

## Introduction

Invasive plant species are primarily introduced to novel regions for ornamental purposes, where they escape our backyard gardens and spread into natural areas (Figure 1). However, these species continue to be sold and distributed through plant nurseries around the world. As climate change worsens, the northeastern US will become increasingly vulnerable to new plant invasions accelerated by the horticulture industry (Figure 2).

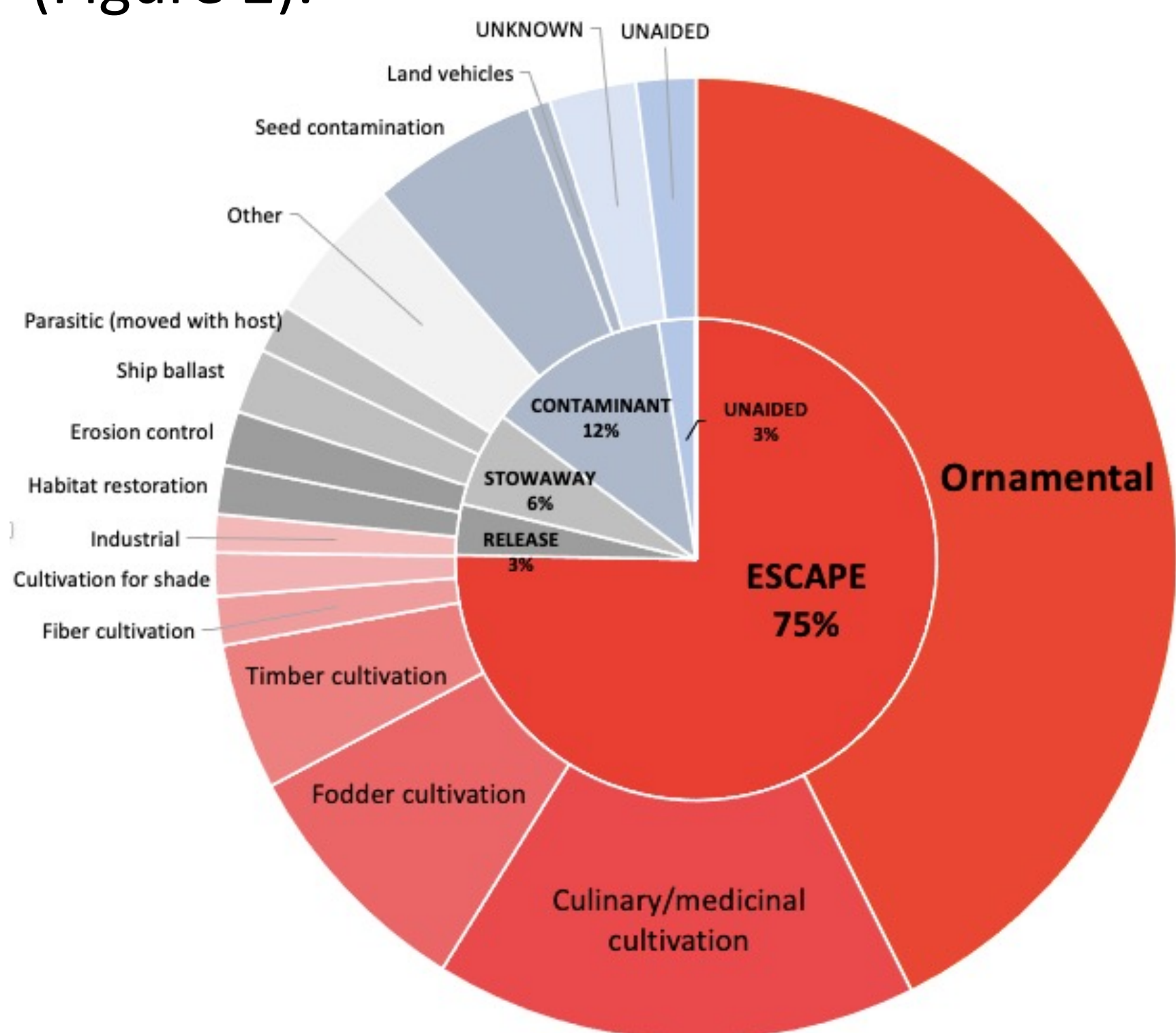


Figure 1: Preliminary results for all global plant invasion pathways. Ornamental introduction dominates global plant invasion pathways.

