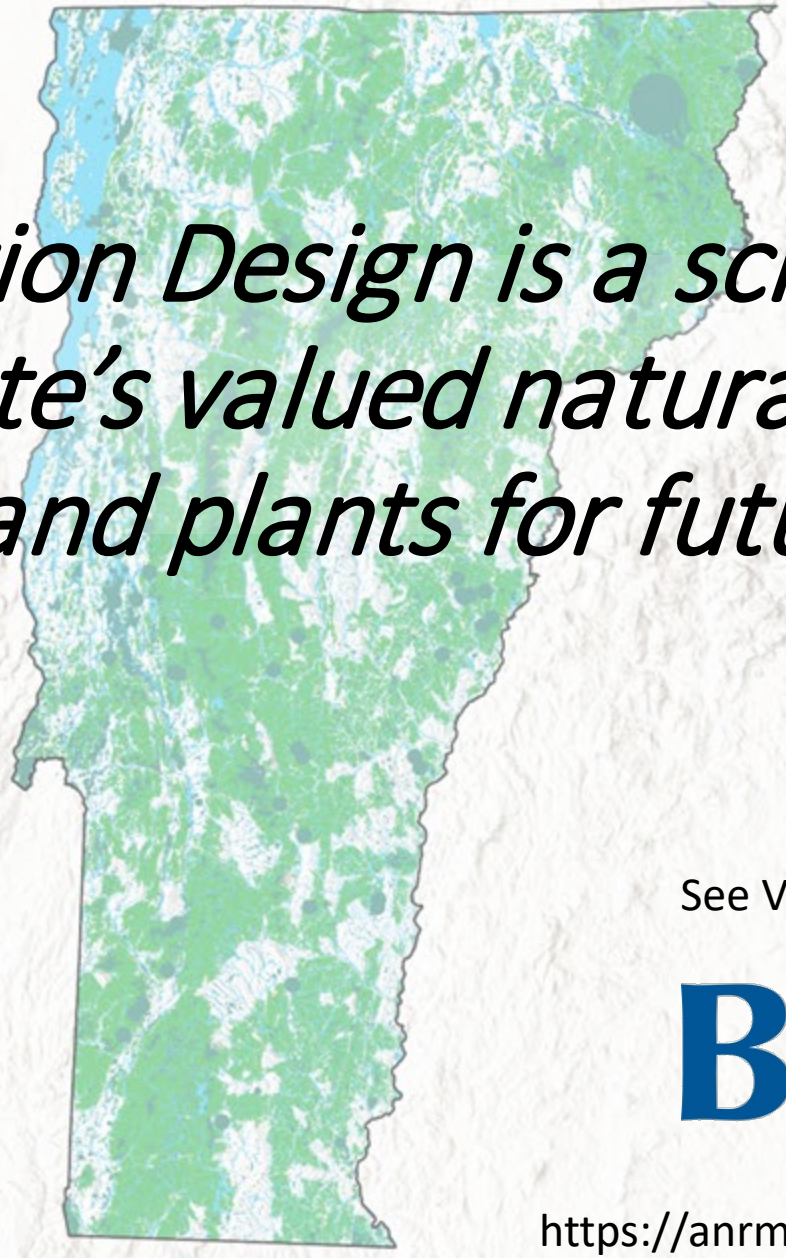
VERMONT CONSERVATION DESIGN

Jens Hilke, Conservation Planner
Robert Zaino, Ecologist



Vermont Conservation Design is a science-based vision to sustain the state's valued natural areas, forests, waters, wildlife, and plants for future generations

VERMONT
AGENCY OF NATURAL RESOURCES

VERMONT FISH & WILDLIFE

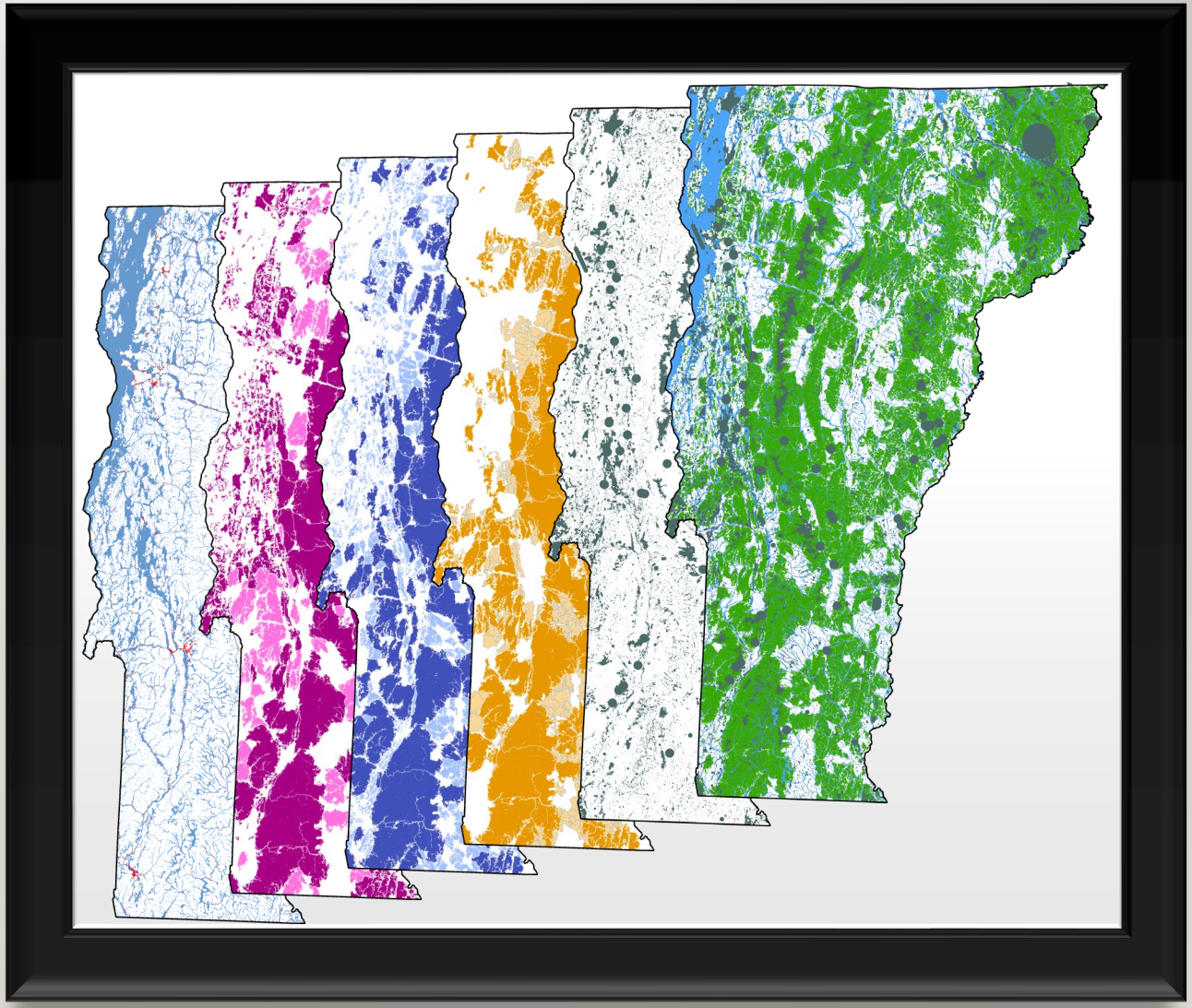
See VCD on

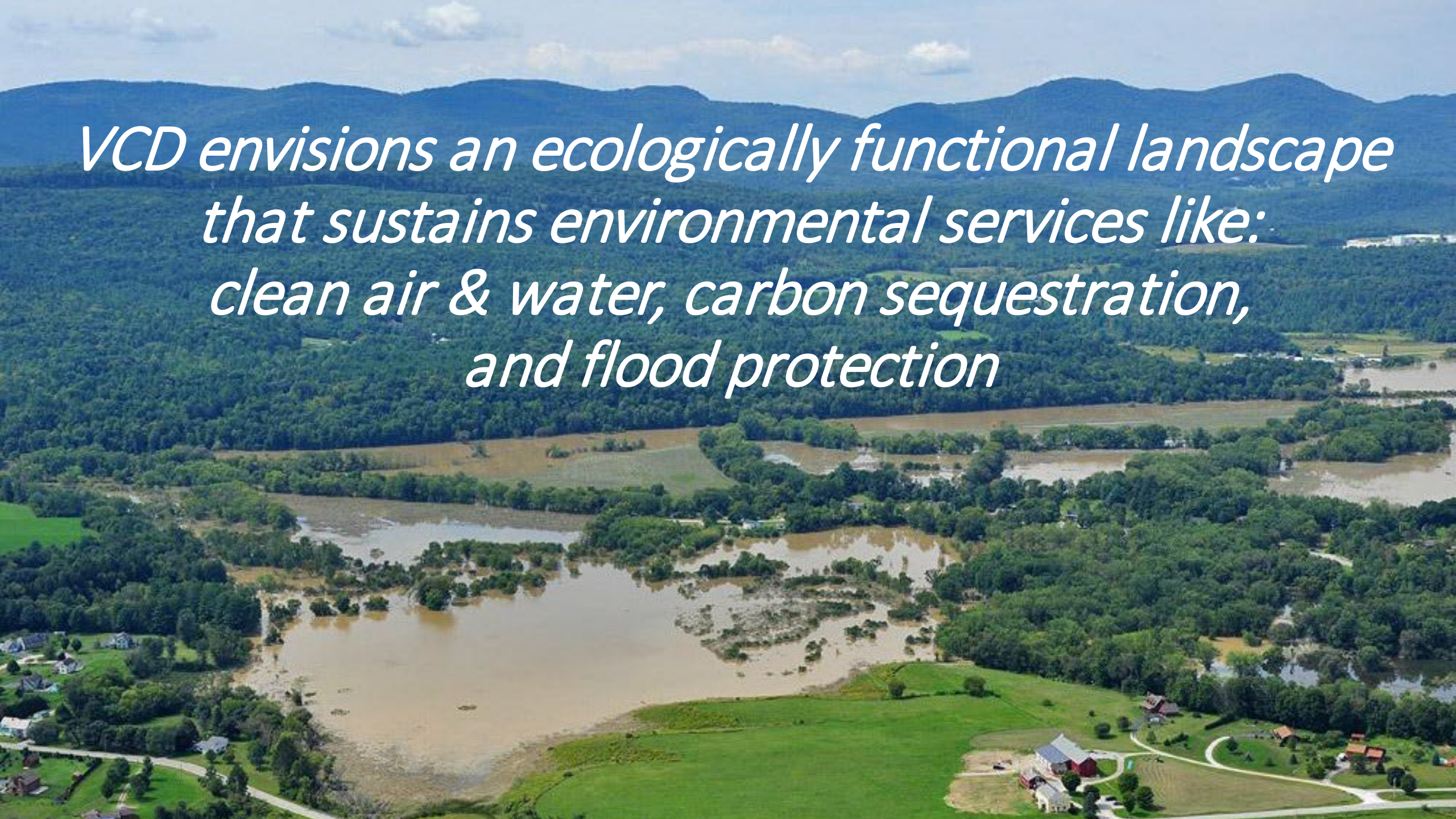
BioFinder™

https://anrmaps.vermont.gov/websites/BioFinder4/

VERMONT CONSERVATION DESIGN

- IDENTIFIES THE ECOLOGICALLY MOST-IMPORTANT LANDS AND WATERS
- MAINTAINS NATURE AND THE BENEFITS IT PROVIDES,
- IS OUR CONSERVATION FRAMEWORK




VCD envisions an ecologically functional landscape that sustains environmental services like: clean air & water, carbon sequestration, and flood protection

