Native and Invasive Plants Sold by the Mid-Atlantic Nursery Industry

A Baseline for Future Comparisons

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MT. CUBA CENTER

Executive Summary

This report was written in order to establish a baseline from which Mt. Cuba Center could measure changes in the nursery industry regarding the availability of native and invasive plants, and as a result, its influence. Fourteen nurseries were chosen from the mid-Atlantic region (PA, NJ, MD, and VA) that together provide a good representation for the types of business models found in the industry overall, with the exception of box store growers.

The results indicate that 25% of all the taxa sold by these nurseries (and therefore in the regional industry) are native. This percentage includes native species, cultivars and hybrids. Of those natives, only 23% are straight species, meaning the bulk of native plants (77%) available to consumers are cultivated forms.

Invasive taxa were also of interest, and the survey found that 2% of all the taxa sold are considered invasive according to the state of Delaware. Another 2% are on the Delaware Invasive Plant Watch List, which are plants thought to pose a risk of invasiveness.

Definitions

Native: Broadly defined as occurring in the Eastern Temperate Forest Ecoregion (Eastern United States except New England). This is essentially how Mt. Cuba Center uses the term native for the purposes of our own collection. When used alone without subsequent descriptors, the term "native" includes native species, native cultivars and native hybrids. Native species determinations were done using the ranges found on the USDA Plants Database and BONAP websites.

Native Species: A true or "straight" species that is native to the above defined region.

Native Cultivar: A selection of a species that is native to the above defined region. Cultivars technically can include hybrids; however, we have given those plants a separate designation. For this project, cultivars had to have a specific epithet; otherwise they were considered hybrids (assuming research did not prove otherwise). Names may not be perfectly correct but designations should be.

Native Hybrid: A plant with two or more native species or native cultivars as parents. Plants that included parentage not native to the lower 48 United States were not considered to be a native hybrid. The Eastern Temperate Forest restriction was lessoned to include continental U.S. natives due to the many hybrids that have complex backgrounds that involve many species, some of which may be native to the western U.S. It is common practice in the industry to think of these hybrids as belonging to the "native" category while those with Asian or European parentage as non-native. Hybrids between genera, even those native to the Eastern Temperate Forest, were not considered native because such hybrids were only made possible due to intensive efforts by man, at least in the cases of this survey.

Invasive: These are plants designated as invasive in Delaware by Bill McAvoy in his March 2016 document "Non-native and Invasive Plants in Delaware". There may be differences in what is considered invasive in other mid-Atlantic states, but it is fair to assume that the region is similar enough to expect any plant that is invasive in Delaware would also be invasive in NY, NJ, PA, MD, DC, and VA.

Invasive Watch List: These are plants that according to Bill McAvoy's document are "invasive plants not yet well established in Delaware but have potential to become abundant and widely distributed throughout the state. Invasive Watch List species are often a priority concern in surrounding areas."

Plant Type: Plant types were defined as annual, perennial, grass, fern, vine, bamboo, shrub, tree, or edible. The distinction between tree and shrub was subjective; however, the cutoff line fluctuated typically at a mature height breakpoint of 15-20'. There are many cases where some cultivars of a species are keyed out as trees while other cultivars are shrubs. This was especially common among the conifers. *Acer palmatum* var. *dissectum* (Japanese cutleaf maple) and its cultivars were considered trees even though they are typically shorter than 15' tall. The edible category includes plants that could be placed under others like tree or vine, but it seemed best to group all plants grown for non-ornamental (edible) purposes together into one category.

Contents

Introduction

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Data was gathered on the plant offerings for 2016/17 from each nursery. Each taxon was then normalized for its name and keyed out to indicate a variety of characteristics including nativity, plant type, and invasiveness.

Nursery Selection

Fourteen nurseries were selected in order to obtain a representative group of the industry. These are all relatively large, key players in the region who are likely to continue in business for many years. This was important for follow-up comparisons. In addition to their size and experience, nurseries were chosen based on their business models of products sold (container, field grown, plant types) as well as their intended markets (landscapers, garden centers, etc.). The one type of grower not found in our survey is one that sells to big box stores like Home Depot and Lowe's. Admittedly, this is a serious flaw due to the amount of product that moves through these stores. However, the nurseries we have selected likely sell most of the same taxa sold by the big box growers. The reason they are not included is that these growers typically are exclusive to the box stores and don't publish catalogs from which we could gather data.

Table 1: Index of Locations of Surveyed mid-Atlantic Nurseries

#	Location by State
1	MD
2	MD
3	MD
4	NJ
5	NJ
6	VA
7	NJ
8	MD
9	MD
10	NJ
11	NJ
12	PA
13	VA
14	NJ

Industry-wide Results

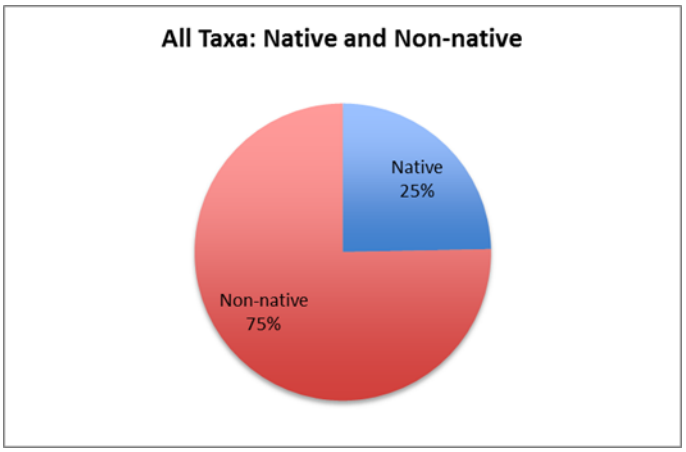
Native Plants Sold in the Mid-Atlantic Region

There are 6,885 different taxa of plants sold by the target nurseries. It is believed that the surveyed nurseries well represent the makeup of the overall industry. While there are certainly going to be more taxa than what was surveyed, it can be fairly assumed that the majority of taxa being sold have been incorporated into this list.

On a taxa basis, 24% of the plant varieties sold by the nurseries in our survey are classified as natives.

When used broadly, the term "native" includes native species, cultivars of native species, and hybrids of native species. However, hybrids with a known non-native parent and hybrids between native genera were not considered natives for the purpose of this study.

