Landscape Conservation Cooperatives


lccnetwork.org

Questions to cover

- How can multi-resource analysis be defined and integrated into a practical, overarching landscape-based framework to guide decision making?

- What key relationships among natural resources need to be incorporated into these assessments, and what social, economic, and environmental impacts are most relevant?

- What datasets are needed to conduct an integrated landscape and/or multi-resource analysis?
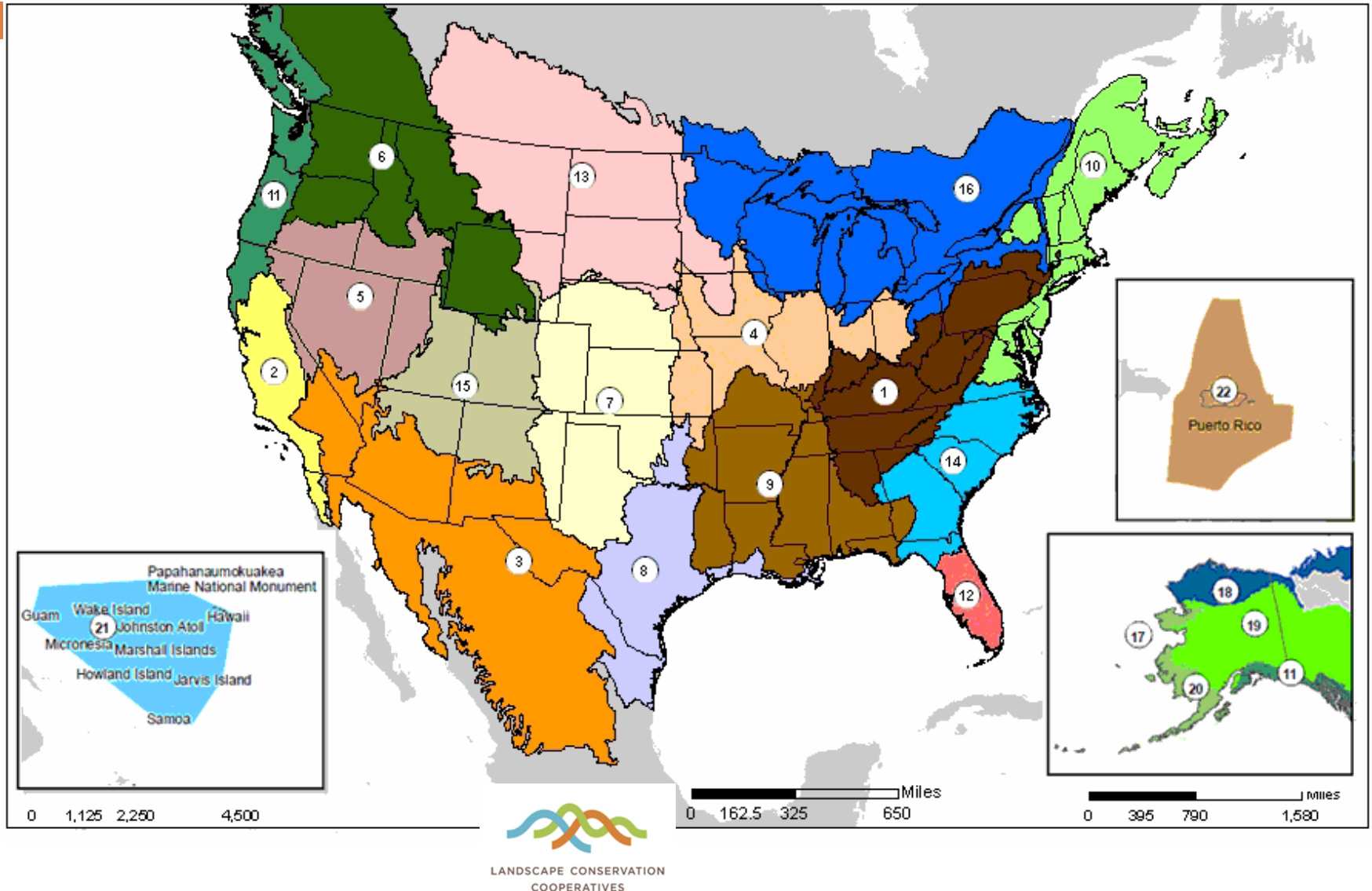
Why cooperate?

Urbanization Probability
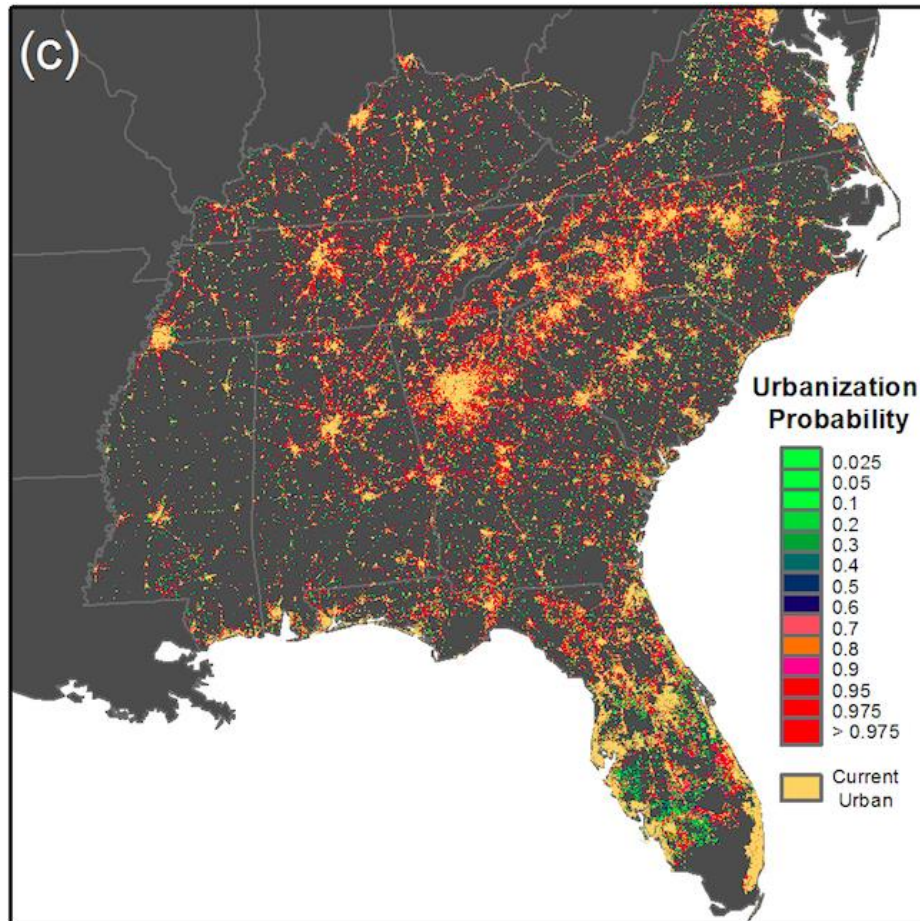
Days per year with peak temperature over 90° F
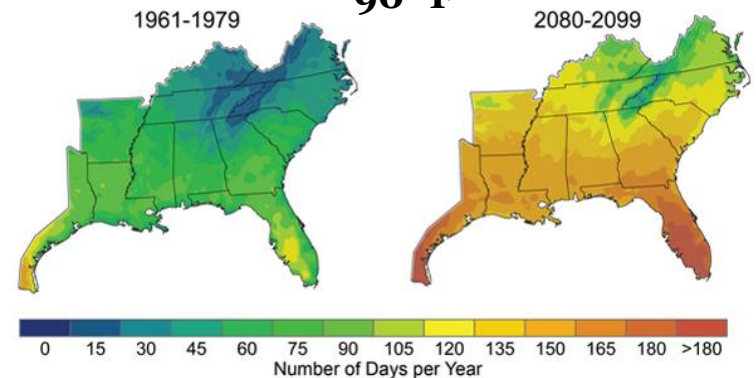
Landscapes Capable of Sustaining Natural and Cultural Resources for Current and Future Generations

