

Invaders for Sale

Buyer Beware!



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University of Massachusetts, Amherst

Outline

- ◆ About Me
- ◆ About RISCC
- ◆ Climate Change and Invasive Plants
- ◆ Invaders for Sale
- ◆ What can we do?

About Me

◆ Teaching:

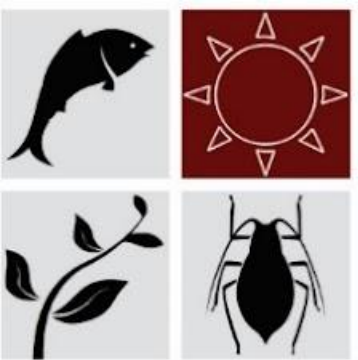
- ◆ Quantitative Ecology: Application of statistical modeling to ecological problems
- ◆ Geographic Information Systems and Spatial Statistics: Understanding ecological problems in a spatial context

◆ Current Research Projects

- ◆ UMass Cranberry Bog: Late water treatment – alternative to herbicide/pesticide application
- ◆ Spatial patterns of tree damage in Tampa FL during hurricane Irma

About Me

- ◇ Garden Club of Amherst:
 - ◇ I'm an avid gardener
 - ◇ Personal interest in the effects of invasive species and climate change. What can I do help?
- ◇ Invasion Ecology
 - ◇ Northeast Regional Invasive Species and Climate Change Network (RISCC)



Northeast
RISCC
Management

Regional Invasive Species
& Climate Change



Mission Statement:

The Northeast Regional Invasive Species & Climate Change (RISCC) Management Network aims to reduce the compounding effects of invasive species and climate change by synthesizing relevant science, communicating the needs of managers to researchers, building stronger scientist-manager communities, and conducting priority research.

Translational Ecology: Actionable Science

Translational ecology (TE) is an approach in which ecologists, stakeholders, and decision makers work together to develop research that addresses the sociological, ecological, and political contexts of an environmental problem

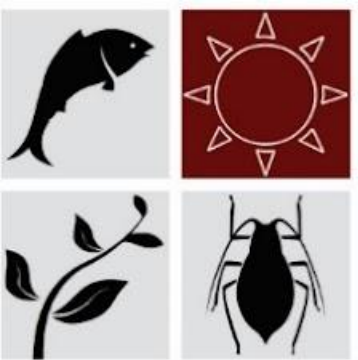




Leadership Team

We support a network
of ~ 450 invasive
species managers





Northeast
RISCC
Management

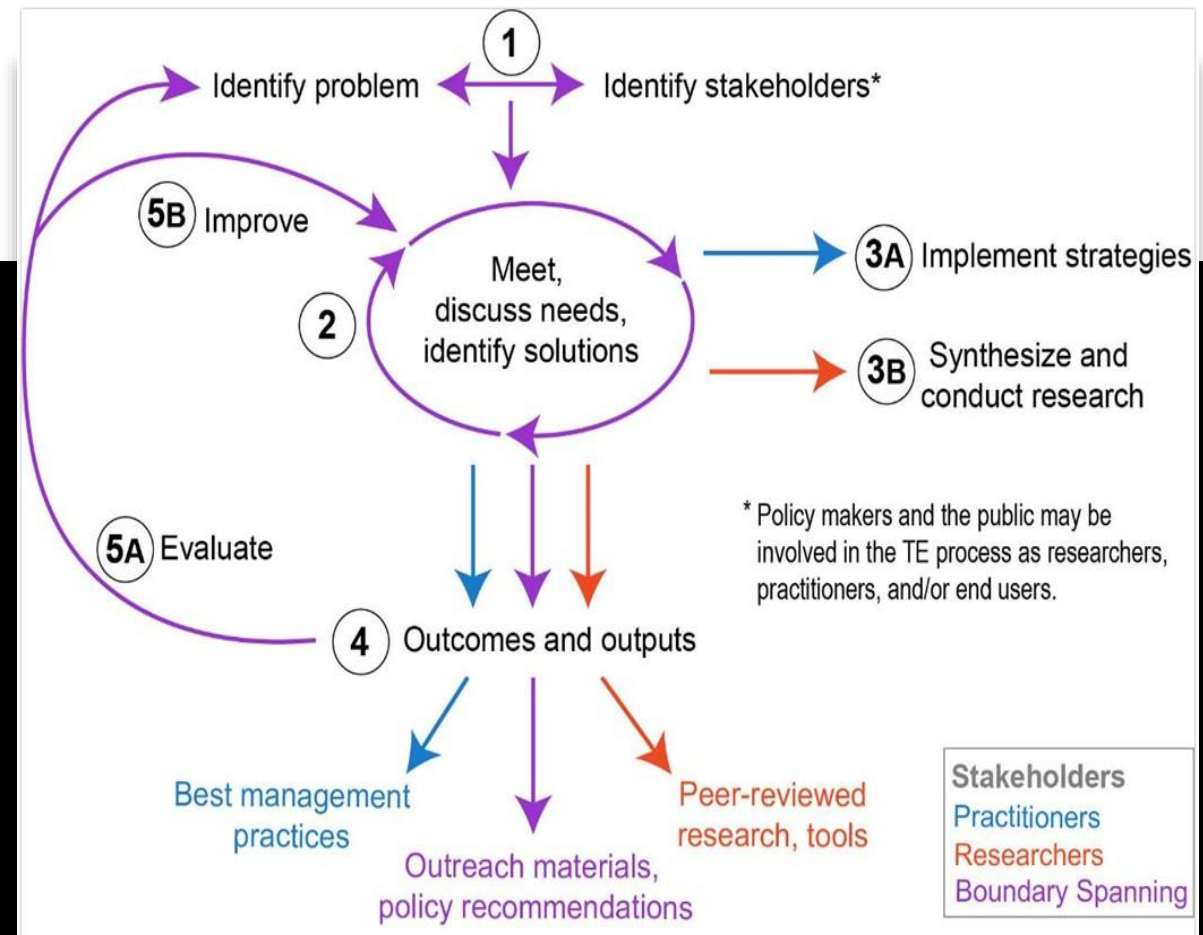
Regional Invasive Species
& Climate Change



So... What do we do at RISCC?

Translational Invasion Ecology

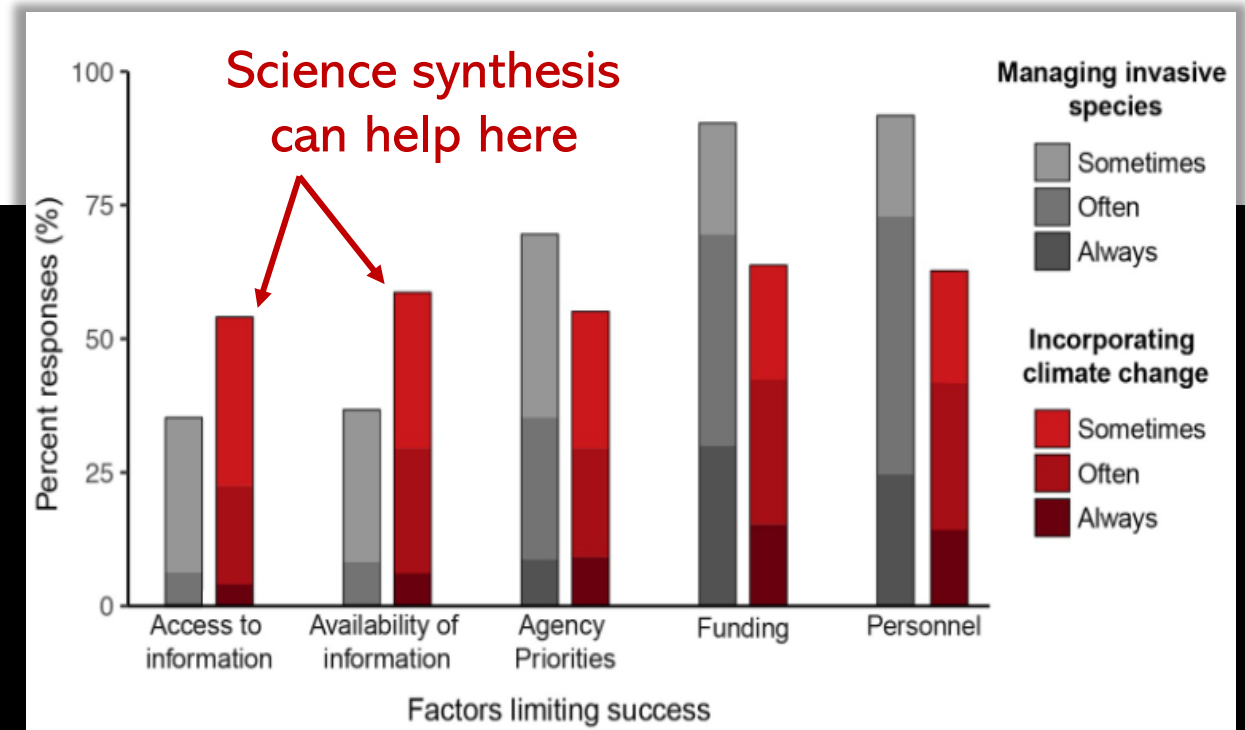
At RISCC, we apply principles of TE to the twin challenges of Invasive Species (IS) and Climate Change (CC)



Synthesize The Science!

Our survey revealed that a lack of information, or access to information, is a key barrier to including climate change in management actions.

RISCC helps make information accessible and available to land managers.



Beaury et al. 2020



Northeast RISCC Management

Synthesize The Science!

We create and distribute biweekly research summaries to our listserv.

We produce semiannual, 2-page Management Challenges.

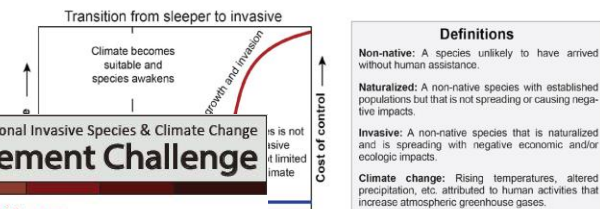
Preparing for sleeper species Climate change could awaken some naturalized species

Summary

Many naturalized non-native species never become invasive and generally are not prioritized for management due to limited resources. However, climate change could enhance the success of these species, causing some to become invasive. Therefore, we need to reassess the current pool of naturalized species to identify and prioritize management of 'sleeper' species.

What are sleeper species?

Sleeper species are naturalized in a region, potentially invasive, but not yet invasive because they are limited by biotic or abiotic conditions. Many naturalized species remain at low abundance and will never become invasive, but others are constrained by unfavorable climate conditions. Climate change could create newly favorable conditions for naturalized species limited by climate, enabling them to 'awaken' and resulting in rapid population growth and invasion.