It should be noted that a few of these nurseries sell plant types like annuals and vegetables (edibles) which were not intended to be surveyed. They are included in the overall figures because they represent what these "hardy plant focused" (perennial, tree and shrub) nurseries are selling. However, the annual and edible categories are likely not an accurate representation of everything that is available to the consumer. These categories will be discussed in further detail later as they do include native and invasive plants among them.

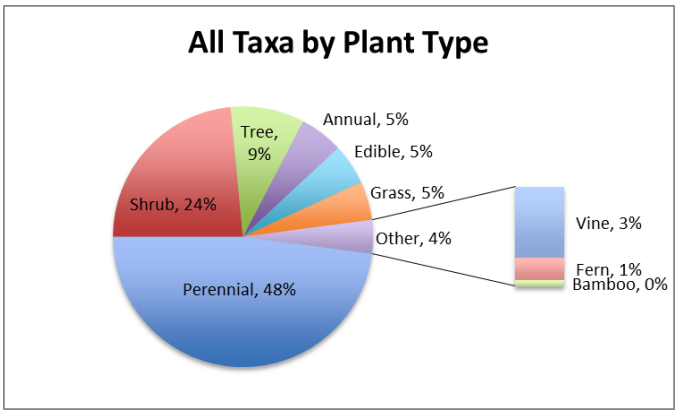


All Taxa: Native and Non-native

Nativity	# of Taxa	% of Total Taxa
Native	1,701	24.71%
Non-native	5,184	75.32%
Grand Total	**6,885**	**100.00%**

All Taxa by Plant Type

This section shows which plant types have the most taxa. The two largest groups by far are perennials and shrubs, which account for 72% of all taxa offered for sale. It's important to remember that this does not reflect sales quantities, just the diversity of taxa.



All Taxa by Plant Type

Nativity	# of Taxa	% of Total Taxa
Perennial	3,263	48%
Shrub	1,600	23%
Tree	699	10%
Annual	363	5%
Edible	351	5%
Grass	326	5%
Vine	201	3%
Fern	64	1%
Bamboo	18	0%
Grand Total	**6,885**	**100%**

Side by Side Comparison

The following table shows how the native percentage of each plant type compares to the overall average (25%). Trees and ferns are the categories with the highest proportion of natives, while vines, annuals, and edibles are the weakest. Edibles and annuals are a tough category for MCC to promote a wider diversity of natives, but vines are a category where MCC can work to promote more native taxa through garden display, plant introductions and promotional trials. The categories with higher percentages like ferns, perennials, trees, and shrubs are places where MCC will likely find further opportunities for trials focused on helping gardeners make better decisions regarding plant choice.

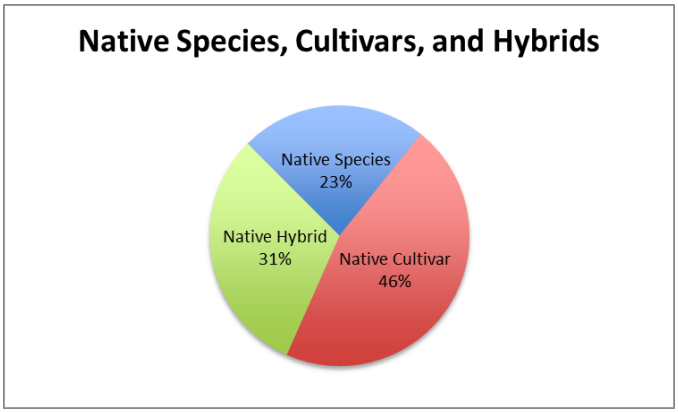
*The two columns on the right represent the breakdown at a species level. This includes straight species and cultivars but does not include hybrids. These numbers better reflect diversity in terms of ecological value from Mt. Cuba Center's perspective. Hybrids are not included even though our experience in the trial garden indicates that these plants can provide ecological value, at least to pollinators. This is not so much about excluding hybrids as getting to the point where you can say something like- "horticulture enables gardeners to utilize 68 different species of native trees, and by extension, the ability to utilize the ecological benefits of 68 different species of native trees." The figures on the left side of the table better represent what the end consumer is likely to encounter for options.

Native vs. Non-native by Plant Type

Plant Type	# of Taxa	% Native	% Non-native	# of Native Species*	# of Non-native Species*
Fern	64	41%	59%	17	22
Tree	699	37%	63%	68	108
Grass	326	34%	66%	51	60
Perennial	3,263	30%	70%	225	416
Shrub	1,600	18%	82%	79	161
Vine	201	10%	90%	10	21
Annual	363	7%	93%	6	45
Edible	351	1%	99%	2	63
Bamboo	18	0%	100%	0	14
Grand Total	**6,885**	**1,700**	**5,185**	**458 (33%)**	**910**

Native Plant Taxa by "Degree of Nativeness"

Only 23% of the native plants that are sold by the surveyed nurseries are native species. The bulk of the taxa available (77%) are cultivated and hybrid forms. Through the University of Delaware, Mt. Cuba Center has conducted one study of woody plants that shows most cultivars are not all that different ecologically from their native species. Data on herbaceous cultivars is not yet available, but MCC's citizen science projects suggest a similar narrative. Unfortunately, it is impossible at this time to determine if each cultivar and hybrid taxa on our list maintains its ecological function. While we have no data about the functionality of hybrid cultivars, it is still encouraging to see that 69% of the native plants sold belong to the species and cultivar categories.

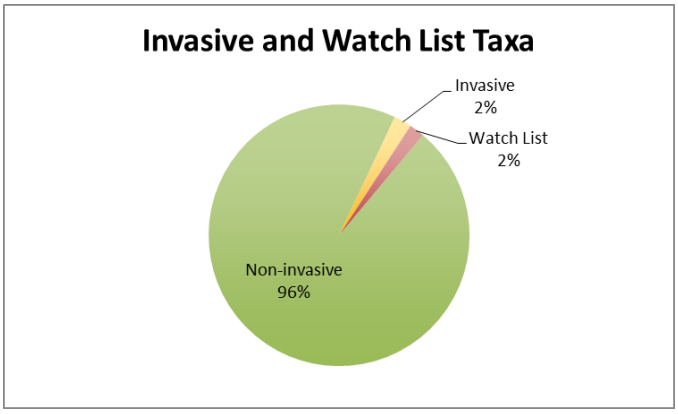


Native Species, Cultivars and Hybrids

Nativity	# of Taxa	% of Native Taxa	% of All Taxa
Native Species	391	23%	5.8%
Native Cultivar	791	46%	11.6%
Native Hybrid	519	31%	7.6%
Grand Total	**1,701**	**100%**	**100%**

