

Making Data Work for You: Free Mapping Tools for Prioritization and Property Research

Ariel Maiorano

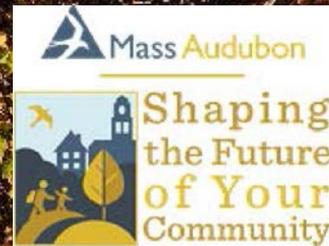
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Abby Hardy-Moss

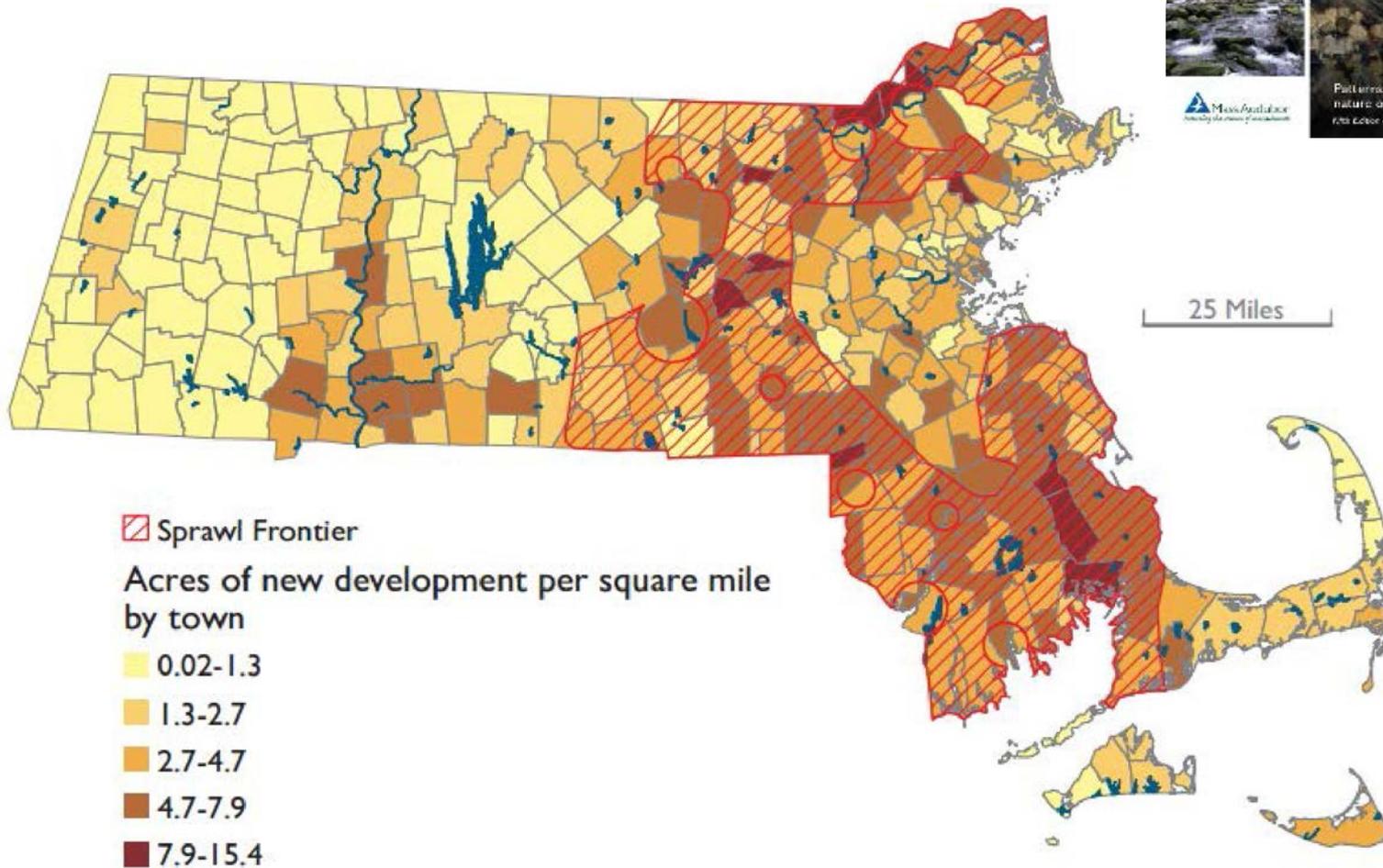
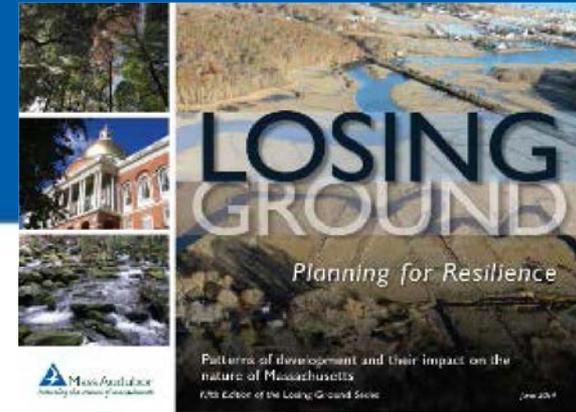
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Essex County Open Space Conference
March 25, 20 17

Development of MAPPR supported by
Open Space Institute Land Trust (OSILT) and the Lookout
Foundation.