Involvement in the LCCs
270+ Agencies and Organizations

- All 50 state natural resource agencies
  - States serve as Chairs (or Vice Chairs) on ~2/3 LCC Steering Committees
- All major federal resource management and conservation agencies
  - FWS, BLM, BOR, NPS, USGS, BIA, BOEM
  - USFS, NRCS, FSA, NOAA/NMFS, EPA, USACE, DOE, DOD, TVA
- Tribes: 20+ individual and consolidated groups
- NGOs, Partnerships (JVs, FHPs), Academic: 40+
- Climate Science Centers, NOAA RISAs, Climate Hubs

LANDSCAPE CONSERVATION COOPERATIVES

# Landscape Conservation Cooperatives: Strategic Goals

- A network of landscapes and seascapes adaptable to global change

- Facilitated alignment of partnership needs and resources

- Conservation of natural and cultural resources guided by collaborative application of science, experience, and cultural and traditional ecological knowledge

- Advance the knowledge of, support for, and engagement in landscape-scale conservation

How can multi-resource analysis be defined and integrated into a practical, overarching landscape-based framework to guide decision making?
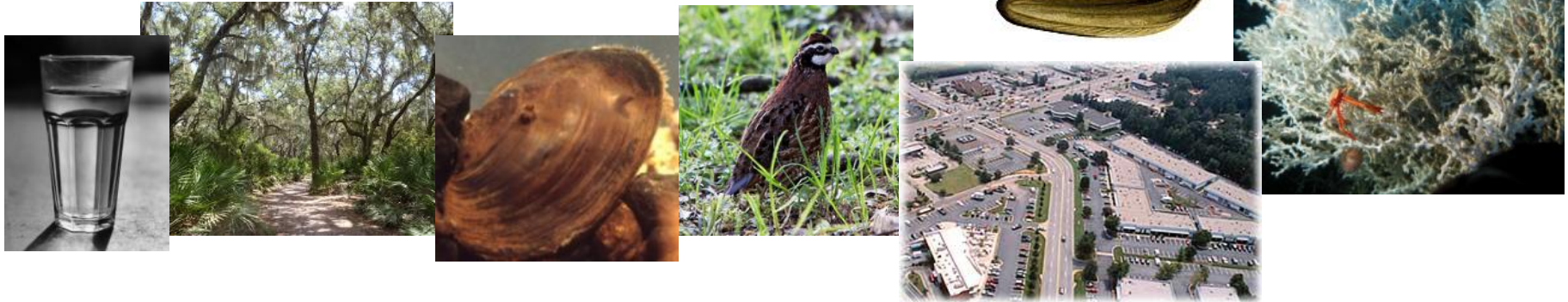
South Atlantic LCC

Mission: Create a shared **blueprint** for landscape conservation actions that sustain natural and cultural resources
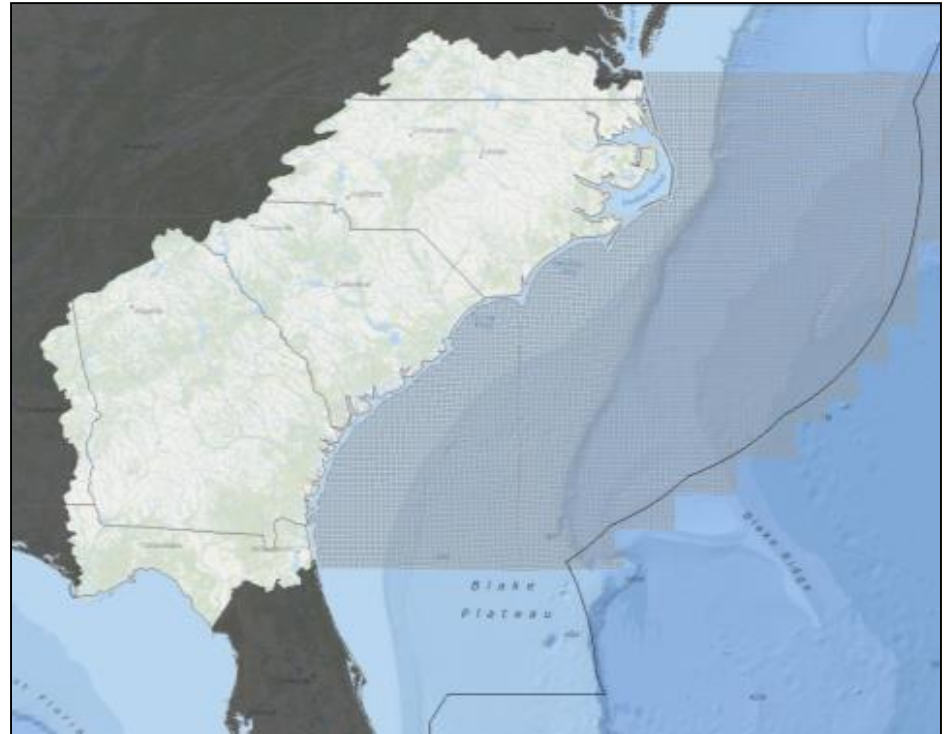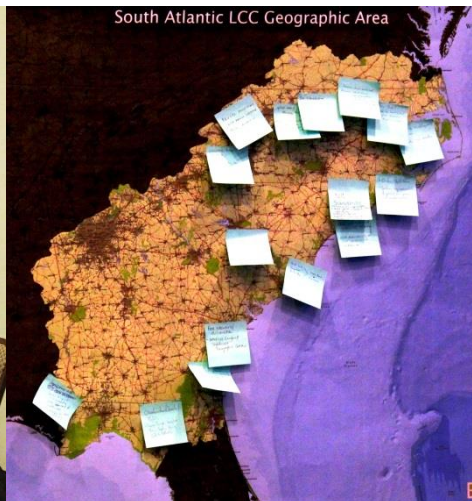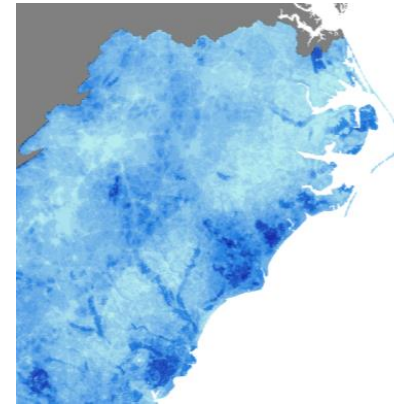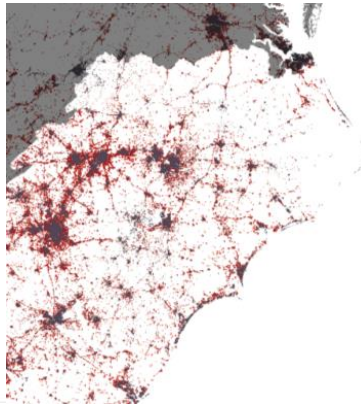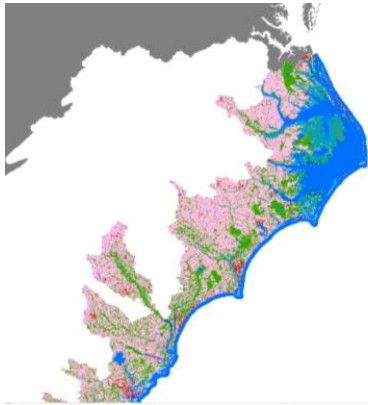
Indicators and targets