Supports social and economic values



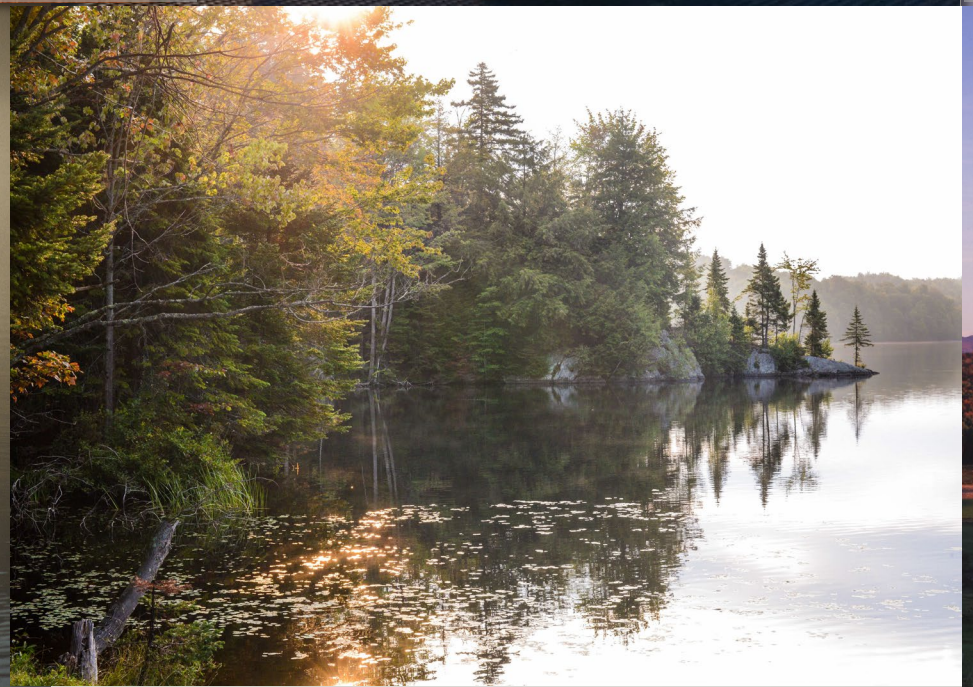
Rural Character & Natural Beauty



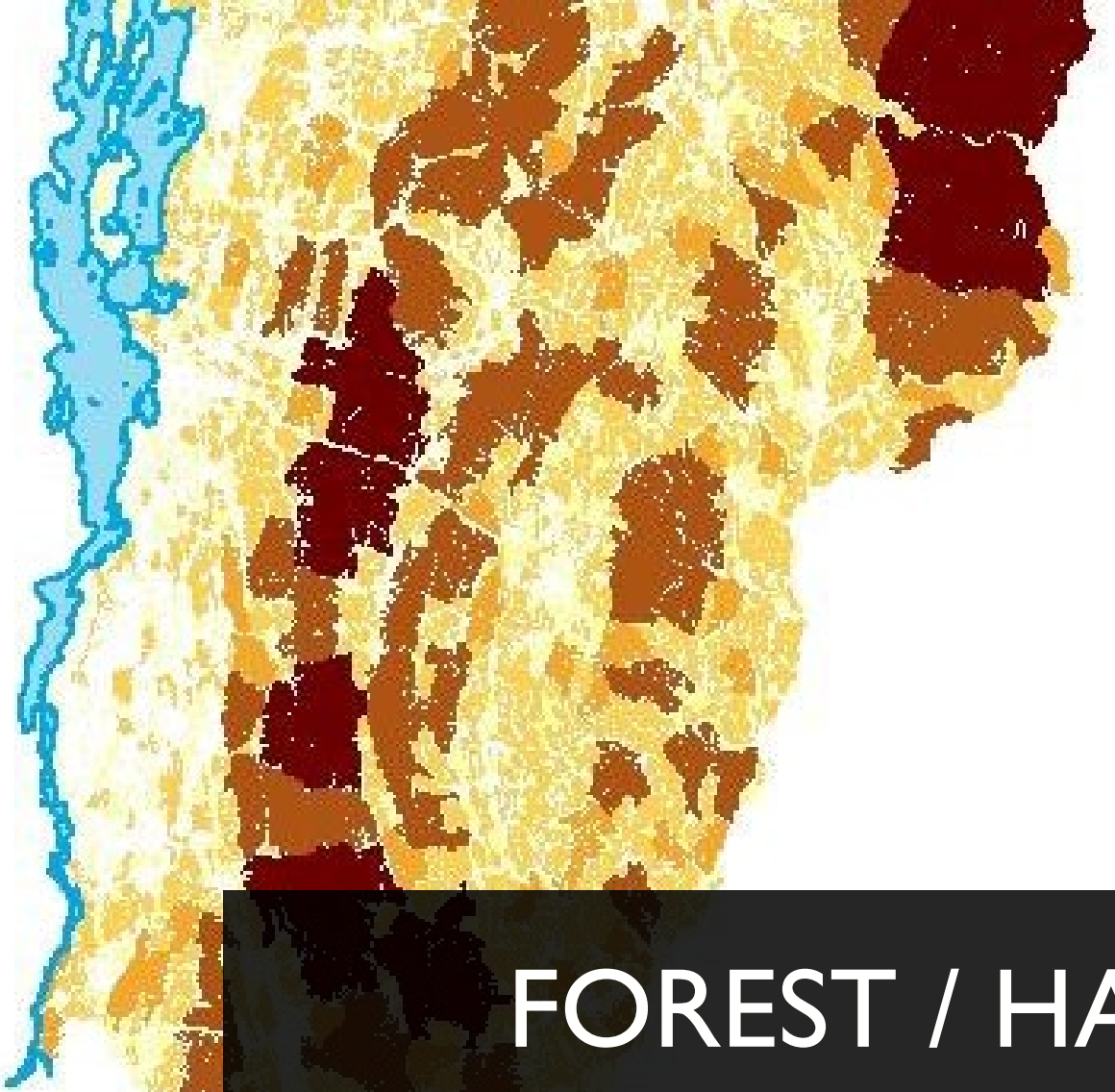


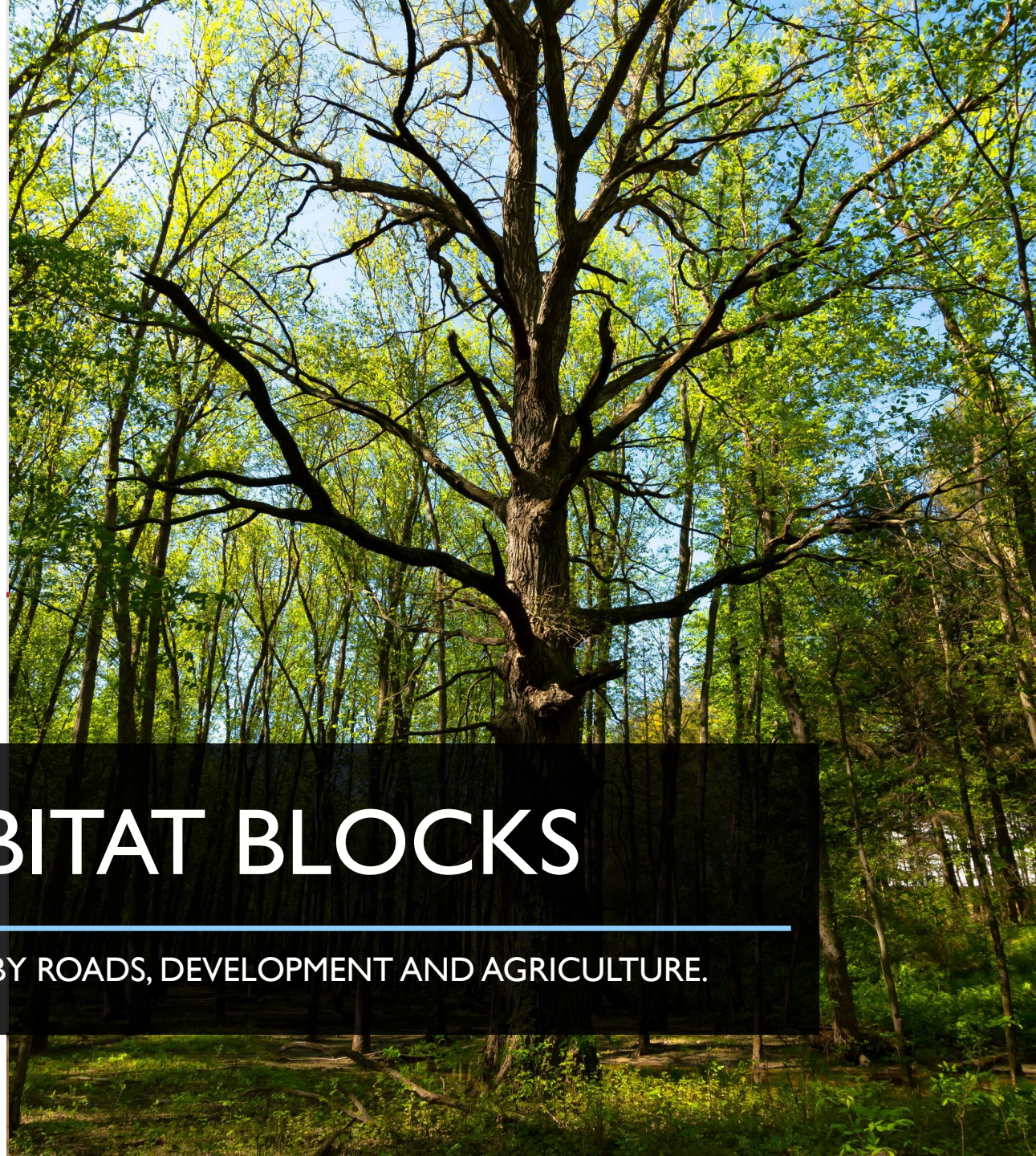
Outdoor Recreation











FOREST / HABITAT BLOCKS

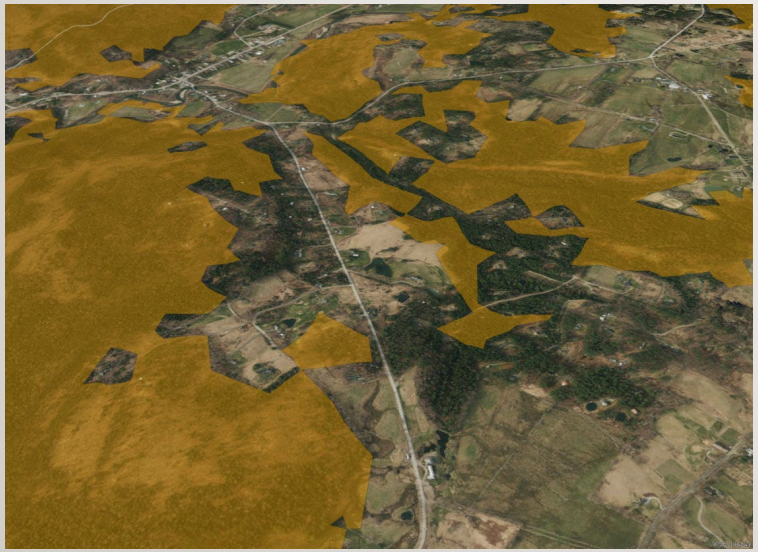
AREAS OF NATURAL COVER SURROUNDED BY ROADS, DEVELOPMENT AND AGRICULTURE.

