City of New York
Parks & Recreation

**New York City Council**
**Committee on Environmental Protection**

**Oversight - Invasive Species Control in New York City**

**April 15, 2010**

**Testimony by**
**Michael Feller, Chief Naturalist**

We are pleased to have this opportunity to speak on matters related to invasive species management. For more than 25 years, Parks' Natural Resources Group, or NRG, has been at the vanguard of invasive species management and urban ecology. NRG was formed in 1984 as a team of expert advisors, including foresters, botanists, wetland and wildlife biologists, geographers, and others to protect and defend New York City's natural areas.

When NRG began in the 1980s to inventory the then-8,000 acres of wild area of New York, it became clear that we were witnessing the steady and, in some cases, rapid unraveling of ecosystems. Landscapes where littered with burnt, rusting car chassis and other dumped debris, and porcelainberry, Asiatic bittersweet, and Japanese honeysuckle engulfed trees and shrubs. In other areas where fallen trees or other disturbance created light-filled gaps, Norway maples formed canopies so dense that all ground cover vegetation was suppressed resulting in the erosion of soil. It was clear that a cohesive management plan for natural areas and a commitment to propagating native species was needed to restore New York City's ecologically important open spaces. Today, I wish to discuss our achievements in invasive species management .

## INVASIVE SPECIES

I would like to start by explaining why invasive species require human intervention in the first place. Invasive species are organisms removed from their native ecological context that when relocated are freed from the complex ecological checks and balances – the predators, herbivores, pathogens, and competitors – with which they evolved. Ecosystems display great capacities for self-organization and self-perpetuation and yet they exhibit great vulnerability to the activities of humankind. Intervention to stop the spread of invasive species is needed, primarily in the form of removal and replacement with appropriate native plants that will resist re-invasion, to forestall the unraveling of native ecosystems and the loss of biodiversity and ecological services. This is nowhere more critical than in and around cities where habitat fragmentation and isolation diminish ecosystem resilience..

Deciding which native species to return to a community is a difficult task. Ecosystems are complex amalgams of inter-related biotic factors (plants, animals, and microorganisms) and abiotic factors (water, minerals, atmosphere, light) that occupy the same habitat and interact with

and influence each other. This is not an exercise in historical accuracy, like renovating a historic building. We need to select native plants that help restore ecological processes that nudge ecosystems back onto trajectories that build stability and resilience.

**Greenbelt Native Plant Center**

Since 1994, the Parks Department has continuously operated the only municipally-run native plant nursery in the country in support of natural areas management. Today, the Greenbelt Native Plant Center (GNPC), stocks up to 450,000 local ecotypic native plants for use in restoration and management of natural areas and for Parks horticulture. Safely stored in the GNPC's climate controlled seed bank are over 1,500 collections of seeds including everything from fern spores to our most common trees as well as state listed rare and threatened species from within the five boroughs such as green milkweed from the Greenbelt in Staten Island and gamma grass from Pelham Bay Park in the Bronx. The GNPC partners regionally, nationally, and globally in the conservation of not only the City's, but the region's flora. Now, Parks and the GNPC are one of six partners in the establishment of a national seed bank for the United States.

The GNPC produces native plants in support of some of the City's most important efforts. The forest restoration and management crews operating in the Bronx as part of the Croton water treatment plant mitigation are supplied with all of their plant material from the GNPC. And in a program initiated four years ago, the GNPC is producing initial stages of bulk seed of 35 species of natives that within five years will yield 5 or 6 mixes of bulk native seed for seeding operations on such City projects as Fresh Kills Park. There is currently no source for local ecotypic bulk seed anywhere in the entire northeast.

**Reforestation**

Not only must we cultivate native plants, but we must work as a city to reintroduce them to the environment. NRG began identifying and removing invasive plants from Parks' natural areas in the 1990s. Since then, NRG has removed invasive species and restored 700 acres of forest. And since 2007, when Mayor Bloomberg launched the PlaNYC Reforestation Initiative, NRG has expanded their invasive plant removal efforts in order to prepare sites for restoring multi-story forests at a citywide scale. Through the MillionTreesNYC initiative, we have reforested more than 120 acres, including 166,000 trees. And, we are well on our way to meeting our goal of reforesting 2,000 acres of parkland by the year 2030.

The PlaNYC Reforestation Initiative has expanded NRG's capacity to remove and control invasive plants by providing resources for site preparation and by enabling us to plant trees that, once they have reach a mature size and establish a closed canopy, will help shade out and prevent the germination of new invasive plants. Next week on April 24, 2010, with the help of legions of MillionTreesNYC volunteers, NRG will plant 20,000 trees in forest restoration project sites throughout the city.

**Restoration**

The reforestation is part of a comprehensive effort to restore New York's natural areas. Over the past 25 years, NRG has restored hundreds of acres of forests and salt marsh with a combination of City, State, Federal, and private funding. What began as a small in-house crew in the Bronx,

soon became a significant citywide land restoration and reclamation program, which has completed over 50 projects in all five boroughs of the City. Invasive plants have been controlled or contained in 20 Forever Wild parks, and treated in several others.

Between 1934 and 1972, land filling and development destroyed 90 percent of the city's wetlands (tens of thousands of acres). In 1990, with mitigation funding from a major oil spill, NRG began an aggressive program to restore salt marshes. To, date we have completed dozens of projects totaling about 200 acres in which we have removed decades old landfill, re-established tidal elevations, and re-planted native *Spartina alterniflora*, salt marsh cordgrass, the keystone species of the salt marsh ecosystem. We continue to perform wetland restoration partnering with the New York Department of State and Department of Environmental Conservation, the US Army Corps of Engineers, and the New York City Department of Environmental Protection. As I speak to you today, I have the satisfaction of knowing that contractors are restoring in Marine Park and Paerdegat Park Preserve, both along Brooklyn's Jamaica Bay shoreline, a total of 30 acres of salt marsh and 60 acres of upland native plant communities.

**Asian Longhorned Beetle**

Invasive species do not only include exotic plants such as Phragmites, but also animals without natural predators. As those of you aware of your history know, Dutch Elm Disease, a fungus spread by the elm bark beetle, blighted the iconic American Elm after being introduced to America in 1928. Entire communities of elms were almost completely destroyed, and battles to preserve elms are still being fought today. While a catastrophic event for America's tree stock, we have learned much from the spread of the disease. Not only must we pursue a diverse tree planting strategy, but we must aggressively work to eradicate invasive species before they cause irreparable harm to our urban tree canopy. Amore recent example is the Asian longhorned beetle. First discovered in Brooklyn in 1996 and subsequently in Illinois, New Jersey, and Massachusetts, the ALB is a local, regional, and national environmental threat, already affecting more than 15,500 trees in urban areas. Nearly half of New York City's trees remain at risk of infestation. Recent infestations have been discovered on Prall's Island, located in the Arthur Kill off Staten Island's west coast, as well as in the Bloomfield section of Staten Island and in Woodside, Queens. Currently, the State and Federal quarantine zone, which has been enlarged as new infestations are found, covers 101.6 square miles of Brooklyn, Queens, Manhattan, and Staten Island.

Parks has worked collaboratively with our partner agencies, the Animal and Plant Health Inspection Service (APHIS), a division of the U.S. Department of Agriculture and the New York State Department of Agriculture & Markets (NYSDAM), to identify infested trees. Since 2001, state and federal inspectors have examined more than 830,000 and treated more than 450,000 New York City trees on public and private property. Parks has also established the ALB Residential Wood Debris Pickup Program, which ensures that all residential wood debris within quarantine areas is disposed of in accordance with quarantine regulations, and will prevent further spread of the beetle. We have also stepped up our efforts to reach out to residents, to train them to spot signs of the Asian longhorned beetle. Since the fall of 2004 when the ALB debris program began, Parks has sent a mailer to the residents of Brooklyn, Queens, Manhattan and (since 2007) Staten Island to increase awareness about this new service and instruct residents on how to schedule an appointment. Each season, Parks has sent just under 1.2 million mailers to residents living in these boroughs.

## CONCLUSION

We offer the following to provide a different frame of reference for those who ask, "Do we really need to manage our city's natural areas?" The two largest national parks in the U.S.—Everglades National Park and Yellowstone National Park—each comprising over one million contiguous wilderness acres, require active management and restoration to combat invasive species, over-abundant nutrient sources, and erosion from overuse. Everglades and Yellowstone National Parks are large wilderness areas surrounded by matrices of wild and rural land. Most of the natural areas in New York City measure in the tens or hundreds of acres—five orders of magnitude smaller than Everglades and Yellowstone—and are situated in a matrix of asphalt and concrete and, as such, are far less resistant, resilient, and robust. Yes, indeed, they critically require intervention and continued management.