Losing Ground



Losing Ground

As of 2013, **over half** of the land in Massachusetts had not yet been protected or developed.



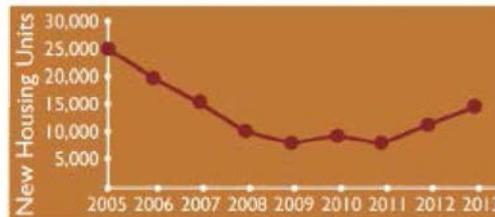
Recent Trends

During the period of 2005-2013,

13 acres of land per day were **developed** (on average).

41 acres of land per day were **protected** (on average).

The rate of development plummeted during the recent **Great Recession**. Lately, however, **new housing permits** are on the rise.



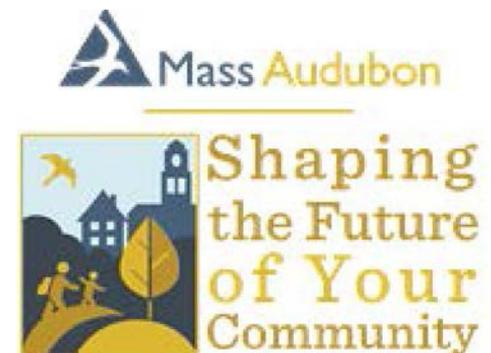
Planning for the Future

54% of the remaining unprotected land is of **high conservation value.** (BioMap 2)

As development pressures increase, we can plan our land use for both a **strong economy** and a **safe, healthy environment.**

Shaping the Future of Your Community

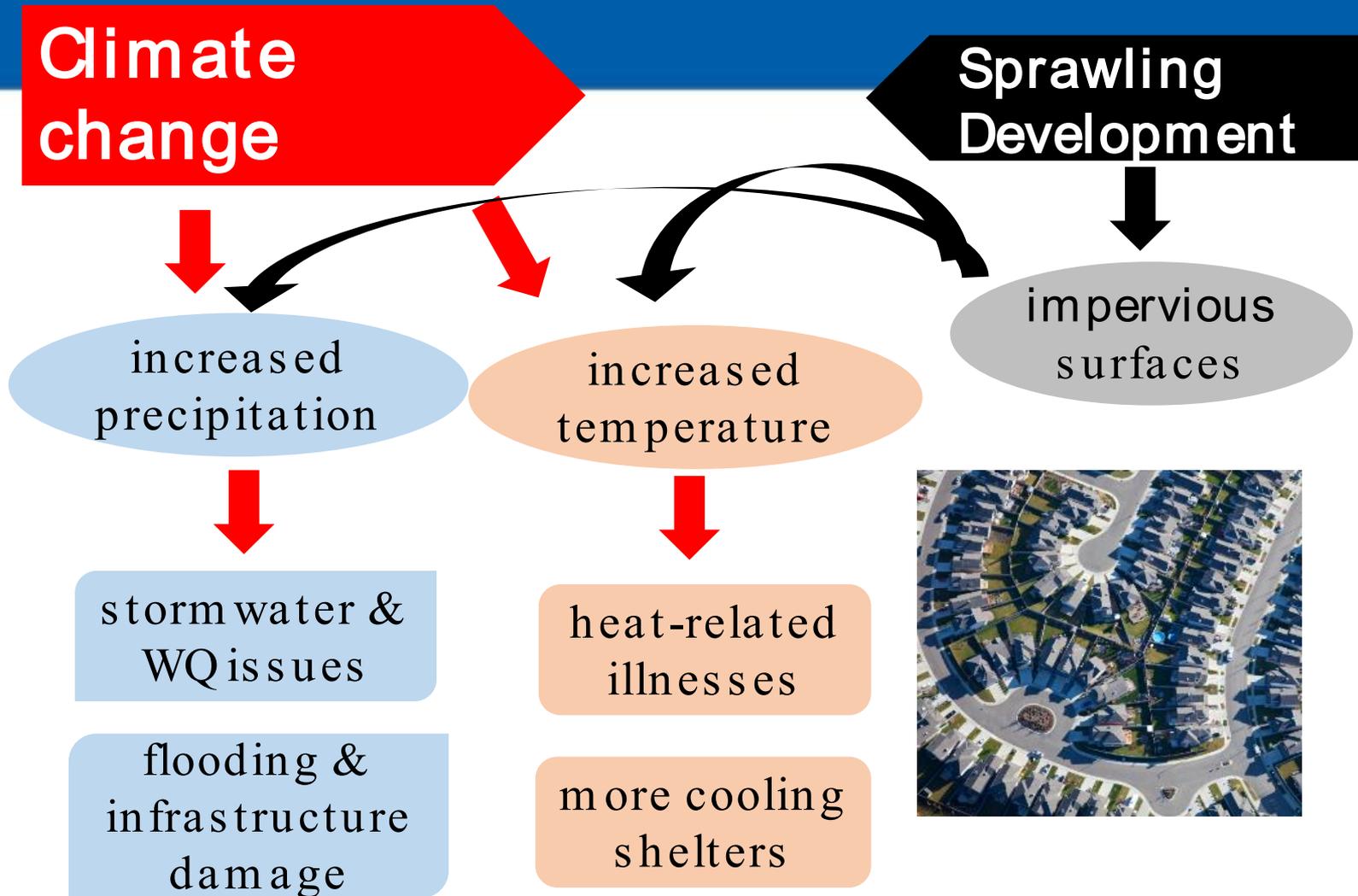
- Created in response to Losing Ground
- Works with communities to implement sustainable development and increase conservation efforts – especially in “sprawl frontier”
- Facilitation: supports local stakeholders with tools and information



