
THE
TRUST
for
PUBLIC
LAND



New Tools for LCC
Conservation
Planning & Analysis

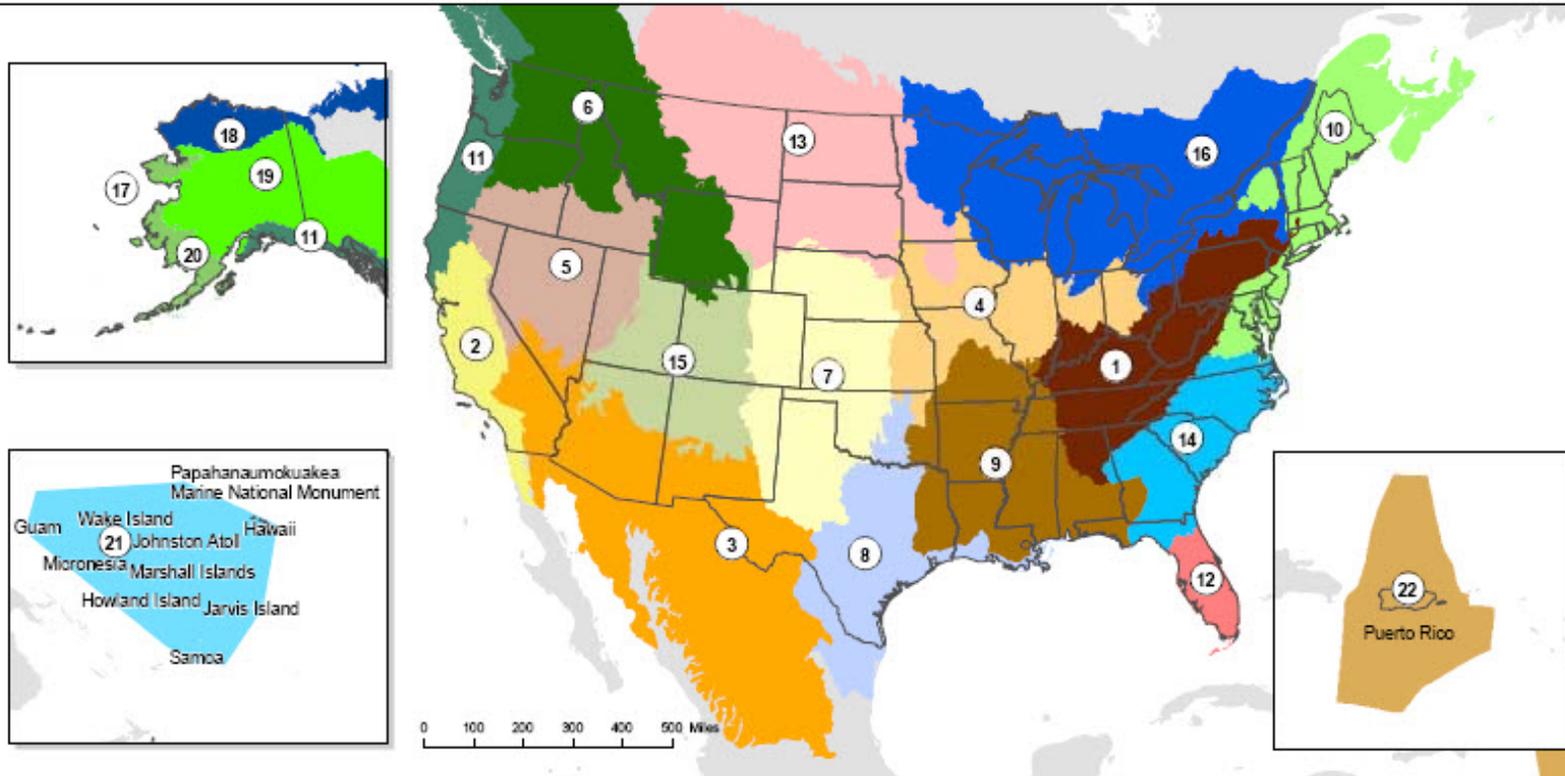
March 2012



Overview of Presentation:

- TPL Tools and Databases
 - LandVote
 - Conservation Almanac
 - NCED
 - TPL Planning Process
- TPL Landscape Case Studies!
- Q & A

Landscape Conservation Cooperatives



Landscape Conservation Cooperatives

- | | | | |
|---|-----------------------------------|-------------------------------------|----------------------------------|
| 1. Appalachian | 7. Great Plains | 13. Plains and Prairie Potholes | 19. Northwestern Interior Forest |
| 2. California | 8. Gulf Coast Prairie | 14. South Atlantic | 20. Western Alaska |
| 3. Desert | 9. Gulf Coastal Plains and Ozarks | 15. Southern Rockies | 21. Pacific Islands |
| 4. Eastern Tallgrass Prairie and Big Rivers | 10. North Atlantic | 16. Upper Midwest and Great Lakes | 22. Caribbean |
| 5. Great Basin | 11. North Pacific | 17. Aleutian and Bering Sea Islands | Unclassified |
| 6. Great Northern | 12. Peninsular Florida | 18. Arctic | |

Albers Equal Area Conic NAD83
 Produced by FWS, IRTM, Denver, CO
 Map Date: 12/14/2011



LandVote: TPL's First Public Conservation Database

On-line database of over 2,000 ballot measures for land conservation funding since 1988.

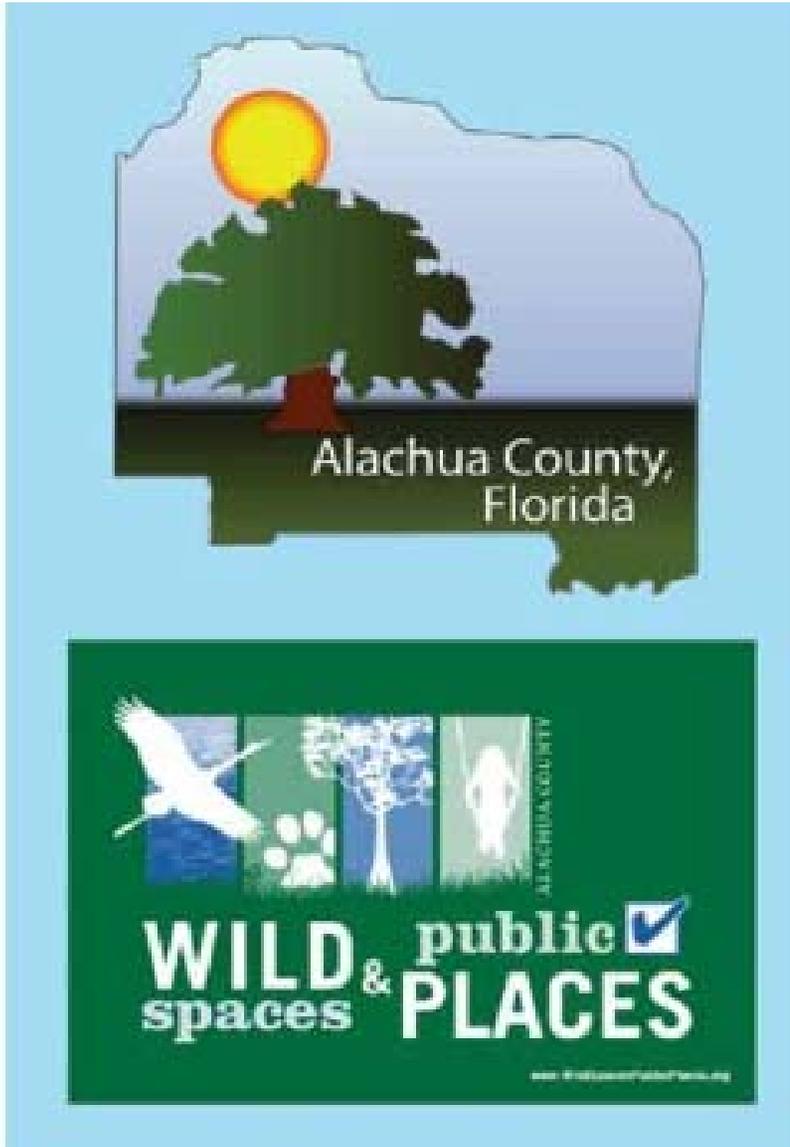
- Custom queries
- Instant graphs
- Dynamic mapping



www.landvote.org



Measuring the Impact of a Local Ballot Measure



Election Details



Date
11-07-2000

Pass?
✓

Votes Yes
47,836

Votes No
31,176

Total Funds Approved
\$29,000,000

Status
Pass

% Yes
61%

% No
39%

Conservation Funds Approved
\$29,000,000



LandVote Map Example - 2010 Pass/Fail Results



**Land Vote
Mapping System**



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CONSERVING LAND FOR PEOPLE

Home
FAQ's
About
Reports

Address:

Search

Clear All Measures

Quick Views

- 2011 Measures
- 2010 Measures
- 2009 Measures
- 2008 Measures
- All Measures by State
- All Measures by Year
- All Measures by Finance Type

Customize View

Start Year: End Year:

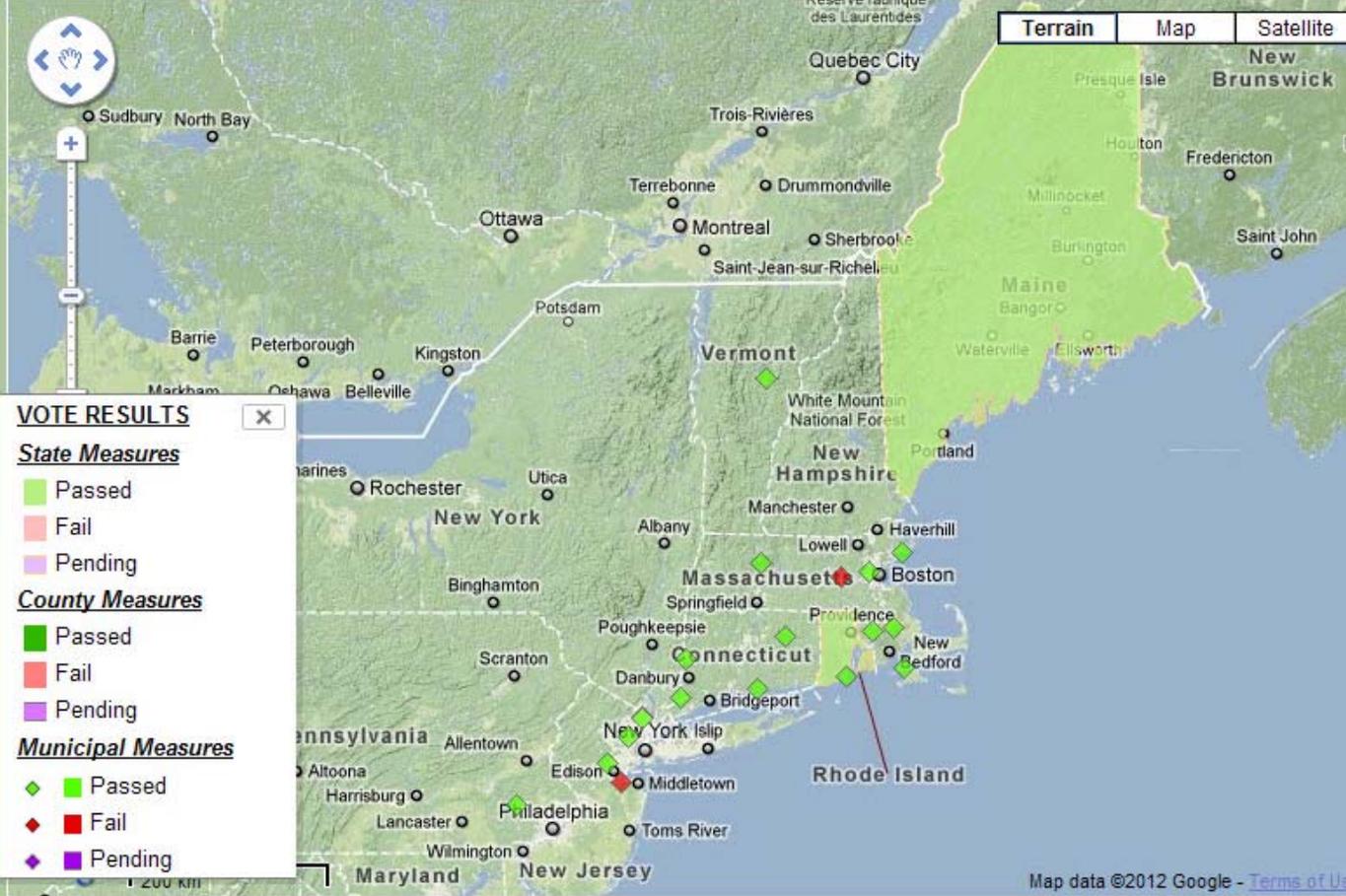
State:

