



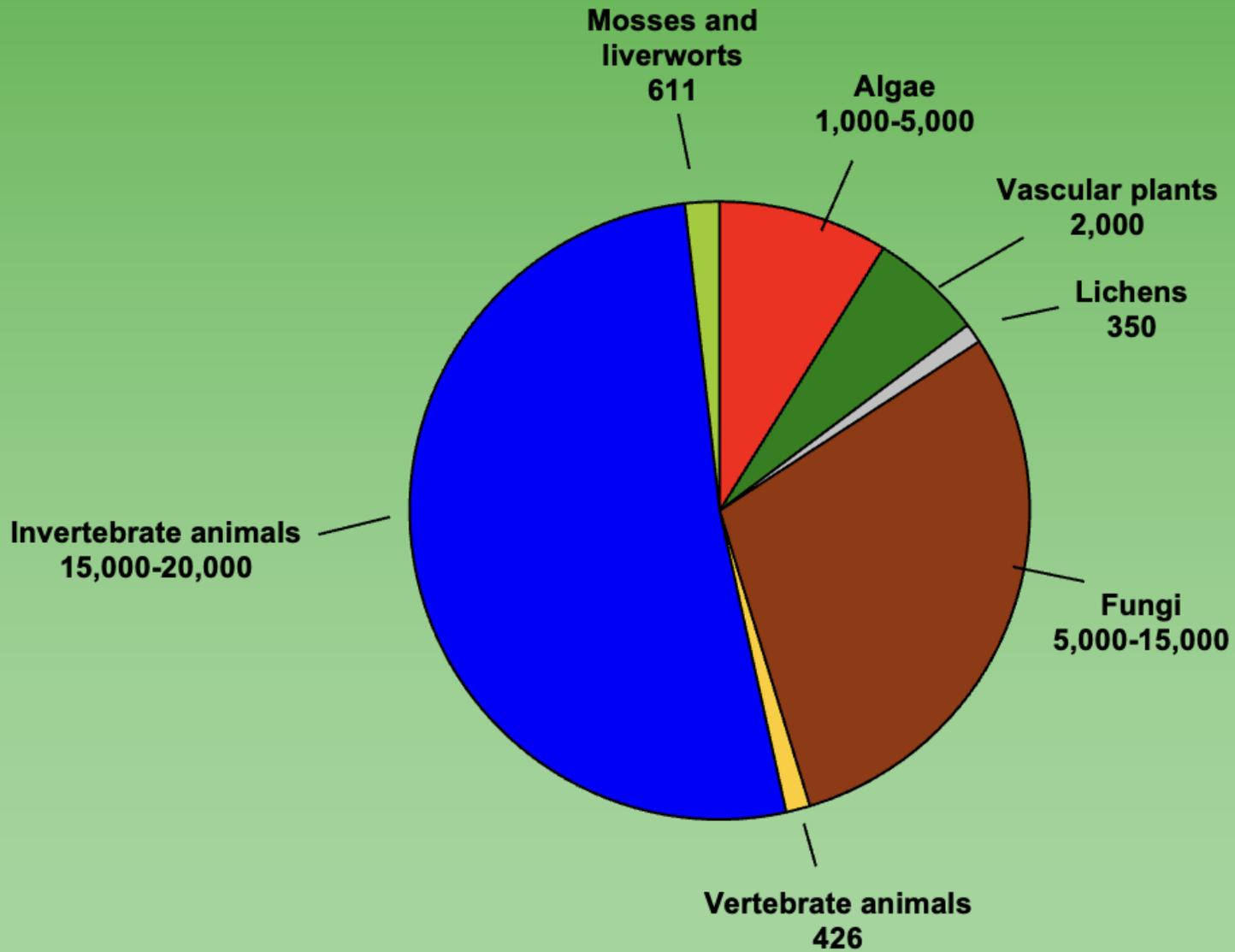
# Conserving Biodiversity in Vermont

*Elizabeth Thompson*

*Ecologist and Conservation Biologist*

*Jericho, Vermont*

*February 2, 2023*



**An estimated 24,000 to 43,500 species in Vermont**

# What is needed to protect biodiversity?

## A Resilient and Connected Landscape:

A system of lands and waters that are connected and protected in such a manner as to promote full ecological function

- Ecological Reserves (large)
  - Natural Areas (smaller)
    - Stewardship Lands
- Connecting Lands (Linkages)
  - Healthy Farmlands
- Semi-wild urban and suburban places

- Ecological Reserves (large)





- Natural Areas (smaller)











- Stewardship Lands



- Connecting Lands (Linkages)



- Healthy Farmlands



- Semi-wild urban and suburban places



# VERMONT CONSERVATION DESIGN

*A practical, scientific vision for sustaining Vermont's ecologically functional landscape into an uncertain future.*

- Applies the coarse filter-fine filter approach
- Uses simple, recognizable features
- Depends on thoughtful stewardship and management



# Pieces of an Ecological Reserve System

(Ecologically Functional Landscape)

