



# Protecting Vermont's old forests, protecting our future

Jamison Ervin



**A few words about my background**

# My personal background: 30 years of conservation



- Duxbury Selectboard
- Duxbury Planning Commission
- Duxbury Land Trust
- Waterbury Local Energy Action Partnership

# My academic background: Vermont land use

Figure 9.1: Various Maps of the Study Area

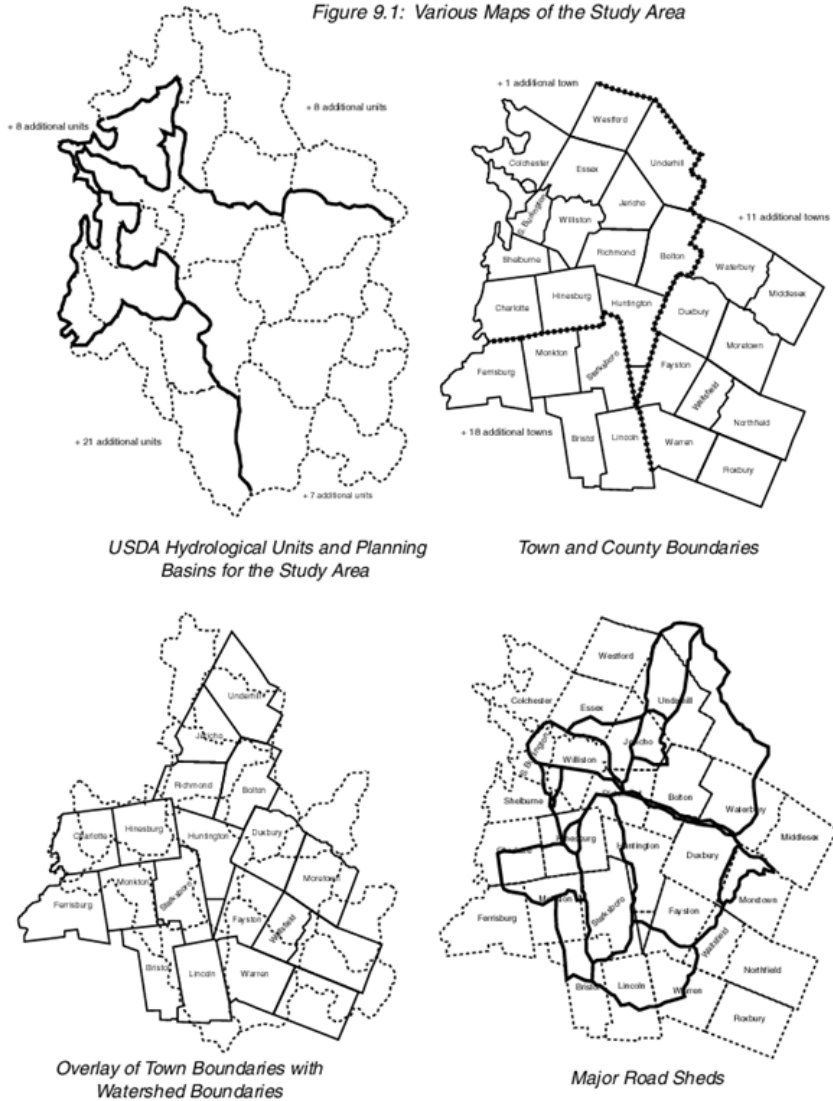
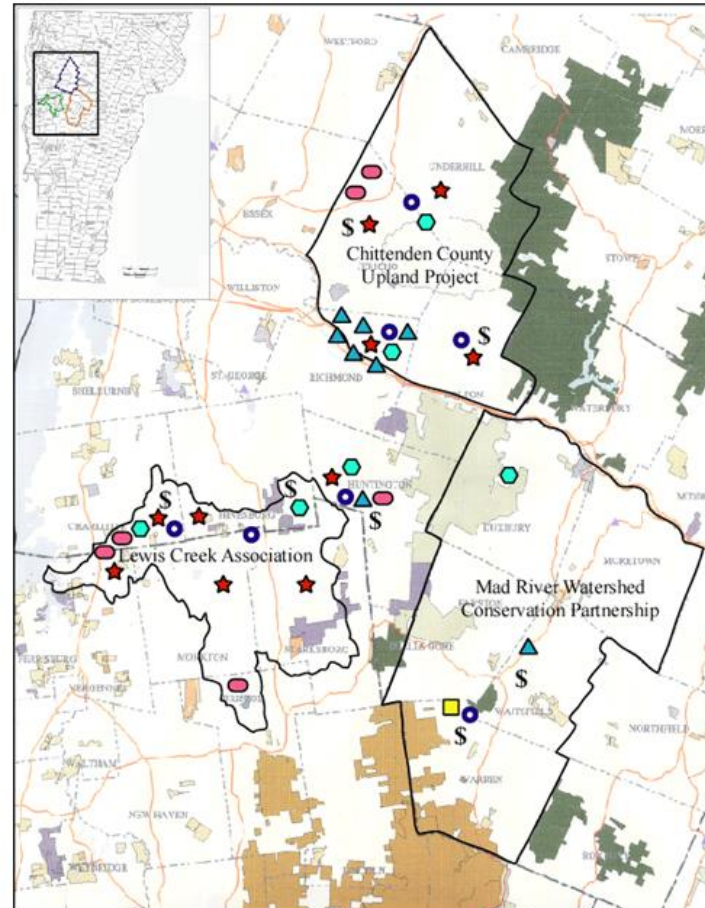


Figure 6.1: Map of Study Area



Note: Brown patches are federal protected lands; olive green, purple, dark green and light blue are state protected lands, and light tan are private easements. Source of background map: University of Vermont Spatial Lab, 1998.

- ★ Conservation commission
- Local land trust
- Rural Resource Committee
- ▲ Other conservation organization
- Keeping Track group
- Conservation planning group
- Ⓢ Town conservation fund

- PhD. in Natural Resources from University of Vermont, 2003
- Focus: Cross-boundary land use planning in Vermont

# My professional background



United Nations Development Program – 14 years



The Nature Conservancy (TNC) – 6 years



World Wildlife Fund (WWF) – 6 years



Forest Stewardship Council – 7 years



Britain Nepal Medical Trust – 3 years

# My professional background

- Support 140 countries in developing national biodiversity plans
- Support 200 countries and territories in assessing status of parks and protected area networks
- Support 60 countries in identifying nature-based climate solutions
- Support 14 countries in integrated spatial planning for nature, climate and development goals
- Manage multiple global events to raise awareness on the nature-climate-human development nexus



**What is the broad global context?**

# 2015: Global adoption of the “Sustainable Development Goals”





# Sustainable Development Goals



## Goal 15: Life on Land

- Protect, restore and sustainably manage ecosystems
- Restore degraded forests
- Avoid extinctions
- Integrate ecosystem services into land use planning



## Goal 13: Climate Action

- Strengthen resilience and adaptive capacity to natural hazards

# 2015: Global adoption of the Paris Agreement

Paris, France



# Paris Agreement

## Article 5 of the Paris Agreement:

- Conserve and enhance carbon sinks, including forests
- Encourage incentives for forest conservation, protection, restoration and sustainable management



PARIS2015  
UN CLIMATE CHANGE CONFERENCE  
COP21·CMP11

# 2022 Global Strategic Plan for Biodiversity



# Global biodiversity agreement



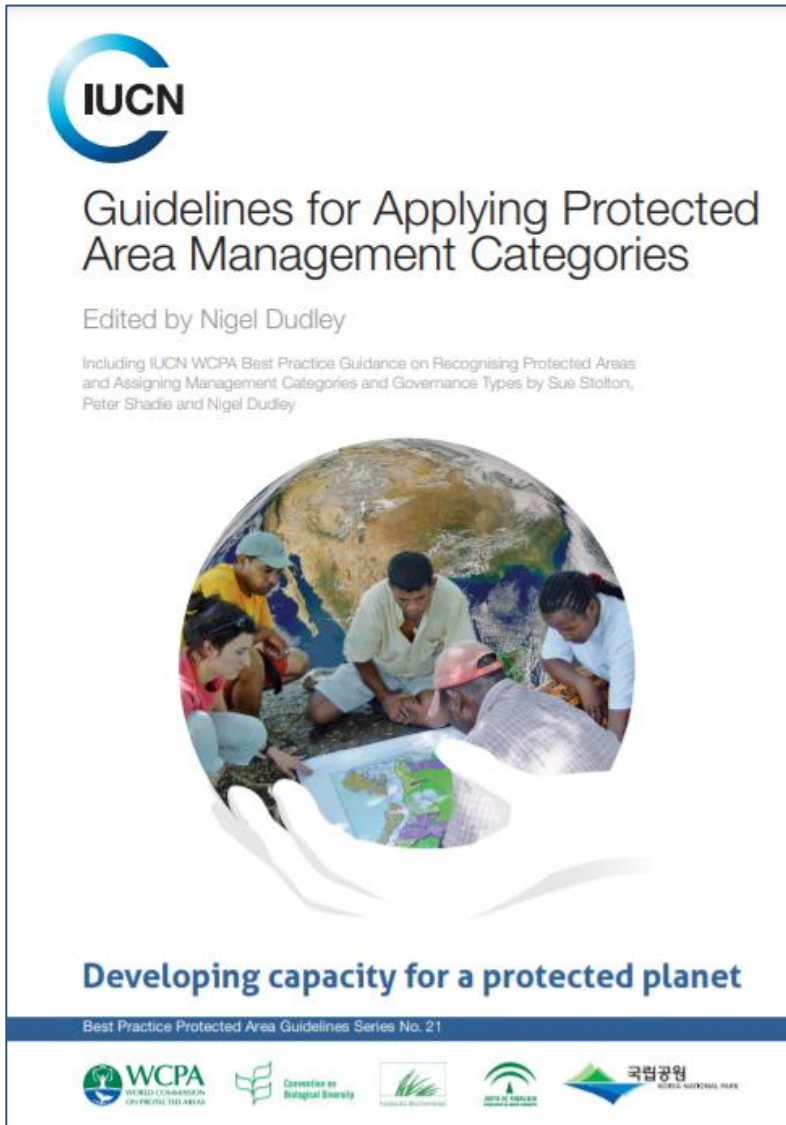
- Target 1: Ensure **biodiversity-inclusive land-use planning**
- Target 2: Ensure that at least 30% of all ecosystems are under **effective restoration** measures
- Target 3: Ensure at least 30% of ecosystems are **effectively protected**
- Target 8: Manage **nature for climate change resilience**

# Protected areas - definition



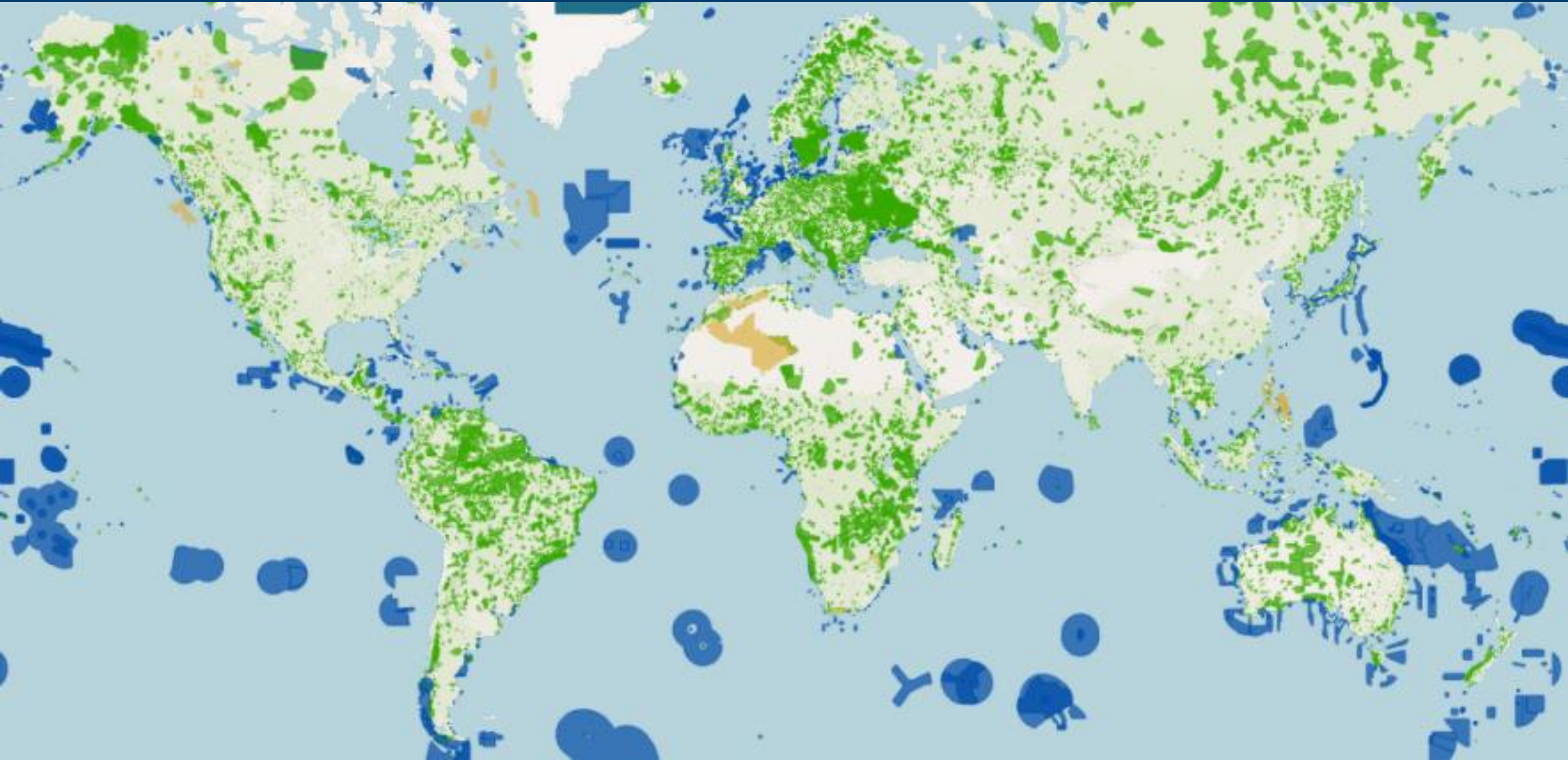
- “A clearly defined geographical space,
- recognized, dedicated and managed, through legal or other effective means,
- to achieve the long-term conservation of nature
- with associated ecosystem services and cultural values.”

# Protected areas – different types and categories



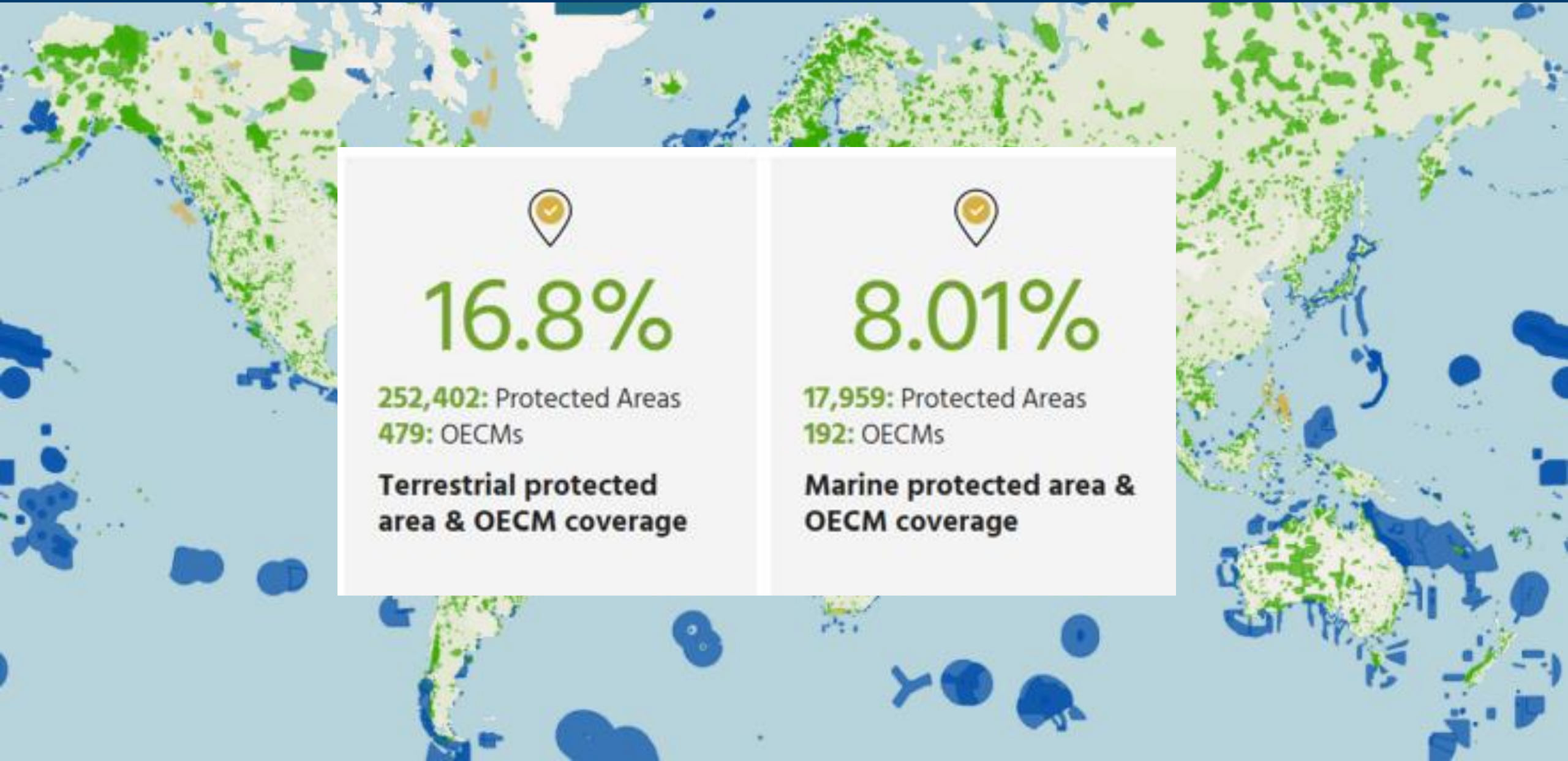
- **Category 1:** Strict protection, wilderness
- **Category 2:** National, state park
- **Category 3:** Natural monument
- **Category 4:** Habitat/species management
- **Category 5:** Protected landscape/seascape
- **Category 6:** Protected area with sustainable use