Show

Layers

Use checkboxes below to change layer visibility

LEGEND »



Terrain
Map
Satellite

VOTE RESULTS

State Measures

- Passed
- Fail
- Pending

County Measures

- Passed
- Fail
- Pending

Municipal Measures

- ◆ Passed
- ◆ Fail
- ◆ Pending

 Map data ©2012 Google - [Terms of Use](#)

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Where Is Government Money for Conservation Being Generated and Spent?

TPL's Conservation Almanac

- Version 1 and 2: All 50 states: Statistics and tables on government spending
 - By agency & funding program
 - By county
- Version 3: About 25 states: GIS version
 - “Base Map” of all land protected pre-1998
 - 1998-2008 land protection data *at the parcel level*
 - Acres acquired (fee vs. easement)
 - Federal, state or local agency
 - Dollars spent
 - Funding source
 - Date protected



Conservation Almanac Property Report

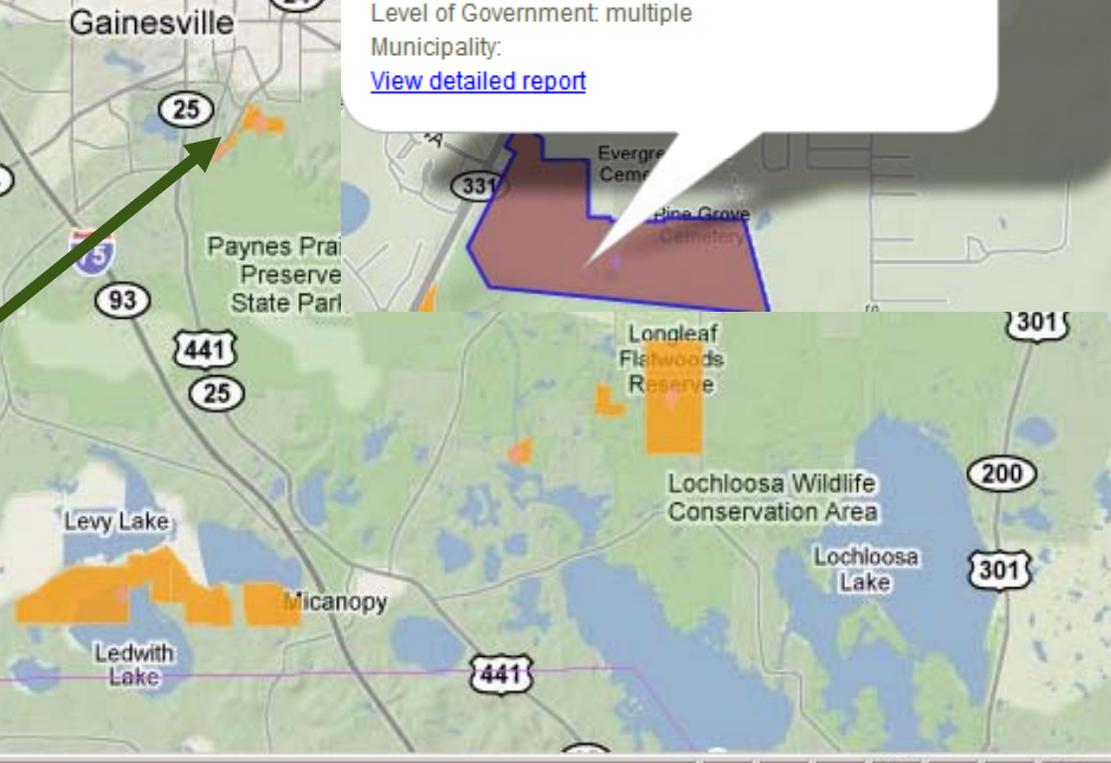


Paynes Prairie Additions

Manager: Alachua County
 Year of acquisition: 2006
 Acres: 113
 Purchase amount: \$7,703,978
 Purchase type: Fee Simple
 Program Sponsor: Florida Forever
 Level of Government: multiple
 Municipality:
[View detailed report](#)



TPL Conservation Almanac Property Report: Paynes Prairie Additions



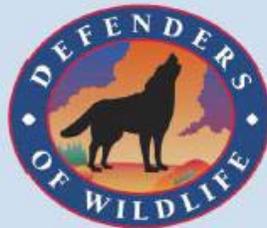
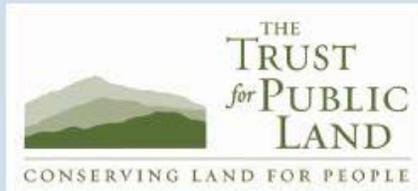
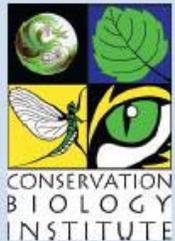
- State Name: Florida
County Name: Alachua
Municipality:
- Manager: Alachua County
Level of Government: multiple
- Close Year: 2006
Close Date: 03/23/2006
- Purchase Type: Fee Simple
Purpose:
- Purchase Amount: \$7,703,978
Federal Spending: \$0
State Spending: \$5,831,112
Local Spending: \$1,872,866
Private / NGO Spending: \$0
- Program Sponsor: Florida Forever
Funding Mechanism: Revenue Bond/ Documentary Stamp Tax

NATIONAL CONSERVATION EASEMENT DATABASE

NCED Specs

- Document all conservation easements in America
- Make all data publicly available on-line
- Over 80,000 easement records
- \$1.2 million project, managed by TPL over 2-1/2 years

NCED Partners



NCED is an initiative of the U.S. Endowment for Forestry and Communities. Additional financial support has been provided by the Gaylord and Dorothy Donnelley Foundation, and the Knobloch Family Foundation.

www.conservationeasement.us



Application: Conservation Planning

Welcome Dennis Grossman

National Conservation Easement Database

- Group Home
- Profile
- Bookmarks
- Discussions
- Members (14)
- Supporting Documents

 **Dennis Grossman**

- Messages
- New Notifications (1)**
- Create a Map
- Import a Dataset
- Create a Group
- Create a Gallery

Legend
PADUS 1.1 CBI Edition
Ownership

- Federal Land
- Native American Land
- State Land
- Regional/Local Land
- Private Conservation Land
- Joint Ownership/Unknown
- Private Land

A map showing land ownership in the PADUS 1.1 CBI Edition region. The map is color-coded according to the legend: Federal Land (dark green), Native American Land (purple), State Land (light green), Regional/Local Land (orange), Private Conservation Land (red), Joint Ownership/Unknown (yellow), and Private Land (white). The map shows a large area of land with various ownership types, including a significant portion of Federal Land (dark green) and Private Land (white).



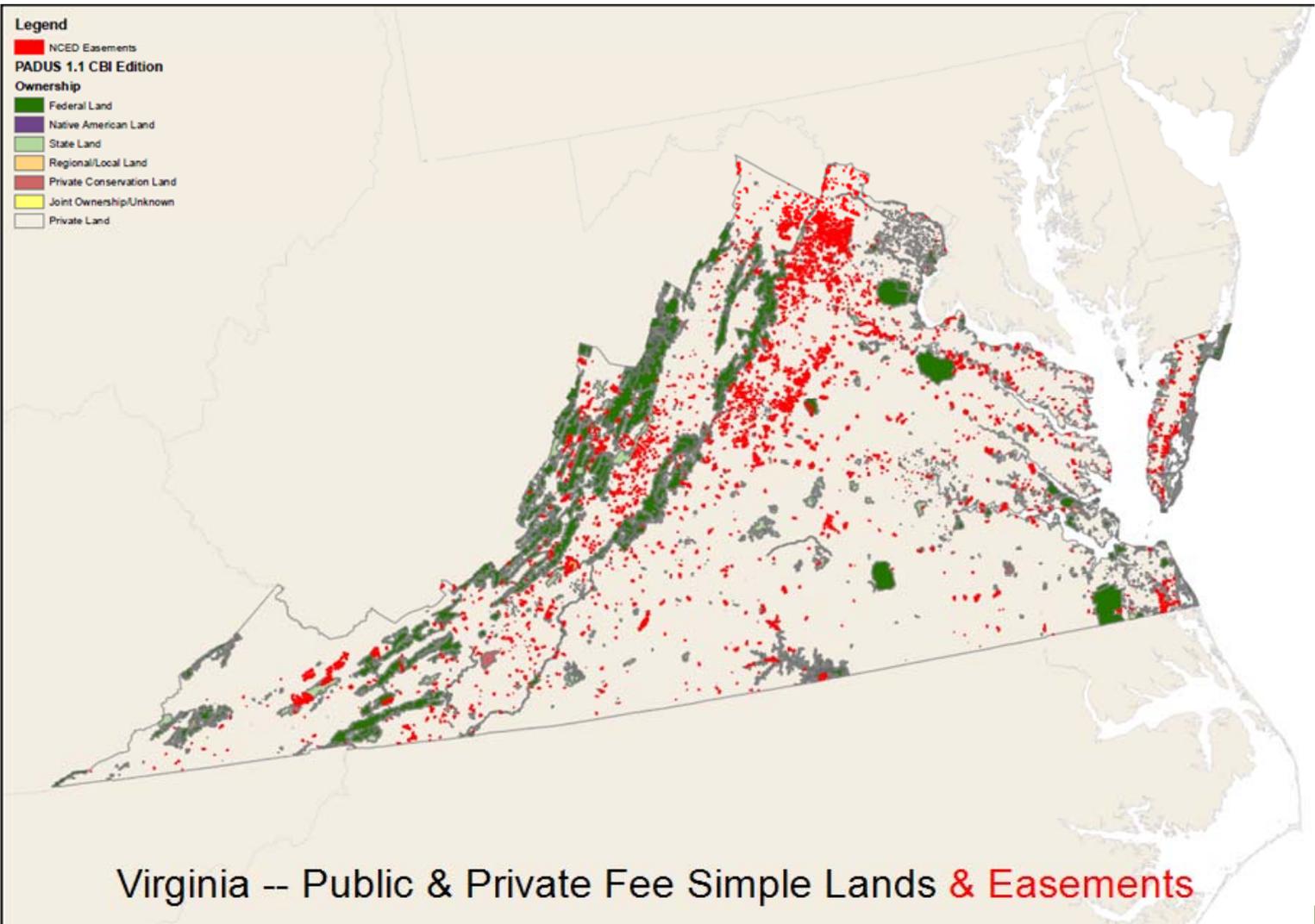
Application: Conservation Planning

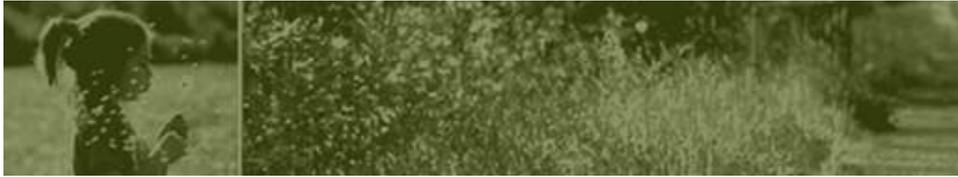
National Conservation Easement Database

- Group Home
- Profile
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- Discussions
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Dennis Grossman