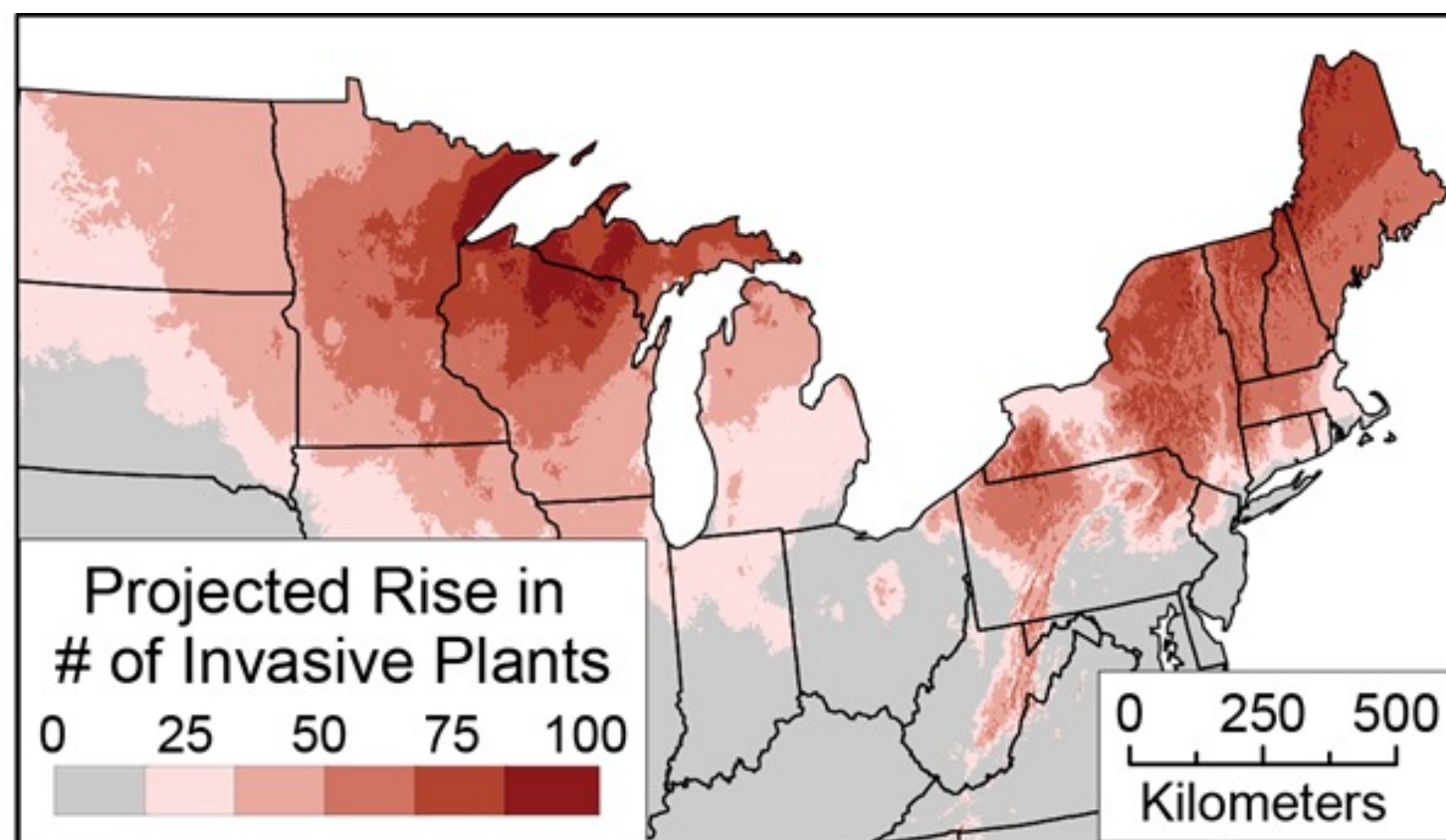


Figure 2: Watch out! Northeast plant invasion trends are on the rise<sup>1</sup>.