Low Density Residential  
Development



Agriculture



Natural  
Area

Natural  
Area

Stewardship Land

Natural  
Area



Core  
Reserve

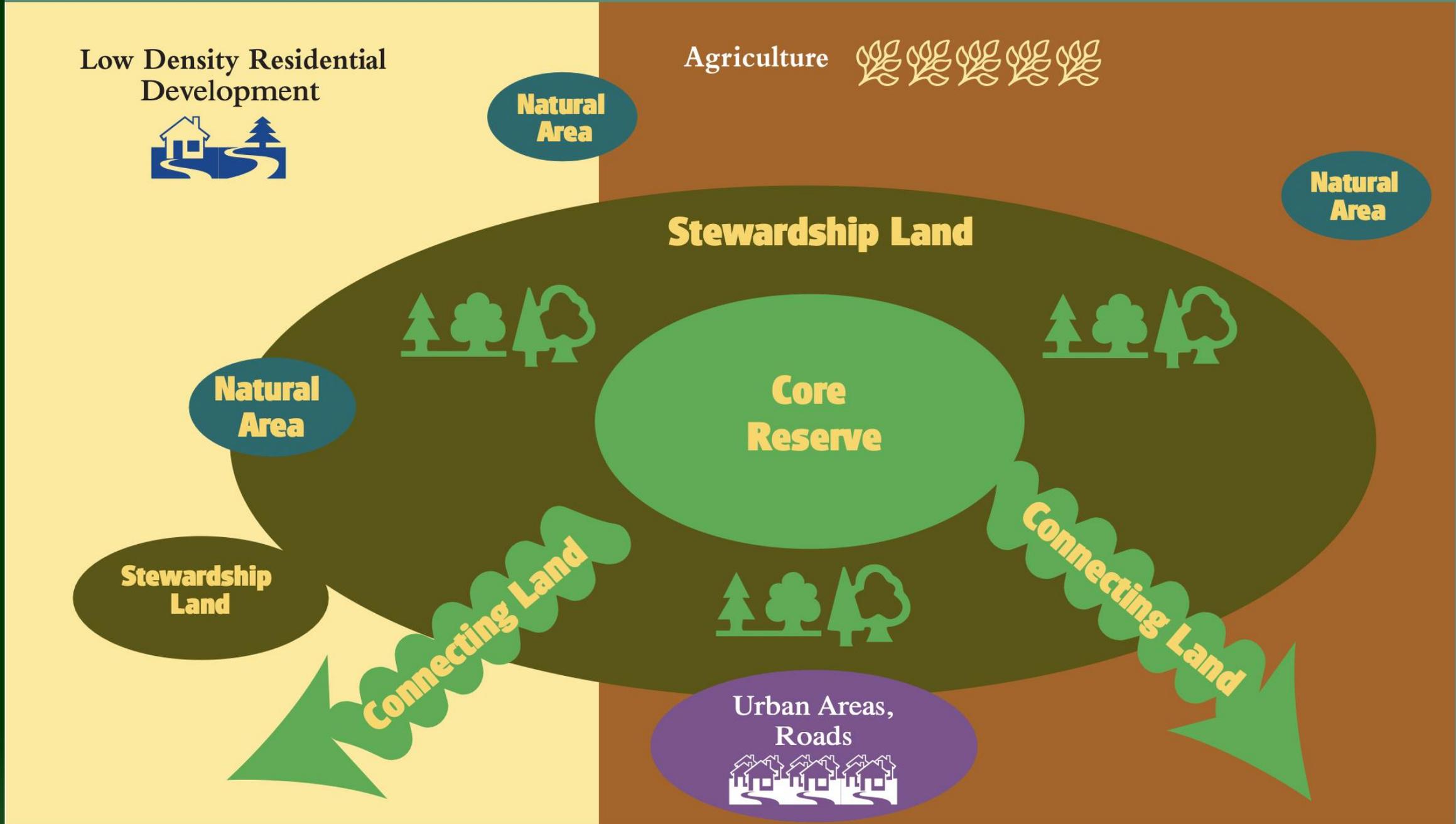
Stewardship  
Land

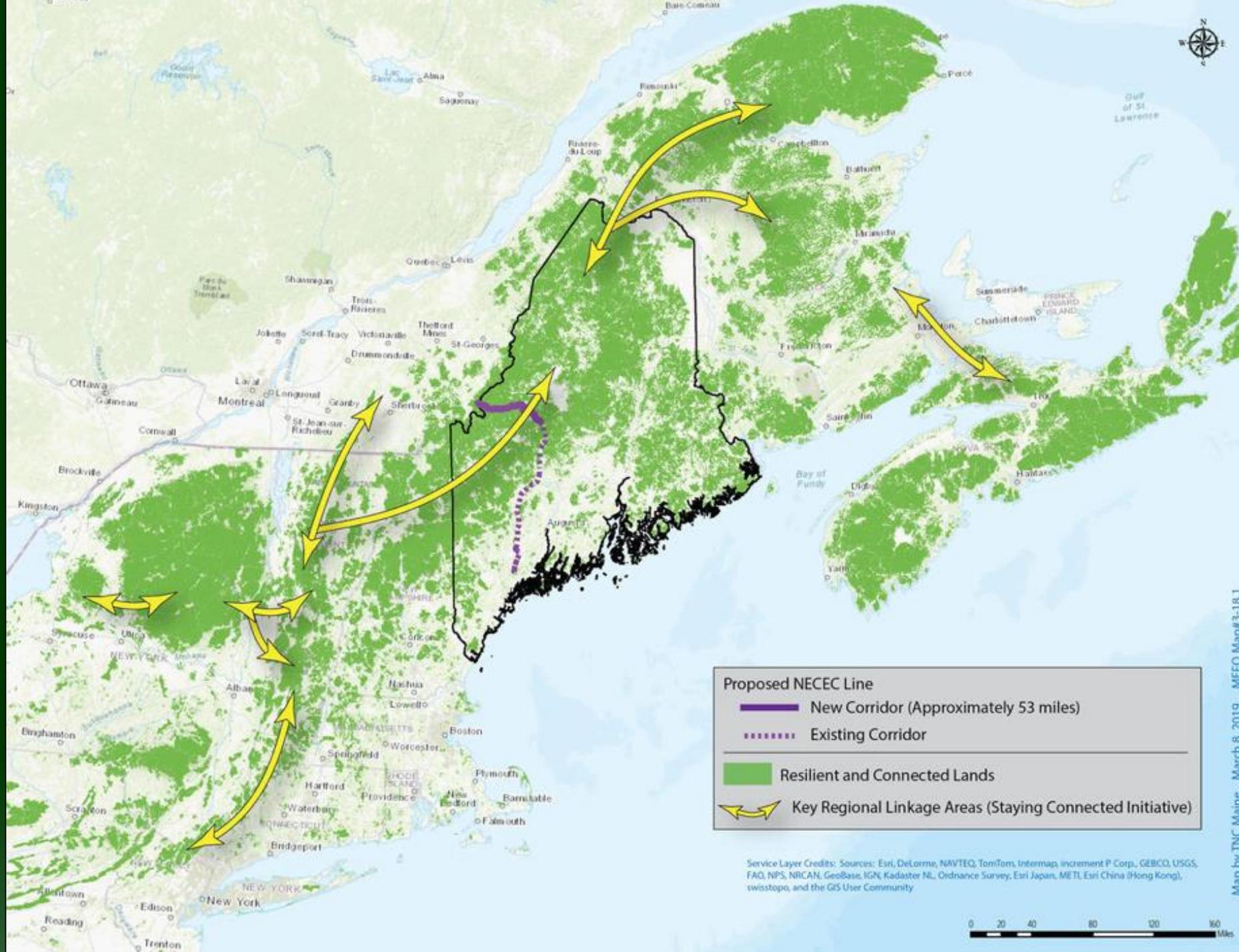
Connecting  
Land

Connecting  
Land



Urban Areas,  
Roads





**Proposed NECEC Line**

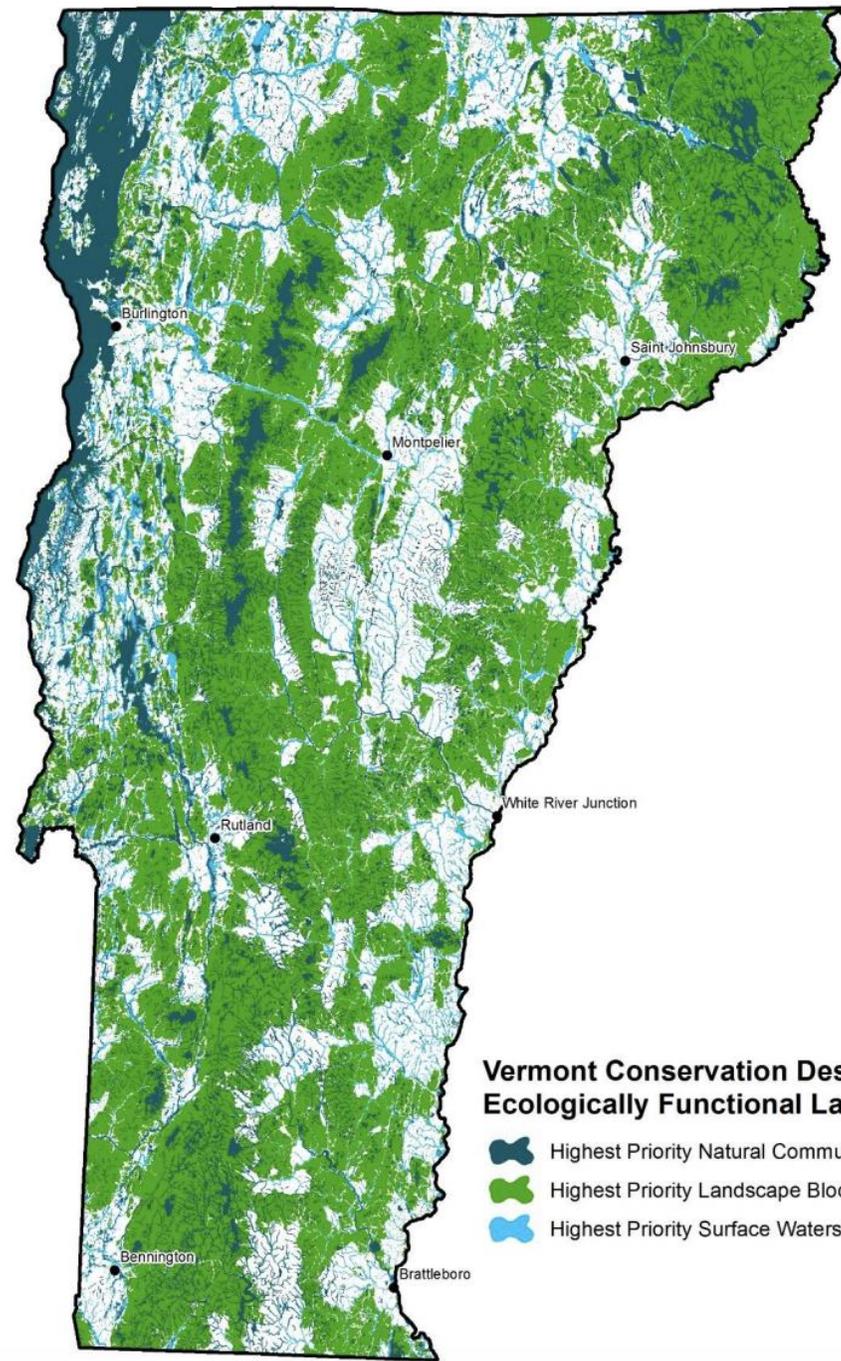
- New Corridor (Approximately 53 miles)
- Existing Corridor

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- Resilient and Connected Lands
- Key Regional Linkage Areas (Staying Connected Initiative)

Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, Geobase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, and the GIS User Community





**Vermont Conservation Design  
Ecologically Functional Landscape**

-  Highest Priority Natural Community & Habitat Features
-  Highest Priority Landscape Blocks
-  Highest Priority Surface Waters and Riparian Areas

**VERMONT CONSERVATION DESIGN**

*MAINTAINING AND ENHANCING AN ECOLOGICALLY FUNCTIONAL LANDSCAPE*



*Summary Report for  
Landscapes, Natural Communities, Habitats, and Species*

February 2018

Eric Sorenson and Robert Zahno

Core Participants:

Jens Hike, Doug Morin – Vermont Fish and Wildlife Department  
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How Much is Enough?  
How Much do we Have?

Kinds of Land Protection  
Permanency

# How Much is Enough?

## Vermont Climate Action Plan:

“Invest in strategic conservation in order to increase the pace of permanent conservation towards 30x30 targets (described in federal report “Conserving and Restoring America the Beautiful”) , with Vermont Conservation Design acting as the guiding plan for prioritization of efforts.”