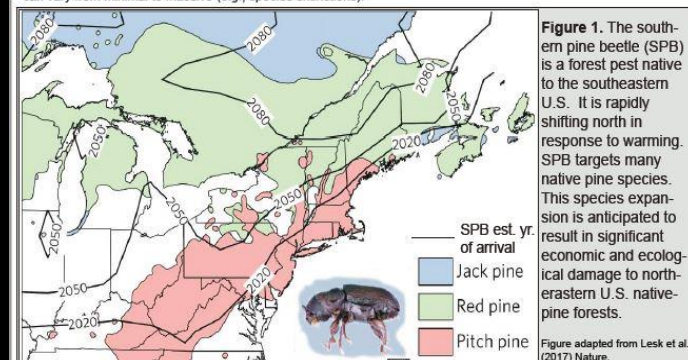
Nuisance Neonatives Guidelines for Assessing Range-Shifting Species

Summary

Native species will need to shift their ranges northward and upslope to keep pace with climate change in the Northeast U.S. However, this may cause some range-shifting species to have undesirable consequences in their expanded range. We provide a framework to identify the likelihood that a range-shifting species will become problematic and offer suggestions to minimize impacts from these species in the recipient habitat.

What are nuisance neonatives?

Neonatives are native range-shifting species that have established themselves beyond their historical range. Unlike invasive species, neonatives could disperse into new areas unassisted by humans. However, like invasive species, neonatives are expanding into novel environments at an accelerated rate due to human-induced climate change (see Figure 1 for an example of a nuisance neonative species). The impacts of their movement to new recipient communities can vary from minimal to massive (e.g., species extinctions).



Management actions

- ★ Survey for the expansion of neonatives in your management area
- ★ Monitor low-risk neonatives for impacts & control high-risk neonatives when feasible
- ★ Prioritize neonatives based on likelihood of impact to the recipient habitat (see reverse for guidance)
- ★ Expand public outreach on nuisance neonatives & facilitate discussions on whether management action should be implemented

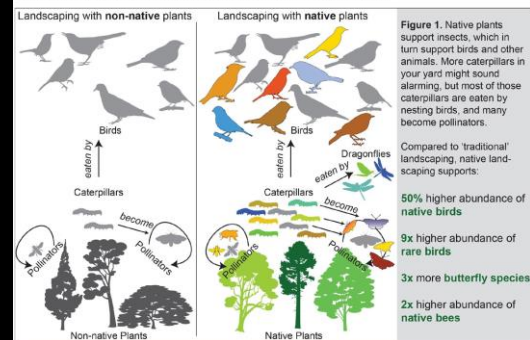
Why Native? Benefits of planting native species in a changing climate

Summary

Yards host a variety of native and non-native plants. It is easy to assume all plants play a similar role in supporting wildlife, but native plants dramatically increase the diversity of bees, butterflies, birds and other native animals. Additionally, non-native plants can become invasive or support invasive pests. Native plants increase biodiversity and reduce risks associated with invasive species, which supports resilient ecosystems in the face of climate change.

Native plants support native wildlife

Landscaping with native plants offers a unique opportunity to promote healthy, resilient ecosystems. Native plants support a diverse food web due to a long history of interacting and evolving with other native wildlife. Most native insects evolved to be specialists on native plants. An example specialist is the monarch butterfly caterpillar, which only eats milkweed. Native plants support a more complex food web of both specialist and generalist insects, resulting in a higher diversity and abundance of native birds, butterflies, and pollinators (Figure 1).



Definitions

- Non-native:** A species unlikely to have arrived without human assistance.
- Invasive:** An established non-native species that is spreading with negative impacts.
- Traditional landscaping:** Predominantly non-native, ornamental plants.
- Native landscaping:** Predominantly plants indigenous to the region.
- Generalist:** Uses a variety of food and habitat resources.
- Specialist:** Uses only specific food and habitat resources.




Share Knowledge and Needs

Sharing knowledge and needs of IS managers through workshops and surveys

Knowledge sharing leads to RISCC products.



 Regional Invasive Species & Climate Change
Management Challenge

Taking Action:
Managing invasive species in the context of climate change

Summary
Climate change is likely to alter the timing and effect of invasive species management, as well as the suite of species we are managing. Despite concern about the effects of climate change, lack of information about how and when to take action is a barrier to climate-smart invasive species management. Here, we outline strategies for incorporating climate change into management along with examples of tools that can inform proactive decision-making.

Motivations for incorporating climate change into management

1. Invasives may emerge earlier and persist longer in response to longer growing seasons
2. Warming causes invasives to shift their ranges into new ecosystems
3. Invasives are introduced via new shipping pathways due to sea ice melt
4. Extreme weather events and sea level rise cause disturbance that creates new opportunities for invasion
5. Herbicides may be less effective with higher atmospheric CO₂
6. Invasives become more competitive with warming and higher atmospheric CO₂

Share Knowledge and Needs

What new invasive species are likely to emerge in your management area?

What types of native species are better choices for restoration?

How do we maximize treatments by adjusting timing?

How will treatment efficacy change and what alternative treatments work better?

Preventative Management

Recommendations:

- Plant species native to Eastern North America that are resistant to climate change (e.g., drought-tolerant, broad hardiness zones; Fig. 2).
- Develop watch lists and proactive management plans for invasive species predicted to shift into your region.
- Prioritize treatment of existing invasive species predicted to spread or increase in abundance with climate change.
- Monitor non-natives for increases in populations ('sleeping species').

Example: Tug Hill State Forest in NY planted native, warm-adapted trees to reduce future disturbance and resist invasions with climate change.

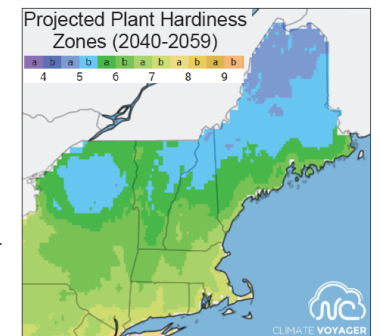


Fig 2. Climate Voyager maps future hardiness zones (climate.ncsu.edu/voyager/).

Treatment & Control

Recommendations:

- Time invasive species management with shifts in the growing season.
- Test new management techniques in the event that existing treatments become less effective with climate change.
- Identify and monitor for range shifting invasive species.
- Connect with managers, both locally and in other regions, about effective treatments for watch list species.

Example: Pesticides need to be applied quickly following the emergence of Gypsy Moth caterpillars. Optimal timing for control can be predicted based on climate (Fig. 3). Sign up with the NPN to be notified ahead of time.

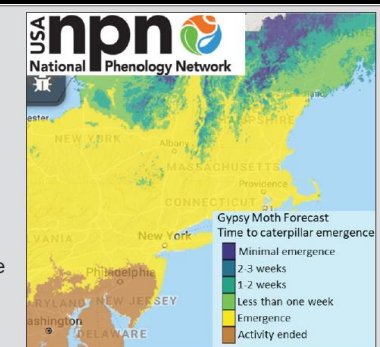


Fig 3. NPN phenology visualization tool (www.usanpn.org/data/visualizations/).



Build Community

Creating networking and one-on-one conversation opportunities

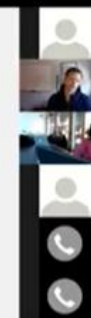
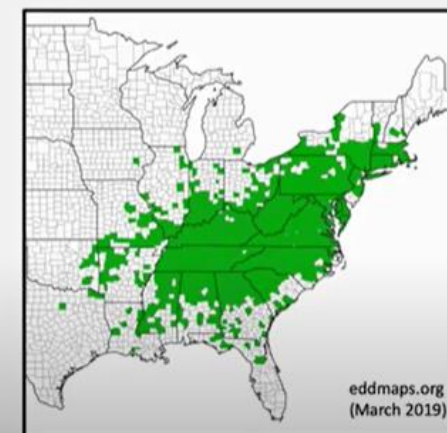
For example, webinars on range-shifting invasive species:

Advice from a manager
Advice from a scientist



Microstegium vimineum
(stiltgrass)

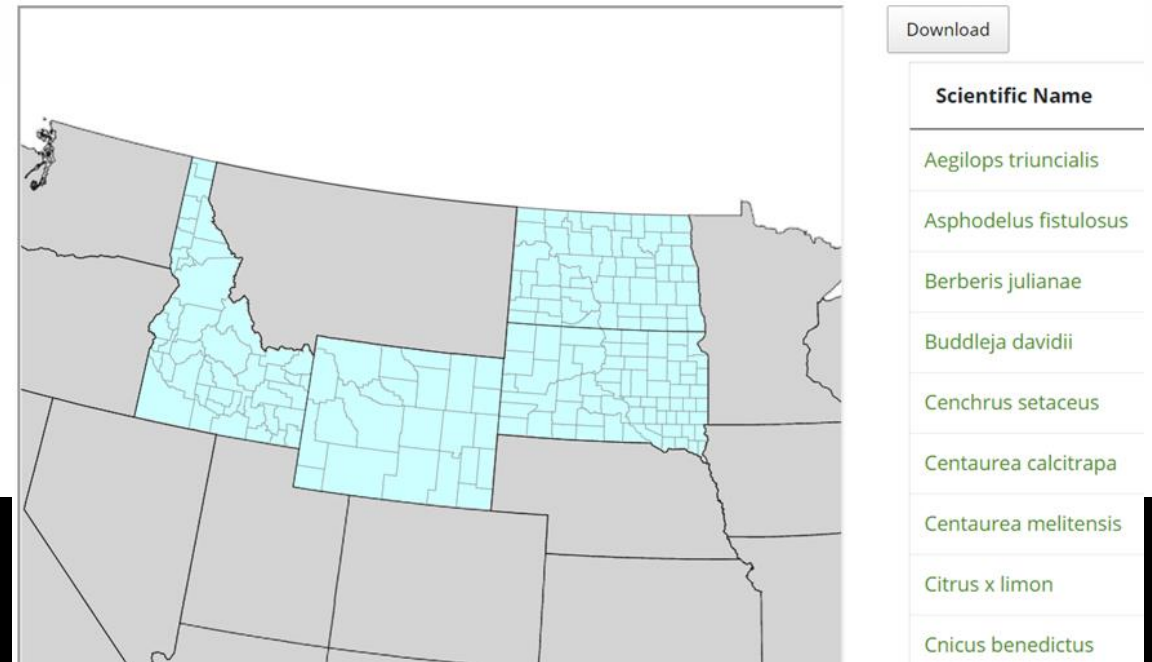
- Native to eastern Asia
- Shade tolerant annual
- May fill "empty niche"
- Few herbivores/pathogens





Priority Research

Our research priorities include:
Resilient Communities
Range Shifting Species
Biocontrol Efficacy



<https://www.eddmaps.org/rangeshiftlisting/>



Work led by Jenica Allen



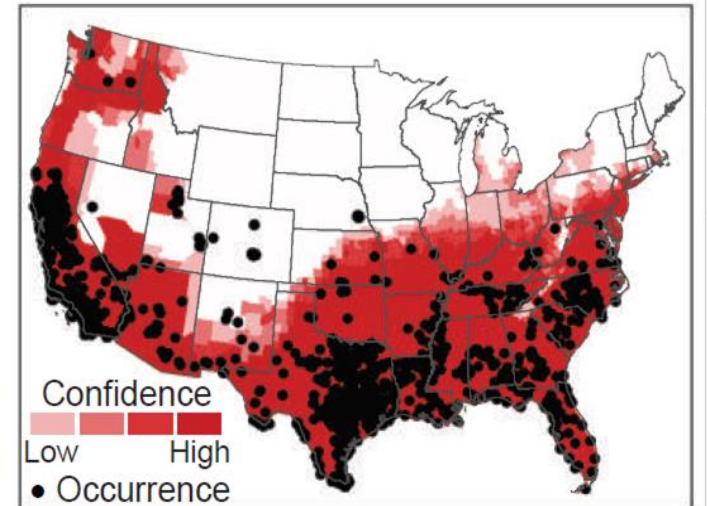


Arundo donax (giant reed)

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

HIGH Vulnerability: Invades rivers, streams, wetlands, and coastal areas. Widely introduced as a biofuel crop, could arrive quickly. Difficult to control and spreads by rhizomes along waterways.