## Objectives:

1. Build relationships with local nursery professionals
2. Promote the sale of native plants over non-native ornamentals
3. Spread awareness about ornamental species currently invasive in the northeast
4. Warn of species that could establish in the future with climate change

## Suitable Habitat for *Mahonia bealei* by 2050

This species is for sale in the Northeast and could become invasive.

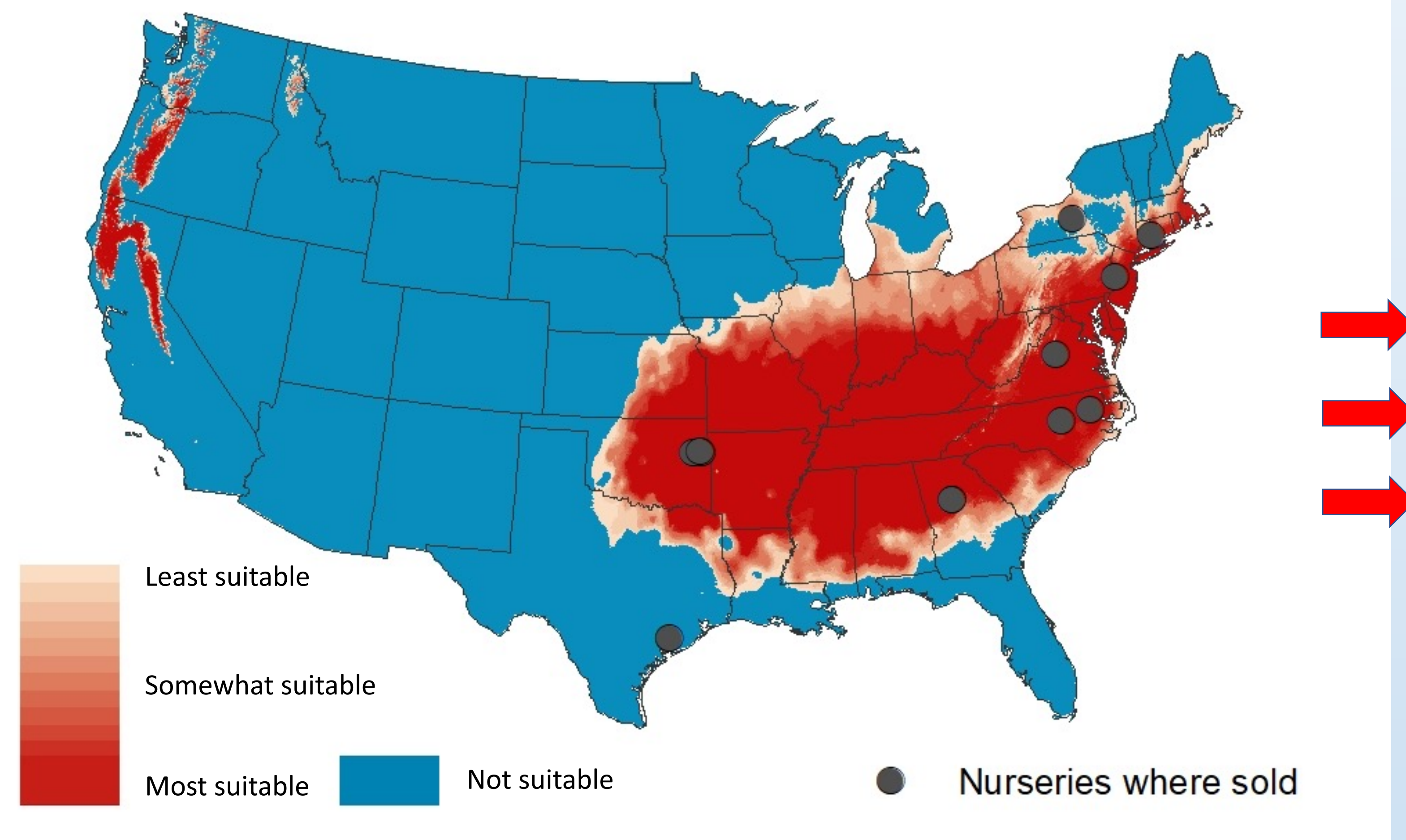


Figure 3: One example of a plant that could become invasive to the Northeast with climate change.