# Current global status of protected areas





# Current global status of protected areas



16.8%

252,402: Protected Areas  
479: OECMs

**Terrestrial protected area & OECM coverage**



8.01%

17,959: Protected Areas  
192: OECMs

**Marine protected area & OECM coverage**

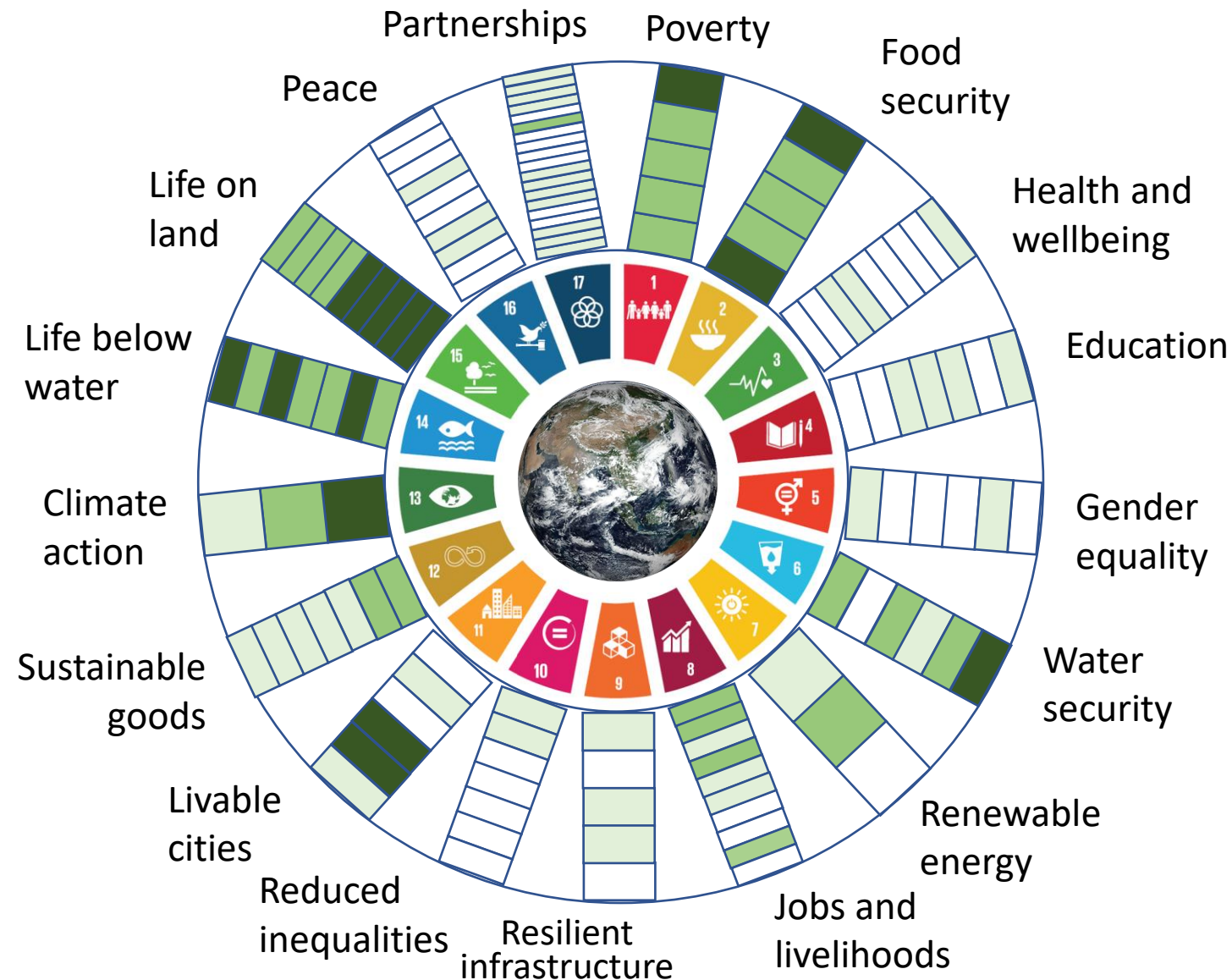


**Evolving context – linkages between nature, climate and wellbeing**

# Biodiversity as the foundation for wellbeing

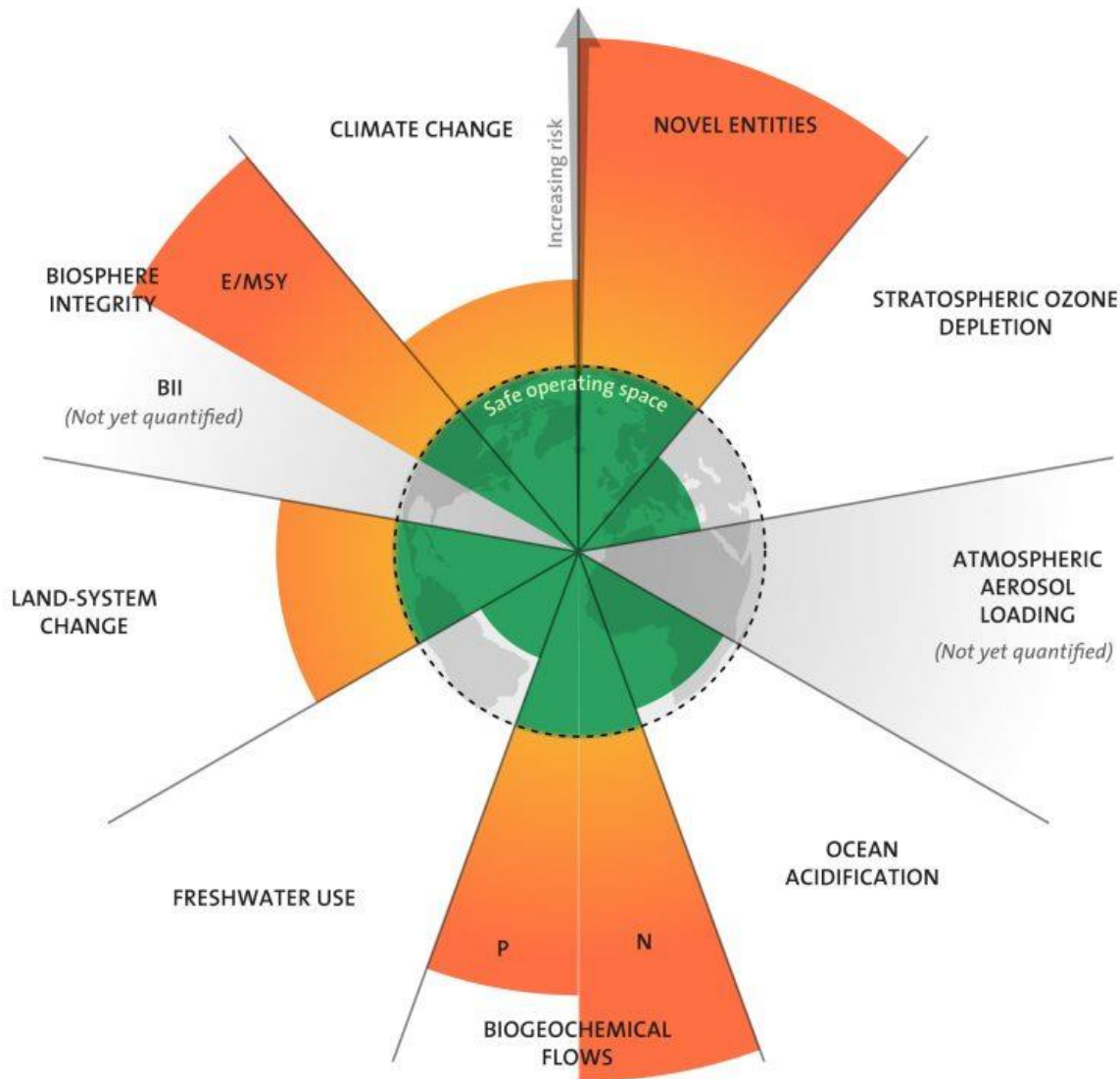


# Recognition of role of nature in wellbeing



- Poverty reduction and livelihoods
- Food security
- Health and wellbeing
- Gender equality
- Water security
- Disaster risk reduction
- Climate mitigation and adaptation

# Recognition of “Planetary Boundaries”

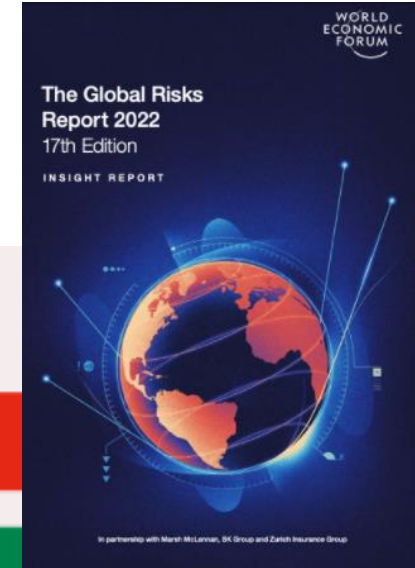


New Netflix documentary brings the planetary boundaries to the world



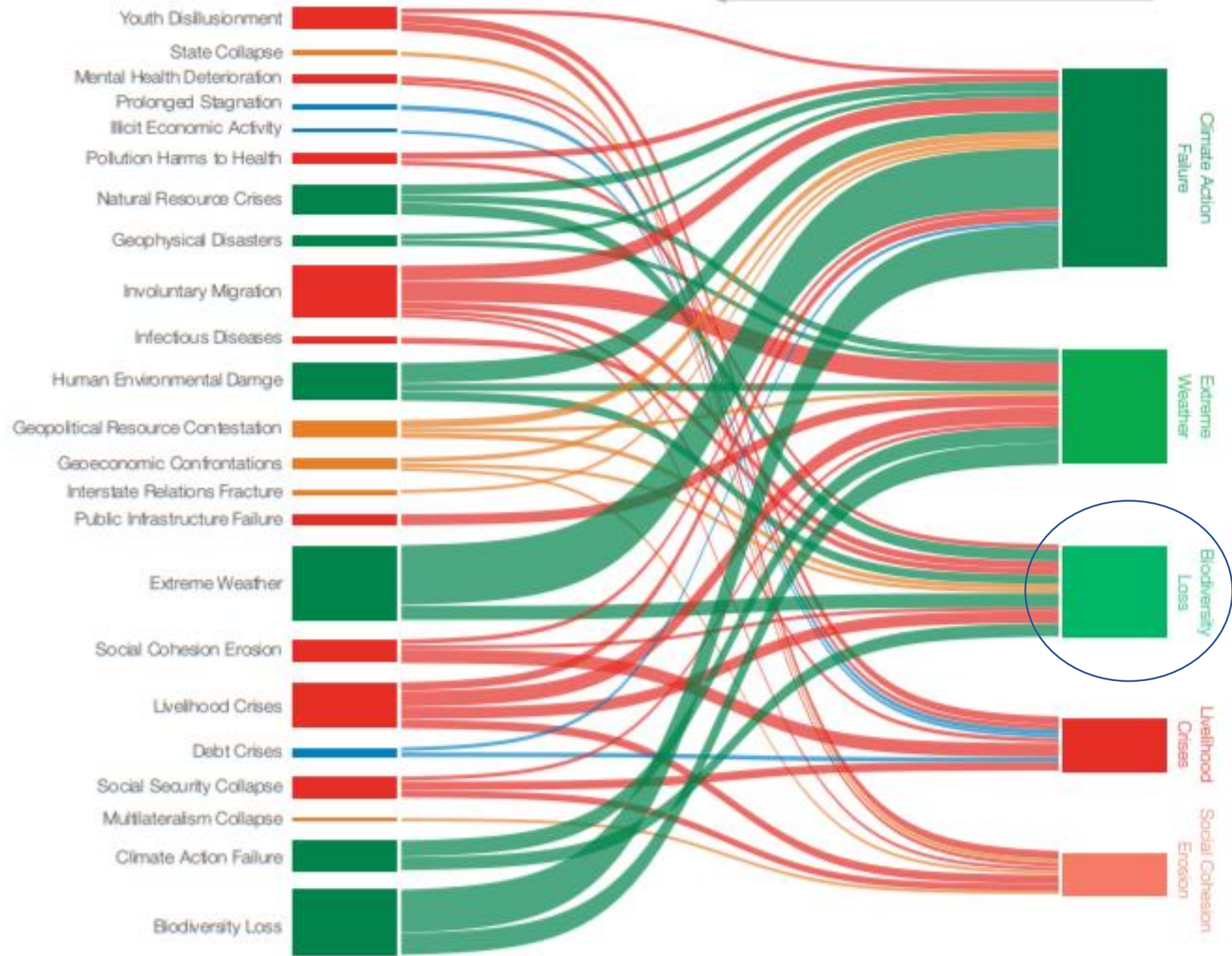
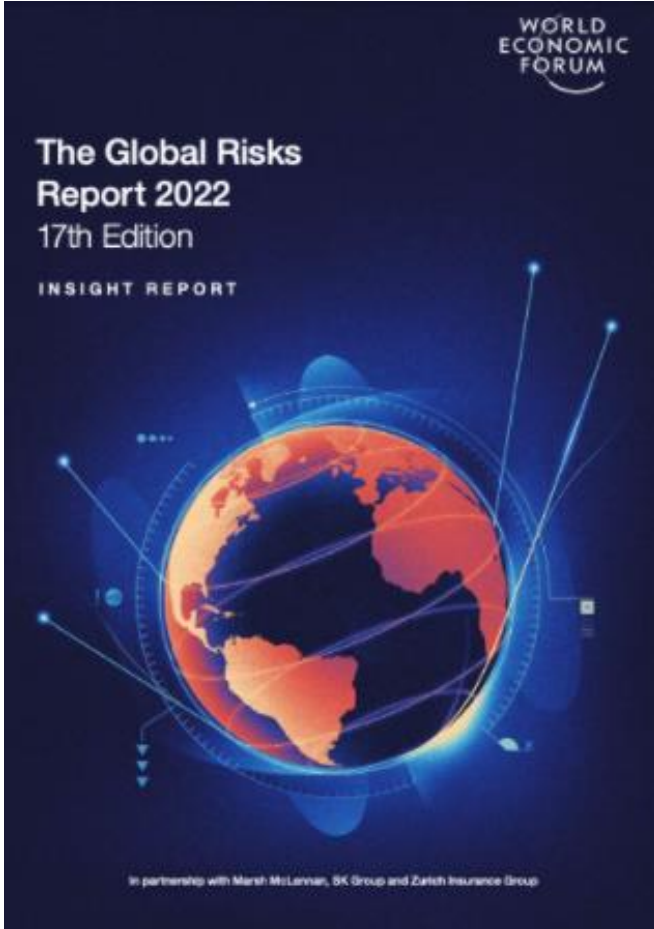
Boundaries that define the ‘safe operating space for humanity’

# Global Risks: World Economic Forum



■ Economic ■ Environmental ■ Geopolitical ■ Societal ■ Technological





# Word of the year: “Polycrisis”

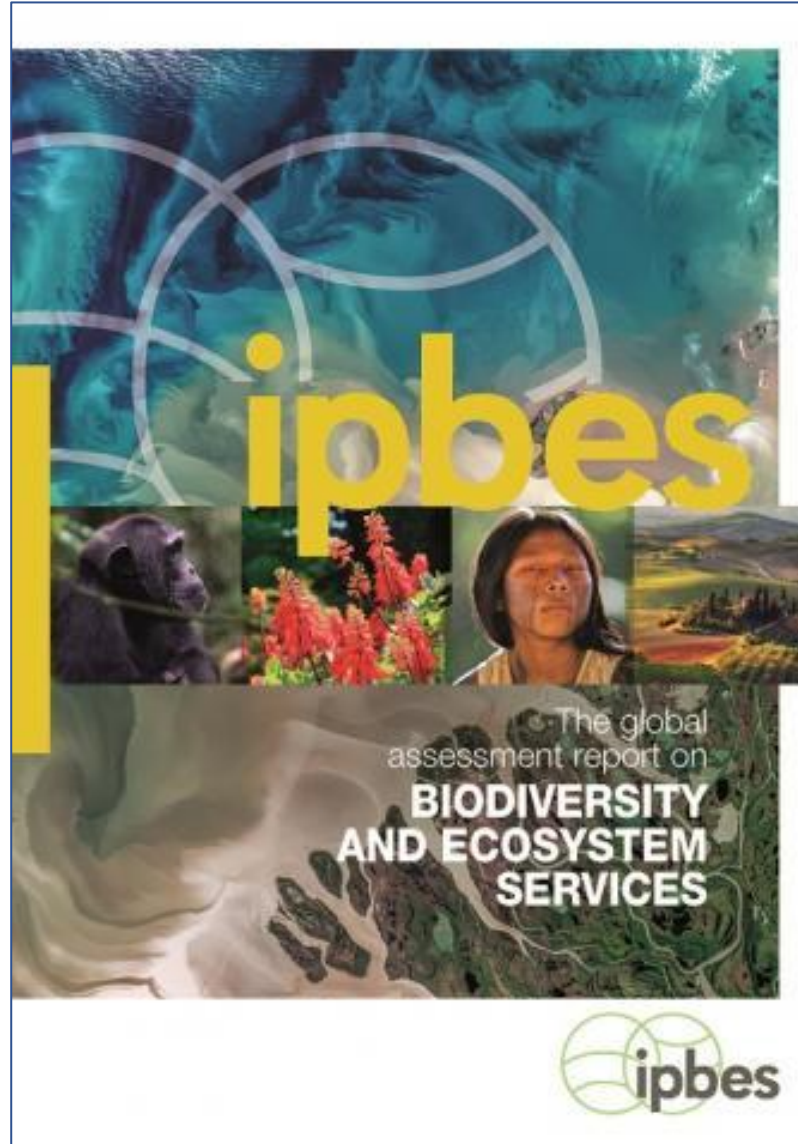
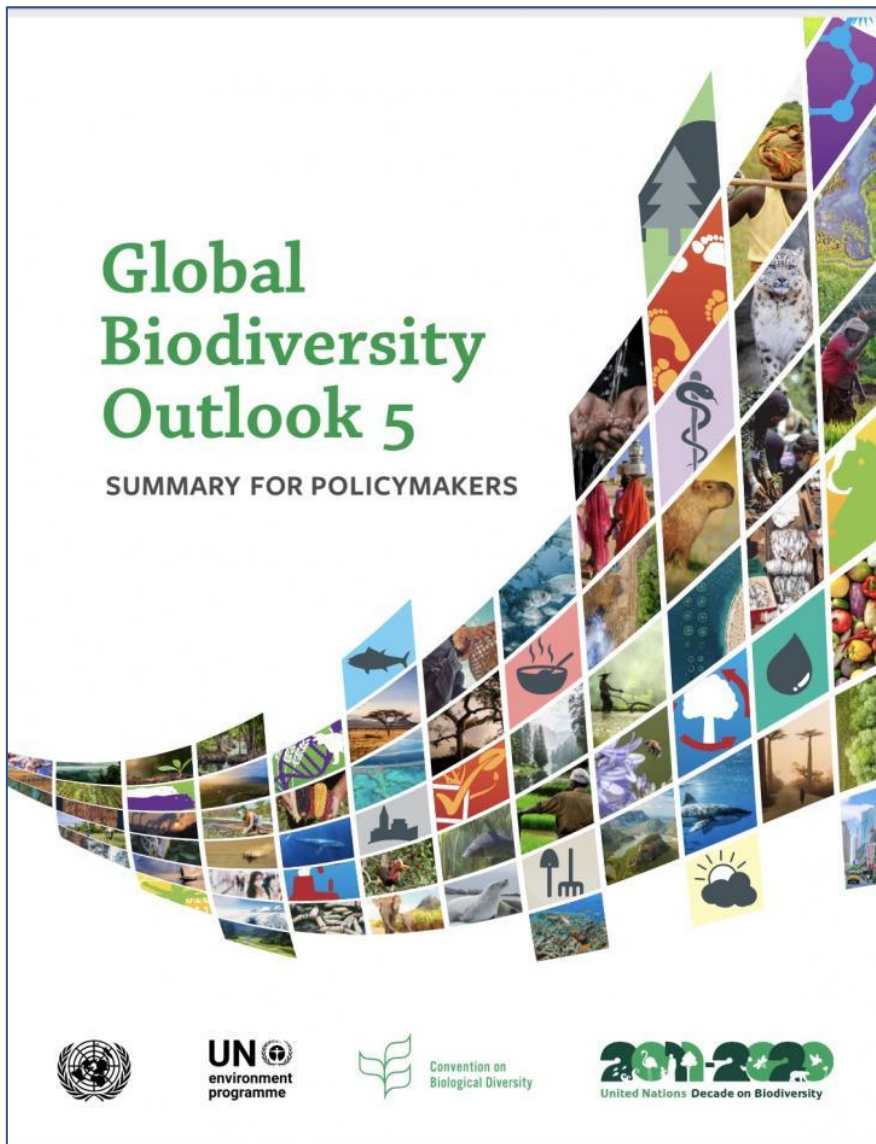