Invasive and Watch List Plants sold in the Mid-Atlantic Region

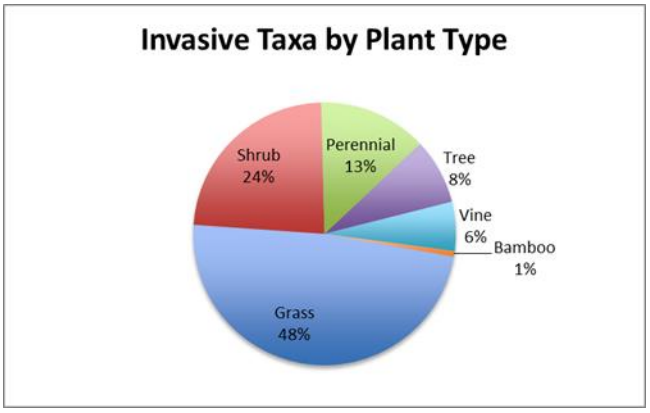
Just 2% of the taxa sold in the mid-Atlantic region are invasive plants and another 2% are on the invasive watch list. This represents 26 different species of invasive plants and 18 species of plants on the watch list.



Invasive Taxa

Invasiveness	# of Taxa	% of Taxa	# of Species
Non-invasive	6,603	96%	1,324
Invasive	149	2%	26
Watch List	132	2%	18
Grand Total	**6,885**	**100%**	**1,368**

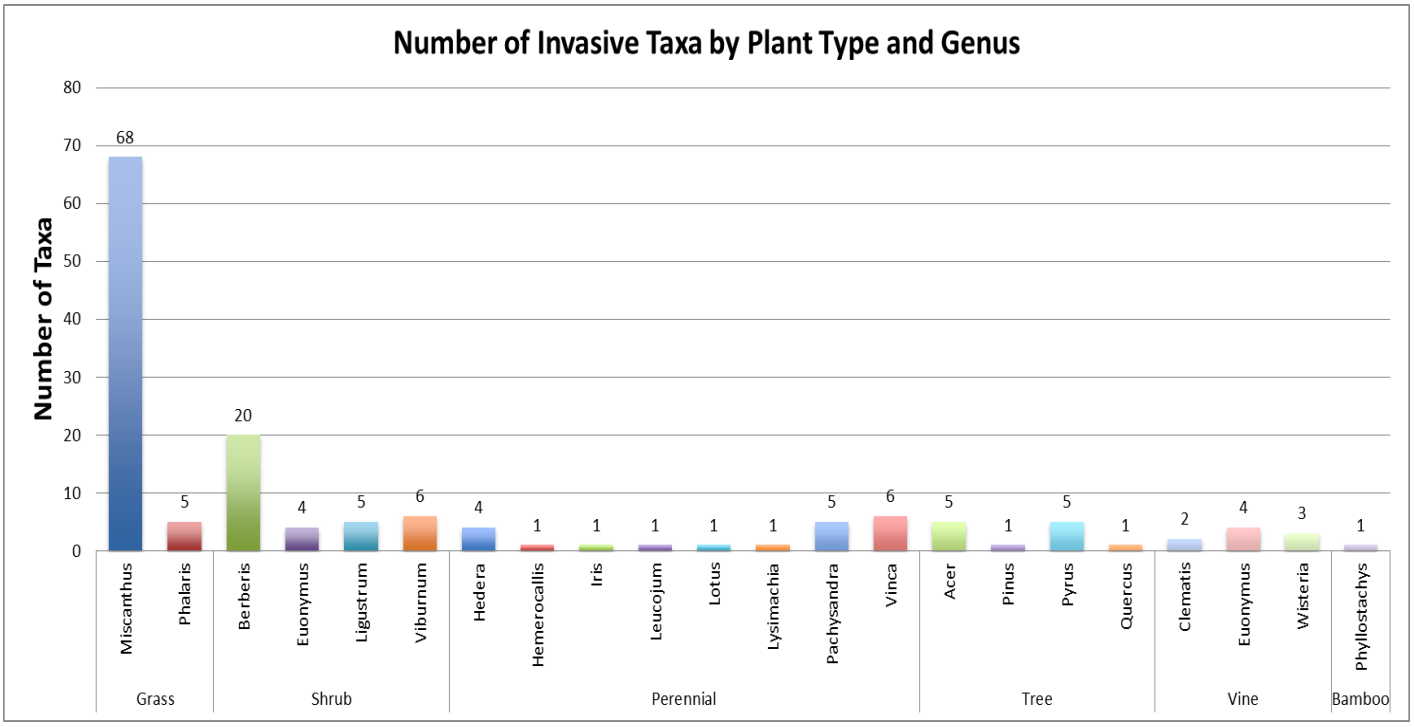
The table below shows the number of invasive taxa and species for each plant type. The first two columns include multiple taxa within a species (i.e. 67 different cultivars of *Miscanthus sinensis*). The columns on the right indicate the number of different species. The chart can be read as- "there are 72 selections of two invasive species of grass."



Invasive Taxa by Plant Type

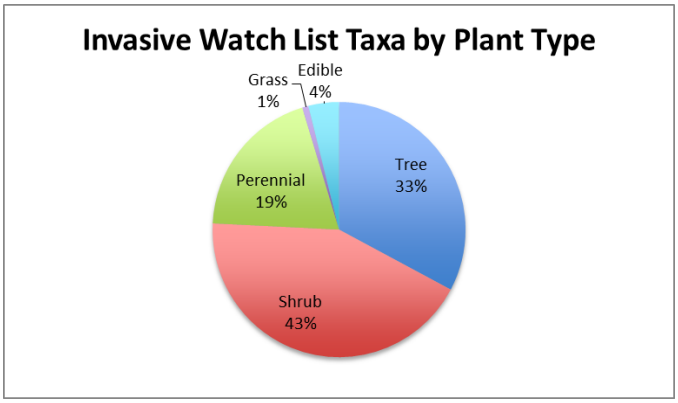
Plant Type	# of Taxa	% Taxa	# of Invasive Species	% of Total Invasive Species
Grass	72	48%	2	8%
Shrub	35	24%	8	31%
Perennial	20	13%	8	31%
Tree	12	8%	3	12%
Vine	9	6%	4	15%
Bamboo	1	1%	1	4%
Grand Total	**149**	**100%**	**26**	**100%**

This chart provides a further breakdown to indicate the genera of invasive plants.



