



CONNECTED AND RESILIENT

A VISION FOR A HEALTHY
THRIVING VERMONT

**House Natural Resources,
Fish & Wildlife**

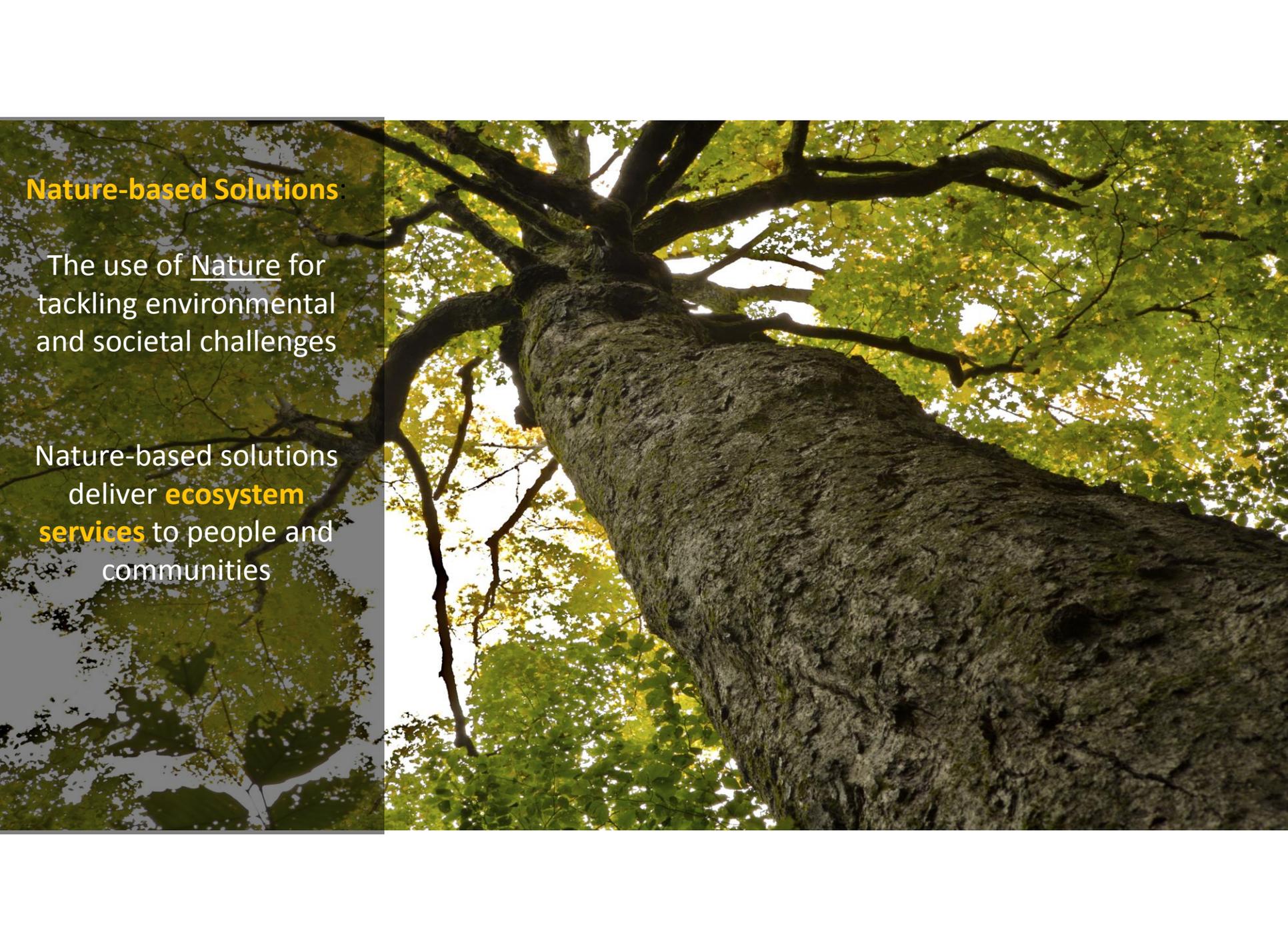
January 18, 2019

Rose Paul

Director of Science and Freshwater
Programs







Nature-based Solutions

The use of Nature for tackling environmental and societal challenges

Nature-based solutions deliver **ecosystem services** to people and communities

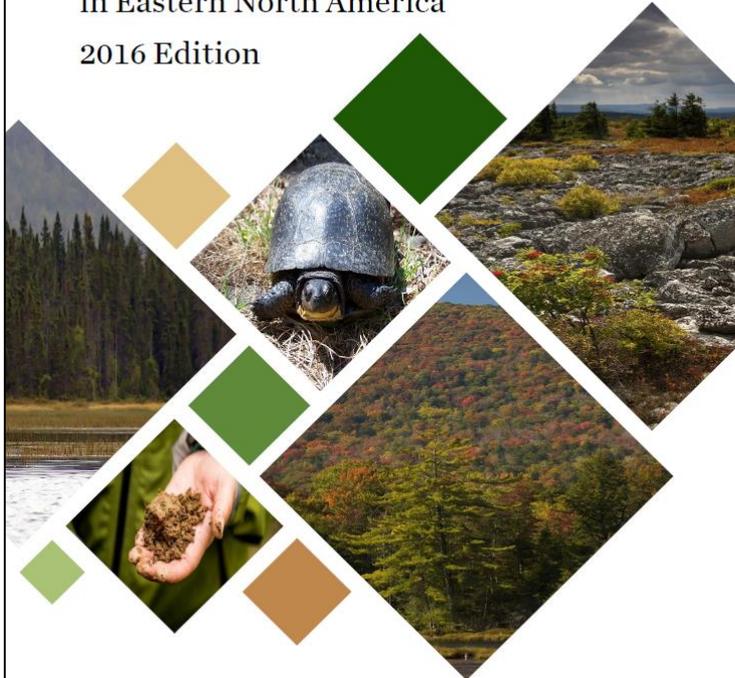


THE POWER OF NATURE

Nature-based solutions provide up to **37% of the emission reductions needed by 2030** to keep global temperature increases under 2^o C (per Paris Climate agreement).

