

Assessing and Ranking Invasive Plant Species in Virginia

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Is this species “invasive?”

A definition

Invasive species are introduced species that cause or have the potential to cause ecological or economic harm or harm to humans.

--*Executive Order 13112*





The Invasive Species Assessment Protocol: A Tool for Creating Regional and National Lists of Invasive Nonnative Plants That Negatively Impact Biodiversity

Author(s): John M. Randall, Larry E. Morse, Nancy Benton, Ron Hiebert, Stephanie Lu, and Terri Killeffer

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400,000 +/-



plant species on Earth

*plant species in North
American flora*

18,000 +/-





30,000 +/-

*plant species introduced
to North America*

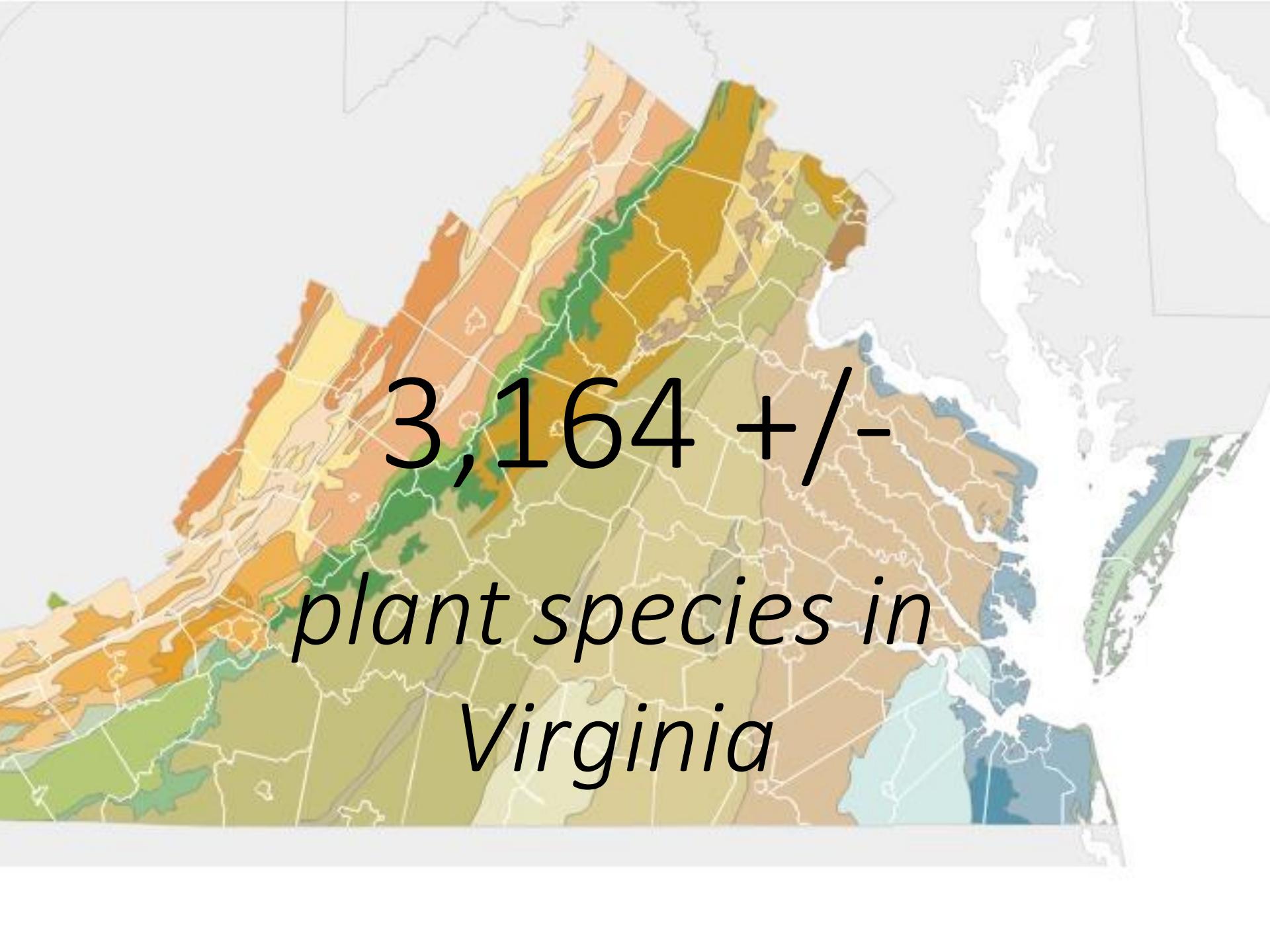


5,000 +/-

*plant species naturalized
in North America*



500 +/-
plant species considered
“invasive”



$3,164 +/-$
*plant species in
Virginia*

600 +/-
plant species naturalized
in Virginia

90

Virginia Invasive Plant Species List



Scientific Name	Common Name	Virginia Invasiveness Rank	Region
			Mountain