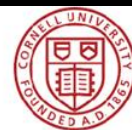
Priority Research:
Range Shifting Plants





Northeast **RISCC** Management

Have a seat at our
table!
Join us at:
riscnetwork.org

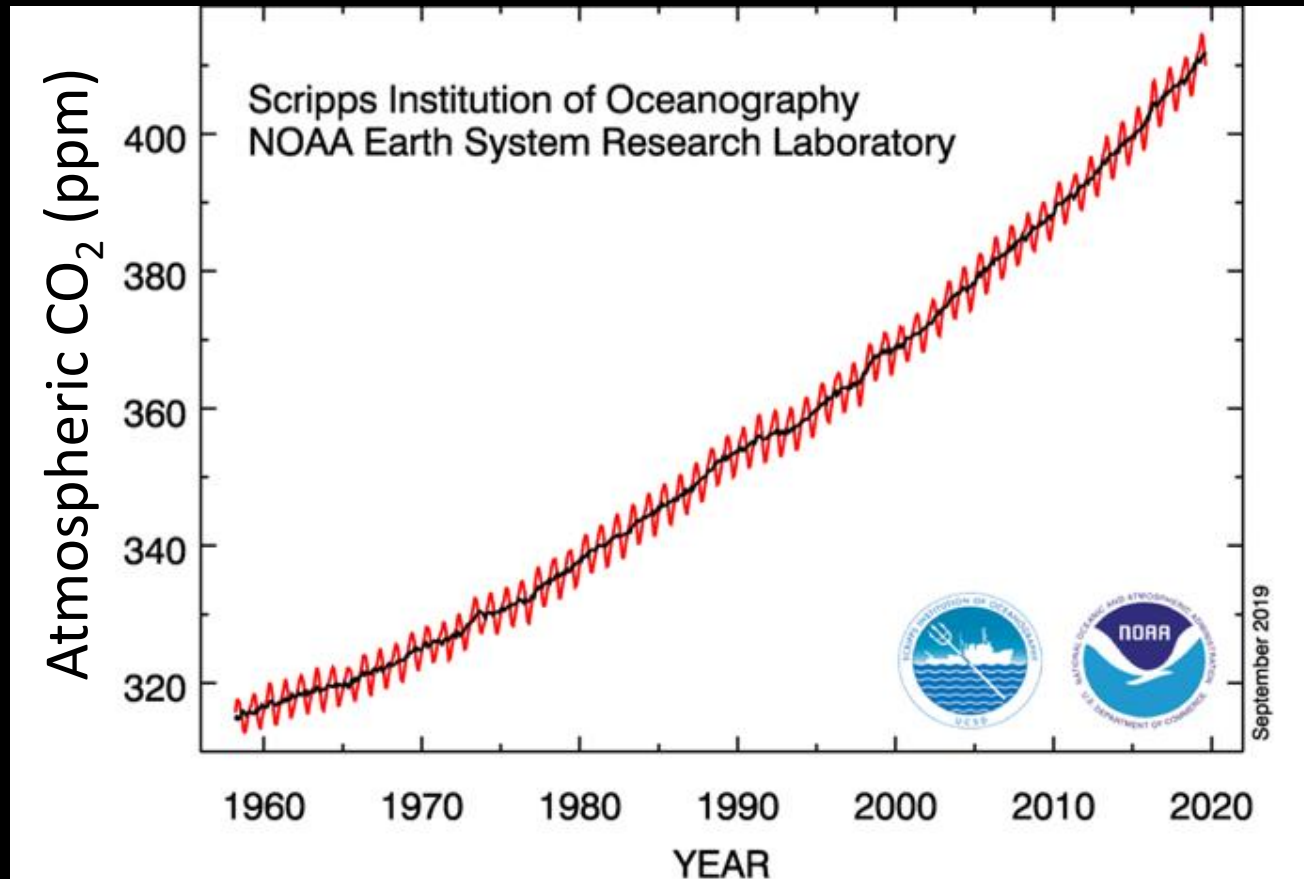


Cornell University.



Twin Challenges: Climate Change and Invasive Species

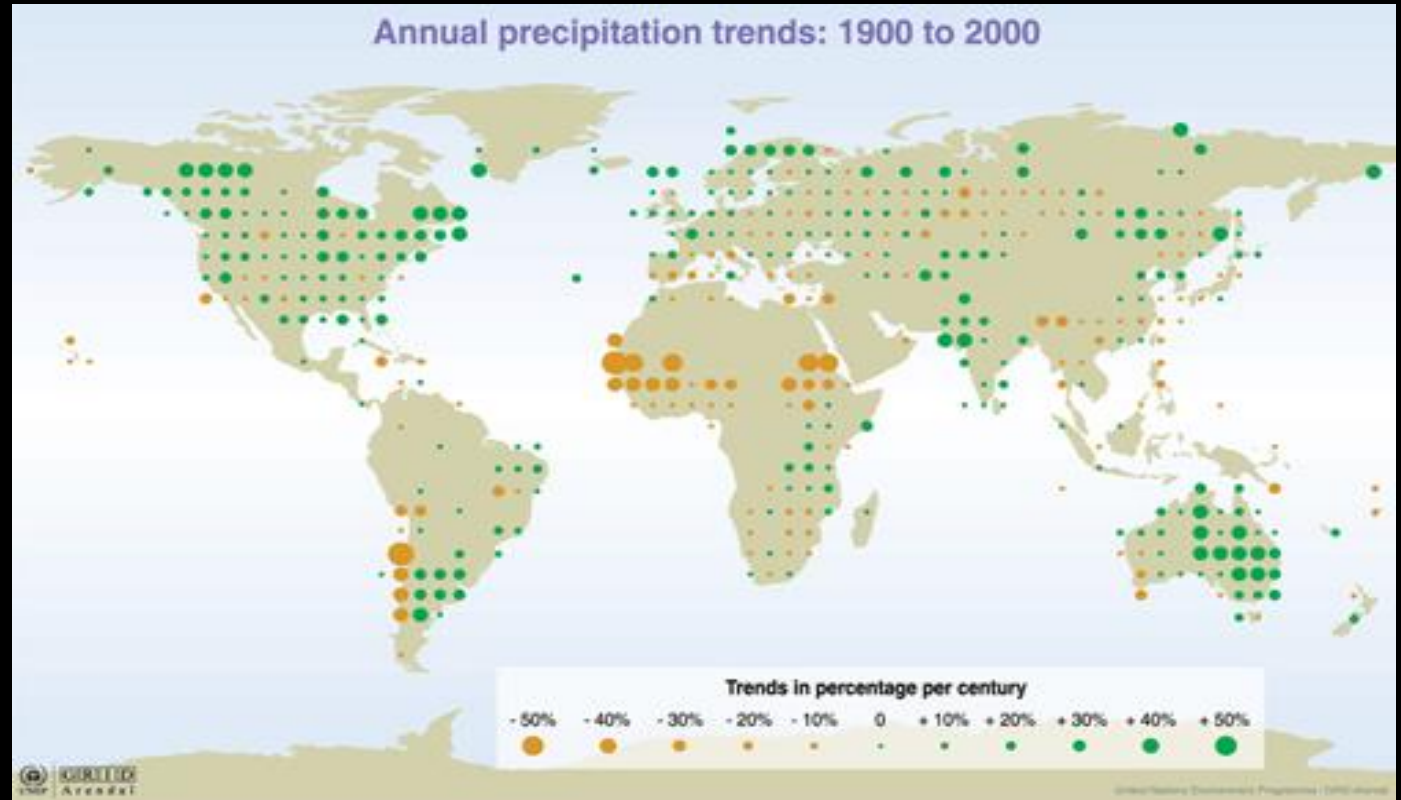
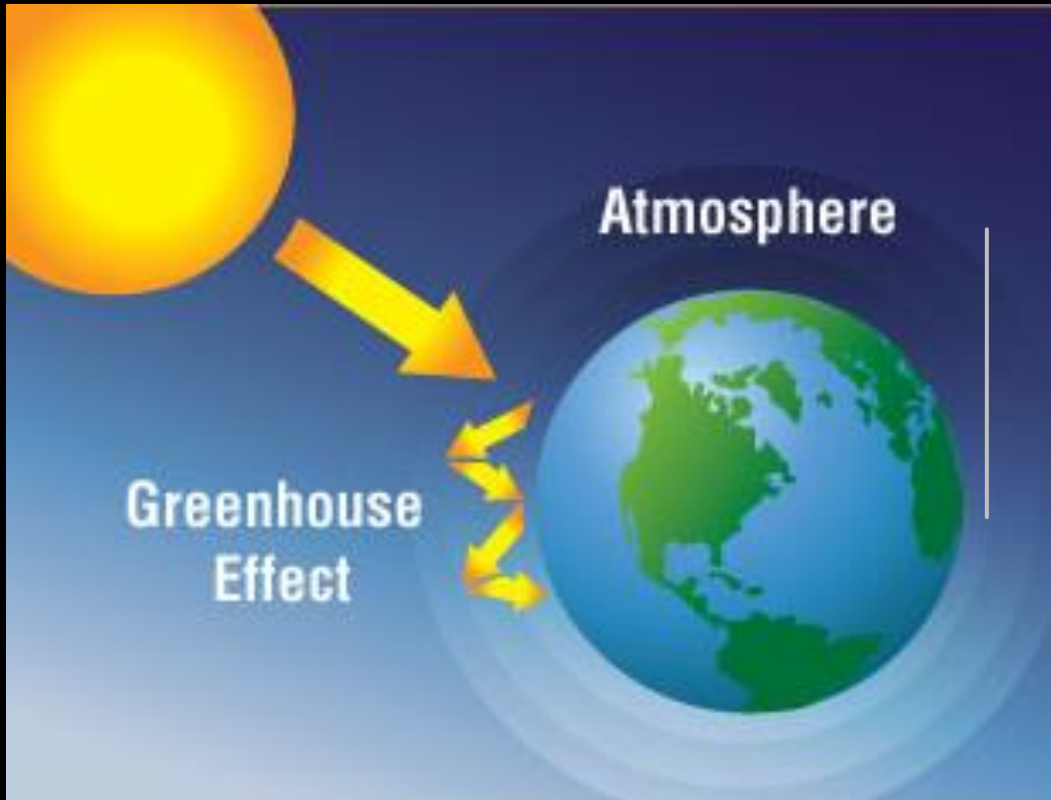




How is climate changing?

