POLICY ON THE USE OF NON-NATIVE PLANTS IN CORNELL BOTANIC GARDENS' ACCESSIONED COLLECTIONS

Guidance Statement

Plants from all over the world form the basis for American agriculture and horticulture. Some of the plant species that were first introduced to our region as ornamentals have proven to be invasive species, which threaten the long-term conservation of biodiversity and the integrity of natural areas. As a public garden, it is inherent in Cornell Botanic Gardens' mission as we "Steward Cornell University's world-class horticultural collections and natural areas," that we stem the proliferation of invasive species and avoid introducing invasive plants.

The primary purpose of this policy document and the recommendations within it is to balance our public garden mission of holding diverse horticultural collections with our conservation mission of preserving natural areas and the broader environment. This mission is further detailed in Botanic Gardens' Envisioning Goals, which provides that the Botanic Gardens will "cultivate, curate and steward high-quality, sustainably-managed horticulture collections and natural areas."

The invasive species policy is based on the Voluntary Code of Conduct for Botanic Gardens and Arboreta, and will serve to direct how invasive plants are managed in the Botanic Gardens' collections.

By identifying the known invasive taxa currently held in our collections and requiring that all of these be removed using best practices in a multi-year process, we are taking a measured but highly responsible approach to invasive species management consistent with the Botanic Gardens' objectives in providing collections with "less invasive tendencies." Furthermore, by monitoring all new species and cultivars for potential invasiveness before entering them into the collections, we are providing a long-term strategy for ensuring that the Gardens will be environmentally progressive in our collections and operations.

For the purpose of this document, an invasive species is defined as a plant that is nonnative to the region under consideration, and whose introduction causes or is likely to cause ecological or environmental harm.

Cornell Botanic Gardens Invasive Species Policy Committee

Co-Chairs

Todd Bittner, Director of Natural Areas Christopher Dunn, Director Committee Members

Robert Wesley, Natural Areas Botanist Jules Ginenthal, Natural Areas Steward Sarah McNaull, Horticultural Plant Records Manager October, 2018

Botanic Gardens Code of Conduct Principles

- 1. Do not add known invasive species to the cultivated collections.
 - Conduct risk assessment and evaluation protocol.
- 2. Remove, phase out, and contain existing invasive species in the cultivated collections.
- 3. Monitor and evaluate new species and cultivars added to the cultivated collections for potential invasive characteristics as identified in Monitoring Protocols for Plant Species of Concern.
- 4. Do not distribute plants or propagules of known invasive species.

The Botanic Gardens pledges to not sell, trade, or distribute known invasive plants or propagules.

- 5. Work to control invasive species in the Natural Areas.
- 6. Educate the public, green industries, and the University about invasive species and the threats they pose to local and global biological diversity.

Appendix 1. Cornell Botanic Gardens' Invasive Species Risk Assessment and Evaluation Protocol.

This protocol will be used prior to adding species, hybrids, and cultivars to the collections:

If the taxon is listed as an invasive species in Appendix 2, 3, or 4, it will not be added to the collections, and will be added to BG-Base as invasive.

If the taxon is listed as an invasive species in Appendix 2, 3, or 4, and an exemption for educational use or research is requested, a written proposal and monitoring plan is required. Proposal review and approval will be conducted by the Botanic Gardens' Invasive Species Policy Committee.

If the taxon is listed as a species of concern in Appendix 5 or is a hybrid or cultivar of a taxon in Appendix 2-5, a written proposal and monitoring plan is required. Proposal review and approval will be conducted by the Botanic Gardens' Invasive Species Policy Committee.

Appendix 2. This list includes plant species that are considered highly invasive to natural areas in the central Finger Lakes region. This list also includes plant species that are not presently known from the region, but are considered highly invasive and would pose a significant threat to natural areas if they were to establish in the region.

Cornell Botanic Gardens commits that all listed species will be removed from the accessioned collections, and that future introductions of listed species will not be permitted, except where species may be retained for educational purposes consistent with these guidelines. If present in the accessioned collections, species from this list are the highest priority for removal.