**Testimony of Alpa Pandya,**
**The Nature Conservancy**
April 15, 2010

The Nature Conservancy
Protecting nature. Preserving life.™

My name is Alpa Pandya, and I'm representing The Nature Conservancy of Long Island, which has been fulfilling its mission to preserve LI's lands and waters for over 50 years. I am also representing the LI Invasive Species Management Area ("LIISMA"), a voluntary association of public and private land managers, scientists, and environmental, civic and industry groups working together to prevent the spread of invasive species on Long Island. Thank you for inviting me to speak with you about biodiversity and invasive species.

First, let me congratulate you on the NYC Green Codes Task Force report. It is broad-ranging and ambitious, and if implemented will greatly improve NYC's lands and waters as well as New Yorkers' quality of life.

Just as importantly for many people, making the right decisions for these issues will save you millions, maybe billions, of dollars. If you are like most people who don't know the difference between a Norway maple and a Red maple or a Zebra mussel and a Blue mussel, know this: invasive species will cause millions of dollars of damage. And yes, the NYS DEC estimates Zebra mussels have caused over $5 billion in damage in the Great Lakes.

For this reason, I urge you to move beyond your excellent starting point in the Green Codes report and incorporate the full spectrum of a planting and invasive species management plan, because not planting the wrong thing is as important as planting the right thing. Having native plants is great, but if you plant 99% native plants and one Purple loosestrife, the Purple loosestrife will probably win.

The four components of an invasive species program are:

1) Prevention: preventing future introductions;
2) Early detection/rapid response: looking for new invasive populations, planning response measures to future introductions;
3) Management and Restoration: limiting the harmful impacts of introductions that have already occurred and then restoring those areas; and
4) Education: educating the public and industry about the issues and concerns relating to invasive species introductions.

Based on this, I would like to amend and add to your report's Urban Ecology section.

Let me start with recommending hiring or training an existing staff person who can serve as a central coordinator for what to plant, what not to plant, and how to get rid of invasive species in the least environmentally damaging way possible. You need someone who also can develop site-specific plans, especially for large restoration projects, rather than relying on fixed percentages of specific plants.

My comments on the Urban Ecology section:
I strongly support the section's direction to increase the number and diversity of trees, meadow grasses, and other plantings. This will lead to not only richer plant diversity, but increased number and variety of birds.

UE1&2: Increase Biodiversity in Public Landscapes and Sidewalk Plantings:

1) "No plant species shall be used if it is listed as invasive as defined and identified by the New York State Department of Environmental Conservation."
   - Don't wait for the State to act. If you are planting *now*, then you need an invasive species list *now* before you spend your money on species which may be invasive. I recommend adopting the science-based LIISMA invasive species list which has been adopted by both Nassau and Suffolk Counties. You are in the same planting zone as Long Island, what is invasive there will be invasive in the City. Why wait?
2) Native Species and Diversity Requirements:
   While I endorse the concept of requiring native plants in public landscapes and sidewalk plantings, I want to caution you that
   - Aside from stressing the use of native species in 30-50% of plantings, they should also mention that the remainder species must be non-invasive. Having half the plants native won't make much of a difference if the other half is Japanese barberry.
   - Native plants may not be viable for some sites, especially roadsides where there is a lot of road salt, petroleum, etc. Also, native plants are not at this time available in large quantities. I recommend requiring non-invasive plants where native plants are not viable.
   - Rather than strict percentage requirements, I recommend working with trained experts who can judge what is appropriate and viable for the site, and then balance native plants and non-invasive plants for the site. With political and public support, landscape architects will be encouraged to make sites as plantings diverse as possible.

In addition, I suggest expanding the Urban Ecology section into a fuller planting and invasive species management plan, the details of which are in my hand-out, "2 Year Priority Action Items for an Invasive Species Management Program", and the highlights of which are:

- Create a permanent Plantings and Invasive Species Advisory Board, including agency, environmental and industry representatives. Require status reports.
- Appoint an agency point person to centralize and coordinate agency decisions regarding invasive species, native or non-invasive plants, and Integrated Pest Management options.
- Hire or train existing staff in Early Detection/Rapid Response. Provide resources for staff and equipment.
- Map, monitor and develop site-specific plans, especially for larger conservation/restoration areas
- Adopt an invasive species list
- Promote native or non-invasive plants
- Support the Greenbelt Native Plant Center Seed bank
- Create a website for improved communications with the public and for inter-agency and inter-governmental coordination
- Develop a public education program
- Create a volunteer program

A volunteer program will not only provide necessary hands for on-the-ground work. By bringing in residents, you connect people with nature, with each other, and with the neighborhoods they love.

Thank you for giving me this opportunity to speak, and to all of you who foresaw the need for a strategic, City-wide approach to improving the City's lands and waters, giving its residents a better quality of life as well as a better environment in which to live.

# 2 Year Priority Action Items for an Invasive Species Management Program

In two years, by January 2012, provide a status report to the City Council and the public on progress on the following Priority Action Items, as well as problems and additional needs.

## Create a Permanent Invasive Species Advisory Board

Create a permanent Invasive Species Advisory Board, to guide future management goals and strategies as invasives problems change and evolve, as well as foster intra-agency coordination

The Advisory Board would keep track of progress through an annual progress report. The annual progress report would be presented to the City Council and the public.

Advisory Board members should include agency members, Council representatives, and environmental, civic, and business stakeholders.

## Train Existing Staff, and Coordinate Agency Efforts

Develop Best Management Practices and Standard Operating Procedures for the City, in natural areas as well as for roads, active recreation parks, golf courses and other lands regularly planted, which will: 1) phase out use of invasive species in landscaping, habitat restoration, or species management; 2) actively eradicate or control invasive species where practical; and 3) expand the use of native (or at least non-invasive) species of plants and animals and ecologically sound restoration techniques.

## Provide Resources for Staff and Equipment

With thousands of acres of roadsides, parks and public space, NYC to train and dedicate staff to invasive species work. We recommend hiring (or moving internally) 1 coordinator, as well as staff people specifically trained for terrestrial and aquatic invasives management in the Department of Parks and Department of Transportation. In addition, hire or commit existing seasonal staff to invasives species work.

## Early detection/Rapid response:

Train staff in active monitoring and rapid response eradication methods. Regular monitoring in natural areas with fewer visitors is especially important.

## Prioritize Restoration Activities

With thousands of acres of public lands, and many more acres of waterways, NYC needs to prioritize management activities and areas.

## Adopt an Invasive Species List

An invasive species list is a necessary first step towards making management decisions on City lands as well as in developing strategies to reduce their introduction into NYC. Work with the Long Island Invasive Species Management Area ("LIISMA"), Nassau and Suffolk Counties, industry representatives, scientists, land managers and other interested stakeholders in creating two lists of invasive species: (1) highly invasive species that cause significant environmental harm or damage and should not be sold commercially, and, (2) moderately invasive species which may

cause less serious damage, and which should be managed (monitored and removed) on City lands and waters. These lists should be reviewed annually by the Advisory Board.

Stop the Sale of Invasive Species

"Escaped" ornamental plants are a significant source of invasive species introduction. Pass a local law stopping the sale of highly invasive species.

Promote Sale of Native or Non-invasive plants

An important part of an invasive species program is to educate people what they should plant as well as telling people what they should not plant. Adopt a list of accepted native plants as per community/ecological habitat, or non-invasive alternatives. This list should be promoted as part of public education. The list is also an important part of City restoration and plantings work.

See Cornell Cooperative Extension's "Alternatives to Ornamental Invasive Plants" for the kind of material which should be promulgated.

Support expansion of the Greenbelt Native Plant Center Seed bank

Support expansion of the Greenbelt Native Plant Center Seed Bank, to ensure that local-genotype native plants are available for ecological restoration projects. The Center could also make seeds available to nurseries for cultivation and sale to homeowners.

Website for Improved Communications with the Public, Inter-Agency Coordination

Develop a website to house a central database for list of invasive species, the alternatives plants list, reporting invasives incidence, land managers blog, homeowner information, disposal methods, etc.

Volunteer Program

Develop a volunteer program for invasive species management , including identification and reporting.

Public Education

Develop a coordinated, ongoing public education and outreach campaign for youth and adults. Invasive education should be incorporated into existing State and local educational programs, such as programs for Master Gardeners, pesticide applicators, and teachers at all grade levels, including colleges.

## Species reviewed by LIISMA's Scientific Review Committee
### Invasiveness ranks as of April 6, 2010

Highly and Very Highly Invasives species, prohibited in Nassau & Suffolk Cos.

