

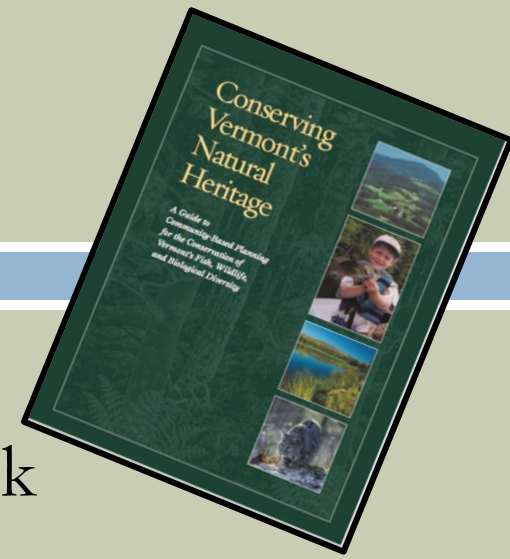
Ecological Scales

- Landscape
- Natural Communities
- Species

Natural Heritage Elements



- Advantage of having a framework
 - Stay sane
 - In planning & regulation you can assign different scales



Landscape Level Elements

- Considering patterns
- Viewing your town from 8,000 feet above
- Seeing your town in a larger context





Forests



Intact

Connected

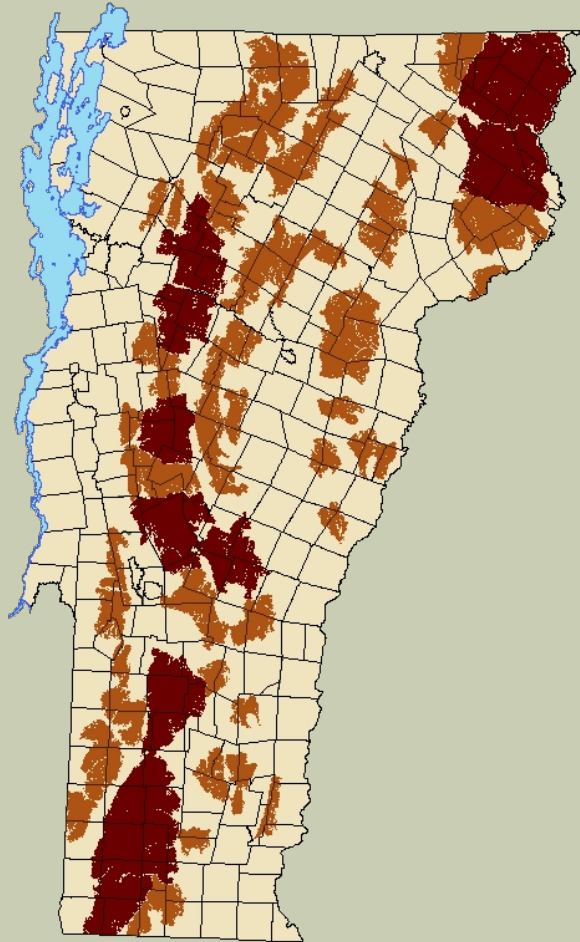
Diverse

Forest Integrity

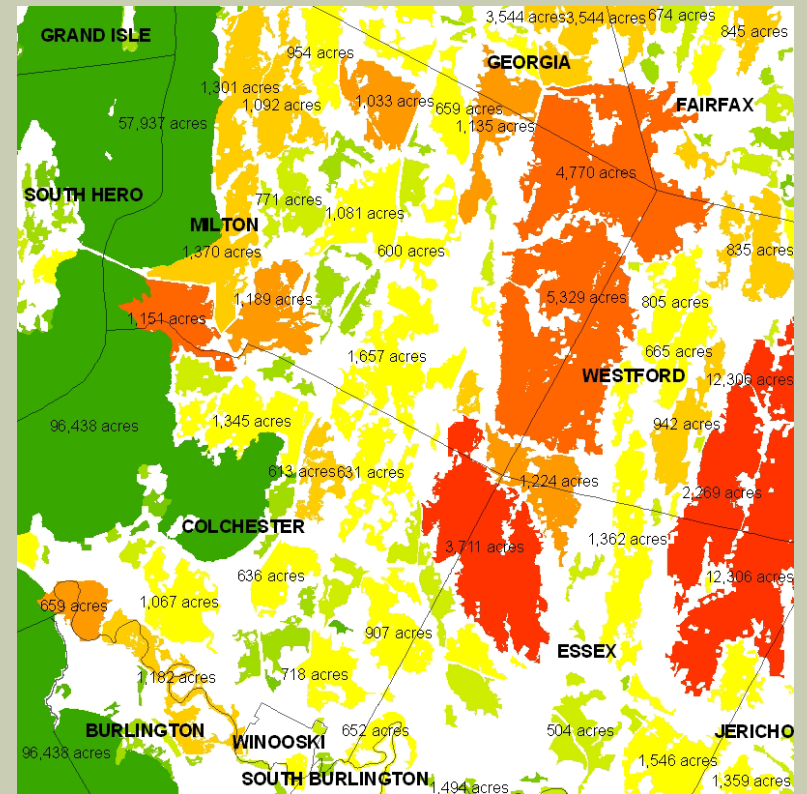


measures the ability to support and maintain biological communities, to support physical elements of the ecosystem, and to support ecological processes.