How Nature Can Heal Our Planet (2018)

Resilient Sites for Terrestrial Conservation
in Eastern North America
2016 Edition



The Nature Conservancy, Eastern Conservation Science

Mark G. Anderson, Analie Barnett, Melissa Clark,
Charles Ferree, Arlene Olivero Sheldon, and John Prince

Resilient *and*
Connected Landscapes
for Terrestrial Conservation



RESILIENT LANDS



CONNECTED LANDSCAPES



CONSERVATION STRATEGIES



Resilience

Dictionary: The ability to become strong, healthy, or successful again after something bad happens



Ecological: The capacity for renewal in a dynamic environment



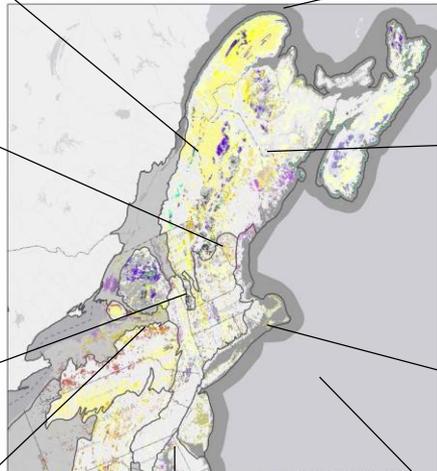
Vermont: losing 1,500 acres of forest/year over last ten years