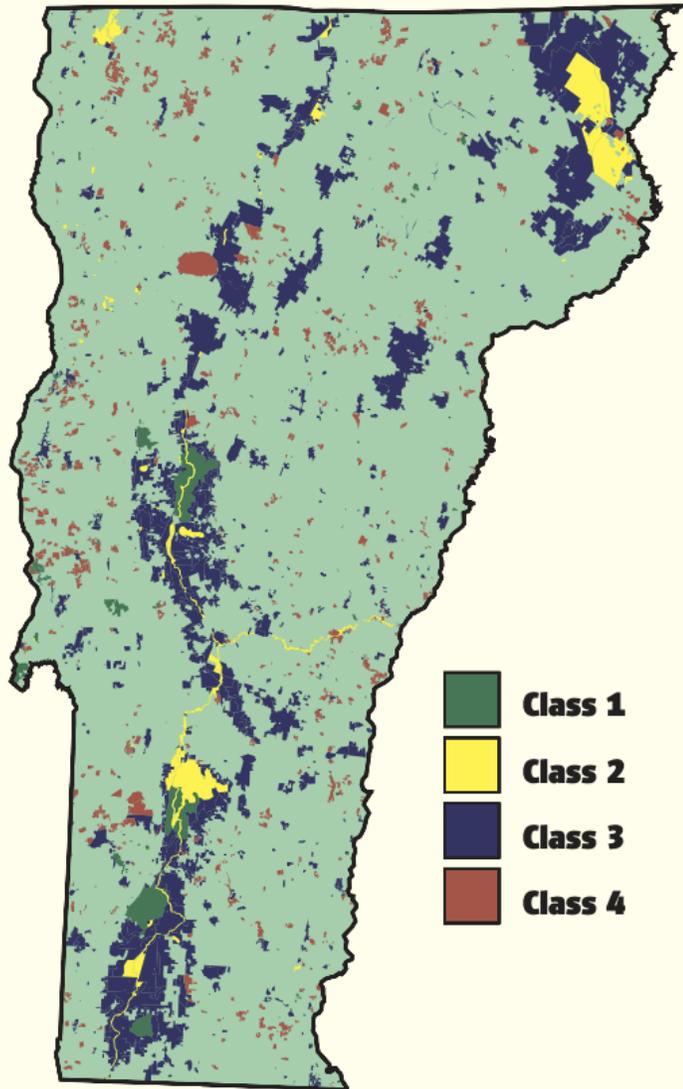
Half-Earth and others: 50%

**How Much do we Have?**

**Kinds of Land Protection**

**USGS GAP Program**

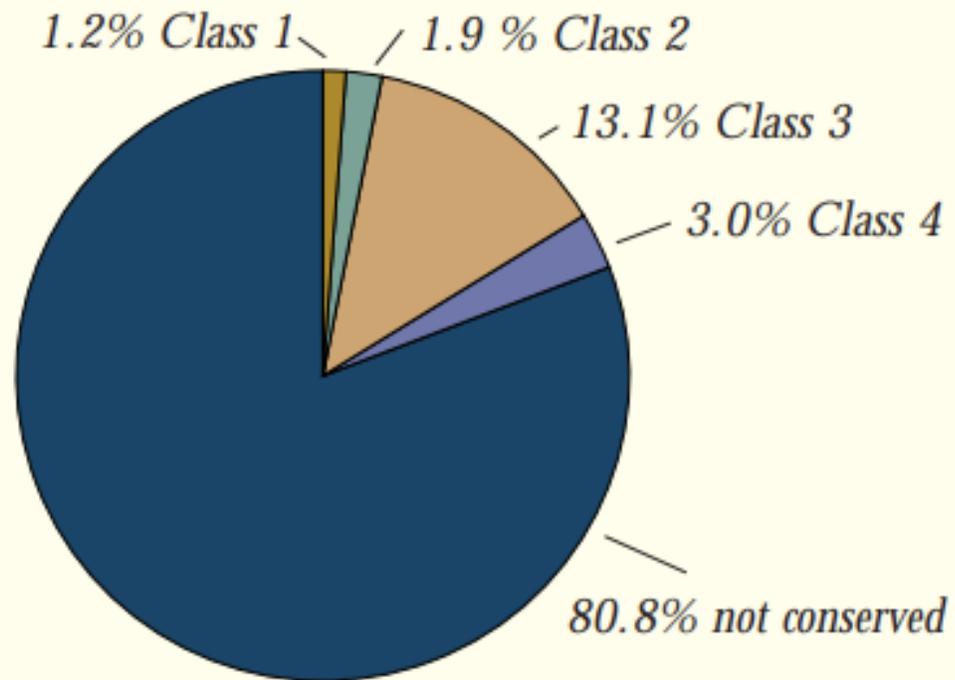
## Conserved Lands by Protection Class



**Class 1 lands are managed in their natural state such that natural disturbance regimes are allowed to occur and natural resource extraction is prohibited. Class 2 lands are managed for their natural values but may receive uses that degrade the quality of natural communities present. Class 3 lands are protected from permanent conversion but are subject to extractive uses. Class 4 lands are managed in ways that may preclude natural cover and the presence of native plant and animal assemblages.**