□ Ecosystem integrity

□ Intact cultural landscapes

Regional Blueprint workshops

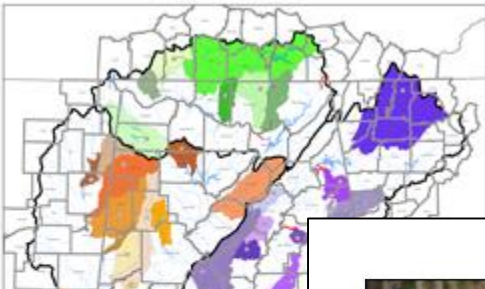# Integrating existing plans

South Atlantic Blueprint 1.0 –
http://blueprint.southatlanticlcc.org

Southeast Conservation Adaptation Strategy (SECAS)
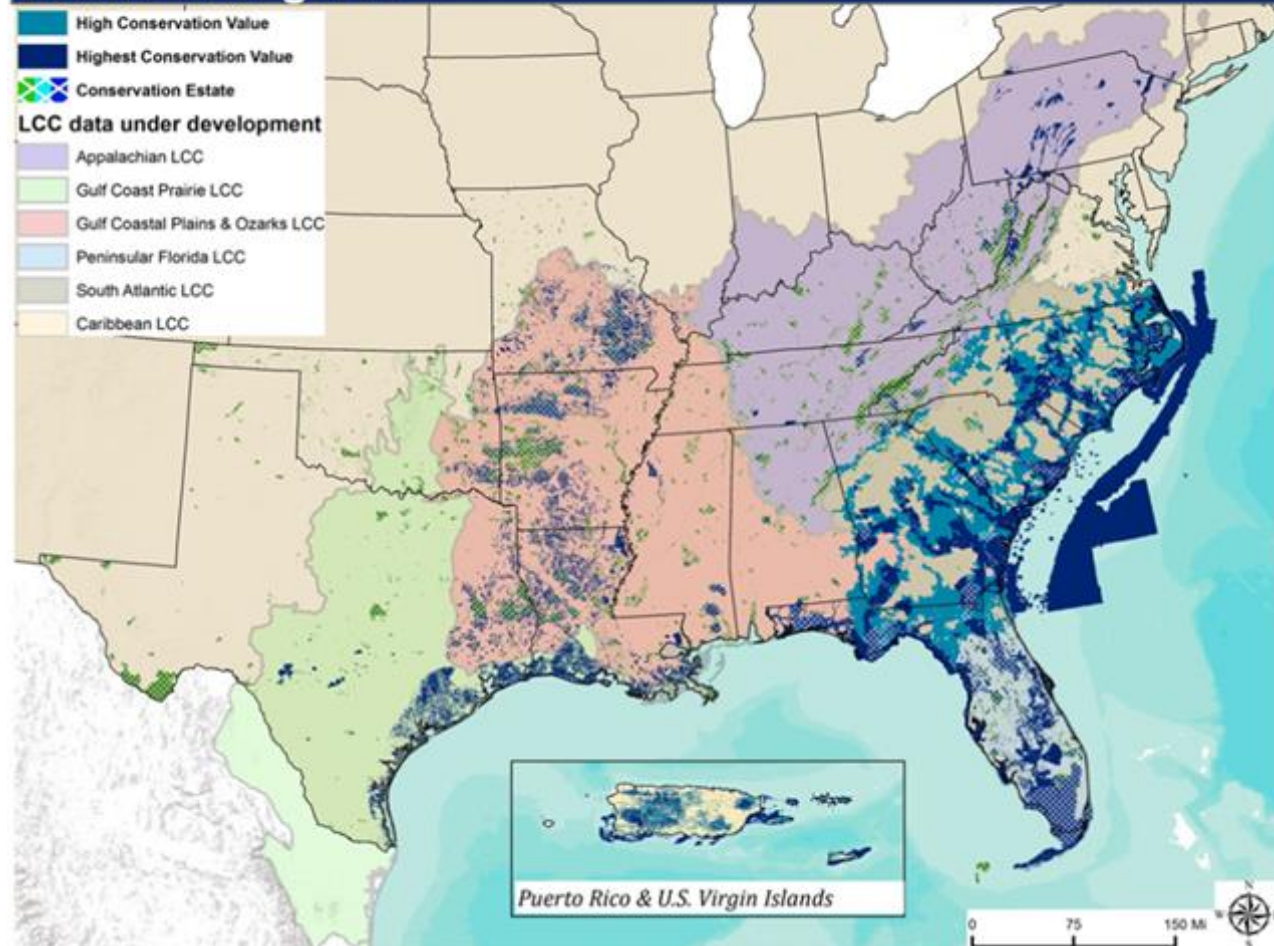
What key relationships among natural resources need to be incorporated into these assessments, and what social, economic, and environmental impacts are most relevant?

Key relationships and impacts

- Depends on scale:
  - of objective to be achieved on the landscape
  - of landscape
- Depends on communities and partners involved

Ongoing case study

- The Upper Midwest & Great Lakes Landscape Conservation Cooperative restoring the connectivity between the Great Lakes and their tributaries

Challenge identification

- Upper Midwest & Great Lakes LCC steering committee

- Issue – barrier removal vs. retention
  - Challenge facing nearly all conservation organizations around the Great Lakes basin

