

CLIMATE-SMART LAND MANAGEMENT AT THE LOCAL LEVEL

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HISTORY LESSON

- Beginning in 2007 MA DFW began taking lead in evaluating implications of CC for conservation agencies:

Mass Habitat Vulnerability Assessment Report

- Habitat vulnerabilities
- Species Vulnerabilities
- Management options

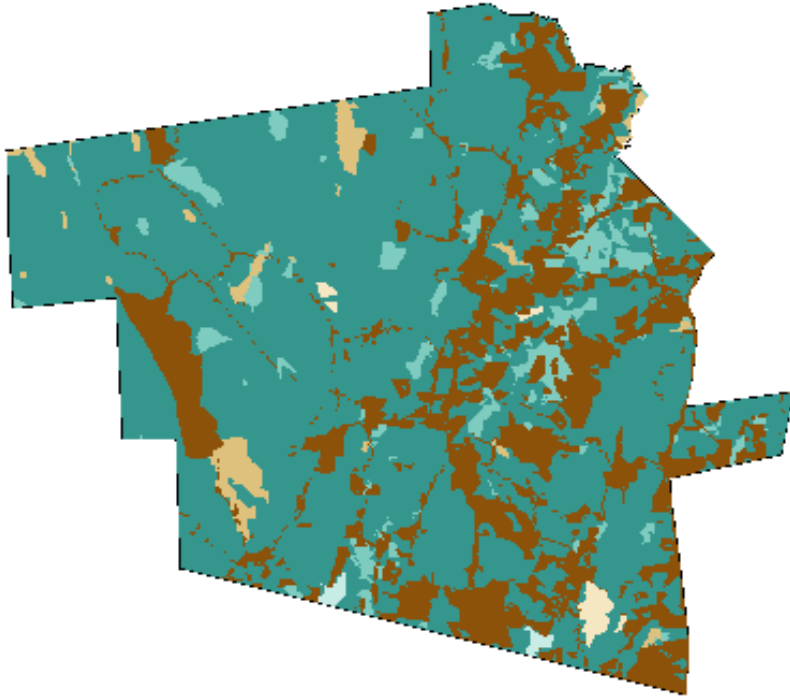
SO, WHERE ARE WE AT?

- We have built tools that should be of great value to land managers in planning under CC
- So what is the problem?
- We need to deliver these tools to managers that need them in form that they can use.
- Need to Downscale.

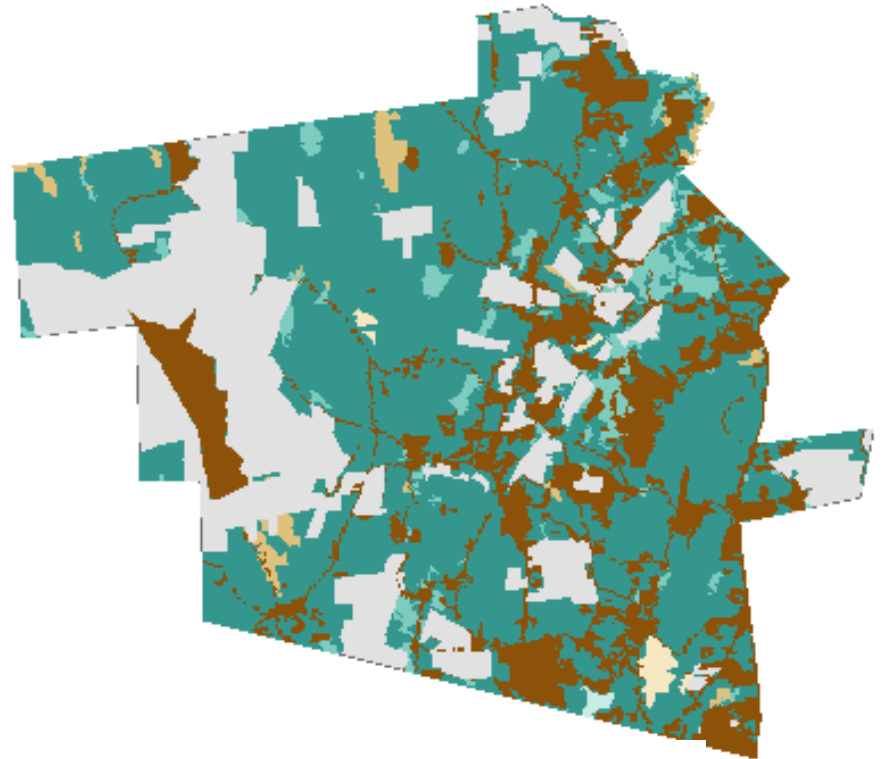
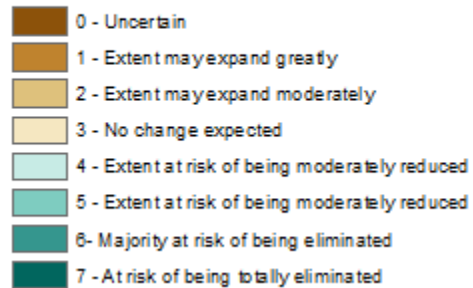
DELIVERY