Comparing Habitat Blocks, Waitsfield, VT

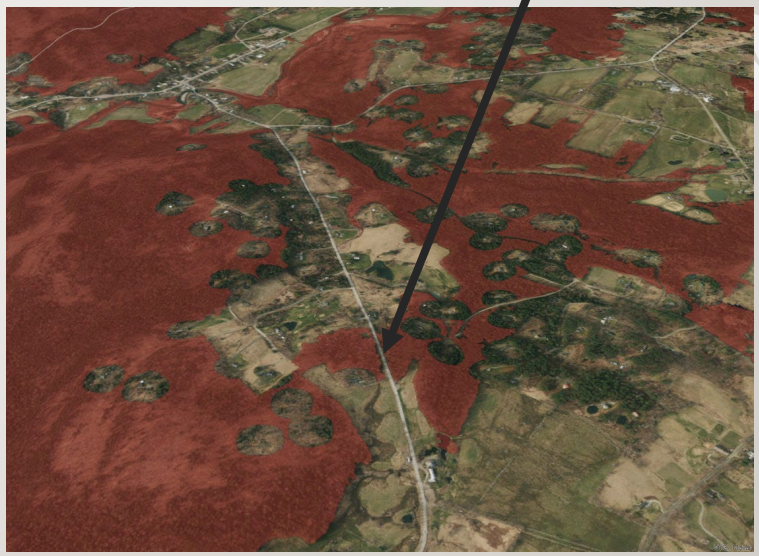


Road Crossings are more clear

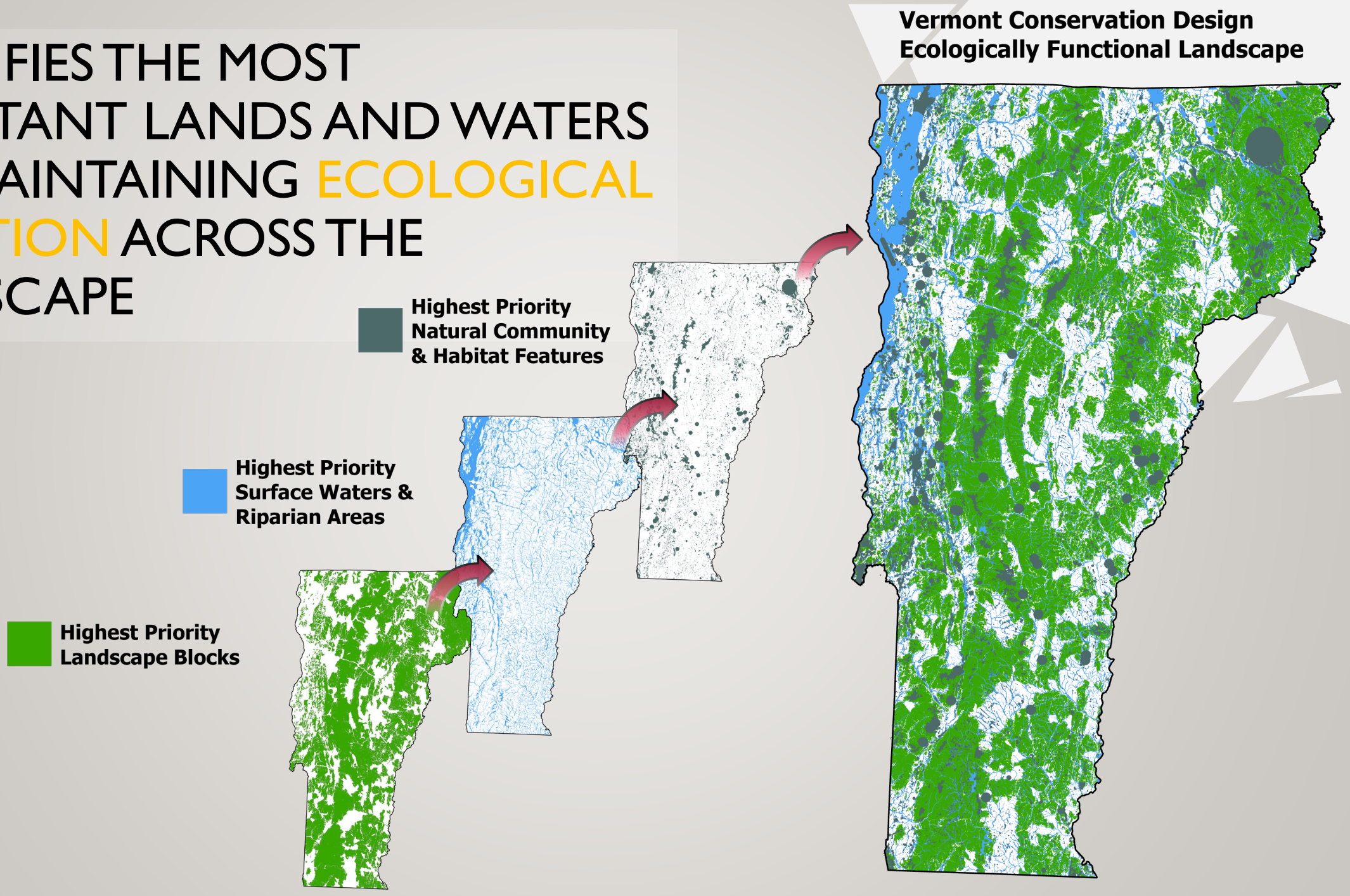
2011

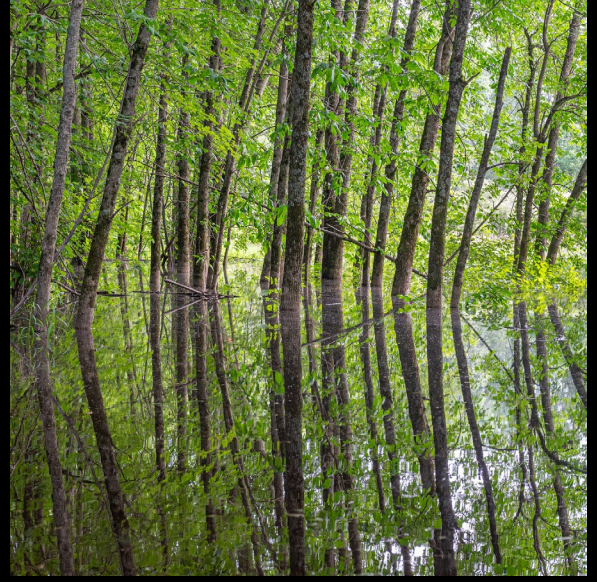


2023



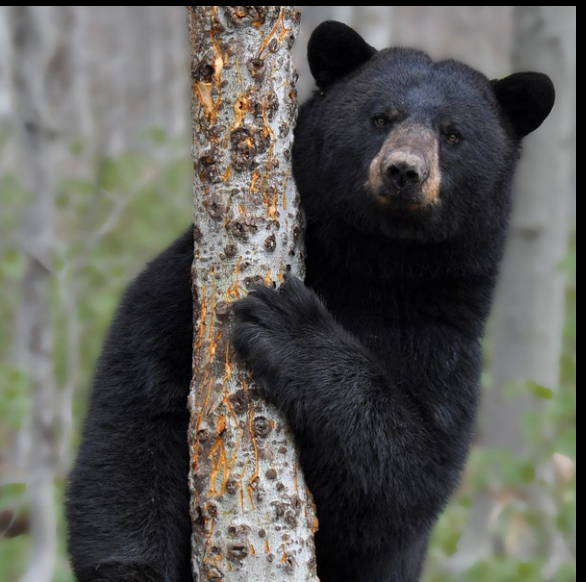
IDENTIFIES THE MOST IMPORTANT LANDS AND WATERS FOR MAINTAINING ECOLOGICAL FUNCTION ACROSS THE LANDSCAPE





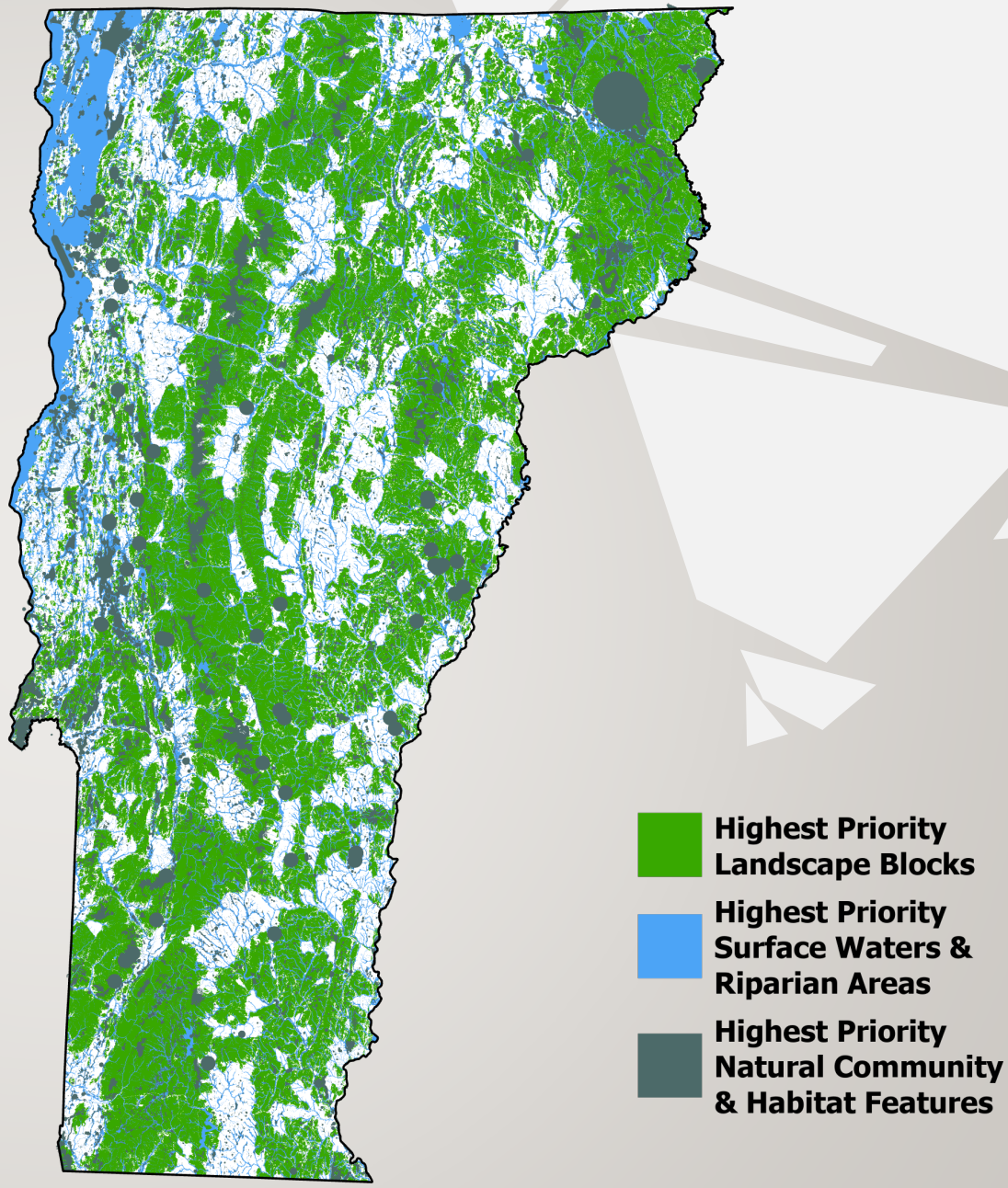
Ecological Function is the degree to which an ecosystem can function under natural processes – allowing all its plants and animals to thrive, reproduce, migrate, and move in response to environmental change.






AN ECOLOGICALLY FUNCTIONAL LANDSCAPE IS…

- *Intact*
- *Connected*
- *Diverse*



CONSERVATION DESIGN AT THREE SCALES

Landscapes



- Interior Forest Blocks
- Connectivity Blocks
- Geological Diversity Blocks
- Surface Waters and Riparian Areas
- Riparian Areas for Connectivity

Natural Communities



- Natural Communities
- Young and Old Forest
- Aquatic Habitats
- Wetlands
- Grasslands/Shrublands
- Underground Habitats

Species



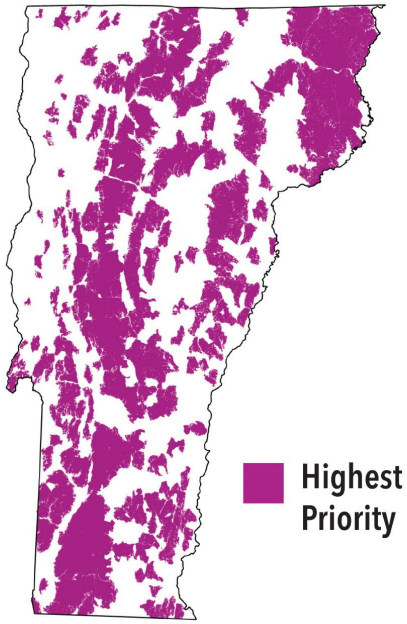
- ***Species with very specific biological needs that will likely always require individual attention***

LANDSCAPE SCALE

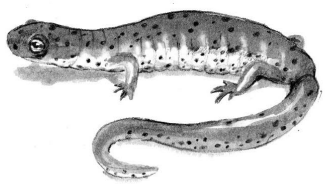


COMPONENTS

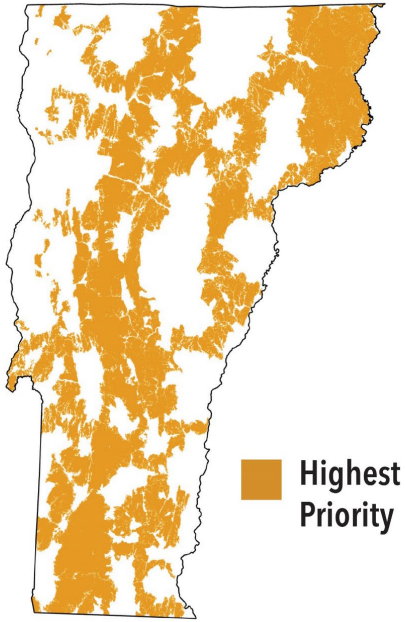
INTERIOR FOREST



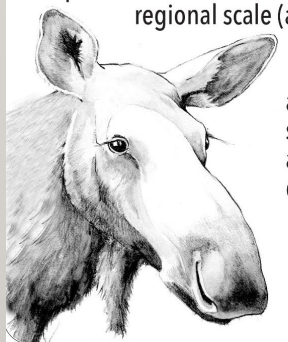
The largest forest blocks in each biophysical region. These are areas of contiguous forest and other natural communities and habitats (such as wetlands, ponds, and cliffs) that are unfragmented by roads, development, or agriculture.