Invasive Watch List Plants

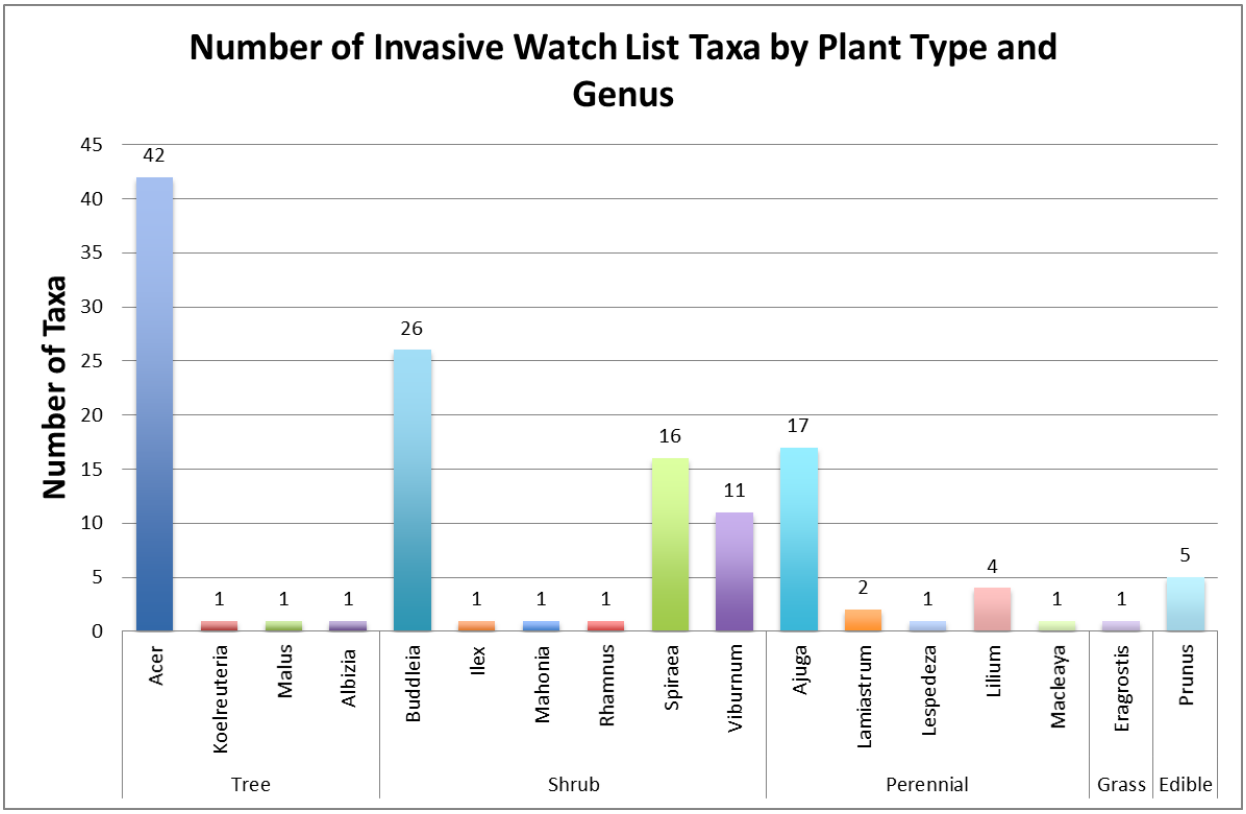
The table below shows the number of invasive watch list taxa and species for each plant type. The first two columns include multiple taxa within a species (i.e. 41 different cultivars of *Acer palmatum*). The columns on the right indicate the number of different species. The chart can be read as- "there are 42 selections of two invasive watch list species of trees."



Invasive Watch list Taxa by Plant Type

Nativity	# of Taxa	% of Taxa	# of WL Species	% of Total WL Species
Tree	45	33%	4	20%
Shrub	56	43%	8	40%
Perennial	25	20%	6	30%
Grass	1	1%	1	5%
Edible	5	4%	1	5%
Grand Total	**132**	**100%**	**20**	**100%**

This chart provides a further breakdown to indicate the genera of Invasive Watch List plants.



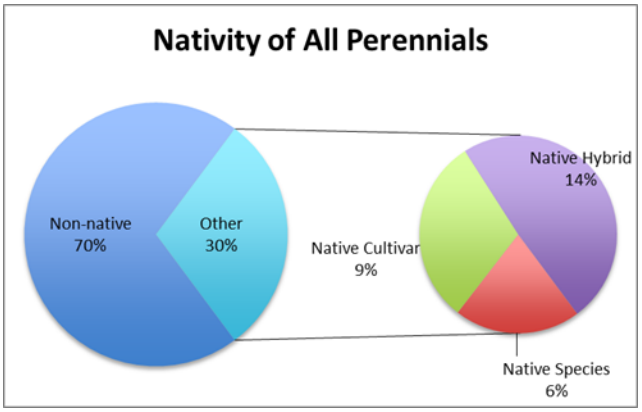
Analysis of Native Plants by Plant Type

This section contains a breakdown of native plants based on plant type.

Perennials

There are 641 different species of perennials represented in the nursery industry (this includes straight species and cultivars but not hybrids). Of those, 225 (35%) are native.

Below is a chart that represents the breakdown of nativity based on all taxa. This is how we might think about a homeowner's access to native plants, while the percentages above are more likely to benefit MCC when thinking about home/commercial landscapes for conservation and wildlife purposes.



Nativity of All Perennials

Nativity	# of Taxa
Non-native	2,297
Native	966
Native Species	200
Native Cultivar	294
Native Hybrid	472
Grand Total	**3,263**

Perennials represent that largest category of plants in the survey (48% of all taxa). Although this category is only the fourth "most native" overall (after ferns, trees, and grasses), its sheer size makes it the most important group. In fact, there are almost three times more native perennials than the next largest group. If the term native is applied narrowly to only include species, there are still four times as many native perennials as the next largest group.

