Northeast RISCC Management

Regional Invasive Species & Climate Change
Management Challenge

# Do Not Sell!

## Ornamental invasive plants to avoid with climate change

## Summary

Climate change is likely to bring dozens of new invasive plants to the Northeast. Despite their invasive tendencies, many of these species are sold as ornamental plants in slightly warmer climates, but are not yet a large part of nursery sales in the Northeast. By avoiding these species, we protect our native ecosystems from future invasive species impacts. We also present alternative native plants that provide similar aesthetics while also supporting biodiversity.

### Ornamentals as Invasives

About 50% of invasive plants were introduced via horticultural trade, including the majority of Northeast invasive plants. The past is a good indicator of the future unless behaviors change.


**Fig. 1.** Northeastern invasive plants with ornamental origins. (A) *Pyrus calleryana* (Callery pear) and (B) *Euonymus alatus* (burning bush) are commonly planted in landscapes and readly escape cultivation.

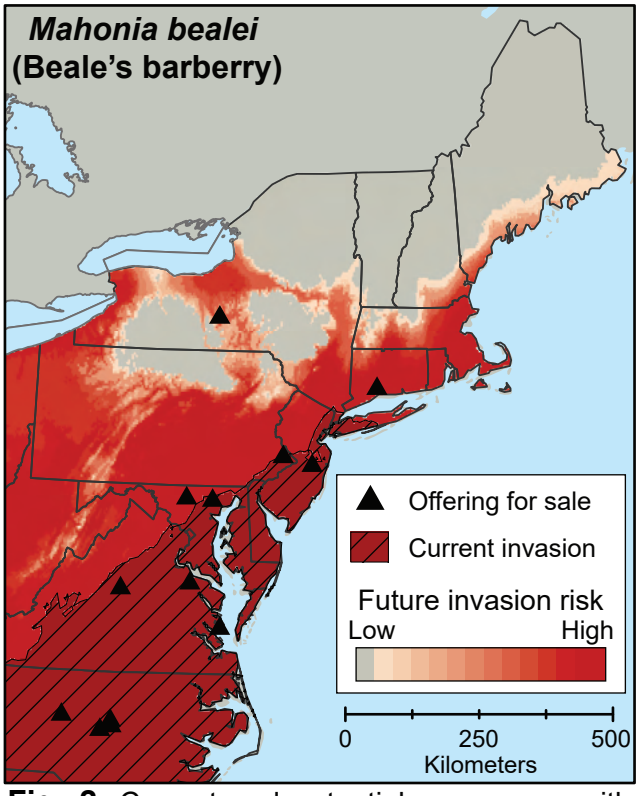


**Fig. 2**. Current and potential range map with climate change along with nursery locations offering sales of *Mahonia bealei* (Beale's barberry) which is invasive in the southeastern U.S.

**A substantial portion of ornamental plants offered for sale in the U.S. are invasive. Expanding native plant offerings reduces risk and supports ecosystems.**

| Non-Native | Invasive | Native |
|---|---|---|

**Non-Native,** ornamental plants constitute about 60% of species circulated through horticulture. Of this pool, 10-25% have been identified as **invasive**.

**Native** ornamental plants have minimal risk of becoming invasive and support pollinators and wildlife.

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## Planting natives is optimal, but what about cultivars?

Cultivars of native plants lack the genetic variabllity present in seed grown plants of the wild type. Reduced genetic variability in cultivars limits their resilience to climate change. Many cultivars also change flower and leaf characteristics of the wild type species in ways that make the plant unavailable or unrecognizable to native insects and other wildlife.

### Recommendations:

- Choose wild type (non-cultivar) species grown from seed when possible
- Select cultivars that retain the leaf color, flower shape, and flower timing of the wild type


**Fig. 3**. *Echinacea purpurea* (purple coneflower) is sold as (A) wild type and cultivars that change (B) flower color, and (C) shape.

# Do Not Sell List and Native Alternatives

The Do Not Sell list includes non-native plants that are invasive in other regions of the U.S. and which are currently offered for sale in at least 5 U.S.-based wholesale, retail and/or online nurseries. These species have well-documented negative ecological impacts and will have suitable habitat in vulnerable Northeast ecosystems with future climate change. The Do Not Sell species are not yet part of the ornamental plant trade throughout the Northeast, so we have an opportunity to prevent or reduce their introduction. In other words, these are the problematic species that are coming our way, vectored by the horticulture industry. Learning to recognize and avoid these species now, in favor of native alternatives, will provide ecological and climate-smart benefits.