Like **Tennessee's** climate in 100 years

Conserve the Stage







Sarah Wakefield



Tom Berry



Caitlin Cusack



© Bob Birdsall

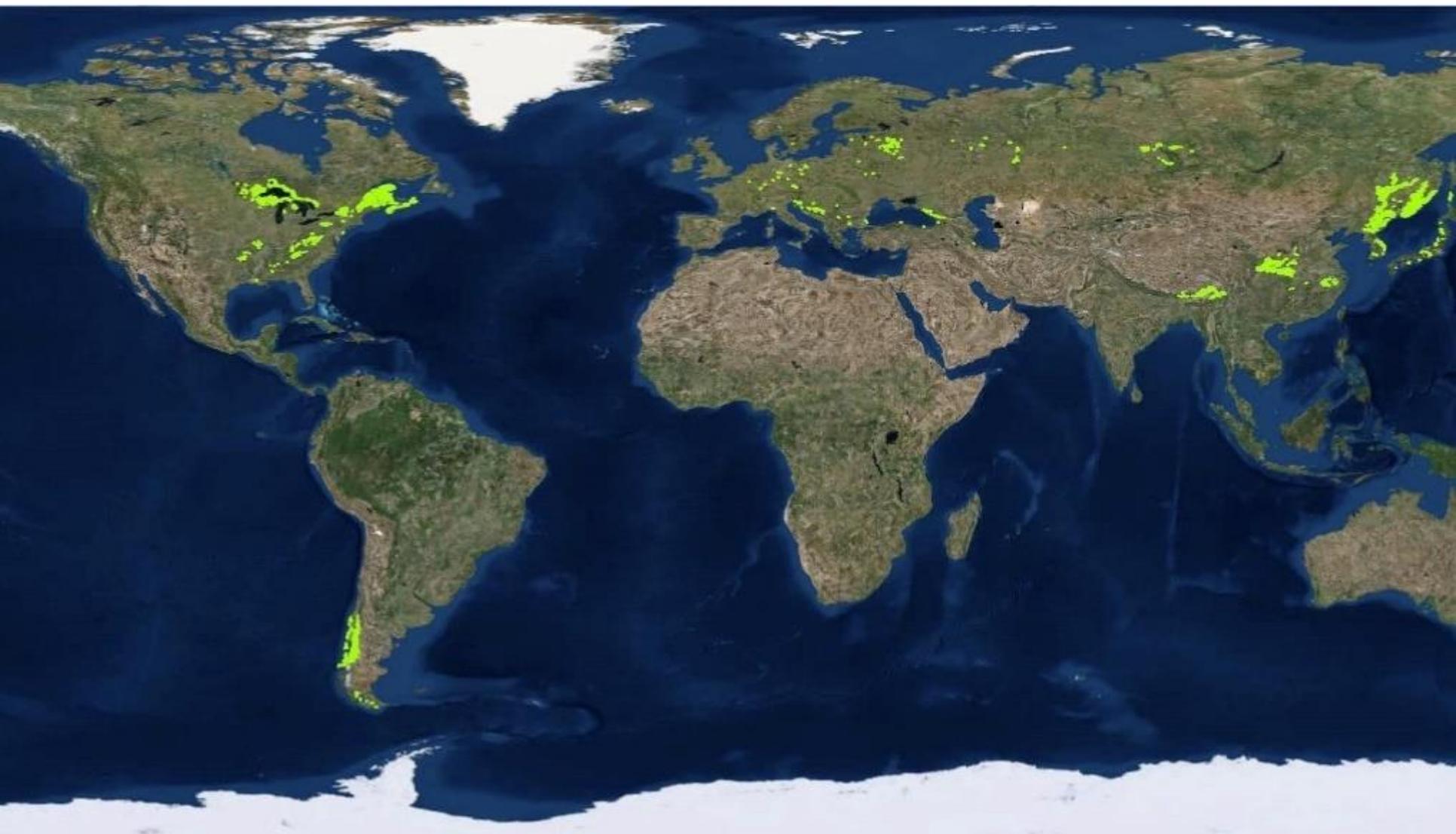


Lief Richardson



Local Connectivity





Long Distance Connectivity: a big network

1) Resilient Sites



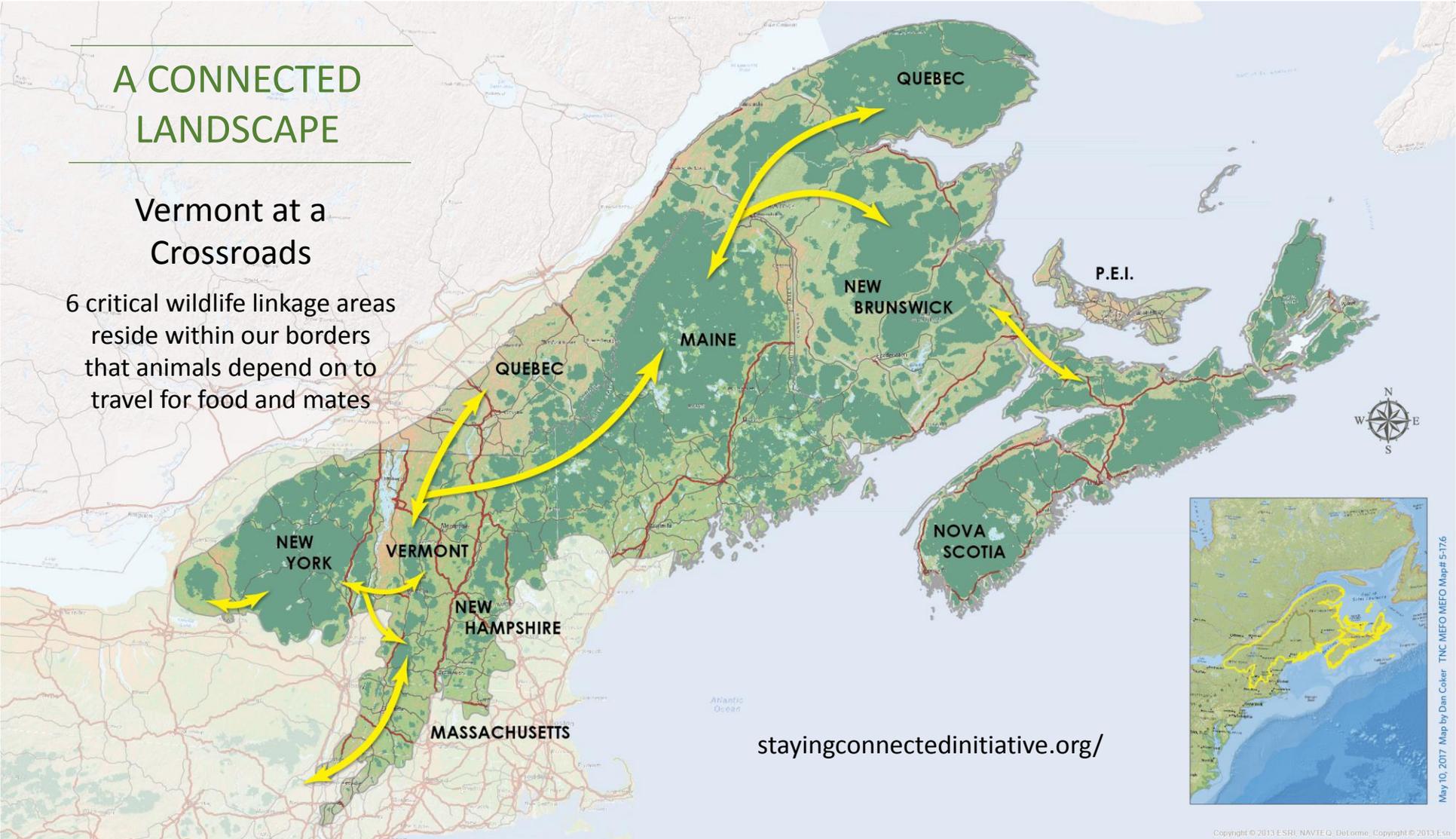
2) A Resilient and Connected Network of Sites to sustain diversity



A CONNECTED LANDSCAPE

Vermont at a Crossroads

6 critical wildlife linkage areas reside within our borders that animals depend on to travel for food and mates



stayingconnectedinitiative.org/

Protect, Restore and Manage

Manage to increase resilience of lands and waters

Physical

Remove unneeded dams; upsize culverts

Re-connect rivers to their floodplains

Allow periodic flooding

Enable wildlife crossings across roads

Manage forests for structural diversity

Large wood retention in forests and rivers

Build healthy soils in forests, on farms

Manage invasive species

Biotic

Keystone Species (e.g. beavers; elms)

Recruitment of the next generation





The Vermont We Depend On, Depends On Us



Wildlife and Forests

Trends, Challenges and
Opportunities

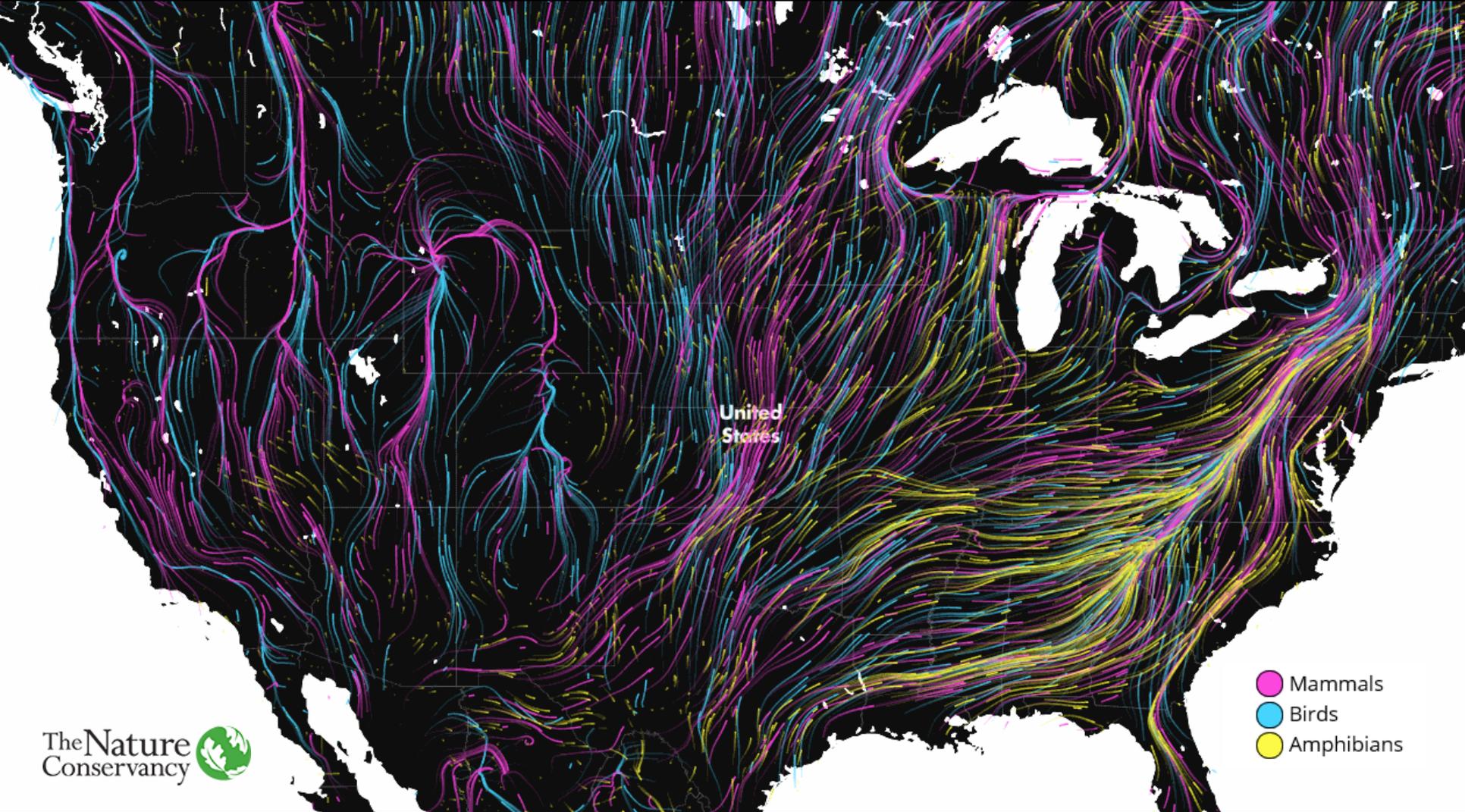
**House Natural Resources,
Fish & Wildlife**