Opinion **Global Economy**  
Year in a word: Polycrisis  
Multiple interlinked global emergencies have been unfolding simultaneously

- **Climate crisis**
- **Water crisis**
- **Food crisis**
- **Natural disaster crisis**
- **Health crisis**
- **Biodiversity crisis**



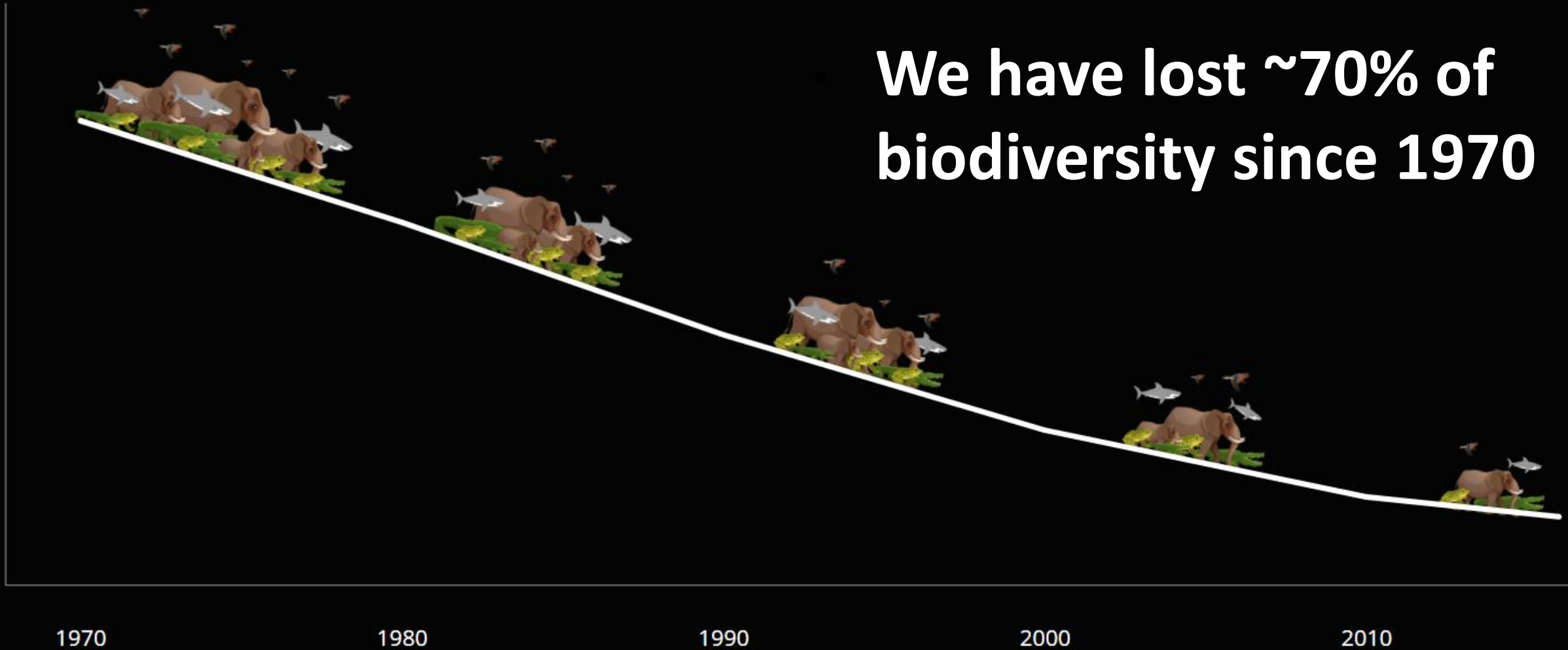
# Biodiversity Emergency



# Biodiversity Emergency

**We have lost ~70% of biodiversity since 1970**

Average change in wildlife population sizes



# Biodiversity Emergency – economic impacts

WORLD  
ECONOMIC  
FORUM

COMMITTED TO  
IMPROVING THE STATE  
OF THE WORLD

New Nature Economy series

## Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy

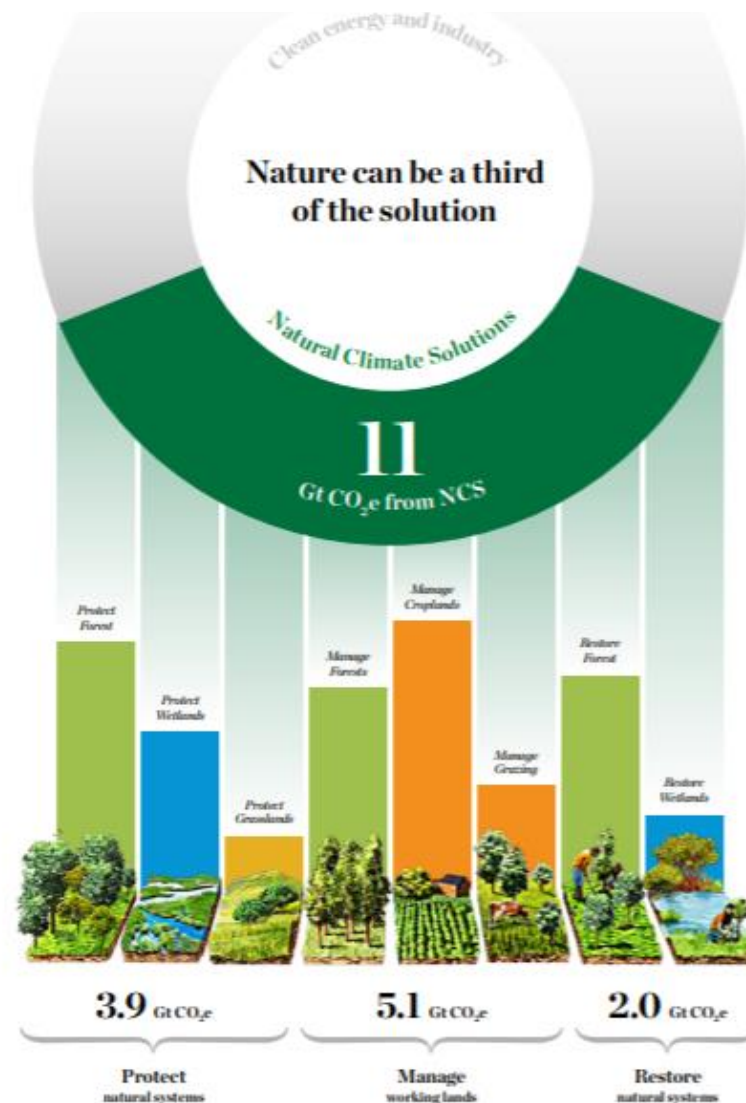
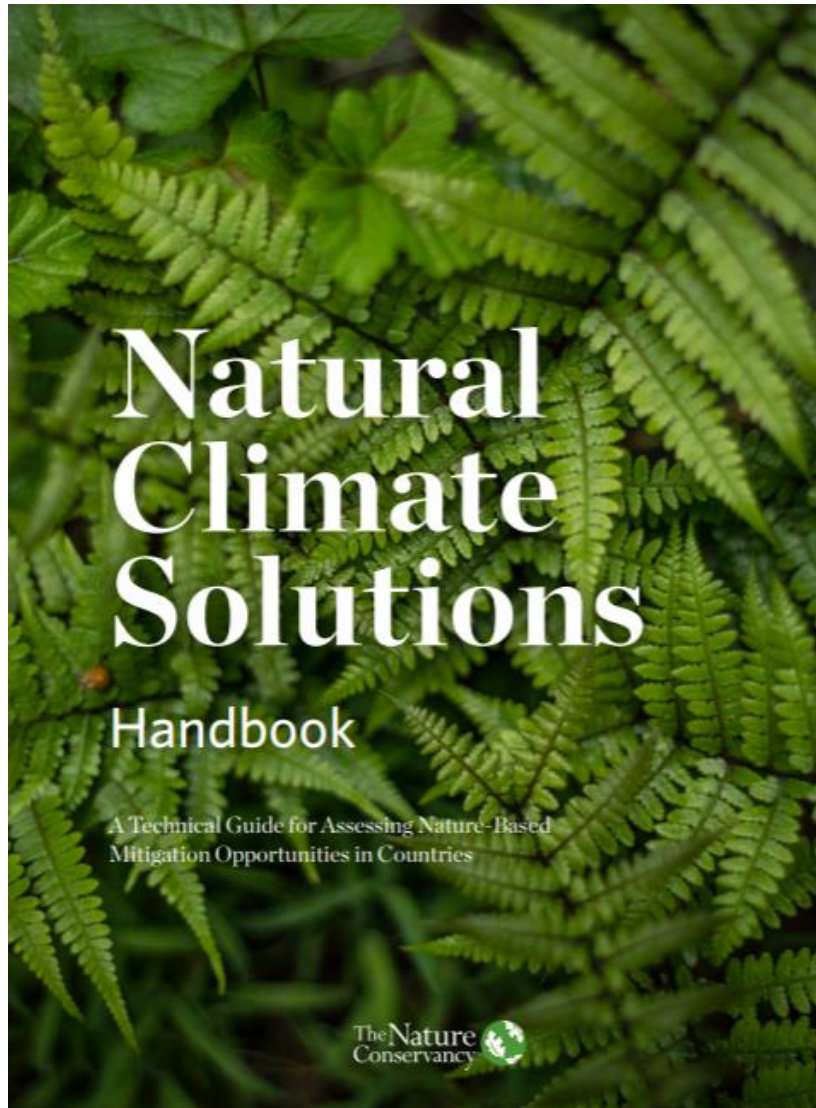
In collaboration with PwC

January 2020



- More than half of global GDP is at risk from biodiversity loss

# Relationship between nature and climate



- Land use (clearing of forests, traditional agriculture) = 24% of greenhouse gases
- Nature can mitigate up to 38% of greenhouse gases

# Forests & climate: More nuanced understanding



- **Older, mature forests** sequester more carbon than younger forests
- **Large, intact patches and intact forested landscapes** are key
- **Forest soils** must be accounted for in carbon calculus



**Why protect 30% of land and water?**

# Why 30%?



- Scientists widely agree that 30% of protection is **the minimum** required to prevent **ecological breakdown** at local, regional and global scales
- 30% would safeguard  $\frac{1}{2}$  of terrestrial carbon stocks and **reduce extinction risk** by 90%

# WHY 30%

# Support for 30 x 30 globally



**Russ Feingold**, Chair of the GSC  
Former US Senator and former Council Deputy to West and Region of Africa



**Ernest Bai Koroma**  
Former President of Sierra Leone



**José María Figueres**  
Former President of Costa Rica



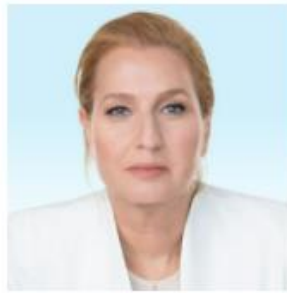
**Diefu Ragnar Grímason**  
Former President of Iceland



**Hindou Oumou Ibrahim**  
President, Association for Indigenous Women and Peoples of Chad (AIWPC)



**Christiana Figueres**  
Former Executive Secretary UNFCCC



**Tzipi Livni**  
Former Foreign Minister of Israel



**Ellen Johnson Sirleaf**  
Former President of Liberia



**Mary Robinson**  
Former President of Ireland



**Malerwan Dossaj**  
Former Prime Minister of Ethiopia



**Dr. Ruhakana Rugunda**  
Former Prime Minister of Uganda



**Susanna Malcorra**  
Former Foreign Minister of Algeria



**Amr Moussa**  
Former Foreign Minister of Egypt



**Enal Saliin**  
Former Transnational Minister of Indonesia



**Gwangun Okwangjo**



**Yongyett Yuthavong**  
Former Deputy Prime Minister of Thailand



**Graça Machel**  
Former First Lady of South Africa



**Loren Legarda**  
Philippine Deputy Speaker



**Zakri Abdul Hamid**  
Former Science and Innovation Prime Minister of Malaysia



**Rashed Sumaila**  
Professor Emeritus for Oceanography at Texas A&M



# Support for 30 x 30 globally



# Support for 30 x 30 in the United States

## The Biden administration has a game-changing approach to nature conservation

The America the Beautiful initiative could redefine US conservation as we know it.



CONSERVING AND RESTORING  
AMERICA THE BEAUTIFUL

2021

*A preliminary report to the National Climate Task Force recommending a ten-year, locally led campaign to conserve and restore the lands and waters upon which we all depend, and that bind us together as Americans.*

### Biden wants to triple protected lands

Conserving 30 percent of land and 30 percent of ocean waters by 2030 would be a big win for the climate and biodiversity.



# Support for 30 x 30 in the United States

## ENVIRONMENT

### State And Local Leaders Push Biden To Protect 30% Of U.S. Land, Waters By 2030

In an open letter, more than 400 elected officials pledge to do their part to achieve the new administration's ambitious conservation goal.



By Chris D'Angelo

01/26/2021 05:45am EST

#### State and Local Leaders Support 30x30

January 26, 2021

We, the undersigned state and local officials, support confronting America's nature crisis by pursuing a goal of conserving at least 30 percent of our nation's lands and ocean by 2030.

Nature is indispensable to the health and prosperity of every community in America. We depend on our forests and streams for clean drinking water and clean air. Our lands are a place of cultural, ecological, and sacred resources that have sustained humanity for generations. Our ocean supplies wild fish that feed our country and provide endless wonder and enjoyment. Our rivers, mountains, and deserts are where families unplug and reconnect. Our parks, open spaces, beaches, trails, and public lands enrich communities' quality of life and power America's outdoor recreation economy. Our very existence depends upon the survival of a rich diversity of natural life.

Achieving 30x30 will require an ambitious and inclusive movement that engages local, state, national and Tribal leaders, as well as private landowners, as part of the solution. We support a national goal of protecting and restoring 30% of land and ocean by 2030 and commit to taking action now in our communities and states to reach it.

How we achieve 30x30 is also important. We believe a national goal of 30x30 should include these important aspects:

- 450 elected officials from 44 states
- 12 state reps from Vermont
- Gavin Newsom signed an executive order to pledge to 30%
- Maine's climate action plan references 30%
- **NY just passed 30% legislation**

# Support for 30 x 30 in Vermont

## INITIAL VERMONT CLIMATE ACTION PLAN

Vermont Climate Council  
DECEMBER 2021

### 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 Zaino

Core Participants:

Jens Hille, Doug Morin – Vermont Fish and Wildlife Department  
Keith Thompson – Vermont Department of Forests, Parks and Recreation  
Elizabeth Thompson – Vermont Land Trust



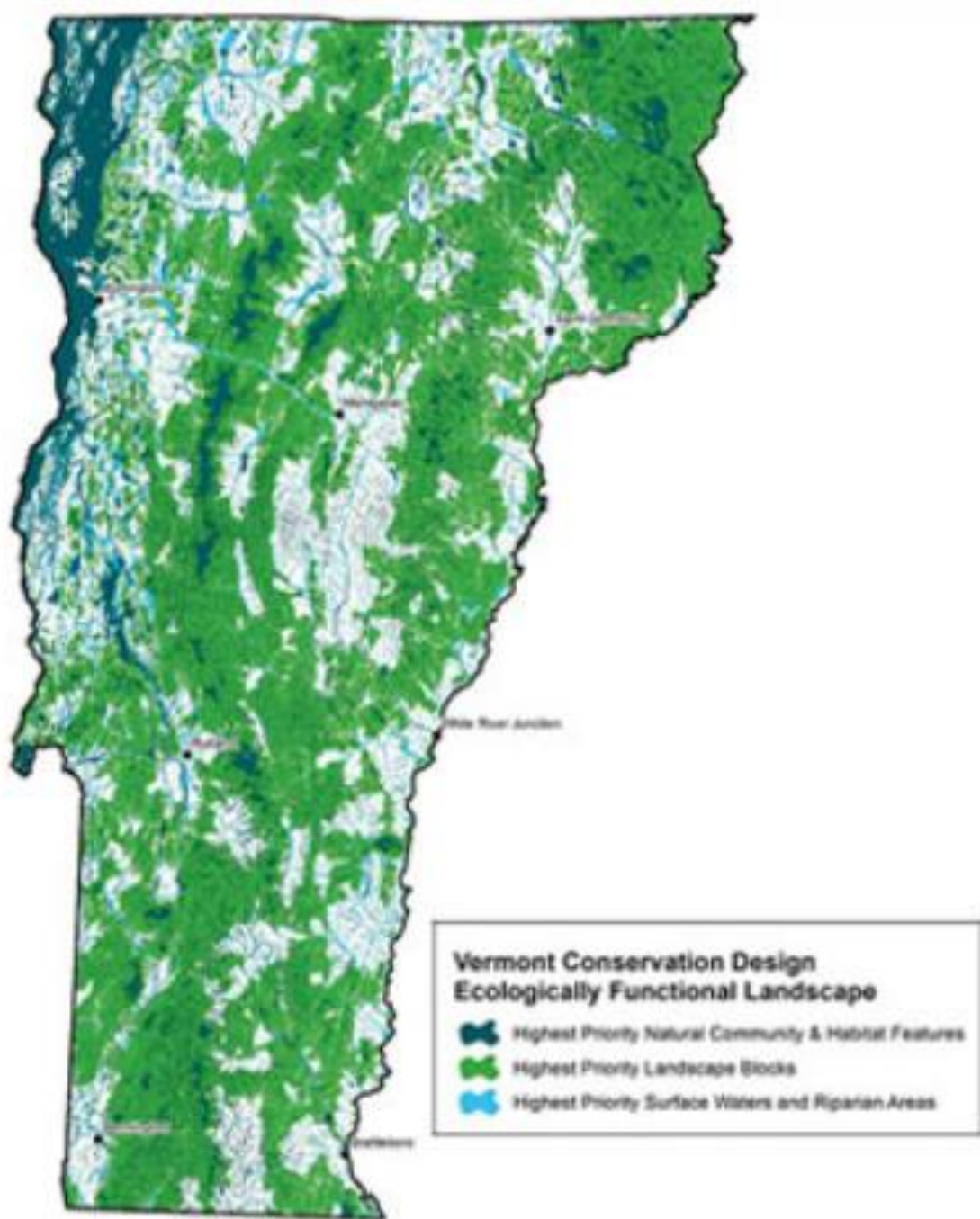
**VERMONT**  
AGENCY OF NATURAL RESOURCES  
*Respect. Protect. Enjoy.*