Forest Blocks



Areas of natural cover surrounded by roads, development and agriculture



Wildlife present in Forest Patches



From Above and Beyond." Campoli, J., Humstone, E., & MacLean, A. 2002.



Effects of Forest Fragmentation

Reduces landscape patch-size and increases movement barriers.

(Patch Size Effects)

Increases the amount of “edge” in a landscape.

(Edge Effects)

Reduces access to food, shelter & mates.

(Isolation Effects)



**Core Forest
Blocks**

**Wildlife Road
Crossings**

**Small,
“stepping
stone”
forests**

**Streamside
Connectors**



Area-Dependent Mammals



Bobcat
19-26 square miles



Black Bear
30+ square miles



Moose 2-20 square miles



River Otter 15-30 linear miles



Fisher 7-15 square miles

*(DeGraaf & Rudis
1986)*



Male Bear M0063

October 11, 2017 – November 11, 2017

Approximately 140 km. journey



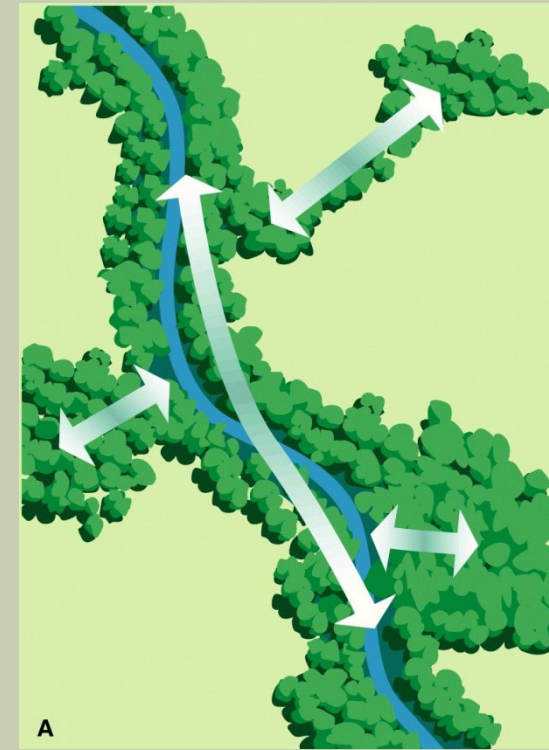
Connectivity: Wildlife



- Habitats isolated

Barriers to animal movement

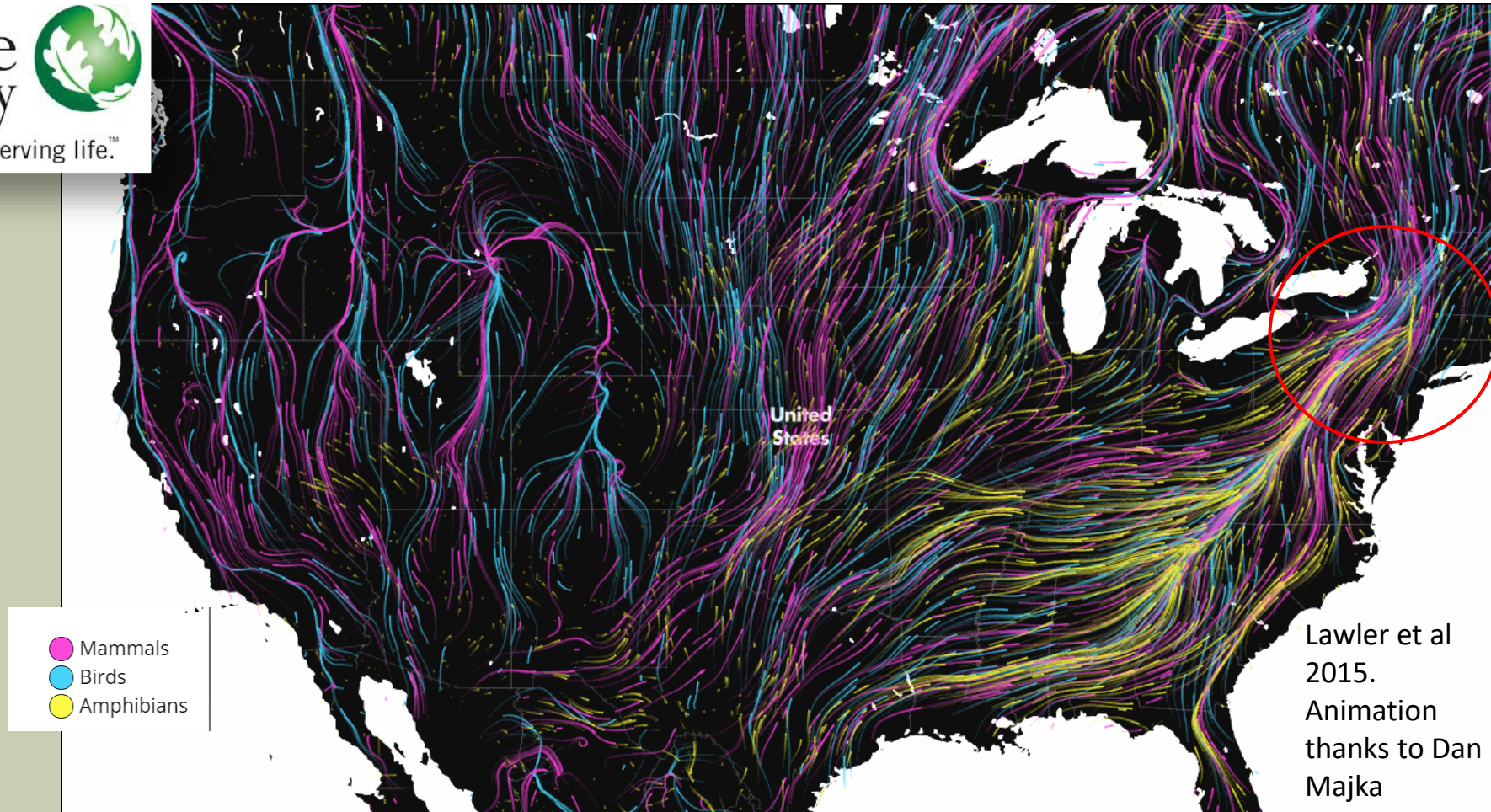
- Roads
- Development
- Agriculture



- Habitats are connected
- River banks provide travel corridor

Climate Flow

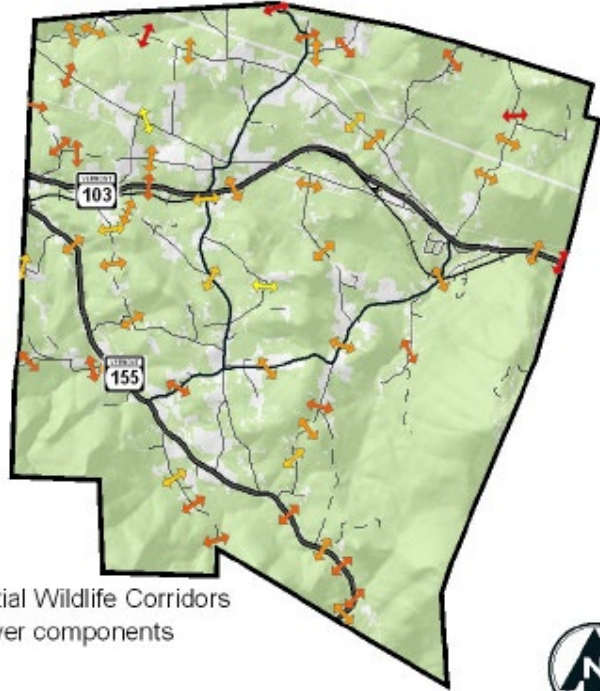
The Gradual Movement of Populations in Response to Climate Change



The gradual movement of populations across the landscape in response to climate change

Current Rates: 11 mile per decade North 36 feet per decade Upslope

Wildlife on the Move



Potential Wildlife Corridors
fewer components
more components

Figure Z. Possible Wildlife Corridors Map

Natural Heritage Element Inventory and Assessment
for Mount Holly, Vermont
June 9, 2008