			Piedmont
			Coastal
<i>Ailanthus altissima</i>	Tree-of-heaven	High	•
<i>Alliaria petiolata</i>	Garlic Mustard	High	•
<i>Alternanthera philoxeroides</i>	Alligator-weed	High	•
<i>Ampelopsis brevipedunculata</i>	Porcelain-berry	High	•
<i>Carex kobomugi</i>	Japanese Sand Sedge	High	•
<i>Celastrus orbiculatus</i>	Oriental Bittersweet	High	•
<i>Centaurea stoebe</i> ssp. <i>micranthos</i>	Spotted Knapweed	High	•
<i>Cirsium arvense</i>	Canada Thistle	High	•
<i>Dioscorea polystachya</i>	Cinnamon Vine	High	•
<i>Elaeagnus umbellata</i>	Autumn Olive	High	•
<i>Euonymus alatus</i>	Winged Euonymus	High	•
<i>Ficaria verna</i>	Lesser Celandine	High	•
<i>Hydrocharis verticillata</i>	Hydrilla	High	•
<i>Iris pseudacorus</i>	Yellow Flag	High	•
<i>Lespedeza cuneata</i>	Chinese Lespedeza	High	•
<i>Ligustrum sinense</i>	Chinese Privet	High	•
<i>Lonicera japonica</i>	Japanese Honeysuckle	High	•
<i>Lonicera maackii</i>	Amur Honeysuckle	High	•
<i>Lonicera morrowii</i>	Morrow's Honeysuckle	High	•
<i>Lythrum salicaria</i>	Purple Loosestrife	High	•
<i>Microstegium vimineum</i>	Japanese Stiltgrass	High	•
<i>Murdannia keisak</i>	Marsh Dewflower	High	•