Climate Change



Climate and Land Use Connection



Climate Change Adaptation

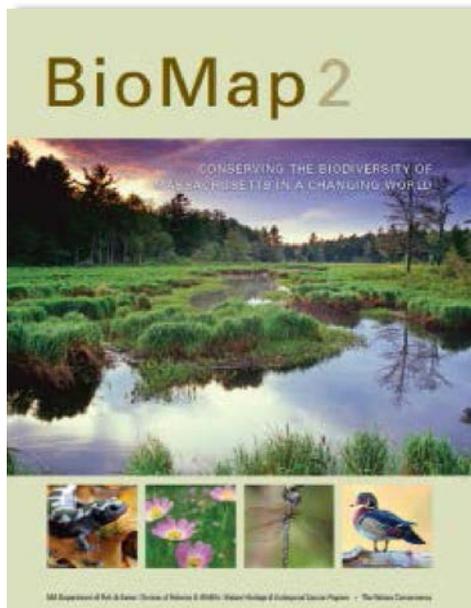
- How do we help ecosystems and species cope with and adapt to these changes?
- How do we avoid or reduce impacts to infrastructure?

**Conserve resilient places –
and restore resilience where it's lost**

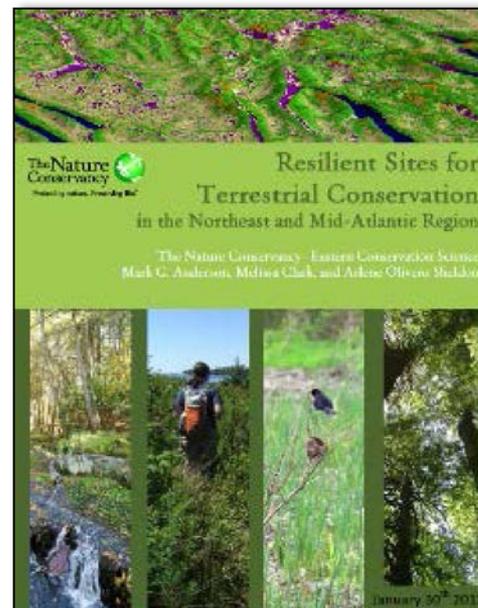


Where are these resilient places?

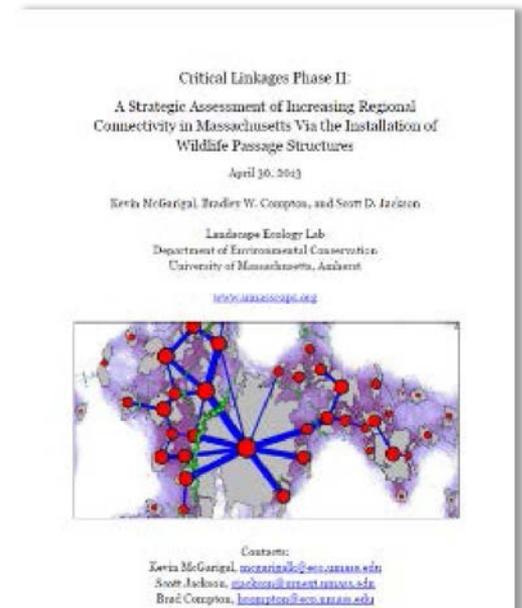
MAPPR: Mapping And Prioritizing Parcels for Resilience