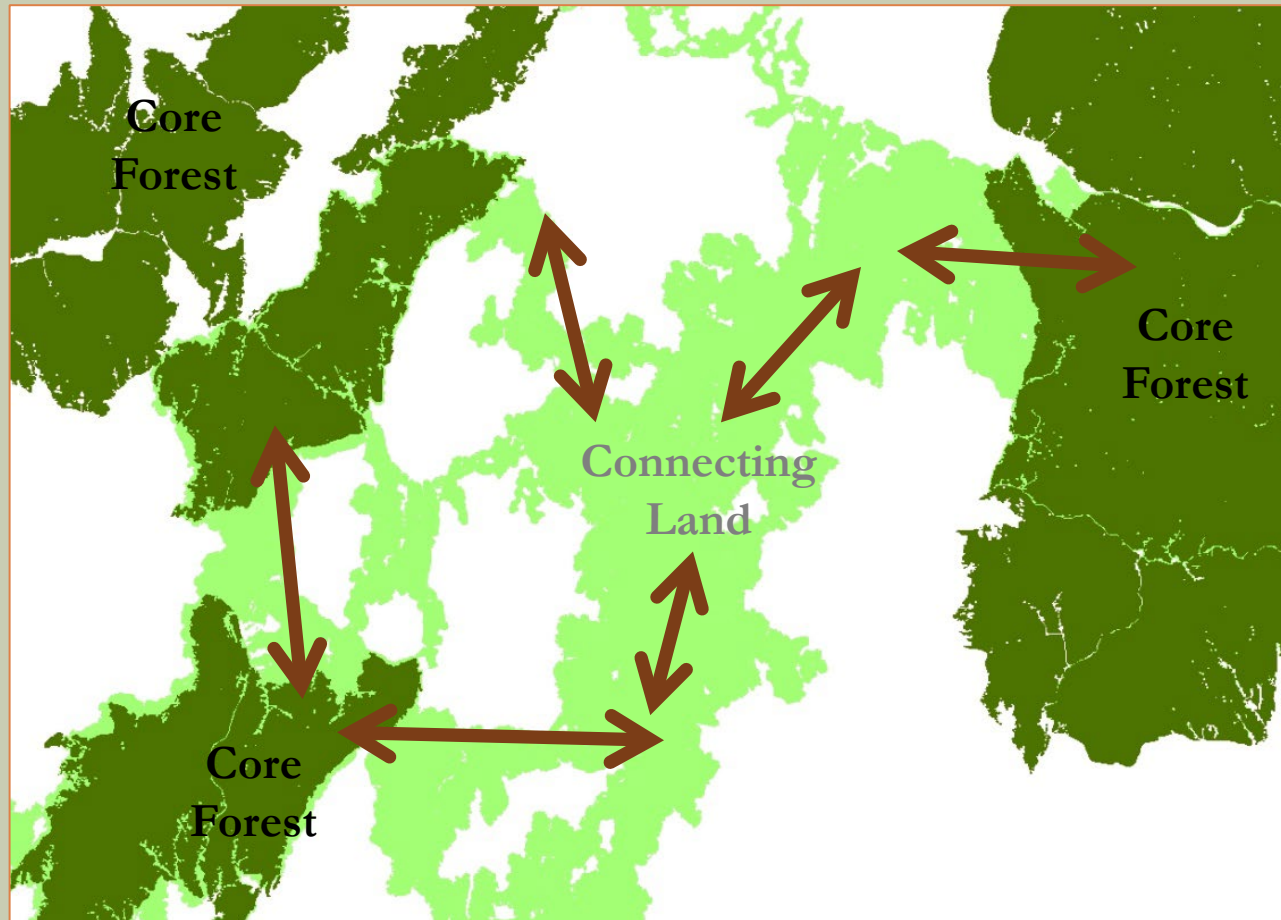
WOODHOLE ENVIRONMENTAL
Environmental Consulting
and Conservation Education
Kathleen Doyle, Ph.D.
100 South Street
10070-0000
1007-888-2000

Made possible by a Municipal Planning Grant awarded by the Vermont Agency of Commerce and Community Development.



Walt Looney

Connectivity: Ecosystem Resiliency



- Plants & Animals are adjusting their ranges
- Many will use this network

Maintaining & Enhancing habitat connectivity allows for plant and animal migration