January 18, 2019

Jim Shallow

Director of Strategic Conservation Initiatives







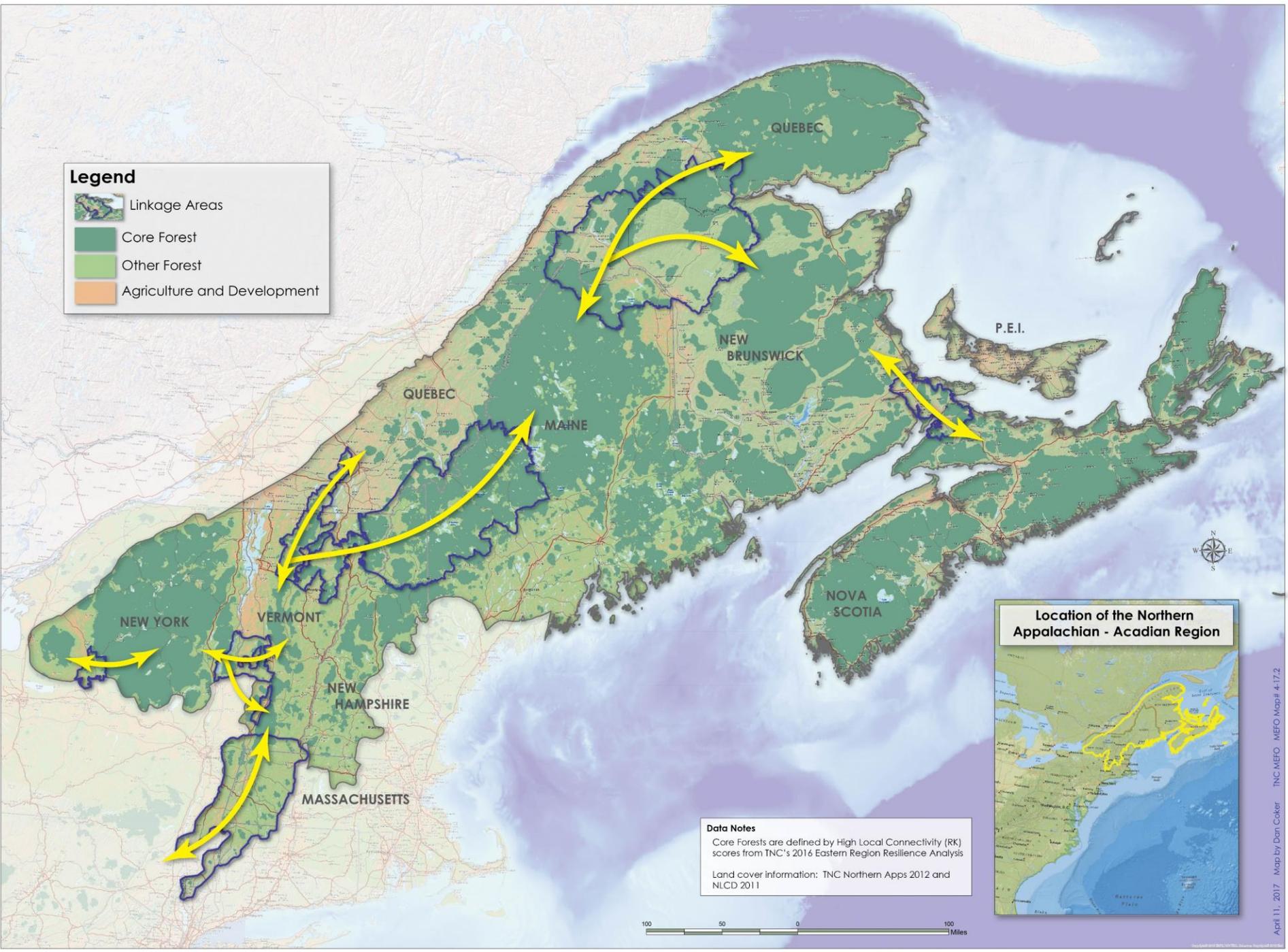






Legend

-  Linkage Areas
-  Core Forest
-  Other Forest
-  Agriculture and Development



Data Notes
Core Forests are defined by High Local Connectivity (RK) scores from TNC's 2016 Eastern Region Resilience Analysis
Land cover information: TNC Northern Apps 2012 and NLCD 2011