- VT endorsed 30 x 30 in its Climate Action Plan
- VT embedded its 30 x 30 commitment in the Vermont Conservation Design by **calling for the protection of older forests – with 10% as a minimum**

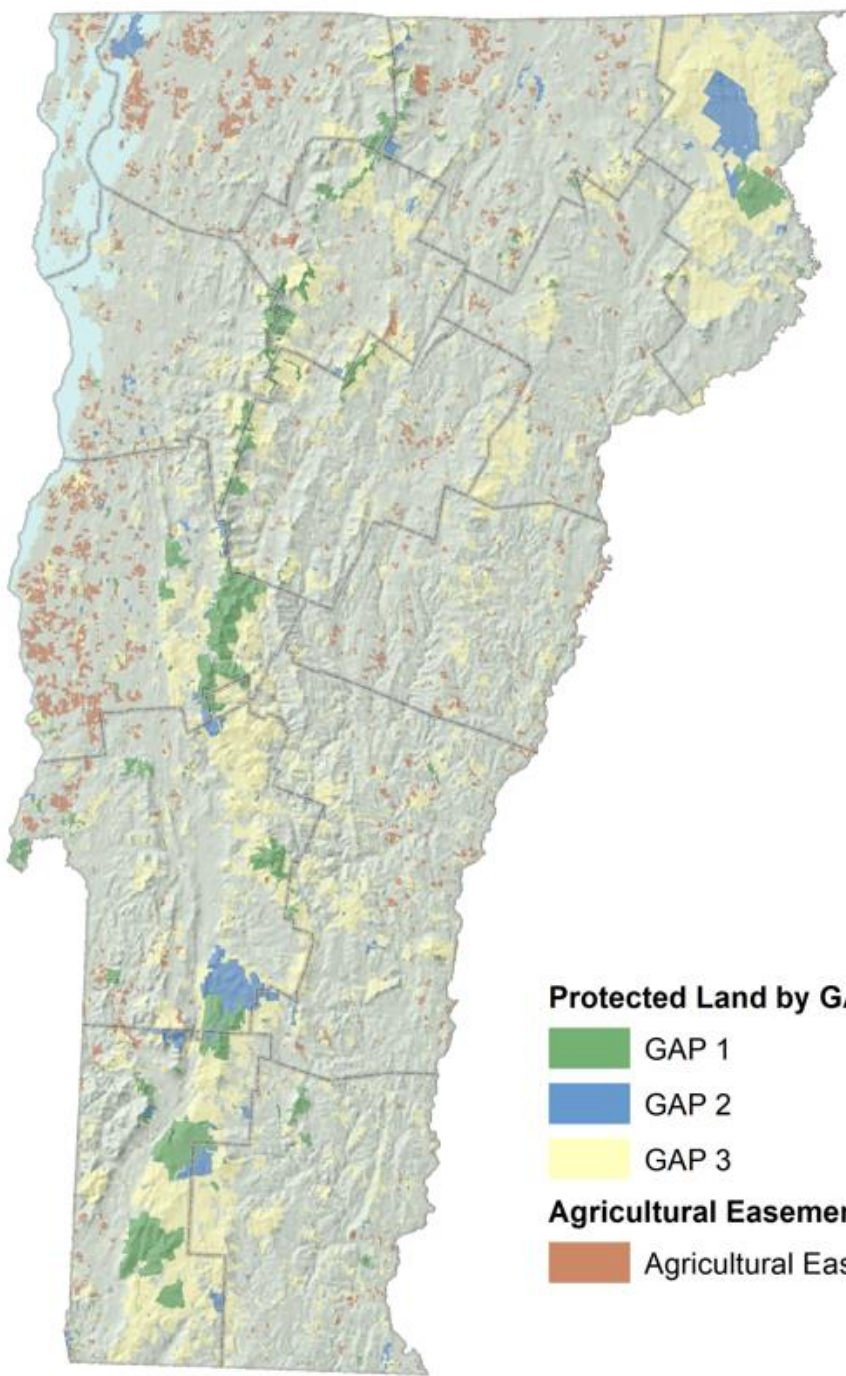


# State of protection and conservation in Vermont

# Creating a state map of protection priorities



- Vermont Conservation Design lays out a clear vision for an ecologically functional landscape that provides a **safety net for climate disasters**, and **solutions for our climate crisis**

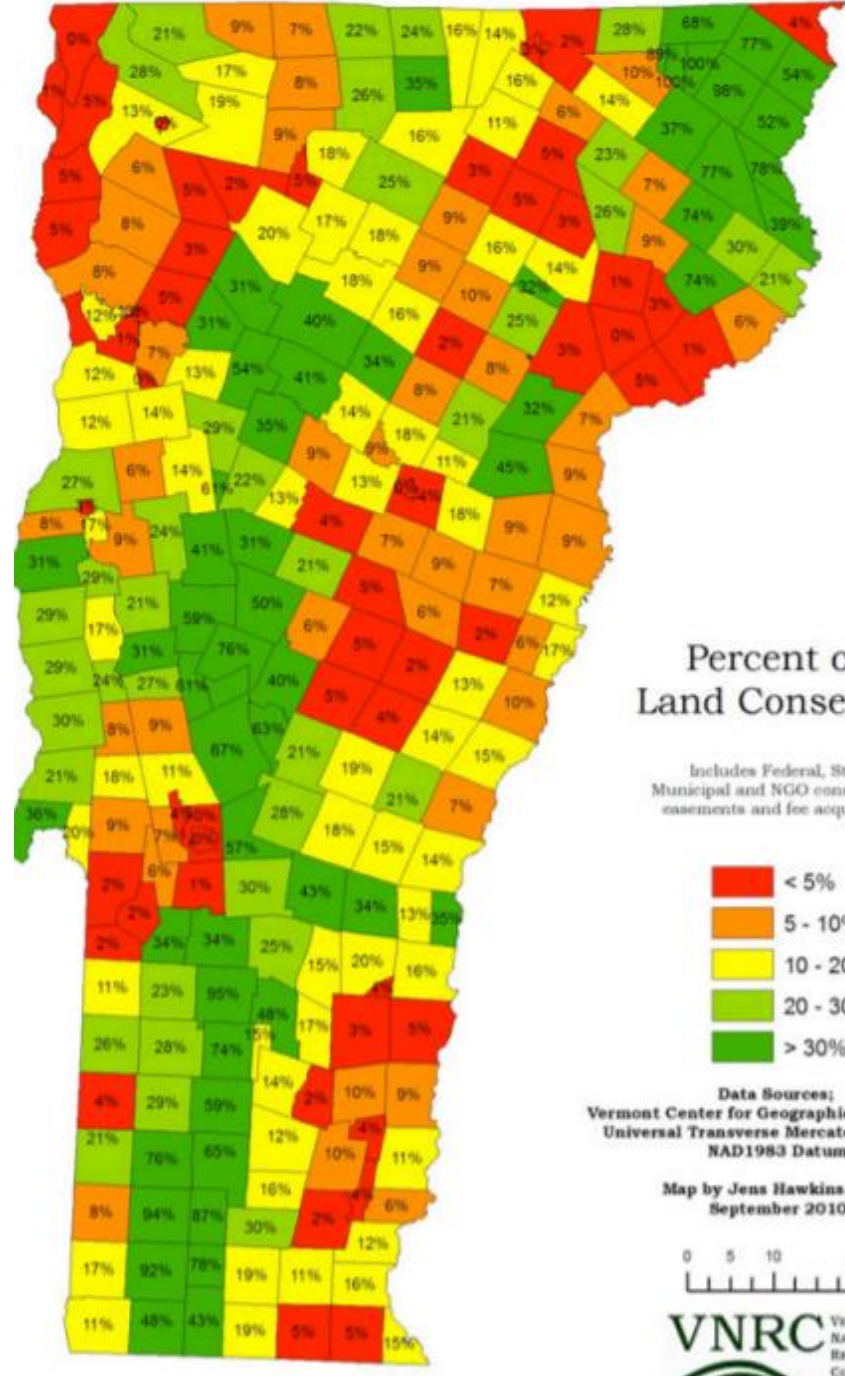


**Protected Land by GAP Status**

- GAP 1
- GAP 2
- GAP 3

**Agricultural Easements**

- Agricultural Easements



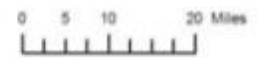
**Percent of Land Conserved**

Includes Federal, State, Municipal and NGO conservation easements and fee acquisitions

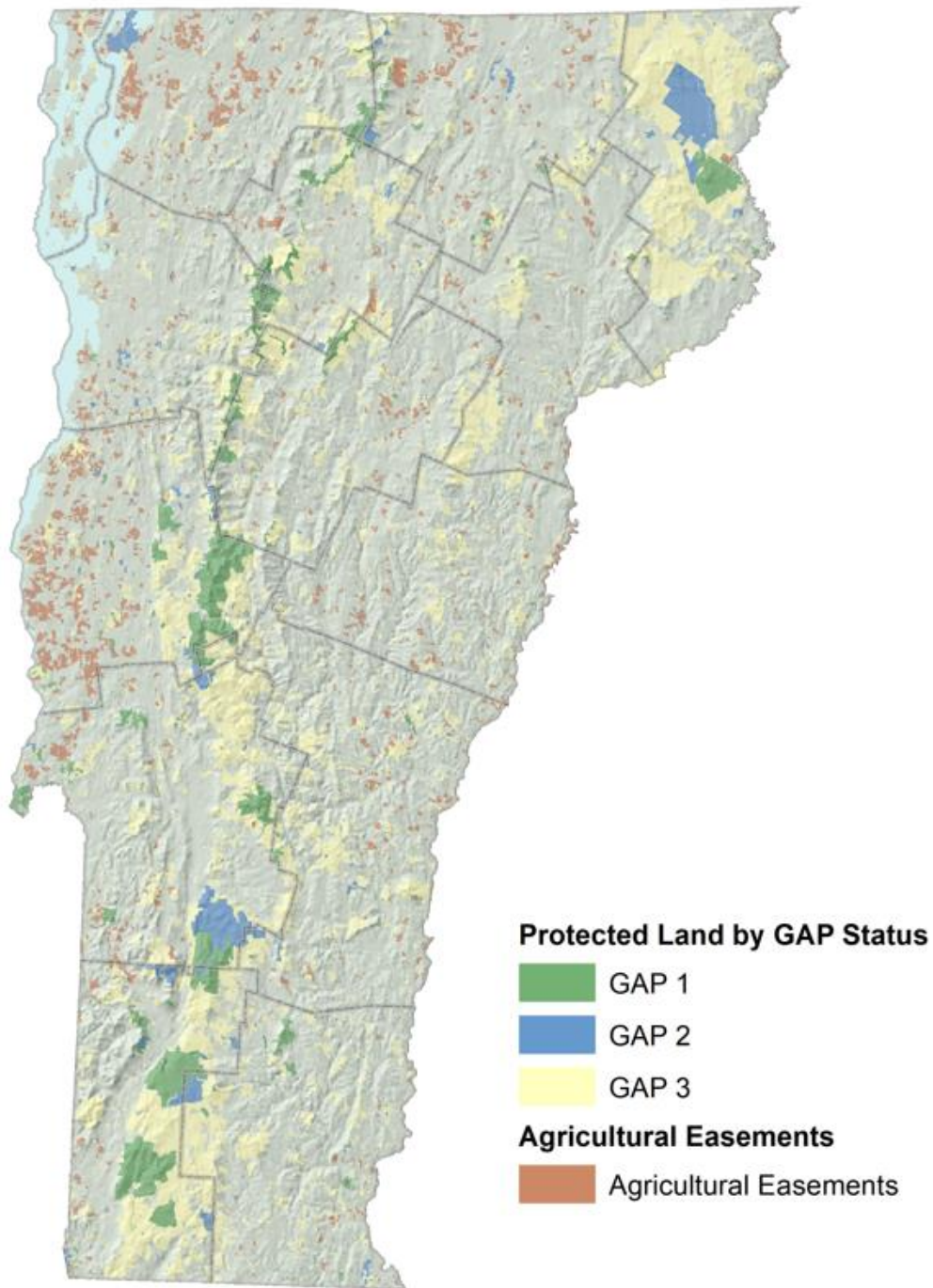
- < 5%
- 5 - 10%
- 10 - 20%
- 20 - 30%
- > 30%

Data Sources:  
Vermont Center for Geographic Information,  
Universal Transverse Mercator Projection  
NAD1983 Datum

Map by Jens Hawkins-Hilke  
September 2010

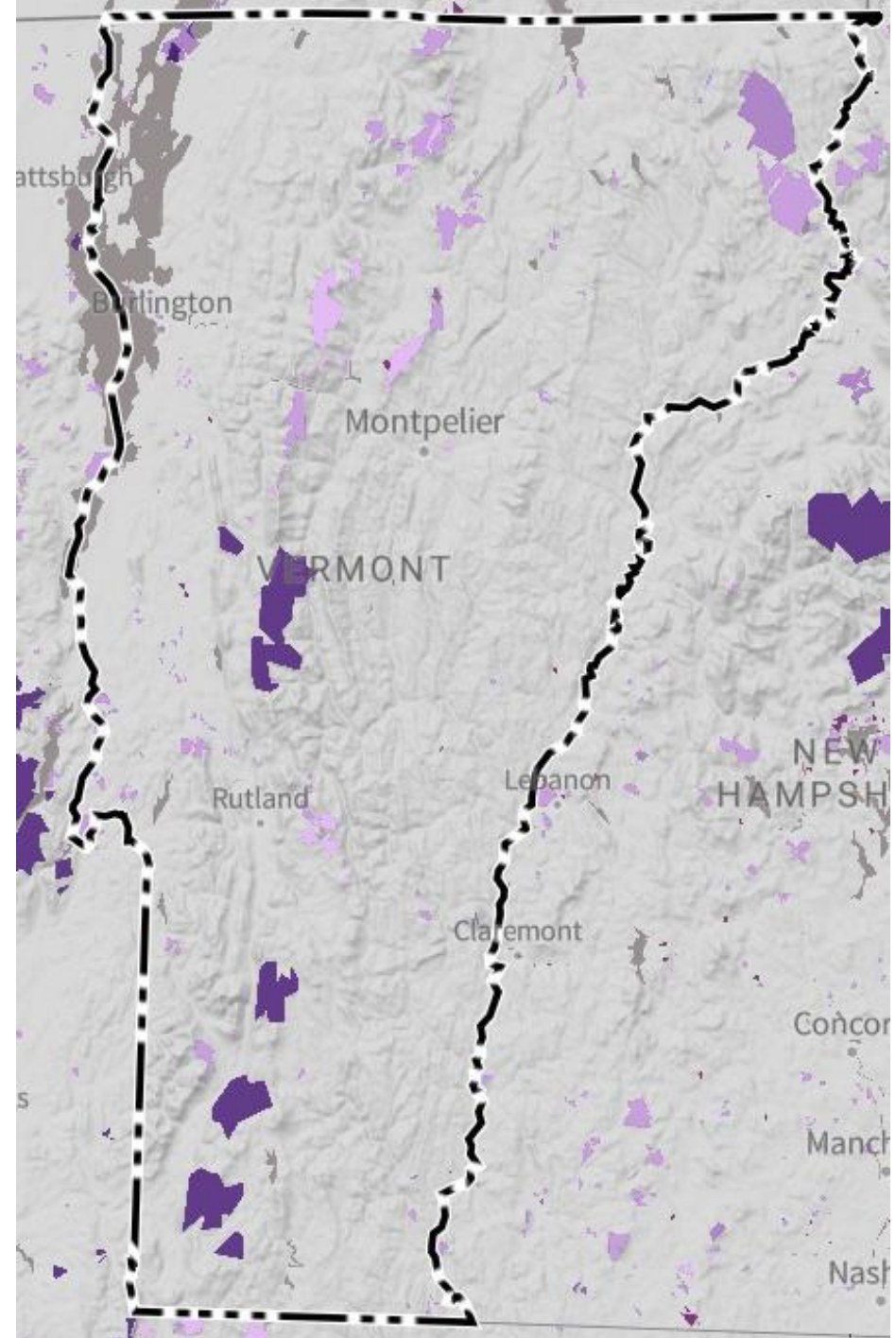
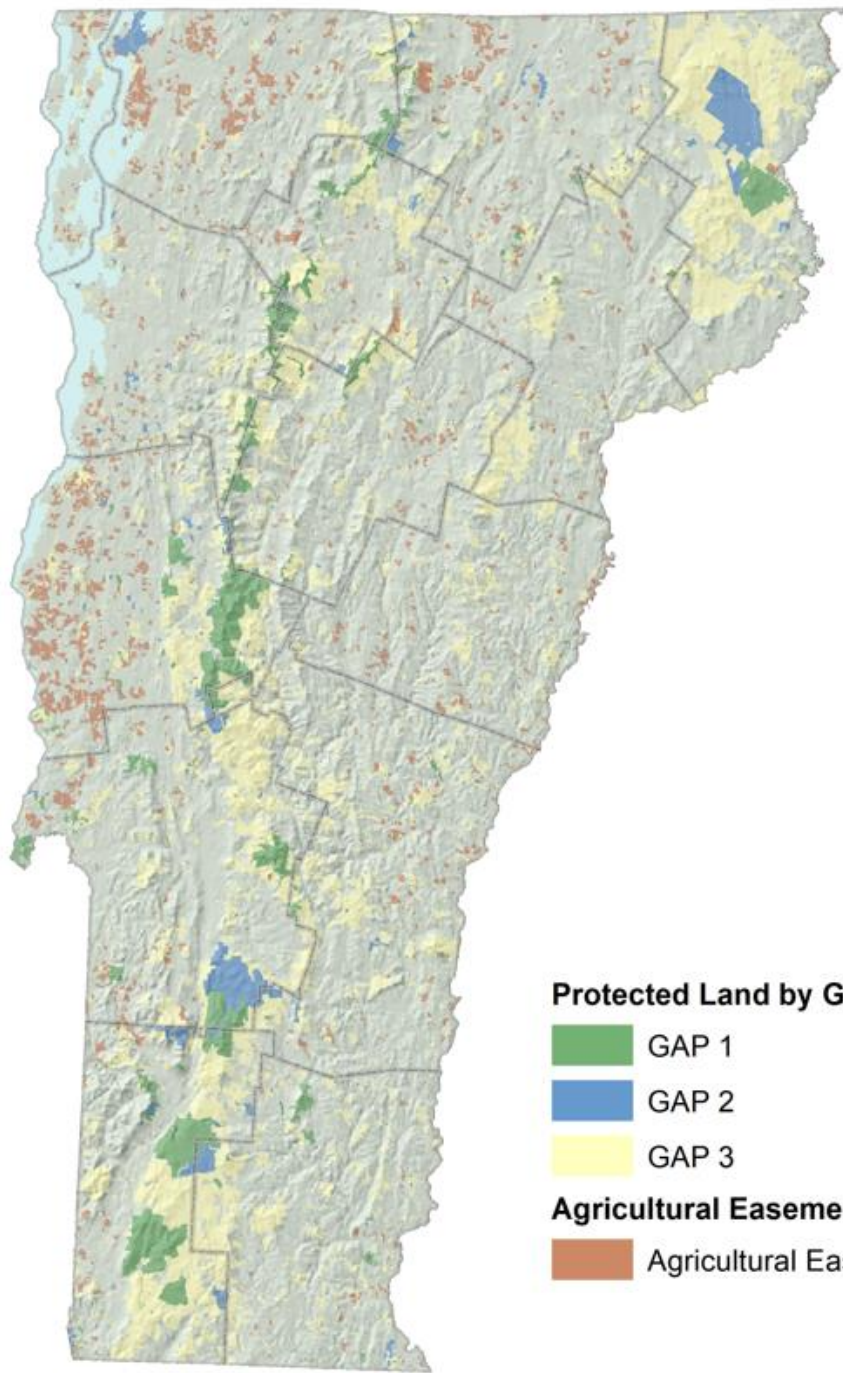