Connectivity: Aquatic



Culvert is a barrier



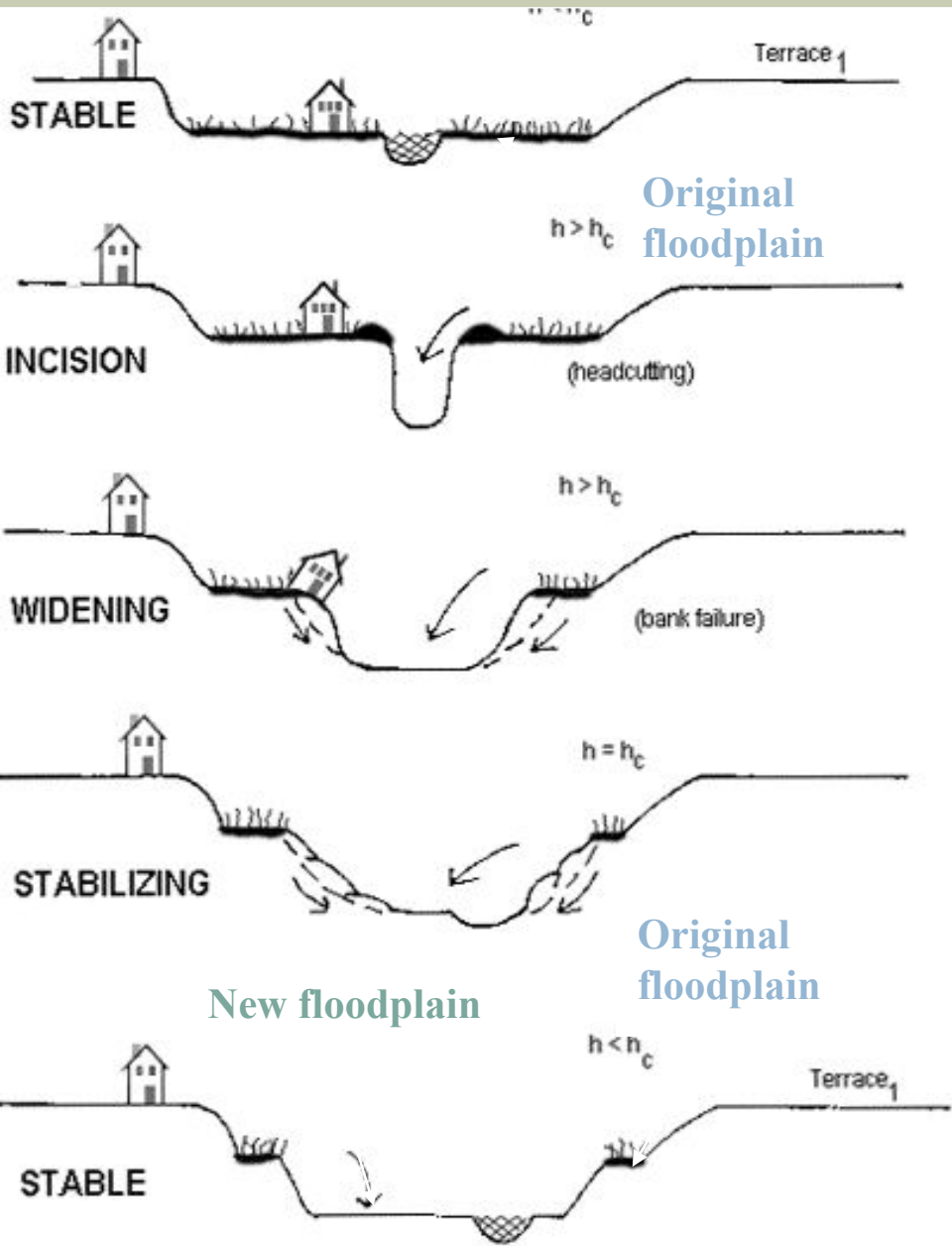
Culvert allows for Aquatic Organism Passage

Poorly installed crossing structures:

- ❑ Fragment aquatic habitats
- ❑ Limit recreational opportunity
- ❑ Increase sediment build-up



Connectivity: Aquatic



Otter Creek, Pittsford, VT, September 3, 2011
Photo:Lars Gange Mansfield Heliflight