Rising CO₂

Other greenhouse gasses, but CO₂ is most important

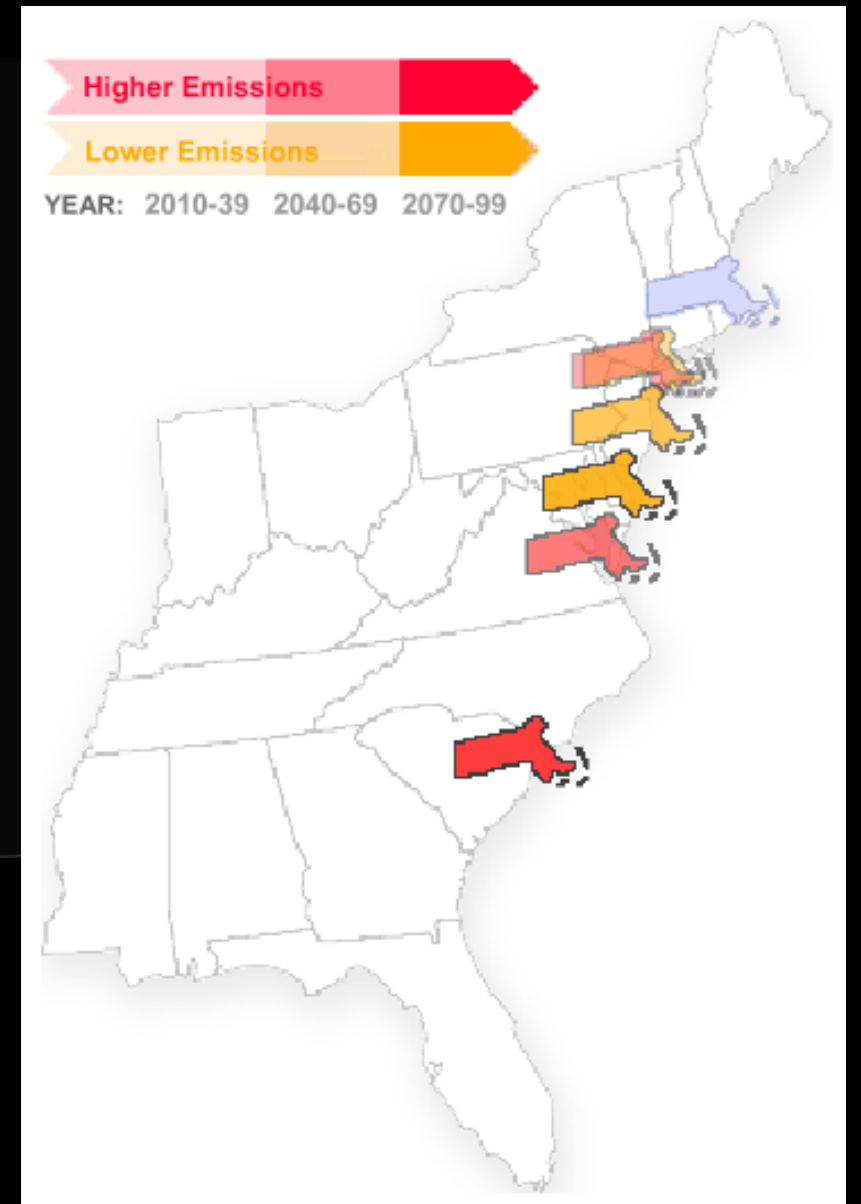
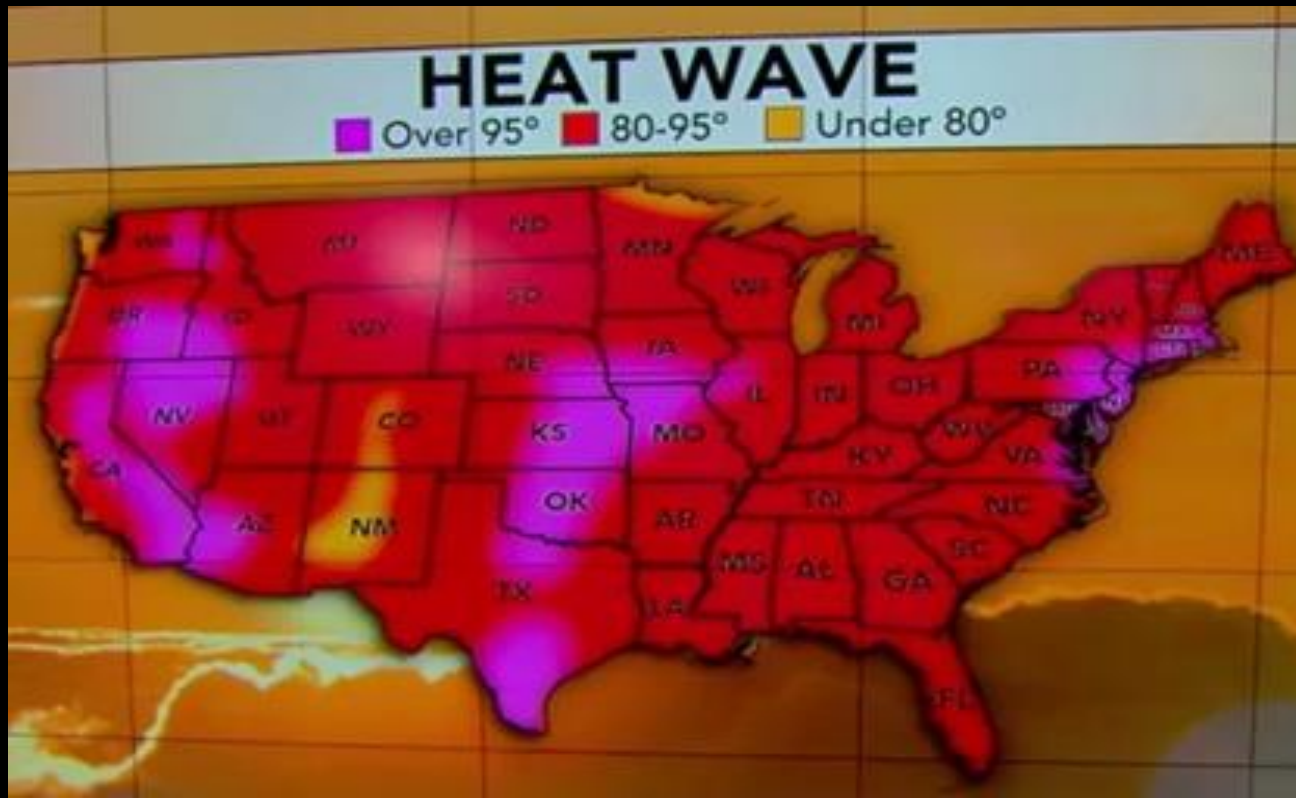


What does rising CO₂ mean for climate?

Rising temperatures (stronger greenhouse effect)

Altered precipitation (varies by region)

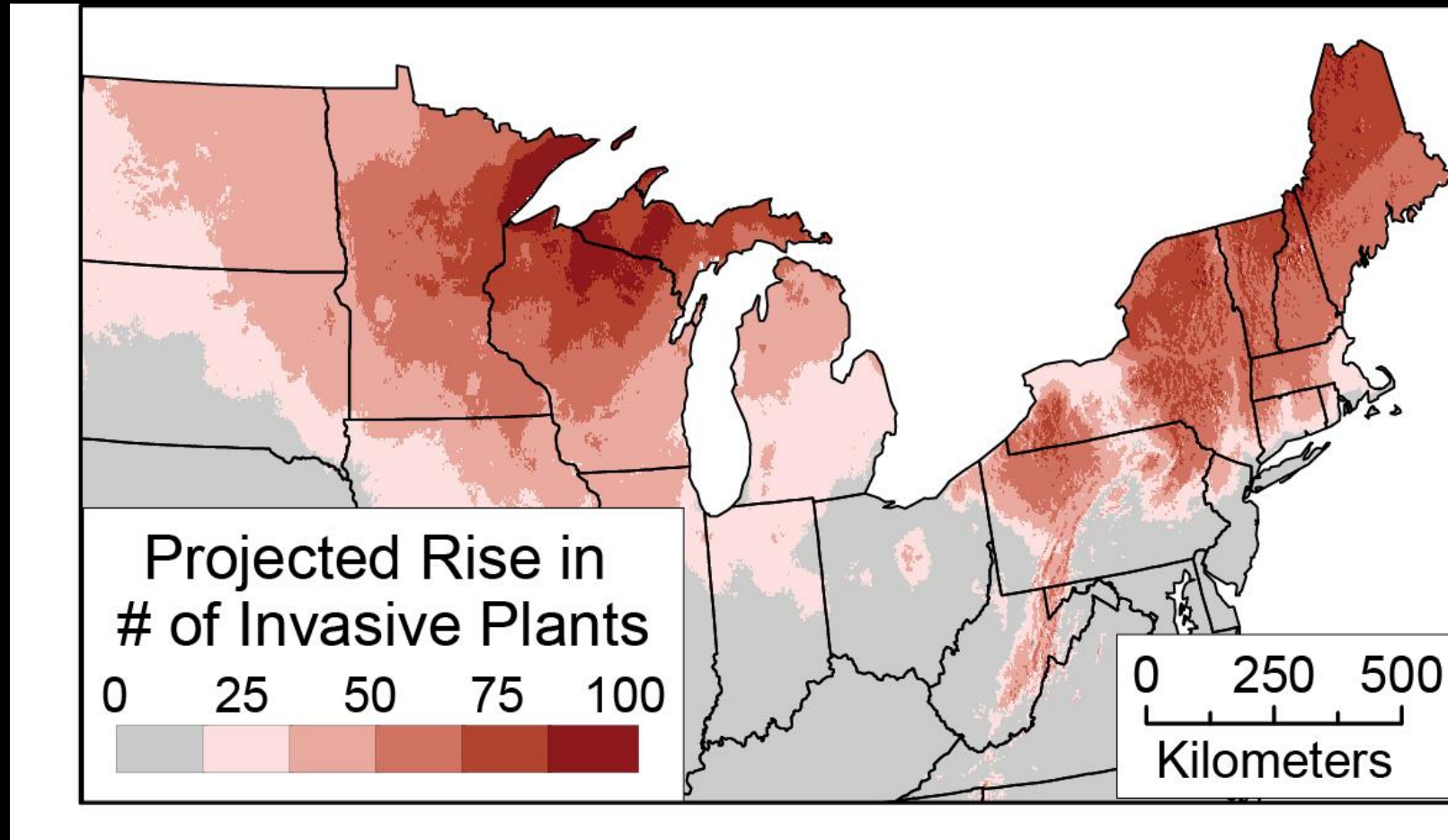
Greater variability: more extreme events