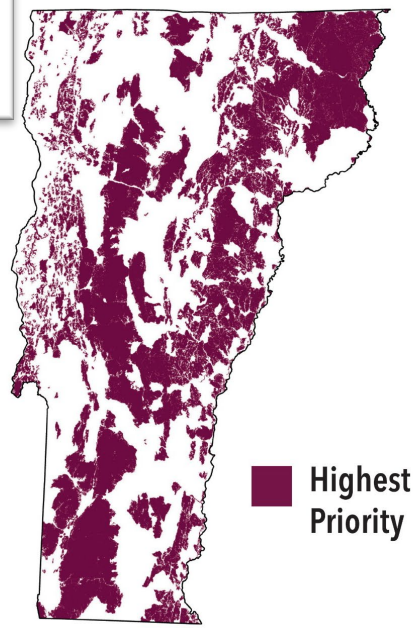
CONNECTING FOREST



The network of forest blocks that together provide terrestrial connectivity at the regional scale (across Vermont and to adjacent states and Québec) and connectivity with surface waters and areas of geological diversity.



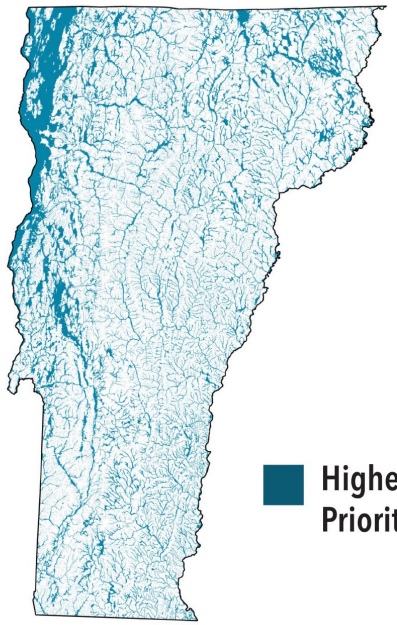
GEOLOGICAL DIVERSITY



A set of forest blocks that reflect the full diversity of Vermont's bedrock, soils, elevations, and landforms (features such as slopes, ridges, flats, and coves). Diversity in the physical landscape is linked to biological diversity, and places that contribute to physical diversity will be important for biological diversity even as the climate changes.



SURFACE WATERS & RIPARIAN AREAS



The network of all lakes, ponds, rivers, and streams, their associated riparian zones, valley bottoms, and river corridors in which geophysical processes occur.



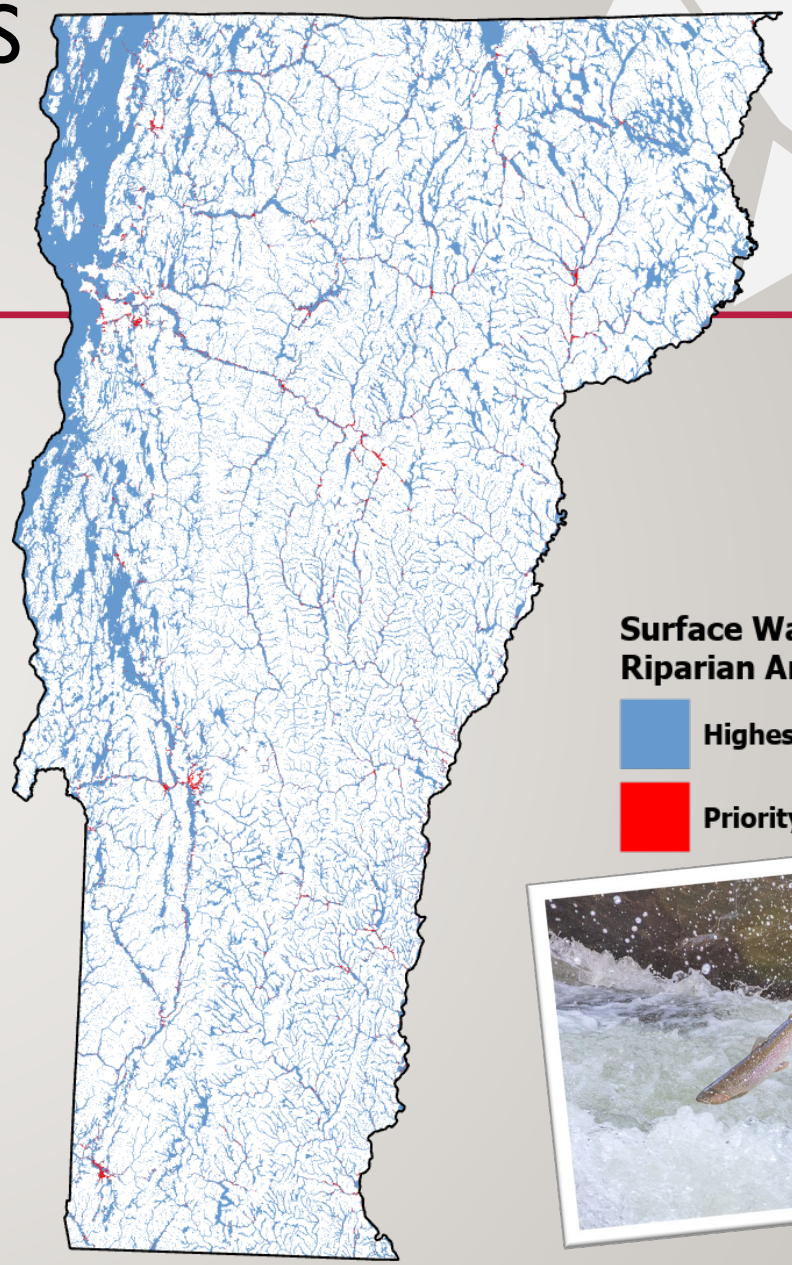
Surface Waters & Riparian Areas



The complete network of **lakes, ponds, rivers, and streams**, and their vegetated margins

SURFACE WATERS & RIPARIAN AREAS

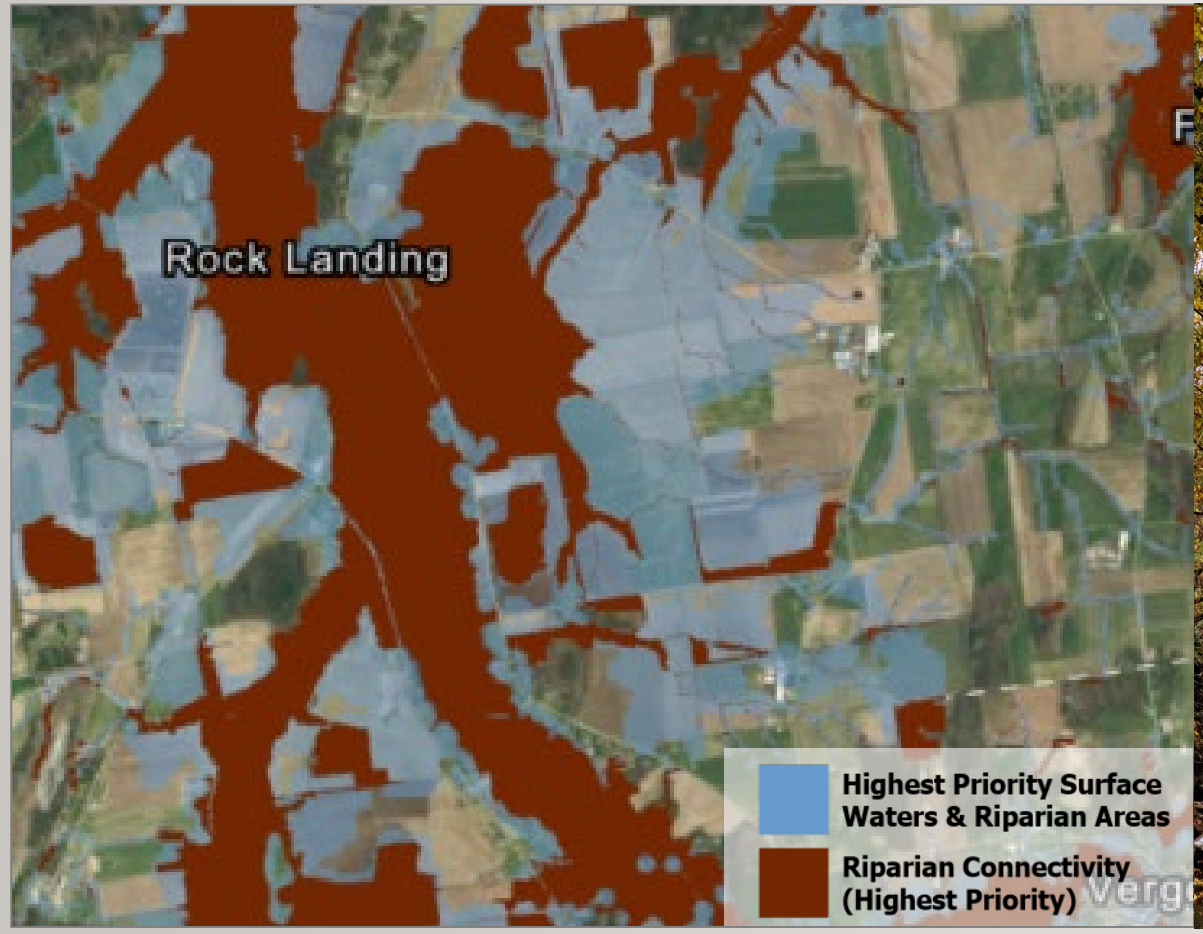
- The complete network of **lakes, ponds, rivers, and streams**, and their **vegetated margins**