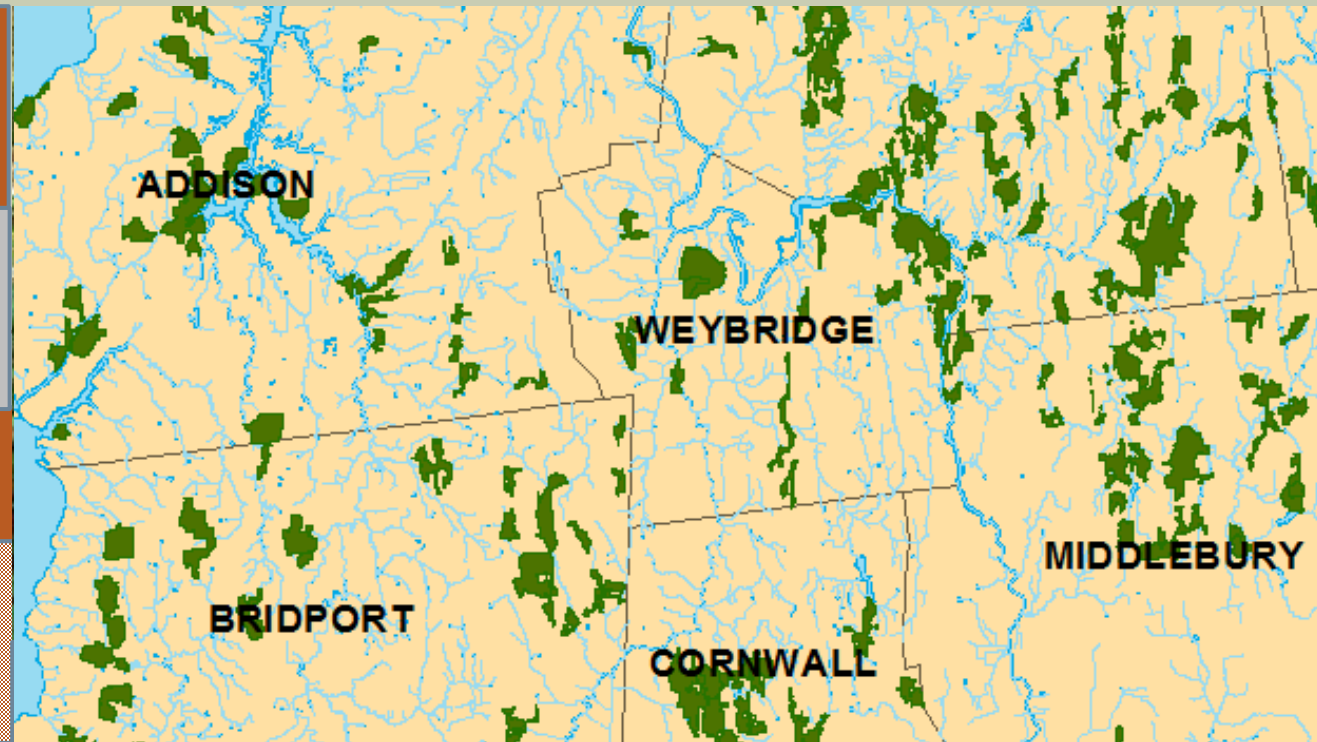
The Physical Landscape

Western
Exposure

Flat
Topography

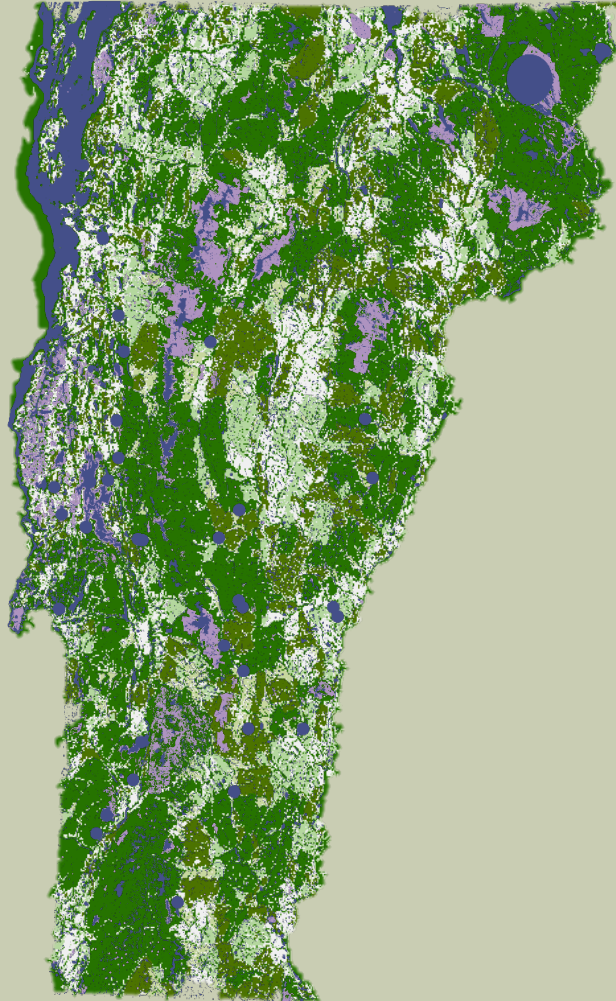
Clay Soils

Limestone
Bedrock



Physical landscape and
biological world are connected

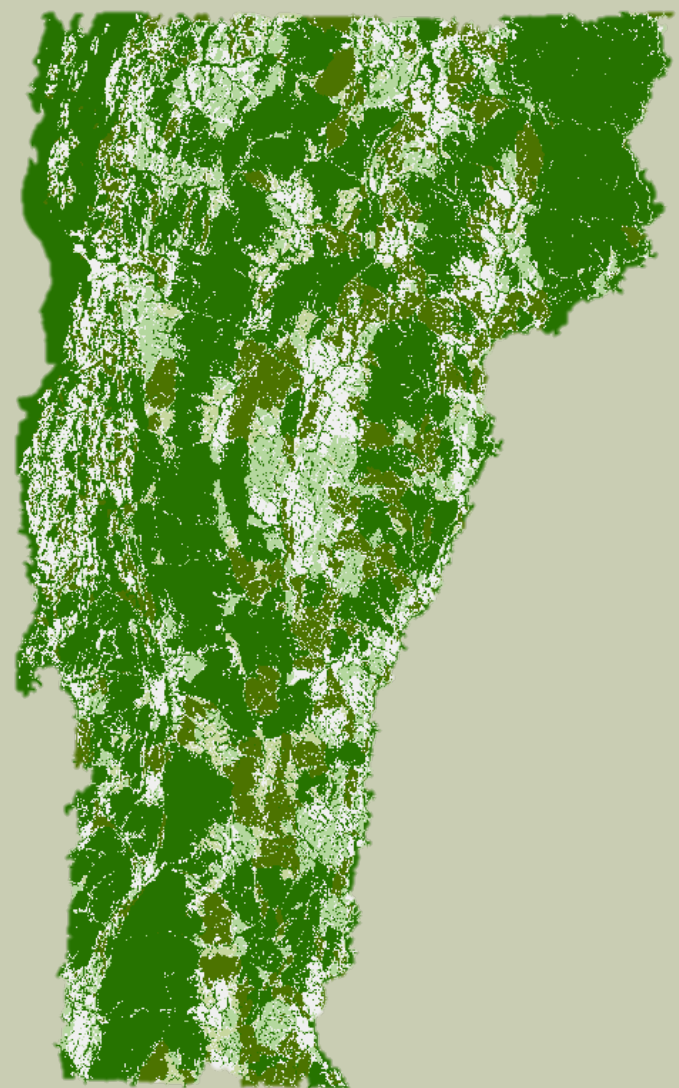