This list was developed using information from the New York State Prohibited and Regulated Plants list, invasive plant lists for the surrounding states and provinces with similar growing conditions, continuing field observations, input from other knowledgeable persons, and all other credible web-based or published sources. Species were included if they are listed as invasive for one or more state or province in the Northeast, Mid-Atlantic, and upper Midwest (generally plant hardiness zones 4, 5, & 6), and are considered invasive in the central Finger Lakes region based on field observations and scientific publications. Species were also included if they are documented to be invasive in New York or nearby states or provinces and if introduced, could become established in the central Finger Lakes region in the future (indicated by an asterisk *). Species were not listed if they are not known to be invasive in the region, or are listed in other Appendices. This list reflects the current knowledge and will be reviewed and updated annually.

Species name	Common name	<u>Family</u>
Acer platanoides†	Norway maple	Sapindaceae
Ailanthus altissima	ailanthus, tree-of-heaven	Simaroubaceae
Alliaria petiolata†	garlic mustard	Brassicaceae
Artemisia vulgaris†	mugwort	Asteraceae
Berberis thunbergii†	Japanese barberry	Berberidaceae
Brachypodium sylvaticum†	false brome-grass	Poaceae
Celastrus orbiculata†	Asian bittersweet	Celastraceae
Cirsium arvense†	creeping thistle	Asteraceae
Cynanchum rossicum† (Vincetoxicum rossicum)	pale swallowwort	Apocynaceae
Elaeagnus umbellata†	autumn olive	Elaeagnaceae
Ficaria verna† (Ranunculus ficaria)	lesser celandine	Ranunculaceae
Frangula alnus† (Rhamnus frangula)	alder buckthorn	Rhamnaceae
Hydrilla verticillata†	hydrilla	Hydrocharitaceae
Ligustrum obtusifolium†	Amur River privet	Oleaceae
Lonicera maackii†	Maack's honeysuckle	Caprifoliaceae

Species name	Common name	<u>Family</u>
Lonicera morrowii† and hybrids	honeysuckle	Caprifoliaceae
Lonicera tatarica†and hybrids	Tartarian honeysuckle	Caprifoliaceae
Microstegium vimineum†	stilt-grass	Poaceae
Persicaria perfoliata†*	mile-a-minute weed	Polygonaceae
(Polygonum perfoliatum)		
Phragmites australis ssp. australis	phragmites	Poaceae
Reynoutria bohemica†	hybrid giant knotweed	Polygonaceae
(Fallopia bohemica, Polygonum bohemicur	n)	
Reynoutria japonica†	Japanese knotweed	Polygonaceae
(Fallopia japonica, Polygonum cuspidatum		
Rhamnus cathartica†	buckthorn	Rhamnaceae
Rosa multiflora†	multiflora rose	Rosaceae
Securigera varia (Coronilla varia)	crownvetch	Fabaceae
Trapa natans†	water-chestnut	Trapaceae

^{*} Not presently known to occur within the central Finger Lakes region.

[†] New York State Prohibited and Regulated Plant species.

Appendix 3. This list includes plant species that are considered moderately to highly invasive to natural areas in the central Finger Lakes region. This list also includes plant species that are not presently known from the region, but are considered moderately to highly invasive and would pose a significant threat to natural areas if they were to establish in the region.

Cornell Botanic Gardens commits that all listed species will be removed from the accessioned collections, and that future introductions of listed species will not be permitted, except where species may be retained for educational purposes consistent with these guidelines. If present in the accessioned collections, species from this list are a high priority for removal.