VH=Very High; H=High

DNS=species is proposed for Do Not Sell status, but phase out period is not finalized so no Effective Date given

Species assessments are available on http://nyis.info/Resources/IS_Risk_Assessment.aspx

| SCIENTIFIC NAME | COMMON NAME | Date Prohibition Takes Effect in Suffolk & Nassau Counties |
|---|---|---|
| *Acer platanoides* | Norway maple | 1/1/2013§ |
| §except cultivars 'crimson king', 'royal red' banned effective 1/1/2016 | | |
| *Acer pseudoplatanus* | Sycamore maple | 1/1/2013 |
| *Alliaria petiolata* | Garlic mustard | 1/1/2009 |
| *Ampelopsis brevipedunculata* | Porcelain berry | 1/1/2009 |
| *Anthriscus sylvestris* | Wild chervil | 1/1/2009 |
| *Aralia elata* | Japanese angelica tree | 1/1/2009 |
| *Artemisia vulgaris* | Mugwort, Common wormwood | 1/1/2009 |
| *Arthraxon hispidus* | Arthraxon | DNS |
| *Berberis thunbergii* (includes all hybrids with other Berberis species) | Japanese barberry | 1/1/2014 |
| *Brachypodium sylvaticum* | Slender false brome | DNS |
| *Cabomba caroliniana* | Carolina fanwort | 1/1/2009 |
| *Cardamine impatiens* | Marrowleaf bittercress | 1/1/2009 |
| *Celastrus orbiculatus* | Oriental bittersweet | 1/1/2009 |
| *Centaurea stoebe ssp. micranthos s.l (biebersteinii, diffusa, xpsammogena, maculosamisapplied)* | Spotted knapweed, Spotted star-thistle | 1/1/2009 |
| *Cirsium arvense* | Canada thistle | 1/1/2009 |
| *Clematis terniflora* | Japanese virgin's bower | 1/1/2011 |
| *Cynanchum louiseae (C. nigrum, Vincetoxicum nigrum)* | Black swallow-wort | 1/1/2009 |
| *Cynanchum rossicum (C. medium, Vincetoxicum medium, V.rossicum)* | Pale swallow-wort | 1/1/2009 |
| *Dioscorea polystachya (D.oppositifolia; D.batatas)* | Chinese yam; Cinnamon vine | DNS |
| *Dipsacus laciniatus* | Cut-leaf teasel | DNS |
| *Egeria densa* | Brazilian waterweed | 1/1/2009 |
| *Elaeagnus umbellata* | Autumn olive | 1/1/2009 |
| *Euonymus alatus* | Winged euonymus | 1/1/2016 |
| *Euonymus fortunei* | Winter creeper | 1/1/2013 |
| *Euphorbia cyparissias* | Cypress spurge | 1/1/2009 |
| *Euphorbia esula* | Leafy spurge | 1/1/2009 |
| *Fallopia japonica/ sachalinensis/ xbohemica (Polygonum cuspidatum /sachalinense/xboehmicum)* | Japanese knotweed, Giant knotweed | 1/1/2009 |

| | | |
|---|---|---|
| *Frangula alnus (Rhamnus frangula)* | Smooth buckthorn | 1/1/2013 |
| *Glyceria maxima (Glyceria grandis var. grandis)* | Tall glyceria, English watergrass, Reed mannagrass | DNS |
| *Heracleum mantegazzianum* | Giant hogweed | 1/1/2009 |
| *Humulus japonicus* | Japanese hops | 1/1/2009 |
| *Hydrilla verticillata* | Water thyme | 1/1/2009 |
| *Hydrocharis morus-ranae* | Frogbit | 1/1/2009 |
| *Imperata cylindrica* | Cogon grass | DNS |
| *Iris pseudacorus* | Yellow iris | 1/1/2012 |
| *Lepidium latifolium* | Broadleaf pepperweed | 1/1/2009 |
| *Lespedeza cuneata* | Chinese lespedeza | 1/1/2009 |
| *Ligustrum obtusifolium* | Border privet | 1/1/2009 |
| *Lonicera japonica* | Japanese honeysuckle | 1/1/2011 |
| *Lonicera maackii* | Amur honeysuckle | 1/1/2011 |
| *Lonicera morrowii/ tatarica/ xbella* | Morrow's honeysuckle | 1/1/2011 |
| *Ludwigia grandiflora* | Uruguayan primrose willow | 1/1/2009 |
| *Ludwigia peploides* | Floating primrose willow | 1/1/2009 |
| *Lysimachia nummularia* | Moneywort | 1/1/2011 |
| *Lysimachia vulgaris* | Garden loosestrife | 1/1/2011 |
| *Lythrum salicaria* | Purple loosestrife | 1/1/2009 |
| *Microstegium vimineum* | Japanese stilt grass | 1/1/2009 |
| *Miscanthus sinensis* | Chinese silver grass; Eulalia | DNS |
| *Myriophyllum aquaticum* | Parrot-feather | 1/1/2009 |
| *Myriophyllum heterophyllum and x M.pinnatum* | Broadleaf water-milfoil | 1/1/2011 |
| *Myriophyllum spicatum* | Eurasian water-milfoil | 1/1/2009 |
| *Murdannia keisak* | Marsh dewflower | DNS |
| *Nymphoides peltata* | Yellow floating heart | 1/1/2009 |
| *Oplismenus hirtellus* | Wavy leaf basketgrass | DNS |
| *Persicaria perfoliata (Polygonum perfoliatum)* | Mile a minute weed | 1/1/2009 |
| *Phalaris arundinacea* (European genotype) | Reed canary-grass | 1/1/2009 |
| *Phellodendron amurense/japonicum* | Amur cork tree | 1/1/2013 |
| *Phragmites australis ssp. Australis* | Common reed grass | 1/1/2009 |
| *Potamogeton crispus* | Curly pondweed | 1/1/2009 |
| *Pueraria montana var. lobata* | Kudzu | 1/1/2009 |
| *Ranunculus ficaria* | Lesser celandine | 1/1/2009 |
| *Rhamnus cathartica* | Common buckthorn | 1/1/2009 |
| *Robinia pseudoacacia* | Black locust | 1/1/2013 |
| *Rosa multiflora* | Multiflora rose | 1/1/2009 |
| *Rubus phoenicolasius* | Wineberry | 1/1/2009 |
| *Salix atrocinerea/cinerea* | Gray florist's willow | 1/1/2013 |
| *Silphium perfoliatum var. perfoliatum* | Cup-plant | 1/1/2009 |
| *Trapa natans* | Water chestnut | 1/1/2009 |
| *Vitex rotundifolia (V. ovata, V. trifolia)* | Beach vitex | 1/1/2009 |

## Species reviewed by LIISMA's Scientific Review Committee

### Invasiveness ranks as of April 6, 2010

Moderately Invasive Species; recommend agencies do not plant, and remove if found, esp. in natural areas

Species assessments are available on http://nyis.info/Resources/IS_Risk_Assessment.aspx

| SCIENTIFIC NAME | COMMON NAME |
|---|---|
| *Acer ginnala* | Amur maple |
| *Acer palmatum* | Japanese maple |
| *Aegopodium podagraria* | Goutweed |
| *Agrostis gigantea* Roth | Redtop, Black bentgrass |
| *Agrostis stolonifera (A. stolonifera ssp. Gigantea)* | Creeping bentgrass |
| *Ailanthus altissima* | Ailanthus |
| *Aira caryophyllea (Aspris caryophyllea)* | Silvery hairgrass |
| *Akebia quinata* | Chocolate vine |
| *Allium vineale* | Field garlic |
| *Alnus glutinosa* | European (Black) alder |
| *Amorpha fruticosa* | False indigo |
| *Arundinaria gigantea* | Bamboo, Canebreak, Giant cane |
| "Bamboo" see *Arundinaria gigantea, Pseudosasa japonica* and *Phyllostachys* | |
| *Berberis vulgaris* | Common barberry |
| *Bromus tectorum* | Cheat grass |
| *Butomus umbellatus (B. junceus)* | Flowering rush |
| *Carex kobomugi* | Japanese sedge, Asiatic sand sedge |
| *Centaurea jacea s.l (nigra, nigrescens, xmoncktonii)* | Black knapweed, Black star-thistle, Tyrol knapweed |
| *Cercidiphyllum japonicum* | Katsura tree |
| *Cirsium palustre* | Marsh thistle |
| *Coronilla varia* | Crown vetch |
| *Cyperus difformis* | Variable flat sedge |
| *Datura stramonium* | Jimsonweed |
| *Digitalis purpurea* | Purple foxglove |
| *Elaeagnus angustifolia* | Russian olive |
| *Elsholtzia ciliata* | Crested elsholtzia |
| *Epilobium hirsutum* | Hairy willow herb; Codlins & cream |
| *Eragrostis curvula* | Weeping lovegrass |
| *Euonymus europaeus* | European spindletree |
| *Euphorbia lathyris* | Caper spurge |
| *Fallopia baldschuanica (Polygonum aubertii)* | Silver lace, Fleece vine |
| *Festuca filiformis (F. brachyphylla, F. capillata, F. tenuifolia, F. ovina ssp. tenuifolia, F. ovina var. capillata/tenuifolia)* | Hair fescue; Fineleaf sheep fescue |
| *Froelichia gracilis* | Cottonweed |
| *Galega officinalis* | Professor weed; Goat's rue |
| *Geranium nepalense (G. ibericum)* | Nepalese crane's-bill |
| *Glaucium flavum* | Yellow hornpoppy |
| *Glechoma hederacea* | Ground ivy |
| *Hedera helix* | English ivy |
| *Hesperis matronalis* | Dame's rocket |
| *Ipomoea hederacea* | Morning glory |
| *Kochia scoparia (Bassia scoparia)* | Mexican summer-cypress |