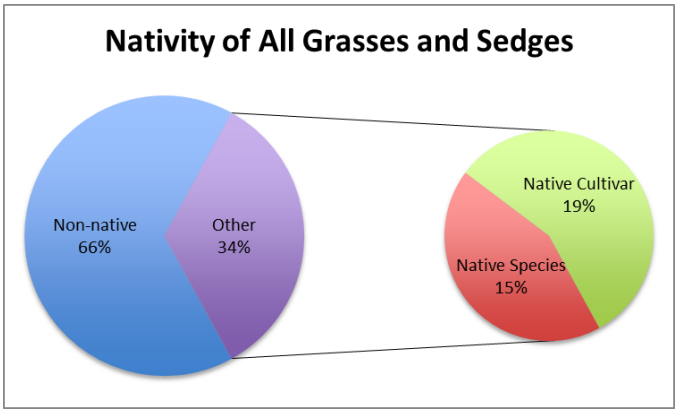
Most Diverse Native Perennial Genera

Genus	Native Species	Native Cultivars	Native Hybrids	Grand Total
Heuchera		4	128	132
Phlox	5	89	25	119
Echinacea	4	15	86	105
Coreopsis	4	15	59	78
Hibiscus	3		44	47
Symphyotrichum	11	26		37
Monarda	4	1	31	36
Tiarella	3	5	18	26
Baptisia	6	2	16	24
Gaillardia			23	23
Rudbeckia	9	9		18
Solidago	12	4		16
Helenium		1	15	16
Eupatorium	7	6		13
Gaura		13		13
Stokesia	1	11		12
Lobelia	2	5	5	12
Penstemon	4	2	5	11
Helianthus	4	4	3	11
Heliopsis	1	10		11

Grasses

There are 111 different species of grasses represented in the nursery industry (this includes straight species and cultivars but not hybrids). Of those, 51 (46%) are native.

Below is a chart that represents the breakdown of nativity based on all taxa. This is how we might think about a homeowner's access to native plants, while the percentages above are more likely to benefit MCC when thinking about home/commercial landscapes for conservation and wildlife purposes.



Nativity of All Grasses and Sedges

Nativity	# of Taxa
Non-native	215
Native	111
Native Species	48
Native Cultivar	63
Grand Total	**326**

Native grasses are the second highest plant category in terms of percent native. This is one of the few areas where our native flora is really on par with the non-natives. The biggest issue in this category is actually the vast number of *Miscanthus* cultivars in the trade (67 to be exact). This is certainly skewing the numbers to the non-native side. Being that *Miscanthus* is also an invasive plant in our region, some careful lobbying to the nurseries could help reduce the number of *Miscanthus* and also bring the percentages closer to a 40-60 or even 50-50 split.

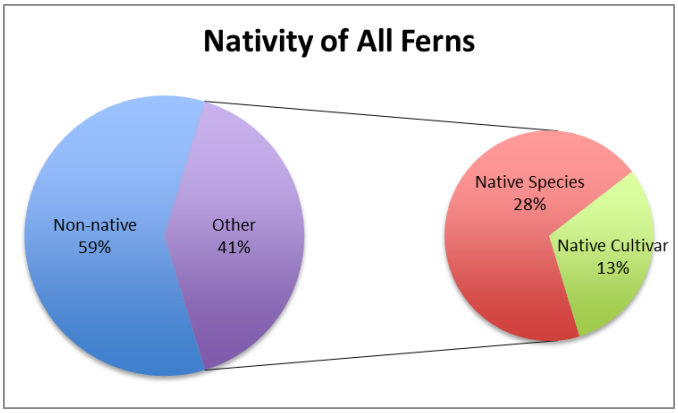
Most Diverse Grass/Carex Genera

Genus	Native Species	Native Cultivars	Grand Total
Carex	22	6	28
Panicum	2	20	22
Schizachyrium	1	10	11
Deschampsia	2	9	11
Andropogon	3	4	7
Juncus	3	4	7

Ferns

There are 39 different species of ferns represented in the nursery industry (this includes straight species and cultivars but not hybrids). Of those, 17 (44%) are native.

Below is a chart that represents the breakdown of nativity based on all taxa. This is how we might think about a homeowner's access to native plants, while the percentages above are more likely to benefit MCC when thinking about home/commercial landscapes for conservation and wildlife purposes.



Nativity of All Ferns

Nativity	# of Taxa
Non-native	38
Native	26
Native Species	18
Native Cultivar	8
Grand Total	**64**

Ferns are the most native plant type. Much of the fern diversity (approx. 25%) comes from selections of *Athyrium* (both native and non-native). However, variation is rarer for the other types of ferns, and thus so are cultivars.

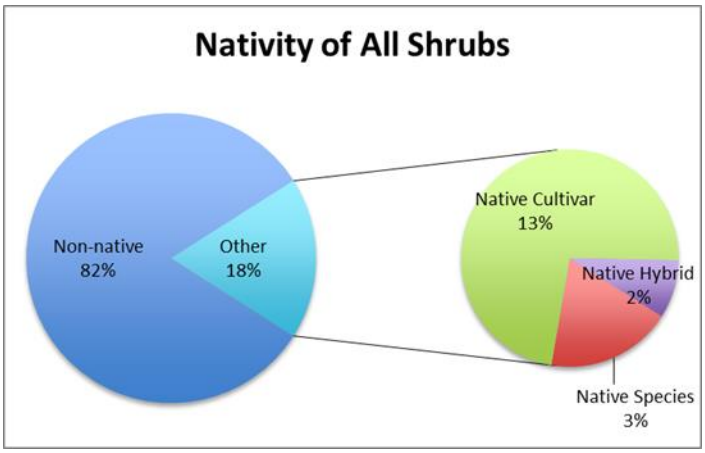
Most Diverse Perennial Genera

Nativity	Native Species	Native Cultivars	Grand Total
Dryopteris	6	1	7
Athyrium	1	6	7
Osmunda	2		2
Thelypteris	2		2
Matteuccia	1	1	2

Shrubs

There are 240 different species of shrubs represented in the nursery industry (this includes straight species and cultivars but not hybrids). Of those, 79 (33%) are native.

Below is a chart that represents the breakdown of nativity based on all taxa. This is how we might think about a homeowner's access to native plants, while the percentages above are more likely to benefit MCC when thinking about home/commercial landscapes for conservation and wildlife purposes.



Nativity of All Perennials

Nativity	# of Taxa
Non-native	1,312
Native	288
Native Species	54
Native Cultivar	209
Native Hybrid	25
Grand Total	**1,600**

One of the disadvantages of our native shrubs is that we lack a large diversity of evergreen taxa compared to the non-natives.