- Web-based data viewer with GIS capabilities
 - Create map product
 - Convert to web service
 - Testing and rollout
- Must be easy to use
- Ability to modify and enhance with local knowledge if desired

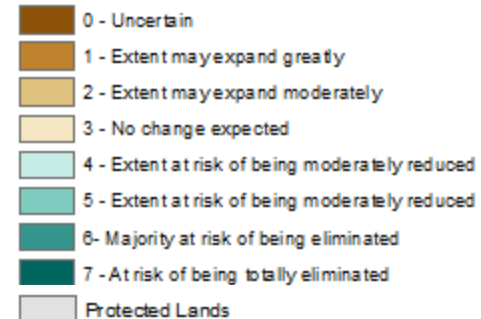
Terrestrial Habitat Vulnerability



**High Emission
Habitat Vulnerability**

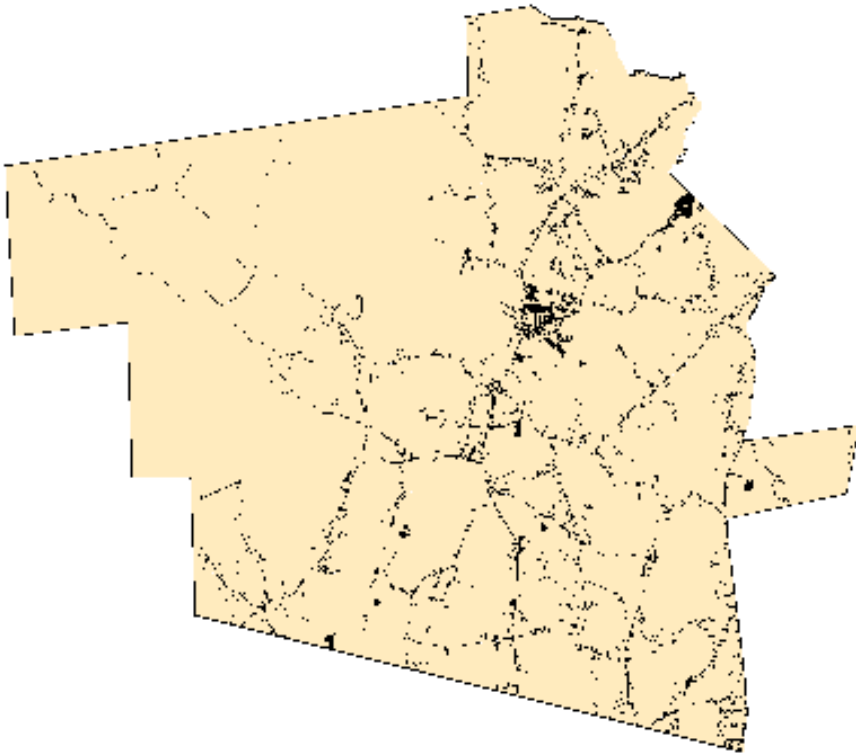


**High Emission
Habitat Vulnerability**



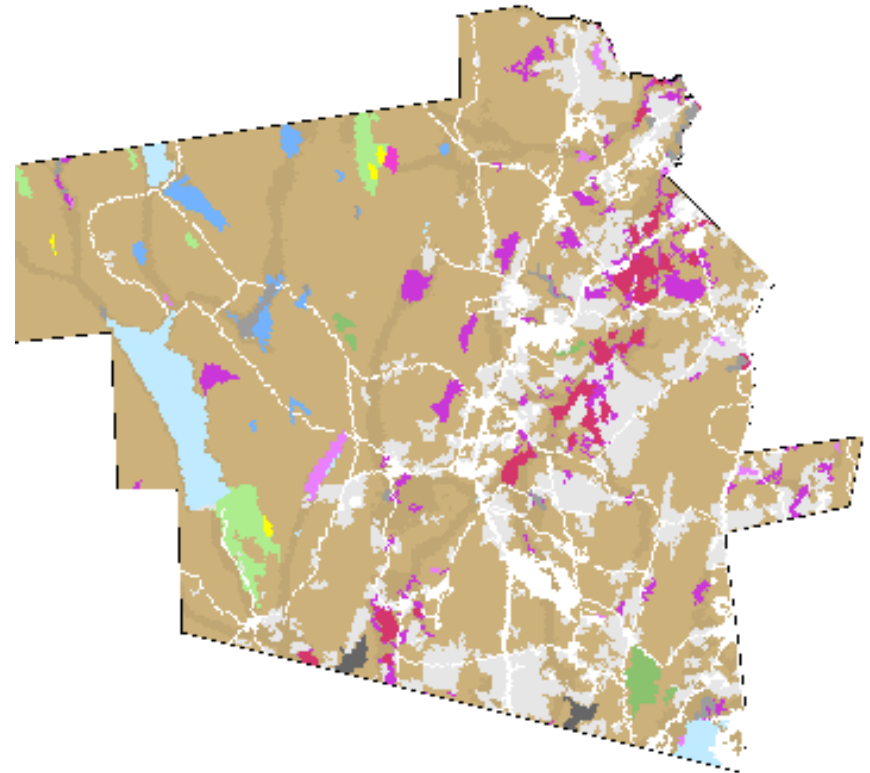
Impervious Surface

Northeast Terrestrial Wildlife Habitat Classification System (NETWHCS)