| | |
|---|---|
| *Lespedeza bicolor/thunbergii* | Shrubby bush clover |
| *Ligustrum vulgare* | European privet |
| *Lotus corniculatus* | Bird's foot trefoil |
| *Lychnis flos-cuculi (Coronaria flos-cuculi, Silene flos-cuculi)* | Ragged robin |
| *Lysimachia punctata* | Spotted loosestrife |
| *Morus alba* | White mulberry |
| *Najas minor* | Brittle water nymph |
| *Nasturtium officinale (Rorippa nasturtium-aquaticum)* | Watercress |
| *Nelumbo nucifera* | Sacred lotus |
| *Onopordum acanthium* | Scotch cotton-thistle |
| *Ornithogalum umbellatum* | Common star-of-bethlehem |
| *Paulownia tomentosa* | Princess tree |
| *Persicaria longiseta (Polygonum caespitosum var. longiseta)* | Creeping smartweeed |
| *Phleum pratense* | Timothy |
| *Phyllostachys* (all species) | Bamboo |
| *Pinus thunbergii* | Japanese black pine |
| *Poa compress* | Canada bluegrass |
| *Poa pratensis* | Kentucky bluegrass |
| *Populus alba* | White poplar |
| *Prunus avium* | Sweet cherry |
| *Prunus cerasus* | Sour red cherry |
| *Prunus padus* | European bird cherry |
| *Pseudosasa japonica* | Arrow bamboo |
| *Pyrus calleryana* | Bradford pear |
| *Ranunculus repens* | Creeping buttercup |
| *Rhodotypos scandens* | Jetbead |
| *Rosa rugosa* | Japanese (Rugosa) rose |
| *Rubus bifrons* | Himalyan blackberry |
| *Rubus laciniatus* | Evergreen blackberry |
| *Rumex acetosella* | Sheep sorrel |
| *Saponaria officinalis* | Bouncing-Bet |
| *Schedonorus arundinaceus (Lolium arundinaceum)* | Tall fescue, Kentucky fescue |
| *Senecio jacobaea* | Tansy ragwort |
| *Solanum dulcamara* | Trailing nightshade |
| *Spiraea japonica* | Japanese spirea |
| *Styrax japonicus* | Japanese snowbell |
| *Tanacetum vulgare* | Common tansy |
| *Tribulus terrestris* | Puncture vine |
| *Tussilago farfara* | Coltsfoot |
| *Ulmus pumila* | Siberian elm |
| *Valeriana officinalis* | Common valerian |
| *Veronica beccabunga* | European speedwell |
| *Veronica officinalis* | Speedwell, Gypsy-weed |
| *Viburnum dilatatum* | Linden arrowwood |
| *Viburnum lantana* | Wayfaring-tree |
| *Viburnum opulus var. opulus (nonnative variety)* | European cranberry bush |
| *Viburnum sieboldii* Miq. | Siebold viburnum |
| *Vicia cracca* | Cow vetch |
| *Vinca minor* | Periwinkle |
| *Wisteria sinensis (floribunda)* | Chinese wisteria |

# Alternatives to Ornamental Invasive Plants

***A sustainable solution for Long Island horticulture***

Long Island is one of many locations throughout the U.S. that has taken progressive steps towards improving the environment by reducing the spread of invasive plants. Invasive plants have damaged Long Island's unique woodlands by replacing native flora, and in turn, negatively impacting wildlife and natural ecosystem processes. Invasive species are among the top causes of biodiversity loss across the globe.

You can be part of the solution, by growing and planting alternatives to ornamental invasive plants! These plants were selected based upon their similar ornamental characteristics and cultural requirements compared to the invasives. Alternative plants may be native or non-native, but are not invasive. Alternative plants are well-adapted to Long Island, and many are readily available at Long Island nurseries. You can help make the future of Long Island greener by growing these "native-friendly" plants!


***Plant Selection Committee:***

*Alexis Alvey - Cornell Cooperative Extension of Suffolk County*

*Dwight Andrews - Dwight Andrews Landscape Design; Long Island Nursery & Landscape Association*

*Jonathan Lehrer - Farmingdale State College, State University of New York*

*Charles Scheer - Half Hollow Nursery; Long Island Farm Bureau*

*Andrew Senesac - Cornell Cooperative Extension of Suffolk County*

*Vincent Simeone - Planting Fields Arboretum State Historic Park*

*Ellen Talmage - Long Island Nursery & Landscape Association*


***For more information, visit:***

*www.nyis.info*
*www.ccesuffolk.org*


Cornell University
Cooperative Extension
of Suffolk County

**Extension Education Center**
423 Griffing Ave., Suite 100
Riverhead, NY 11901-3071
Phone: 631-727-7850
Fax: 631-852-3205

suffolk@cornell.edu


*Alternatives: Eastern Baccharis*

*'Heavy Metal' Switchgrass*

*'Kobold' Dense Blazing Star*



*Cornell Cooperative Extension is funded in part by Suffolk County through the office of Steve Levy, County Executive, and the County Legislature.*

# Invasive Plants Banned on Long Island & Their Alternatives (Plants on the Do Not Sell List with their respective ban date)

## Norway Maple 1/1/2013
*Acer platanoides*

**Freeman Maple****
*Acer x freemanii*

**Red Maple****
*Acer rubrum*

**Sugar Maple****
*Acer saccharum*

**Chinese or Lacebark Elm**
*Ulmus parvifolia*

(Red cultivars 'Crimson King'; 'Royal Red') 1/1/16

**Copper or Purple European Beech**
*Fagus sylvatica*
Purple foliage cvs. including:
'Cuprea'
'Purpurea'
'Rohanii'

**Chokecherry****
*Prunus virginiana*
Purple foliage cvs. including:
'Canada Red'
'Schubert'

## Porcelain-berry 1/1/2009
*Ampelopsis brevipedunculata*

**Bodinier or Purple Beautyberry**
*Callicarpa bodinieri* 'Profusion'
*C. dichotoma*

**Coralberry***
*Symphoricarpos orbiculatus**
*S. x chenaultii**
*S. x doorenbosii**

**Trumpet Honeysuckle****
*Lonicera sempervirens*

## Japanese Angelica Tree 1/1/2009
*Aralia elata*

(Variegated cultivars 'Variegata'; 'Silver Umbrella')

**Variegated Pagoda**, Giant, or Kousa Dogwood**
*Cornus alternifolia***
'Argentea'
Golden Shadows®
*C. controvera* 'Variegata'
*C. kousa* 'Wolf Eyes'

**Golden Cutleaf Staghorn Sumac****
*Rhus typhina* Tiger Eyes®

## Japanese Barberry 1/1/2014
*Berberis thunbergii*

(Dwarf purple cultivars)

**Old Fashioned Weigela**
*Weigela florida*
Small, purple foliage cvs. including:
Dark Horse®
Fine Wine®
Midnight Wine®
Ruby Queen®
'Tango'

(Standard purple cultivars)

**Smokebush**
*Cotinus coggygria*
Purple foliage cvs. including:
'Grace'
'Royal Purple'

**Eastern Ninebark****
*Physocarpus opulifolius*
Purple foliage cvs. including:
Diabolo®
Summer Wine®

**Old Fashioned Weigela**
*Weigela florida*
Large, purple foliage cvs. including:
Wine & Roses®
Shining Sensation™

(Yellow or gold cultivars)

**Glossy Abelia**
*Abelia x grandiflora*
Yellow foliage cvs. including:
'Francis Mason'
'Golden Glow'

**Gold or Variegated-leaf Forsythia**
*Forsythia* spp. including:
*Forsythia x intermedia*
'Fiesta'
'Gold Leaf'
'Golden Times'
*Forsythia viridissima* Citrus Swizzle®

**Golden Boxleaf Honeysuckle**
*Lonicera nitida*
'Baggesen's Gold'
Edmee Gold®

**Old Fashioned Weigela**
*Weigela florida*
Yellow foliage cvs. including:
'Rubidor'
Ghost™

(Green cultivars)

**Cranberry Cotoneaster**
*Cotoneaster apiculatus* 'Tom Thumb'

**Bush Cinquefoil****
*Dasiphora fruticosa (Potentilla fruticosa)*

**Dwarf Fragrant Sumac****
*Rhus aromatica* 'Gro-Low'

**Old Fashioned Weigela**
*Weigela florida*
Green foliage cvs. including:
'Carnaval'
'Minuet'
'Polka'
'Red Prince'
'White Knight'

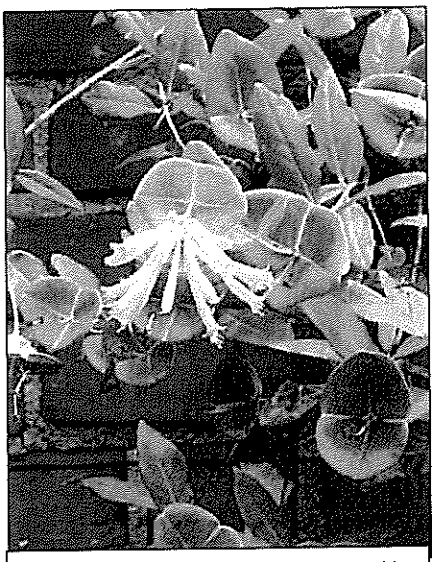
## Sweetautumn Clematis or Japanese Virgin's Bower 1/1/2011
*Clematis terniflora*

**Clematis**
*Clematis* spp. including:
*Clematis x jackmanii*
*Clematis montana*
*Clematis virginiana***
Choose white flowering cvs.