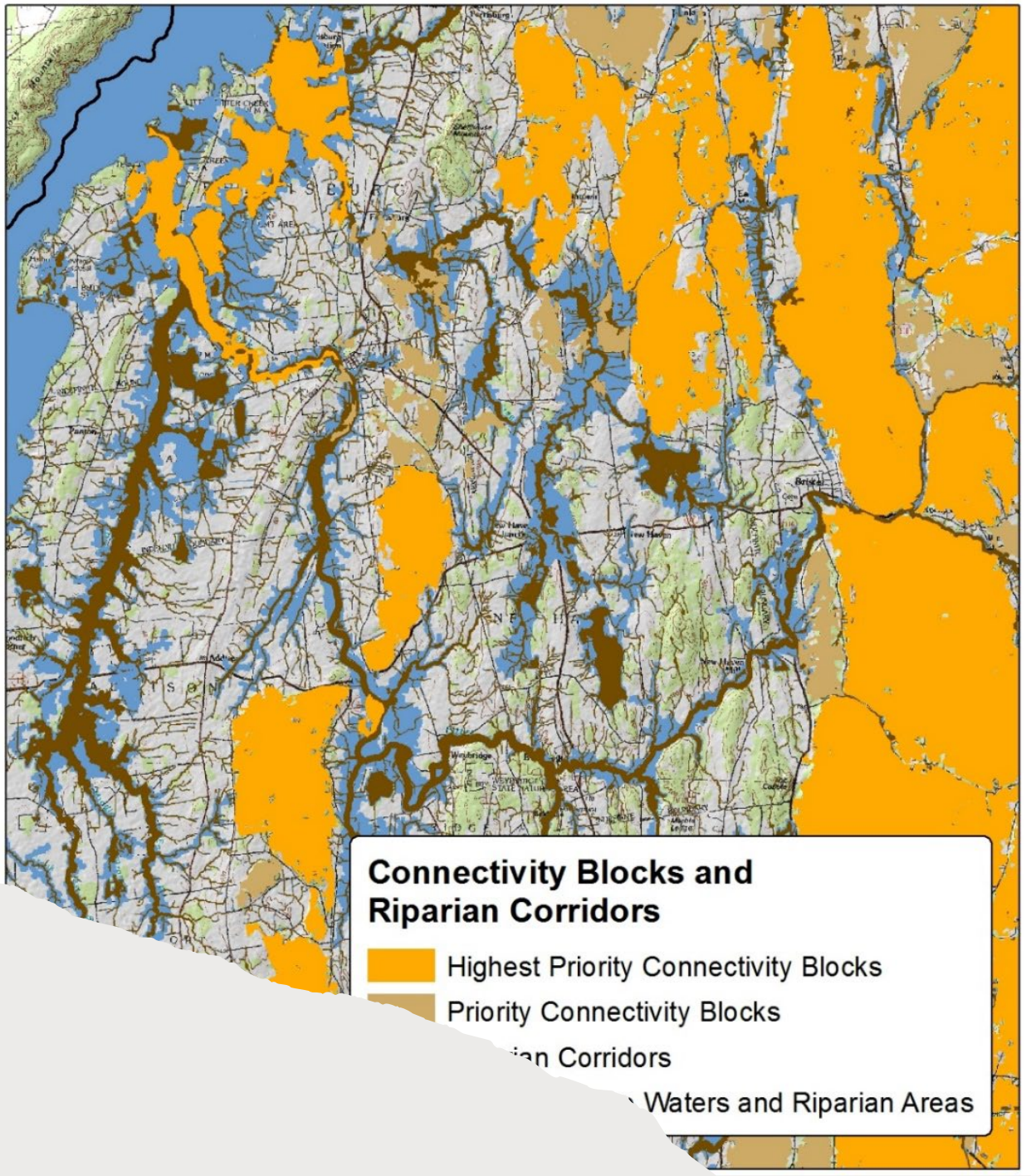
RIPARIAN CONNECTIVITY

- Surface Waters area that are currently vegetated







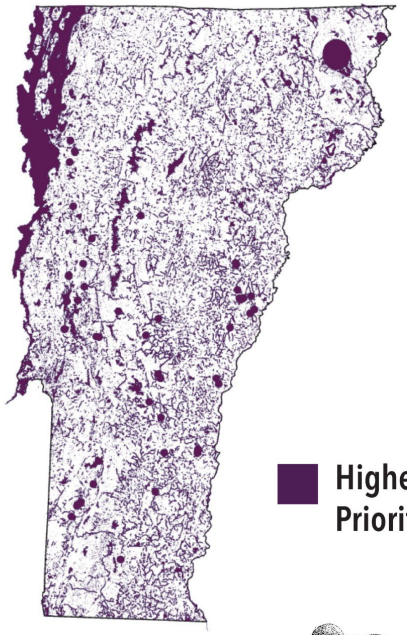


Riparian Connectivity

Riparian areas can connect forest blocks

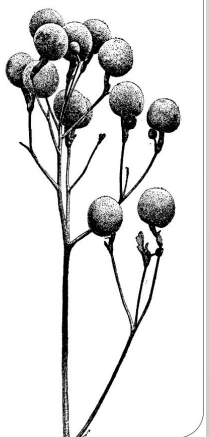
COMMUNITY & SPECIES SCALE COMPONENTS

NATURAL COMMUNITIES, HABITATS & SPECIES

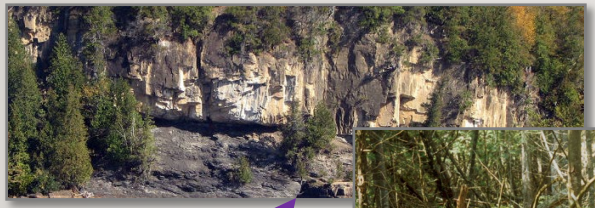


Highest Priority

All the mapped community and species scale components: Natural Communities, Aquatic Habitats, Vernal Pools, Wetlands, Wildlife Road Crossings, and Rare, Threatened & Endangered Species.



Natural Communities



Young and Old Forests



Aquatic Habitats



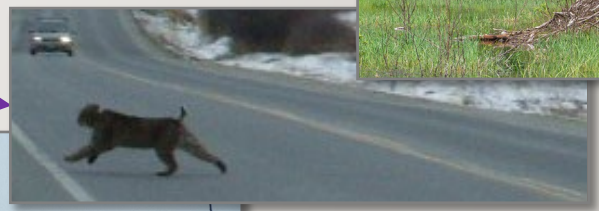
Vernal Pools



Wetlands



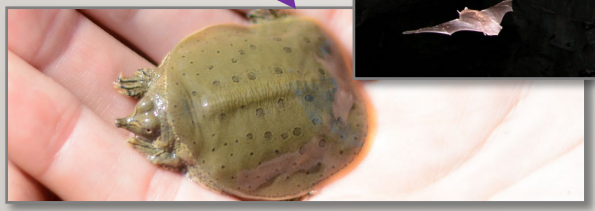
Wildlife Road Crossings



Grasslands/Shrublands



Underground Habitats



Rare, Threatened, & Endangered Species

Natural Communities

Interacting assemblages of organisms, their physical environment, and the natural processes that affect them

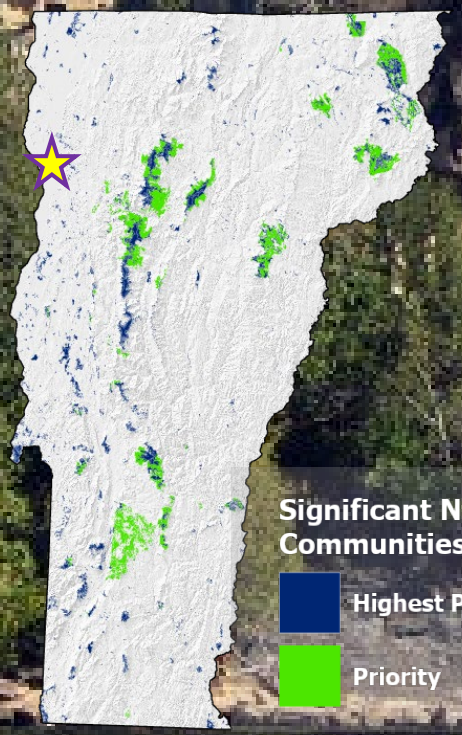
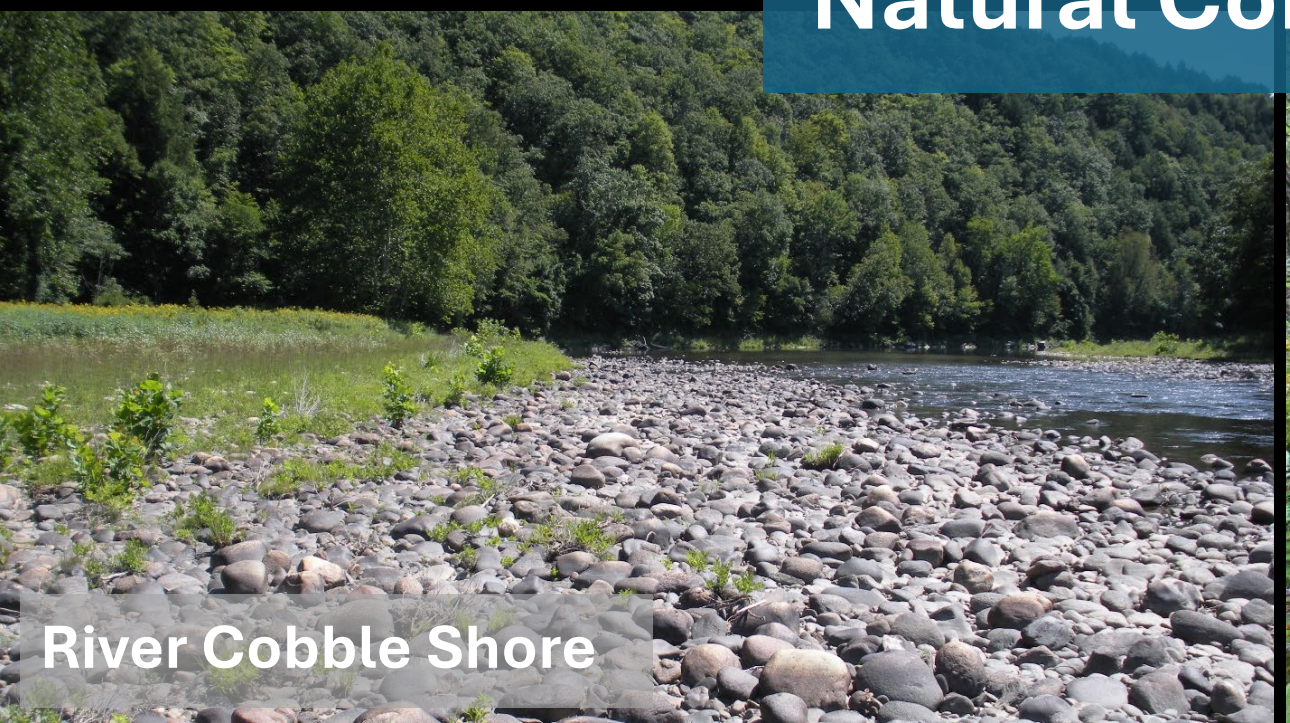


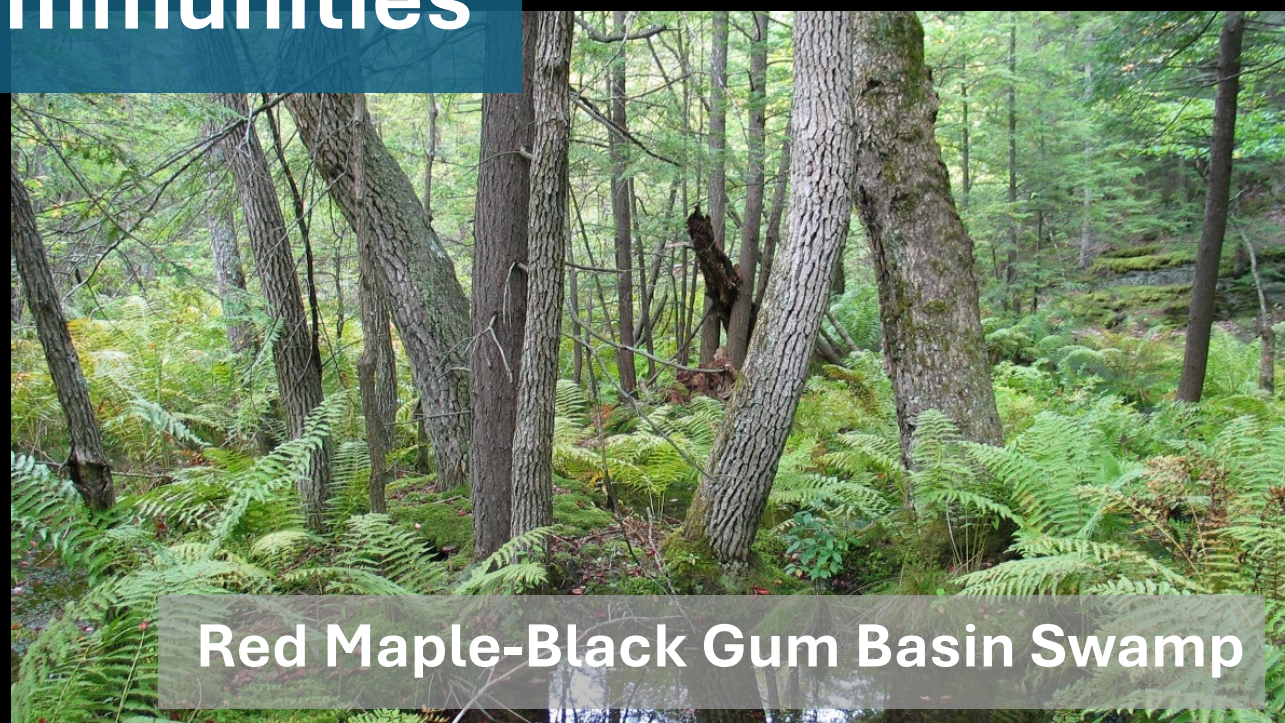
Photo: Champlain Thrust Fault
Limestone Bluff Cedar-Pine Forest
Rock Point, Burlington