This list was developed using information from the New York State Prohibited and Regulated Plants list, invasive plant lists for the surrounding states and provinces with similar growing conditions, continuing field observations, input from other knowledgeable persons, and all other credible web-based or published sources. Species were included if they are listed as invasive for one or more state or province in the Northeast, Mid-Atlantic, and upper Midwest (generally plant hardiness zones 4, 5, & 6), and are considered invasive in the central Finger Lakes region based on field observations and scientific publications. Species were also included if they are documented to be invasive in New York or nearby states or provinces and if introduced, could become established in the central Finger Lakes region in the future (indicated by an asterisk *). Species were not listed if they are not known to be invasive in the region, or are listed in Appendices. This list reflects the current knowledge and will be reviewed and updated annually.

Species name	Common name	<u>Family</u>
Acer campestre	hedge maple	Sapindaceae
Acer tataricum ssp. ginnala (A. ginnala)	Asian maple	Sapindaceae
Aegopodium podagraria	goutweed, bishop's weed	Apiaceae
Allium vineale	wild onion, onion-grass	Amaryllidaceae
Alnus glutinosa	European black alder	Betulaceae
Anthriscus sylvestris†	wild chervil	Apiaceae
Berberis vulgaris	European barberry	Berberidaceae
Cabomba caroliniana†*	fanwort	Cabombaceae
Cardamine hirsuta	hairy cress	Brassicaceae
Centaurea stoebe ssp. micranthos†	spotted knapweed	Asteraceae
(Centaurea maculosa)		
Centaurea jacea	black or brown knapweed	Asteraceae
Cynanchum Iouiseae† (Vincetoxicum nigrum)	black swallowwort	Apocynaceae
Dipsacus laciniatus†	cut-leaved teasel	Caprifoliaceae

APPENDIX 3 (CONTINUED)

Species name	Common name	<u>Family</u>
Euonymus alata†	burning-bush, winged euonymus	Celastraceae
Euphorbia esula†	leafy spurge	Euphorbiaceae
Galium album (G. mollugo)	white bedstraw	Rubiaceae
Hedera helix	English ivy	Araliaceae
Hemerocallis fulva	daylily	Asphodelaceae
Heracleum mantegazzianum†	giant hogweed	Apiaceae
Hesperis matronalis	dame's rocket	Brassicaceae
Hydrocharis morsus-ranae†*	frog-bit	Hydrocharitaceae
Iris pseudacorus†	yellow iris	Iridaceae
Ligustrum ovalifolium	California privet	Oleaceae
Ligustrum vulgare	common privet	Oleaceae
Lonicera japonica†	Japanese honeysuckle	Caprifoliaceae
Lysimachia nummularia	moneywort, creeping jenny	Primulaceae
Lythrum salicaria†	purple loosestrife	Lythraceae
Myosotis scorpioides	forget-me-not	Boraginaceae
Myriophyllum spicatum†	Eurasian water-milfoil	Haloragaceae
Phalaris arundinacea	reed canary grass	Poaceae
Phellodendron amurense†	Amur cork tree	Rutaceae
Potamogeton crispus†	curly pondweed	Potamogetonaceae
Pueraria montana†* (Pueraria lobata)	kudzu	Fabaceae
Reynoutria sachalinensis†	Sakhalin knotweed	Polygonaceae
(Fallopia sachalinensis, Polygonum sachalinense)		
Robinia pseudoacacia†	black locust	Fabaceae
Rubus caesius	European dewberry	Rosaceae
Solanum dulcamara	bittersweet nightshade	Solanaceae
Torilis japonica	Japanese hedge parsley	Apiaceae
Viburnum opulus ssp. opulus	European cranberry viburnum	Adoxaceae
Vinca minor	periwinkle	Apocynaceae

^{*} Not presently known to occur within the central Finger Lakes region.

[†] New York State Prohibited and Regulated Plant species.

Appendix 4. This list includes plant species that are considered moderately invasive to natural areas in the central Finger Lakes region. This list also includes plant species that are not presently known from the region, but are considered moderately invasive and would pose a significant threat to natural areas if they were to establish in the region.

Cornell Botanic Gardens commits that all listed species will be removed from the accessioned collections, and that future introductions of listed species will not be permitted, except where species may be retained for educational purposes consistent with these guidelines. If present in the accessioned collections, species from this list are a lower priority for removal than species listed in Appendix 2 and 3.