# Protected areas in Vermont



- All lands (Gap 1 – Gap 3): 26.1%
- Percent managed for older, mature forests: <3%
- Percent in Gap 1 status: 3.6%; percent in GAP 2 status: 1.8%
- Most Gap 1 lands are at high elevation, not well connected, not representative, not truly protected
- Large swaths of little or no protection

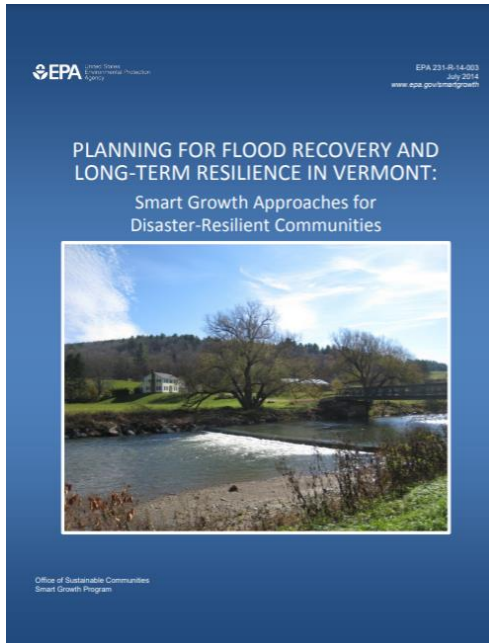






**What does all this mean for  
Vermont – 5 questions**

# 1. Are we managing for natural disasters?



- To mitigate floods, “communities could start by preserving existing, undeveloped forested areas”



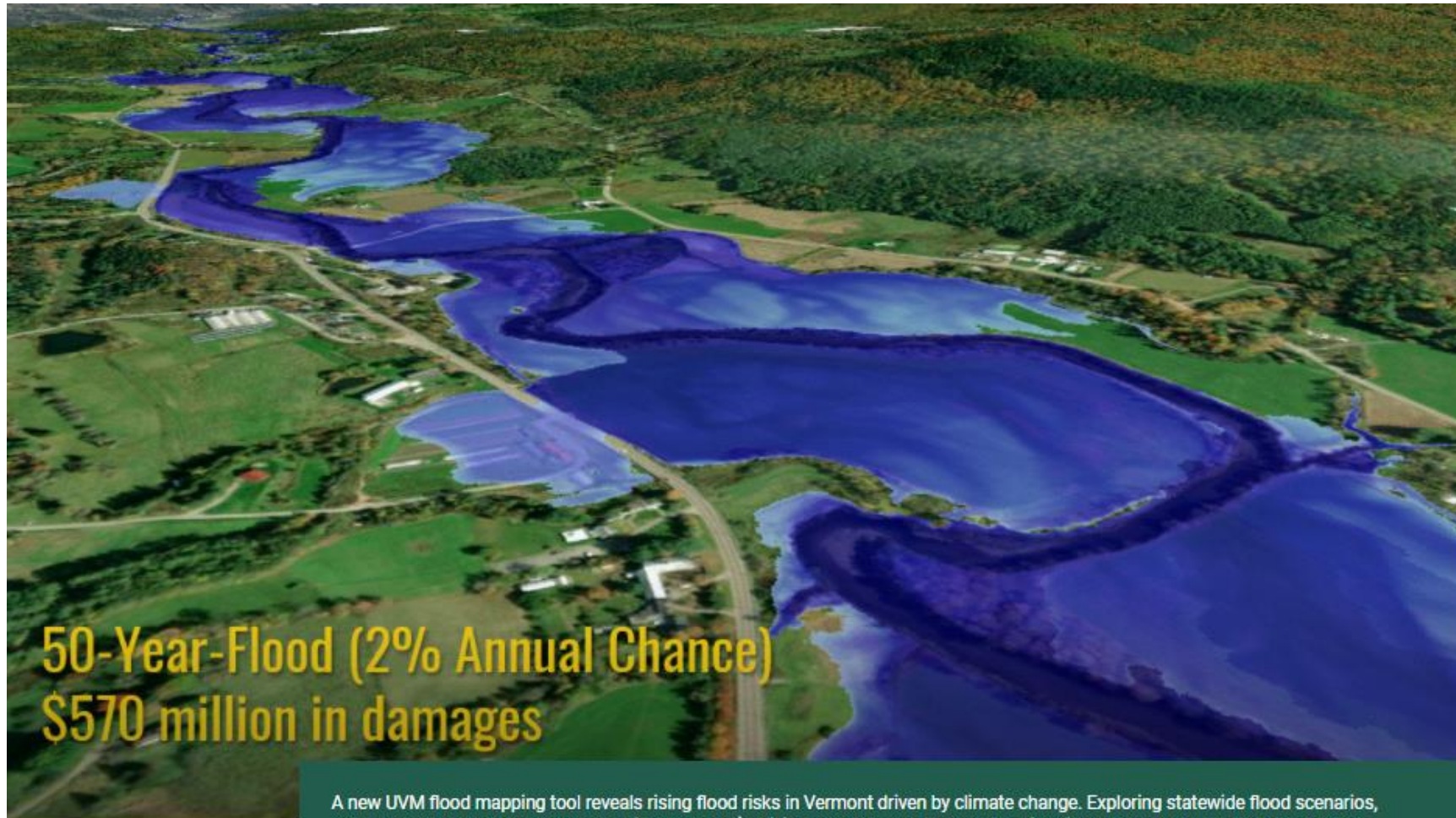
Enhancing Flood Resiliency  
of Vermont State Lands

30 June 2015 FINAL DRAFT

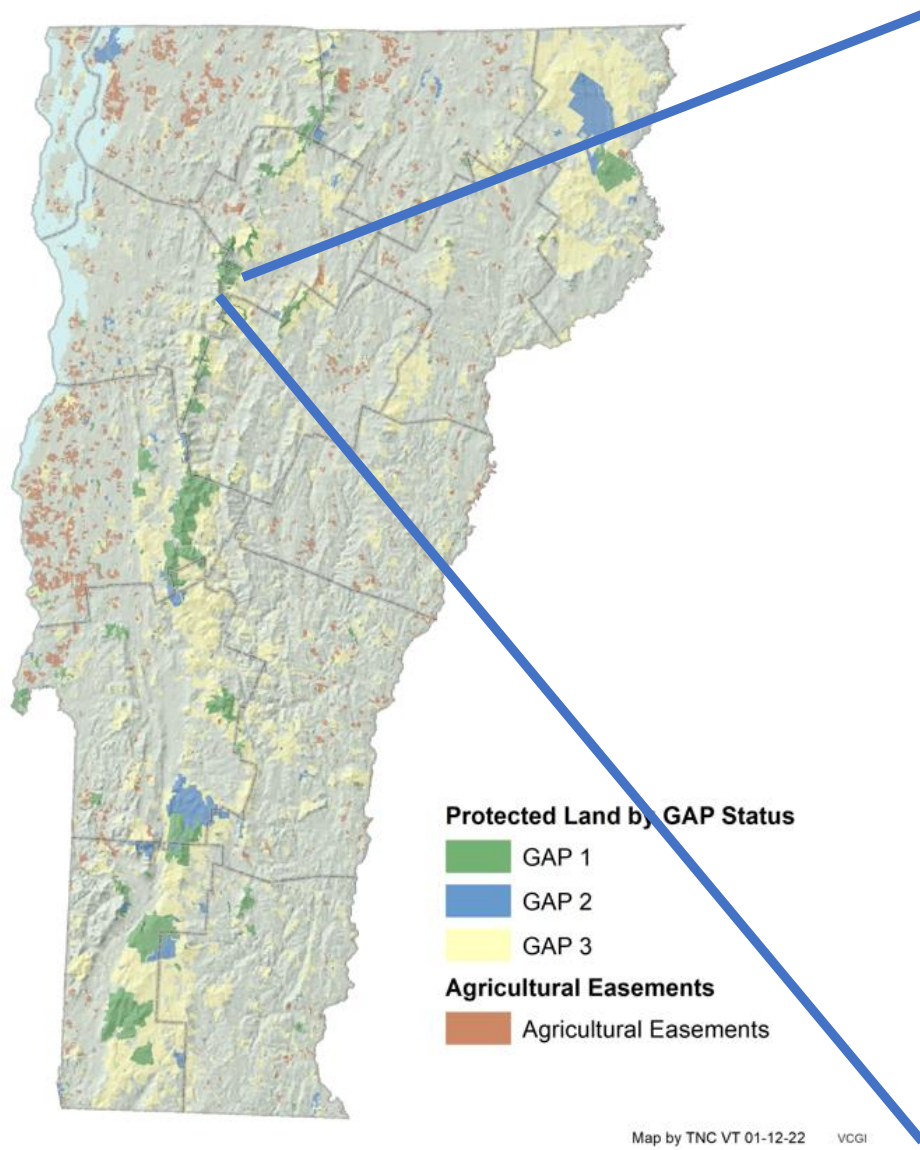
- 90% of Vermont’s state-managed lands are in forested headwaters
- These areas are extremely important for mitigating floods

# Are we managing for natural disasters?

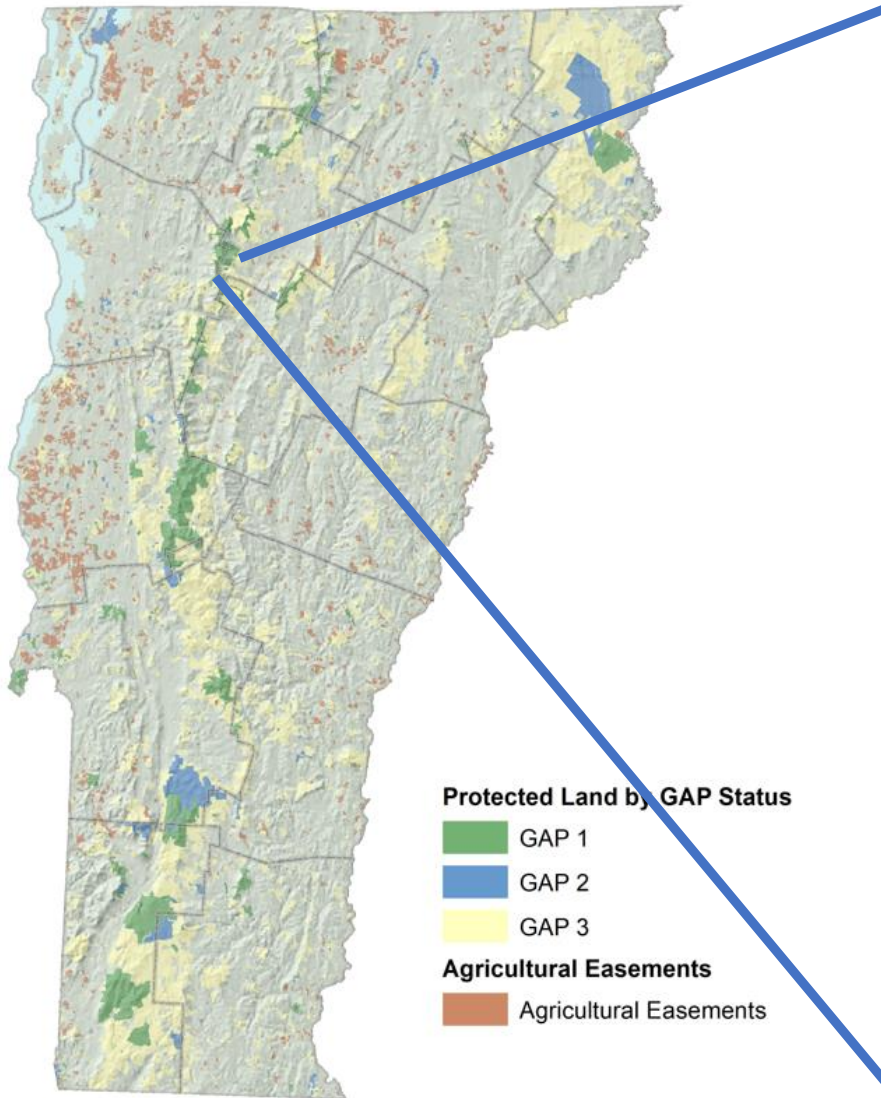
## Vermont Flood Costs Could Exceed \$5.2 Billion



# Are we managing for natural disasters?



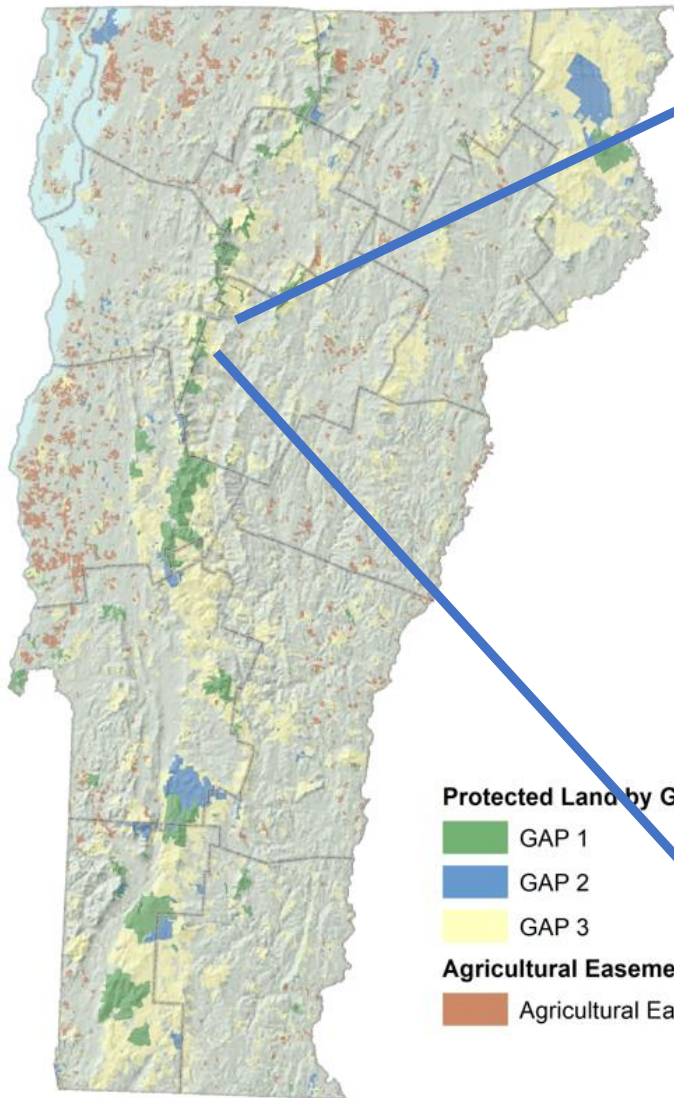
# Are we managing for natural disasters?



Map by TNC VT 01-12-22 VCGI



# Are we managing for natural disasters?



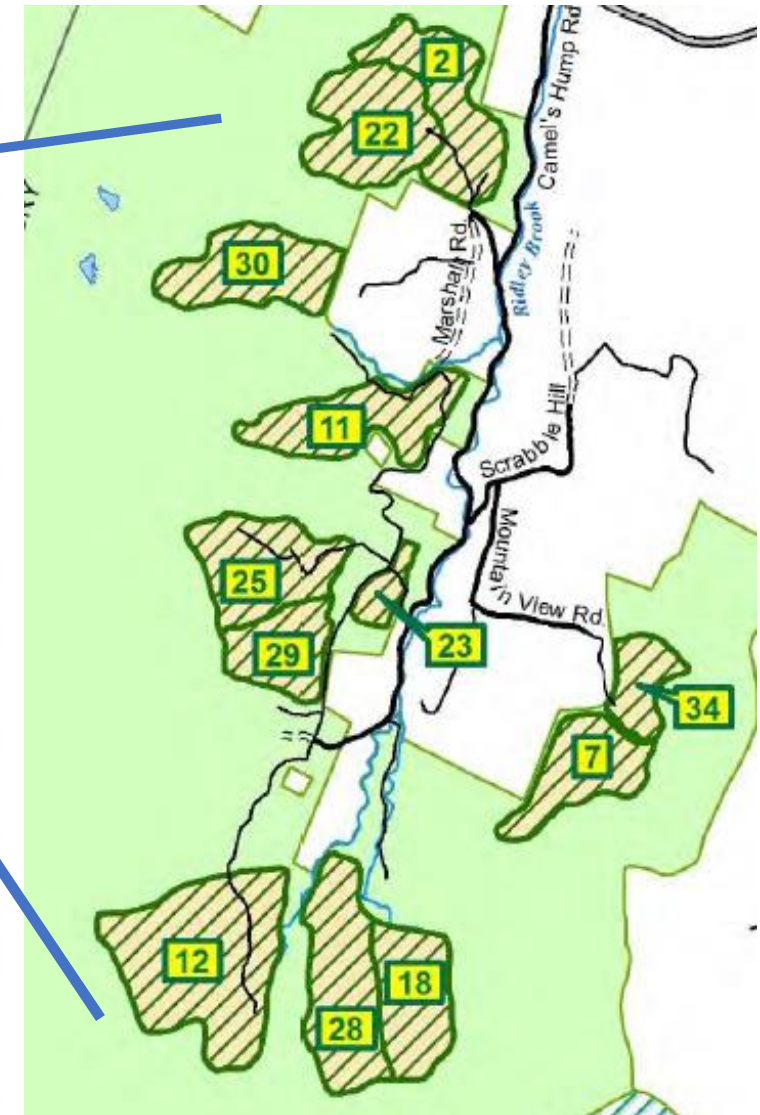
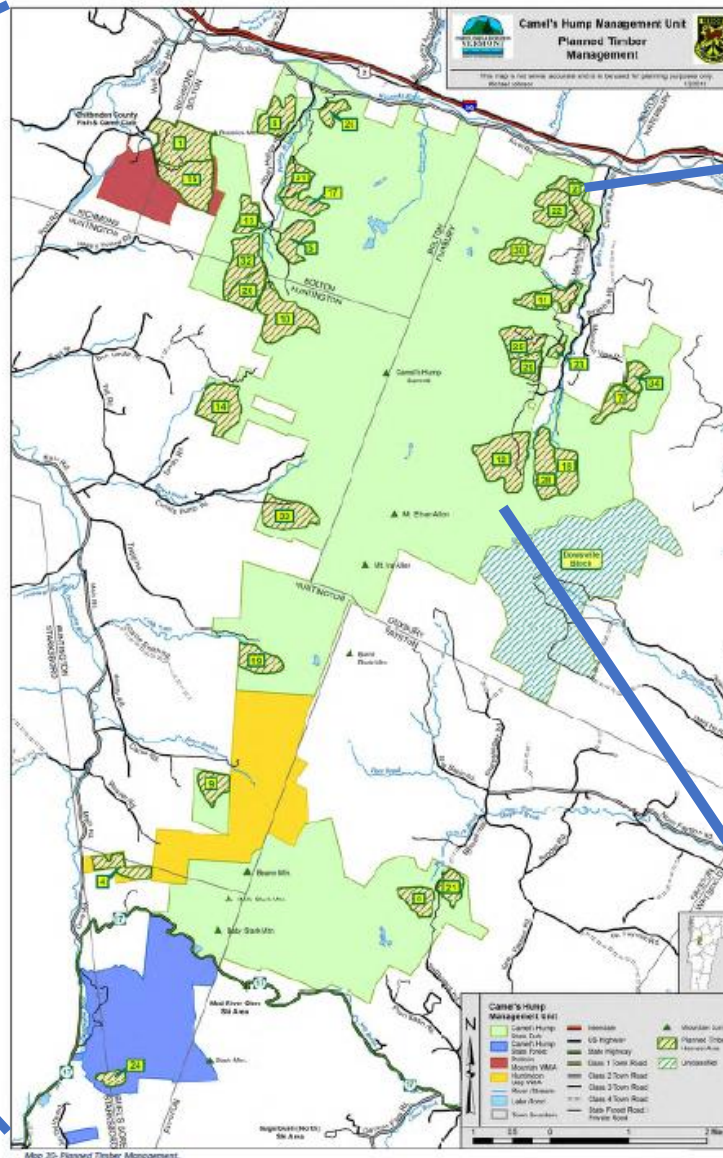
## Protected Land by GAP Status