Road crossings
Dams

LANDSCAPE CONSERVATION COOPERATIVES
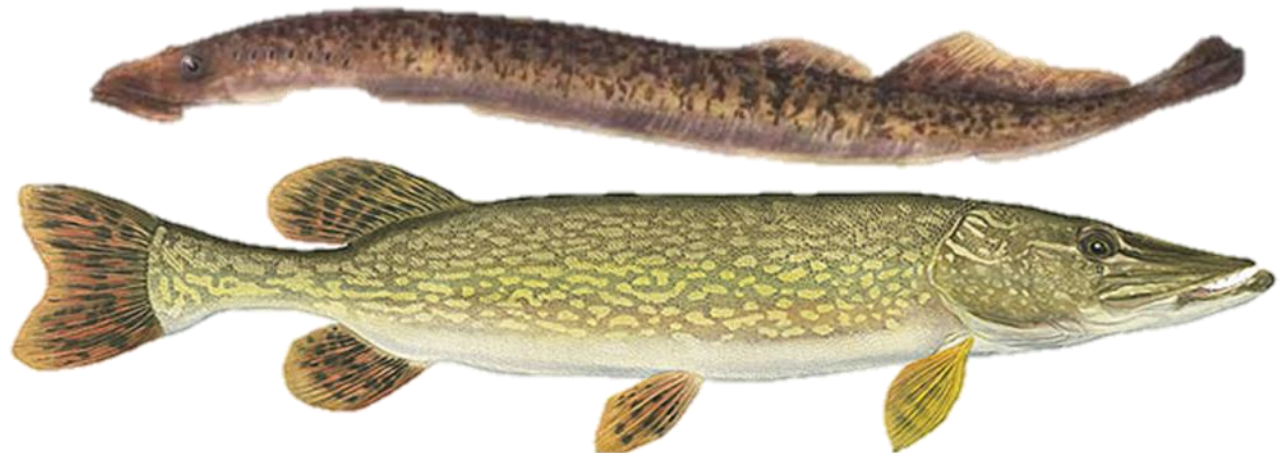
0 70 140 280 Kilometers
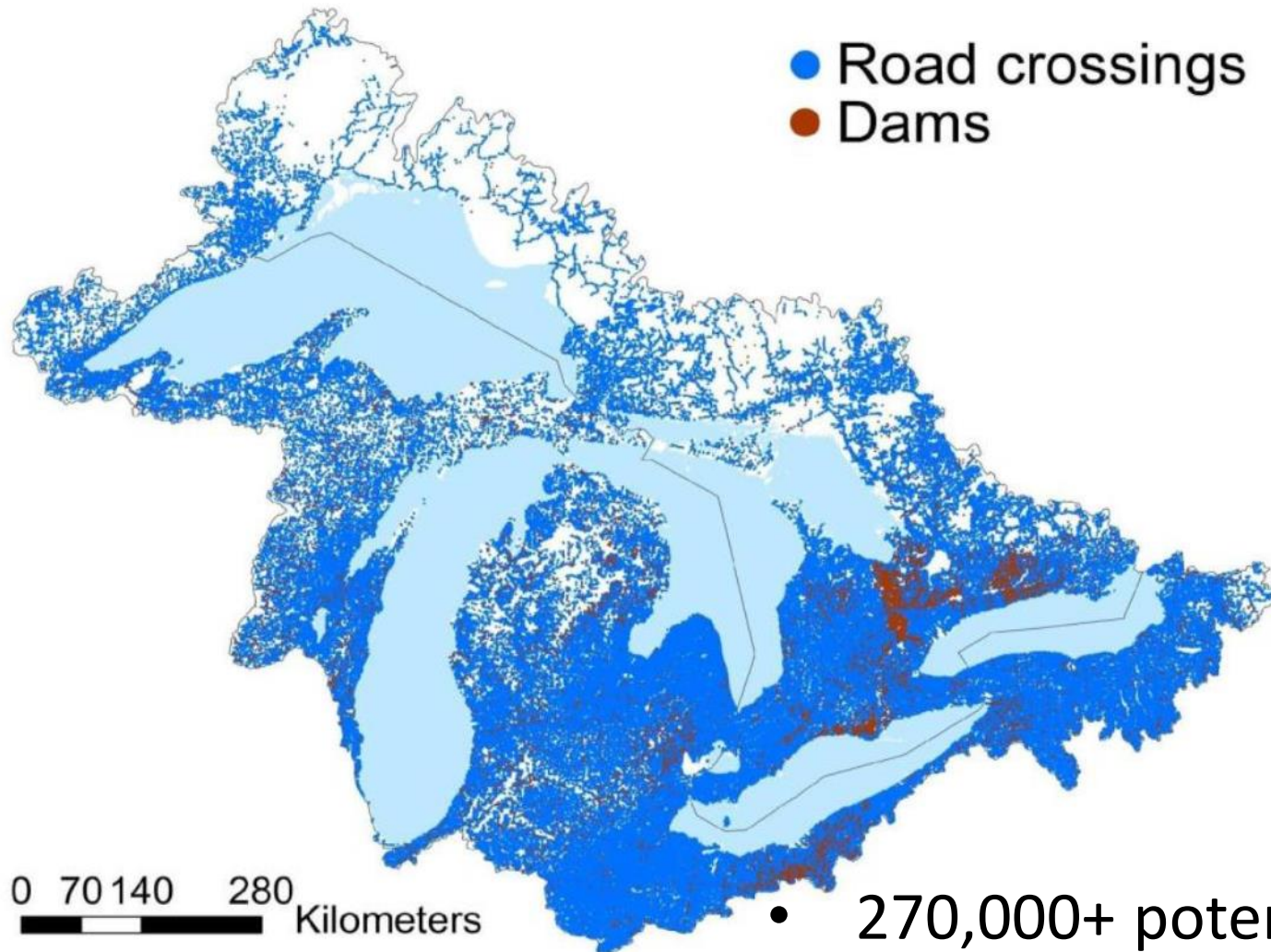
- 270,000+ potential barriers
- Are barriers passable?
- Removing which barriers provides the most benefit?
- Optimization model

(Preliminary results)
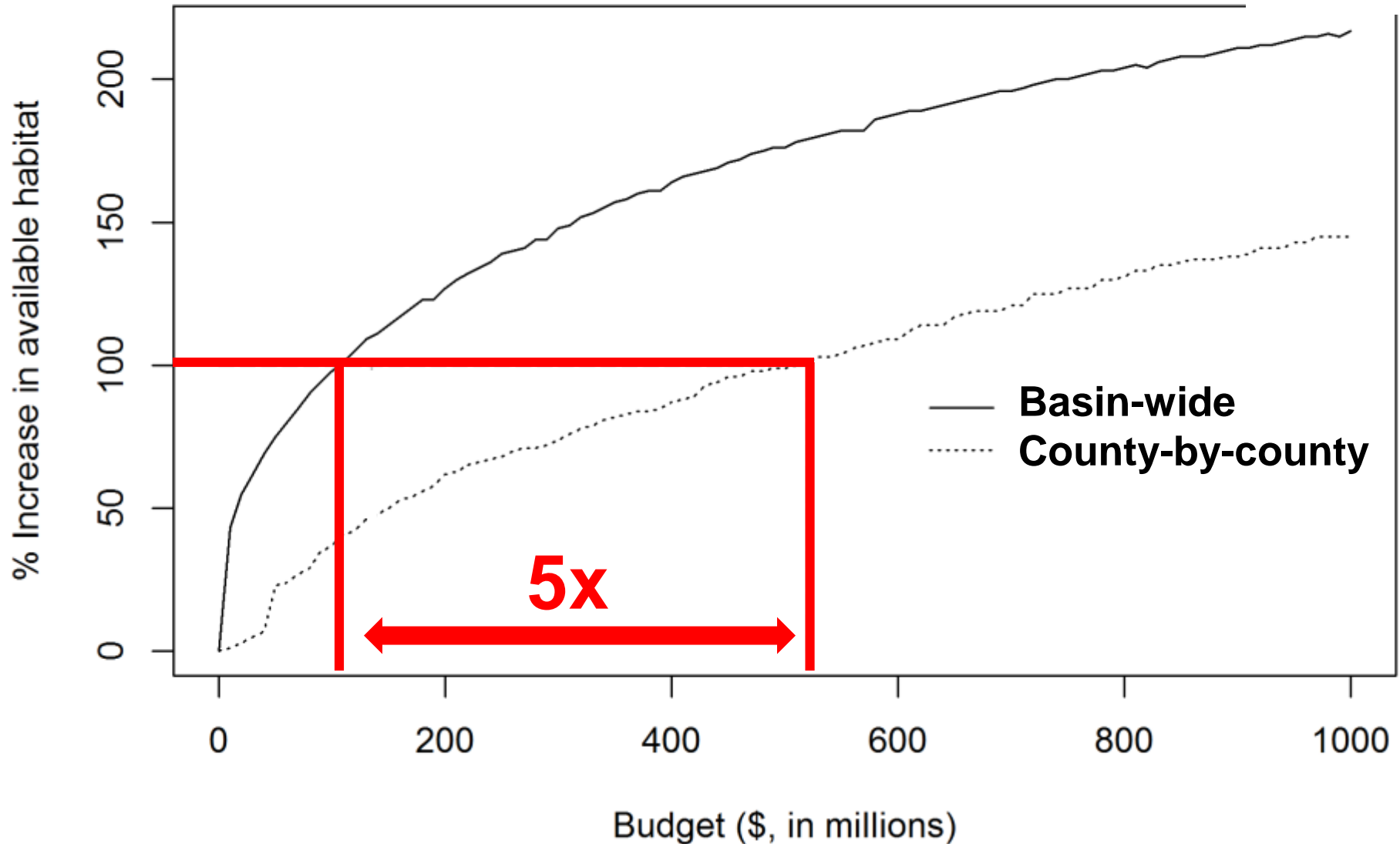
What datasets are needed to conduct an integrated landscape and/or multi-resource analysis?