This list was developed using information from the New York State Prohibited and Regulated Plants list, invasive plant lists for the surrounding states and provinces with similar growing conditions, continuing field observations, input from other knowledgeable persons, and all other credible web-based or published sources. Species were included if they are listed as invasive for one or more state or province in the Northeast, Mid-Atlantic, and upper Midwest (generally plant hardiness zones 4, 5, & 6), and are considered invasive in the central Finger Lakes region based on field observations and scientific publications. Species were also included if they are documented to be invasive in New York or nearby states or provinces and if introduced, could become established in the central Finger Lakes region in the future (indicated by an asterisk *). Species were not listed if they are not known to be invasive in the region, or are listed in Appendices. This list reflects the current knowledge and will be reviewed and updated annually.

Species name	Common name	<u>Family</u>
Achyranthes japonica†*	Japanese chaff flower	Amaranthaceae
Akebia quinata	akebia	Lardizabalaceae
Ampelopsis brevipedunculata†	porcelain-berry	Vitaceae
Aralia elata†*	Japanese angelica tree	Araliaceae
Arthraxon hispidus†*	small carpet grass	Poaceae
Campanula rapunculoides	creeping bellflower	Campanulaceae
Cardamine impatiens†*	narrow-leaved cress	Brassicaceae
Convallaria majalis	lily-of-the-valley	Asparagaceae
Egeria densa†*	Brazilian waterweed	Hydrocharitaceae
Euonymus fortunei†	evergreen bittersweet	Celastraceae
Imperata cylindrica†*	cogon grass	Poaceae
Lepidium latifolium†*	broad-leaved peppergrass	Brassicaceae
Lespedeza cuneata†*	Chinese bush clover	Fabaceae
Lonicera xylosteum	honeysuckle	Caprifoliaceae

APPENDIX 4 (CONTINUED)

Species name	Common name	<u>Family</u>
Ludwigia hexapetala†*	common primrose-willow	Onagraceae
Ludwigia peploides†*	floating primrose-willow	Onagraceae
Malus baccata, floribunda, sylvestris and hybrids	crabapple	Rosaceae
Murdannia keisak†*	marsh dewflower	Commelinaceae
Myriophyllum aquaticum†*	parrot-feather	Haloragaceae
Oplismenus hirtellus†*	wavy basketgrass	Poaceae
Phyllostachys aurea†*	golden bamboo	Poaceae
Phyllostachys aureosulcata†*	yellow-grooved bamboo	Poaceae
Picea abies	Norway spruce	Pinaceae
Rubus phoenicolasius†	wineberry	Rosaceae
Rumex acetosella	sheep sorrel	Polygonaceae
Silphium perfoliatum†	cup-plant	Asteraceae
Vitex rotundifolia†*	beach vitex	Lamiaceae
Wisteria sinensis	wisteria	Fabaceae

^{*} Not presently known to occur within the central Finger Lakes region.

[†] New York State Prohibited and Regulated Plant species.

Appendix 5. Plant species of concern (Watch List) within the central Finger Lakes region are listed below. Species on this list may or may not be invasive, and additional information or monitoring is needed to make this determination.

Cornell Botanic Gardens commits to implement a monitoring program for listed species presently within the accessioned collections and for future introductions of listed species consistent with these guidelines.

This list was developed using information from the New York State Prohibited and Regulated Plants list, invasive plant lists for the surrounding states and provinces with similar growing conditions, continuing field observations, input from other knowledgeable persons, and all other credible web-based or published sources. Species were included if they are listed as invasive for one or more state or province in the Northeast, Mid-Atlantic, and upper Midwest (generally plant hardiness zones 4, 5, & 6), and the possibility exists they may become invasive in the central Finger Lakes region based on field observations and scientific publications. While many of the listed species have long been naturalized, additional monitoring is warranted, as many appear to be becoming more invasive. Species were not listed if they are considered invasive (Appendix 1), or are not documented to be invasive in the region, adjacent states, or provinces. The list reflects the current knowledge, and will be reviewed and updated annually. With sufficient information from field observations, Botanic Gardens' monitoring, or other sources, species may be removed altogether or moved to the known invasive species list (Appendix 1).