- GAP 1
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## Agricultural Easements

- Agricultural Easements

Map by TNC VT 01-12-22 VCGI

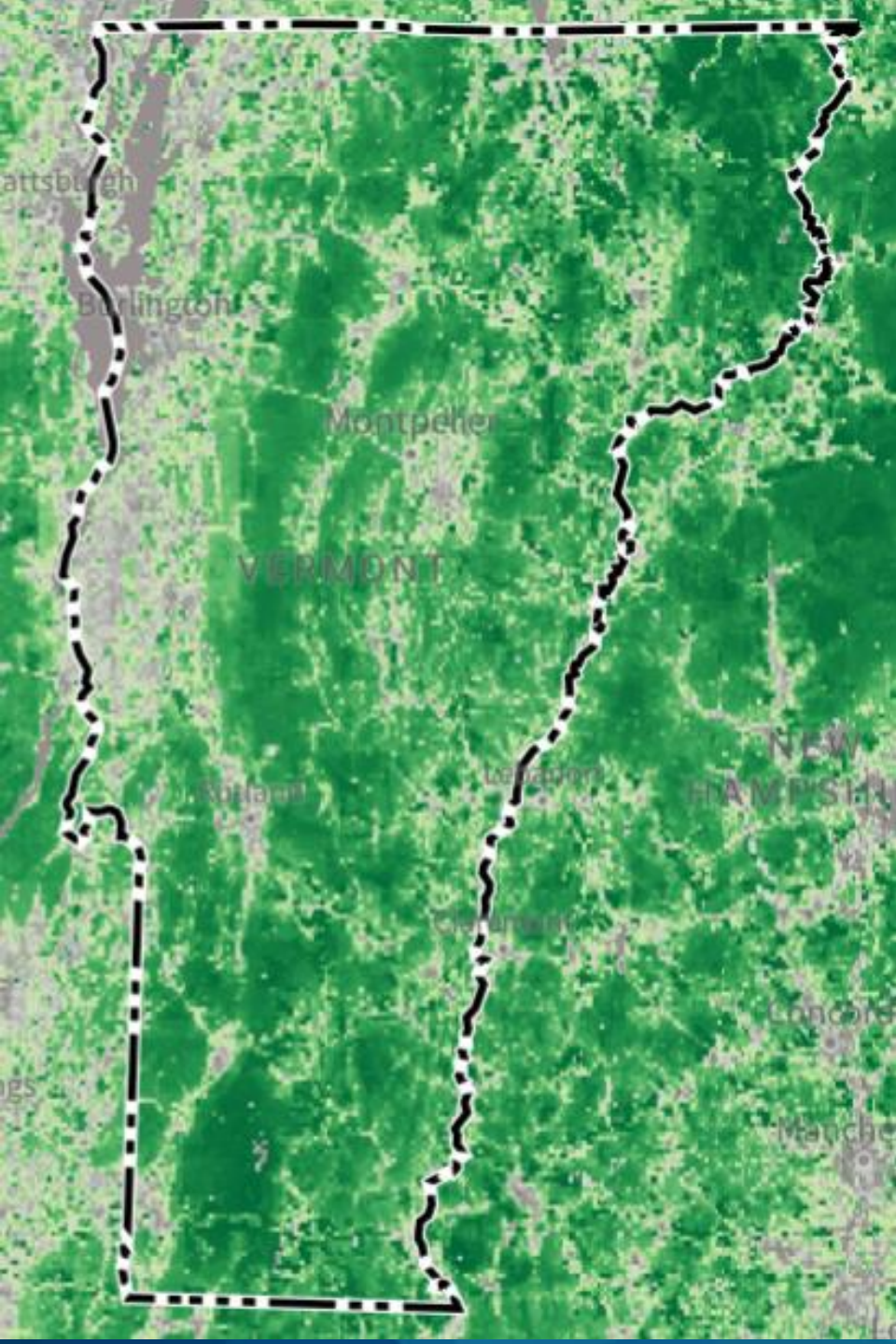


## 2. Are we managing for forest intactness and integrity?





## 2. Are we managing for forest intactness and integrity?



VERY HIGH - 0.61%

HIGH - 84.77%

MEDIUM - 8.76%

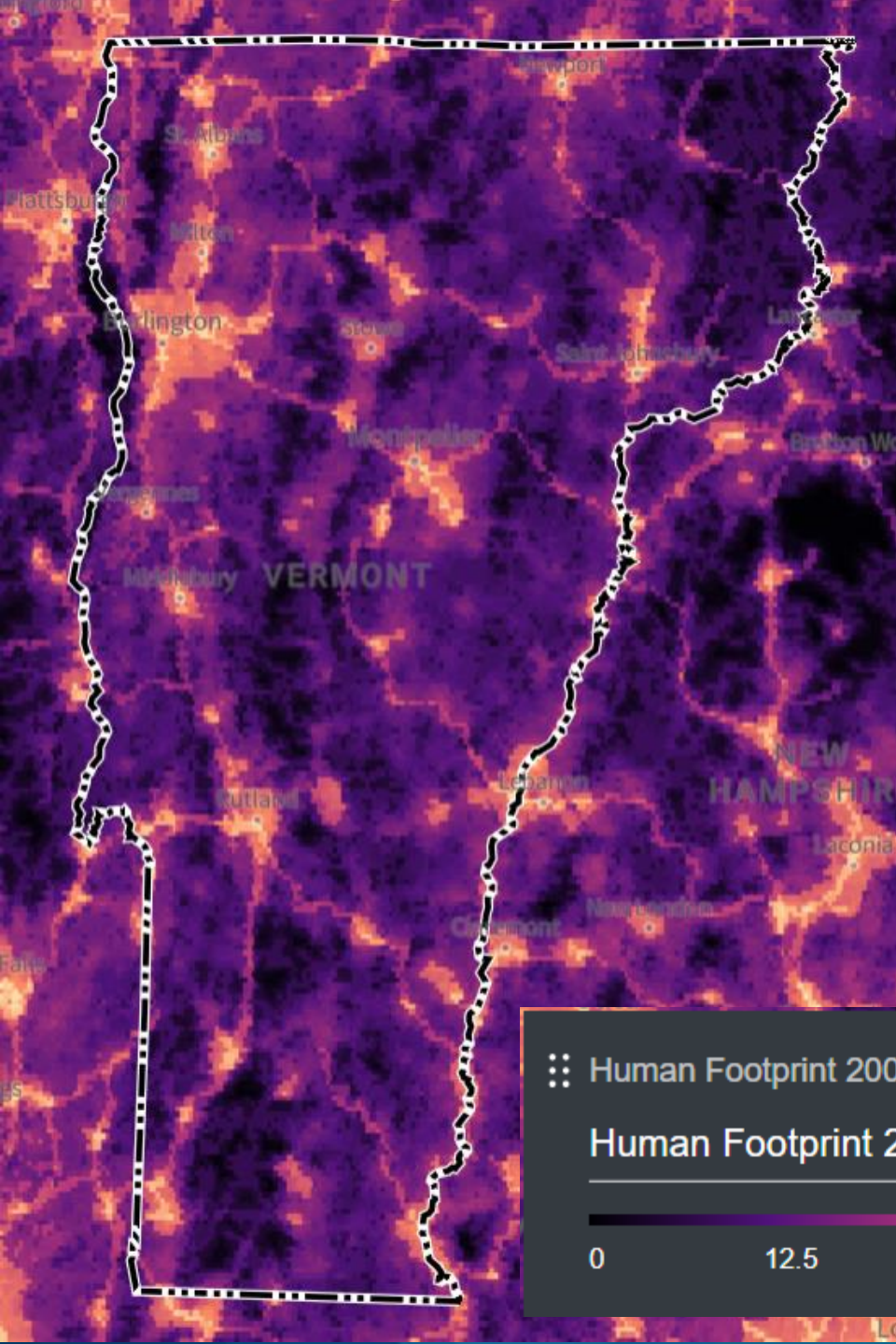
LOW - 5.26%

VERY LOW - 0.60%



## 2. Are we managing for forest intactness and integrity?

- Relatively intact
- Very high potential for increased fragmentation from development, logging, roads
- Very few large forested blocks with high integrity



Human Footprint 2000-2013 (V2)

Human Footprint 2000

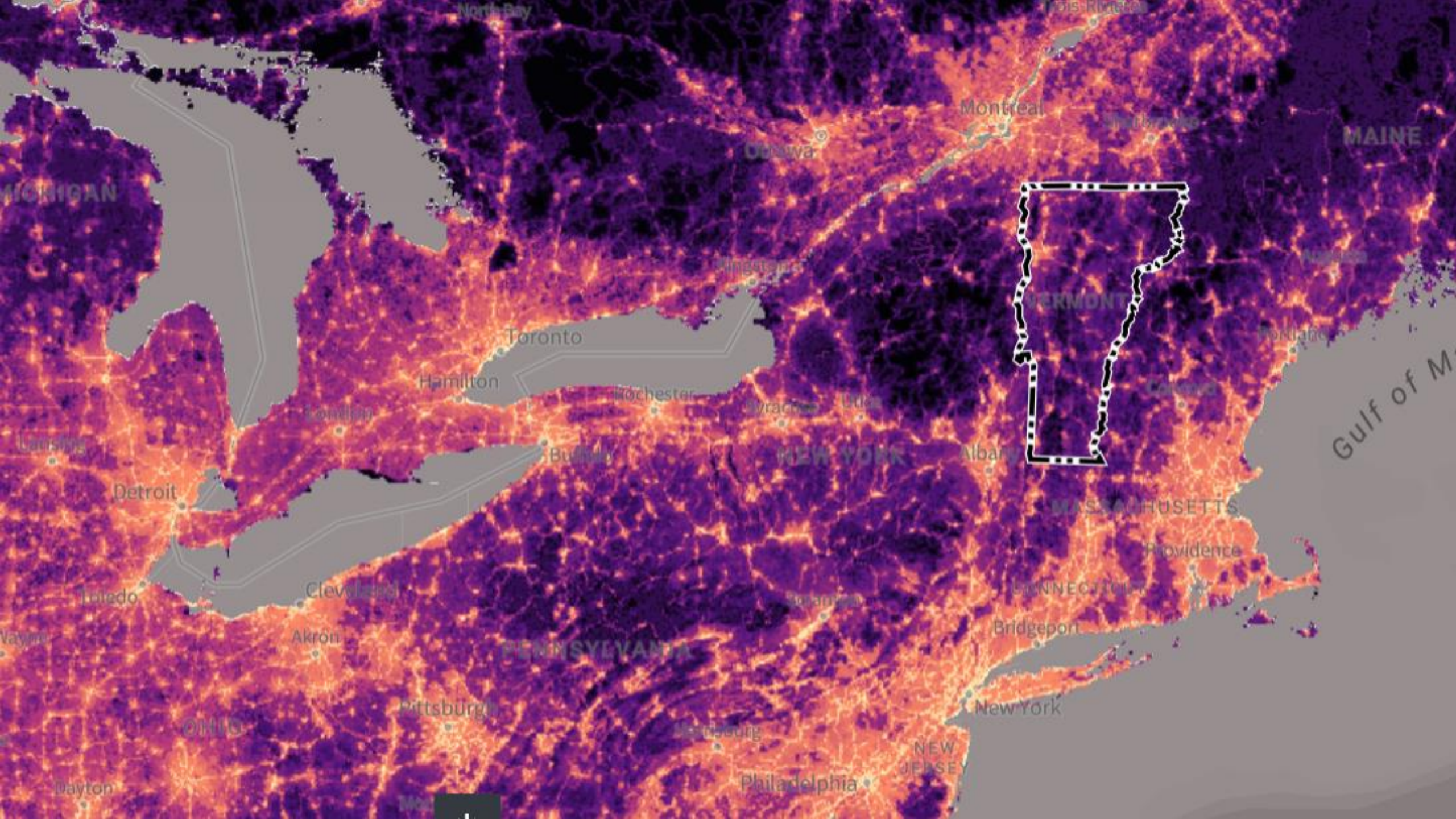
0

12.5

25

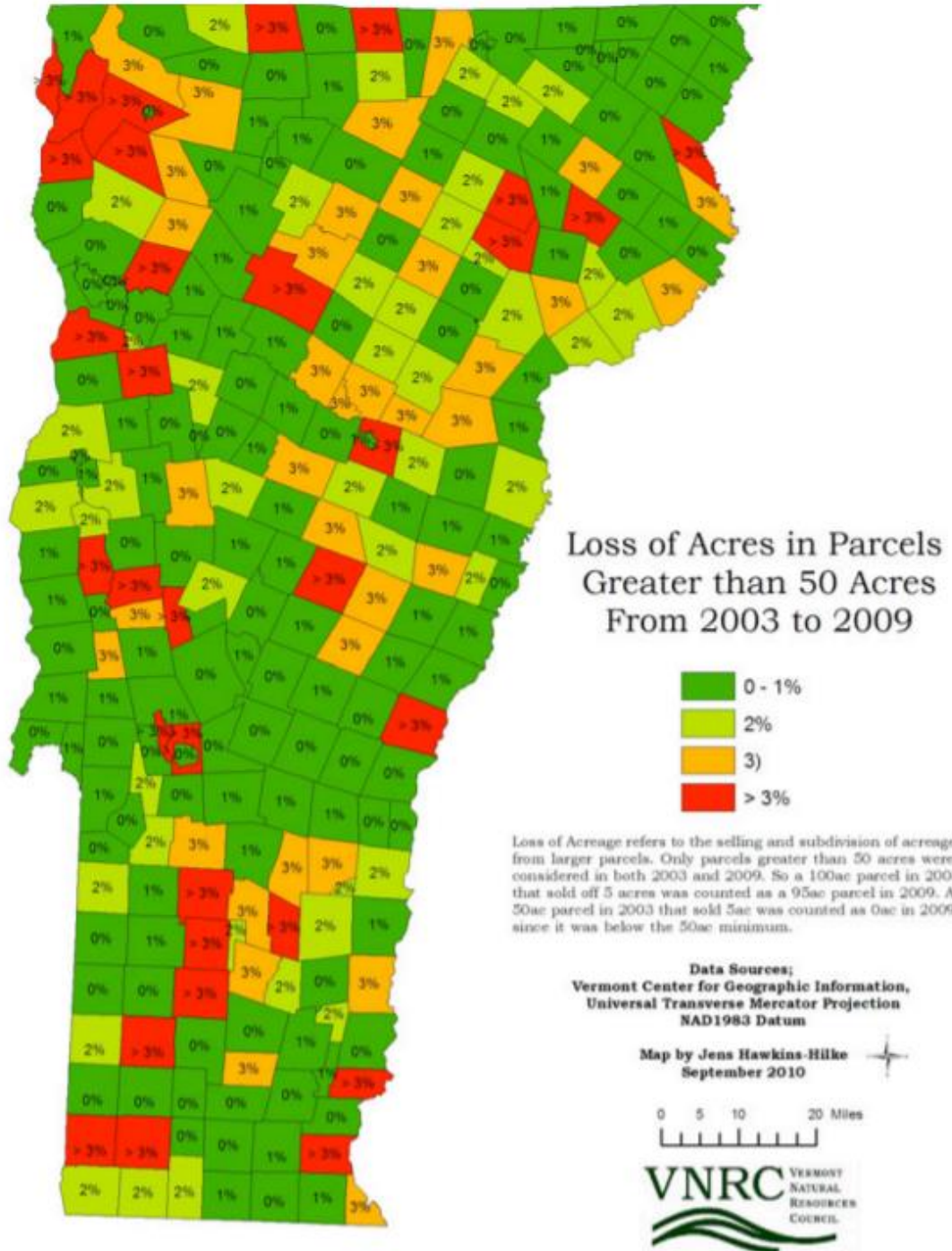
37.5

50

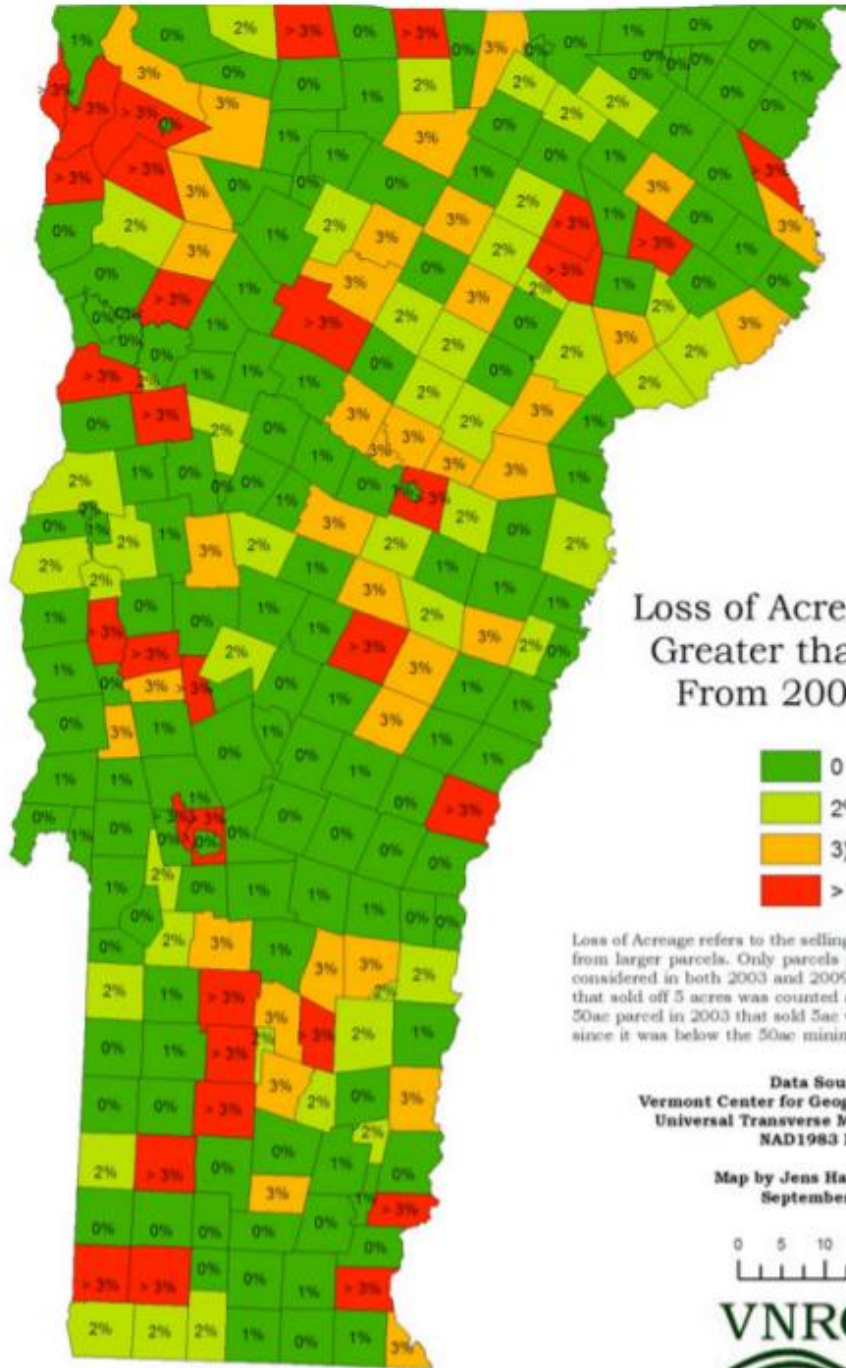


# Are we managing for forest intactness and integrity?

- Very high potential for inter-generational turnover of lands
- Increased forest sub-divisions for housing
- Increased roads for rural, ex-urban, peri-urban development