- Messages
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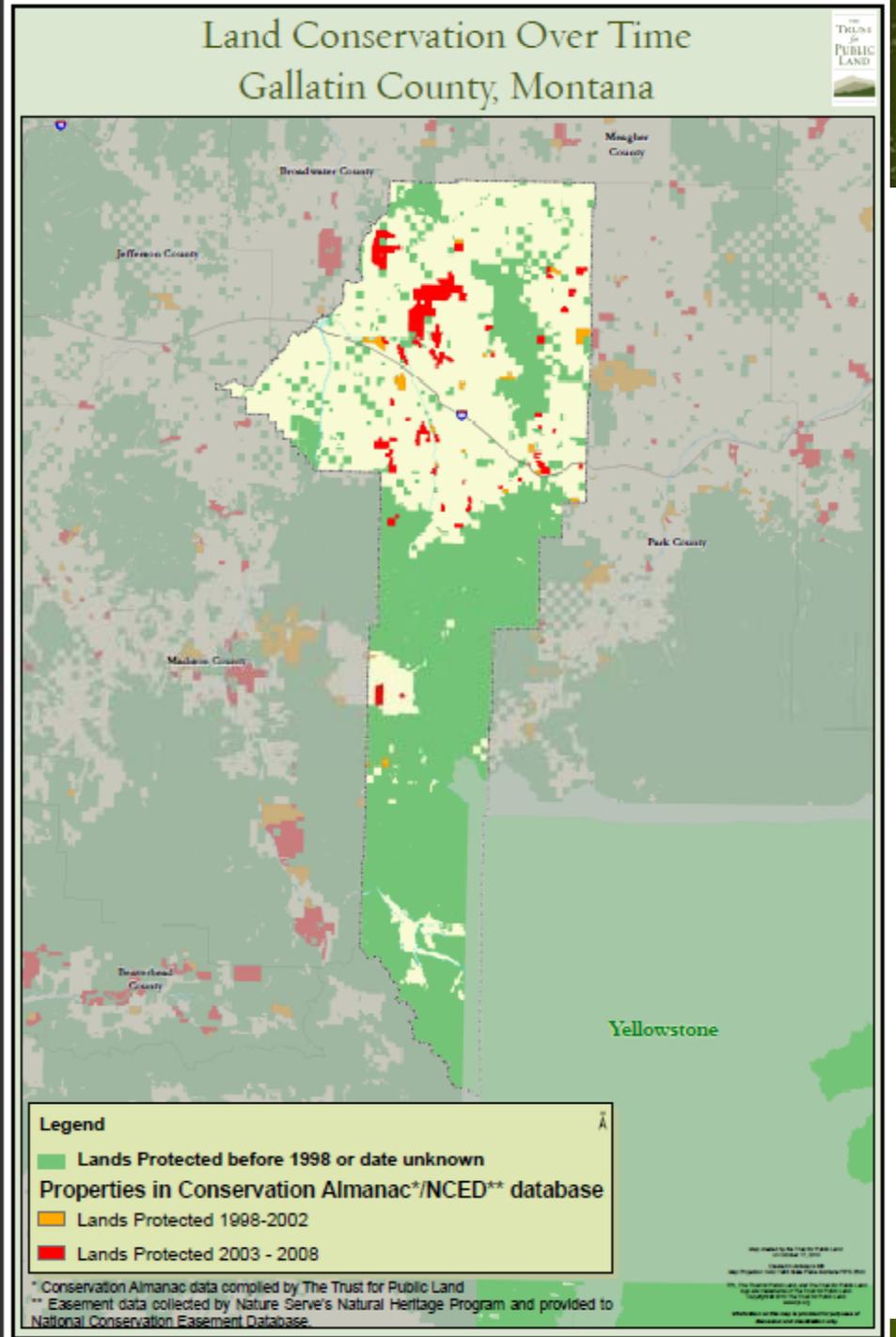




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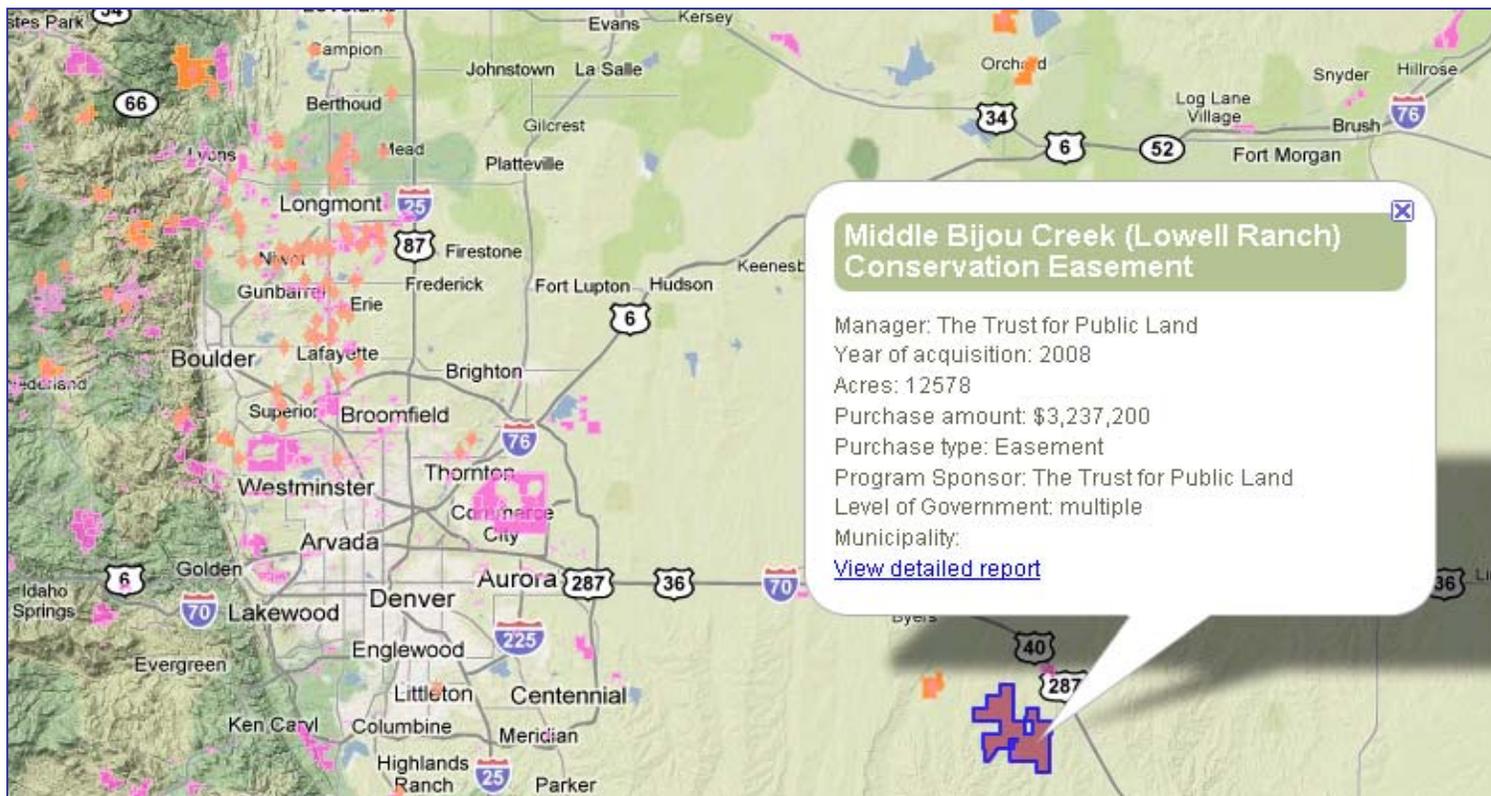
Application: Analyze Progress of Protection





Application: Analyze Economic Benefits

Saving Colorado's Tax Credit Program





Application: Analyze Economic Benefits

Exhibit 2. Estimated Annual Per Acre Value of Ecosystem Services By Ecosystem Type

Ecosystem Type	Ecosystem Service(s)	Value Per Acre Per Year (2008\$)	Source
Barren	None	N/A	
Emergent Herbaceous Wetland	Flood control, water supply; fish and wildlife habitat; recreation; aesthetics	\$784	Roberts & Leitch, 1997
Woody Wetland	Flood control, water supply; fish and wildlife habitat; recreation; aesthetics	\$784	Roberts & Leitch, 1997
Deciduous Forest	Grazing; carbon sequestration; habitat provision	\$879	Ingraham & Foster, 2008
Evergreen Forest	Grazing; carbon sequestration; habitat provision	\$879	Ingraham & Foster, 2008
Mixed Forest	Grazing; carbon sequestration; habitat provision	\$880	Ingraham & Foster, 2008
Scrub/Shrub	Carbon sequestration	\$610	Ingraham & Foster, 2008
Sagebrush	Dilution of waste water; natural purification of water; erosion control; habitat for fish and wildlife; recreation	\$82	Loomis et al, 2000
Grassland/Herbaceous	Grazing; dilution of waste water; natural purification of water; erosion control; habitat for fish and wildlife; recreation	\$85	Loomis et al, 2000



Application: Analyze Economic Benefits

Finding: Every dollar invested in easements by Colorado returns \$6.



A RETURN ON INVESTMENT:
THE ECONOMIC VALUE OF
COLORADO'S CONSERVATION EASEMENTS



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BusinessWeek

THE ASSOCIATED PRESS February 1, 2010, 2:48PM ET

Report: Conservation easements good investment

By JUDITH KOHLER

DENVER

Coloradans reap roughly \$6 in benefits for every \$1 invested in efforts to keep agricultural land and other open spaces from being developed, a report released Monday suggests.

Lawmakers reached a favorable compromise: rather than a permanent 2/3 reduction, a 50% reduction for the next 3 years.



