

Role of Ecological Vulnerability Analysis in Safeguarding Communities from Climate Change

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VULNERABILITY ASSESSMENTS

Ask questions about:

- *What* things are most vulnerable?
- *Why* they are vulnerable
 - Understanding why assists in determining possible adaptation responses



NORTHEAST TAKES LEAD IN ECO. VA

Northeast has been “incubator for VA methods. Most states are doing or have completed VAs:

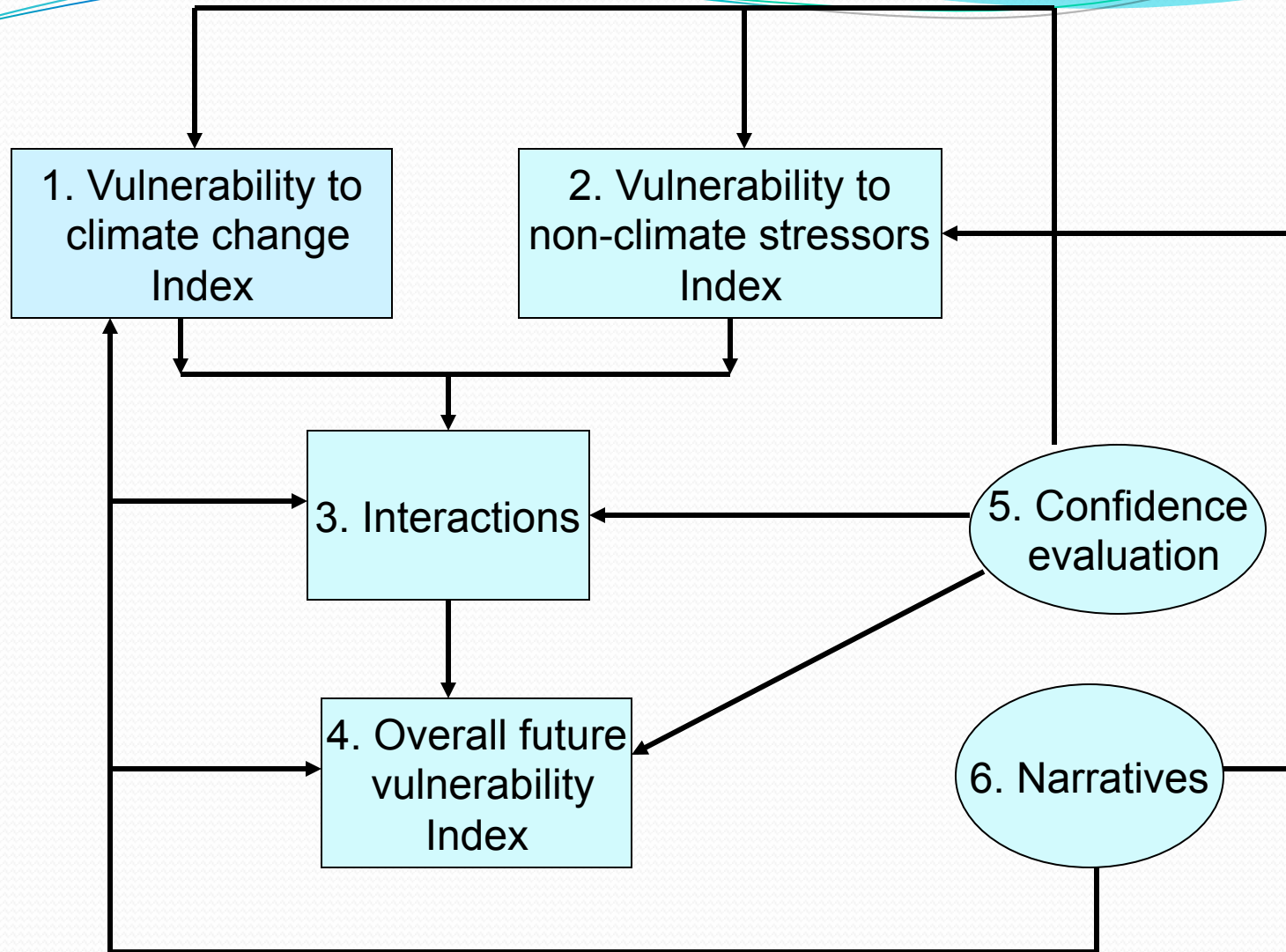
MA	Complete (habitats/species)
CT	Complete (species)
NY	Complete (habitats/species)
NJ	Underway (habitats/species)
ME	Complete (habitats/ species)
VT	Underway(habitats and species)
VA	Underway (species)
WV	Complete (species)
NH	Underway
PA	Complete (species)
MD	Complete