# Are we managing for forest intactness and integrity?



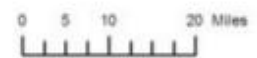
Loss of Acres in Parcels Greater than 50 Acres From 2003 to 2009

- 0 - 1%
- 2%
- 3%
- > 3%

Loss of Acreage refers to the selling and subdivision of acreage from larger parcels. Only parcels greater than 50 acres were considered in both 2003 and 2009. So a 100ac parcel in 2003 that sold off 5 acres was counted as a 95ac parcel in 2009. A 50ac parcel in 2003 that sold 5ac was counted as 0ac in 2009 since it was below the 50ac minimum.

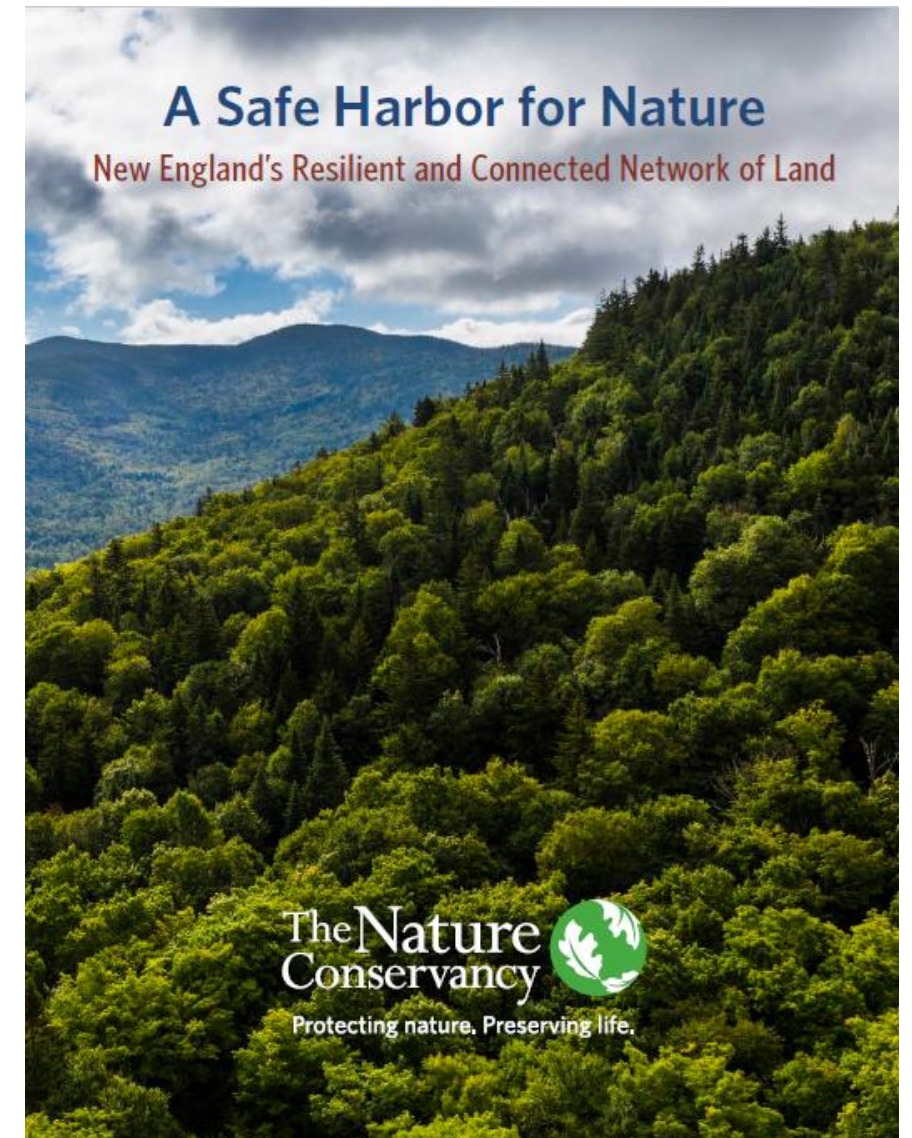
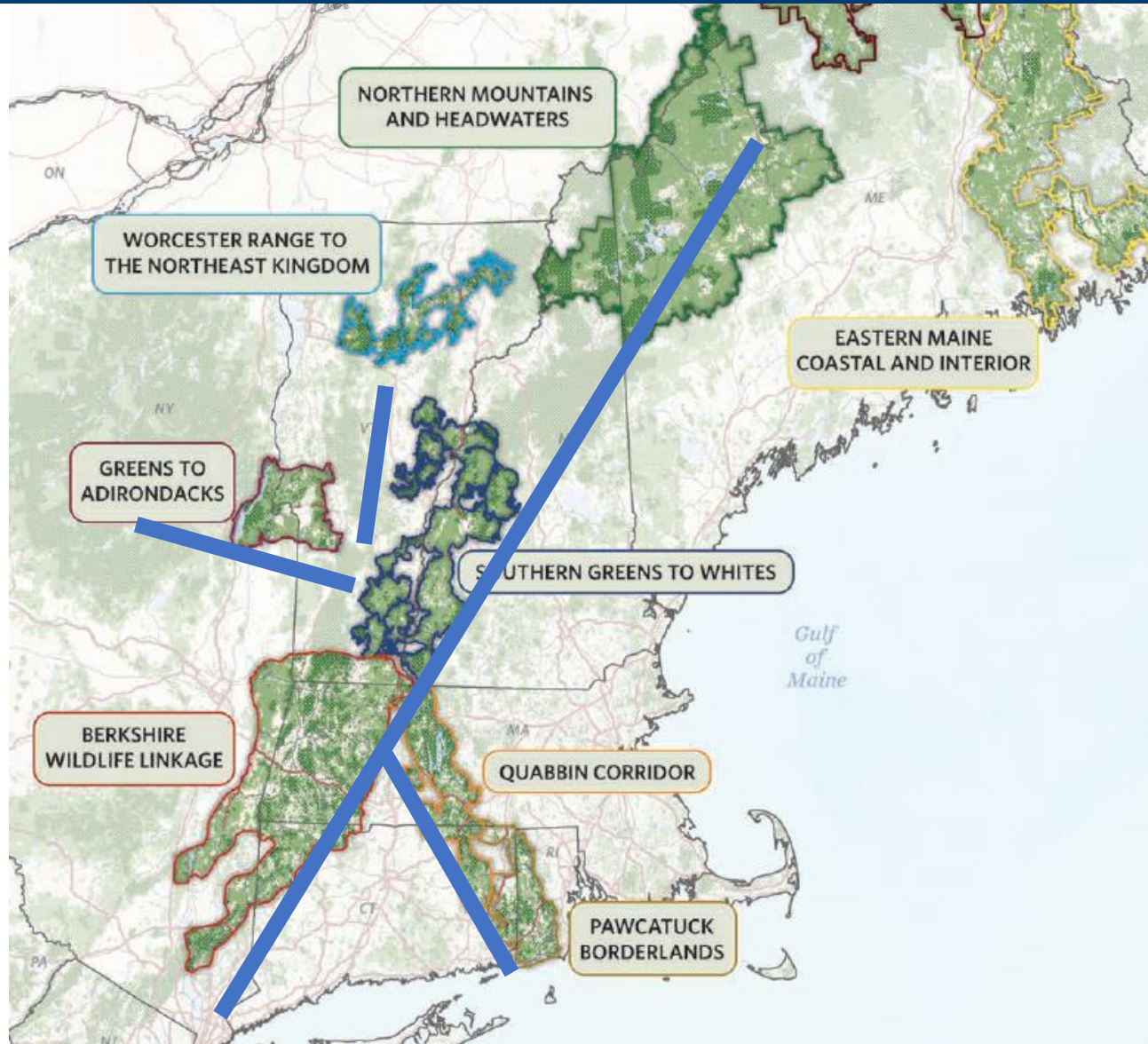
Data Sources:  
Vermont Center for Geographic Information,  
Universal Transverse Mercator Projection  
NAD1983 Datum

Map by Jens Hawkins-Hilke  
September 2010

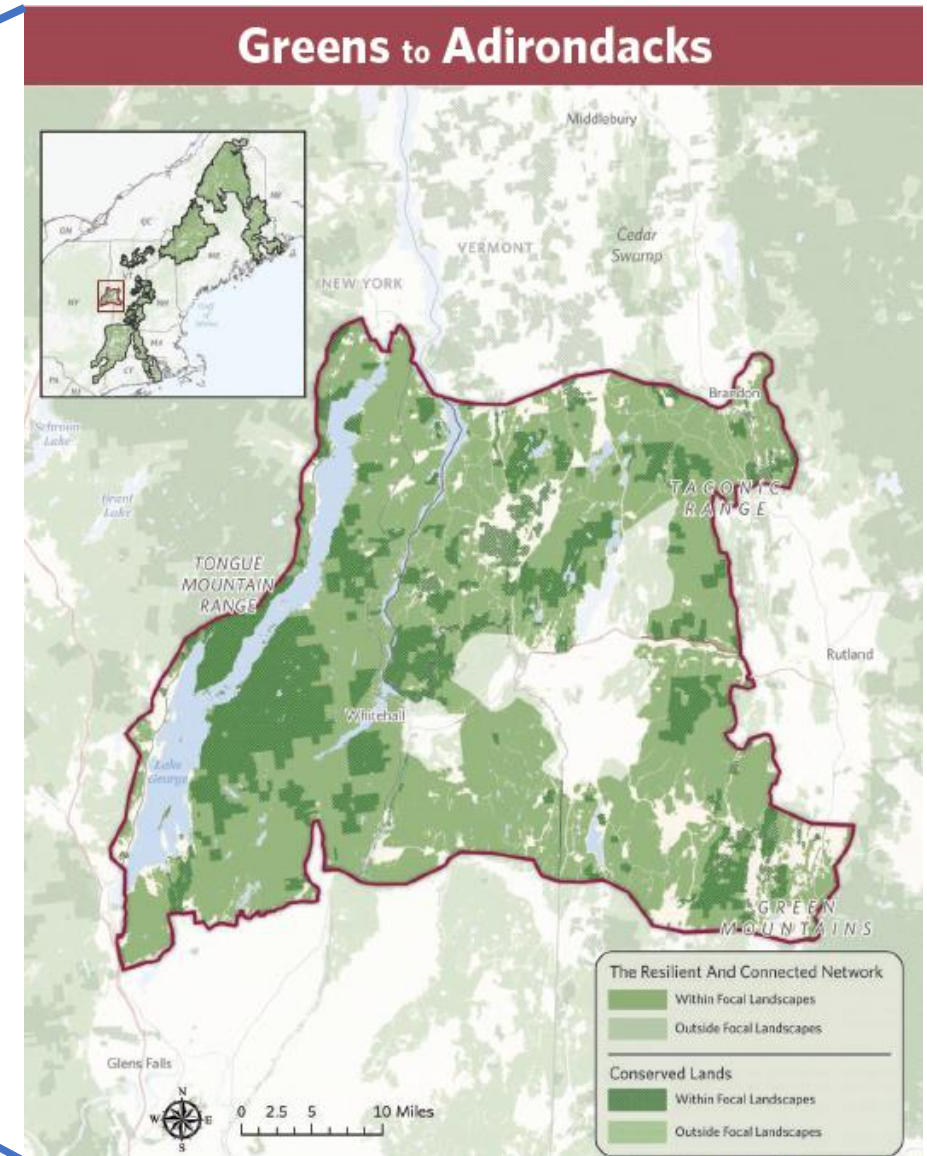
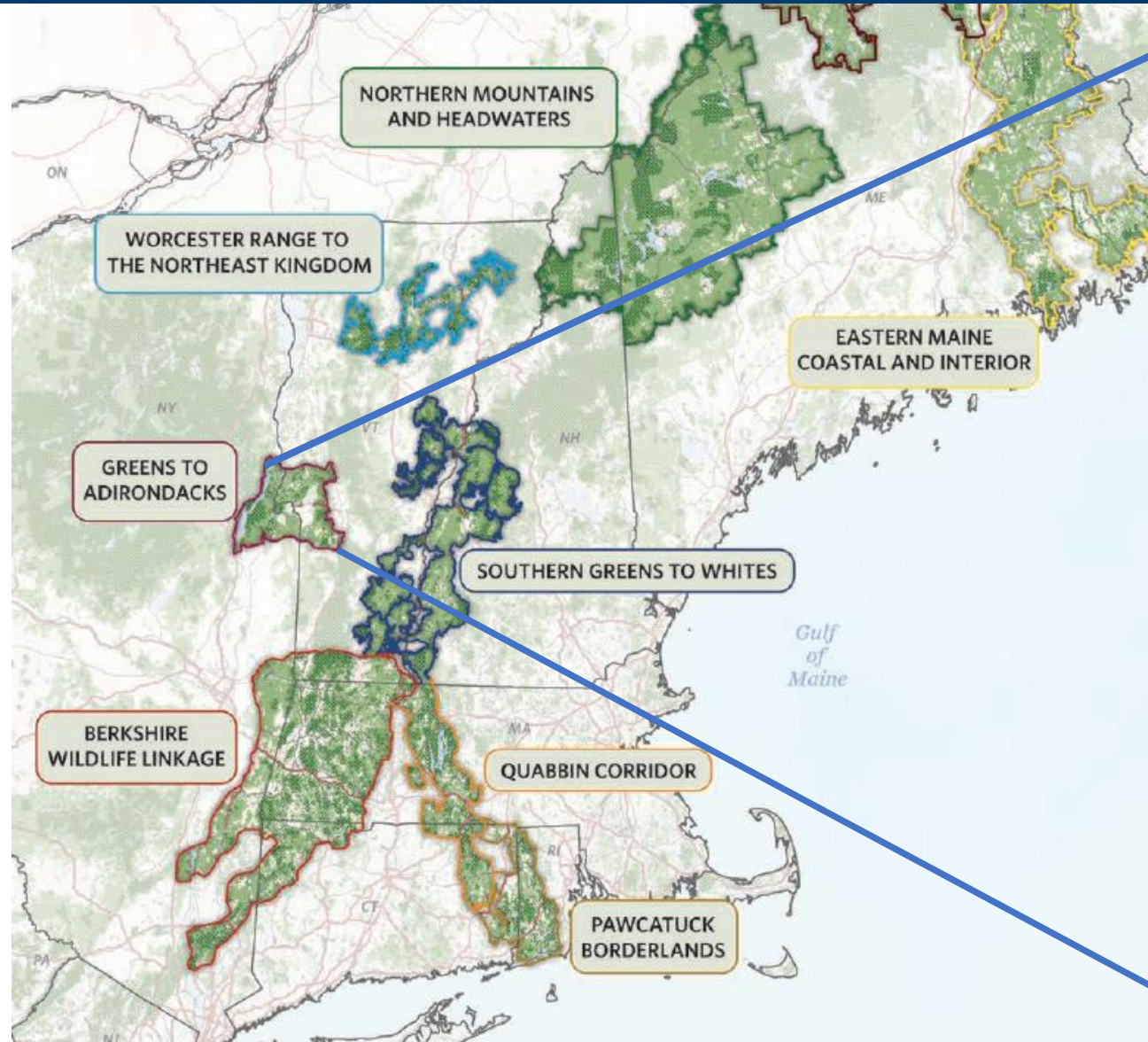