Application: Dept of Defense Base Buffering



Strategic Conservation Planning Analysis

Integrated Database Analysis of 58 Base Locations

- LandVote
- Conservation Almanac
- National Conservation Easement Database

Key Findings

- Potential conservation partners
- Potential sources of matching funds
- Average cost to protect land, by fee or easement

Large Landscape Tools Project

Project Objective

Identify online data and tools that will uniquely support and advance large landscape conservation

Tasks

- **Inventory**
Identify existing data and tools that are pertinent or adaptable to large landscape conservation.
- **Analyze**
Evaluate gaps in existing technologies as they relate to large landscape conservation.
- **Design**
Recommend an approach and design for a Large Landscape Conservation GIS Portal.
- **Demonstrate**
Provide Proof of Concept demonstrations for large landscape conservation analysis. (Quabbin to Quebec Corridor, Crown of the Continent and Chattahoochee/Apalachicola Basin)





Department of Interior LandScape Decision Tool



Conservation Data Management & Analysis

- **Building the Next Generation Decision Support Platform for DOI**
- **Following DOI's strategic plan**
- **ESRI is prime contractor and key partners on Task Order 1 are TPL, NatureServe and CBI**
- **Using Cloud and Managed Services based on ArcGIS Online technology**
- **Create landscape conservation “decision support tool”**
- **LCCs are an example of a type of user group that the tool is intended to benefit**



TPL “4P” Landscape Conservation Model





CONNECTICUT RIVER PROGRAM

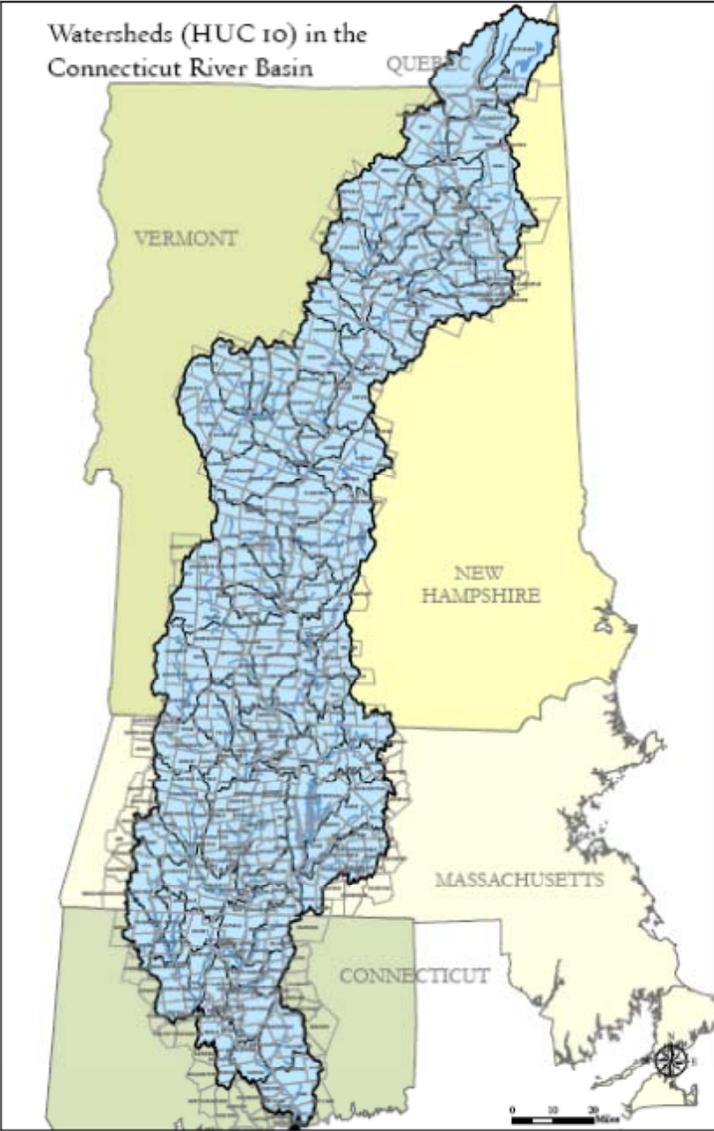
published by THE TRUST FOR PUBLIC LAND

"Few rivers in the United States offer more potential for a satisfying total environment to a greater concentration of people."

CONSERVING THE HEART OF NEW ENGLAND

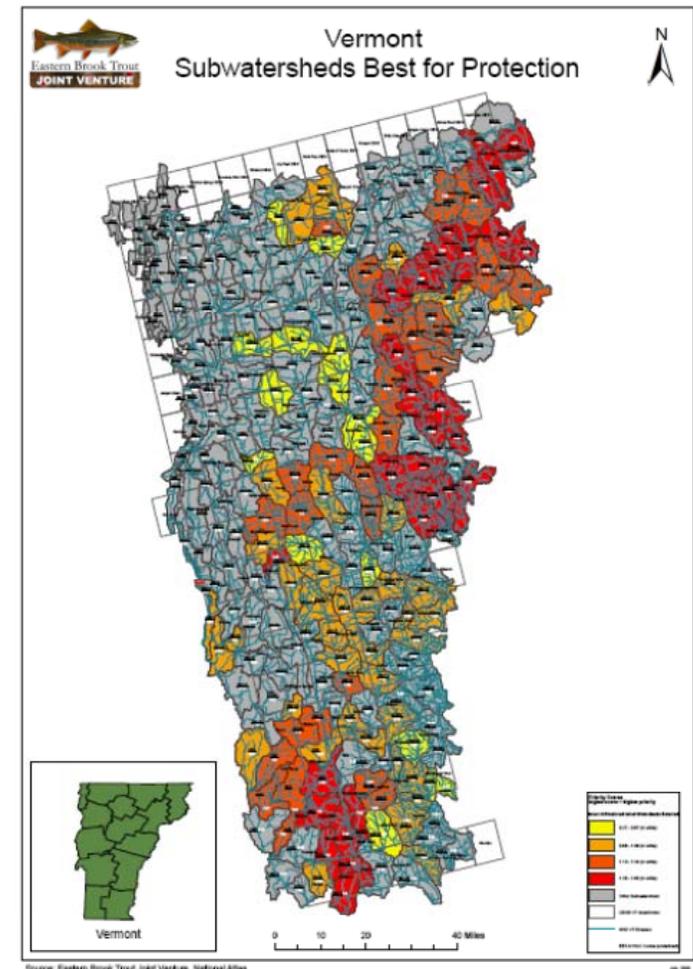
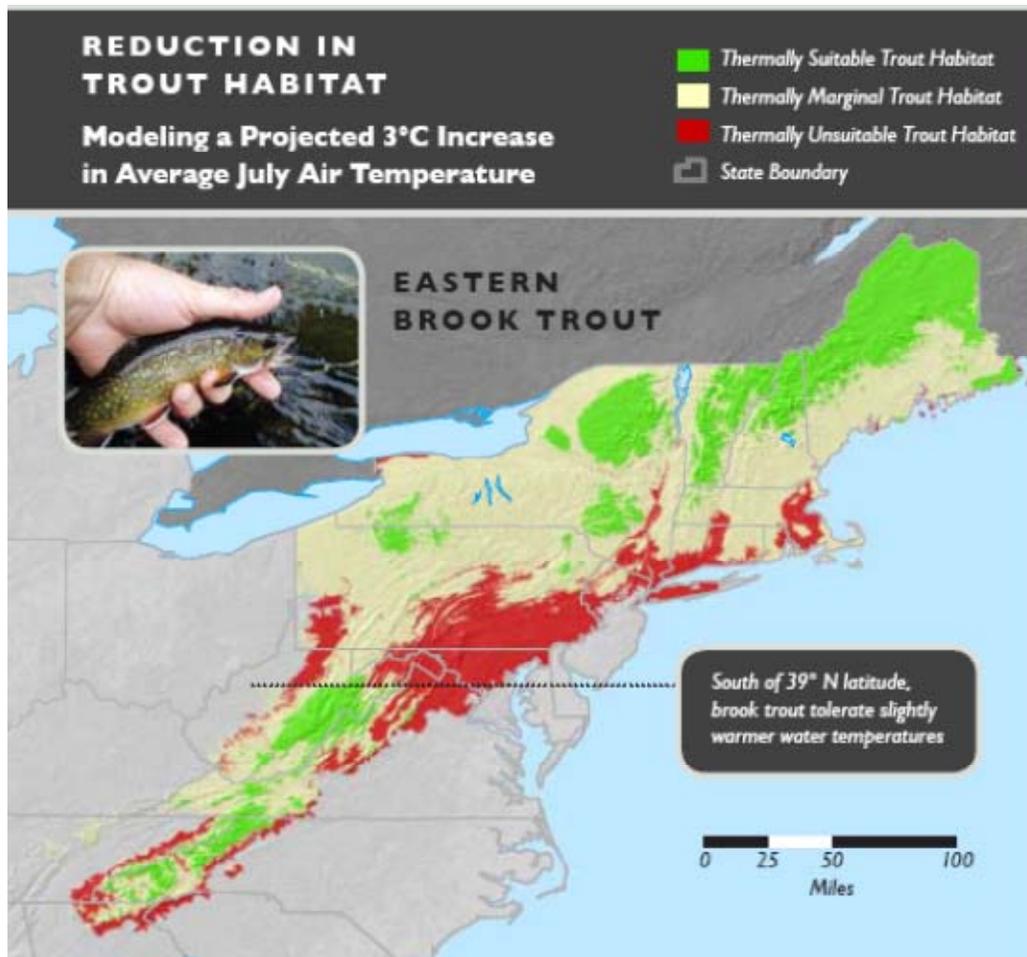
THE CONNECTICUT RIVER WATERSHED