BioMap2:
Habitat, Biodiversity



TNC Resilience:
Climate Adaptation



Critical Linkages:
Ecological Connectivity

- Parcel Size
- Block Size

- Adjacent to Protected Land
- Under-protected Settings

Resilience: The capacity to absorb disturbance and reorganize while retaining the same basic function, structure and identity.

Landscape Complexity

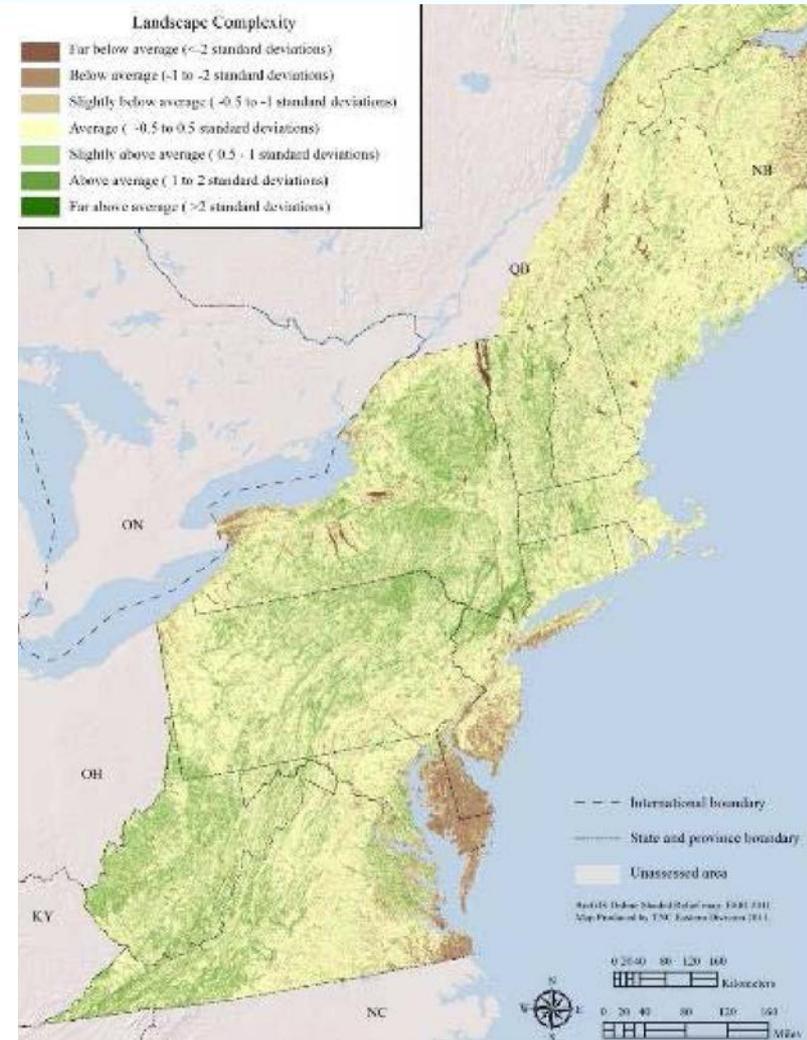
Number of microclimates are found in the area