Appalachian LCC

- Biodiversity –
  Global 'hotspot' for many species

- Surface Water /
  Forests Supply
  Drinking Water
  (Major Cities)

- Population Density /
  *Outdoor Recreation to
  the Nation's Capital*

Richness

coal

shale gas

shale gas formations

Marcellous

Utica

wind energy

infrastructure & transmission

Challenge

The Nature Conservancy

Pennsylvania Energy Impacts Assessment
Report 1: Marcellus Shale Natural Gas and Wind

Pennsylvania Energy Impacts Assessment
2010

Author and Team Leader: Nels Johnson[a]

Assessment Team: Tamara Gagnolet[1], Rachel Ralls[1], Ephraim Zimmerman[2], Brad Eichelberger[2], Chris Tracey[2], Ginny Kreitler[3], Stephanie Orndorff[3], Jim Tomlinson[3], Scott Bearer[1], and Sarah Sargent[3]
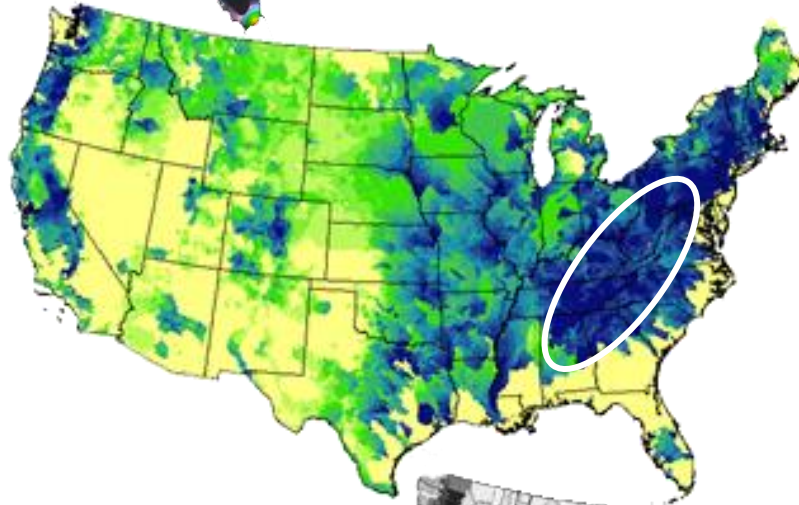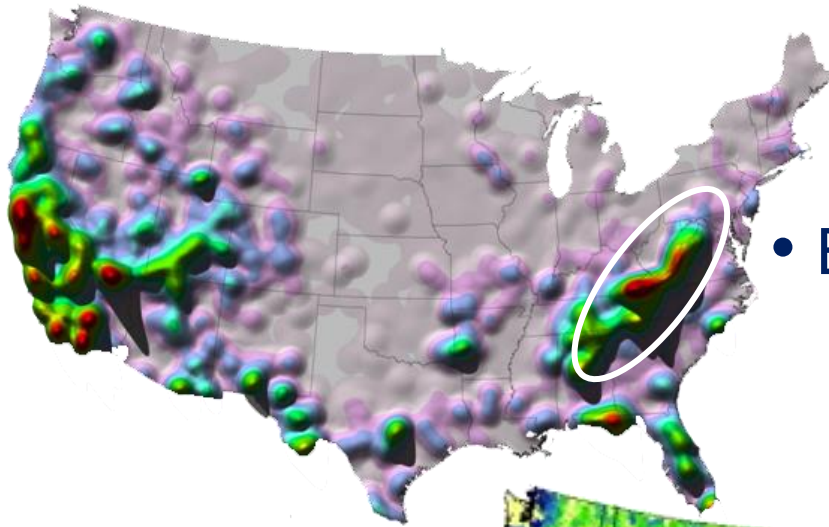
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Protecting nature. Preserving life.

Audubon
PENNSYLVANIA

CONCEPTS AND QUESTIONS

261

Development by design: blending landscape-level planning with the mitigation hierarchy

Joseph M Kiesecker[1]*, Holly Copeland[2], Amy Pocewicz[2], and Bruce McKenney[3]
2012

Compensatory mitigation, or biodiversity offsets, provide a mechanism for maintaining or enhancing environmental values in situations where development is being planned, despite detrimental environmental impacts. Offsets are generally intended as an option for addressing any remaining environmental impacts of a development plan, after efforts have been made to avoid, minimize, or restore on-site impacts. Although offset programs require that developers adhere to the mitigation hierarchy to avoid, minimize, and restore ... ity on-site before considering an offset for residual impacts, no quantitative guidelines exist for ... ion-making process. What criteria are needed to require that impacts be minimized or avoided ... r? Here, we examine how conservation planning can provide a way to address this issue. By blend- ... cape-level conservation planning with application of the mitigation hierarchy, we can ensure that ... biodiversity offsets is consistent with sustainable development practices.

m 2010; 8(5): 261–266, doi:10.1890/090005 (published online 20 Aug 2009)

OPEN ACCESS Freely available online

PLOS ONE

Shale Gas, Wind and Water: Assessing the Potential Cumulative Impacts of Energy Development on Ecosystem Services within the Marcellus Play

Jeffrey S. Evans[1,2]*, Joseph M. Kiesecker[3]

1 The Nature Conservancy, Fort Collins, Colorado, United States of America, 2 Department of Zoology and Physiology, University of Wyoming, Laramie, Wyoming, United States of America, 3 The Nature Conservancy, Fort Collins, Colorado, United States of America

2014

Abstract

Global demand for energy has increased by more than 50 percent in the last half-century, and a similar increase is projected by 2030. This demand will increasingly be met with alternativ... resources causes disturbances that strongly impact terrestri... covers more than 160,934 km^2 in an area that provides drink... metropolitan areas in the United States (e.g. New York City,... probability surfaces representing development potential of... Appalachians. We used these predictions and published proj... future potential impacts on surface drinking water. Our ana...