**Wood Vamp***
*Decumaria barbara*

**Climbing Hydrangea**
*Hydrangea anomala* subsp. *petiolaris*

**Japanese Hydrangea-vine**
*Schizophragma hydrangeoides*



*A great alternative- Trumpet Honeysuckle*

## The Do Not Sell List

The Do Not Sell List consists of over 60 of the worst invasive plants! Species on the Do Not Sell List are "very highly invasive" or "highly invasive" according to the independent scientific review committee. It is illegal to sell, transport, distribute, or propagate species on the Do Not Sell List in both Nassau and Suffolk Counties.

*Native to the United States ** Native to New York State (hybrids and cultivars of native species included)

## **Autumn-olive** 1/1/2009
*Elaeagnus umbellata*

**Groundsel-bush** or **Eastern Baccharis****
*Baccharis halimifolia*

**Sweetfern****
*Comptonia peregrina*

**Northern Bayberry****
*Morella pensylvanica (Myrica pensylvanica)*

**Beach Plum****
*Prunus maritima*

## **Winged Euonymus** or **Burning Bush** 1/1/2016
*Euonymus alatus*

**Dwarf***, **Large***, or **Hybrid* Fothergilla**
*Fothergilla gardenii**
*F. major**
*F.* x *intermedia** 'Mt. Airy'

**Virginia Sweetspire***
*Itea virginica*
'Henry's Garnet'
Little Henry™

**Black** or **Red **Chokeberry**
*Photinia melanocarpa** *(Aronia melanocarpa)*
*P. pyrifolia** 'Brilliantissima' *(A. arbutifolia)*

**Doublefile Viburnum**
*Viburnum plicatum* var. *tomentosum*

## **Wintercreeper Euonymus** 1/1/2013
*Euonymus fortunei*

(Groundcover habit)

**Bearberry****
*Arctostaphylos uva-ursi*

**Willowleaf Cotoneaster**
*Cotoneaster salicifolius*
'Repandens'
'Scarlet Leader'

**Bearberry Cotoneaster**
*Cotoneaster dammeri*

**Creeping Raspberry**
*Rubus calycinoides (Rubus hayata-koidzumii)*

(Shrub habit)

**Dwarf Japanese Aucuba**
*Aucuba japonica*
'Nana'
'Nana Rotundifolia'
'Rozannie'
'Wisley Nana'

**Japanese Skimmia**
*Skimmia japonica*

## **Yellow Flag Iris** 1/1/2012
*Iris pseudacorus*

**Louisiana Irises***
*Iris* spp.

Yellow flowering cvs. including:
'Brazos Gold'
'Dixie Deb'
'Joy Flight'
'Laura Louise'
'Professor Barbara'
'Rokki Rockwell'
'Willow Mint'

**Japanese Iris**
*Iris ensata*

**Harlequin Blueflag Iris****
*Iris versicolor*

## **Bell, Amur, Morrow,** and **Tatarian Shrub Honeysuckle** 1/1/2011
*Lonicera* x *bella*
*L. maackii*
*L. morrowii*
*L. tatarica*

**Deutzia**
*Deutzia* spp.

**Beautybush**
*Kolkwitzia amabilis*

**Mockorange*** (some species native to U.S.)
*Philadelphus* spp.

**Nippon** or **Vanhoutte Spirea**
*Spiraea nipponica* 'Snowmound'
*Spiraea* x *vanhouttei*

## **Japanese Honeysuckle** 1/1/2011
*Lonicera japonica*

**Crossvine***
*Bignonia capreolata*

**Carolina Yellow Jessamine***
*Gelsemium sempervirens* 'Margarita'

**Goldflame Honeysuckle**
*Lonicera* x *heckrottii*

**Trumpet Honeysuckle****
*Lonicera sempervirens*
'John Clayton'
'Sulphurea'

## **Creeping Jenny** or **Moneywort** 1/1/2011
*Lysimachia nummularia*

**Green and Gold***
*Chrysogonum virginianum*

**Spotted Dead Nettle**
*Lamium maculatum*

**Creeping Mazus**
*Mazus reptans*

**Siberian Barren-strawberry**
*Waldsteinia ternata*

(Gold cultivars 'Aurea')

**Golden Coral*** or **Foamy Bells**
*Heuchera**
Citronelle®
Dolce Key Lime Pie®
Lime Ricky®
X *Heucherella*
Strike It Rich® Gold
Stoplight®

**Goldmoss Stonecrop**
*Sedum acre* 'Aureum'

**Golden Japanese Stonecrop**
*Sedum makinoi* 'Ogon'

**Golden Creeping Speedwell**
*Veronica prostrata* Aztec Gold®
*V. repens* 'Sunshine'

## **Purple Loosestrife** 1/1/2009
*Lythrum salicaria*

**Meadowsweet**
*Filipendula purpurea* 'Elegans'
*F. rubra**
*F. vulgaris*

**Dense Blazing Star***
*Liatris spicata* 'Kobold'

**Obedient Plant****
*Physostegia virginiana*

**Hybrid** or **Common Perennial Sage**
*Salvia nemorosa (S.* x *superba; S.* x *sylvestris)*
*Salvia officinalis*
Choose purple flowering cvs.

## **Amur** and **Japanese Corktree** 1/1/2013
*Phellodendron amurense*
*P. japonicum*

**Honeylocust***
*Gleditsia triacanthos* var. *inermis*

**Kentucky Coffeetree****
*Gymnocladus dioicus*

**Chinese** or **Lacebark Elm**
*Ulmus parvifolia*

**Japanese Zelkova**
*Zelkova serrata*

## **Black Locust** 1/1/2013
*Robinia pseudoacacia*

(Gold cultivars 'Frisia')

**Golden Honeylocust***
*Gleditsia triacanthos* var. *inermis*
'Sunburst'

## **Did you know?**

Invasive plants also pose a serious threat to Long Island's local economy. Expensive invasive plant control measures need to be taken in order to maintain the value and beauty of Long Island's numerous parks, golf courses, water bodies, and farms.

# Invasive Plants NOT Banned on Long Island & Their Alternatives (Plants on the Management List)

## Amur Maple
*Acer ginnala*

**Trident Maple**
*Acer buergerianum*

**Eastern Redbud***
*Cercis canadensis*

**Japanese Tree Lilac**
*Syringa reticulata*

## Russian-olive
*Elaeagnus angustifolia*

**White* or Chinese Fringetree**
*Chionanthus virginicus**
*C. retusus*

**Corkscrew Willow**
*Salix matsudana* 'Tortuosa'

**Chastetree**
*Vitex agnus-castus*

## English Ivy
*Hedera helix*

**Wood Vamp***
*Decumaria barbara*

**Carolina Yellow Jessamine***
*Gelsemium sempervirens* 'Margarita'

**Climbing Hydrangea**
*Hydrangea anomala* subsp. *petiolaris*

**Japanese Hydrangea-vine**
*Schizophragma hydrangeoides*

## Japanese Silver Grass
*Miscanthus sinensis*

**Feather Reed Grass**
*Calamagrostis* x *acutiflora*
'Karl Foerster'
'Overdam'

**Korean Feather Reed Grass**
*Calamagrostis brachytricha*

**Pink Muhly Grass****
*Muhlenbergia capillaris*

**Switchgrass****
*Panicum virgatum*
Dallas Blues®
'Heavy Metal'
'Northwind'

## Japanese Black Pine
*Pinus thunbergii*

**Japanese Red Pine**
*Pinus densiflora*

**Limber Pine***
*Pinus flexilis*

**Pitch Pine****
*Pinus rigida*

## Callery Pear
*Pyrus calleryana*

**Downy**, Apple**, or Allegheny****
**Serviceberry**
(single-stemmed)
*Amelanchier arborea***
*A.* x *grandiflora***
*A. laevis***