# 3. Are we managing for regional connectivity?



# 3. Are we managing for regional connectivity?

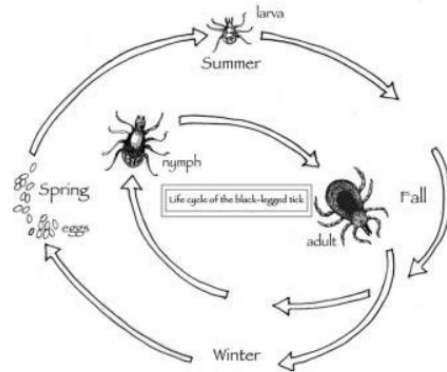




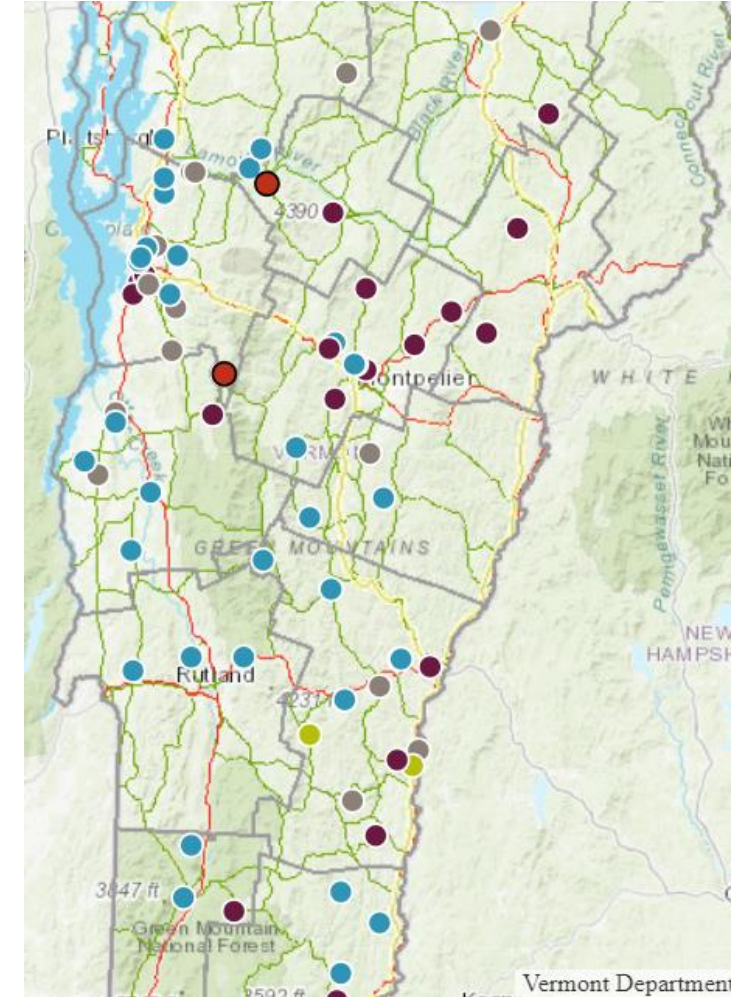
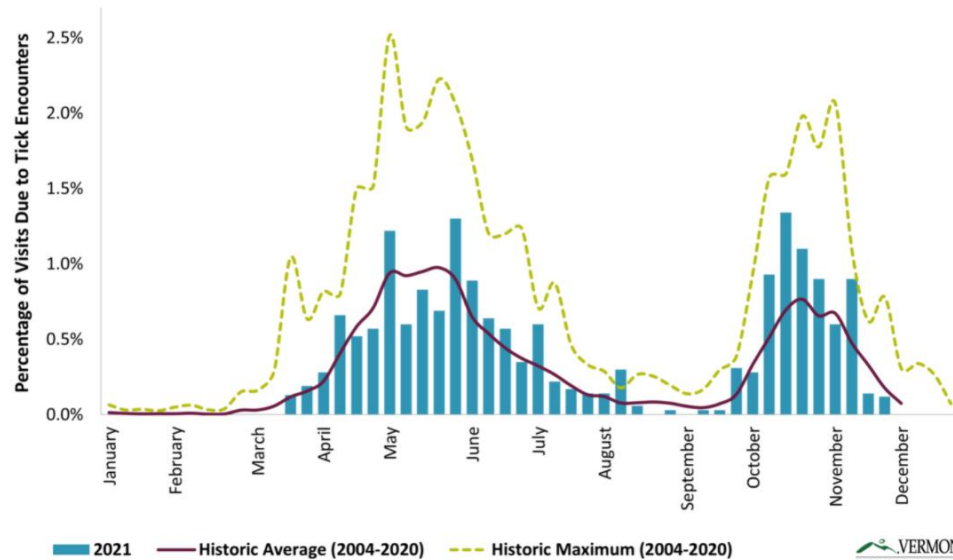
# 4. Are we managing for human health?

## A Plague of Ticks: Scientists Search for Solutions

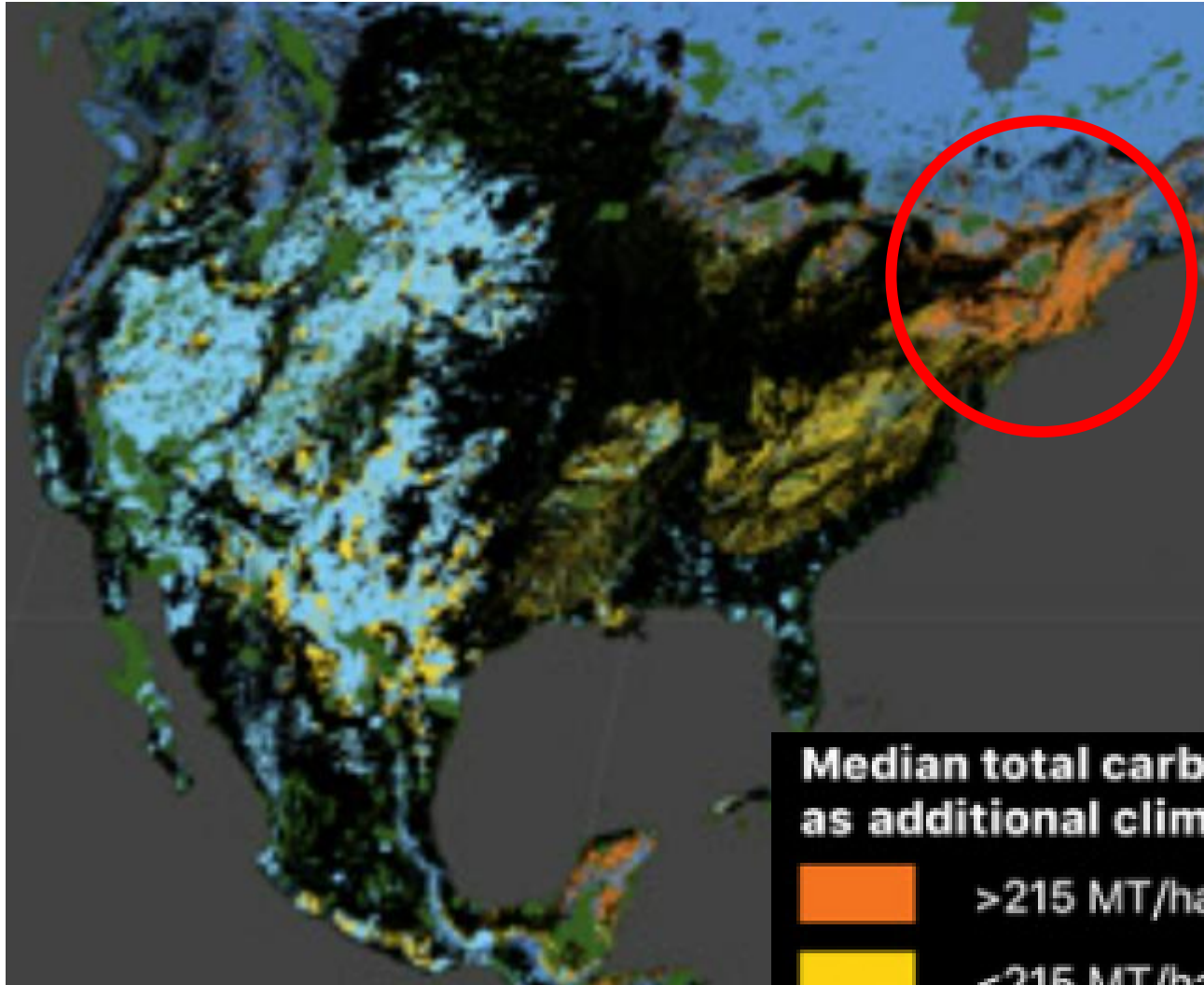
On a hike this spring, we walked through a clear-cut area with tall grass and brambles. Afterwards, our pant legs were crawling with black-legged ticks (*Ixodes scapularis*), also known as deer ticks, the kind that carry Lyme disease. Scientists with the Vermont Department of Health recently examined over 2,000 ticks and found that 53% of black-legged ticks tested positive for Lyme disease. A small percentage of the ticks carried pathogens that cause anaplasmosis or babesiosis, two other tick-borne diseases that can make people gravely ill.



- Climate change increases tick populations
- Logging increases tick populations



# 5. Are we managing for carbon sequestration?



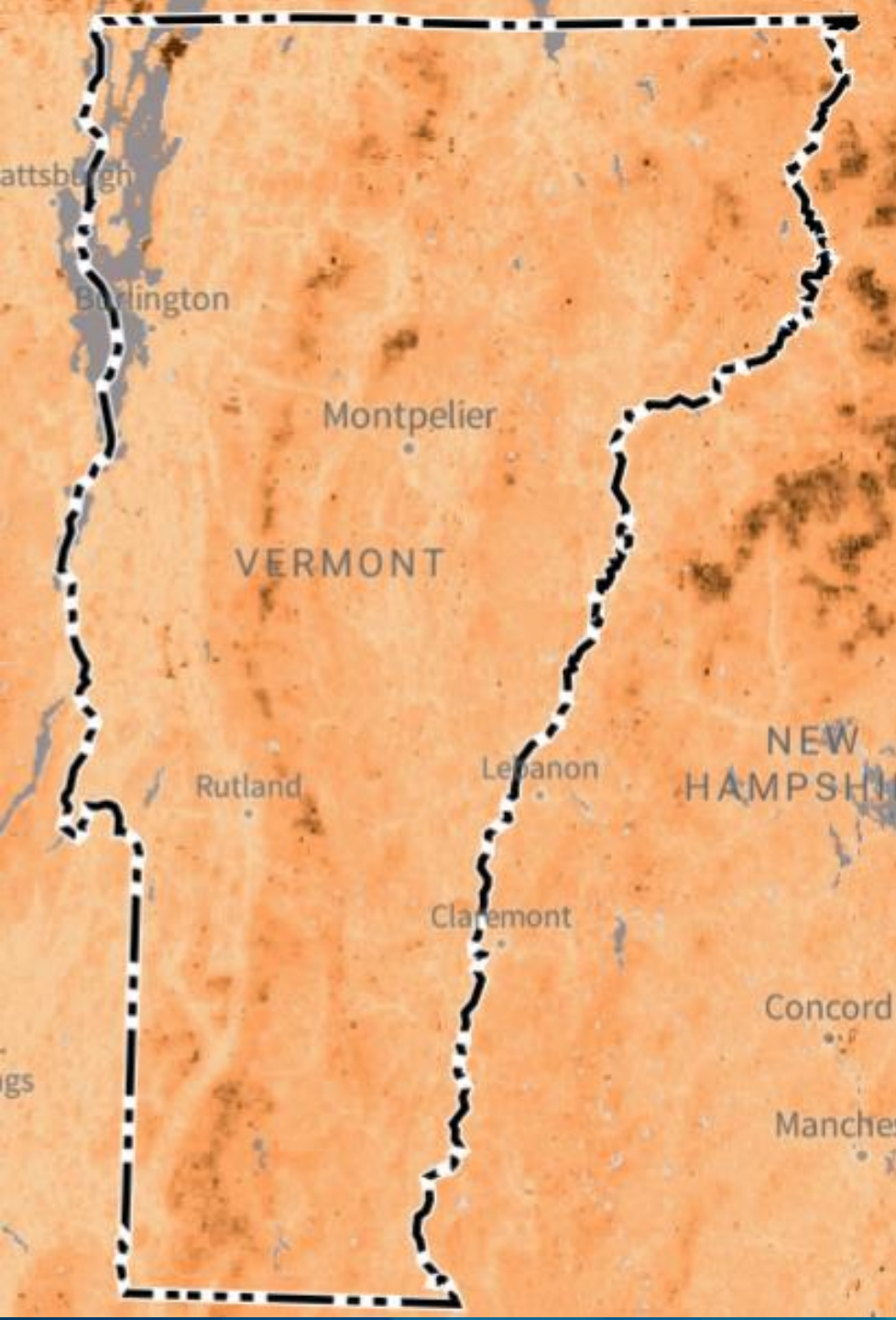
Median total carbon density of unprotected areas selected as additional climate stabilization areas (target 2)



- An enormous amount of land with high amounts of terrestrial carbon is not protected in the Northeast US
- Science papers call for increase of ~ 5% of land as **climate reserves** for climate stabilization

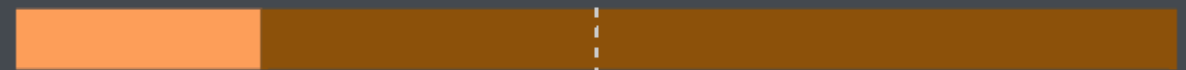
# 5. Are we managing for carbon sequestration?

Vermont has a high amount of biomass and soil organic carbon – 826+ megatons



**826.47 Mt**

TERRESTRIAL CARBON



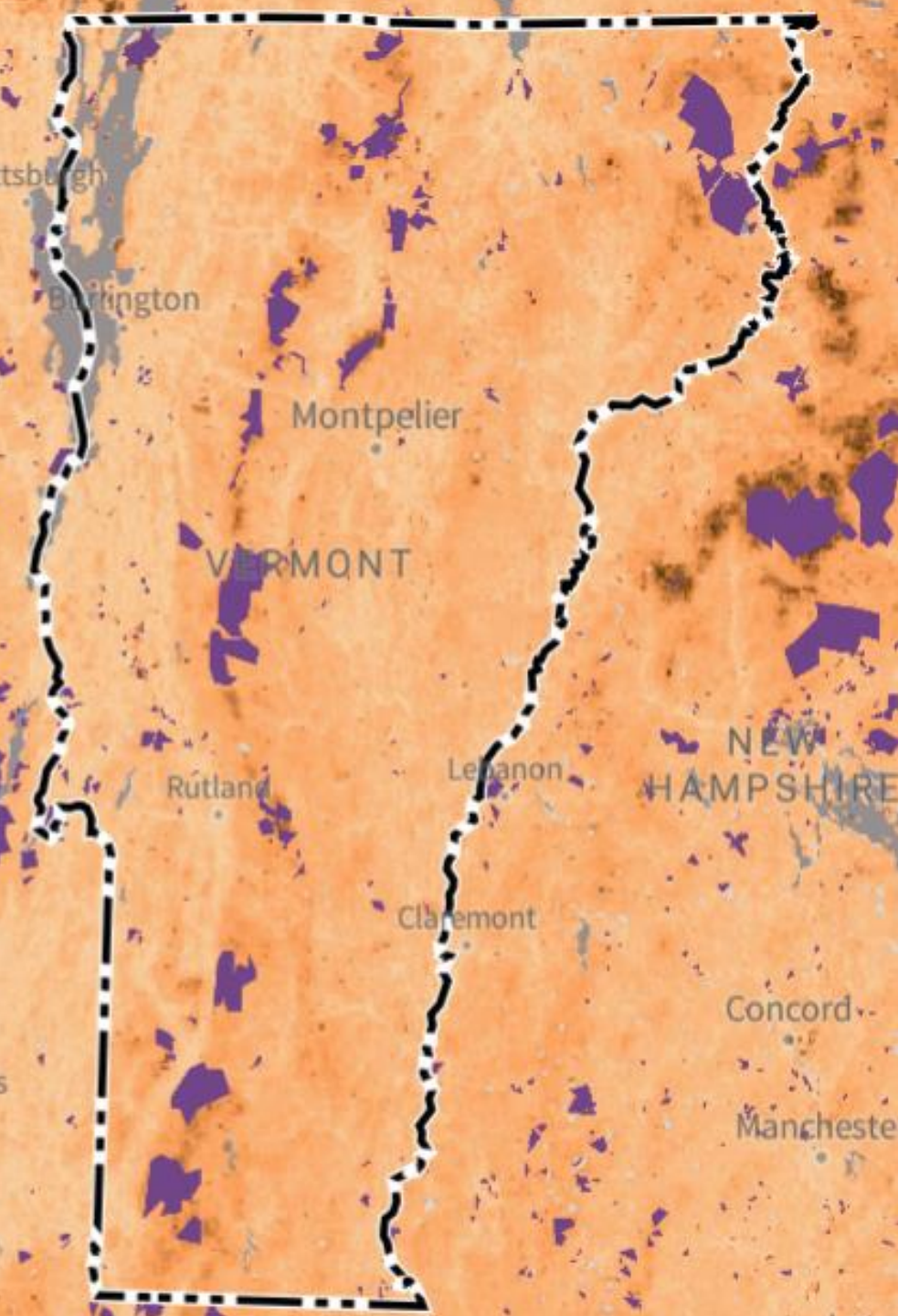
174.26 Mt  
BIOMASS CARBON

50%

652.21 Mt  
SOIL CARBON

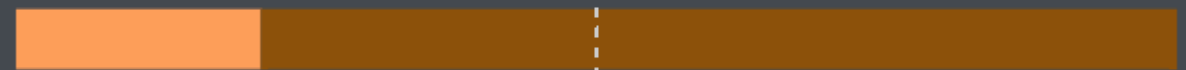
# 5. Are we managing for carbon sequestration?

But the vast majority of the lands with high carbon are not protected from logging



**826.47 Mt**

TERRESTRIAL CARBON



174.26 Mt

BIOMASS CARBON

50%

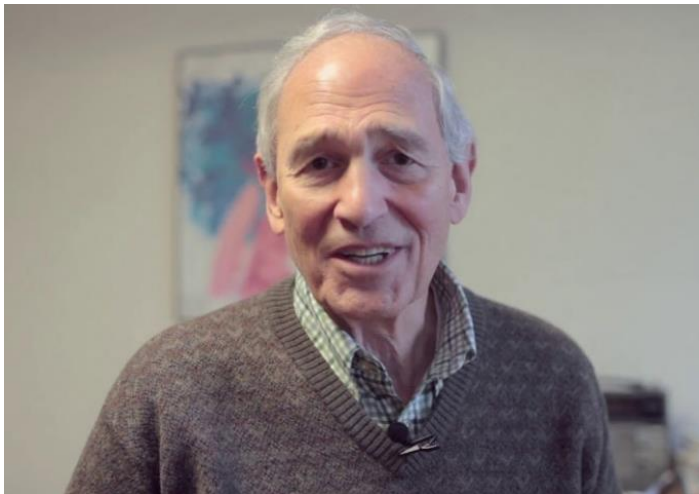
652.21 Mt

SOIL CARBON

# 5. Are we managing for carbon sequestration?



“**Vermont forests** could store 2.3 to 4.2 times more carbon than they currently store – ***if they are allowed to grow old***” Dr. William Keeton



“The most effective thing that we can do (for carbon) is ***allow trees that are already growing to continue growing*** to reach their full ecological potential, to store carbon, and develop a forest that has its full complement of environmental services.” Dr. William Moomaw

# 5. Are we managing for carbon sequestration?



- In the next 8 years, Vermont plans to **triple logging** on public lands
- Vermont's state management plans **do not prioritize** maintaining mature, intact forests for their **carbon sequestration** value



# 5 considerations for tackling the biodiversity-climate-wellbeing nexus in Vermont

# 5 Considerations

- **Adopt ambitious protection targets** to create a nature-based ‘safety net’ for Vermont (endorse the Climate Action Plan's 30x30 commitment)
- **Align** Vermont Forest Parks and Recreation and VT Fish and Wildlife plans with **Vermont’s Conservation Design and Climate Action Plan** by prioritizing the protection of at least 10% of mature forests
- **Reconsider state land designation** to assess if current plans achieve objectives for climate, disaster risk reduction, and **avoid logging in Vermont State Parks**
- **Create incentives** for private landowners to manage for older, mature forests in large blocks (e.g., change Use Valuation Appraisal to include a ‘wildlands’ category)
- Engage in a statewide **integrated spatial planning** exercise that prioritizes carbon sequestration, disaster risk mitigation, forest connectivity, and large, older, intact forests



# Bonus consideration: The future