## Do Not Sell

### *Akebia quinata* (chocolate vine)


**Ecological Impacts:** Crowds out native understory species as a thick ground cover, can over top shrubs and trees.

**Vulnerable Ecosystems:** Forest edges, wetlands.

### *Ampelopsis brevipedunculata* (porcelain berry)


**Ecological Impacts:** Forms thick mats of vegetation when established. Can outgrow natives and shade out seedlings and low growing young trees.

**Vulnerable Ecosystems:** Sunny forest edges, open habitats.

## Native Alternative

### *Lonicera sempervirens* (coral honeysuckle)


Zones 4 - 9

### *Bignonia capreolata* (cross vine)


Zones 6 - 9

**KEY:** Dry | Medium | Wet | Part shade | Full sun | Zones: Range of Hardiness Zones

References: Allen & Bradley 2016 Biol. Cons.; Beaury et al. 2021 Front. in Ecol. & Env.; Beaury et al. 2021 J .App. Ecol.; Baisden et al. 2018 Hort. tech.; Bradley et al. 2020 RISCC Mngmnt Chall; Corbet et al. 2001 Ann. Bot.; Coville et al. 2021 Inv. Plant Sci. & Manag.;Harris et al. 2009 Journal of Torrey Bot Soc.; Jeschke & Strayer 2005 PNAS; Lady Bird Johnson Wildflower Center Plant Database; Missouri Botanical Garden Plant Finder; NC State Extentsion Gardener Plant Toolbox; Ricker et al. 2019 Hort. Sci.; Rockwell-Postel et al. 2020 Biol. Inv.; Simberloff et al. 2012 Ecology; White 2016 UVM Diss.

## Do Not Sell

## Native Alternative

### *Arundo donax* (giant reed)


**Ecological Impacts:** Outcompetes native wetland plants, alters wetland structure, increases fire frequency, and acts as a host for crop pests and pathogens.

**Vulnerable Ecosystems:** Rivers, streams, wetlands, coastal areas.

### *Panicum virgatum* (panic grass)


Zones 5 - 9

### *Asclepius curassavica* (tropical milkweed)


**Ecological Impacts:** Can hybridize with native A*sclepias* species, harms insect development and survival, toxic to livestock and humans.

**Vulnerable Ecosystems:** Sunny habitats including pastures, crops, and plantations.

### *Asclepias tuberosa* (butterfly weed)


Zones 3 - 9

### *Buddleja davidii* (butterfly bush)


**Ecological Impacts:** Outcompetes native plant species and can establish more quickly than native species in unvegetated areas.

**Vulnerable Ecosystems:** Disturbed areas, including riparian and wetland habitat.

### *Aesculus parviflora* (bottlebrush buckeye)


Zones 4 - 8

### *Cenchrus setaceus* (fountain grass)


**Ecological Impacts:** Disrupts nutrient cycling, outcompetes native plants, and increases the risk of fire.

**Vulnerable Ecosystems:** Dry grasslands, early successional habitats, forests.

### *Koeleria macrantha* (Junegrass)


Zones 3 - 9

### *Cestrum diurnum* (day-blooming cestrum)


**Ecological Impacts:** Aggressive colonizer of disturbed areas that can form dense thickets that exclude native species. It is toxic to humans and other mammals.

**Vulnerable Ecosystems:** Sunny disturbed areas, pastures, secondary forests.

### *Clethra alnifolia* (sweet pepperbush)


Zones 3 - 9

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## Do Not Sell

### *Cortaderia selloana* (papmpas grass)


**Ecological Impacts:** Outcompetes native species, reduces macroinvertebrate abundance and richness, and alters wetland structure.

**Vulnerable Ecosystems:** Mediterranean coastal ecosystems, forests, grasslands, wetlands.

### *Dioscorea polystachya* (cinnamon vine)


**Ecological Impacts:** Dense growth reduces light availability, displaces native vegetation, reduces biodiversity, and icreases breakage of supporting shrubs and trees.

**Vulnerable Ecosystems:** Wet areas, including forests, drainage, and riparian areas.

### *Euonymus fortunei* (wintercreeper)


**Ecological Impacts:** Displaces native vegetation, alters soil chemistry, disrupts food webs, and increases breakage of supporting trees.