THE TRUST for PUBLIC LAND
CONSERVING LAND FOR PEOPLE

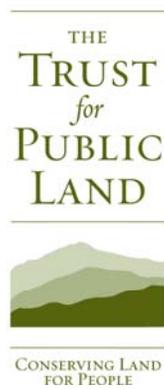




Landscape Conservation Objective: Eastern Brook Trout

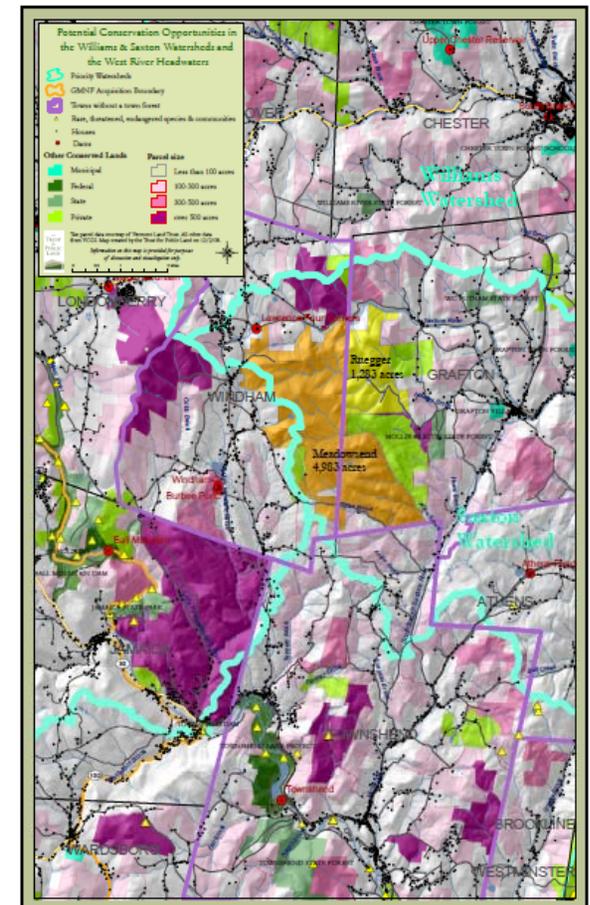
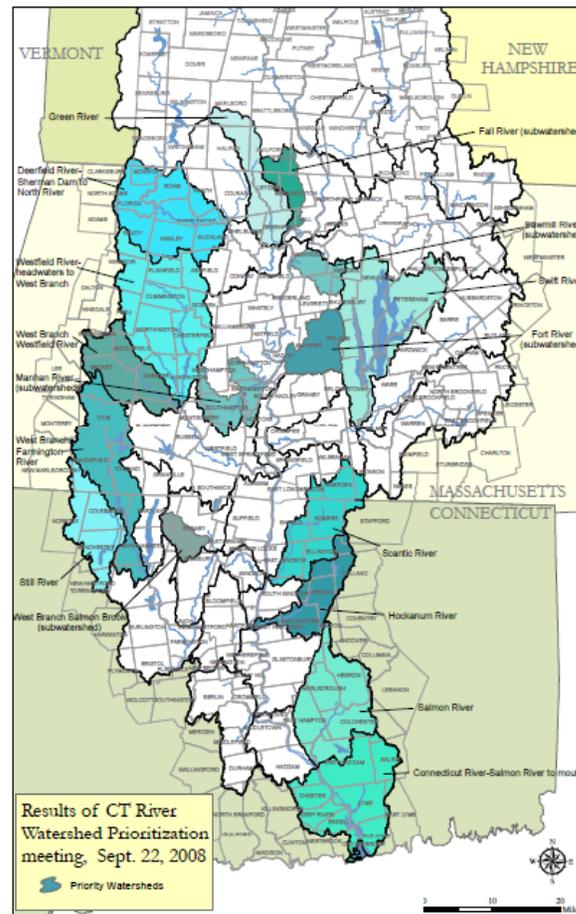
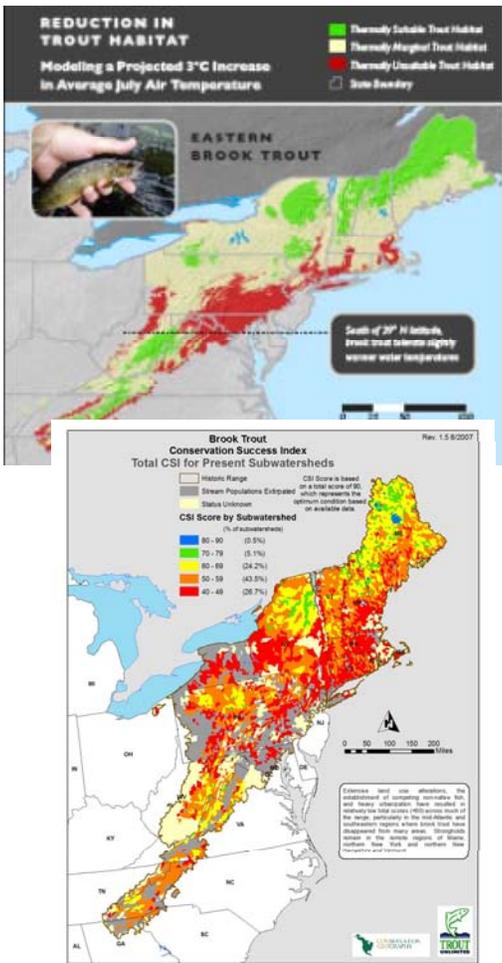


PARTNERSHIP: CT River Watershed Fisheries



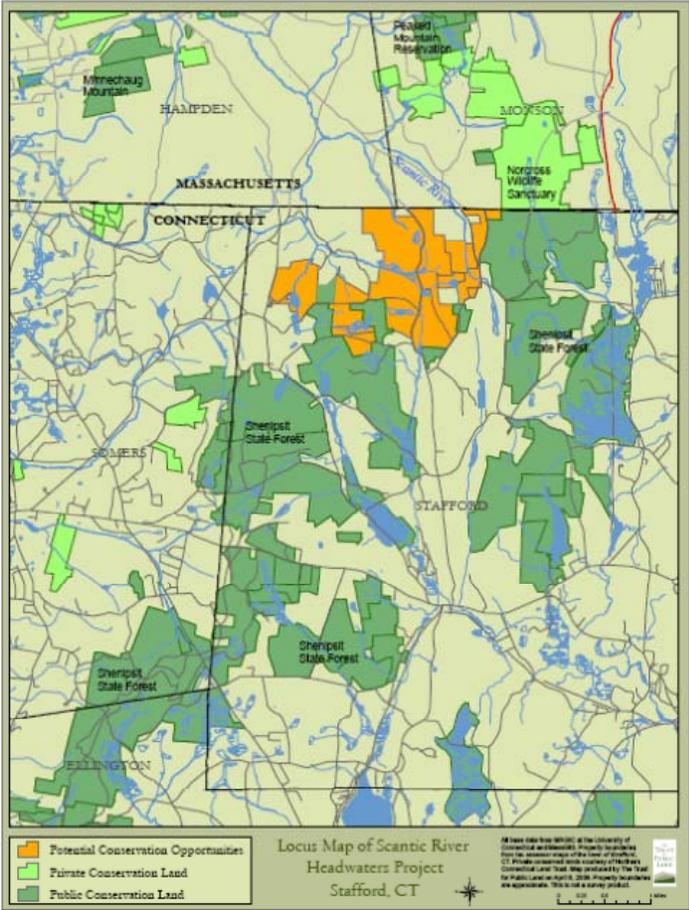


PLANNING: Fisheries Science into Parcel Priorities

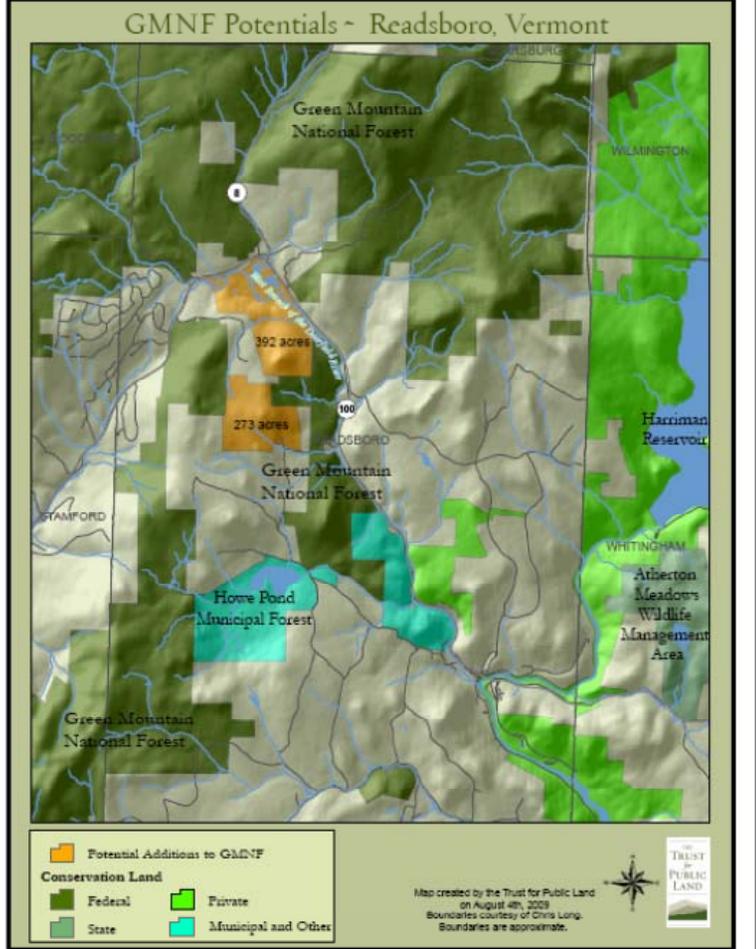




PROJECTS: TPL Projects Target Trout Strongholds

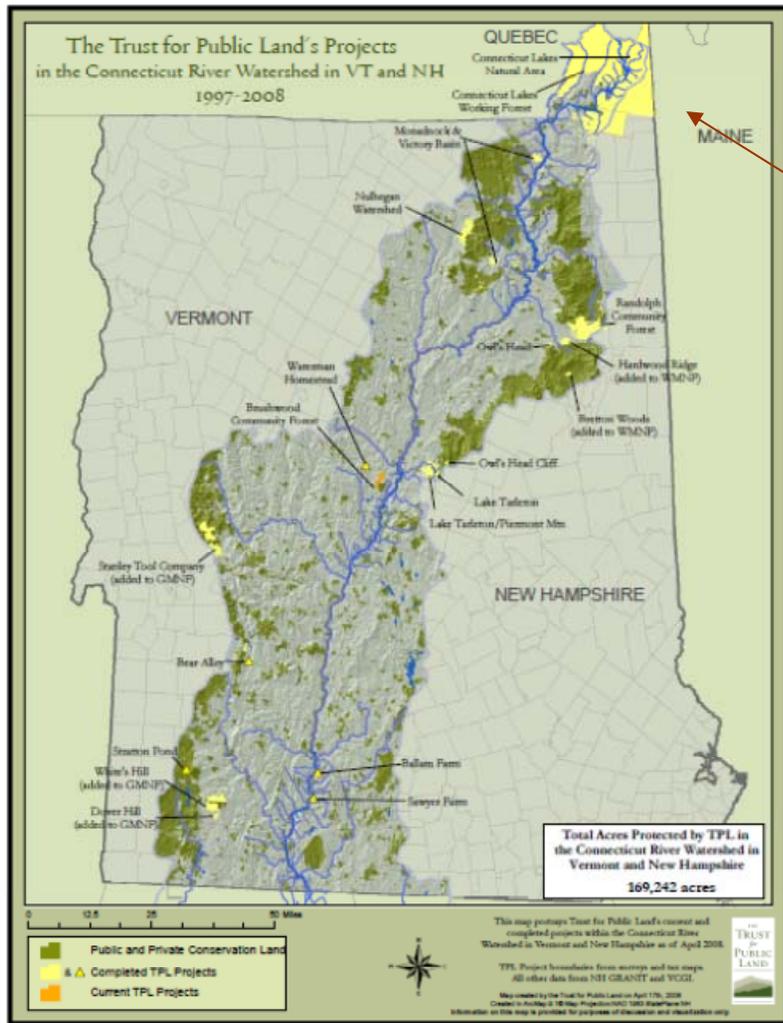


Scantic River Headwaters (CT)





Integrating Restoration and Conservation



*CT Lakes Headwaters
Coos County, NH*

171,000 acres—3% of NH!



TPL Is Using LCC Science for Resiliency Planning

Purpose & Need Approach Applications Outlook

Designing Sustainable Landscapes for Wildlife Decision-Support Tools for Conservation

Fostering Climate Adaptation in the Northern Forest: Mahoosuc to High Peaks Landscape Conservation Plan

PROJECT RATIONALE: The Mahoosuc to High Peaks region offers one of the most significant sites in the Northeast to model climate adaptation for species such as Canada Lynx, Blackwell's Thrush, Northern Bog Lemming, and Eastern Brook Trout.¹ Bounded by Nash Stream State Forest in New Hampshire and Mansfield Bigelow Range, this 3.2 million-acre corridor is the keystone to connectivity across the 26 million-acre Northern Forest. It is also a landscape with a unique density of naturally restored forest types across a wide range of gradients (a "solid" "slab"), specific habitat refugia that have been identified for climate-sensitive species, and favorable projections for future climate relative to adjacent areas—such as sustained snowpack even through the end of the century.

The Landscape Conservation Plan will define a new landscape planning boundary for the "Mahoosuc-High Peaks Region" that integrates the existing boundaries of the Mahoosuc Initiative, High Peaks Initiative, and the swath of connecting lands between them covered by a few large ownerships.