Impervious Surface

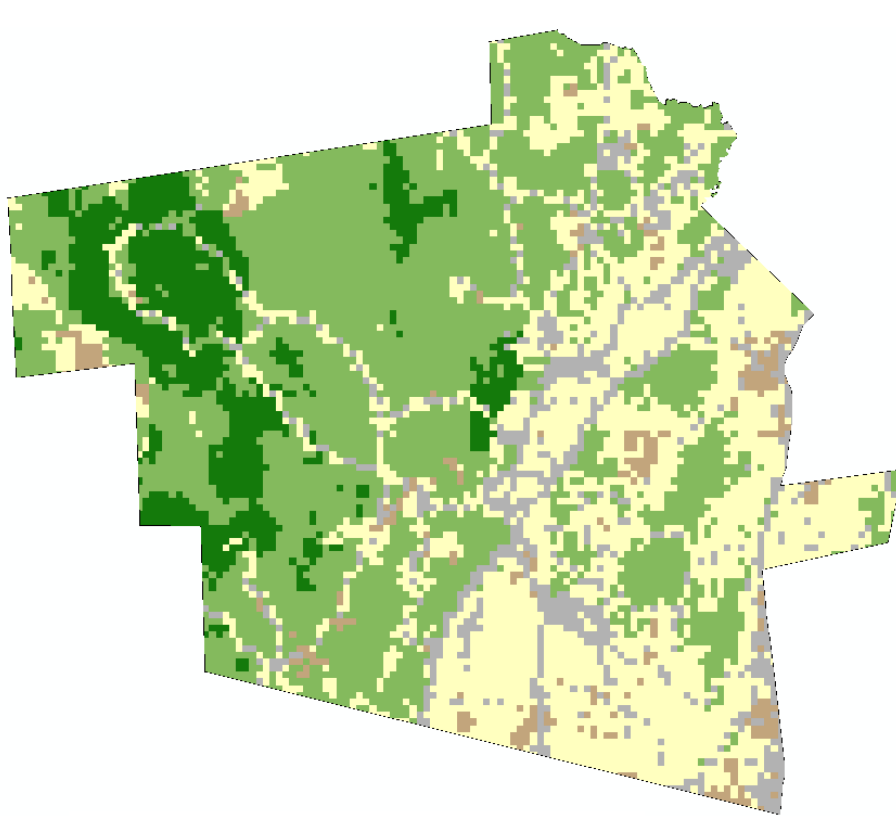
- Yes
- No



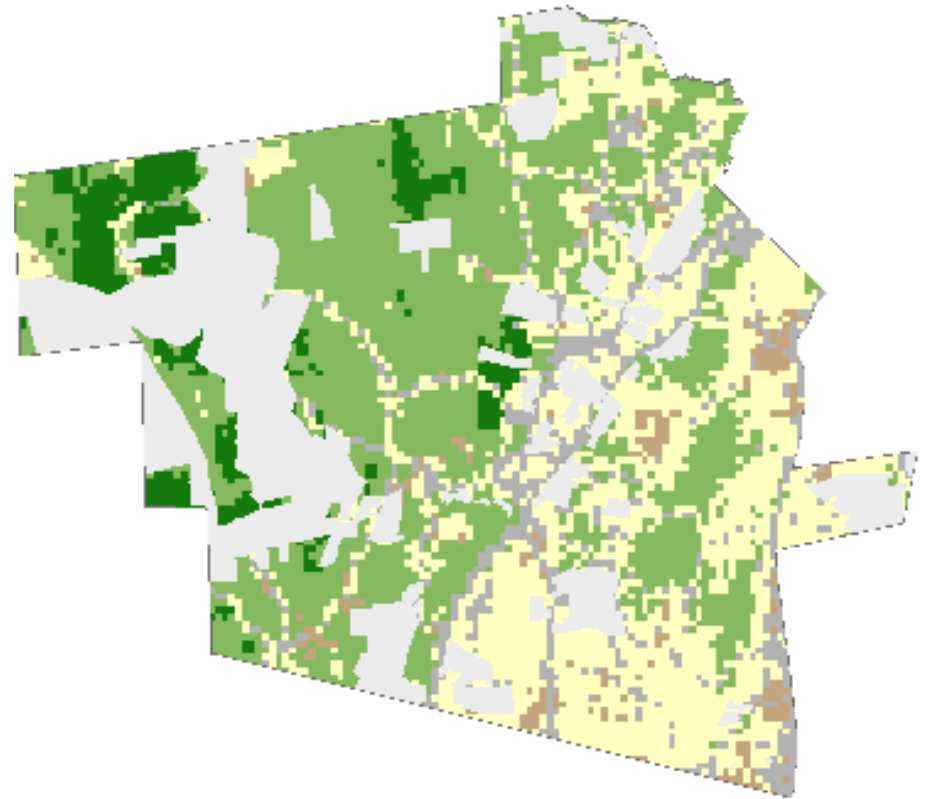
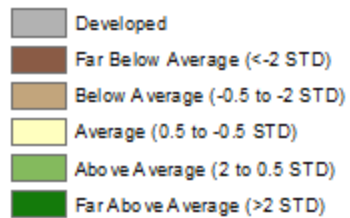
Northeast Terrestrial Habitat