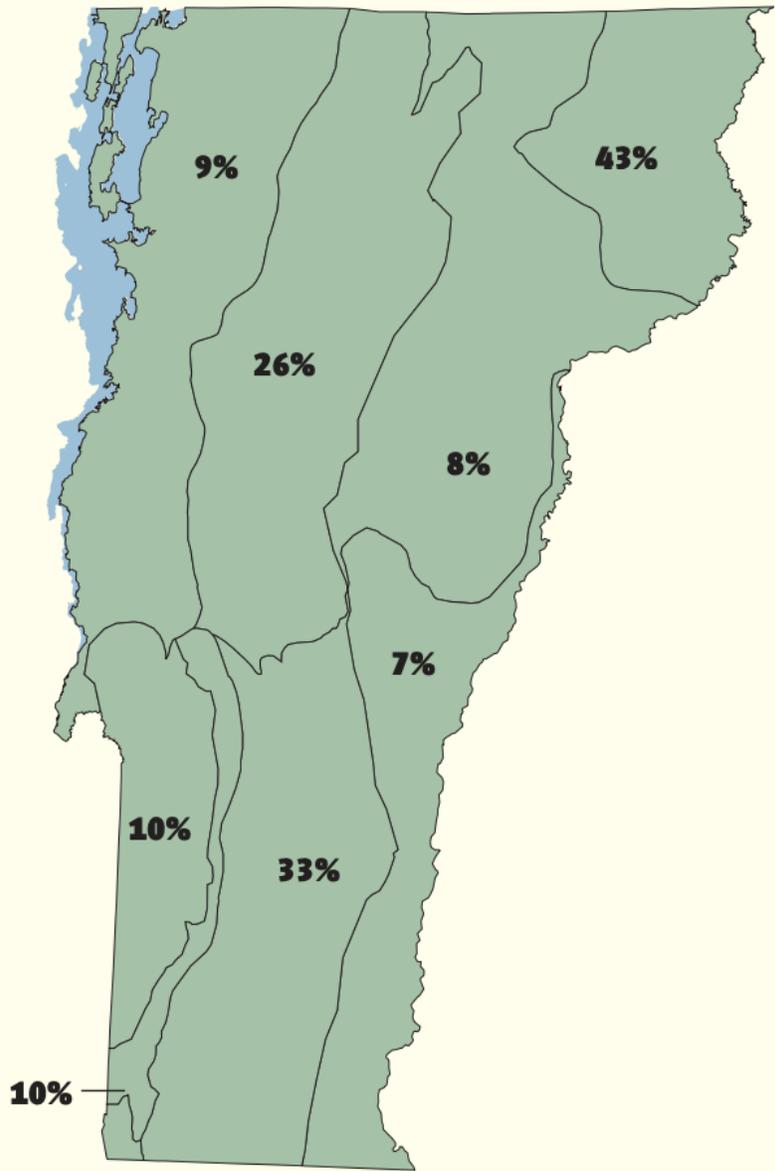
Vermont Biodiversity Project  
2002

**Percentage of state in each of the four GAP classes plus unconserved land.**



Vermont Biodiversity Project  
2002

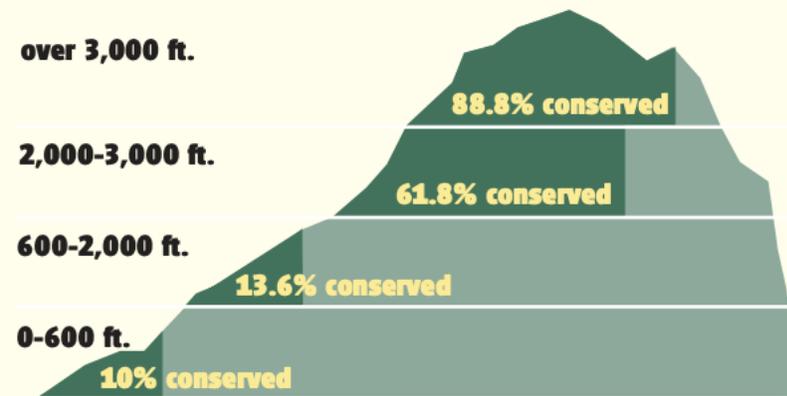
# Conserved Lands by Biophysical Region



Vermont Biodiversity Project  
2002

## Conserved Lands by Elevation

**Percentage of each elevation zone in conserved lands. Much of Vermont's biodiversity is found at low elevations, but the lowest elevations are the least protected.**