**Vulnerable Ecosystems:** Forests, meadows, scrubland.

### *Hedera helix* (English ivy)


**Ecological Impacts:** Reduces density and diversity of native plants, reduces tree regeneration.

**Vulnerable Ecosystems:** Forests.

### *Lagerstroemia indica* (crape myrtle)


**Ecological Impacts:** Grows rapidly and is an aggressive competitor. Host of several plant pathogens.

**Vulnerable Ecosystems:** Urban ecosystems, sub-tropical forests.

## Native Alternative

### *Sorghastrum nutans* (Indiangrass)


Zones 4 - 9

### *Dioscorea villosa* (wild yam)


Zones 4 - 8

### *Mitchella repens* (partridgeberry)


Zones 4 - 8

### *Phlox divaricata* (wild blue phlox)


Zones 3 - 8

### *Chionanthus virginicus* (white fringe tree)


Zones 3 - 9

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## Do Not Sell

### *Mahonia bealei* (Beale's barberry)


**Ecological Impacts:** Spreads rapidly into natural areas. Similar characteristics to other invasive barberries (e.g., *Berberis thunbergii*).

**Vulnerable Ecosystems:** Forests.

### *Nandina domestica* (heavenly bamboo)


**Ecological Impacts:** Spreads rapidly, outcompetes native plants and seeds are toxic to birds.

**Vulnerable Ecosystems:** Forests.

### *Oplismensus hirtellus spp. undulatifolius* (wavyleaf basketgrass)


**Ecological Impacts:** Dominates forest understory and spreads rapidly.

**Vulnerable Ecosystems:** Forests.

### *Paulownia tomentosa* (princess tree)


**Ecological Impacts:** Fast growing tree capable of dominating ecosystems. Spreads rapidly and hard to eradicate.

**Vulnerable Ecosystems:** Disturbed habitats, forests.

### *Prunus laurocerasus* (cherry laurel)


**Ecological Impacts:** Alters forest structure, highly toxic to wildlife, and has a strong growth response to carbon dioxide.

**Vulnerable Ecosystems:** Forests.

## Native Alternative

### *Aronia melanocarpa* (black chokeberry)


Zones 3 - 8

### *Ilex verticillata* (winterberry)


Zones 3 - 9

### *Tiarella cordifolia* (foam flower)


Zones 4 - 9

### *Catalpa speciosa* (northern catalpa)


Zones 4 - 8

### *Kalmia latifolia* (mountain laurel)


Zones 4 - 9

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## Do Not Sell

### *Pyrus calleryana* (callery pear)


**Ecological Impacts:** Spreads rapidly, grows dense thickets, and expands into natural areas.

**Vulnerable Ecosystems:** Grasslands, disturbed areas, early successional habitat.

### *Quercus acutissima* (sawtooth oak)


**Ecological Impacts:** Identified as potentially weedy and acorns have lower nutrient value.

**Vulnerable Ecosystems:** Forests.

### *Sesbania punicea* (red sesbania)


**Ecological Impacts:** Recognized globally as a high-impact invasive plant, particularly in drier regions where it degrades streams. Seeds are toxic to wildlife.

**Vulnerable Ecosystems:** Agricultural systems, riparian areas, wetlands.

### *Spartium junceum* (Spanish broom)


**Ecological Impacts:** Highly competitive and fire adapted, can grow in near monocultures.

**Vulnerable Ecosystems:** Forests, grasslands, shrubland.

### *Vinca major* (big leaf periwinkle)


**Ecological Impacts:** Grows in dense mats that exclude native plants and reduce biodiversity.

**Vulnerable Ecosystems:** Forests, riparian areas.

## Native Alternative

### *Amelanchier canadensis* (serviceberry)


Zones 4 - 8

### *Quercus bicolor* (swamp white oak)


Zones 3 - 8

### *Lonicera sempervirens* (coral honeysuckle)


Zones 4 - 9

### *Hypericum prolificum* (shrubby St. John's wort)


Zones 3 - 8

### *Phlox divaricata* (wild blue phlox)


Zones 3 - 8

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## Do Not Sell

### *Wisteria floribunda* (Japanese wisteria)


**Ecological Impacts:** Hybridizes with *Wisteria sinensis* (see below) to become even more invasive.

**Vulnerable Ecosystems:** Forests.

### *Wisteria sinensis* (Chinese wisteria)


**Ecological Impacts:** Spreads rapidly into natural areas, changes understory structure, and reduces native plant diversity. Can girdle trees.