- | | |
|---|--|
| NLCD-NHD open water | North-Central Appal Acidic Cliff/Talus |
| NLCD developed classes 21-24, 31 | N-Central Appal Circumneut Cliff/Talus |
| NLCD agricultural classes 81-82 | N-Central Appal Acidic Swamp |
| Laur-Acad Wet Meadow/Shrub Swamp | N-Central Interior and Appal Rich Swamp |
| NE Interior Pine Barrens | N-Central Interior Wet Flatwoods |
| Central Appal Dry Oak-Pine Forest | NE Interior Dry-Mesic Oak Forest: typic |
| Laurentian-Acadian Freshwater Marsh | NE Interior Dry-Mesic Oak Forest: moist/cool |
| Central App Pine-Oak Rocky Woodland | Appal Hem-N. Hwd Forest: typic |
| | Appal Hem-N. Hwd Forest: moist-cool |

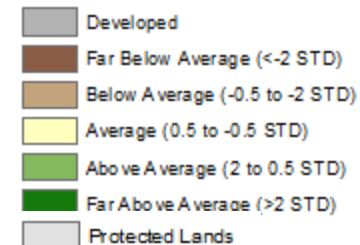
Terrestrial Resilience (TNC)



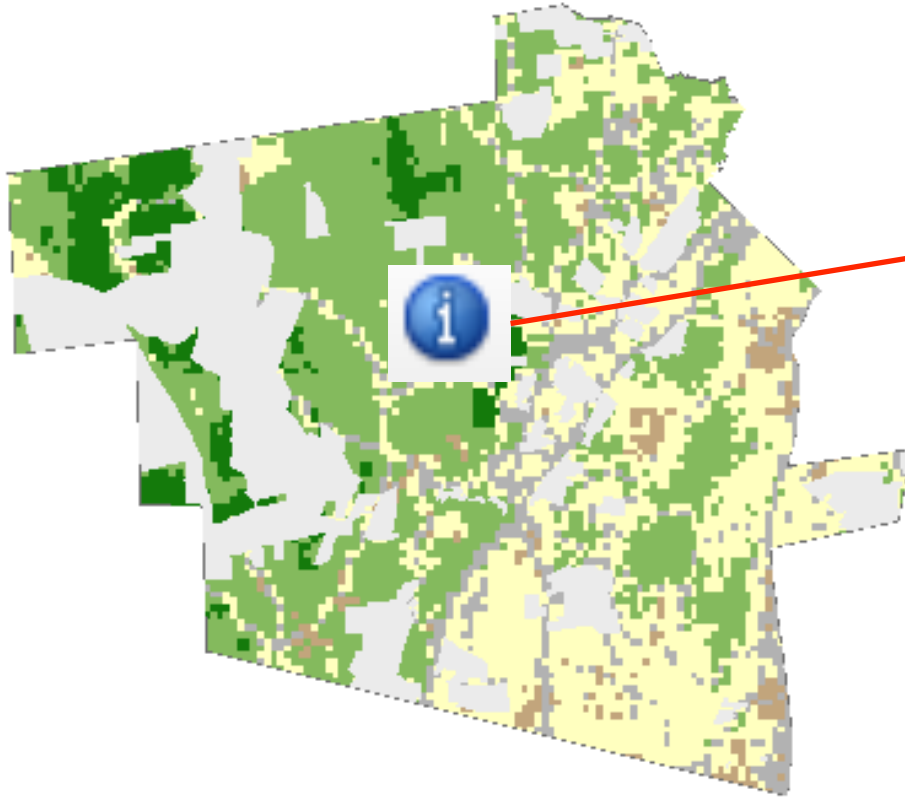
Estimated Terrestrial Resilience Score



Estimated Terrestrial Resilience Score



Terrestrial Resilience (TNC)