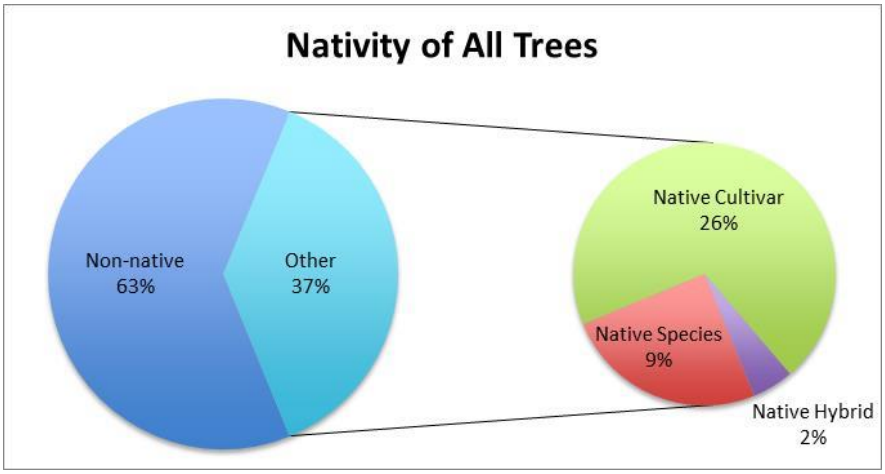
Most Diverse Native Shrub Genera

Genus	Native Species	Native Cultivar	Native Hybrid	Grand Total
Vaccinium	3	13	15	31
Ilex	3	23		26
Thuja		23		23
Hydrangea		22		22
Rhododendron	7	7	6	20
Viburnum	4	13		17
Physocarpus	1	15		16
Cornus	3	12		15
Kalmia		14		14
Rhus	3	7		10

Trees

There are 176 different species of trees represented in the nursery industry (this includes straight species and cultivars but not hybrids). Of those, 68 (39%) are native.

Below is a chart that represents the breakdown of nativity based on all taxa. This is how we might think about a homeowner's access to native plants, while the percentages above are more likely to benefit MCC when thinking about man-made landscapes for conservation and wildlife purposes.



Nativity of All Trees

Nativity	# of Taxa
Non-native	438
Native	261
Native Species	62
Native Cultivar	183
Native Hybrid	16
Grand Total	**699**

At first glance the tree category looks pretty good, certainly greater than the average 24% native. Upon closer inspection of the plant list, we learn that much of the diversity comes from cultivars of about seven different genera. *Quercus* is the genus that includes the most species. One of the disadvantages of our native trees (and shrubs too) is the lack of evergreens, at least compared to non-natives.

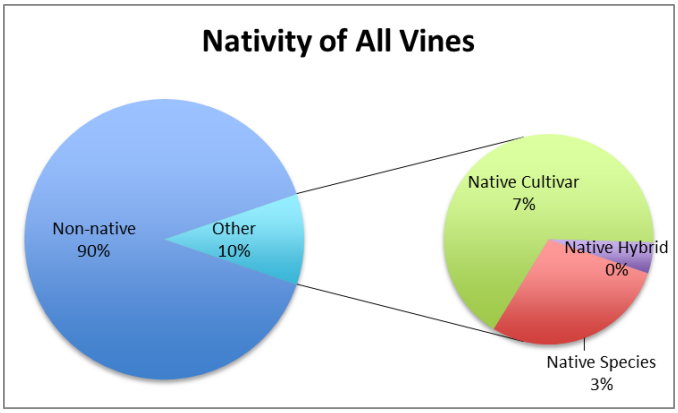
Most Diverse Perennial Genera

Nativity	Native Species	Native Cultivar	Native Hybrid	Grand Total
Cercis	1	22	2	25
Ilex	2	20	1	23
Magnolia	5	16		21
Acer	2	13	2	17
Quercus	12	1	1	14
Asimina	1	12		13
Cornus	1	12		13
Taxodium	1	11		12
Pinus	3	5		8
Diospyros	1	6		7
Gleditsia		7		7
Betula	2	4		6
Nyssa	1	5		6
Halesia	2	4		6

Vines

There are 31 different species of vines represented in the nursery industry (this includes straight species and cultivars but not hybrids). Of those, 11 (35%) are native.

Below is a chart that represents the breakdown of nativity based on all taxa. This is how we might think about a homeowner's access to native plants, while the percentages above are more likely to benefit MCC when thinking about home/commercial landscapes for conservation and wildlife purposes.



Nativity of All Vines

Nativity	# of Taxa
Non-native	180
Native	21
Native Species	6
Native Cultivar	14
Native Hybrid	1
Grand Total	**201**

Native vines represent a relatively small proportion of the diversity of vines sold in the region. It is true that there are few native vines being sold, but there is a huge diversity particularly among non-native clematis that causes these numbers to be especially dramatic. In fact, 148 of the 180 non-native vines are cultivars of non-native clematis. Native clematis are conspicuously absent from this survey and once a propagation method is commercialized, they may help to increase the diversity of native vines.

Most Diverse Native Vine Genera

Genus	Native Species	Native Cultivar	Native Hybrid	Grand Total
Lonicera	1	5	1	7
Campsis	1	3		4
Wisteria		4		4

Annuals

There is no chart regarding the proportion of native annuals compared to non-native annuals because the nurseries in this survey were chosen to reflect the availability of hardy plants and not annuals. To include annuals would require additional surveys of large greenhouse operations that focus solely on the annual market. These are very different aspects of the industry. The annuals being grown by the nurseries in our survey are more ancillary product lines. The complete list of annual genera is provided below for informational purposes only.

Native Annual Genera (All)

Genus	Native Species	Native Cultivars	Native Hybrids	Grand Total
Rudbeckia	1	8		9
Coreopsis	1		3	4
Phlox			2	2
Salvia		2		2
Campanula	1			1
Helenium		1		1
Grand Total	**3**	**11**	**5**	**19**

Edibles

There are just four types of native edibles in this survey, representing 1% of the overall edible category. This category is not the best representation of edibles overall because the nurseries were not selected with this category in mind. While there may be more non-native edibles available, there are doubtfully more native edibles. It should be noted that *Asimina triloba* (pawpaw) was considered as tree and not an edible. In addition, *Vaccinium* (blueberry) is included in the shrub category due to its ornamental usage.