**Vulnerable Ecosystems:** Forests.

## Native Alternative

### *Wisteria frutescens* (American wisteria)


Zones 5 - 9

### *Cercis canadensis* (eastern redbud)


Zones 4- 8

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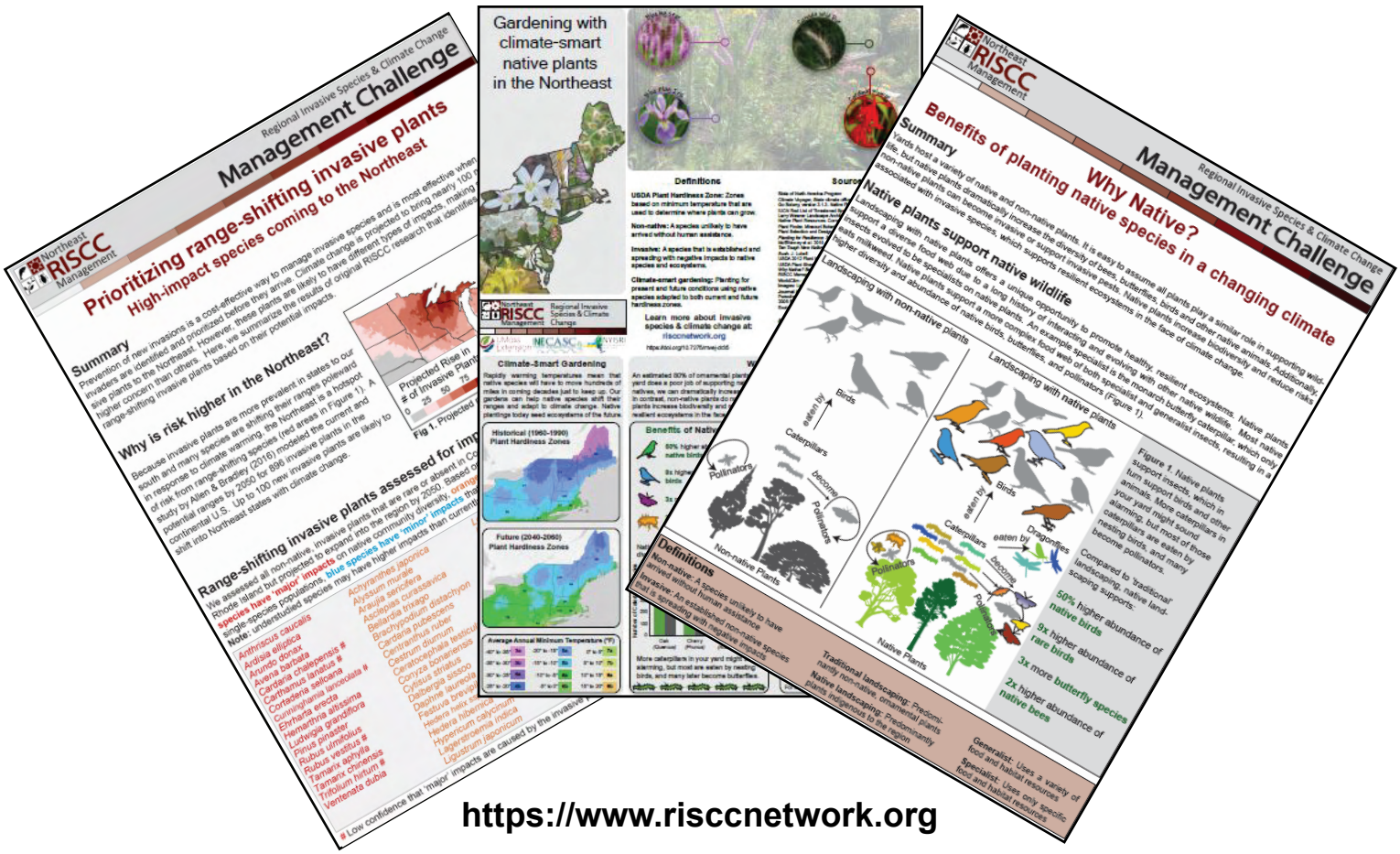


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