### Current distribution of *Mahonia bealei*

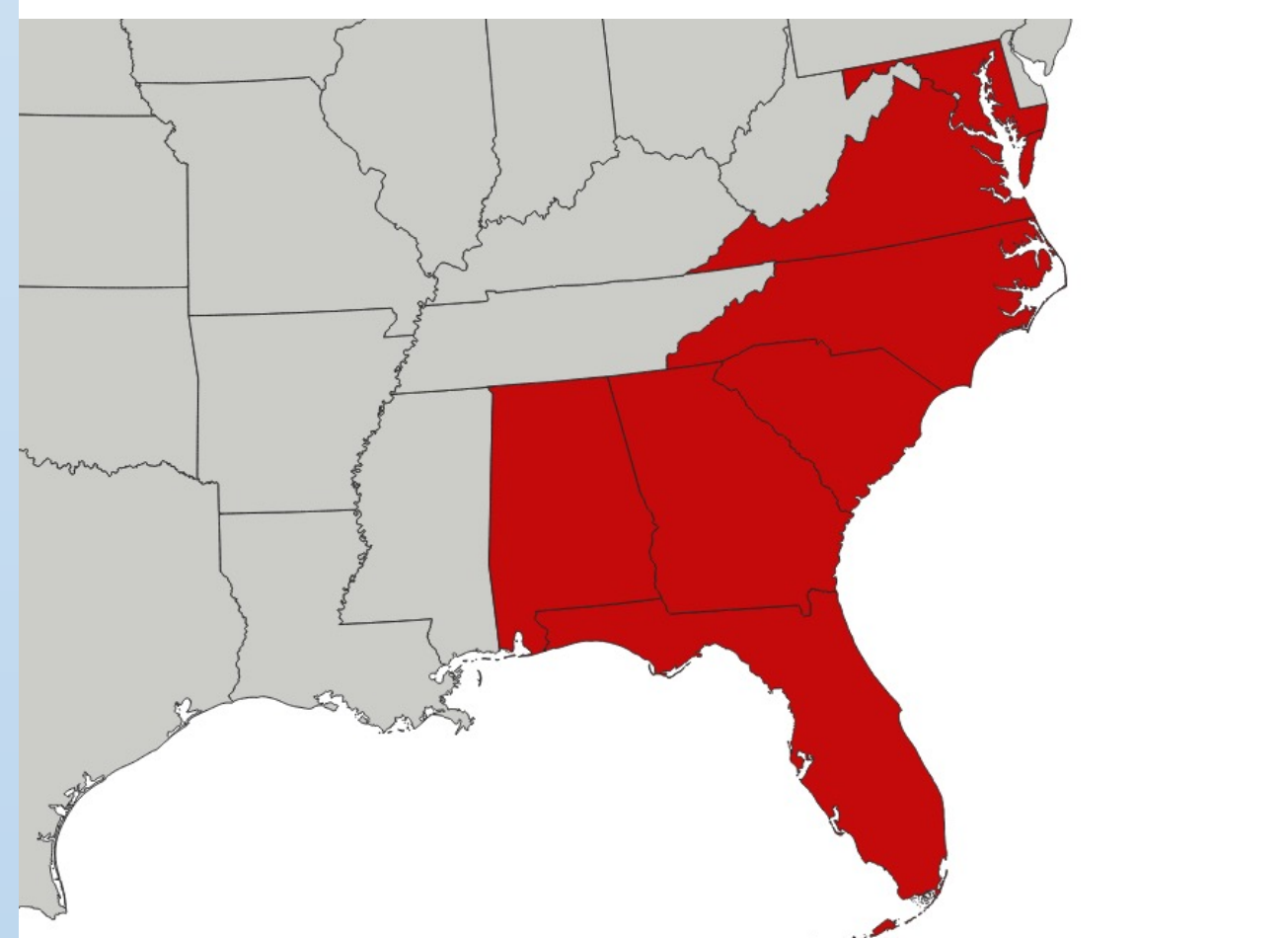


Figure 4: *Mahonia bealei* is currently an invasive ornamental the Southeast.



Two examples of non-native ornamentals that are invasive in the Northeast.

## Methods

I visited 4 local nurseries to ask questions that informed by research:

- ❖ What trends exist in native and non-native plant sales?

To increase awareness about regulated invasives, I consolidated data for each species currently regulated in the Northeast as well as species projected to shift here with climate change:









- ❖ Invasive species origins, ecological impacts, Northeast native alternatives
- ❖ 124 regulated species, 81 range shifters, 279 species total
  - Sources include: USDA Plants, Invasive Plant Atlas, state websites

I investigated the best ways to distribute this list of species to the greater public, with hopes to deter further invasion from ornamental species already invasive as well as those that haven't yet established here.

## References:

- <sup>1</sup>Allen, J. M., and B. A. Bradley. 2016. Out of the weeds? Reduced plant invasion risk with climate change in the continental United States. *Biological Conservation* 203:306–312.
- <sup>2</sup>Beaury, E. M., M. Patrick, and B. A. Bradley. In Press. Invaders for sale: the ongoing spread of invasive species by the plant trade industry. *Frontiers in Ecology and the Environment*.
- <sup>3</sup>Bradley, B. A., Bayer, A., Griffin et al.(2020). Regional Invasive Species & Climate Change Management Challenge: Gardening with climate-smart native plants in the Northeast. Photos from Bugwood.com