**Hybrid Dogwood**
(single-stemmed)
*Cornus* Celestial®
*C.* Stellar Pink®
*C.* Venus®

**Green Hawthorn***
*Crataegus viridis* 'Winter King'

**Loebner or Star Magnolia**
*Magnolia* x *loebneri* 'Leonard Messel'
*M. stellata*

## Rugosa Rose
*Rosa rugosa*

**Bush Cinquefoil****
*Dasiphora fruticosa (Potentilla fruticosa)*

**Beach Plum****
*Prunus maritima*

**Shrub Roses**
*Rosa* spp.
The Knock Out® Rose series

**Virginia Rose****
*Rosa virginiana*

## Common Periwinkle
*Vinca minor*

**Barrenwort**
*Epimedium* x *perralchicum* 'Frohnleiten'
*Epimedium* x *versicolor*
'Neosulphureum'
'Sulphureum'

**Creeping Mazus**
*Mazus reptans*

**Creeping Phlox***
*Phlox stolonifera* 'Sherwood Purple'

**Creeping Speedwell**
*Veronica peduncularis* 'Waterperry'
*V. umbrosa* 'Georgia Blue'

## Japanese and Chinese Wisteria
*Wisteria floribunda*
*W. sinensis*

**Climbing Hydrangea**
*Hydrangea anomala* subsp. *petiolaris*

**Japanese Hydrangea-vine**
*Schizophragma hydrangeoides*

**American Wisteria***
*Wisteria frutescens* 'Amethyst Falls'

## The Management List

The Management List consists of over 70 invasive plants. Although not as highly invasive as plants on the Do Not Sell List, it is *recommended* that these plants are not planted on Long Island, especially by county agencies or for homes near natural habitats. Species on the Management List are "moderately invasive" according to the independent scientific review committee.

*A great alternative- American Wisteria*

## The Native-Friendly Garden

Come check-out some of these alternative plants at Cornell University's Long Island Horticultural Research & Extension Center! A small, "Native-Friendly" Garden was created as a research and demonstration site for horticulture professionals & homeowners. Visit us at:

3059 Sound Avenue
Riverhead, NY 11901
631-727-3595

The Native-Friendly Garden was designed and installed by Alexis Alvey, Nursery & Landscape Specialist for Cornell Cooperative Extension of Suffolk County.

*Native to the United States ** Native to New York State (hybrids and cultivars of native species included)

## Blue Wood Sedge
*Carex flaccosperma*

available

**Form:** Clump forming
**Height:** 6-12 inches high
**Zones:** Zones 5-8
**Origin:** North America
**Foliage:** Blue-green wide bladed grass-like foliage. Interesting slender seed heads form in the spring.
**Culture:** Partial shade to shade. Benefits from cutting back in late winter.

## Leadwort
*Ceratostigma plumbaginoides*

available

**Form:** Mat forming
**Height:** 8-12 inches high
**Zones:** Zones 5-9
**Origin:** Asia
**Foliage:** Lime-green foliage with tinges of red. Clear blue star-shaped flowers with red seedheads, summer to fall.
**Culture:** Full sun to partial shade. Grows best in dry soils. Vigorous grower, may spread in garden bed.

## Liriope
*Liriope spicata*

available

**Form:** Clump forming
**Height:** 8-12 inches high
**Zones:** Zones 4-10
**Origin:** Asia
**Foliage:** Dark green grass-like evergreen foliage, summer flower spikes in shades from light purple to violet.
**Culture:** Full sun to partial shade. Can benefit from spring shearing if foliage becomes winter damaged.

## Lady's Mantle
*Alchemilla mollis*

available

**Form:** Clump forming
**Height:** 12-18 inches high
**Zones:** Zones 4-7
**Origin:** Asia
**Foliage:** Large round light green-gray leaves sparkle when holding moisture droplets. Sprays of small yellow-green flowers.
**Culture:** Full sun to partial shade. Likes moist soil.

## Coral Bells
*Heuchera americana* 'Chocolate Veil'

available

**Form:** Clump forming
**Height:** 18-24 inches high
**Zones:** Zones 4-9
**Origin:** North America
**Foliage:** Deep maroon foliage, small delicate pink flowers on tall flower spikes.
**Culture:** Full sun to partial shade. Evergreen in mild winters. Prune out damaged foliage in spring.

## Getting plants established

Once established, these plants are tough and weed suppressive, but need some care when you put them in the ground.

*To ensure good establishment*

**START CLEAN** Plant only on a site that is free of weeds. If there are perennial weeds with fleshy roots, take time to completely kill or remove them before going any further. These plants can suppress weeds that germinate from seeds, but may not be able to compete with weeds sprouting from root pieces.

**ADD COMPOST** To loosen a heavy soil or help a sandy soil hold onto water and nutrients, till in organic matter—compost is best.

**MULCH** About 3 inches of shredded bark mulch works wonders to keep weeds out while plants are young. Find mulch at your garden center.

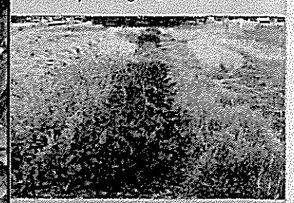
**WATER** Soak well at planting and keep soil moist until they're established.

**HAND WEED** Keep the weeds out while groundcovers are filling in! Don't expect them to work miracles—your plants need to become well established before they can stand up to weeds. Plan to hand weed once or twice during the first year. Once established, your plants should require little weeding.

*Maintenance*

The groundcovers that have late season flowers like autumn goldenrod will benefit from a late fall, winter or early spring shearing to remove the spent seed head and damaged foliage.

To discourage weed encroachment, apply mulch to plot margins.



*Test bed on Interstate 490, Rochester, NY Plants on highway median thrived despite sustained drought conditions during the summer of 2007*

Butterfly Milkweed
*Asclepias tuberosa*

# Weed-suppressive Groundcovers

**For further information and resources visit:**
*http://nysipm.cornell.edu/nursery_glouse/weed_supp_grcovers.asp*


**Content contributors, including photos, from Cornell University and Cornell Cooperative Extension:**

Brian Eshenaur
NYS Integrated Pest Management Program
Rochester NY

Andy Senesac
Long Island Horticultural Research & Extension Center
Riverhead NY

Irene Tsontakis-Bradley
Long Island Horticultural Research & Extension Center
Riverhead NY

*with* Leslie Weston
Environmental Landscape Design and Management
Trumansburg, NY

**Brochure design, some photos:**
Christine Sevilla, *lumin guild*

**Printed by Monroe Litho- a Forest Stewardship Council (FSC)-certified printer using 100% renewable, non-polluting wind power. Paper is FSC certified and contains over 50% recycled wood fiber.**


*What's in a name?* A *groundcover* is a perennial plant used *en masse* for its visual wallop and to crowd out weeds. Many are gorgeous perennials that gardeners have used in flower borders for years. Now we're finding that some are top performers in the "tough sites" department too. Fewer weeds means less herbicide use. Good news for you ... and for the environment.

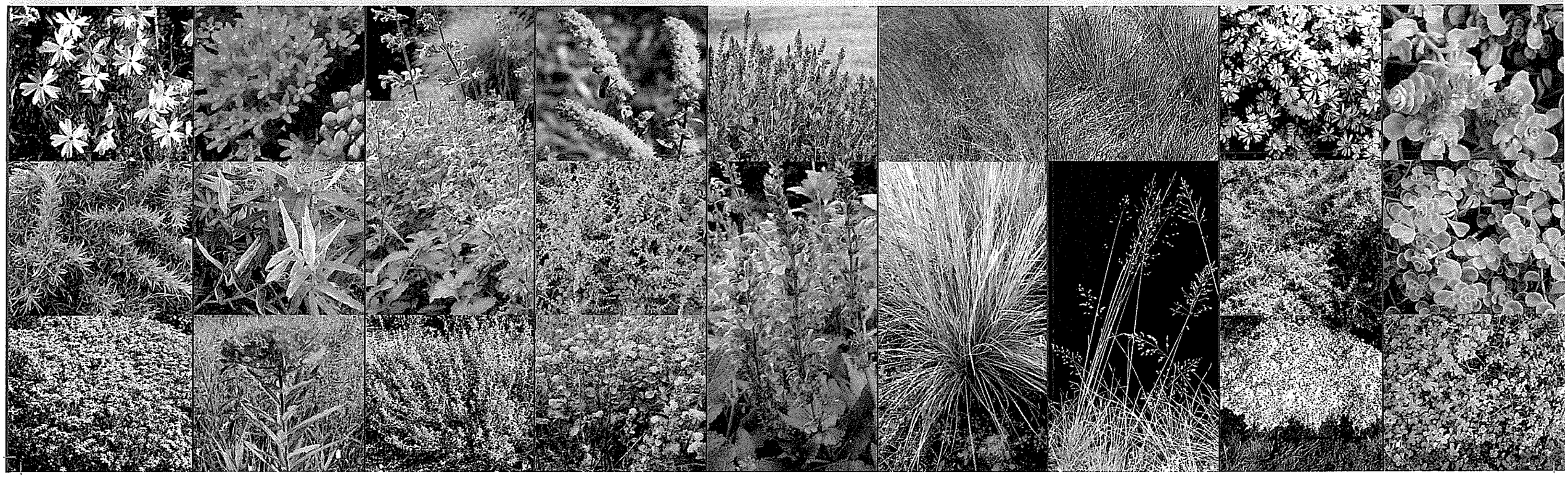
The plants listed here have been evaluated under different growing conditions for their ease of establishment, low maintenance characteristics and their ability to exclude weeds. Our initial screening tests took place in Ithaca (Finger Lakes region, zone 5) and Riverhead (eastern Long Island, zone 7), New York. Since then demonstration plots have been established across New York State. This brochure summarizes the growth characteristics for top rated groundcovers. All of these plants will perform well in full sun, and some are shade tolerant as well. If you are interested in native plants look for those that originate in North America. Nursery retailers can mark the plants in this guide that are available and suited to local conditions.