*plant species on the DCR
Invasive Plant Species List*

Invasive Plant Risk Assessment Protocol

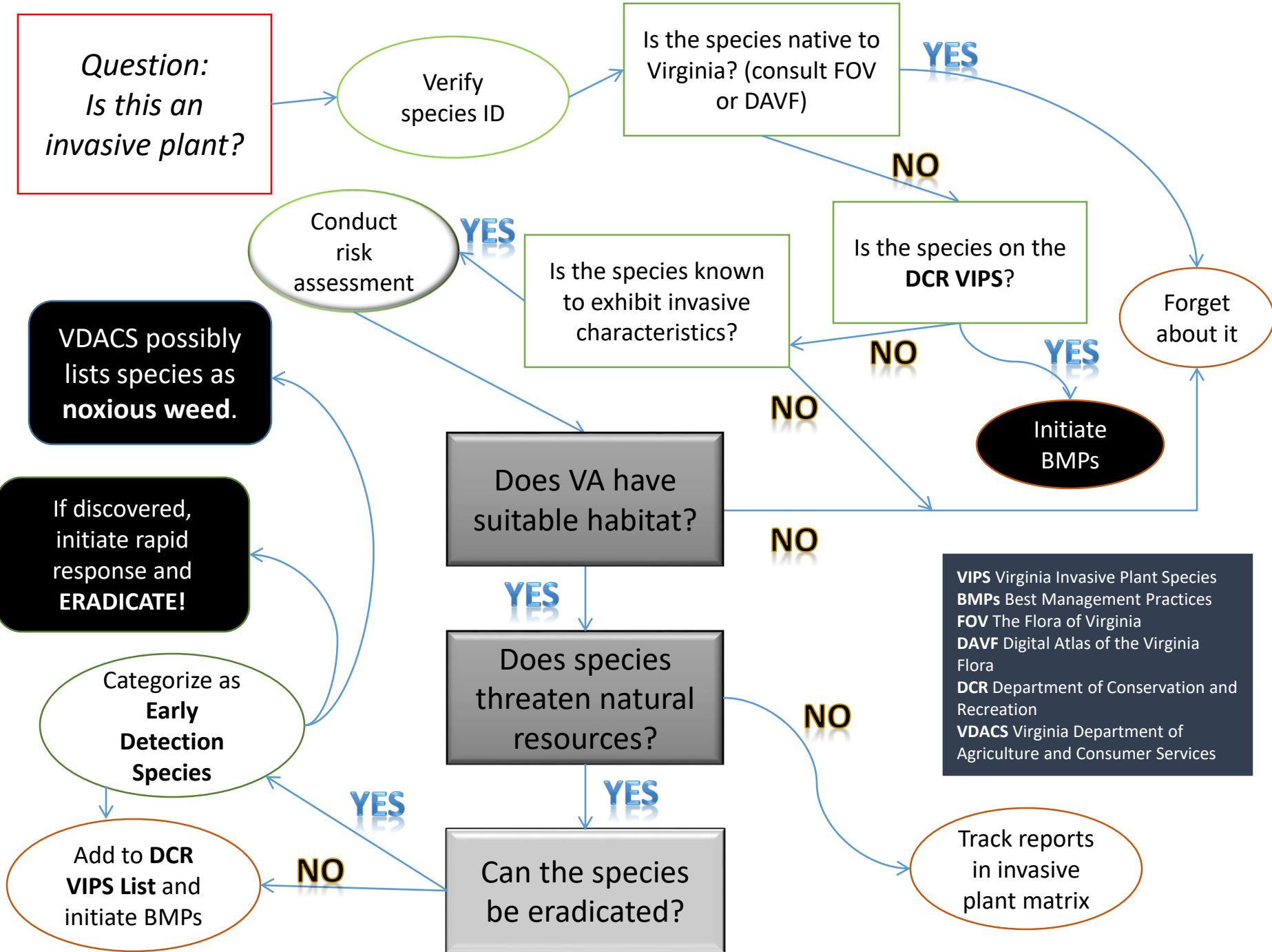
- Developed by NatureServe and partners
- Scalable to specific state or region
- Multiple choice questions with weighted answers
- Creates a record of the various information sources that goes into the ranking process



The I-rank of a species increases to the degree the species is documented to:

- alter ecosystem processes, such as succession, light availability, water or soil chemistry, hydrology or fire regime
- invade undisturbed natural communities
- cause substantial impacts on rare or vulnerable species or natural communities or high-quality examples of more common communities
- be widely distributed or generally abundant where present
- disperse readily to new areas
- resist control

Question:
*Is this an
invasive plant?*



Invasive Plant Risk Assessment Components

- Screening Questions
- Ecological Impacts
- Current Distribution and Abundance
- Trends in Distribution and Abundance
- Management Difficulty

Ecological Impact

- ecosystem processes
- community structure
- community composition
- individual species
- conservation significance