**Results** We narrowed the list of 276 species to 35 top impact species. Here are 4 examples:

DO NOT PLANT	DO NOT PLANT	DO NOT PLANT	DO NOT PLANT
Beale's Barberry	Red Valerian	Giant Reed	Crapemyrtle
			
Native to: China	Native to: Europe	Native to: India	Native to: China, Japan
<i>Mahonia bealei</i> is a shade tolerant shrub that can outcompete native species and dominate the landscape. It produces bunches of flowers that aid its rapid dispersal. Today, it has naturalized in woodland areas throughout the southern US.	<i>Centranthus ruber</i> is a prolific bloomer and freely self seeds. It mostly becomes weedy when in areas with full sun and average soils, however it is drought tolerant and generally grows on its own. It is quite difficult to eradicate once established.	<i>Arundo donax</i> forms dense stands that increase fire frequency. It often invades wetlands, where it outcompetes native species for nutrients, water, and sunlight, therefore suppressing natural ecosystem function.	<i>Lagerstroemia indica</i> is currently a popular ornamental species that has widely escaped cultivation and naturalized in the Southeast. It is drought tolerant, fast growing and can act as a host for powdery mildew and fungal leaf spot.
TRY THIS INSTEAD	TRY THIS INSTEAD	TRY THIS INSTEAD	TRY THIS INSTEAD
Black Chokeberry	Flame Azalea	Panic Grass	New Jersey Tea
			

## Want to help?

Avoid planting these invasive species.

**Plant native!** Gardens of today seed ecosystems of the future<sup>3</sup>. Support biodiversity. Know your impact.

## Contact me

Email: [jmazzuchi@umass.edu](mailto:jmazzuchi@umass.edu)

Advisors: Bethany Bradley & Evelyn Beaury