Native Edibles Genera

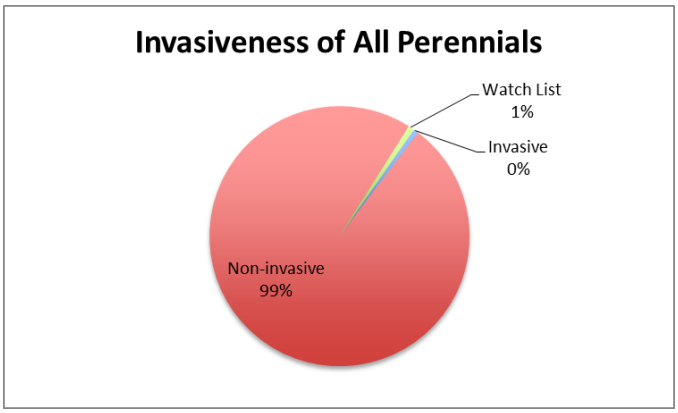
Genus	Native Cultivar	Grand Total
Vitis	2	2
Rubus	2	2
Grand Total	**4**	**4**

Analysis of Invasive Plants by Plant Type

This section contains a breakdown of invasive and invasive watch list plants based on plant type.

Perennials

There are 20 taxa of 8 different invasive species which represents just 1% of the overall perennial category. Another 25 taxa from 6 different watch list species represents an additional 1% of the overall perennial category.



Invasiveness of All Perennials

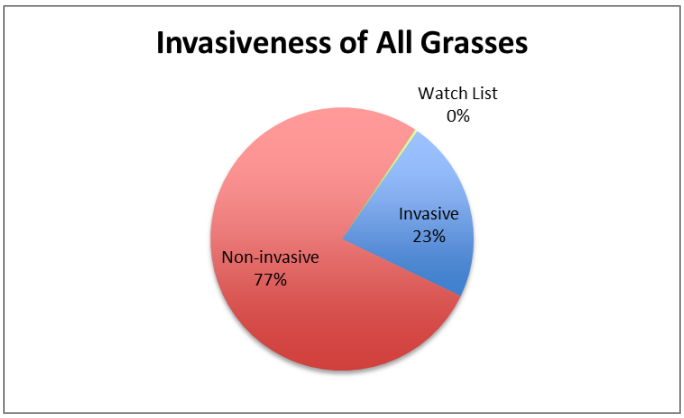
Invasiveness	# of Taxa	% of Taxa
Invasive	20	1%
Non-invasive	3,218	99%
Watch List	25	1%
Grand Total	**3,263**	**100%**

Invasive Perennials

Invasiveness	# of Taxa	# of Growers
Invasive		
Hedera helix	4	6
Hemerocallis x fulva	1	3
Iris pseudoacorus	1	1
Leucojum aestivum	1	1
Lotus corniculatus	1	1
Lysimachia nummularia	1	1
Pachysandra terminalis	5	5
Vinca minor	6	9
Watch List		
Ajuga	3	2
Ajuga reptans	13	11
Ajuga x tenorii	1	8
Lamiastrum galeobdolon	2	4
Lespedeza thunbergii	1	1
Lilium lancifolium	4	1
Macleaya microcarpa	1	1
Grand Total	**45**	

Grasses

There are 2 taxa of 2 different invasive species which represents a disproportionate 23% of the overall grass category. Another watch list taxa represents an additional less than 1% of the overall grass category.



Invasiveness of All Grasses

Invasiveness	# of Taxa	% of Taxa
Invasive	72	22%
Non-invasive	252	77%
Watch List	1	0%
Grand Total	**325**	**100%**

Invasive Grasses

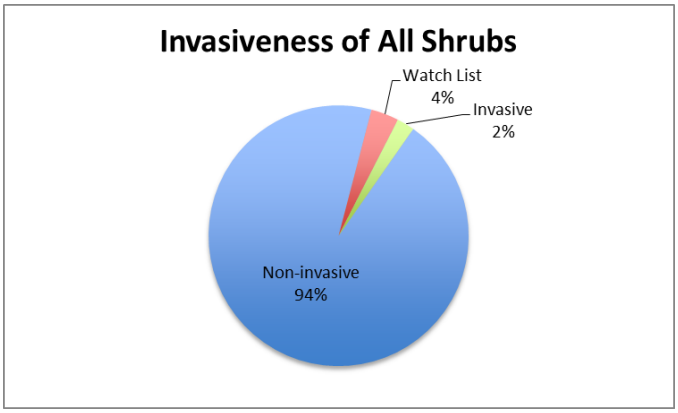
Invasiveness	# of Taxa	# of Growers
Invasive		
Miscanthus sinensis	67	12
Phalaris arundinacea	5	4
Watch List		
Eragrostis curvula	1	1
Grand Total	**73**	

Ferns

There are no invasive or watch list ferns.

Shrubs

There are 35 taxa of 8 different invasive species which represents 2% of the overall shrub category. Another 55 taxa from 8 different watch list species represents an additional 4% of the overall shrub category.



Invasiveness of All Shrubs

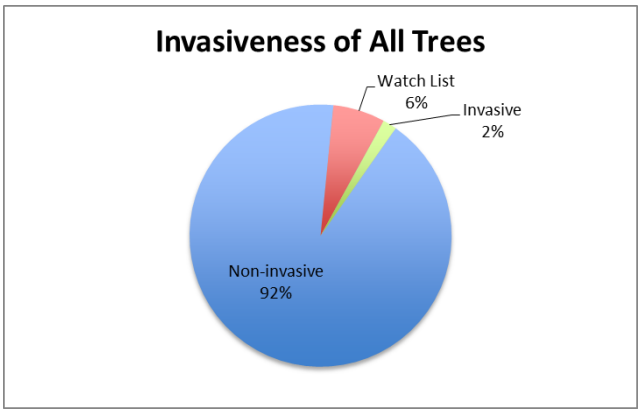
Invasiveness	# of Taxa	% of Taxa
Non-invasive	1,509	94%
Watch List	56	3%
Invasive	35	2%
Grand Total	**1,600**	**100%**

Invasive Shrubs

Invasiveness	# of Taxa	# of Growers
Invasive		
Berberis thunbergii	20	8
Euonymus alatus	4	6
Ligustrum japonicum	1	1
Ligustrum ovalifolium	1	7
Ligustrum sinense	2	2
Ligustrum x ibolium	1	1
Viburnum dilatatum	5	4
Viburnum setigerum	1	2
Watch List		
Buddleia	7	
Buddleia davidii	19	8
Ilex crenata	1	2
Mahonia bealei	1	2
Rhamnus frangula	1	3
Spiraea japonica	14	10
Spiraea x bumalda	2	9
Viburnum plicatum	9	9
Viburnum sieboldii	2	1
Grand Total	**91**	

Trees

There are 12 taxa of 4 different invasive species which represents 2% of the overall tree category. Another 42 taxa from 2 different watch list species represents an additional 7% of the overall tree category. The bulk of these are cultivars of *Acer palmatum* (Japanese maple).