Losing Forest Wildlife Habitat

1981

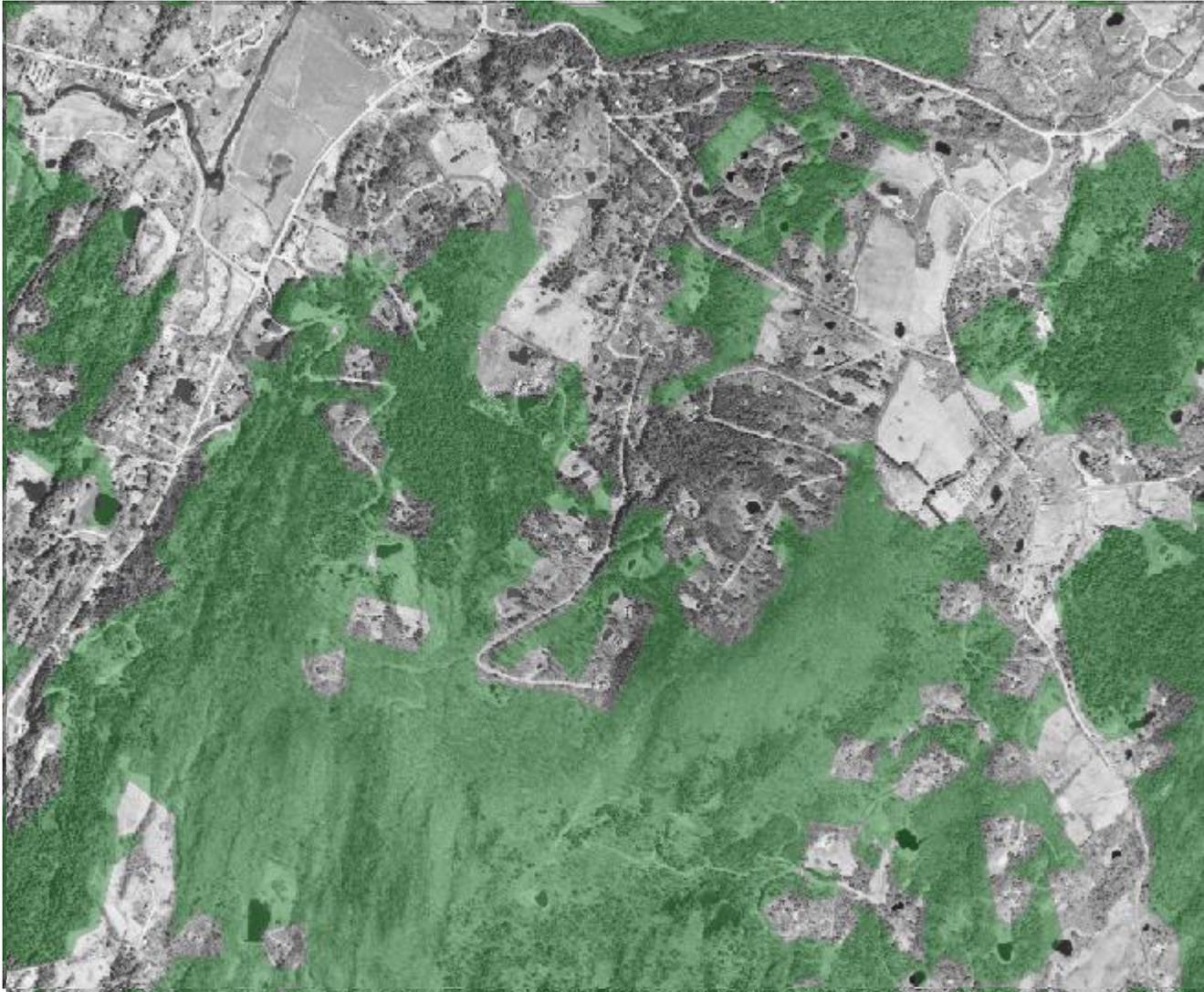


Image Credit: Jens Hilke (VT Fish & Wildlife)





THE POWER OF NATURE

TO IMPROVE VERMONT'S
WATER QUALITY and
REDUCE FLOOD IMPACTS

**House Natural Resources,
Fish & Wildlife**

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Rose Paul

Director of Science and Freshwater
Programs



Vermont's freshwater resources

VT has more aquatic species than any other New England state

Threats

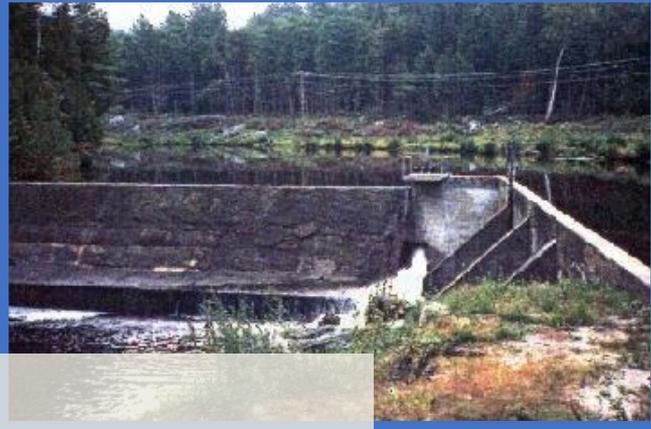
Barriers to movement (dams, culverts)