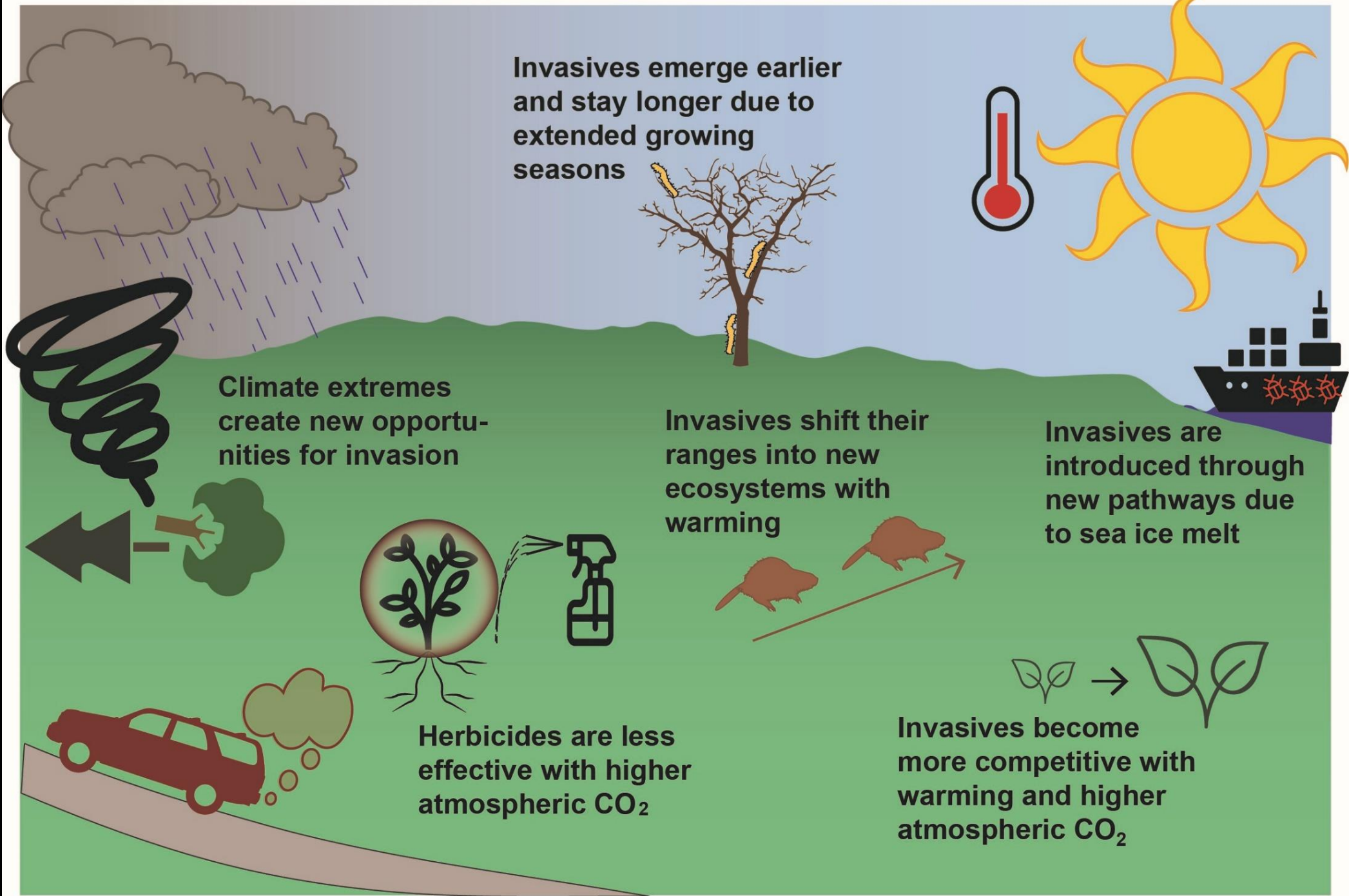
Changing climate,
new ecosystems

How do Climate
Change and
Invasive Species
Interact?

The Northeast is also a hotspot of future plant invasions



Allen & Bradley,
2016



Invasives emerge earlier and stay longer due to extended growing seasons

Climate extremes create new opportunities for invasion

Invasives shift their ranges into new ecosystems with warming

Invasives are introduced through new pathways due to sea ice melt

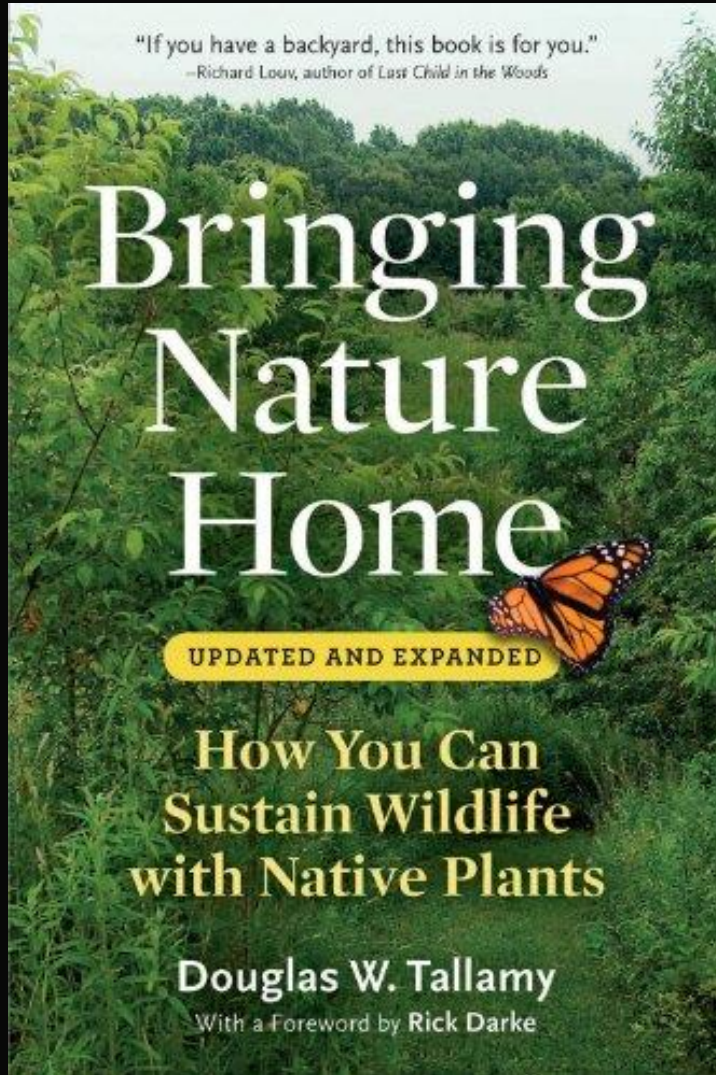
Herbicides are less effective with higher atmospheric CO₂

Invasives become more competitive with warming and higher atmospheric CO₂



It's Not All Bad

There are things
that we gardeners
can do to help!



“Chances are, you have never thought of your garden—indeed, of all of the space on your property—as a wildlife preserve that represents the last chance we have for sustaining plants and animals that were once common throughout the U.S. But that is exactly the role our suburban landscapes are now playing and will play even more in the near future.” -Doug Tallamy

Gardening as an ecological tool



What Pollinator Plants are Blooming *Now*



Growing popularity
of pollinator gardens

Did you know there are **49**
species of bumblebees in the
United States?

Many bumblebee species have
declining populations.



Gardens and assisted migration

The intentional introduction of species outside of their historic ranges into more climatically favorable regions



Assisted Migration: Gardens as 'stepping stones'



We're already doing assisted migration with nursery plants



Take home point:

If we want species to survive extinction, we need to help them move

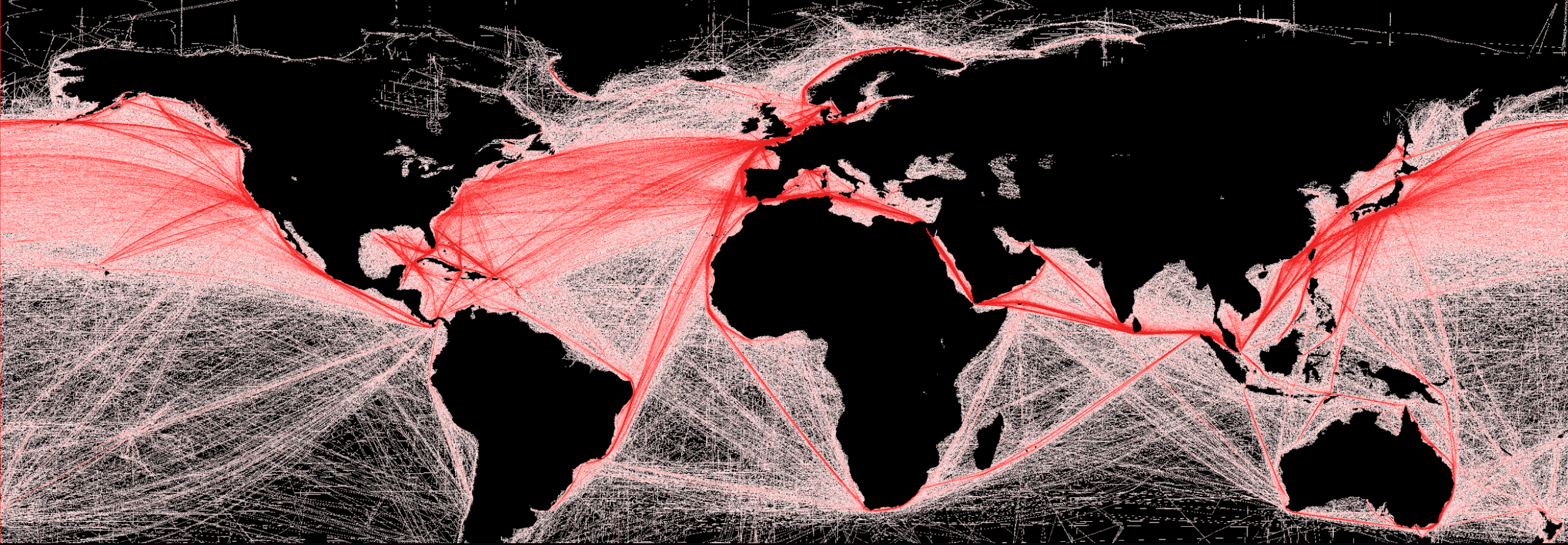
Key take-home points

- ◆ Climate change is already here
- ◆ A changed climate may provide new opportunities for invasive plants
- ◆ A changing climate brings challenges...and opportunities for gardeners!