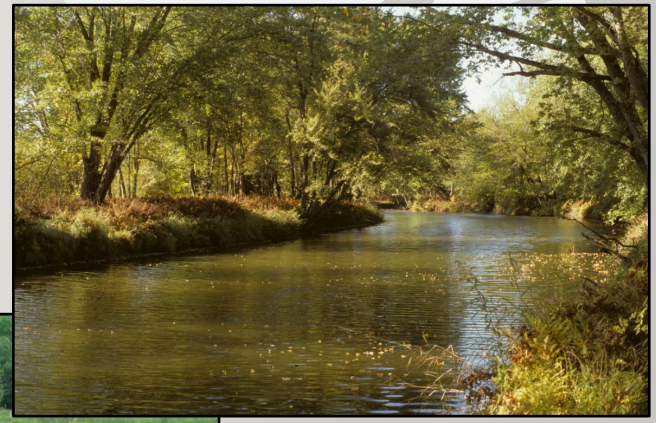
Natural Communities





Natural Communities that are often associated with headwaters and/or river systems

- Calcareous Red Maple-Tamarack Swamp
- Red Maple-Northern White Cedar Swamp
- Red Maple-Black Ash Seepage Swamp
- Northern Hardwood Seepage Forest
- Northern White Cedar Swamp
- Northern White Cedar Seepage Forest
- Red Spruce-Cinnamon Fern Swamp
- Spruce-Fir-Tamarack Swamp
- Hemlock-Balsam Fir-Black Ash Seepage Swamp
- Seep
- Rich Fen
- Intermediate Fen
- Poor Fen
- Alder Swamp
- Riverside Outcrop
- Erosional River Bluff
- Boreal Floodplain Forest
- Silver Maple-Sensitive Fern Floodplain Forest
- Silver Maple-Ostrich Fern Floodplain Forest
- Sugar Maple-Floodplain Forest
- River Mud Shore
- River Sand or Gravel Shore
- River Cobble Shore
- Calcareous Riverside Seep
- Rivershore Grassland
- Alluvial Shrub Swamp



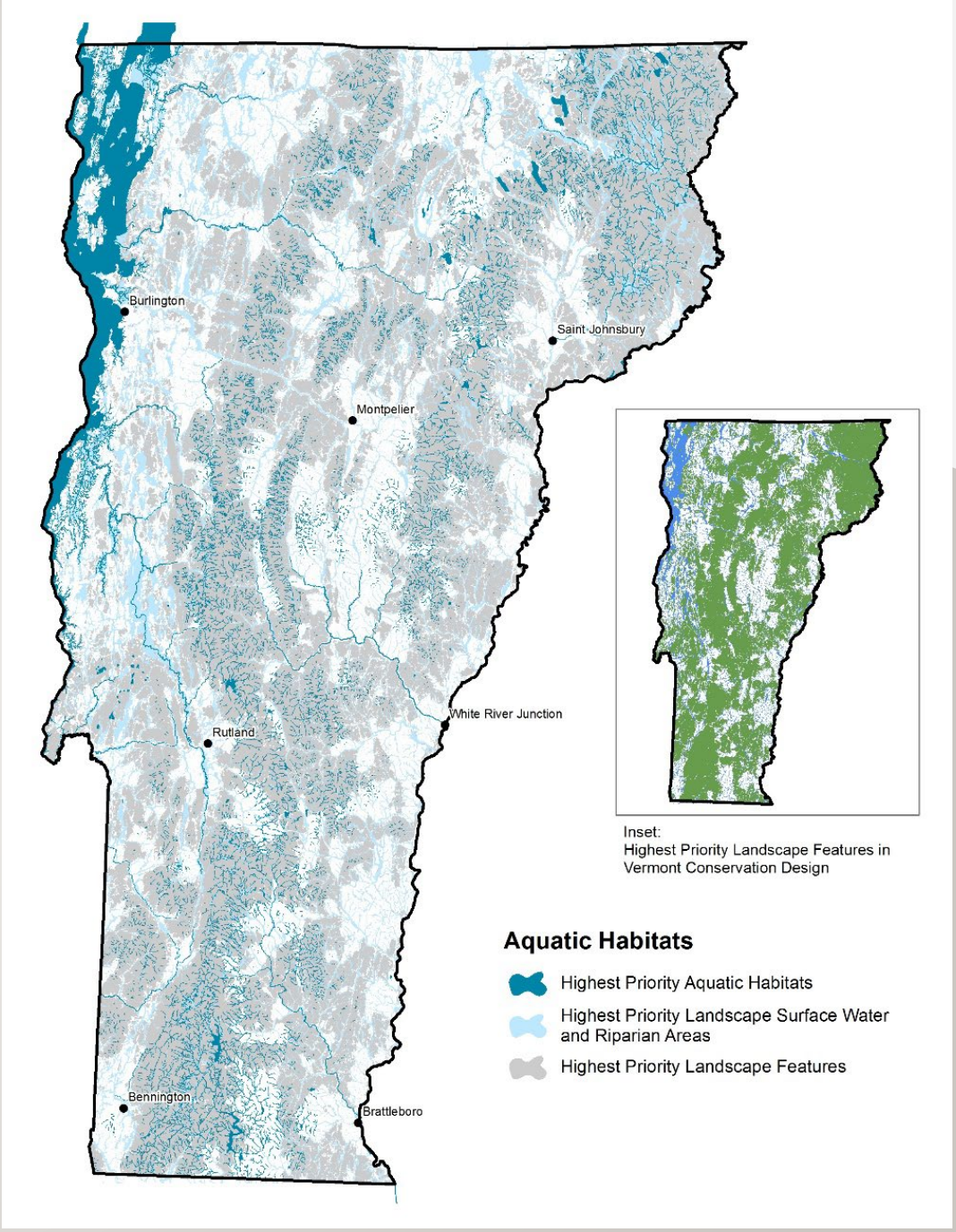




Aquatic Habitats

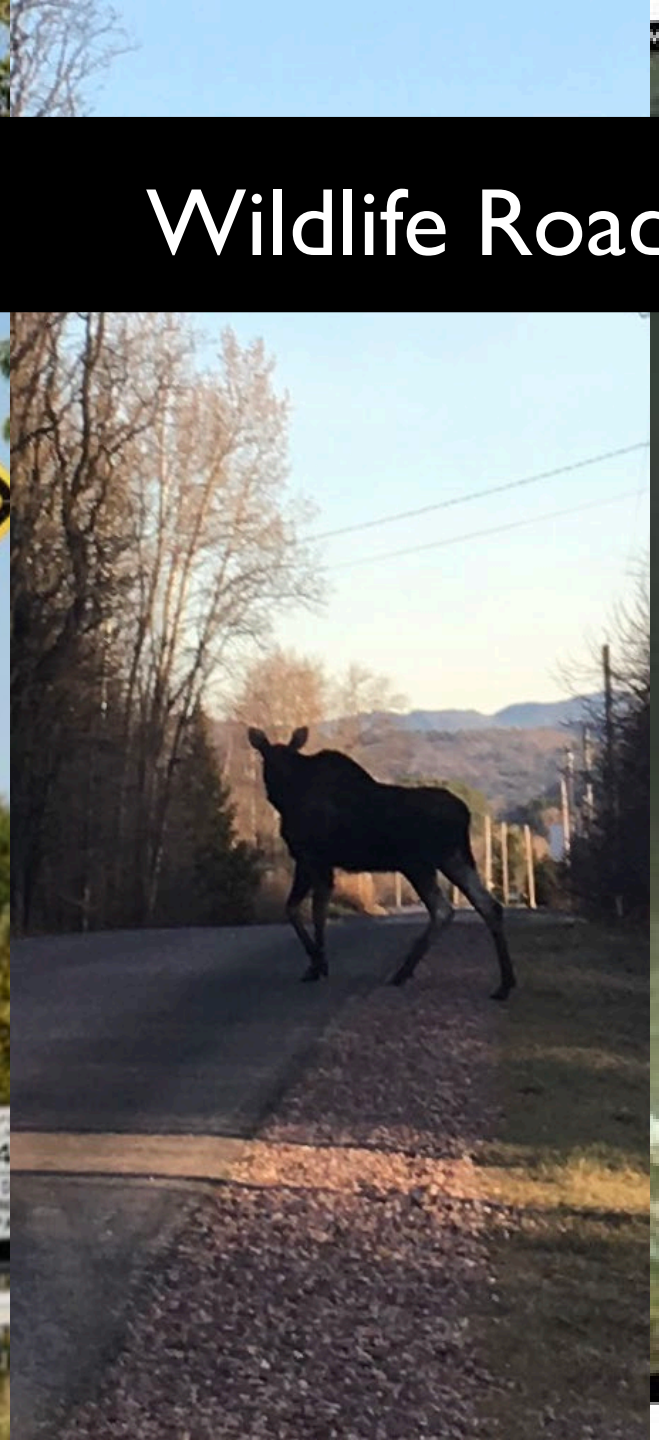


A set of river and stream reaches and lakes and ponds with important physical settings or species assemblages



Wildlife Road Crossings









OVERLAPPING ISSUES







Resilience Planning
Aquatic Organism Passage
Flood waters and debris
Terrestrial animal movement





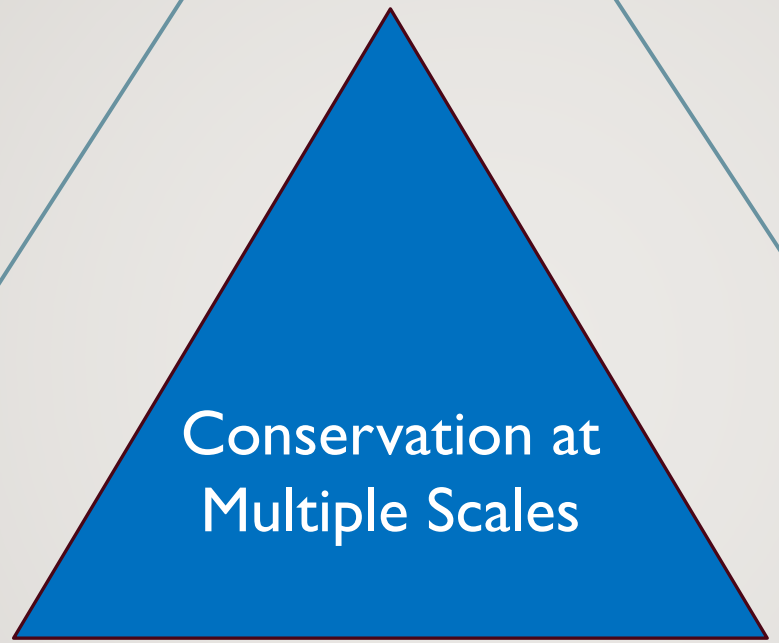


Why conserve at multiple scales?