Foundation

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Lower-Impact Shale Development with
The Nature Conservancy's Shale Siting Tool

In cooperation with energy companies and academic researchers, The Nature Conservancy has built an analytical tool that will help shale developers reduce ecological impacts while profitably developing shale oil and gas reserves.
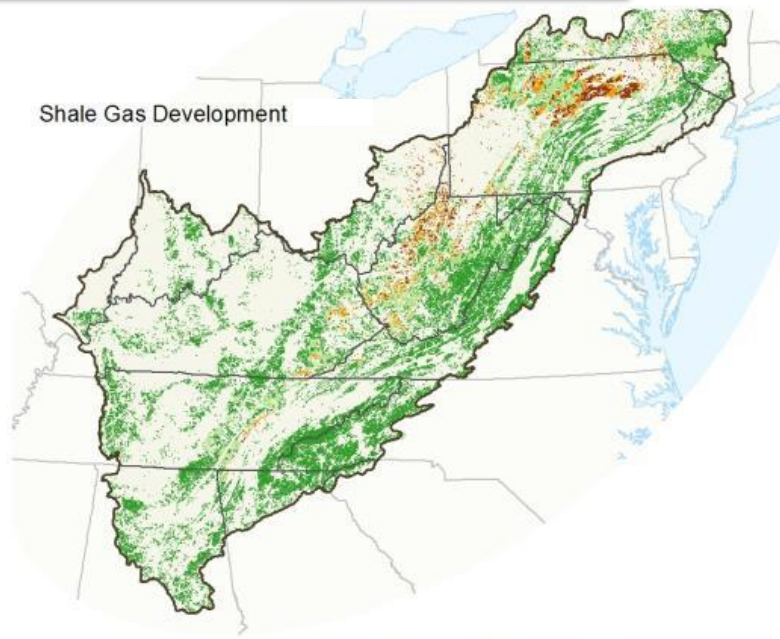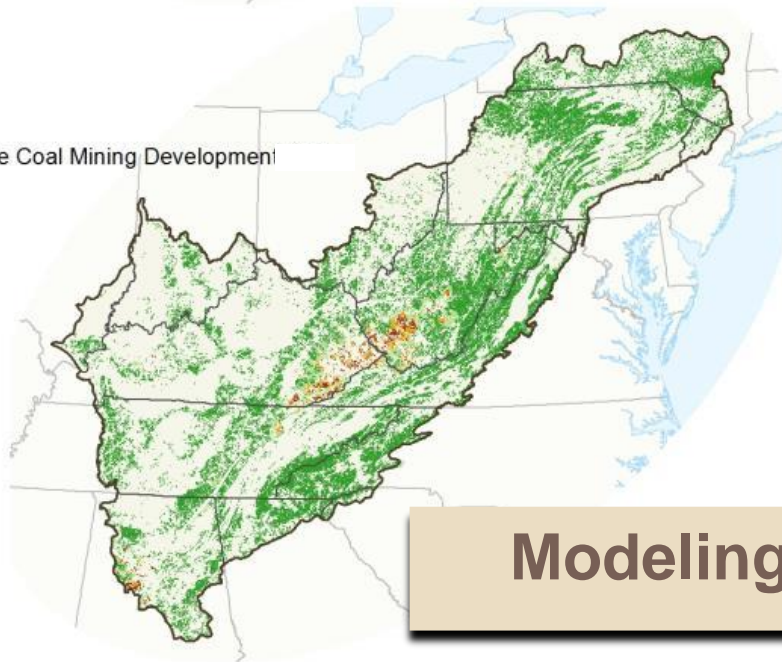**2014**

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Wind Energy Development
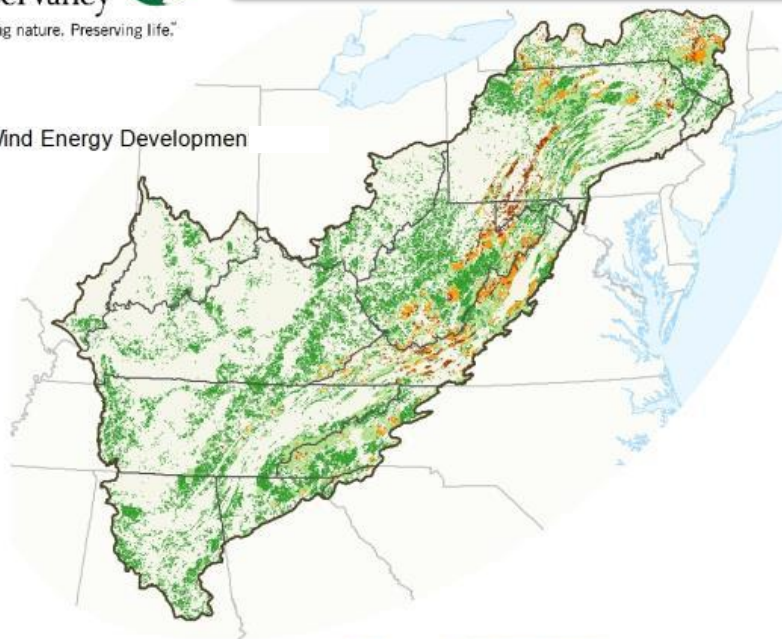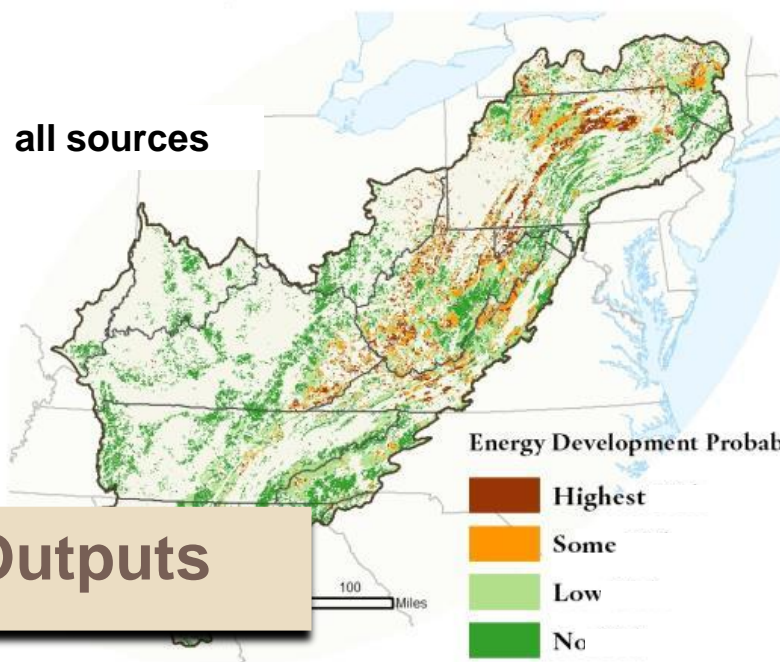
Shale Gas Development