Species name	Common name	<u>Family</u>
Acer pseudoplatanus†	sycamore maple	Sapindaceae
Aesculus hippocastanum	horse chestnut	Sapindaceae
Ajuga reptans	bugleweed	Lamiaceae
Bromus inermis	smooth brome grass	Poaceae
Butomus umbellatus	flowering rush	Butomaceae
Convolvulus arvensis	field bindweed	Convolvulaceae
Crataegus monogyna	English hawthorn	Rosaceae
Dioscorea polystachya†	Chinese wild yam	Dioscoreaceae
Elaeagnus angustifolia	Russian olive	Elaeagnaceae
Euonymus europaea	spindle tree	Celastraceae
Euphorbia cyparissias†	cypress spurge	Euphorbiaceae
Glechoma hedracea	ground ivy	Lamiaceae
Glyceria maxima†	giant manna grass	Poaceae
Humulus japonicus†	Japanese hop	Cannabaceae

Species name	Common name	<u>Family</u>
Luzula luzuloides ssp. luzuloides	European woodrush	Juncaceae
Lysimachia vulgaris†	garden loosestrife	Primulaceae
Malus prunifolia and hybrids	crabapple	Rosaceae
Melilotus alba	white sweet-clover	Fabaceae
Miscanthus sinensis†	silver-grass	Poaceae
Nymphoides peltata†	yellow floating-hearts	Menyanthaceae
Ornithogalum umbellatum	star-of-Bethlehem	Asparagaceae
Paulownia tomentosa	princess-tree	Paulowniaceae
Pinus sylvestris	Scots pine	Pinaceae
Poa compressa	wiry bluegrass	Poaceae
Populus alba	white poplar	Salicaceae
Prunus avium	bird cherry	Rosaceae
Pyrus calleryana	Bradford pear	Rosaceae
Rhodotypos scandens	jetbead	Rosaceae
Rorippa nasturtium-aquaticum	watercress	Brassicaceae
Salix atrocinerea†	gray florist's willow	Salicaceae
Salix purpurea	basket willow	Salicaceae
Taxus cuspidata	Japanese yew	Taxaceae
Ulmus pumila	Siberian elm	Ulmaceae
Viburnum lantana	wayfaring tree	Adoxaceae
Viburnum sieboldii	Siebold's viburnum	Adoxaceae

^{*} Not presently known to occur within the central Finger Lakes region.

[†] New York State Prohibited and Regulated Plant species.

Appendix 6. Invasive plant references for New York and surrounding states and provinces.

New York State

New York State Prohibited and Regulated Plants list. September 10, 2014. http://www.dec.ny.gov/docs/lands_forests_pdf/isprohibitedplants2.pdf

Invasive Plant Council of New York State. http://www.ipcnys.org/default.aspx

Adirondack Park Invasive Plants Program. http://www.adkinvasives.com/

General

Invasipedia developed by the Nature Conservancy's Global Invasive Species Team. http://invasipedia.ucdavis.edu/doku.php

Other States and Provinces

Invasive plants of natural habitats in Canada: an integrated review of wetland and upland species and legislation governing their control. http://www.cws-scf.ec.gc.ca/publications/inv/index e.cfm

Connecticut Invasive Plants Council – Connecticut Invasive Plants List. http://www.hort.uconn.edu/cipwg/invplantsCT05.pdf

Invasive Plants of Illinois. http://www.ill-inps.org/index files/Page815.htm

Noxious and Invasive Weeds and the Weed Laws in Indiana. http://www.btny.purdue.edu/WeedScience/2005/WeedLaw05.pdf