# Vermont Protected Land 2020

Source: Vermont Land Trust

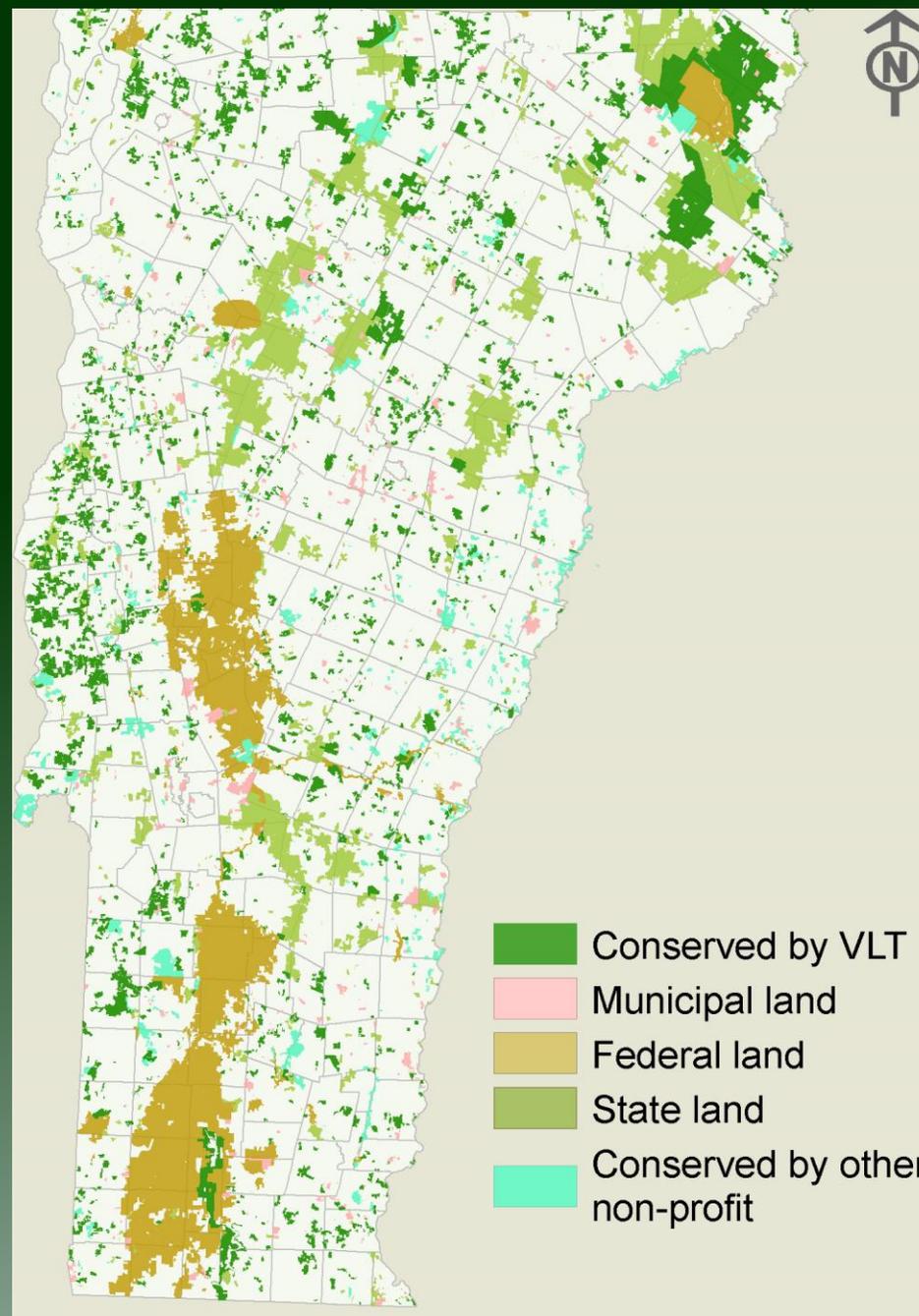
~26% of Vermont

State: 8.5%

Federal: 7.6%

Private: 8.2%

Local: 1.2%



## Vermont Protected Lands

- Vermont: 5.9 million acres, or 15% of New England
- Forest: 78% of Vermont (declining)
- Forest: ~79.1% private, 20.9% public.
- All Vermont: 26.2% permanently protected from development.
  - 19% working forest
  - 4% farmland
  - 3.2% Wildland (an additional 0.5% non-permanent Wildland)

From *New England Wildlands*

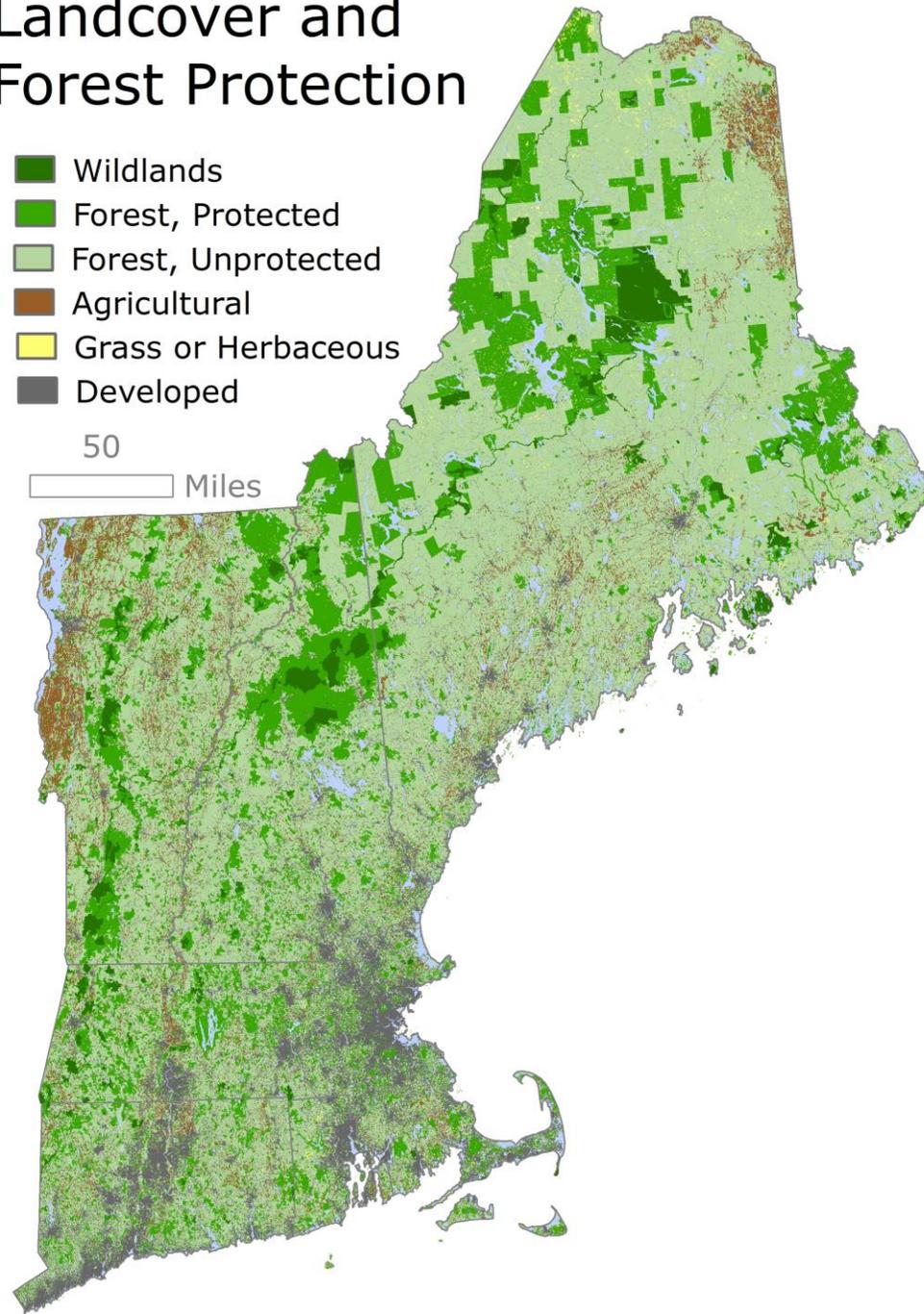
In press, 2023--Harvard Forest, Highstead Foundation, Northeast Wilderness Trust  
A Project of the Wildlands and Woodlands Initiative