The project area has been identified as among the most important landscapes in the eastern U.S. for connectivity and climate resilience (see right).² The region is the primary east-west connecting corridor between 34 million acres of Northern Forest in Maine and 12 million acres of Northern Forest in New Hampshire, Vermont and New York. It is also an important site for resilience of specific habitats and species. The northern forest types (boreal and Laurentian) in this region are projected to see fewer impacts from climate-driven pests and other stressors.³ The region is also a critical site for specific habitat refugia, with projections that it will retain suitable habitats with reliable snowpack for species like snowshoe hare and Canada lynx and aquatic habitat for coldwater species such as eastern brook trout.⁴

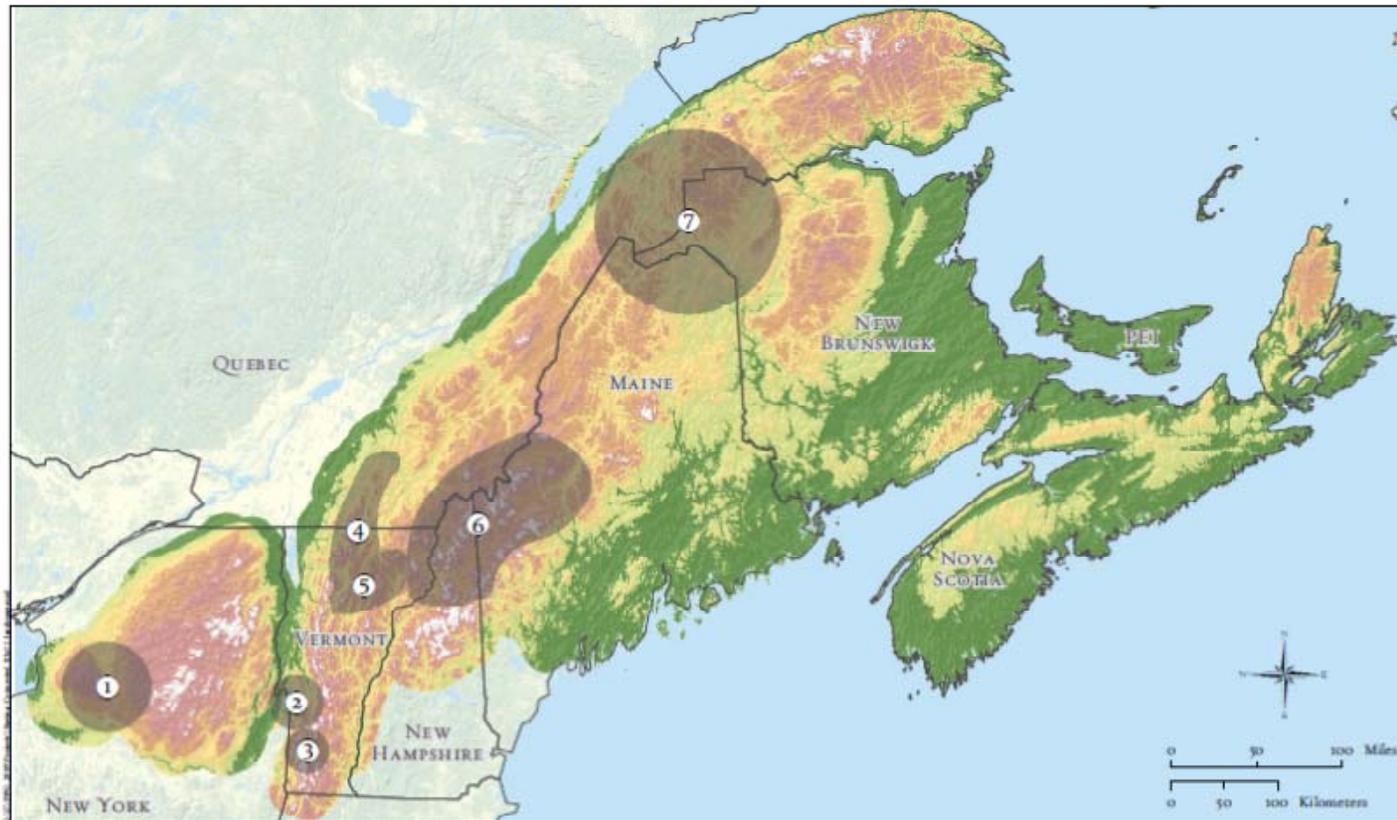
Finally, this site is a promising for adaptation due to the sophistication of existing conservation partnerships: the Mahoosuc Initiative and High Peaks Initiative have protected more than 35,000 acres since 2005. These community-based and science-driven partnerships have another 86,000 acres of projects in either final phase of completion or under immediate consideration for public funding. Given the high density of large landowners (primarily TNCs and REITs) and projected viability of ownership

Footnotes:

- ¹ "A Biological Analysis of the High Peaks Region of Maine's Western Mountains", M. Curtis et al., 2011
- ² "Mapping Connected", Anderson et al., March 2010 and "Designing Resilient Landscapes for Wildlife", Anderson et al., 2011
- ³ "Pest Vulnerability Mapping, Mitigation and Region: Factors contributing to insect pest vulnerability include drought stress (Collins and Woodcock, 1996), high stand density, species composition, age, elevation, slope", Roger D. D. Franklin, 2003, and soil type (Strommen et al., 1998). Williams and others (1988) developed techniques using a Climate Risk Index (CRI) to assess vulnerability to disturbance and forest loss due to soil holding capacity, site aspect and forest structure for determining insect damage and health issues.
- ⁴ "Heating 'Troubled Waters'", Hawk et al., 2008 and Pielke, P.A., 2007. Global climate change and fragmentation of water trails and absorption in the western Appalachian Mountains. Pages 117-131 in D. Strommen, P. Dreyer, and R. H. Brown, eds. Proceedings of 10th State-of-the-Art Meeting on Water Trails, 2007. Trout.



STAYING CONNECTED IN THE NORTHERN APPALACHIANS HIGH PRIORITY LINKAGE AREAS

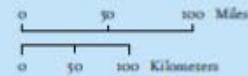


LEGEND
 ● High Priority Linkage
 □ State/Province Boundary

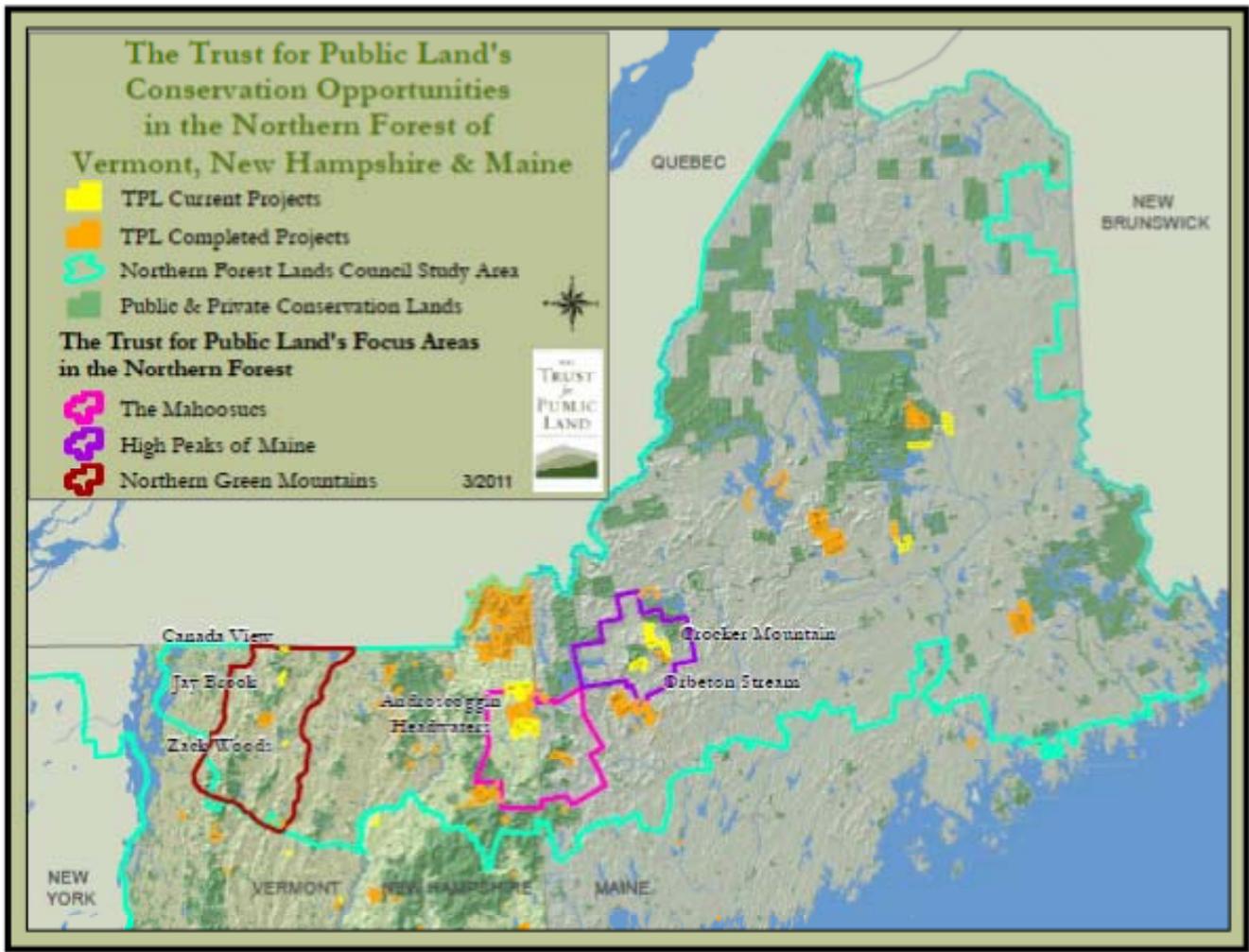
Elevation Class (feet)
 0 - 400
 400 - 700
 700 - 1,100
 1,100 - 1,600
 1,600 - 2,400
 2,400 - 6,256

- HIGH PRIORITY LINKAGES**
- ① TUG HILL PLATEAU ↔ ADIRONDACK MOUNTAINS (NY)
 - ② ADIRONDACK MOUNTAINS ↔ GREEN MOUNTAINS (NY/VT)
 - ③ TACONIC MOUNTAINS ↔ SOUTHERN GREEN MOUNTAINS (NY/VT)
 - ④ NORTHERN GREEN MOUNTAINS (VT/CANADA)

- ⑤ WORCESTER RANGE ↔ NORTHEAST KINGDOM (VT)
- ⑥ NORTHEAST KINGDOM ↔ NORTHERN NH
 ↔ WESTERN ME MOUNTAINS (VT/NH/ME)
- ⑦ MAINE'S NORTH WOODS ↔ QUEBEC'S
 GASPE PENINSULA (ME/CANADA)



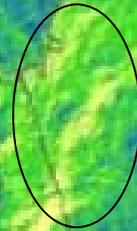
Created March 2008 by
The Nature Conservancy
 Protecting nature. Preserving life.
 Data Source: TNC & ERI



- Habitat Mega-Connectors and Refugia
- Headwaters of major NE rivers
- Famed recreation (A.T. & L.T.; hunt/fish)