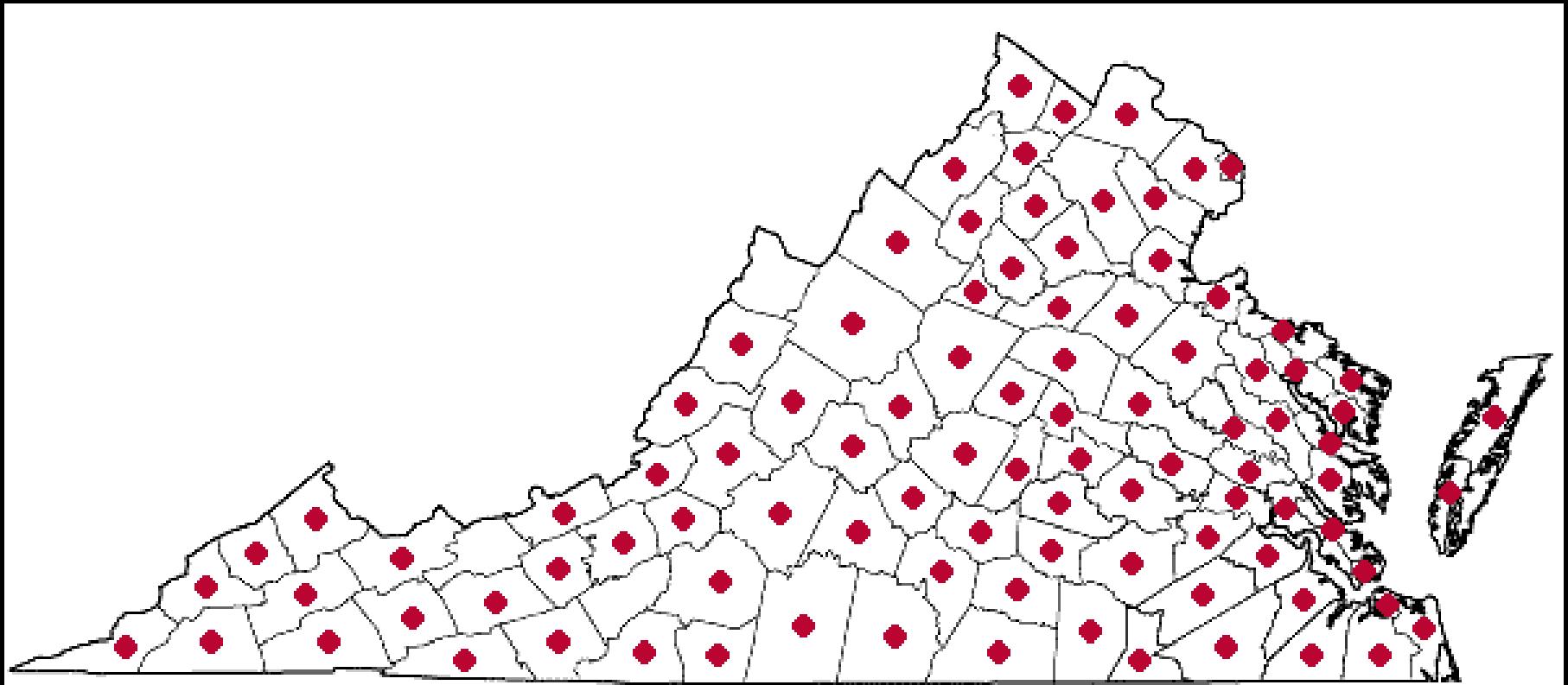




Current Distribution and Abundance

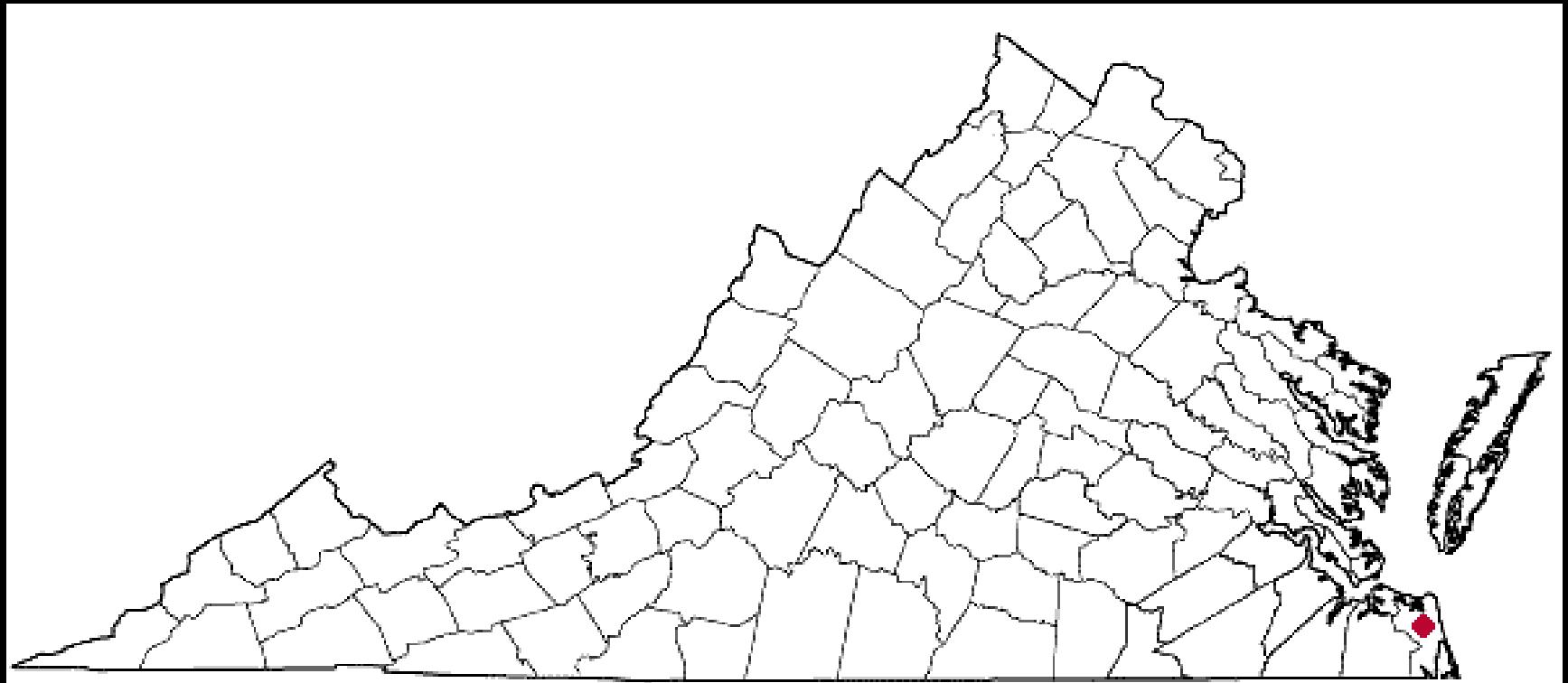
- current range in region
- proportion of range where negative impacts
- proportion of region's habitats impacted
- diversity of habitats impacted