# Landcover and Forest Protection

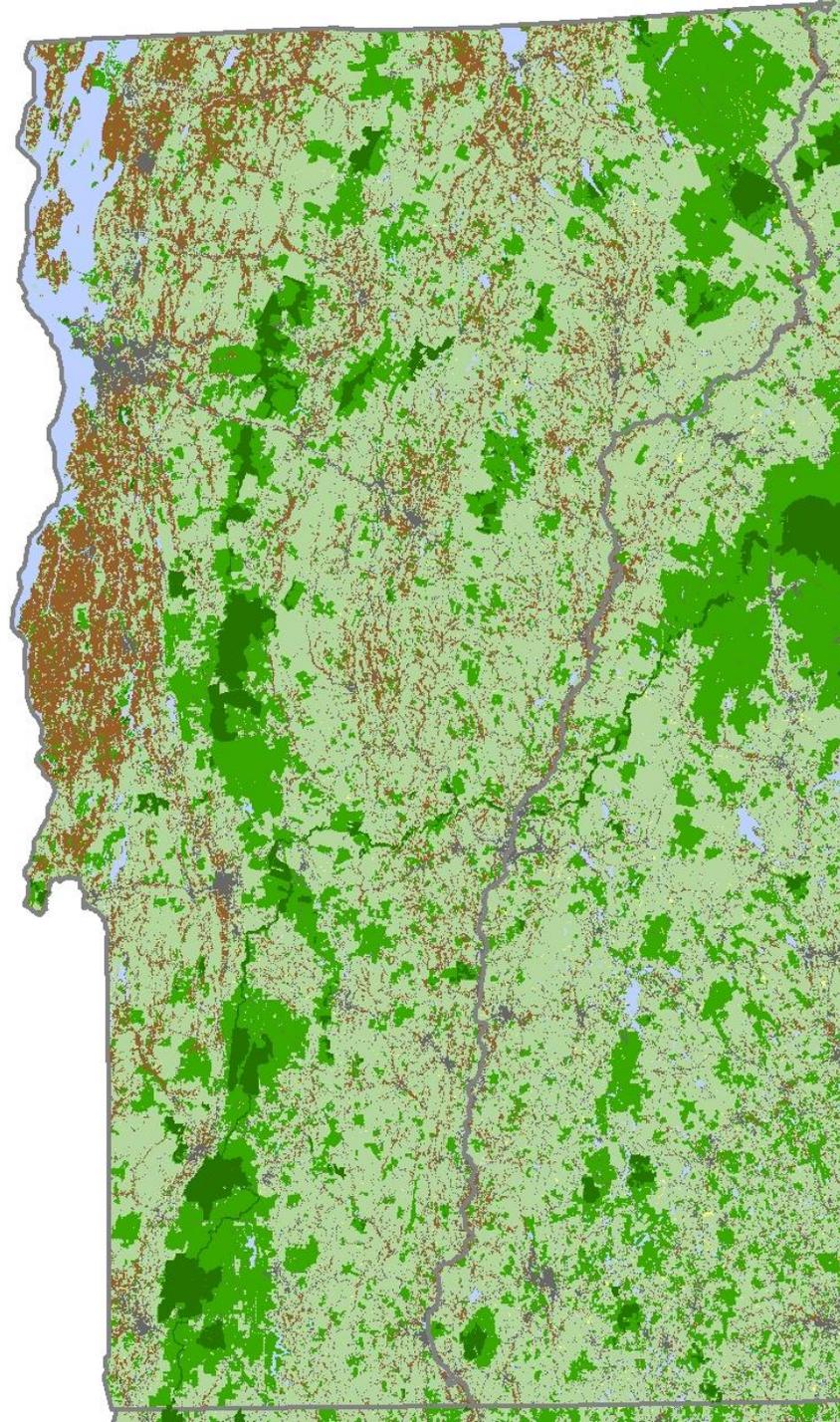
- Wildlands
- Forest, Protected
- Forest, Unprotected
- Agricultural
- Grass or Herbaceous
- Developed

50

Miles

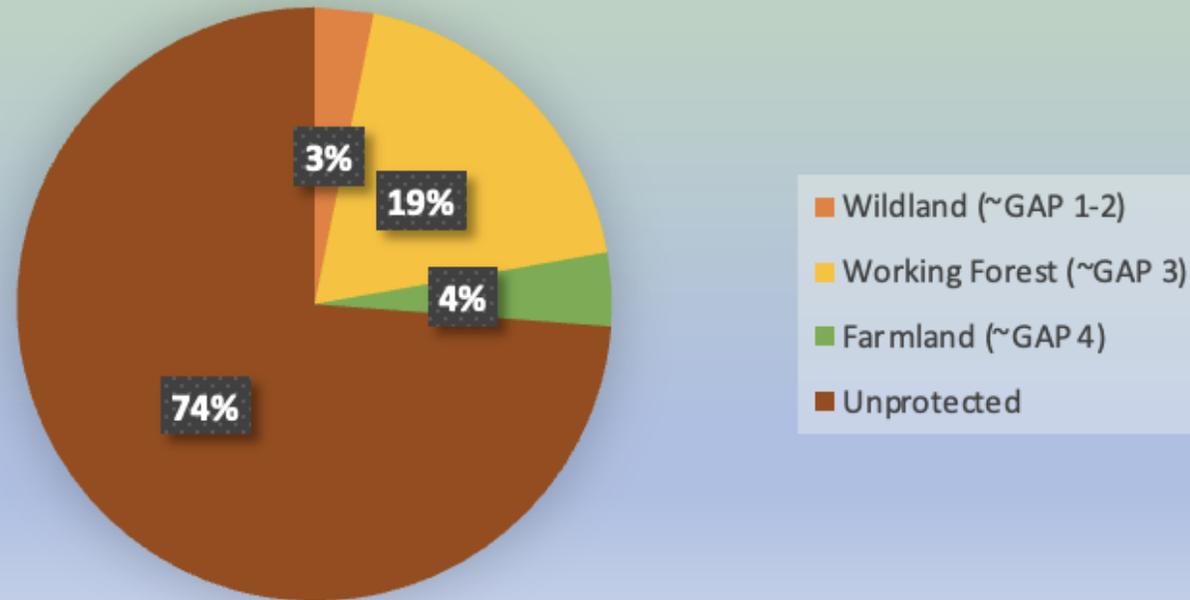


From *New England Wildlands*  
In press, 2023--Harvard Forest,  
Highstead Foundation, Northeast  
Wilderness Trust  
A Project of the Wildlands and  
Woodlands Initiative



- Wildlands
- Forest, Protected
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## Vermont Protected Land Estimates W&W 2023



From *New England Wildlands*

In press, 2023--Harvard Forest, Highstead Foundation, Northeast Wilderness Trust  
A Project of the Wildlands and Woodlands Initiative

# What we need: Permanently Protected Land

- Increase total conserved land
- Increase proportion of Class 1 to 9-10% or more?
- Increase proportion of Class 2 – needs analysis
- Identify features that need specific protection type
  - Distribute conserved lands by elevation, biophysical region, geology

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# SOURCES:

Vermont  
Biodiversity  
Project  
2002

## Vermont's Natural Heritage

Conserving Biological Diversity  
in the Green Mountain State



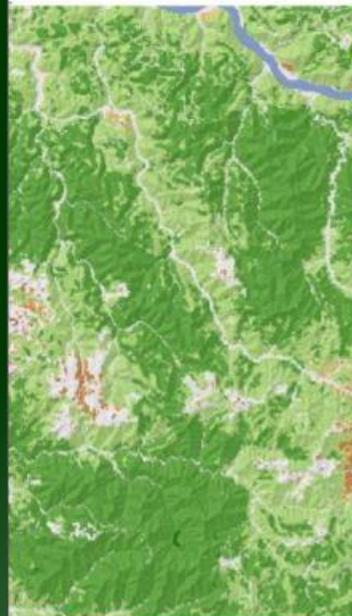
VERMONT BIODIVERSITY PROJECT

*A report from the Vermont Biodiversity Project*

# The Nature Conservancy 2016

## Resilient *and* Connected Landscapes *for Terrestrial Conservation*

The Nature  
Conservancy   
Eastern Conservation Science



RESILIENT LANDS



CONNECTED LANDSCAPES



CONSERVATION STRATEGIES



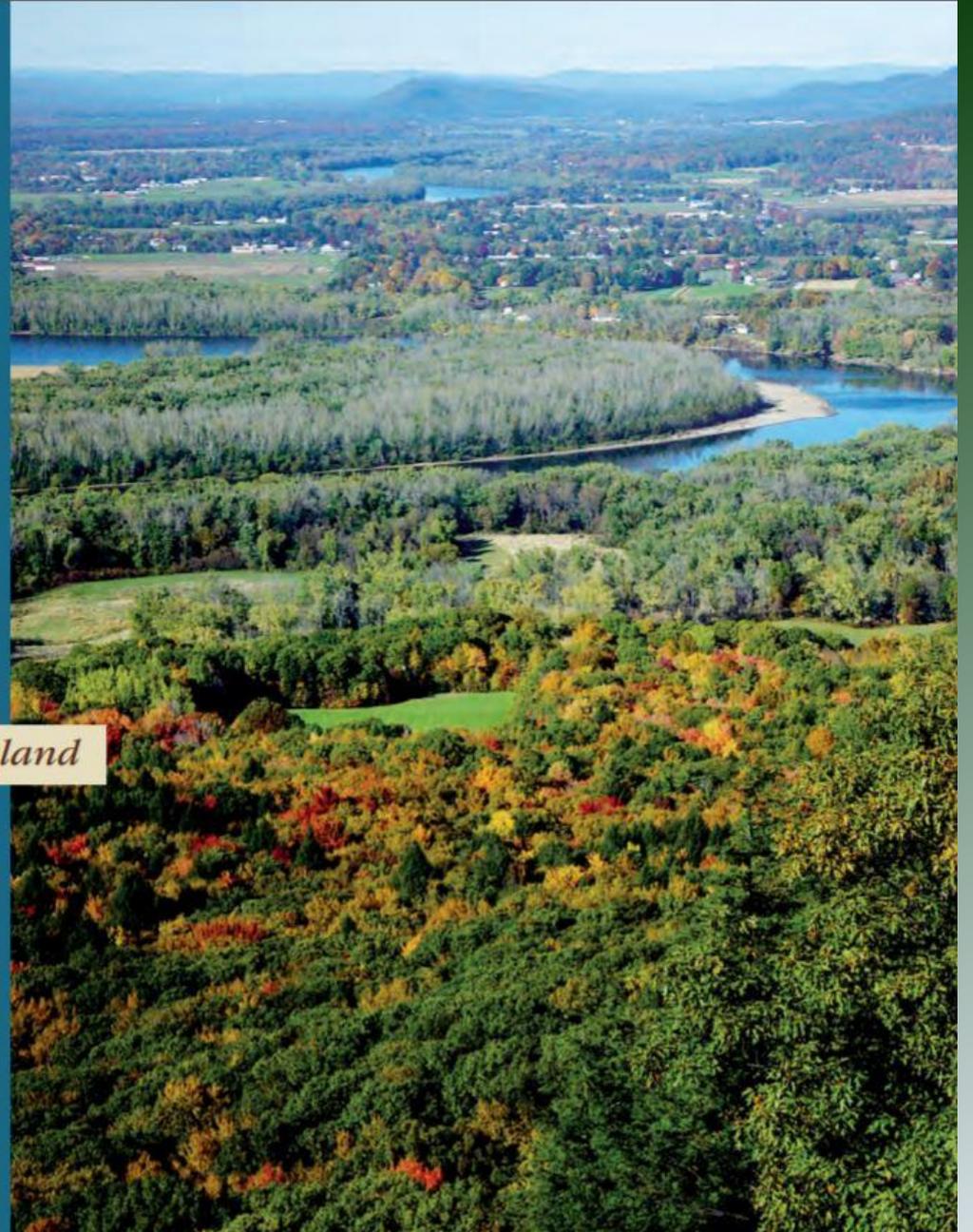
W&W  
Partnership  
2017

Wildlands and  
Woodlands



Farmlands and  
Communities

*Broadening the Vision for New England*



# Vermont Conservation Design 2018

## VERMONT CONSERVATION DESIGN

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# Wildlands in New England 2023 *in press*

## Wildlands in New England *Past, Present, and Future*

The looming global crisis of climate change, biodiversity loss, and precarious human welfare, calls for urgent action. Today, in New England, we can and must act by halting forest and farm land loss, accelerating land protection, increasing the sustainable production of food and wood, and designating more Wildland areas. Wildlands—conservation areas that are preserved to allow natural processes to unfold, with no active management—lie at the heart of this integrated conservation agenda.

**Wildlands in New England** is the first regional study to map and describe all known Wildlands. New England, with about 40 million acres of land, is 81 percent forested, but only 3.3 percent of the region (1.32 million acres) are Wildlands. These Wildlands comprise 426 individual state, federal, and private properties. Although the pace of Wildland conservation has increased in recent decades, the total area protected remains far below the Wildlands, Woodlands, Farmlands and Communities (WWF&C) goal of at least 10 percent of the region.

This report provides a baseline, and a way forward, for policy makers, conservation organizations, landowners, and every community seeking to conserve more Wildlands.

### Report Summary



*Questions?*