Conservation By Geography

- Africa
- Asia Pacific
- North America
- Canada
- Caribbean
- United States
 - Eastern Division
 - Who We Are
 - Where We Work
 - Science and Data
 - Maps & Spatial Data
 - Terrestrial Projects
 - Terrestrial Resilience
 - Northeast
 - Southeast
 - Permeability
 - Habitat Map & Guides
 - Ecoregional Plans
 - Secured Lands
 - Habitat Guides
 - Geospatial Analysis
 - Results Portfolio
 - Freshwater Projects
 - Marine Projects
 - Climate Change
 - Habitat Guides
 - Alaska

Conservation Gateway > Conservation By Geography > North America > United States > Eastern Division > Science and Data > Terrestrial Projects > Terrestrial Resilience

Resilience

Northeast Resilience Analysis

Southeast Resilience

Landscape Permeability

Northeast Resilience Analysis

Defining resilient sites for conservation in the northeast and mid-Atlantic U.S.

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Sea level rise, coastal processes and shoreline were not analyzed in the maritime zone.

Resilience concerns the ability of a living system to adjust to climate change, to moderate potential damages, to take advantage of opportunities, or to cope with consequences, in short, its capacity to adapt. The Nature Conservancy's resilience analysis develops an approach to conserve biological diversity while allowing species and communities to rearrange in response to a continually changing climate. This project identifies the most resilient examples of key geophysical settings to provide managers and scientists with a nuanced picture of the places where conservation is most likely to succeed over centuries.

The resilience analysis had four parts. The project:

- 1) Mapped geophysical settings across the entire area,
- 2) Within each geophysical setting, located areas that have complex topography and are highly connected by natural cover,
- 3) Compared the identified sites with The Nature Conservancy's portfolio of important biodiversity sites,
- 4) Identified key linkages between sites.

Download the Data

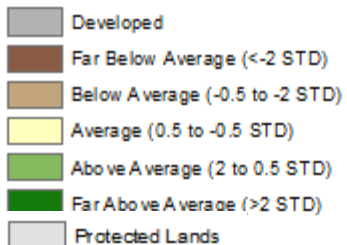
Northeast Resilience Datasets 90m
90m dataset, basic hexagons and coastal zones for download (1gb download)

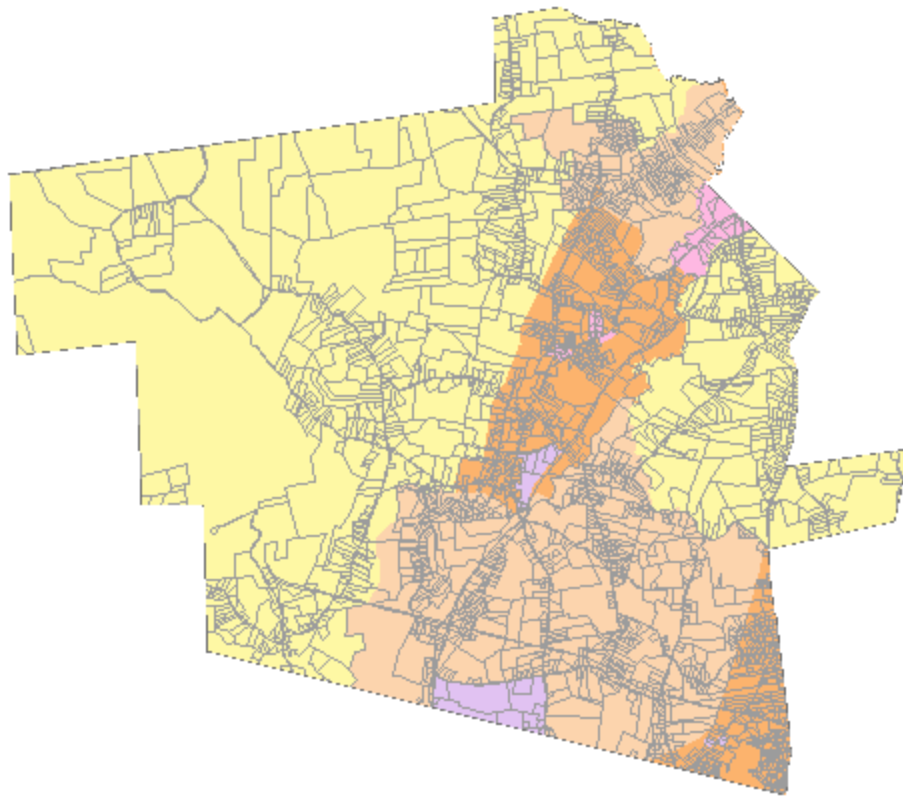
Additional Northeast Resilience Data
All resilience data used for the resilience analysis in the northeastern United States including intermediate products such as 30m landform variety (2.2gb download)