Landscapes
- 5 elements
- Forest Blocks
- Surface Waters
- Riparian Areas

Finding Efficiency in Conservation Action

Conserve at the Coarsest Scale Possible



Communities
- ~105 elements
- Natural Communities
- Wetlands
- Grasslands
- Young Forests
- Old Forests

Species
- 24,000-43,000 species
- Rare, threatened & endangered
- Common Species
- Species of Greatest Conservation Need

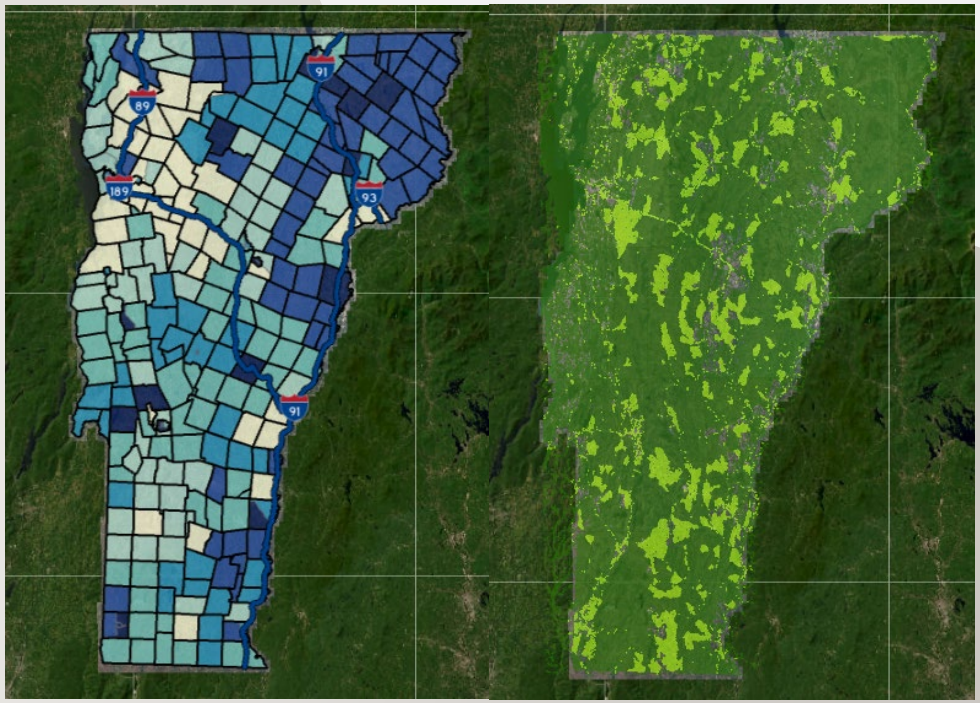
Understand the Ecological Context



COORDINATION AMONG CONSERVATION PARTNERS

ABOUT THE DESIGN –SOCIAL VULNERABILITY

- 45% of the Highest Priority area has a poverty rate higher than the state median
- 91% of the Highest Priority area has an unemployment rate gt than the state average of 1.8%
- 70% of the Highest Priority area has a per capita income below the state median of $34,536
- 91% of the Highest Priority area has an above median percentage of mobile homes as a portion of their housing stock
- 56% of the highest priority area has a high percentage of its population as 65 or older

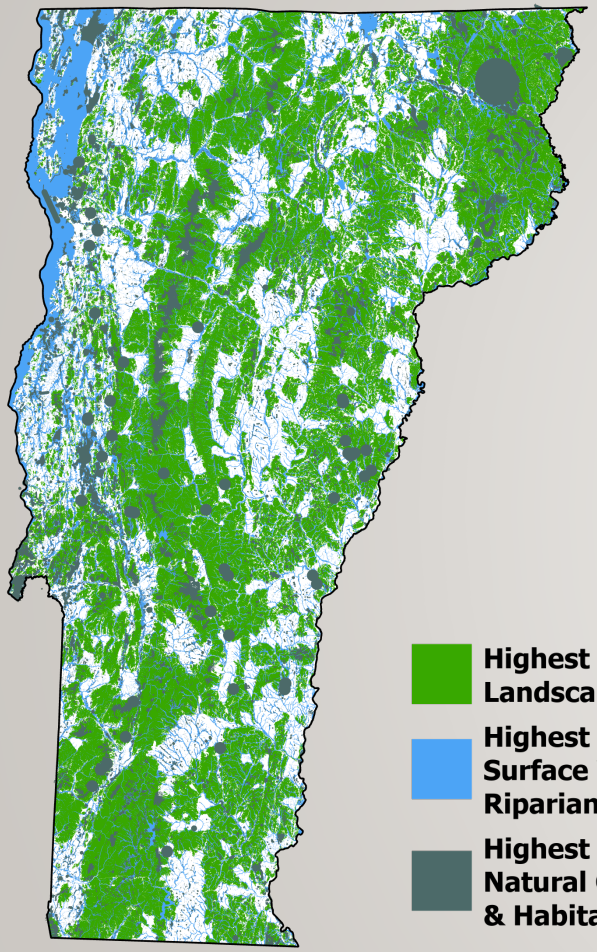


Poverty Rate

VCD Highest Priority Area

Explore the Social & Environmental Factors Map theme On BioFinder

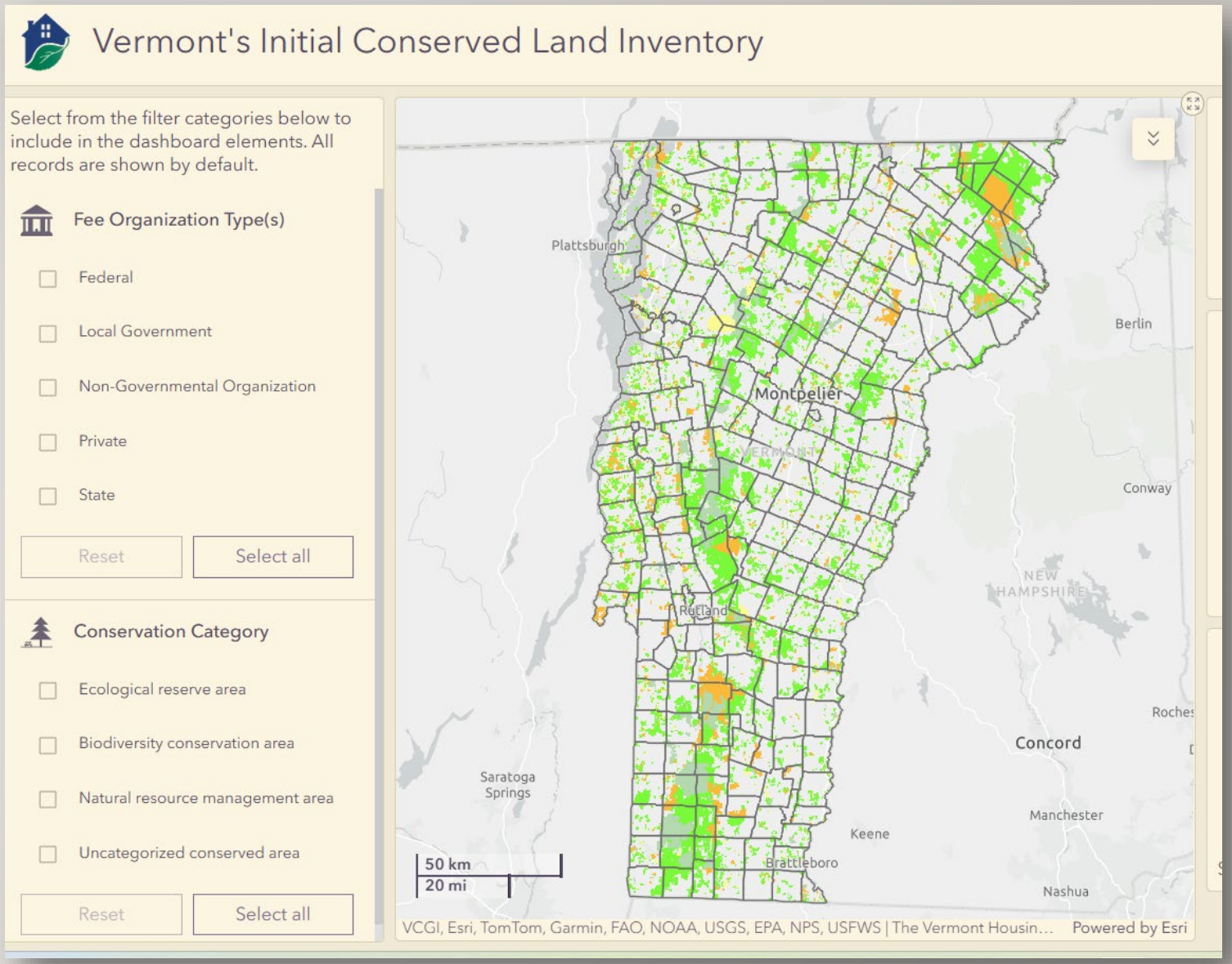
VERMONT CONSERVATION DESIGN



Highest Priority Landscape Blocks

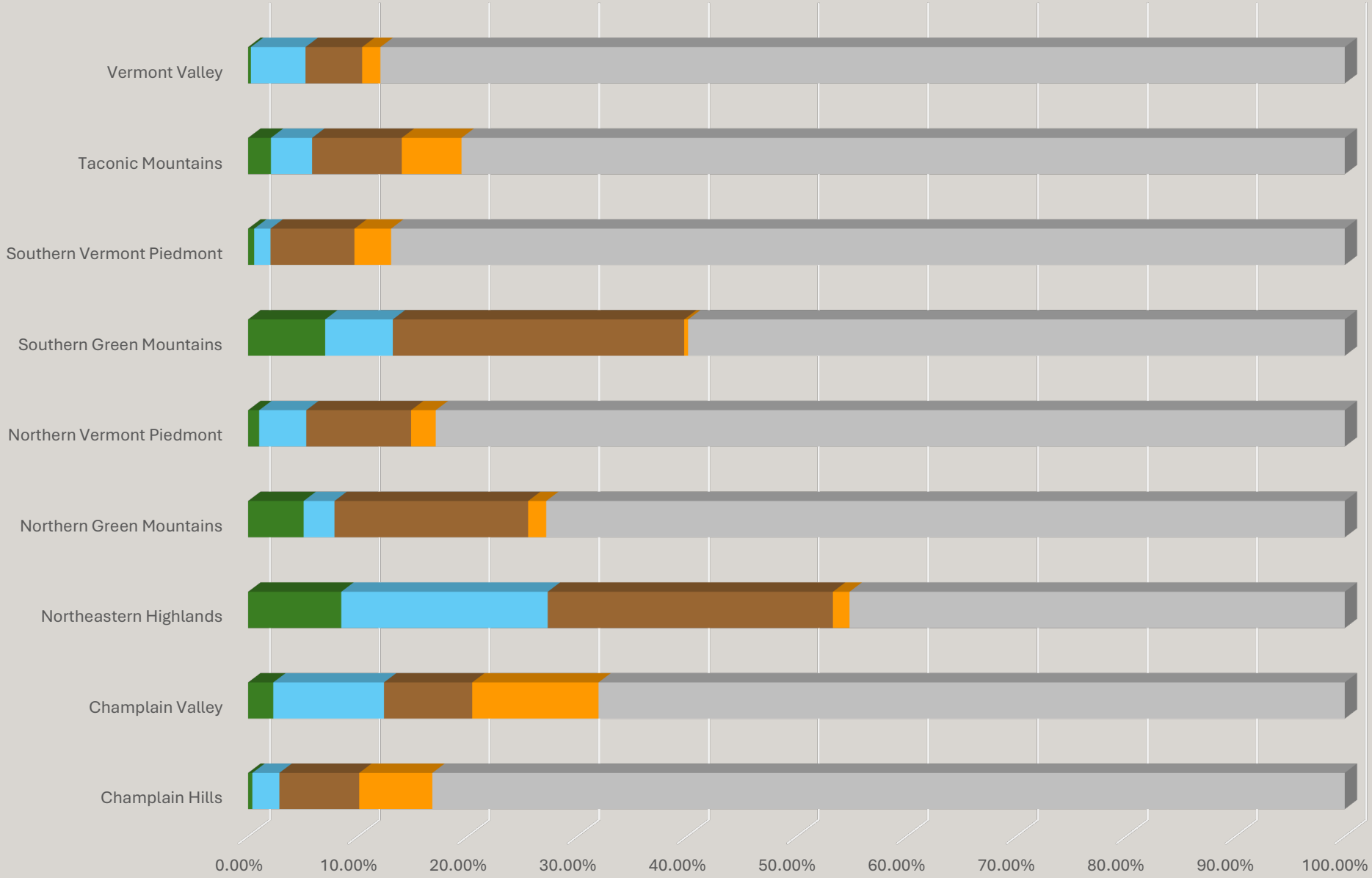
Highest Priority Surface Waters & Riparian Areas