Connectivity: Network Connectivity

Upper Androscoggin to
Mahoosucs-High Peaks

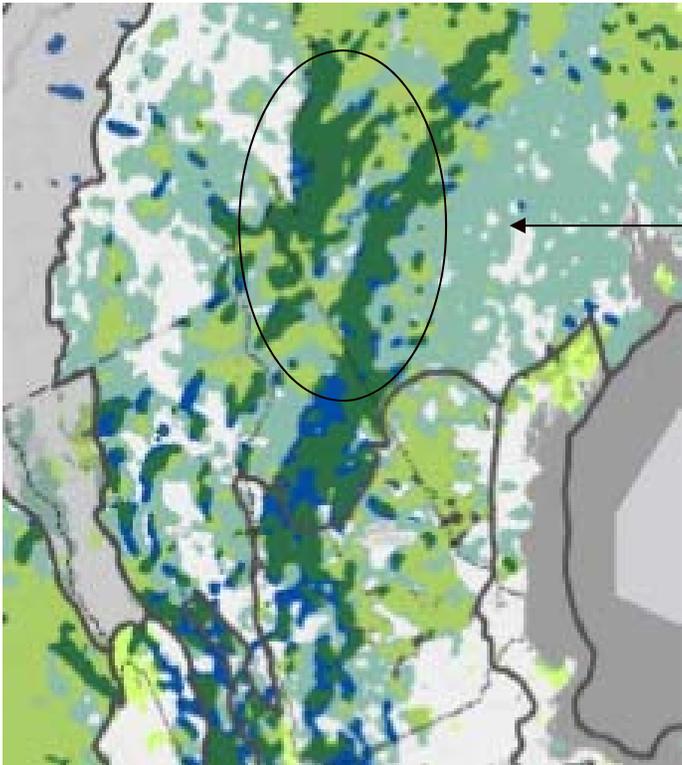


**Regional Pinch
Points**
Based on circuit theory and
McRae's
circuitscape

Coarse Filter



Lynchpin to Northern Forest Connectivity



Upper Androscoggin to Mahoosucs-High Peaks

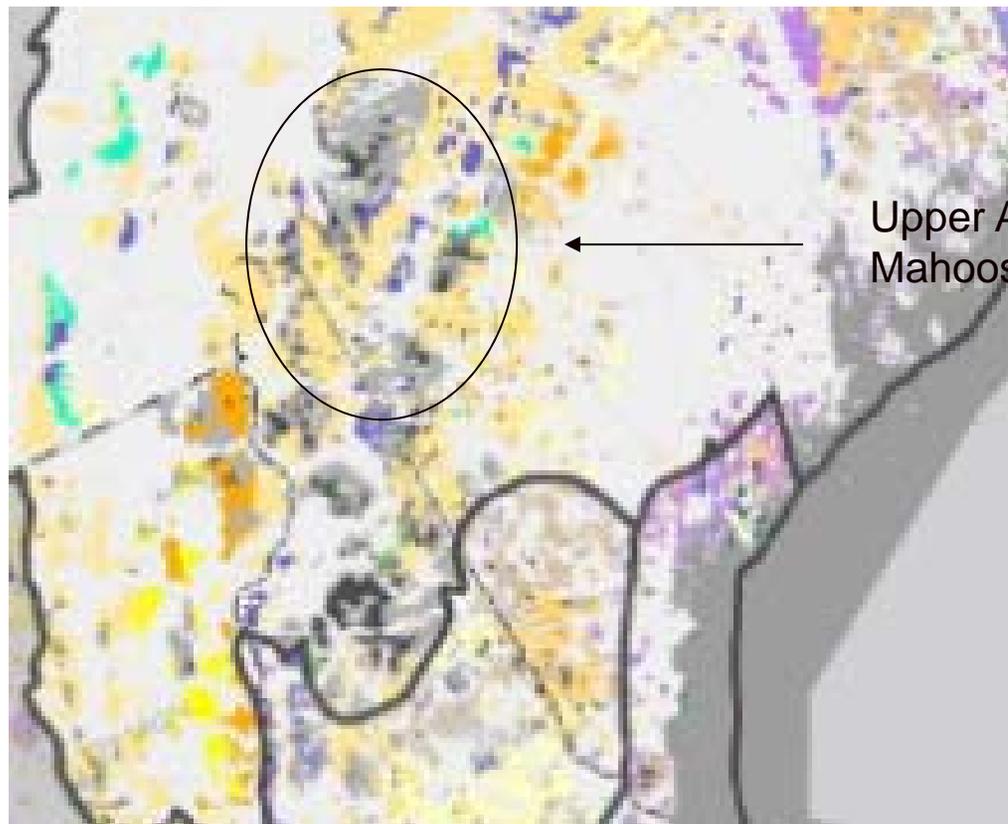
Map 6.36 Networks of resilient sites.

Anderson, Clark, and Olivero Sheldon. 2012.
Resilient Sites for Terrestrial Conservation in the Northeast and Mid-Atlantic Region.

Map 6.36: Networks of resilient sites based on linkages and focal areas. This map integrates the focal areas with the regional flow concentrations. In the map, focal areas located in areas of high flow concentrations are shown in olive green. Focal areas that are large and highly intact have diffuse flow and are shown in pale green. Key linkages are shown in areas with no focal area but high amounts of concentrated flow, and these are shown in dark blue. Blue-green areas are fairly intact regions with diffuse flow but no identified focal area.



Regionally Unique Geology

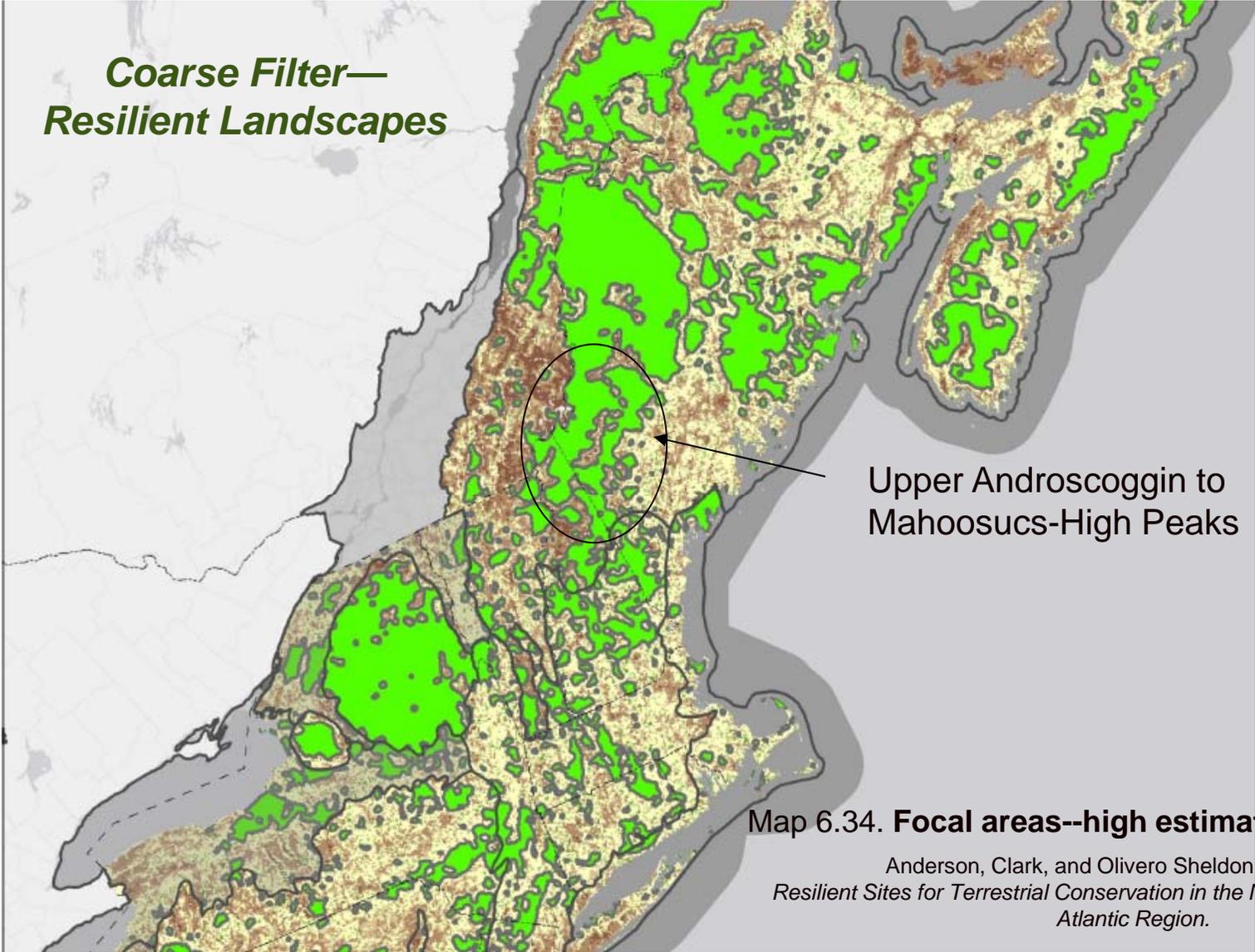


Upper Androscoggin to
Mahoosucs-High Peaks

Map 6.33 Most resilient—geophysical.

Anderson, Clark, and Olivero Sheldon. 2012.
*Resilient Sites for Terrestrial Conservation in the Northeast
and Mid-Atlantic Region.*

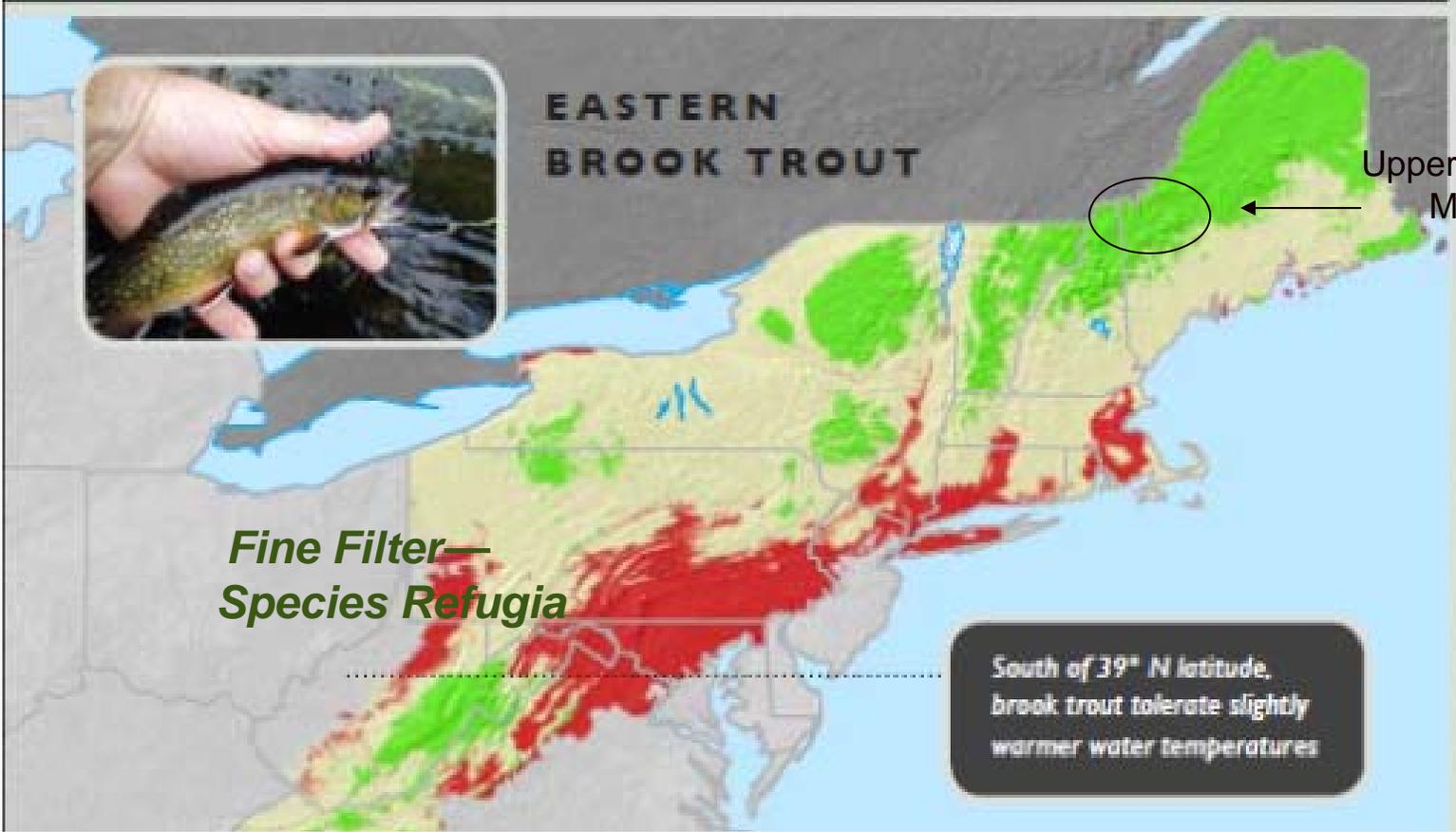
Map 6.33: The most resilient examples of each geophysical setting in the region. This map shows only the 1000-acre hexagons that score above the mean for estimated resilience as compared to others in their ecoregion; each high scoring hexagon is colored based on its corresponding geophysical setting. This map reveals how the settings are reflected in the resilience scores.