Tree-of-heaven



Digital Atlas of the Virginia Flora

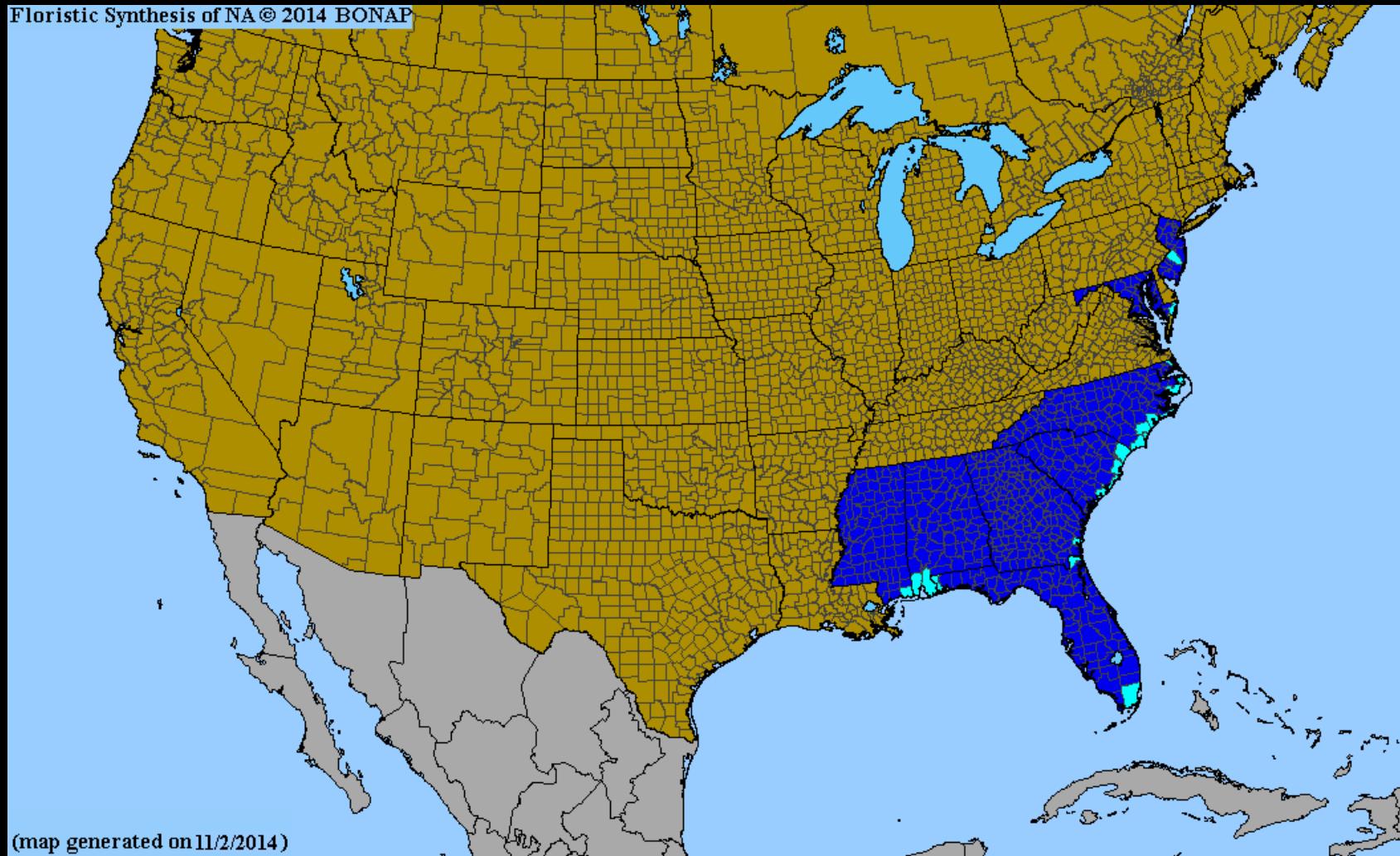
Beach Vitex



Digital Atlas of the Virginia Flora

Beach Vitex

Floristic Synthesis of NA © 2014 BONAP



(map generated on 11/2/2014)

Trend in Distribution and Abundance

- current trend in region
- proportion of potential range occupied
- long-distance dispersal potential
- ability to invade conservation areas
- similar habitats invaded elsewhere
- reproductive characteristics



5469

Management Difficulty

- general management difficulty
- minimum time commitment
- management impacts on natives
- accessibility of invaded areas



How Were Plants Chosen for Assessment?

- 109 species on the list in 2012
- Created a database
- Added species from other state and federal lists for the Mid-Atlantic
- EDDMapS
- NatureServe
- recommendations from field staff

Results of the 2013 Assessment

- 90 species
 - 2009 list = 109
- 31 species removed
- 12 species added
 - Eight are early detection species
- 6 species increased ranks
- 4 species decreased ranks

Invasiveness Ranks (I-ranks)

- High
 - 38 species
- Medium
 - 36 species
- Low
 - 16 species

Invasive Plant List - Early Detection Species

- Not yet present, or
- Present, not yet widely established
- Pose demonstrated threat to ecological or economic values
- 10 species on the 2013