Vermont Conservation Design




Vermont Conservation Design assigns an overall **priority rank** to lands and waters most important for maintaining **ecological function**.





Vermont Conservation Design



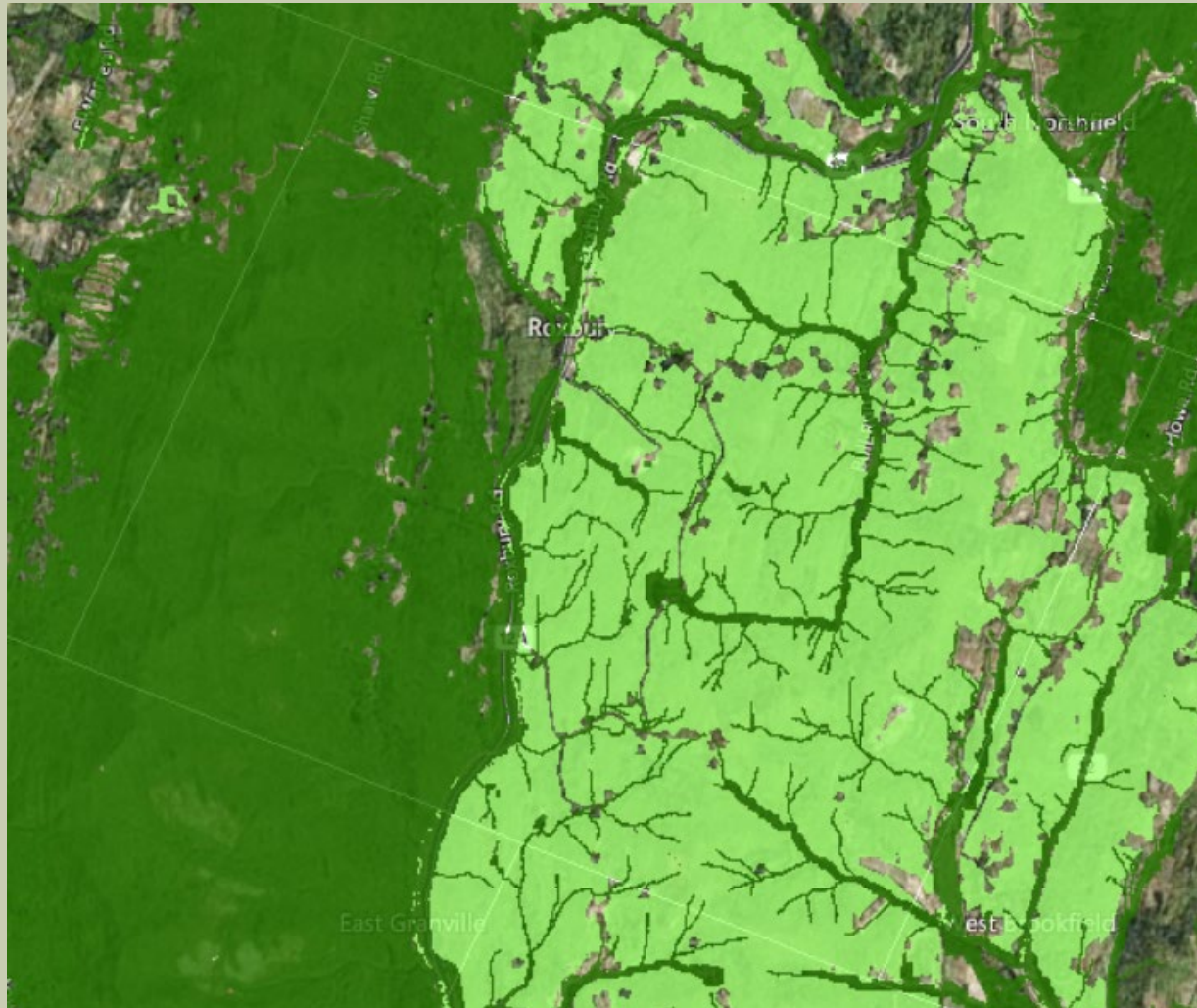
Vermont Conservation Design - Landscape Scale