Surface Coal Mining Development

all sources

Energy Development Probability

Highest
Some
Low
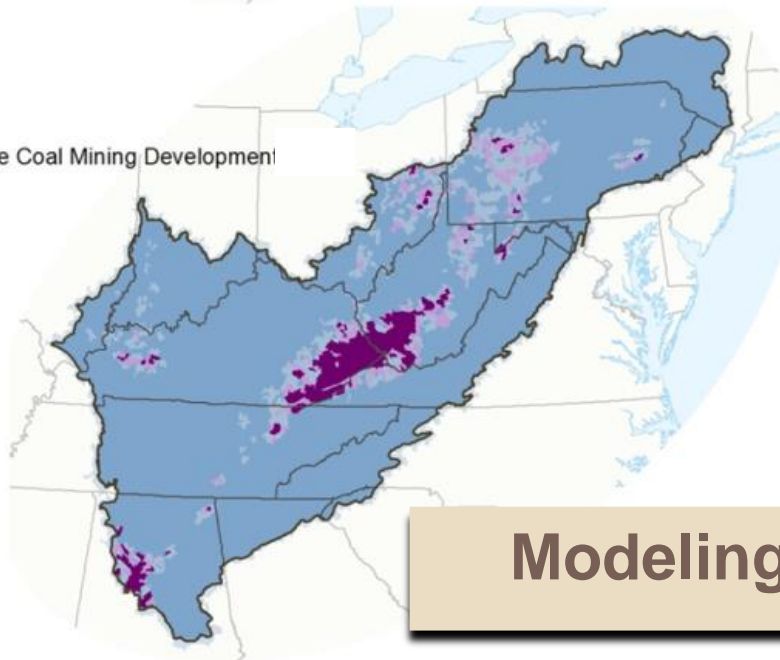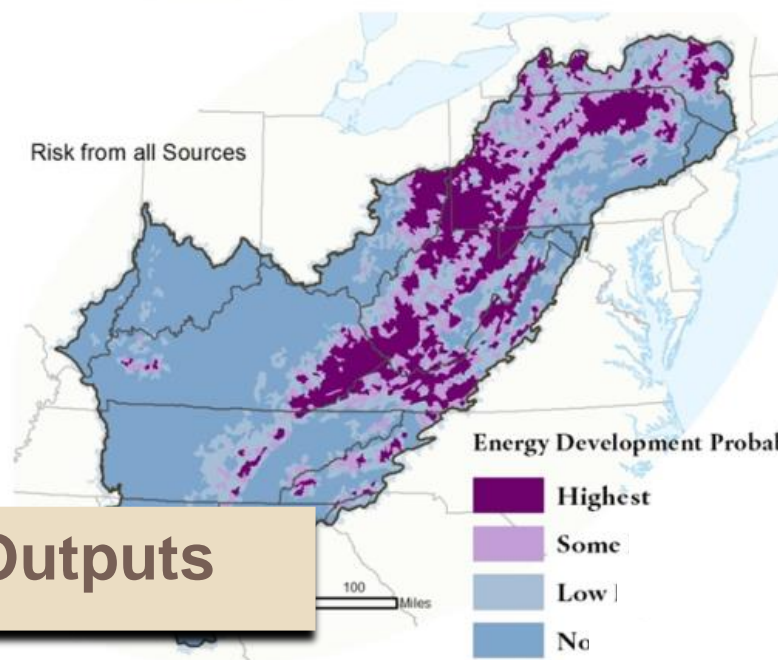No

100 Miles

Modeling Outputs

Wind Energy Development
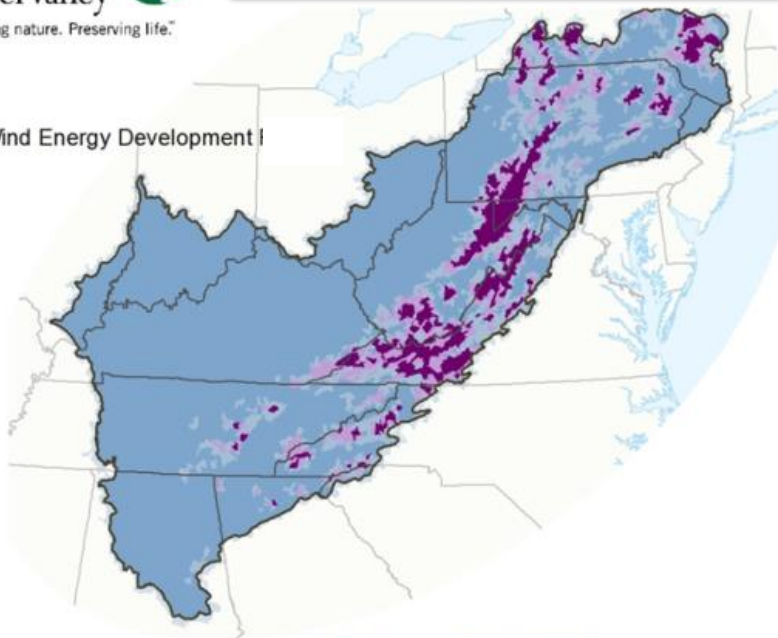
Shale Gas Development
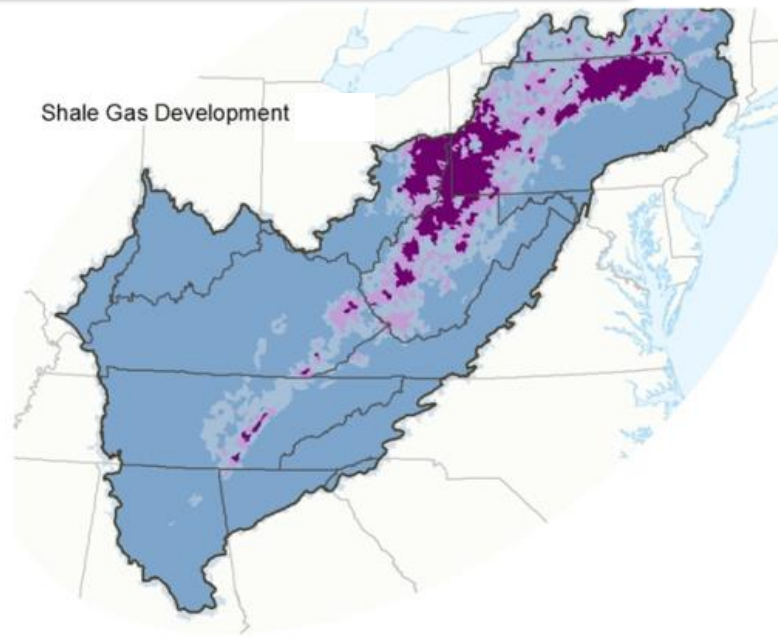
Surface Coal Mining Development

Risk from all Sources

Energy Development Probability
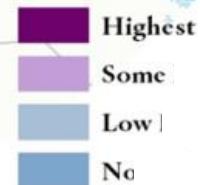
- Highest
- Some
- Low
- No

100 Miles

Modeling Outputs

Important Watersheds for Drinking Water

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Watershed Importance to Drinking Water in the Appalachian LCC
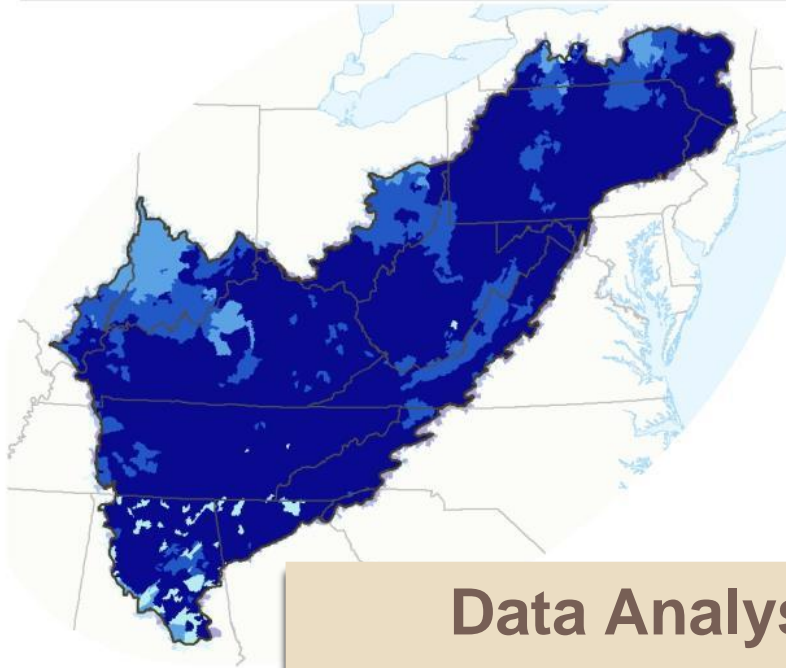
Watershed Importance to Drinking Water in Appalachian LCC Watersheds at Highest Energy Development