Landscape Connectivity

Possibility for individuals and populations to move among these microclimates



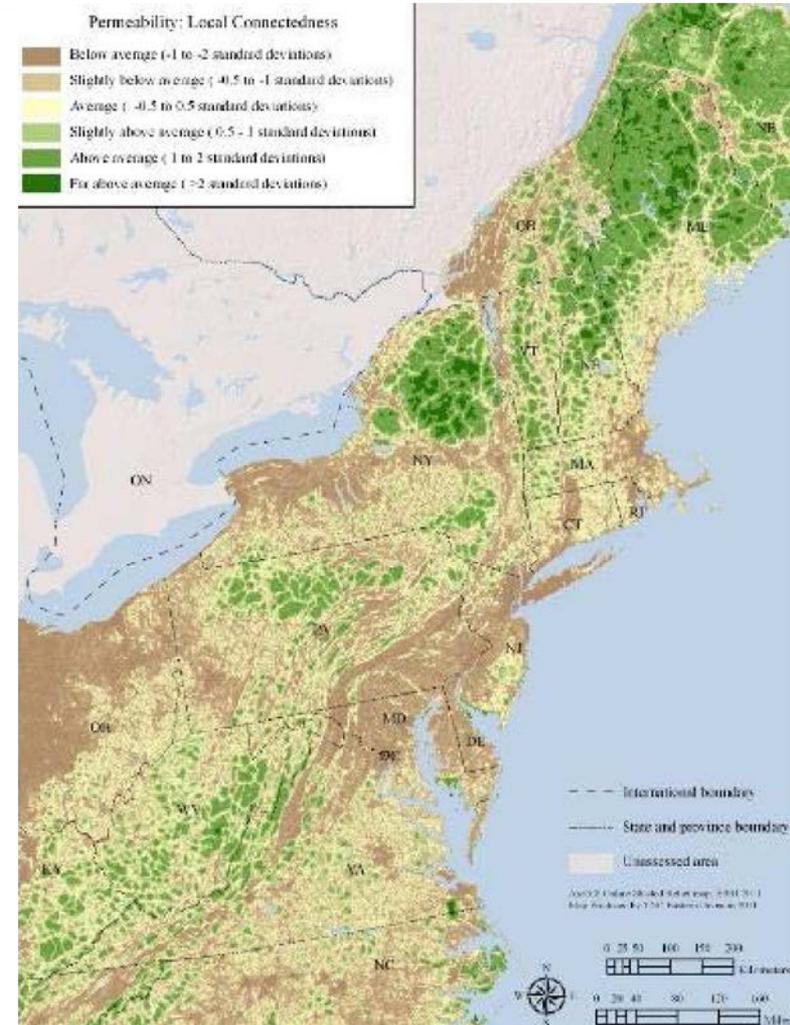
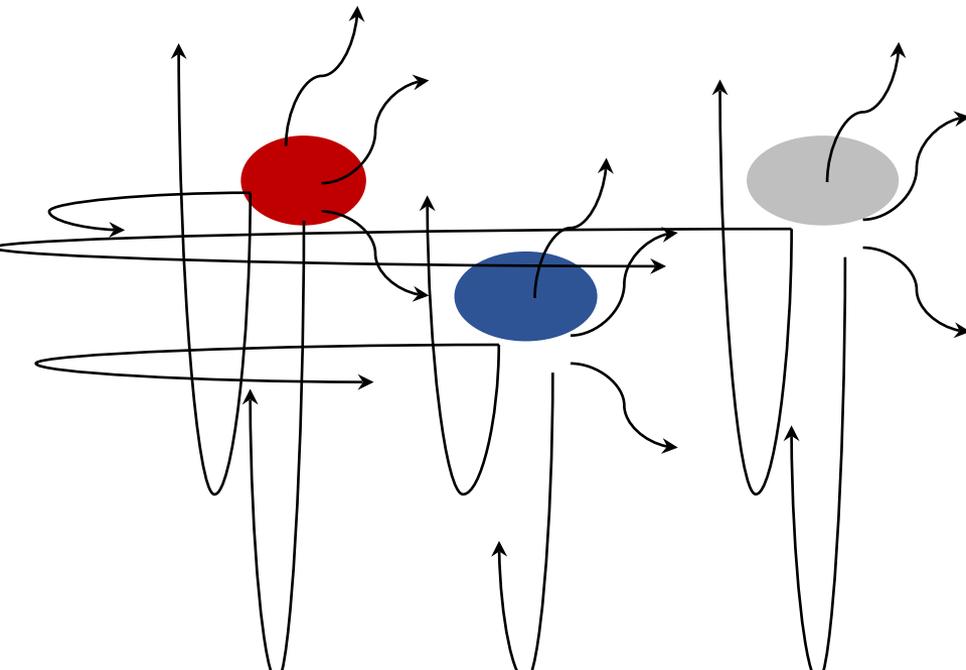
Landscape Complexity