Cornell University Cooperative Extension

IPM

farm viability

| Moss Phlox<br>*Phlox subulata*<br>'Emerald Blue' | Butterfly Milkweed<br>*Asclepias tuberosa* | Catmint<br>*Nepeta x faassenii*<br>'Walker's Low' | Autumn Goldenrod<br>*Solidago sphacelata*<br>'Golden Fleece' | Salvia<br>*Salvia nemorosa / S. sylvestris*<br>'Blue Hill' | Little Bluestem<br>*Schizachyrium scoparium*<br>'The Blues' | Northern Dropseed<br>*Sporobolus heterolepis* | White Heath Aster<br>*Aster ericoides*<br>'Snow Flurry' | Two-row Stonecrop<br>*Sedum spurium*<br>'John Creech' |
|---|---|---|---|---|---|---|---|---|
| Mat forming<br>4-6 inches high | Sprawling<br>12-24 inches high | Upright and sprawling<br>18-24 inches high | Upright<br>18 inches high | Clump forming<br>18-24 inches high | Clump forming<br>20-40 inches high | Clump forming<br>24-48 inches high | Low, dense mound<br>3-6 inches high | Creeping<br>3-6 inches high |
| Zones 3-9 | Zones 3-9 | Zones 3-8 | Zones 2-8 | Zones 4-8 | Zones 5-9 | Zones 3-9 | Zones 3-9 | Zones 3-8 |
| North America | North America | Eurasia, Africa | North America | Europe | North America | North America | North America | Asia |
| Profusion of early spring blue blooms, glossy evergreen foliage. | Dark green foliage. Bright orange flowers in summer are very attractive to butterflies. Interesting upright seed pods late in the season. | Green-grey foliage. Long lasting blue flowers in spring/ summer. | Broad dark green foliage with late summer display of yellow blooms. | Blue flowers late spring through early fall attractive to pollinators and hummingbirds. | Tall, slender blue-green leaves turn to golden bronze in fall. Looks best planted in large groups. Free to bend and sway, provides a prairie look. | Graceful fine textured grass. In late summer tall lightly fragrant flowers/ seed heads are produced. Foliage fades golden to bronze in fall/ winter. | Mounding dark green foliage covered with white flowers in September. | Low growing with small, fleshy, evergreen leaves and pink flowers in late summer and early fall. |
| Full sun.<br>Tolerates drought and even a little salt.<br>Grows best in well drained soil. | Full sun.<br>Drought tolerant. Prune back spent stems in late winter or spring. New foliage emerges later than most perennials. | Full sun.<br>Vigorous grower, allow room so it doesn't crowd out neighboring plants. | Full sun.<br>Removing spent flower stalks in the spring gives the plant a more refined look. | Full sun.<br>Cut back after first bloom to encourage vigorous re-bloom. | Full sun.<br>Remove last year's foliage by cutting to ground in late winter/ early spring. | Full sun.<br>Drought tolerant.<br>Grows best in well drained soils. | Full sun to partial shade.<br>Drought tolerant. | Full sun to partial shade.<br>Grows best in dry soils. |

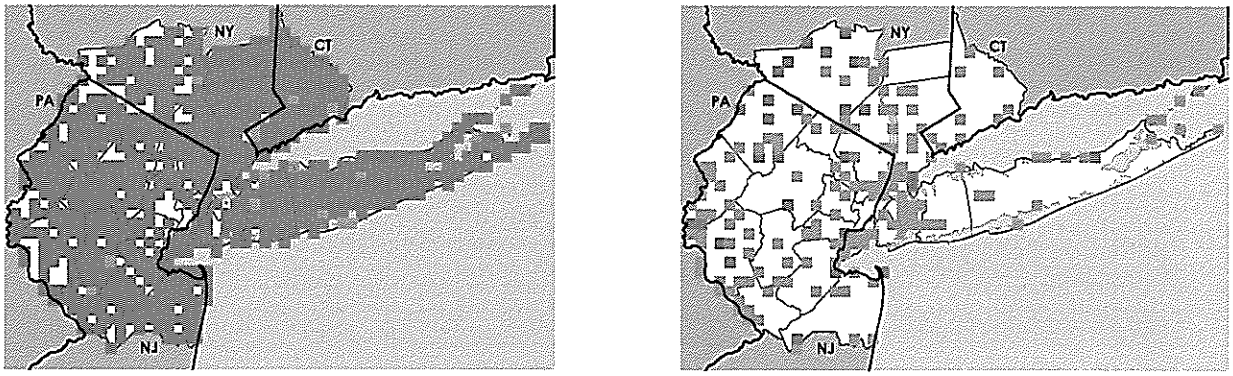


Testimony given by Dr. Gerry Moore, Brooklyn Botanic Garden
15 April 2010

**Invasive Species Control in New York City**

I thank the Council's Committee on Environmental Protection for holding this hearing on this important issue. First I want to address what scientists and conservationists mean when they refer to a species as "invasive." In Federal Executive Order 13112 (signed in 1999) an invasive species is defined as one that is: "1) nonnative to the ecosystem under consideration, and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health." Being a botanist, I will limit the rest of my testimony primarily to invasive plants. Invasive plants are generally non-native species or genotypes that have spread into native or minimally managed plant systems. These plants cause economic or environmental harm by developing self-sustaining populations and becoming dominant and disruptive to those systems.

It is important to stress that invasive plants are not simply weeds. Many of the weeds that one sees in his or her yard, such as dandelions *(Taraxacum officinale)*, are oftentimes not invasive plants, as they do not generally invade natural ecosystems or cause significant economic harm. Invasive plants do, and, in some cases, they can form extensive monocultures. Areas that once supported rich diversity of plant life now support a reduced biodiversity, large regions now dominated by single plant species, such as common reed *(Phragmites australis)* and purple loosestrife *(Lythrum salicaria)*. An excellent specific example of the broader challenge before us with respect to our local flora can be found in the current ranges of two species of bittersweet vines found in the area. One, Asian bittersweet *(Celastrus orbiculatus)*, is non-native and common throughout, while the other, American bittersweet *(Celastrus scandens)*, is native and is rapidly declining (see Fig. 1).




A B

**Figure 1. Current ranges of Asian bittersweet (*Celastrus orbiculatus;* A) and American bittersweet (*C. scandens;* B) in the New York City metropolitan region. Green squares indicate recent records (post 1990); yellow squares indicate historical records (pre-1990).**

Unlike development which has impacts that are obvious to all, invasive species and their impacts to open space and the biodiversity that relies on these spaces are less noticeable to those who are unfamiliar with invasive species. Furthermore, current developments regarding environmental

initiatives are oftentimes couched as "green" initiatives, and it is a challenge to communicate that some green plants are less "green" than others with respect to these initiatives. Thus, there is a serious need to educate the public regarding the presence of invasive species in our area and the impacts they are having on our lands.

The economic impacts to invasive species are also significant as extensive resources are now being expended by land stewards to control and eradicate populations of invasive species. A research paper published in 2005 in the journal *Ecological Economics* (52: 273-288) estimated the damages caused by invasive species in the United States to be almost $120 billion per year.

In 2003, to address the various issues invasive plant species posed, state legislation was enacted that called for a multi-interest (state agencies, conservation organizations and trade) team led by the New York State Departments of Environmental Conservation and Agriculture and Markets. This team was to research the invasive species issue and provide recommendations. This led to the formation of a New York State Invasive Species Task Force and eight Partnerships for Regional Invasive Species Management (PRISMs). The boroughs of New York City are divided into two of these PRISMs, Bronx and Manhattan being in the Lower Hudson PRISM and Brooklyn, Queens, and Staten Island being in the Long Island Invasive Species Management Area PRISM (representatives from LIISMA, which includes Queens, Brooklyn, and Staten Island, are giving testimony today).