 Priority Rank

 HIGHEST PRIORITY

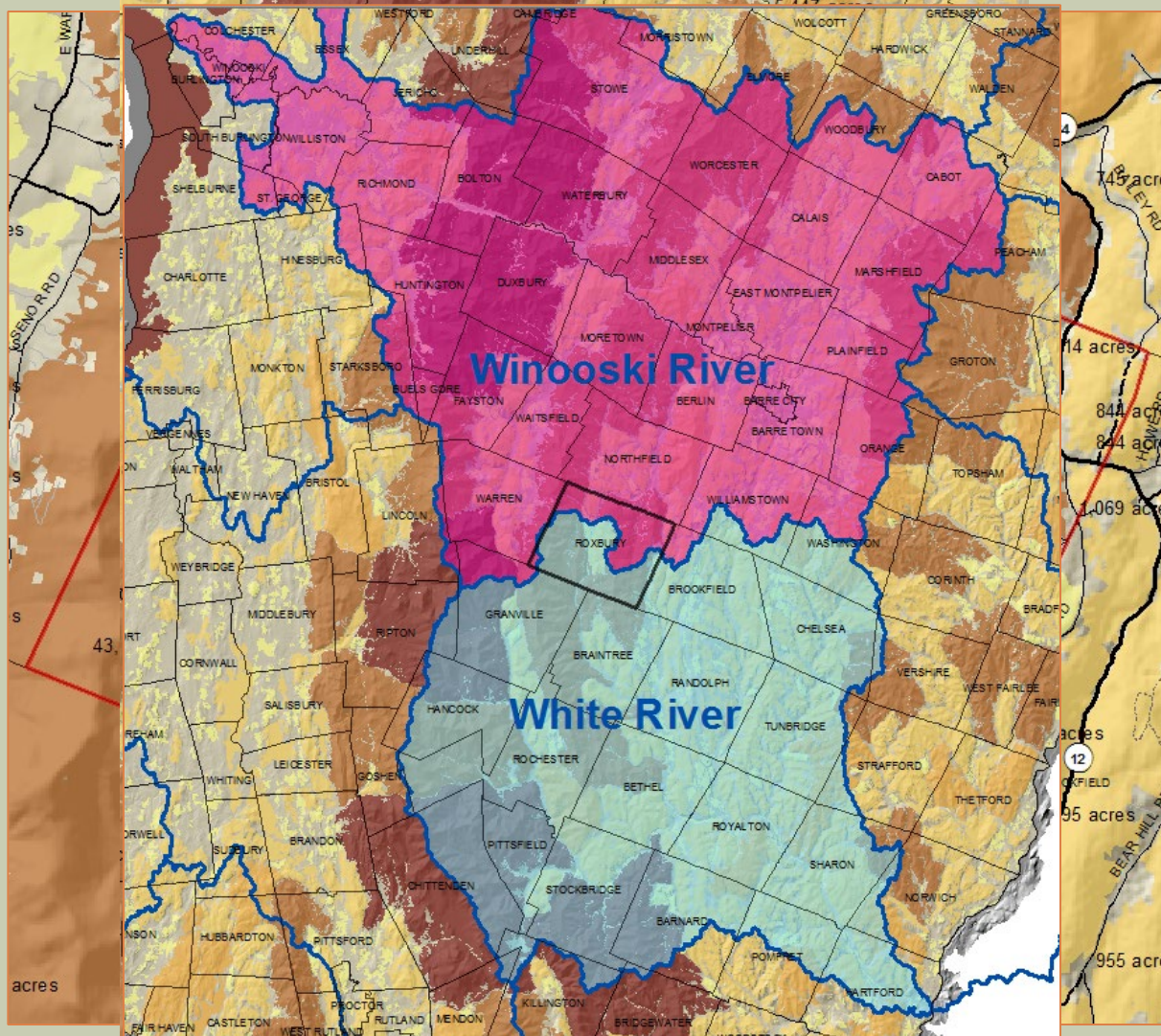
 PRIORITY

Vermont Conservation Design



- Vermont Conservation Design - Landscape Scale
-  Priority Rank
-  HIGHEST PRIORITY
-  PRIORITY

Case study: Roxbury, VT



Forest Blocks

- Large blocks in upper elevations, west and east.
- Route 12a as a barrier
- Development on class 4 roads within habitat blocks

Regional perspective

- Shows larger pattern of Northfield Range
- Connections west to Greens

Watershed Boundaries

- Headwaters for Winooski River & White River
- Species differences

Questions?