Invaders for sale: the ongoing spread of invasive species by the plant trade industry

Evelyn M Beaury^{1*}, Madeline Patrick², and Bethany A Bradley^{1,2}

Invaders for Sale



Global Trade: Source of many awesome new ornamental plants...and not-so-awesome invasive species

THE WONDERFUL
JAPANESE
KWIZU VINE




HER MAJESTY THE EMPRESS OF JAPAN

The Most Remarkable
Climbing Vine
of the age

It comes from Japan the land so productive of curious and ornamental Flowers. The blossoms are large and in panicles somewhat like Wistaria, but much larger in size and better clusters. The color is of a pleasing shade of purple. The foliage is large, shaped like the leaf of a bean. The vine is extremely rapid and dense in growth, making it of great value where a quickly produced shade is wanted. Unlike many of our vines it requires little or no care. Commences growth so early in the spring and is so full of life and vigor that it will cover a wall or trellis before a Clematis or Wistaria would hardly get started. Being such an attractive vine and perfectly hardy, Everyone should plant it. Pkt. 10¢ or 3 Pkts. 25¢.

L. L. MAY & CO., ST. PAUL, MINN.

“The most remarkable climbing vine of the age”

“The vine is extremely rapid and dense in growth, making it of great value where a quickly produced shade is wanted. Unlike many of our vines, it requires little or no care.”

“Everyone should plant it!”

What could
go wrong?



The most remarkable climbing vine of the age turned into this:



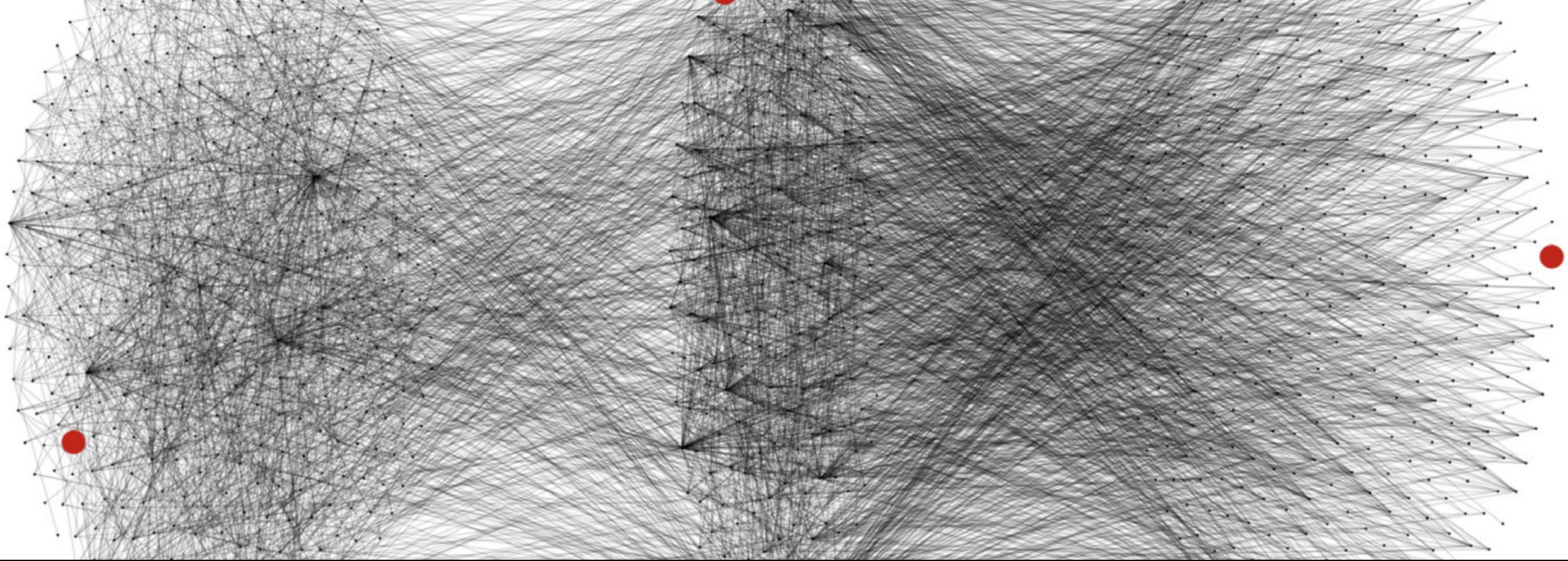


Figure 1 in Nelson and Bone 2015

The Horticultural Trade Network: A source for the introduction and spread of invasive plants and pathogens

Ornamental Plants as Invasive Species

About 60% of invasive plants were deliberately introduced
(but probably not with malicious intent)

Unknown
~30%

Accidental
~10%

Deliberate
~60%



Lehan et al. 2013

Ornamental pathway:
47% of all invasive plants

The U.S. is adopted home to more than 1000 invasive plants



Can I buy a
noxious
weed,
please?

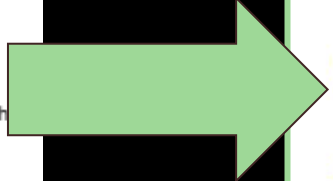
To answer
this
question,
Eve
Beaury
conducted
an
extensive
search of
plants for
sale in the
lower 48
states:

Nursery
Catalogs

Internet plant
sources

A LOT OF GOOGLING!

Scientific Name	Noxious Common Name
<i>Aeginetia</i> L.	crofton weed
<i>Ageratina adenophora</i> (Spreng.) R.M. King & H. Rob.	
<i>Alectra</i> Thunb.	
<i>Alternanthera sessilis</i> (L.) R. Br. ex DC.	sessile joyweed
<i>Asphodelus fistulosus</i> L.	onionweed
<i>Avena sterilis</i> L.	animated oat
<i>Azolla pinnata</i> R. Br.	mosquito fern
<i>Carthamus oxyacanthus</i> M. Bieb.	
<i>Carthamus oxyacantha</i> M. Bieb., orth. var.	wild safflower
<i>Caulerpa taxifolia</i> (Vahl) C. Agardh	
<i>Chrysopogon aciculatus</i> (Retz.) Trin.	pilipiliula
<i>Commelina benghalensis</i> L.	Benghal dayflower
<i>Crupina vulgaris</i> Cass.	common crupina
<i>Cuscuta</i> L. ²	dodder
<i>Digitaria abyssinica</i> (Hochst. ex A. Rich.) Stapf	
<i>Digitaria scalarum</i> (Schweinf.) Chiov.	African couch grass
<i>Digitaria velutina</i> (Forssk.) P. Beauv.	velvet fingergrass
<i>Drymaria arenarioides</i> Humb. & Bonpl. ex Schult. [excluded]	alfombrilla
<i>Eichhornia azurea</i> (Sw.) Kunth	anchored waterhyacinth
<i>Emex australis</i> Steinh.	three-cornered jack
<i>Emex spinosa</i> (L.) Campd.	devil's thorn
<i>Galega officinalis</i> L.	goatsrue
<i>Heracleum mantegazzianum</i> Sommier & Levier	giant hogweed
<i>Hydrilla verticillata</i> (L. f.) Royle	hydrilla
<i>Hygrophila polysperma</i> (Roxb.) T. Anderson	Miramar weed
<i>Imperata brasiliensis</i> Trin.	Brazilian satintail
<i>Imperata cylindrica</i> (L.) P. Beauv.	cogongrass
<i>Ipomoea aquatica</i> Forssk.	Chinese waterspinach
<i>Ischaemum rugosum</i> Salisb.	murain-grass
<i>Lagarosiphon major</i> (Ridley) Moss	oxygen weed
<i>Leptochloa chinensis</i> (L.) Nees [excluded]	Asian sprangletop
<i>Limnophila sessiliflora</i> (Vahl) Blume	ambulia
<i>Lycium ferocissimum</i> Miers	
<i>Lycium ferocissimum</i> Miers, orth. var.	African boxthorn
<i>Lygodium flexuosum</i> (L.) Sw.	maidenhair creeper
<i>Melaleuca quinquenervia</i> (Cav.) S.F. Blake	melaleuca
<i>Melastoma malabathricum</i> L.	
<i>Mikania cordata</i> (Burm. f.) B.L. Rob. [excluded]	mile-a-minute
<i>Mikania micrantha</i> Kunth	mile-a-minute



"Miscanthus sinensis" for sale

About 187,000 results (0.43 seconds)

Ad · www.highcountrygardens.com/ (800) 925-9387

Buy Miscanthus sinensis Grass - 20% Off All Fall Perennials

Pre-Order Perennials For Fall Delivery! Discover Unique, Waterwise, Native & Rare Plants Perennials in Fall for a Bigger Spring & Summer Garden. Pre-Order Today & Save 20%. C Selection & Price. Sustainable Gardening. Unique Plant Varieties. 100% Guaranteed. Karl Foerster Grass · Muhly Grass · Blonde Ambition Grass · Maiden Hair Grass

Maiden Grass - from \$10.39 - Dramatic Coppery Feathers · More ▾

www.wilsonbrosgardens.com › miscanthus-grasses ▾

Buy The Best Miscanthus Maiden Grass Plants For Sale ...