Landscape Connectivity

The degree to which the landscape supports movement



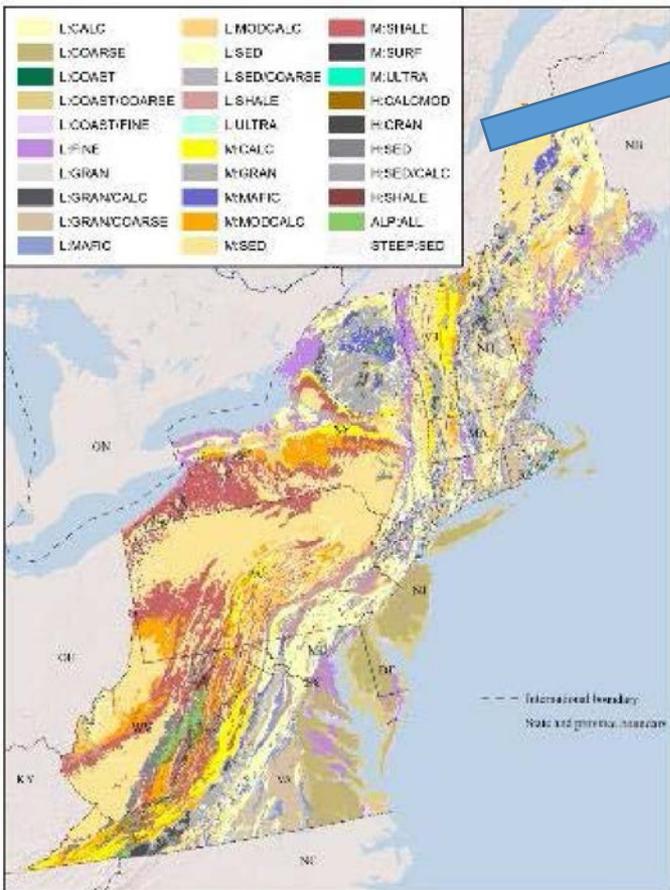


Complexity + Connectivity: Resilient Network that Represent a Full Suite of Biodiversity

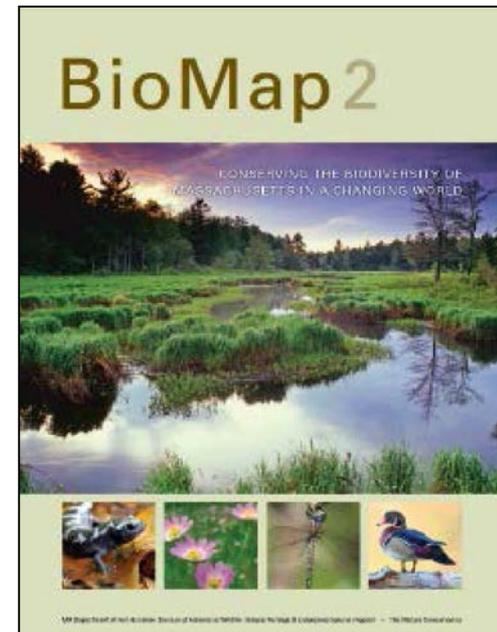
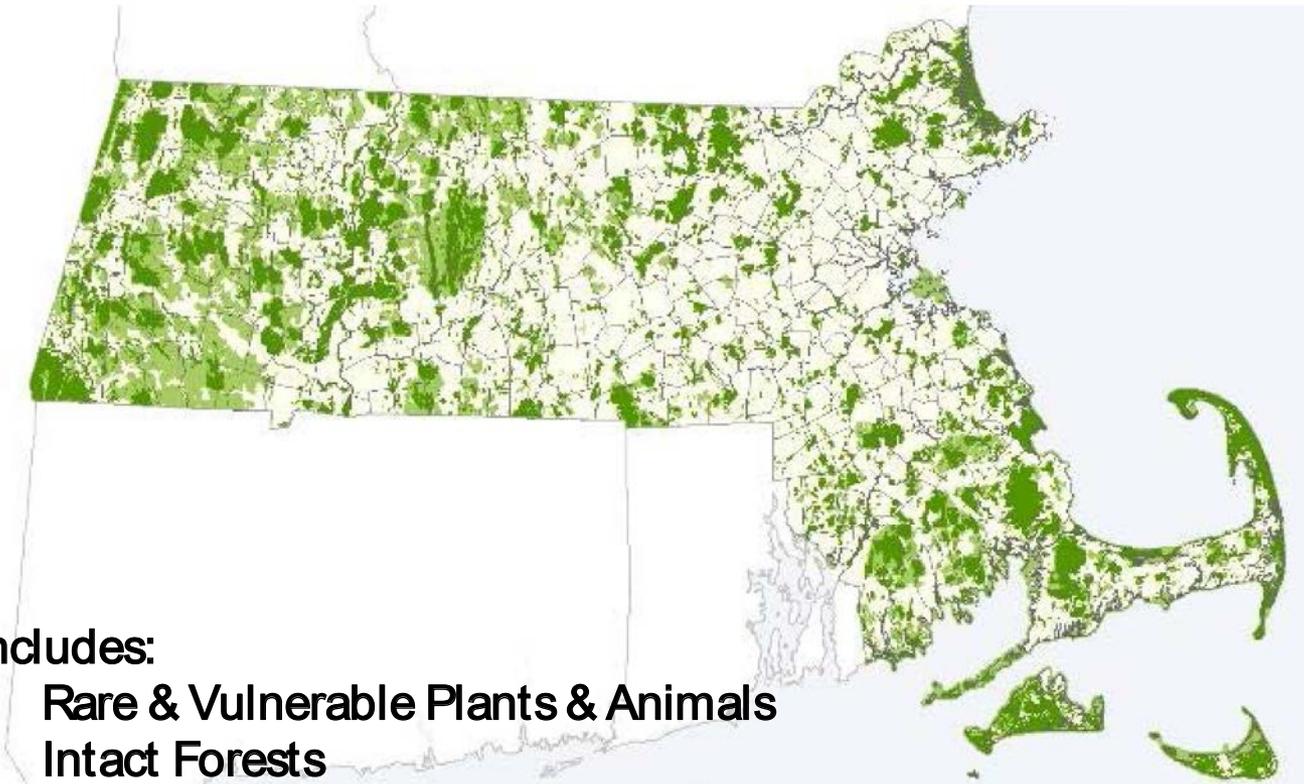
30 Settings:
Geology & Elevation