NORTHEASTERN REGIONAL ECO. VA - WHY

- Effective adaptation must be at regional level
- States/agencies need to collaborate

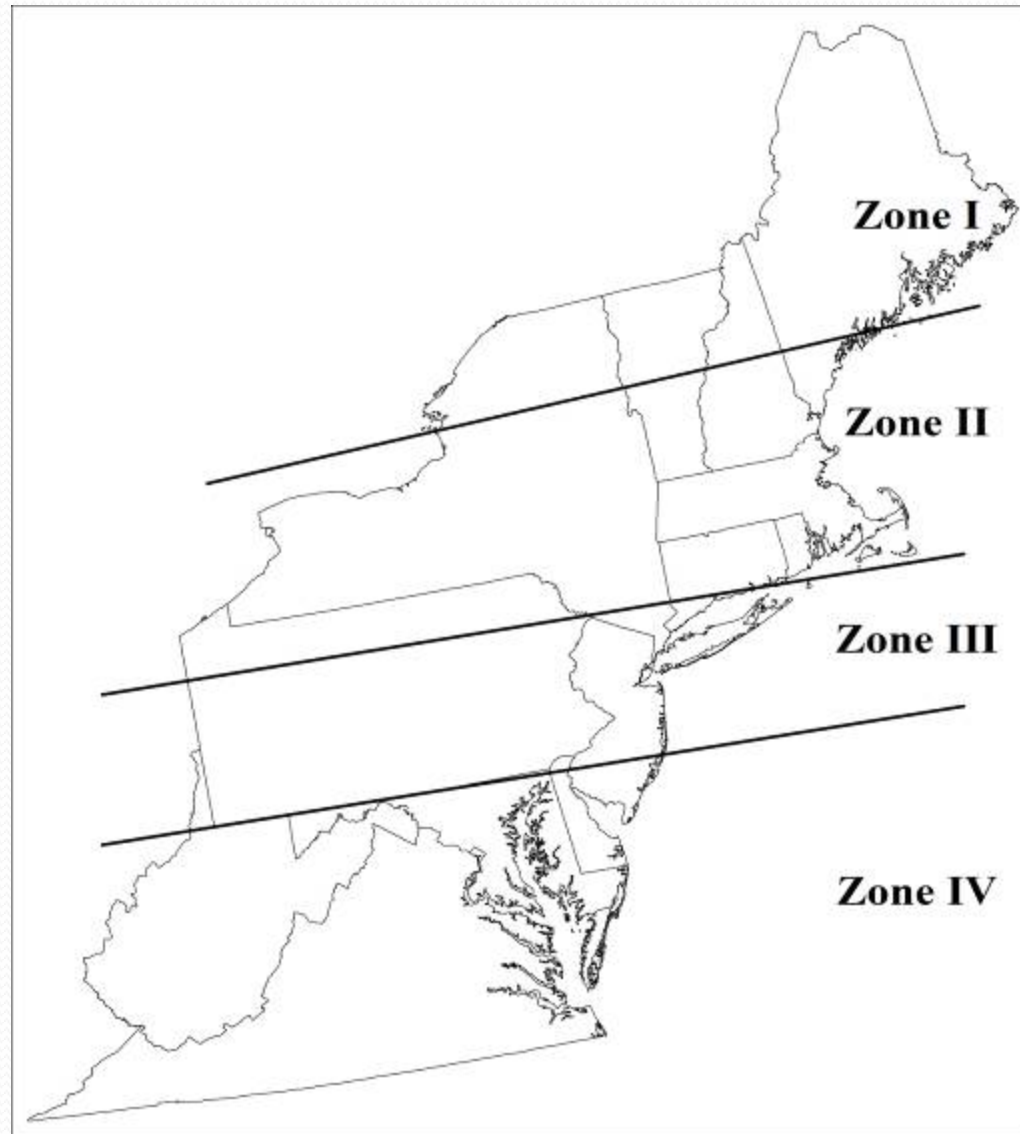


THE NEAFWA HABITAT VULNERABILITY MODEL



Reports on NEAFWA web site

REGIONAL ZONES



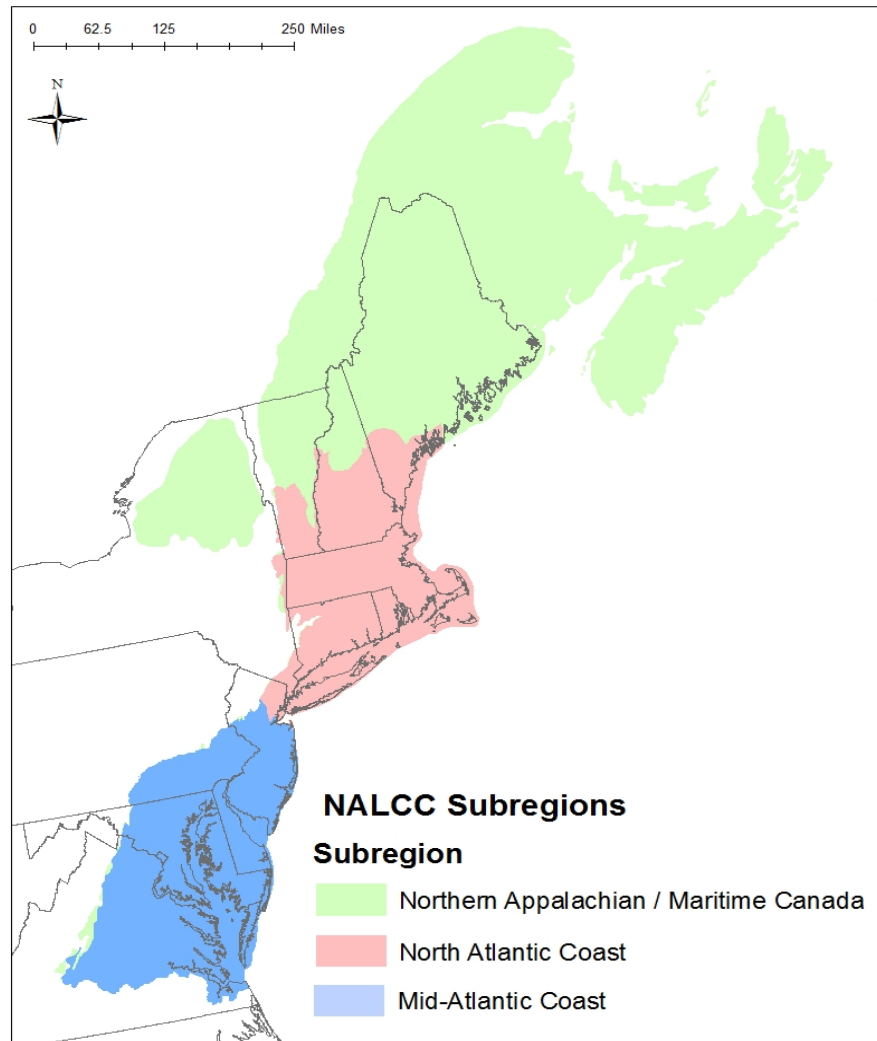
Habitat Vulnerability Summary

- Four major habitats highly vulnerable:
 - Alpine tundra
 - Spruce-fir (boreal) forest
 - Cold water fish habitat (though may not be as vulnerable as previously thought)
 - Coastal habitats

Climate Change Vulnerability Index (CCVI) Comparison

- CCVI is species vulnerability model developed by NatureServe and used in numerous situations in North America
- CCVI used on 64 plant and animal species in Northeast
- Used on “foundational species” as check on habitat results.
- Compared three subregions: Northern Appalachians and Maritime Canada; North Atlantic; and Mid-Atlantic

NALCC Regions



CCVI Results

- Spruce-fir Forest

	Northern	Southern
• Habitat model result:	V	CV
• CCVI Red Spruce result:	MV	HV
• CCVI Balsam Fir result:	MV	HV
• CCVI Black Spruce result:	MV	HV
• Bicknell's Thrush result:	MV	HV