Highest Priority Natural Community & Habitat Features



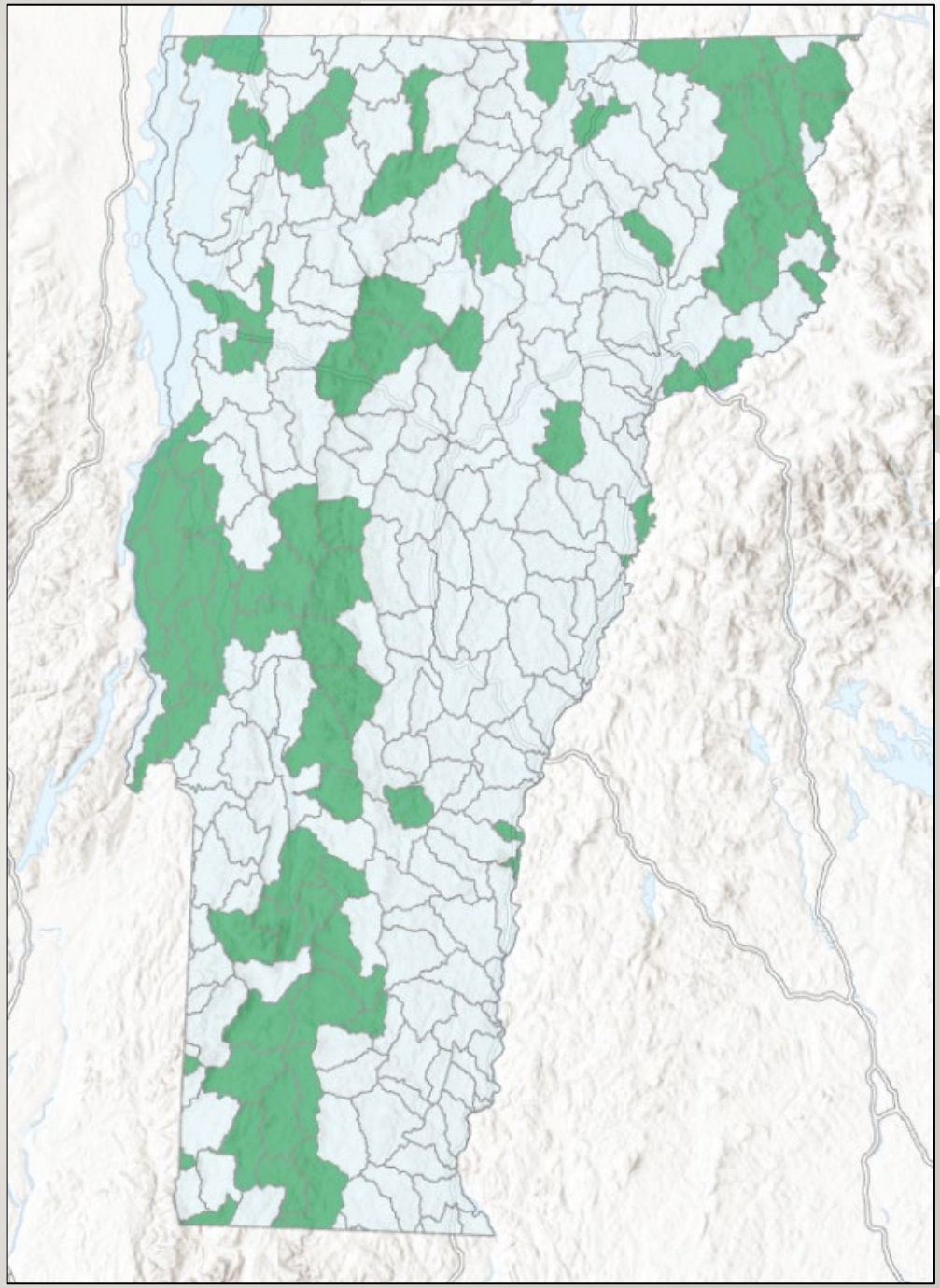
(Remember permanent land conservation is just one of many tools for achieving VCD.)

Percentage of **VCD Highest Priority Riparian Areas*** conserved, by category, in each Biophysical Region

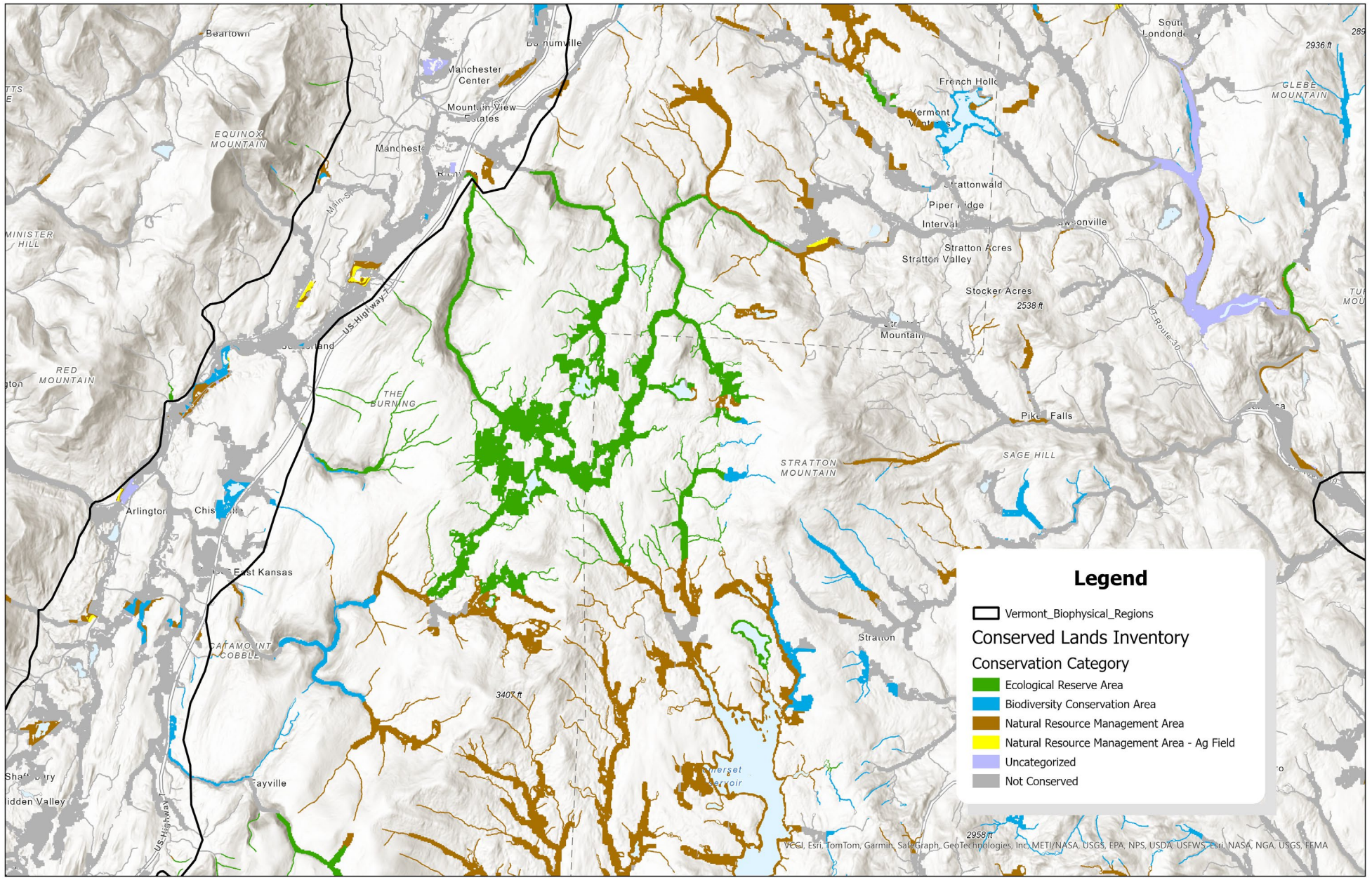


*Terrestrial portion of HP Surface Waters and Riparian Areas component

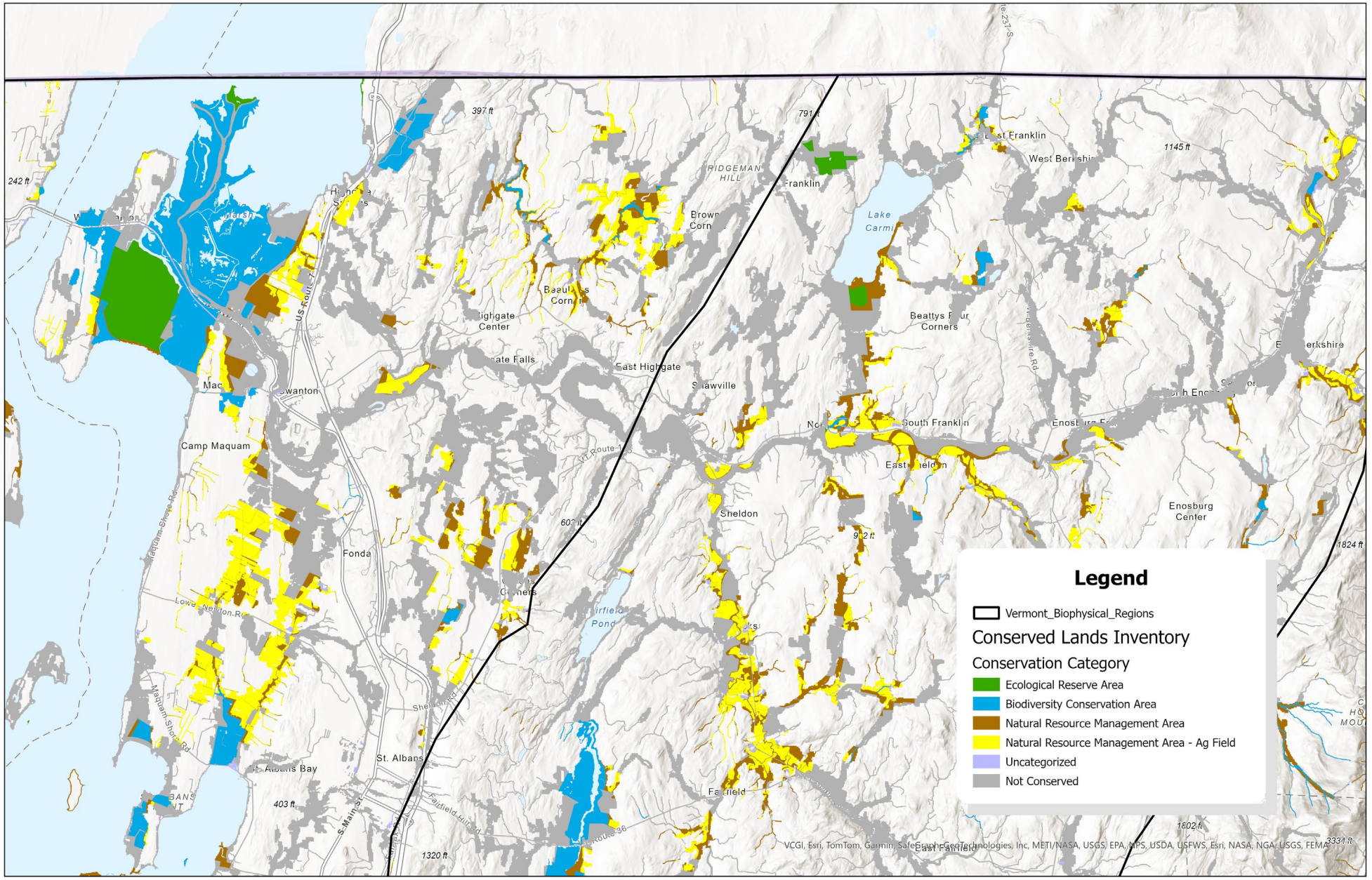
Permanent conservation within small watersheds. Dark green areas have >30% of highest priority riparian area acres permanently conserved.



Example Map of **VCD Highest Priority Riparian Areas**, by Conservation Category, around Lye Brook Wilderness



Example Map of **VCD Highest Priority Riparian Areas**, by Conservation Category, in northern Champlain Valley/Hills



IMPLEMENTING VERMONT CONSERVATION DESIGN RECOMMENDATIONS FOR ACT 59

- **Expand Vermont's conserved lands to better represent all nine biophysical regions.**
- **Support and encourage the stewardship, management, and restoration of riparian areas and aquatic systems on new and existing conserved lands.**
- **Protect priority landscape-scale corridors within Vermont's regional connectivity network.**
- **Improve representation of old forests by strategically establishing Ecological Reserve Areas in biophysical regions outside the Northern and Southern Green Mountains. Manage for a balance of forest structure, including young and old forests, in Biodiversity Conservation Areas and Natural Resource Management Areas.**
- **Enhance and increase the protection of rare and uncommon species, significant natural communities, and the important habitats of Vermont Conservation Design.**

REPORT CONCLUSIONS

- These are ecological recommendations for permanent land conservation to support ecological function (VCD)
- Add to VT's current land conservation priorities, not replace them
- Need to still consider all the other conservation tools
- Not just quantity of conservation, also quality
- Recommendations are meant to be combined with other social land conservation values, but these social values and benefits depend on an ecologically functional landscape: ***When we conserve ecological function, we support both nature and people***.

THANK YOU!

https://www.vtfishandwildlife.com/conserve/vermont-conservation-design

https://anrmaps.vermont.gov/websites/BioFinder4/