Importance Value
- 75-100
- 50-75
- 25-50
- 0-25

100 Miles
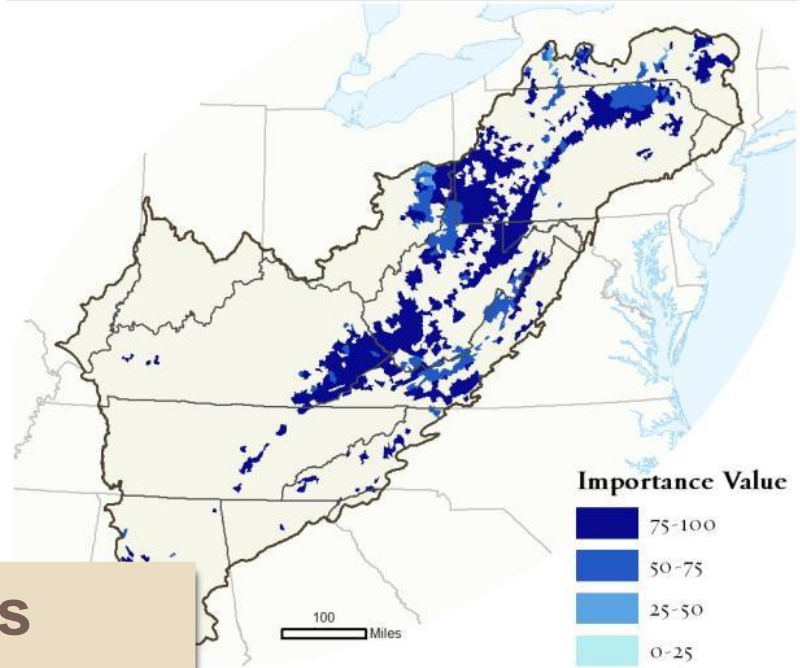
Data Analysis

- **75% of LCC watersheds are in top 25% nationally - for importance to drinking water**

- **12% are in areas of highest probability of energy development**

Cerulean Warbler / Wood Thrush
[large / mature forest habitat]

Deliver Science

LCC Network example: Alaska and NW Canada
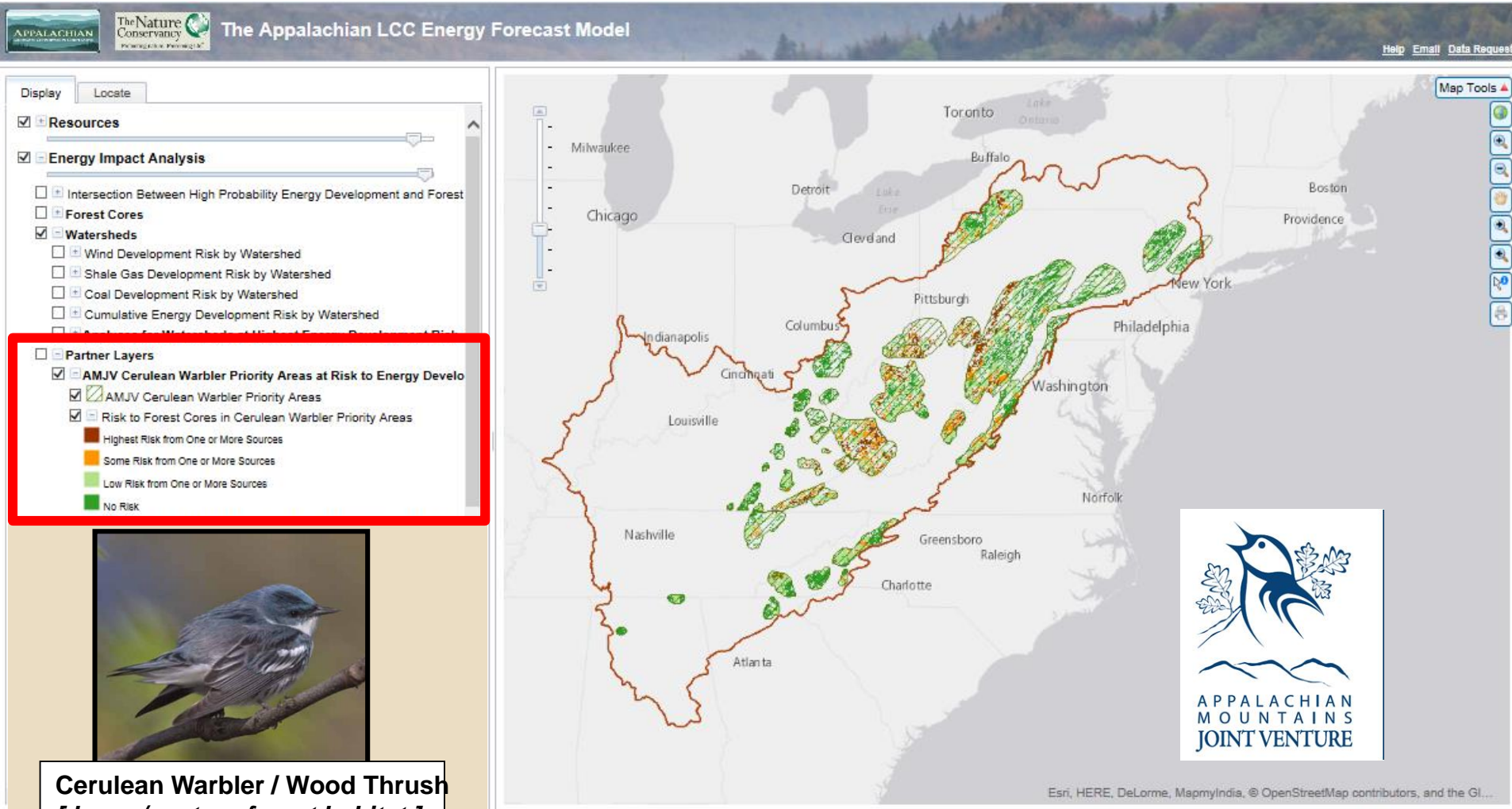
- The 5 LCCs that cover Alaska and NW Canada and the Alaskan CSC are collaborating on a number of projects that support critical science needs
  - National Hydrography Dataset
  - Water Temperature Monitoring Network
  - Coastal Hazards
- Developing Integrated Ecosystem Model

Summary response to questions

- How can multi-resource analysis for landscapes be defined and guide decision making?
  - Bring multi-disciplinary partners together to identify shared vision, goals, and information needs
- What key relationships are needed and what impacts are most relevant?
  - Depends on landscape, partners need to identify important impacts
- What datasets are needed?
  - Depends on question but typically a wide range of datasets

Closing observations

- No single organization can tackle our future challenges

- Landscape-based framework to guide decision making requires bringing partners together to:
  - Develop shared vision, goals and objectives
  - Identify existing data sets and data gaps
  - Make the work happen collectively (shared resources, overcome or work within jurisdictional authorities, etc.)

- Landscape Conservation occurs locally but we must think regionally!

Questions?

LANDSCAPE CONSERVATION
COOPERATIVES

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