Poor river management and development

Nonpoint source pollution

Climate change



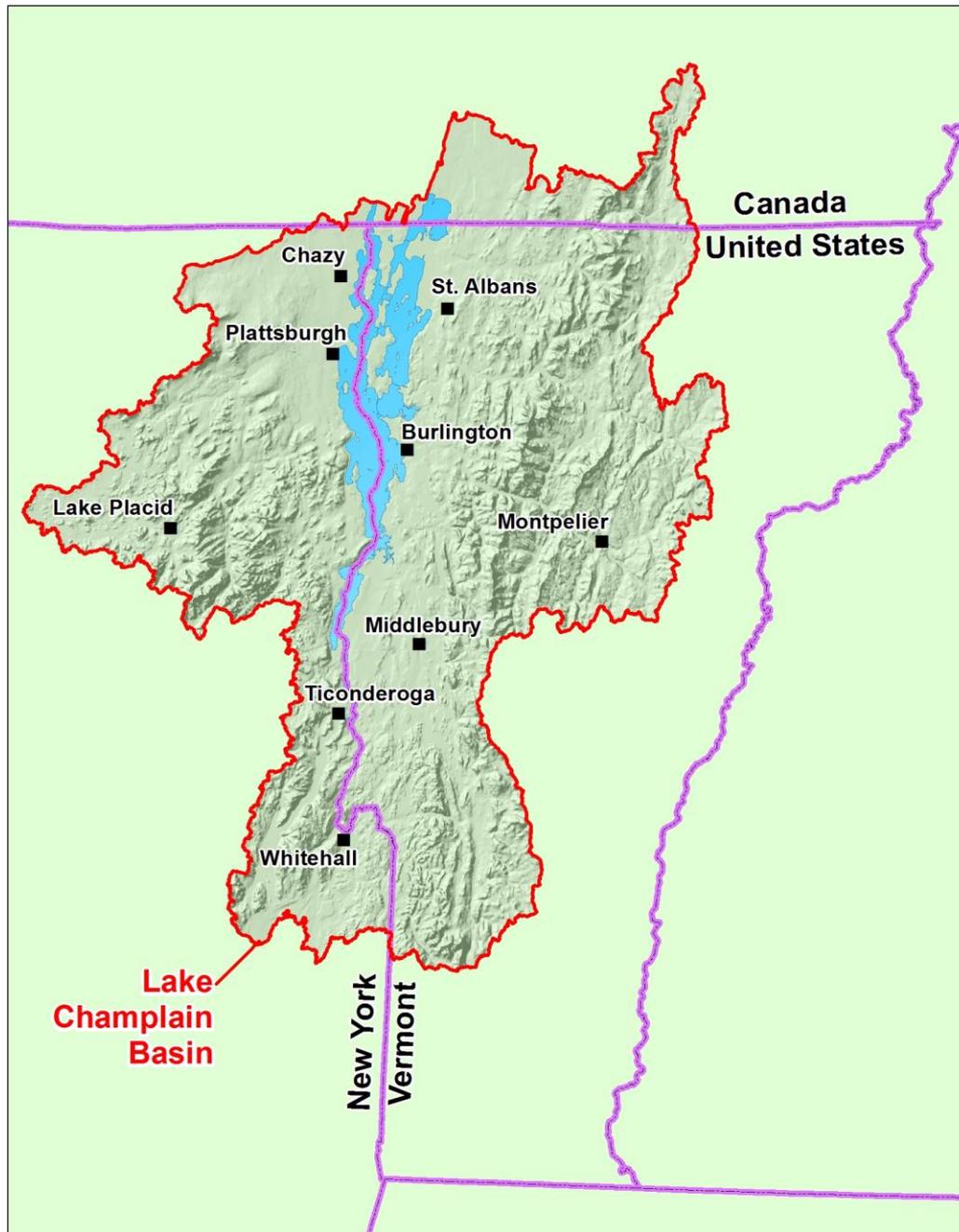


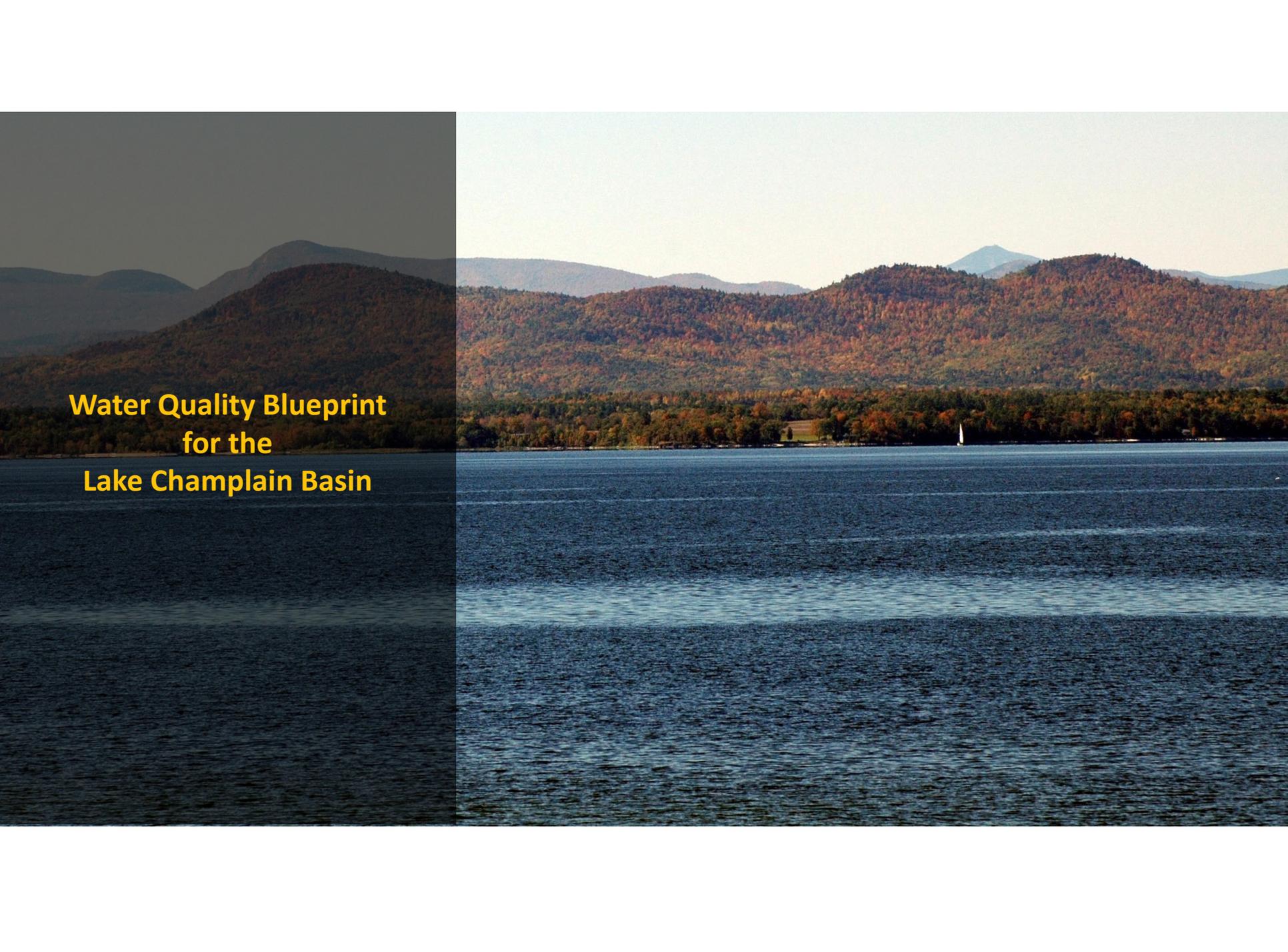
The Nature Conservancy
Vermont Dam Screening Tools