REDUCTION IN TROUT HABITAT

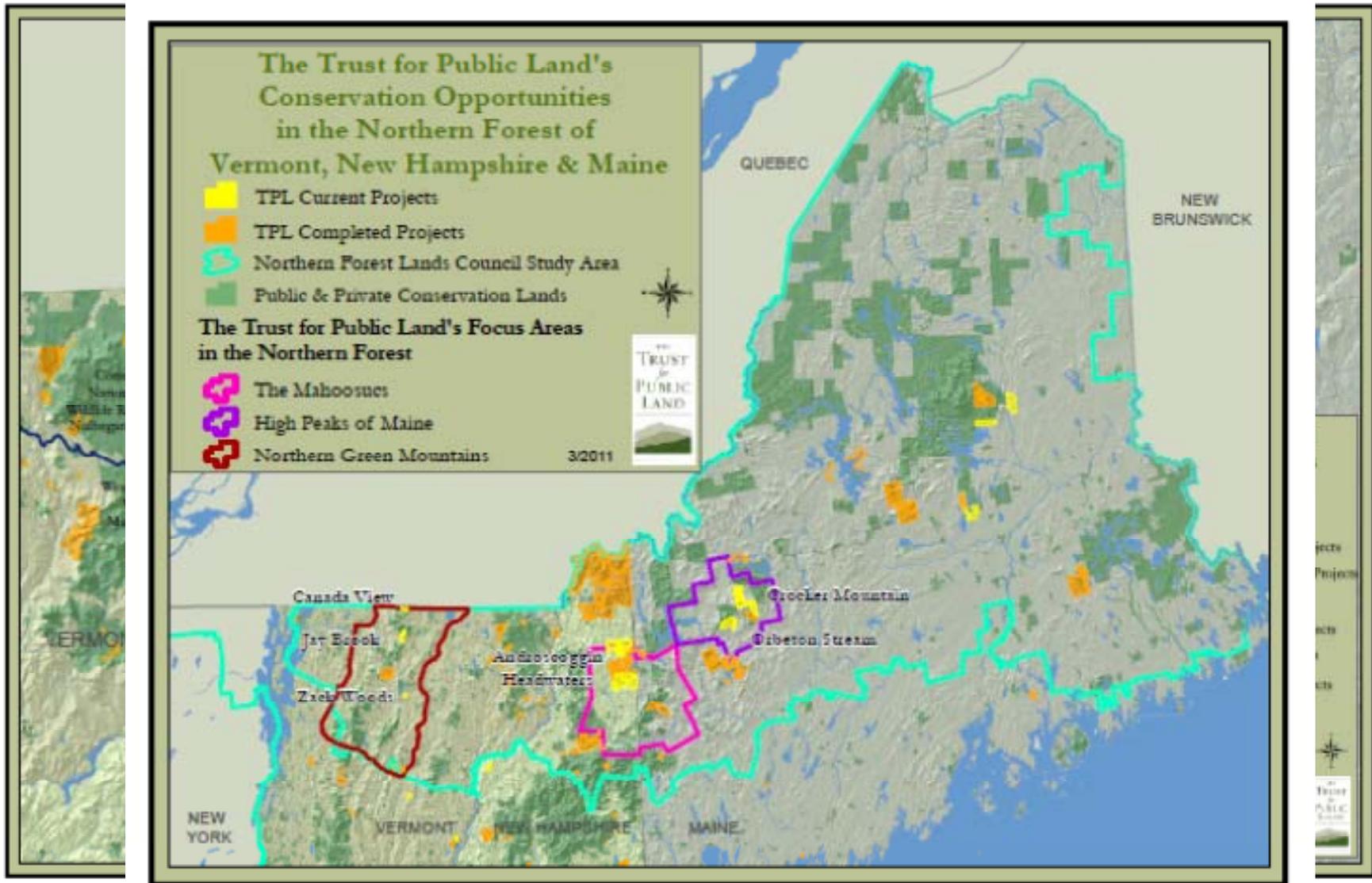
Modeling a Projected 3°C Increase in Average July Air Temperature

- Thermally Suitable Trout Habitat
- Thermally Marginal Trout Habitat
- Thermally Unsuitable Trout Habitat
- State Boundary



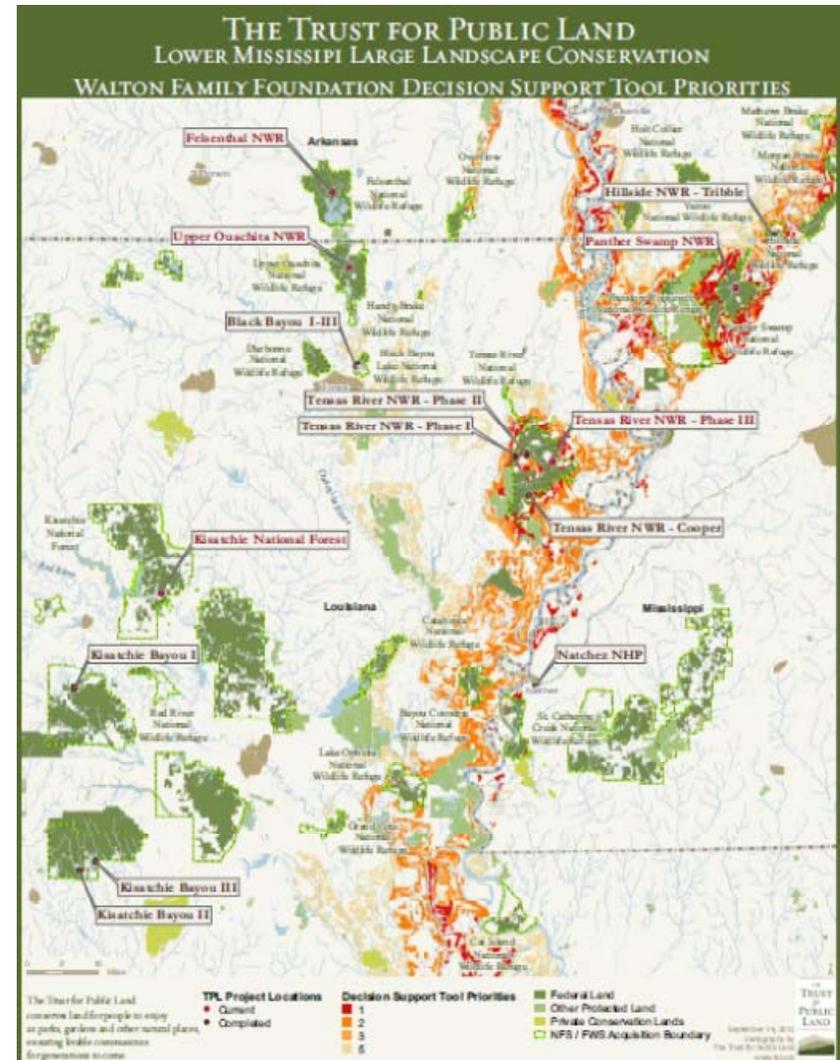
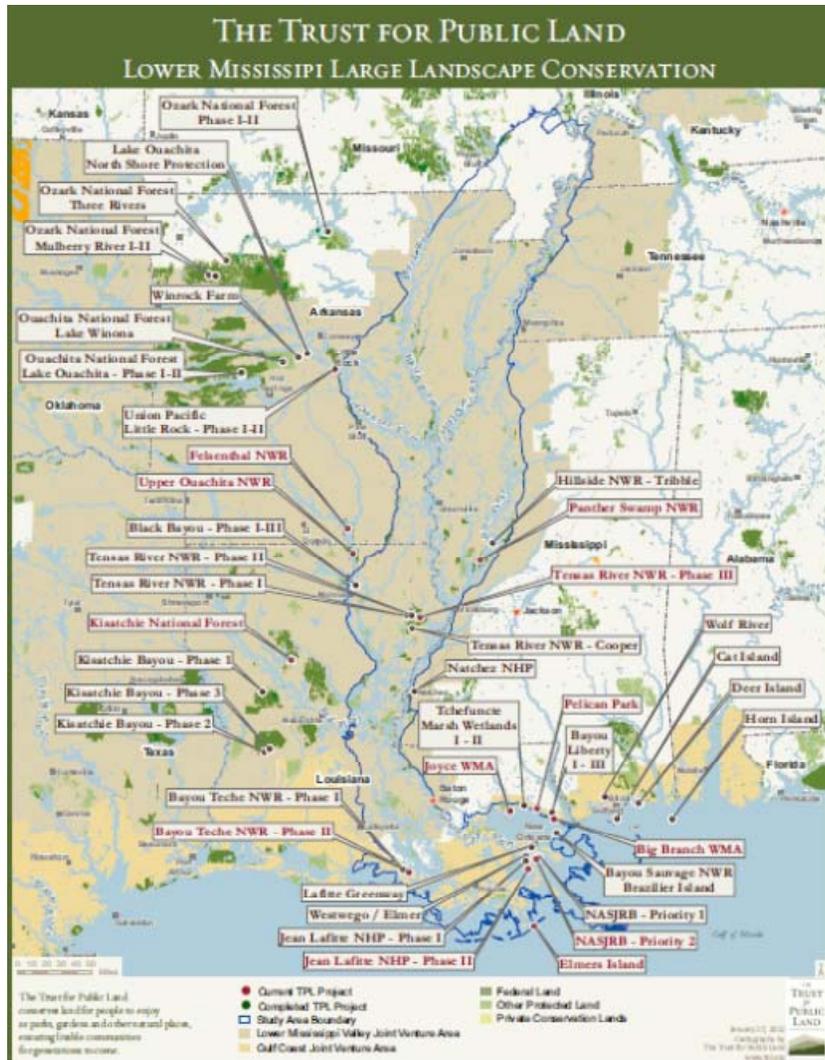
Fine Filter

Williams, Haak, et al. 2009.
Healing Troubled Waters.

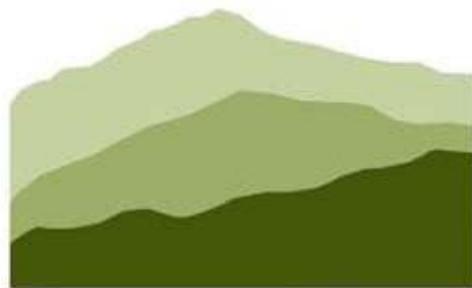




LCCs Help TPL Make the Landscape Shift



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Thank you