Northeast Resilience Report
Download the full report of the resilience project for the northeastern United States (pdf)

Permeability Datasets
GIS data for the permeability study

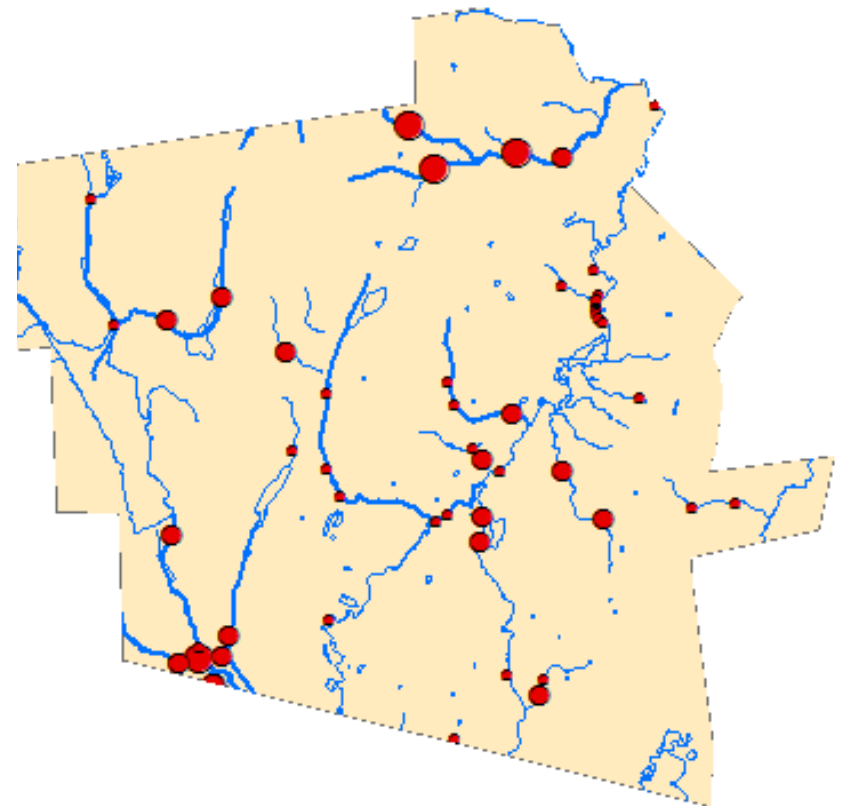
Estimated Terrestrial Resilience Score





Zoning and Parcels

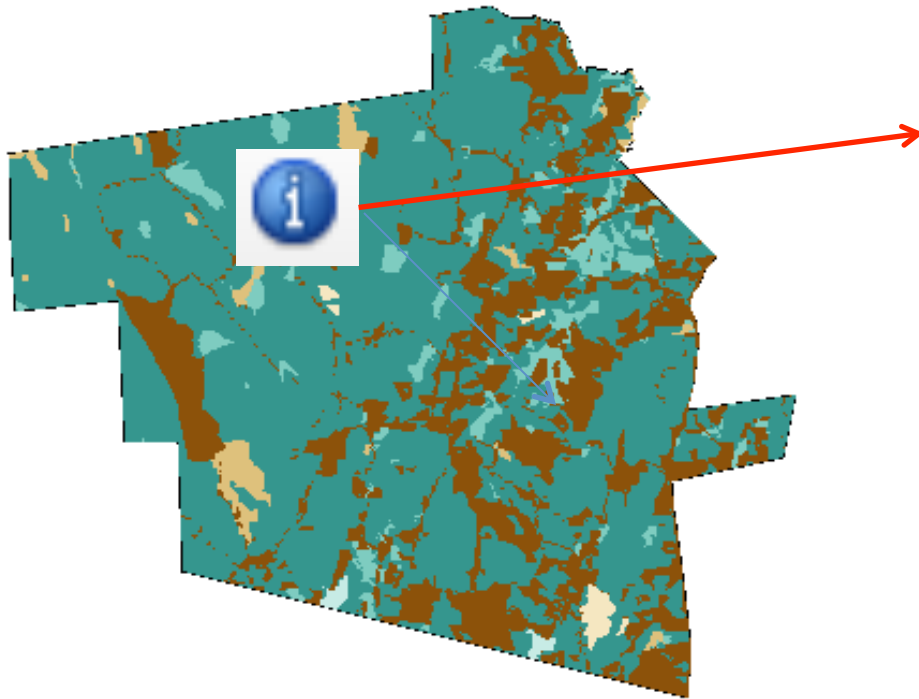
- Limited, Central, Hwy Business; Office Park
- Light Industrial
- Residential: 80k+ sq ft / Agricultural
- Residential: 40-80k sq ft
- Residential: 15-40k sq ft
- Residential: 5-15k sq ft & Multi-family Low-density
- Level 3 Assessor Parcels



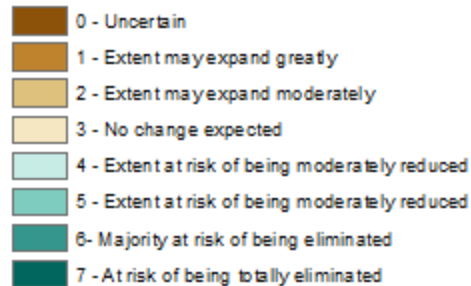
Culvert Replacement Connectivity

Connectivity

- Low
- Medium
- High
- Stream
- Coldwater Stream



**High Emission
Habitat Vulnerability**



Asset 4: Terrestrial uplands, including upland forest and shrublands

Management Actions

- Reduce over-browsing by white-tailed deer by controlling deer populations in order to protect regeneration of habitats; delays in regeneration reduce the ability of the forest ecosystem to function consistently over time.
- Manage invasive species; launch an initiative to remove invasives from large unfragmented forest blocks on protected (private, state, federal) land in collaboration with partners.
- Track and eliminate invasives and pests; where feasible transplant preferred native species to restore areas with invasives.

Protection Actions

- Improve buffering to safeguard core, high-quality habitats so that they may provide a refuge for plant and animal species experiencing pressure from climate and non-climate stressors.
- Identify and preserve habitat movement corridors and improve habitat connectivity to facilitate movement of organisms displaced by human development or climate change-related stressors.
- Protect large unfragmented forest blocks of habitat to provide refuges for displaced plant and animal species.
- Maintain ecological function over long periods by managing forest reserves that are large, minimally fragmented, and representative of varied ecological settings that include forest biodiversity. |

Advocacy and Outreach Actions

- Provide foresters with information and support services concerning how climate change may disturb forests and impact strategies for keeping forests viable.
- Conduct outreach and education on water and land conservation practices and the changes expected to come with a warming world.
- Add state tax incentives to keep forests as forests, such as a state tax credit for the cost of professionally prepared forest management plans.

Source: Rubinoff, P, C. Rubin, D. Robadue, J. Riccitelli, C. Collins, D. Robadue, C. Damon, K. Ruddock, P. August, C. Chaffee, E. Horton-Hall, and A. Ryan. 2013. Building Capacity to Adapt to Climate Change through Local Conservation Efforts: A South Kingstown Land Trust Pilot Project. Technical Report. Rhode Island Sea Grant, Narragansett, RI.