Resilience =
Complexity
+
Connectivity
within each setting

Goal:
Protect the stage,
not the actors



BioMap2



Includes:

Rare & Vulnerable Plants & Animals

Intact Forests

Intact Wetlands

Intact Rivers

Vernal Pools

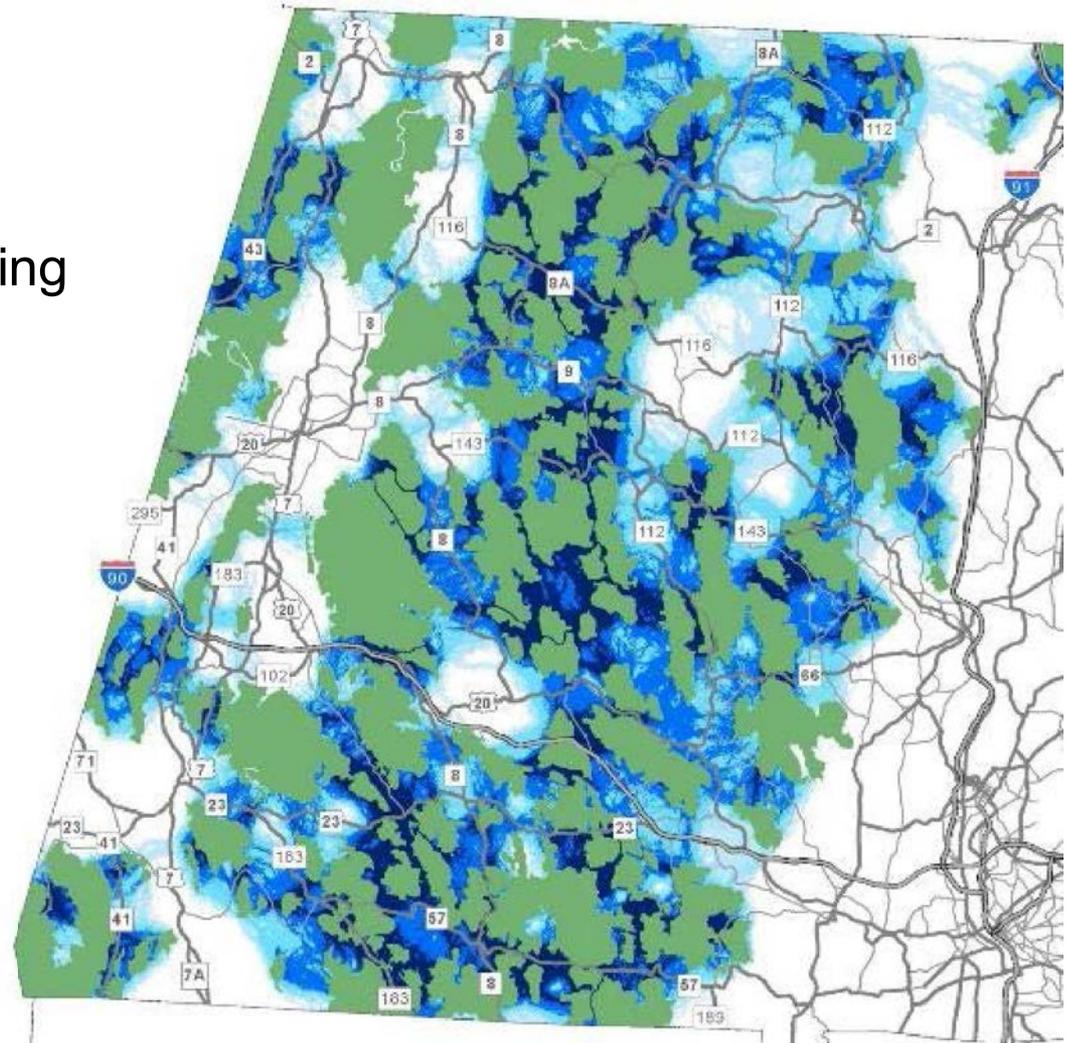
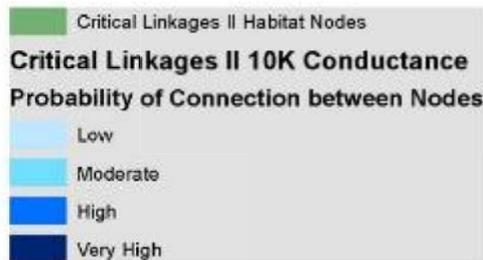
Intact Landscape