Little Kitten Dwarf Maiden Grass - Miscanthus sinensis - 1 Gallon Pot. FREE SHIPPING Temporarily Out of Stock. Click button below to get on the Waiting List!

www.wilsonbrosgardens.com › Variegated-Maiden-Gra... ▾

yellow iris plant for sale

About 31,200,000 results (0.63 seconds)

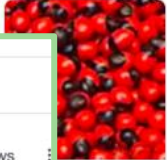
See yellow iris plant

		
Re-Blooming Bearded Iris - ... \$14.99 Eden Brothers	Harvest Of Memories... \$8.29 Breck's ★★★★★ (28)	8- Iris Tropical Yellow Walkin... \$5.99 Etsy

abrus precatorius for sale

About 83,700 results (0.39 seconds)




See abrus precatorius



Japanese barberry for sale

About 359,000 results (0.52 seconds)

See japanese barberry

		
Lime Glow Japanese... \$32.50 The Tree Center	Online Orchards 1 Gal. Crismo... \$30.97 Home Depot ★★★★★ (24)	Concorde Japanese... \$39.99 The Greenhouse ★★★★★ (4)

Ad · www.thetreecenter.com/ ▾

Barberry Shrubs | Buy Barberry Shrubs Online

Buy Plants and Trees Online with Fast Shipping to Your Door. Qu FedEx Direct To Your Home. Healthy, Mature Plants.

★★★★★ Rating for thetreecenter.com: 4.7 - 2,462 reviews

www.thetreecenter.com › Shrubs and Hedges ▾

Barberry Shrubs | Buy Barberry Shrubs Online

n = 1285 invasive plants in the U.S.

Of the 1285 invasive plants in the U.S...

- 61% are still sold as ornamentals
- Invasive plants available for purchase in all L48 states
- 44% of available species were state-regulated
- 20 species were Federal noxious weeds



61% of known invasive species are still sold as ornamentals



Chinese silvergrass (*Miscanthus sinensis*)

- Invasive in eastern U.S.
- Outcompetes native plants
- links to increased fire frequency
- Regulated in CT
- Sold by 140 vendors in 37 states



Japanese barberry (*Berberis thunbergii*)

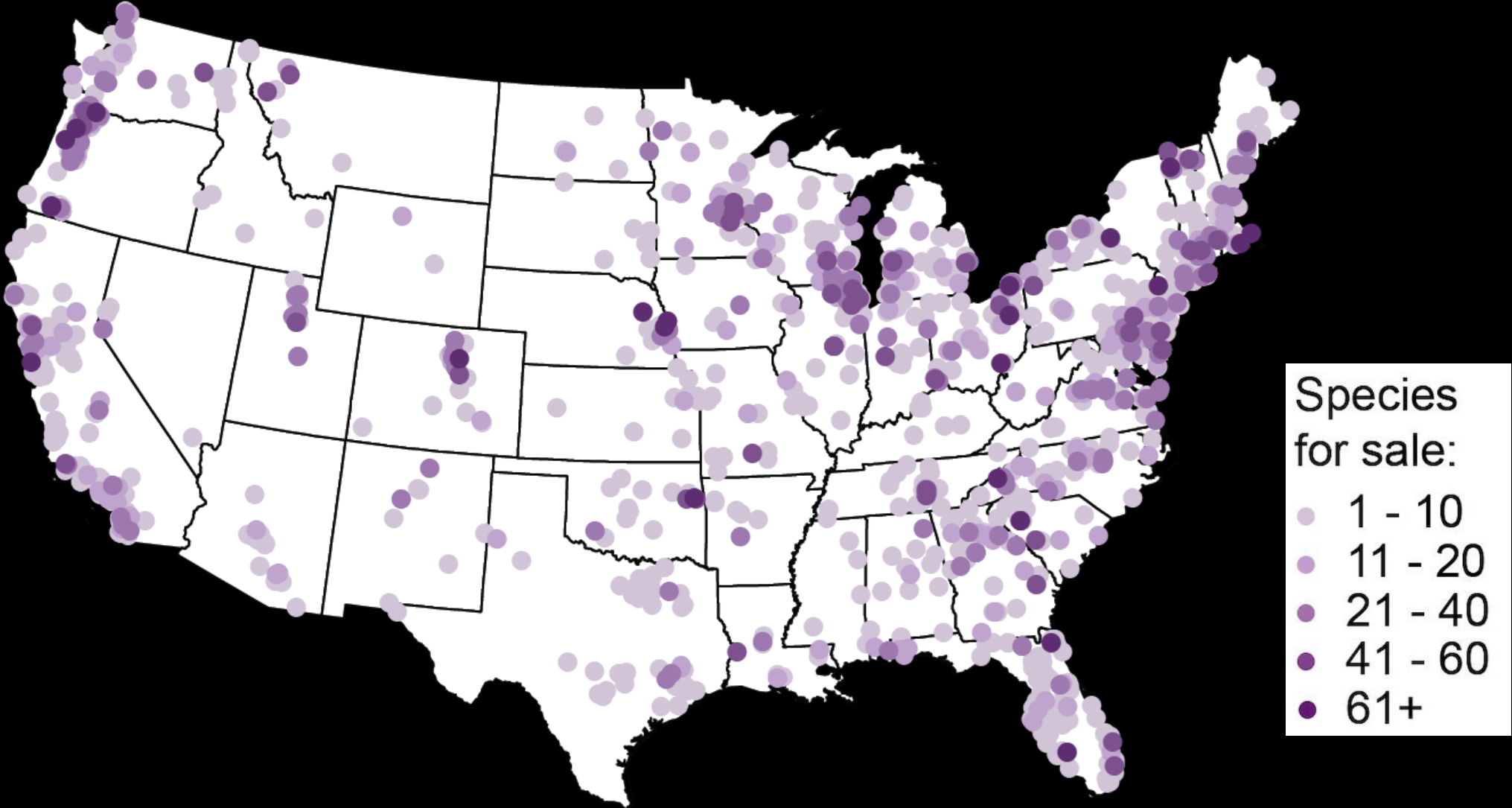
- Invasive in eastern U.S.
- Forms dense thickets, carries ticks with Lyme
- Regulated in CT, MA, ME, MN, NH, NY, VT, WI, WV
- Sold by 109 vendors in 29 states



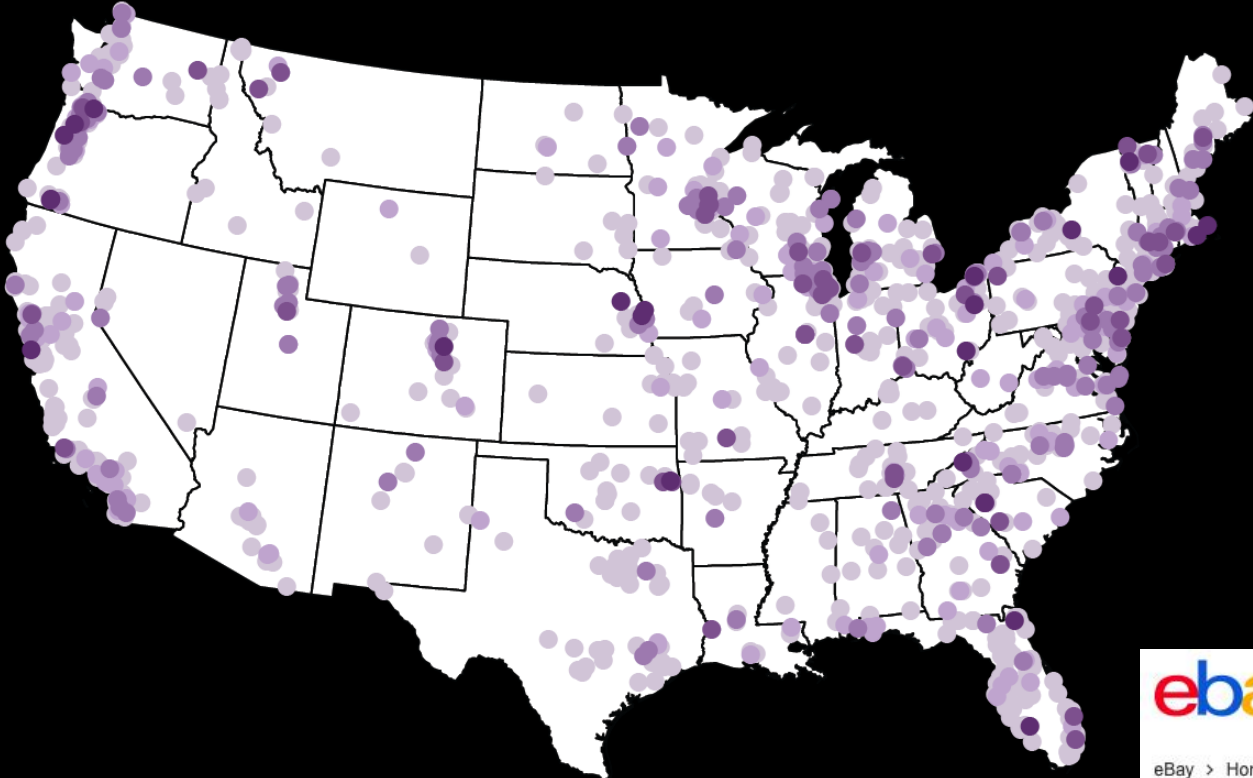
Cogongrass (*Imperata cylindrica*)

- IUCN: “world’s most invasive plants”
- **Federal noxious weed**
- Sold by 33 vendors in 17 states

Invasive plants available for purchase in all L48 states



Invasive plants available for purchase in all L48 states




ebay Shop by category


eBay > Home & Garden > Yard, Garden & Outdoor Living > Plants, Seeds & Bulbs > Seeds & Bulbs > Vine Seeds

Celastrus orbiculatus BITTERSWEET VINE Seeds

★★★★★ Be the first to [write a review](#) | [About this product](#)

 **42 sold**

Best pick
\$4.99
+ \$2.99 Shipping





What can I do to
help?

Steps you can take

- ◆ Check before you buy:
 - ◆ There are lots of great lists of invasive plants.
 - ◆ Dr. Google – I always google an unfamiliar plant before I consider purchasing it!
- ◆ Use native and climate-smart plants in your garden
 - ◆ Check out lists of native alternatives

Steps you can take

- ◆ Communicate with your local garden center
 - ◆ Let them know if you see an invasive for sale.
 - ◆ Nurseries don't usually want to sell invasives on purpose.
 - ◆ Nurseries will respond to their customers' interests
- ◆ Educate your friends and fellow gardeners
 - ◆ Be kind, no plant shaming!