Invasive Plants of Indiana. http://www.inpaws.org/InvasivePlants.pdf

KY-EEPC Kentucky Exotic Pest Plant Council. http://www.se-eppc.org/ky/list.htm

Kentucky EPPC – Invasive Exotic Plant List. http://www.invasive.org/listview.cfm?list=16

Maine Natural Areas Program. Status of Invasive Plants in Maine. http://www.mainenaturalareas.org/docs/program_activities/status_invasive_plants.php

Invasive Species of Concern in Maryland. http://www.mdinvasivesp.org/invasive species md.html

The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts. Massachusetts Invasive Plant Advisory Group. 2005.

http://www.newenglandwildflower.org/conserve/docs/MIPAG040105.pdf

Massachusetts Invasive Plants Advisory Group. Plants voted as invasive. http://www.massnrc.org/MIPAG/invasive.htm

Massachusetts Prohibited Plant List.

http://www.mass.gov/agr/farmproducts/proposed prohibited plant list v12-12-05.htm

Michigan Invasive Plants Council – Invasive Plant Information. http://invasiveplantsmi.org/

Invasive Plant Atlas of New England. Current Invasive Species List.

http://nbii-nin.ciesin.columbia.edu/ipane/ipanespecies/current inv.htm

New Hampshire Prohibited Plant Species.

http://www.nh.gov/agric/divisions/plant industry/documents/list of invasive species.pdf
A Guide to Invasive Upland Plant Species in New Hampshire. New Hampshire Department of
Agriculture, Markets and Food, Plant Industry Division & New Hampshire Invasive Species
Committee. 2005. http://extension.unh.edu/forestry/Docs/invasive.pdf

Invasive Plant Species – Native Plant Society of New Jersey.

http://www.npsnj.org/invasive species 0103.htm

Snyder, David and Sylvan R. Kaufman. 2004. An overview of nonindigenous plant species in New Jersey. New Jersey Department of Environmental Protection, Division of Parks and Forestry, Office of Natural Lands Management, Natural Heritage Program, Trenton, NJ. 107 pages. http://www.nj.gov/dep/parksandforests/natural/heritage/InvasiveReport.pdf

Ohio's Invasive Plant Species.

http://www.dnr.state.oh.us/Portals/3/invasive/pdf/OHIO%20INVASIVE%20PLANTS.pdf

Invasive Plants in Ontario.

http://www.city.stratford.on.ca/naturally/documents/fact_sheet_invasive_plants_in_ontario.p

Invasive Plants in Pennsylvania.

http://www.dcnr.state.pa.us/forestry/wildplant/invasivelist.aspx

List of Exotic, Invasive Plants in the Murrysville, PA Area.

http://www.murrysville.com/documents/parks invasive plants.pdf

Invasive Plants of Rhode Island. http://www.urimga.org/invasive_plants.html#invasive

The Nature Conservancy. Invasive Species in Vermont.

http://www.nature.org/wherewework/northamerica/states/vermont/volunteer/art21110.html

Vermont Land Trust list of Invasive Species in Vermont.

http://www.vlt.org/invasives/index.html

Vermont Invasive Exotic Plant Committee. Vermont Invasive Plants.

http://www.vtinvasiveplants.org/invaders.php

Invasive Alien Plant Species of Virginia.

http://www.dcr.virginia.gov/natural heritage/invspinfo.shtml

Invasive Plants of West Virginia. http://www.wvdnr.gov/wildlife/invasivewv.shtm

Invasive Plants Association of Wisconsin - Working List of the Invasive Plants of Wisconsin - March 2003. http://www.ipaw.org/newsletters/issue4.pdf

Wisconsin Department of Natural Resources. Invasive Species: Plants. http://www.dnr.state.wi.us/invasives/plants.asp

Cofrin Center for Biodiversity, University of Wisconsin - Green Bay Herbarium. Invasive Plants of Wisconsin.

http://www.uwgb.edu/BIODIVERSITY/herbarium/invasive_species/invasive_plants01.htm