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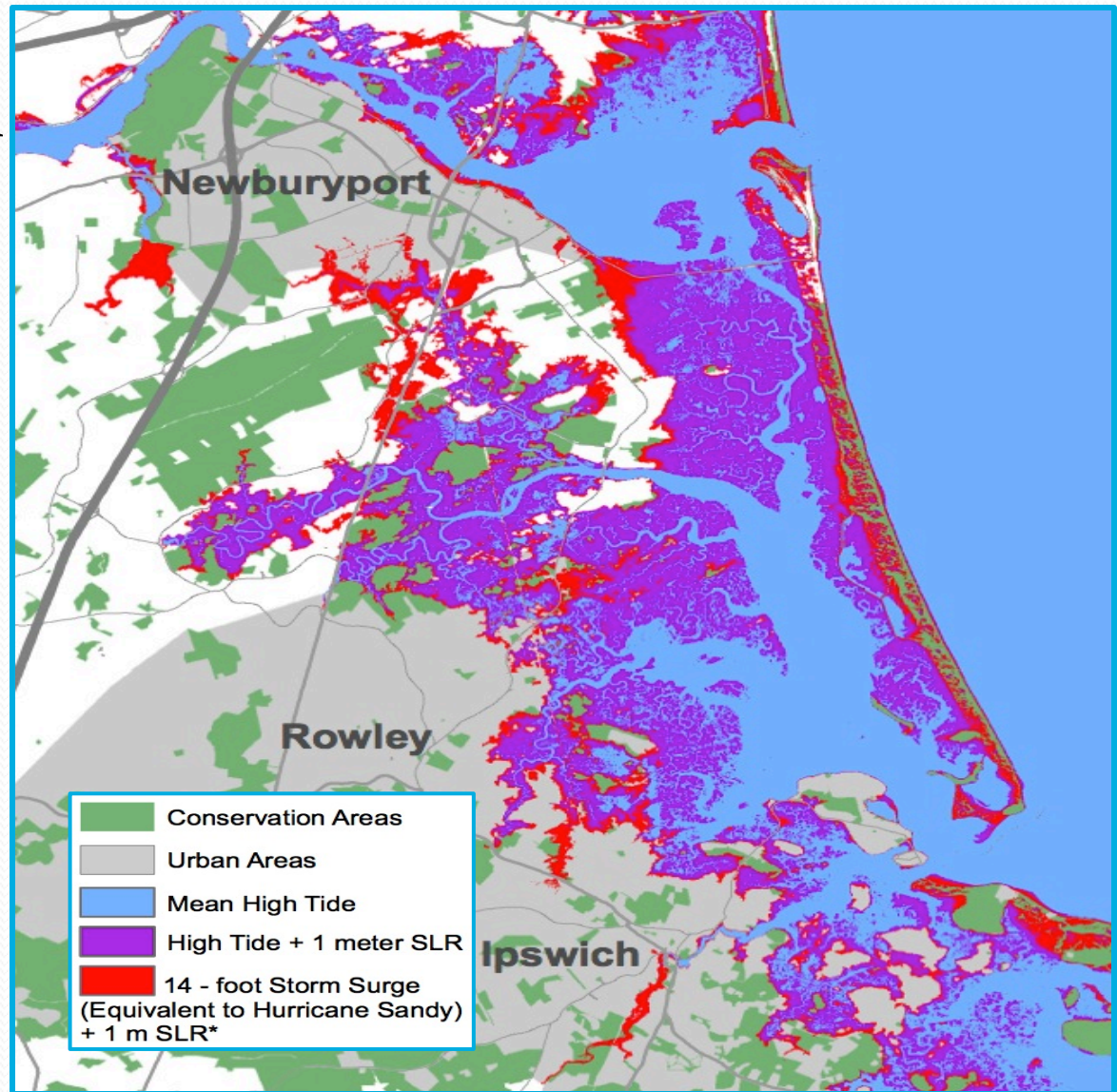
Species analyses support habitat VA.

What is relevance to local communities?

Eco. Vulnerabilities and Community Resiliency Planning

North Shore, MA

- Saltmarshes lost
- Towns exposed



Community Resiliency Planning on North Shore

Working with NS communities to plan adaptive responses.

VA as part of Community Adaptation Plan

- Identifies ecosystem-oriented adaptation strategies that reduce risk and increase resiliency
- Cost-benefits of “grey and green solutions”
- Preserves ecosystem resilience, diversity, and other ecosystem services



Ecological Restoration and Enhancement

Native Salt Marsh Restoration



Restoration of over **325 acres** of native marsh vegetation through the removal of two dominant non-native invasive plants (**pepperweed and Phragmites**)

Next Steps

- Have tools that can be used to plan local conservation but need to make them relevant and attractive to local communities, land trusts, etc.
- Need to apply them in high profile case studies, like the North Shore.
- Need to find some way to “institutionalize” their use at local levels.
- Most important – Regional Adaptation Strategy