Check Before You Buy

Resources - Invasive Plant Lists: Check before you buy

New York State Prohibited and Regulated **Invasive Plants**

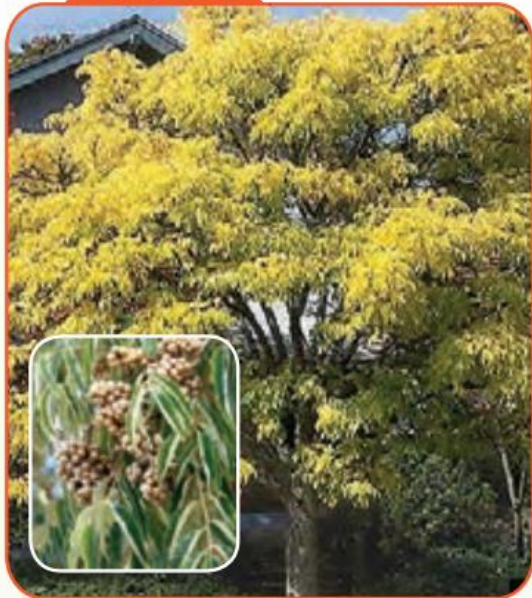
September 10, 2014



Resources - Invasive Plant Lists: Check before you buy

TERRESTRIAL PLANTS

PROHIBITED



Amur Cork Tree *Phellodendron amurense*

PROHIBITED



Amur Honeysuckle *Lonicera maackii*

PROHIBITED



Autumn Olive *Elaeagnus umbellata*

Dr. Google to
the rescue!



miscanthus sinensis invasive|



UMass Amhe...



Analysis of E...



SPIRE Logon



OneDrive for ...



My Drive



YouTube



Loading Sess...



GitHub



UMass Amhe...



Add shortcut

Plant native and climate-smart alternatives

Problem Plant	Desirable Characteristics	Great Alternatives
Japanese Wisteria	showy flowers, fragrance	woodland phlox, <i>Phlox divaricatus</i> sweet azalea, <i>Rhododendron canescens</i> coast azalea, <i>Rhododendron atlanticum</i> American wisteria, <i>Wisteria frutescens</i>
Japanese Honeysuckle	fragrant flowers	leatherflower, <i>Clematis viorna</i> Carolina jasmine, <i>Gelsemium sempervirens</i> trumpet honeysuckle, <i>Lonicera sempervirens</i> sweetbay magnolia, <i>Magnolia virginiana</i> purple passionflower, <i>Passiflora incarnata</i>

Native alternatives to invasive ornamentals: US Forest Service list

The internet is a great place to buy invasive plants...



FCGardens

16,261 sales | 4.3 ★★★★★ (2,725 reviews)

ENCORE Miscanthus Grass Perennial
Ornamental 1 Live Plant Clumping
Fast Growing Plants Non-invasive

\$14.99

✓ In stock

Quantity

1



Add to cart



Early holiday shopping? You'll receive this item by Nov 9-13.

Highlights



Handmade

Description



1 Live Plant - Miscanthus sinensis Encore - Perennial

The internet is also a great place to find non-invasive alternatives!

HERBACEOUS PLANTS

Invasive

Chinese (Japanese) Silver Grass or Maiden Grass, *Miscanthus sinensis*

Alternatives

Big Bluestem**, *Andropogon gerardi*

Feather Reed Grass,
Calamagrostis x acutiflora

Korean Feather Reed Grass,
Calamagrostis brachytricha

Bottlebrush grass**, *Elymus hystrix*

Switch Grass**, *Panicum virgatum* & cultivars

Indian grass**, *Sorghastrum nutans*

Pink Muhly grass is a great non-invasive alternative to Miscanthus





There are lots
of beautiful
cultivars of
panic grass
too.

Gardening with climate-smart native plants in the Northeast



Definitions

USDA Plant Hardiness Zone: Zones based on minimum temperature that are used to determine where plants can grow.

Non-native: A species unlikely to have arrived without human assistance.

Invasive: A species that is established and spreading with negative impacts to native

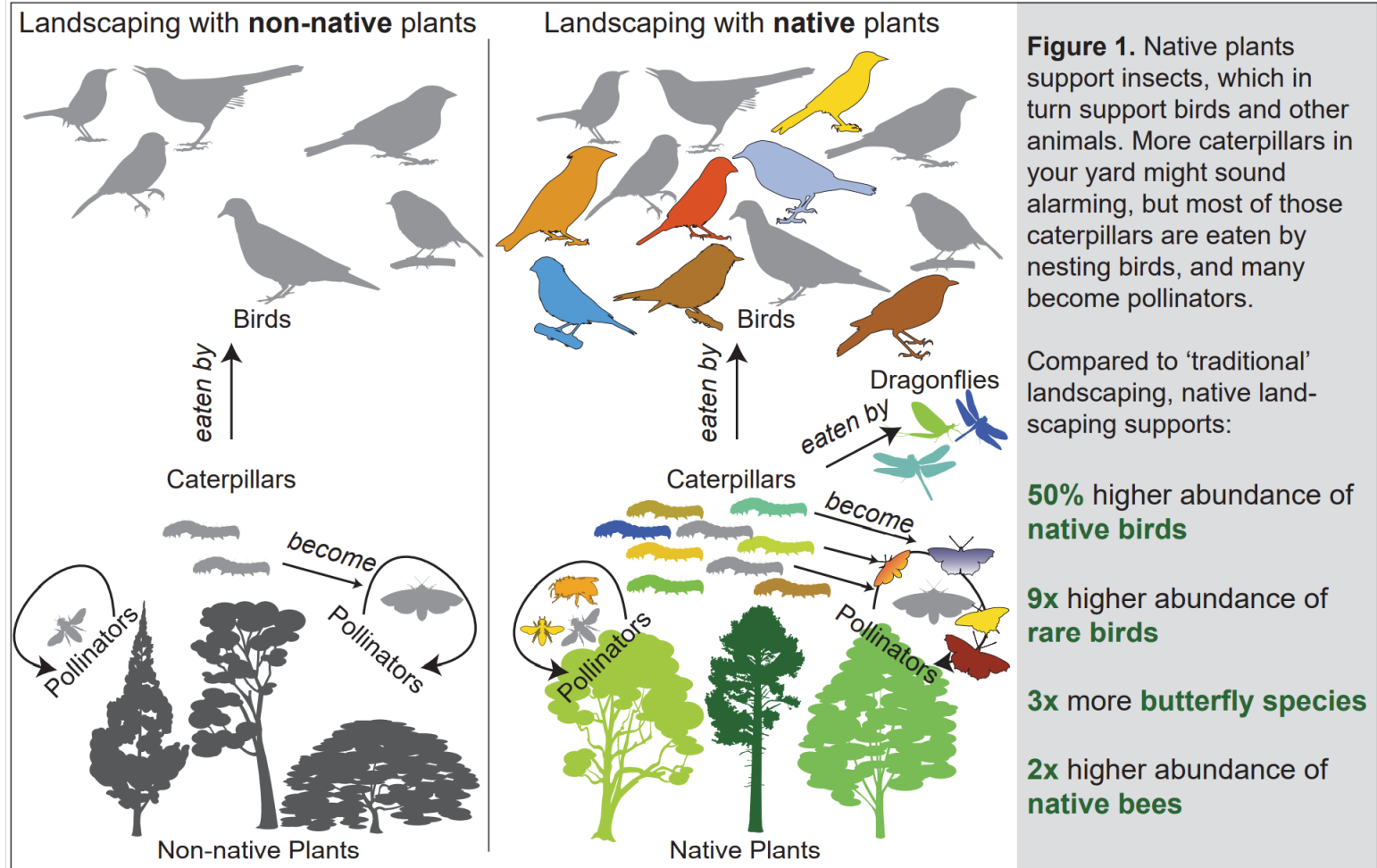
Sources

Biota of North America Program
Climate Voyager, State climate office of North Carolina
Go Botany, version 3.1.3. Native Plant Trust.
IUCN Red List of Threatened Species
Larry Weaner Landscape Architects
Native Plant Resources. Cornell Cooperative Extension
Plant Finder. Missouri Botanical Garden
Plant Selection and Design. U. New Hampshire Cooperative Extension
Planting for Resilience: Selecting Urban Trees in Massachusetts. A. McElhinney et al. 2019
Ten Tough New Native Shrub Alternatives for Barberry and Burning Bush. J. Lubell
USDA 2012 Plant Hardiness Zones Map. USDA ARS

Native Alternatives for Climate Smart Gardening

	Species	Growth Form	Hardiness Zones	Planting Conditions	Benefits
Native Grasses	Big blue stem (<i>Andropogon gerardii</i>)	Grass	4-9		
	Canada wild rye (<i>Elymus canadensis</i>)	Grass	3-8		
	Indian grass (<i>Sorghastrum nutans</i>)	Grass	4-9		
	Little bluestem (<i>Schizachyrium scoparium</i>)	Grass	3-9		
	Sideoats grama (<i>Bouteloua curtipendula</i>)	Grass	4-9		
Native Flowering Herbs	Beardtongue (<i>Penstemon digitalis</i>)	Herb	3-8		
	Blazing star (<i>Liatris spicata</i>)	Herb	3-8		
	Blue false indigo (<i>Baptisia australis</i>)	Herb	3-9		
	Blue flag iris (<i>Iris versicolor</i>)	Herb	3-9		
	Blue lobelia (<i>Lobelia siphilitica</i>)	Herb	4-9		
	Butterfly weed (<i>Asclepias tuberosa</i>)	Herb	3-9		
	Cardinal flower (<i>Lobelia cardinalis</i>)	Herb	3-9		
	Foam flower (<i>Tiarella cordifolia</i>)	Herb	4-9		
	Ironweed (<i>Vernonia noveboracensis</i>)	Herb	5-9		
	Joe pye weed (<i>Eutrochium fistulosum</i>)	Herb	4-8		
	Lance leaf coreopsis (<i>Coreopsis lanceolata</i>)	Herb	4-9		
	Monkey flower (<i>Mimulus ringens</i>)	Herb	4-9		
	New England aster (<i>Symphotrichum novae-angliae</i>)	Herb	4-8		
Obedient plant (<i>Physostegia virginiana</i>)	Herb	3-9			

Benefits of landscaping with native plants



Some native plant sources

- ◇ Prairie Moon Nursery
- ◇ Prairie Nursery
- ◇ High Country Gardens
- ◇ Look for plants labeled native at your local nurseries

Questions?

Links to selected resources

- NY State prohibited and regulated invasive plants guide

- https://www.dec.ny.gov/docs/lands_forests_pdf/isprohibitedplants2.pdf

- Northeast Regional Invasive Species and Climate Change Network

- <https://www.risccnetwork.org/>

- Alternatives to Ornamental Invasive Plants: A Sustainable Solution for New York State

- <https://nysipm.cornell.edu/agriculture/ornamental-crops/greenhouse-resources/alternatives-ornamental-invasive-plants-sustainable-solution-new-york-state/>

Links to selected resources

- US Forest Service Native Alternatives List

- [https://www.fs.fed.us/wildflowers/Native Plant Materials/Native Gardening/alternatives.shtml](https://www.fs.fed.us/wildflowers/Native_Plant_Materials/Native_Gardening/alternatives.shtml)

- New York Invasive Species Research Institute

- <http://www.nyisri.org/>