Natural Capital

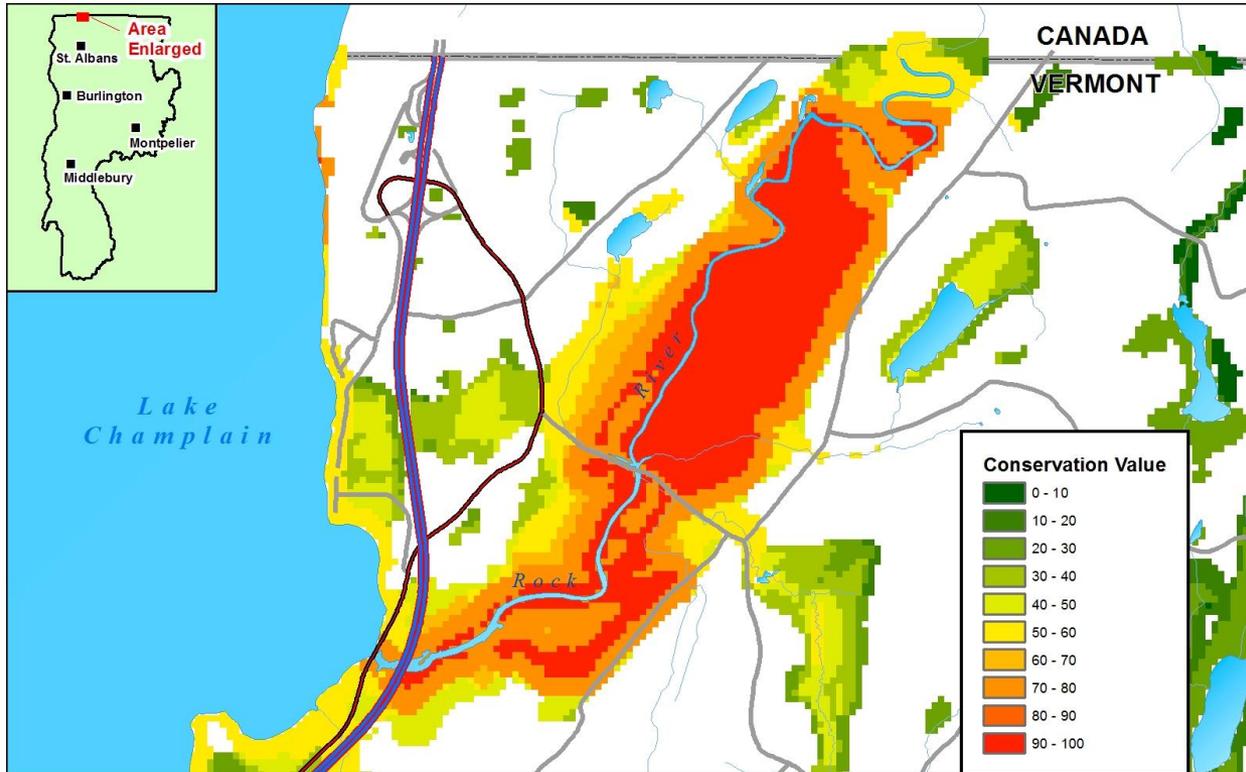






**Water Quality Blueprint
for the
Lake Champlain Basin**

Rock River Wetlands





Research Question

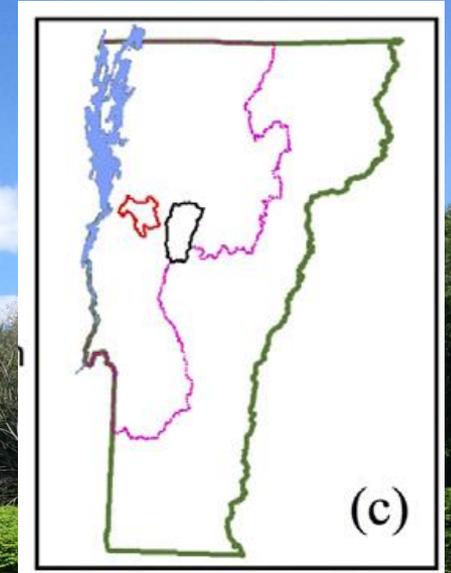
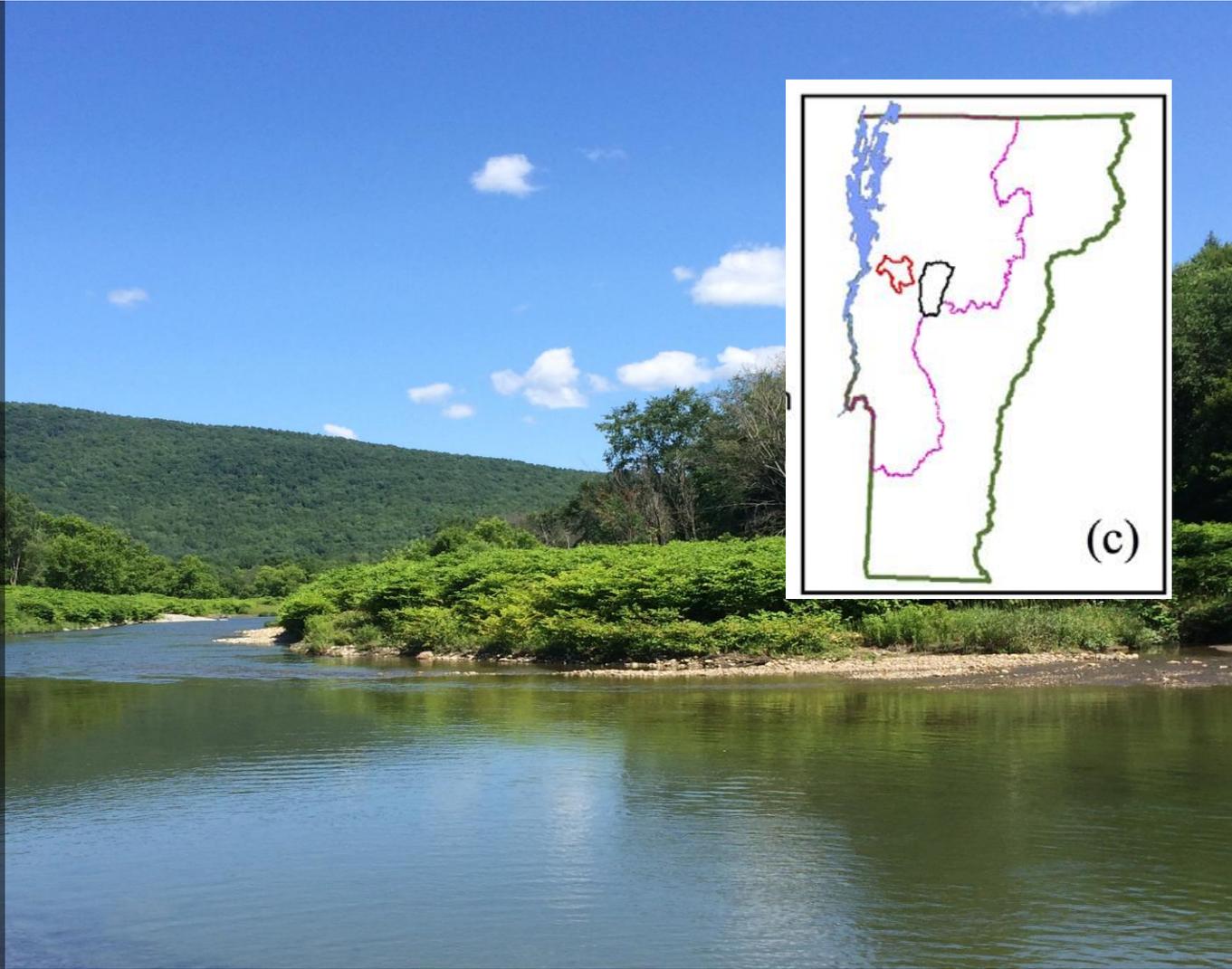
How, where & at what cost
can nature-based solutions
be used to reduce flooding
and phosphorus
in the Lake Champlain
basin?



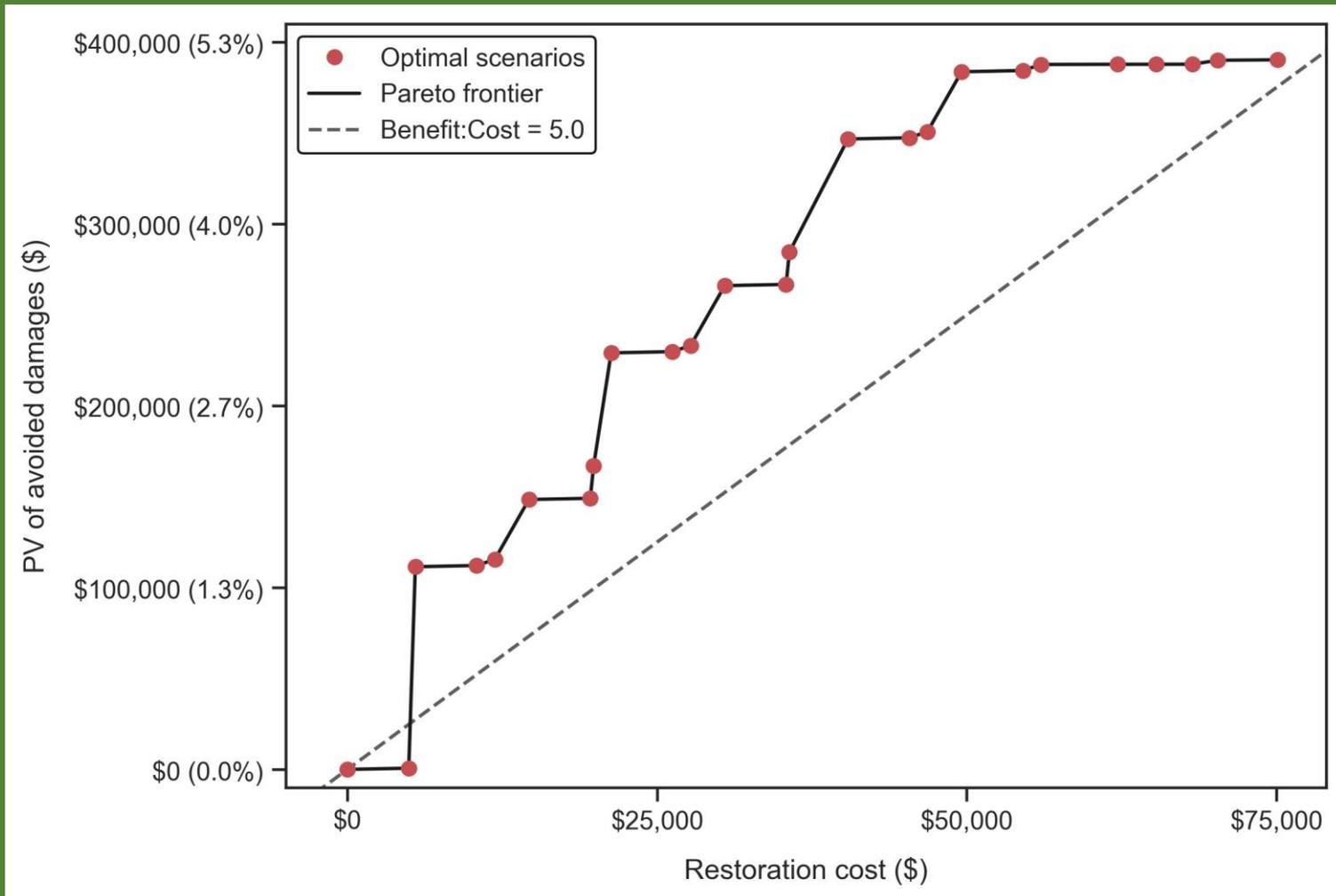
Floodplains:

Where:

Floodplain forest restoration for flood mitigation in the **Mad River and Lewis Creek Watersheds**



The **benefits**
outweigh
costs by
> 5 to 1



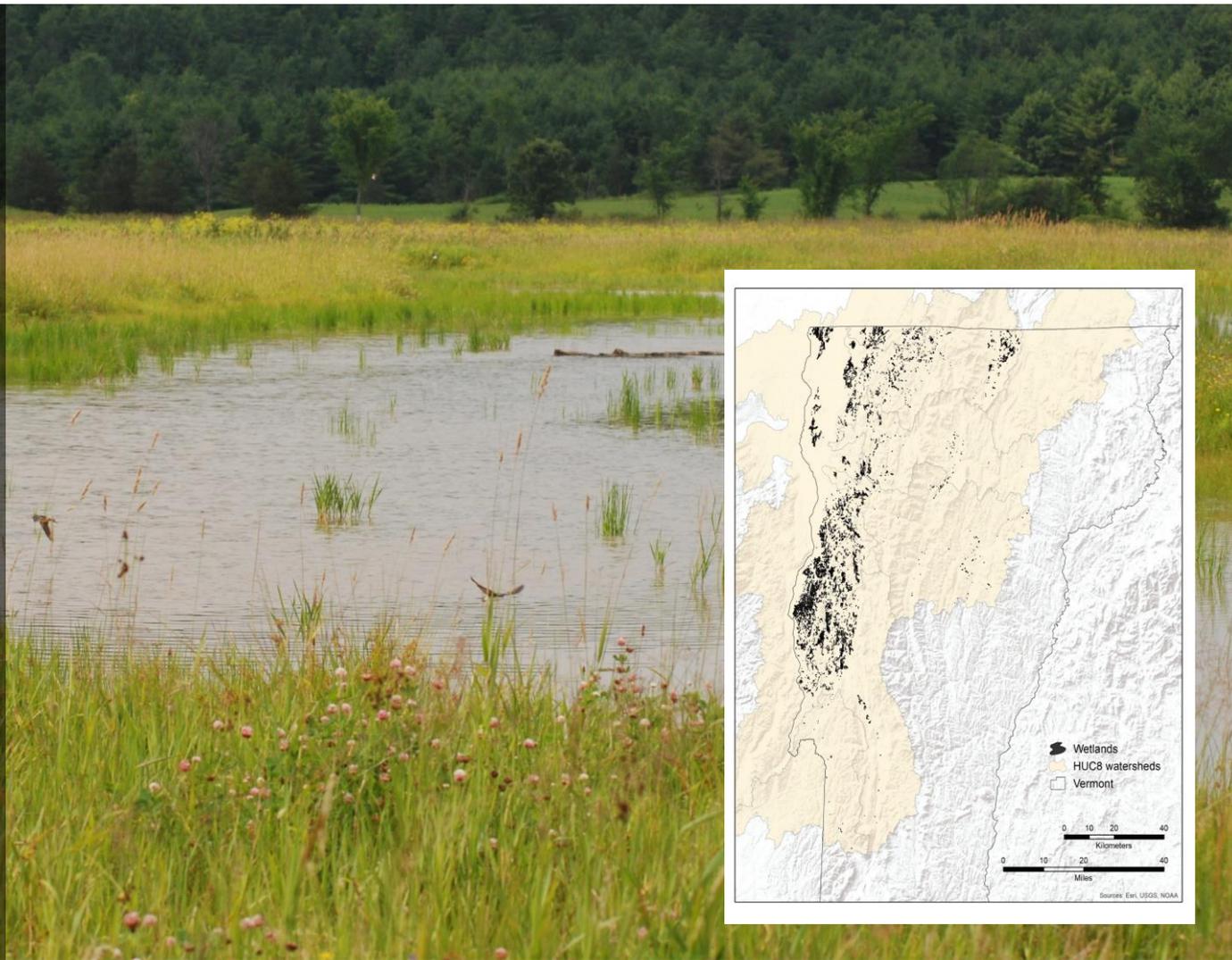
Wetlands

Where:

Wetland restoration
to trap phosphorous
in Lake Champlain
Basin

3,606 Restorable Sites

Size: **3-800** Acres



A photograph of a wetland area. In the foreground, there is a body of water reflecting the surrounding vegetation and trees. The water is dark and still, creating clear reflections. The middle ground is filled with lush green plants, including tall reeds and various grasses. In the background, there are several trees with thin trunks, some of which appear to be dead or dormant. The sky is a pale blue, and distant mountains are visible on the horizon.

Cost Benefits of Wetland Restoration:

- Wetland restoration can meet **1/3** of VT's phosphorus reduction goal for Lake Champlain
- **135 wetlands** contribute most highly to phosphorus reduction

Smart Investment

As part of the VT Forest Partnership, we just completed a year-long study that proved:

Every **\$1** invested in land conservation in Vermont returned **\$9** in natural goods and services back to Vermonters