In 2008, LIISMA established a Scientific Review Committee (SRC) to assess the invasiveness of plant species for New York State. The SRC was comprised of numerous stakeholders, including plant researchers from academia and other institutions; conservationists and land stewards; agriculturists and horticulturists (including industry representatives); and local, state and federal government representatives. This committee developed a detailed protocol for invasiveness and then used that protocol to assess the invasiveness or potential invasiveness of approximately 180 species of plants. The primary goal of this process was to provide local officials in Nassau and Suffolk Counties (both counties have passed legislation addressing invasive plant species) and the New York State Invasive Species Task Force with detailed specific information on invasive plants species.

The protocol assessed plant species in four broad categories: ecological impact, biological characteristics (including dispersal ability), distribution and abundance, and feasibility of control. A scoring and ranking system was developed. The ranking system had five levels of invasiveness: very high, high, moderate, low, and insignificant. Additional information, including the invasiveness assessments for all plant species evaluated by the LIISMA SRC and the Final Report of the New York State Invasive Species Task Force can be found at the New York Invasive Species Information website (http://nyis.info/) maintained by the National Oceanic and Atmospheric Administration's (NOAA's) Sea Grant program and Cornell University Cooperative Extension.

In closing, it should be stressed that of the hundreds of non-native plant species, only a small percentage (5% or less) have invasive tendencies. Thus, current efforts of control should focus on these species, and should include 1) preventing further introductions of invasive species; 2)

limiting the spread of existing invasive species; and 3) reducing the number of currently infested areas using established control and eradication protocols. Essential to this effort is for land stewards to have access to plant materials that do not have invasive tendencies. The New York City Park and Recreation's Greenbelt Native Plant Center, which provides such materials, plays a critical role in this regard.

Through its New York Metropolitan Flora program (www.bbg.org; also see brochure attached to submitted testimony), scientists at Brooklyn Botanic Garden have been studying the trends in the local flora for over twenty years. The Garden has been (indeed we communicate almost weekly with various park officials on matters relating to invasive species) and will continue to work with city officials, including park officials, to address this most important issue. Please to not hesitate to contact us with any additional questions you may have regarding this matter.

Report to the Committee on Environmental Protection
New York City Audubon
Invasive Species in New York City
April 15, 2010

My name is Dr. Susan Elbin, and I am the Director of Conservation for the New York City Audubon Society. NYC Audubon is an independent grass-roots conservation organization, affiliated with the National Audubon Society since 1980. We serve and represent 10,000 members in the City's five boroughs. Our primary mission is to protect wild birds and habitat within the City, improving the quality of life for all New Yorkers.

New York City is a gateway for entry to the US by air, sea, and sky. It is no wonder that a large number of invasive species have emerged here, including: European Starlings, West Nile Virus, Asian Long-horned Beetle, Chestnut Blight, and Garlic Mustard. It is our responsibility to monitor the influx and occurrence of invasive species and strategically prevent their spread..

Two general strategies need to be employed: 1). Long-term strategic management to extinction or containment for persistent invasive species, and 2) rapid eradication at sites of new eruptions.

Invasive species are resilient and often play a role in ecosystem function. For example, the spread of weedy invasive plant species like Oriental Bittersweet, Mulitflora Rose, and Porcelain Berry have caused major ecological alterations of bird habitat. On the other hand, birds consume berries of these plants and distribute their seeds throughout the City in their droppings. Stands of Japanese Knotweed, Phragmites and Purple Loosestrife overtake tidal and fresh water wetlands. Controlling their spread or reducing the existing affected areas will require the commitment of substantial resources of money and manpower. In the meantime, birds are using these plants for food, shelter, and nest sites.

On the other hand, when an invasive species is detected at a port, like the Asian long-horned beetle invasion on Pralls Island, the plan was for immediate action that would ideally isolate and eradicate the organisms before they had time to spread.

We can look to the Harbor Herons complex as a case study in which some invasive species of plants provided appropriate substrate for breeding herons. These species (herons, egrets, and ibis) return to the same islands to breed every year. Black-crowned Night-Herons nested in oriental bittersweet vines on North Brother Island. These invasive vines provided a labyrinth of support for nesting herons, egrets, and ibis. However, over time, these very vines crushed the structures that supported them and resulted in a loss of nesting habitat. Restoration projects need to focus on limiting the expansion of invasive, non-native species such as Norway Maple and Ailanthus, on the Harbor Heron islands. Gradual and strategic removal of invasive vines and trees, replacing them with native species, will serve to support the birds within the colony for the short-term and ensure the continued presence of nesting tress in the long term.

Invasive species range from plants, to insects, to birds, and the issue is complex. Each species has the potential to out-compete native species and impact natural resources important to sustaining bird populations within New York City. On the other hand, some species are used by birds for food, shelter, and nesting. Each situation needs to be managed on a case by case basis.

Only rarely will we have the opportunity to eradicate an invasive species, so the operative word is, indeed, manage. Our role is to monitor natural resources and be alert to opportunities for controlling or eradicating invasive species.

Thank you.

READ INTO RECORD!

SSBx
SUSTAINABLE SOUTH BRONX

**April 15, 2010**

**To:** James F Gennaro, Chairman
Committee of Environmental Protection
New York City Council

**From:** Jaime Stein
Environmental Policy Analyst
Sustainable South Bronx

**Testimony to the Committee of Environmental Protection Regarding the Control of Invasive Species in New York City**

Sustainable South Bronx (SSBx) is an organization that promotes environmental justice through innovative, economically sustainable projects that are informed by community needs. At the foundation of our organization is the advocacy for policy and development which increases green collar job opportunities for low income communities, jobs which we provide training for through our Bronx Environmental Stewardship Training (BEST)programs.

We are active members of both the Southern Bronx River Watershed Alliance and the citywide Storm Water Infrastructure Matters (SWIM) coalition, an integral partner in the passage of Local Law 5 and the formation of the City's Sustainable Stormwater Management Plan. For the past nine years we have been one of two core community partners on the South Bronx Greenway project, a large scale implementation of green infrastructure designed with community input. The Greenway will not only provide miles of safe recreational space for the South Bronx, but also miles of green-scape in need of a maintenance workforce.

As the City considers the deployment of large scale plantings to meet the biodiversity and CSO mitigation goals of PlaNYC 2030 and the Sustainable Stormwater Management Plan, control of invasive species will be essential. **As the City begins to plan for the implementation of such control, Sustainable South Bronx asks the Council to recognize the job creation potential of invasive species identification and control** as a driver and beneficial outcome of such planning.

890 Garrison Avenue, 4th Floor • The Bronx, NY 10474
Tel: 646.400.5430 • Fax: 718.617.5228 • Web: www.ssbx.org


Our BEST programs work with formerly incarcerated individuals from low income communities throughout the 5 boroughs. We provide two training programs: **BEST for Buildings** specializing in building efficiency and **BEST Eco** specializing in environmental remediation. Each program provides critical skills and certifications for job placement.

Our BEST Eco trainees learn the identification, remediation and control of invasive species. Of the nearly 200 BEST graduates, 82% are gainfully employed. We are proud of this percentage but it can always be higher and we continue to push for initiatives that will increase the job market for our trainees. For this reason we support the Council's emphasis on invasive species control and again emphasize the job creation potential of such control.

Thank you for the invitation to submit testimony regarding this important citywide issue.

Jaime Stein
Environmental Policy Analyst
Sustainable South Bronx
jstein@ssbx.org

# THE COUNCIL
# THE CITY OF NEW YORK

*Appearance Card*

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

*Date:* 7/15/10

**(PLEASE PRINT)**

**Name:** Michael Feller

**Address:** _____

**I represent:** NYC Department of Parks & Recreation

**Address:** Natural Resources Group

# THE COUNCIL
# THE CITY OF NEW YORK

*Appearance Card*

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

*Date:* _____

**(PLEASE PRINT)**

**Name:** GERRY MOORE

**Address:** BROOKLYN BOTANIC GARDEN

**I represent:** BROOKLYN BOTANIC GARDEN

**Address:** 1000 WASHINGTON AVE

# THE COUNCIL
# THE CITY OF NEW YORK

*Appearance Card*

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

*Date:* 15 April 2010

**(PLEASE PRINT)**

**Name:** Susan Elbin

**Address:** 71 W 23rd St

**I represent:** NYC Audubon

**Address:** _____

*Please complete this card and return to the Sergeant-at-Arms*

# THE COUNCIL
# THE CITY OF NEW YORK

*Appearance Card*

I intend to appear and speak on Int. No. _____ Res. No. _____

☒ in favor ☐ in opposition

*Date:* 4/15/10

(PLEASE PRINT)

Name: ALPA PANDYA

Address: _____

I represent: THE NATURE CONSERVANCY

Address: EAST HAMPTON, NY

*Please complete this card and return to the Sergeant-at-Arms*

# THE COUNCIL
# THE CITY OF NEW YORK

*Appearance Card*

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

*Date:* 15 Apr 2010

(PLEASE PRINT)

Name: Robert Nacz.

Address: _____

I represent: The New York Botanical Garden

Address: _____

*Please complete this card and return to the Sergeant-at-Arms*