Invasiveness of All Trees

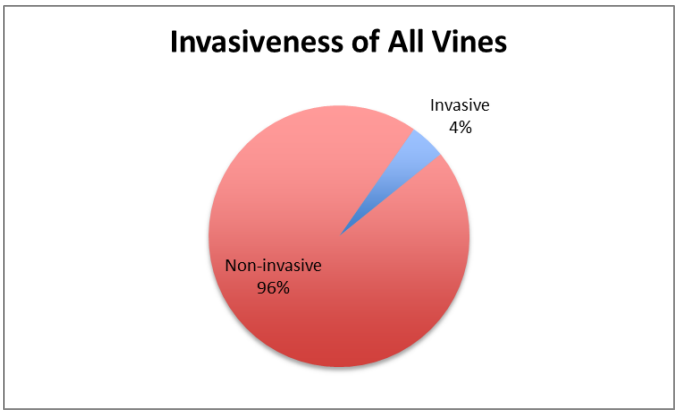
Invasiveness	# of Taxa	% of Taxa
Non-invasive	642	92%
Watch List	45	6%
Invasive	12	2%
Grand Total	**699**	**100%**

Invasive Trees

Invasiveness	# of Taxa	# of Growers
Invasive		
Acer platanoides	5	3
Pinus thunbergii	1	4
Pyrus calleryana	5	6
Quercus acutissima	1	2
Watch List		
Acer palmatum	42	8
Koelreuteria paniculata	1	5
Maus baccata	1	1
Albizia julibrissin	1	1
Grand Total	**57**	

Vines

There are 9 taxa of 4 different invasive species which represents 4% of the overall vine category.



Invasiveness of All Vines

Invasiveness	# of Taxa	% of Taxa
Invasive	9	4%
Non-invasive	192	96%
Grand Total	**201**	**100%**

Invasive Vines

Name	# of Taxa	# of Growers
Invasive		
Clematis	1	3
Clematis paniculata	1	6
Euonymus fortunei	4	4
Wisteria sinensis	3	2
Grand Total	**9**	

Annuals

There are no invasive or watch list annuals.

Edibles

Only *Prunus avium* (sweet cherry) is on the watch list. There are five cultivars of this species being sold by just one nursery. Given that this is a major food crop, it is unlikely to be dropped from the industry.

Bamboo

Currently only 1 of the 18 species of bamboo sold today is considered invasive, *Phyllostachys aurea*, and is sold by only one nursery.

Grower Profiles

The charts below show the product profiles of each of the nurseries surveyed. The table showing quantities helps showcase the diversity of taxa offered by each nursery.

Grower Profile by Plant Type

Nurseries	Bamboo	Edible	Fern	Grass	Perennial	Shrub	Tree	Vine
Angelica	0%	0%	0%	0%	0%	47%	53%	0%
Babikow	1%	0%	3%	5%	90%	0%	0%	1%
Cavano's	0%	2%	2%	9%	82%	1%	0%	4%
Centerton	0%	23%	2%	4%	49%	20%	1%	1%
Hopewell	0%	4%	1%	4%	37%	31%	22%	1%
Ingleside	0%	0%	0%	7%	4%	42%	46%	1%
Johnson Farms	0%	0%	2%	7%	39%	39%	10%	2%
Kurt Bluemel	2%	2%	3%	25%	66%	1%	0%	1%
Moon	1%	2%	0%	3%	11%	56%	26%	1%
Overdevest	0%	2%	0%	4%	50%	36%	3%	5%
Pleasant Run	0%	0%	1%	5%	39%	32%	20%	3%
Quality	0%	1%	2%	4%	79%	8%	1%	5%
Saunders	0%	0%	2%	5%	45%	41%	6%	1%
Tuckahoe	0%	0%	0%	5%	5%	55%	35%	0%
Grand Total	**0%**	**3%**	**1%**	**6%**	**54%**	**24%**	**9%**	**3%**

Grower Quantities by Plant Type

Nurseries	Annual	Bamboo	Edible	Fern	Grass	Perennial	Shrub	Tree	Vine	Grand Total
Angelica							101	116		217
Babikow	8	4	3	25	43	704	1		5	793
Cavano's	8		21	19	83	745	12		32	920
Centerton	13		226	17	39	495	203	6	14	1,013
Hopewell			33	9	29	298	253	178	9	809
Ingleside			1	1	24	15	145	160	2	348
Johnson Farms	11		3	11	43	239	242	63	14	626
Kurt Bluemel	4	15	14	30	252	656	11		11	993
Moon		1	10		13	47	235	108	4	425
Overdevest	46		48		84	994	718	61	89	2,040
Pleasant Run	2		2	17	63	489	394	249	42	1,258
Quality	15	2	32	43	88	1,803	191	30	105	2,309
Saunders	294		10	20	57	492	448	60	7	1,382
Tuckahoe					16	15	182	116	1	330
Grand Total	**401**	**22**	**397**	**192**	**834**	**6,992**	**3,136**	**1,154**	**335**	**13,463**

Limitations

1. This report is not to be used as a source for accurate names.
2. We are in no way able to ascertain popularity of anything sold in the region, just the diversity.
3. The report is written from the view of the mid-Atlantic region. However these growers ship across much greater regions, just as other growers ship into the mid-Atlantic.
4. Big box growers were not included because their product lists were not available.
5. Distinctions between trees and shrubs is subjective and a breakpoint was made based on height of 15-20'. There were some exceptions to this, like *Acer palmatum* var. *dissectum* were all still treated as trees even though most only grow a few feet tall.

Conclusion

The results indicate that 25% of all the taxa sold by these nurseries (and therefore in the regional industry) are native. This percentage includes native species, cultivars and hybrids. Of those natives, only 23% are straight species, meaning the bulk of native plants available to consumers (77%) are cultivated forms. Invasive taxa were also of interest, and the survey found that 2% of all the taxa sold are considered invasive according to the State of Delaware. Another 2% are on the Delaware Invasive Plant Watch List, which are plants thought to pose a risk of invasiveness. Follow-up studies in the future will allow Mt. Cuba Center to see how the industry changes over a period of time and hopefully derive some measure of the impact from MCC's programs.