...long-term persistence of species and their habitats, natural communities, and a diversity of ecosystems



Critical Linkages II

- **Conservation Nodes**
 - Conservation Areas
- **Conductance**
 - Probability of animals moving



UMASS
AMHERST

The Nature
Conservancy 

MASS HIGHWAY

OUR CONSERVATION WORK

Wildlife Research & Conservation

Land Conservation

Ecological Management

Education & Community Outreach

Sustainable Planning & Development

Losing Ground Report

Shaping the Future of Your Community Program

Preservation & Development Toolkit

Guidebook to Involvement in Your Community

Cost Effective Low Impact Development (LID)

MAPPR Project

Schools

Partners

Visitor Experience

Mapping & Prioritizing Parcels for Resilience Project



Mass Audubon, in partnership with The Nature Conservancy and LandVest, developed **Mapping and Prioritizing Parcels for Resilience (MAPPR)** to allow Massachusetts conservationists to rapidly identify specific parcels that, if protected, could contribute the most to achieving land protection goals.

While land trusts, towns, and agencies have long relied on a wide range of maps and data sets to identify priority areas for land protection to meet their goals, MAPPR takes advantage of newly available digital parcel data to identify specific land protection opportunities. MAPPR also helps land trusts, towns, and agencies to easily define and refine their priorities, discover new opportunities, and extract the data necessary to take the next steps in land

Resources

MAPPR Tool

Resources

Questions

For more information:
MAPPR@massaudubon.org

Project Partners





MAPPR: 3 Steps

1

Select a study area

- Town, county, or watershed

2

Choose model

- Choose a pre-calculated model (balanced, resilience, aquatic, or biological)
- Choose specific model

3

Run & Review Results

- Review results, including priority scoring and parcel ownership
- Adjust optional filters and constraints

Values: Resilient Sites for Conservation, Critical Linkages Priorities, BioMap2 Core Habitat, Parcel Size, Block Size, Adjacent to Protection



1. WHERE

Choose a study area

MAPPR Tool

Mapping and Prioritizing Parcels for Resilience (MAPPR) allows land conservationists to identify the parcels within an area of interest that are the highest priorities for protection based on habitat quality, climate change resilience, and other metrics such as parcel size and adjacency to existing protected parcels. Analyses are based on open space data and assessor parcel data available through MassGIS as of April 2015. As a result, ownership information and protection status may be inaccurate for some parcels. Check with your town for the most up-to-date information. Please email any comments to mappr@massaudubon.org.

Instructions [show](#)

Example Run

Study Area [?](#)

None selected - select one now.

Previously Used Models

- Balanced Model
- Resilience Model
- Aquatic Model
- Biological Model

Assign Model Values [?](#)

- | | |
|--|--------------------------|
| <input type="checkbox"/> Resilient Sites for Conservation | <input type="checkbox"/> |
| <input type="checkbox"/> Critical Linkages Priorities | <input type="checkbox"/> |
| <input type="checkbox"/> BioMap2 Core Habitat | <input type="checkbox"/> |
| <input type="checkbox"/> BioMap2 Priority Natural Communities | <input type="checkbox"/> |
| <input type="checkbox"/> BioMap2 Forest Cores | <input type="checkbox"/> |
| <input type="checkbox"/> BioMap2 Vernal Pool Cores | <input type="checkbox"/> |
| <input type="checkbox"/> BioMap2 Wetland Cores | <input type="checkbox"/> |
| <input type="checkbox"/> BioMap2 Aquatic Cores | <input type="checkbox"/> |
| <input type="checkbox"/> BioMap2 Species of Conservation Concern | <input type="checkbox"/> |
| <input type="checkbox"/> BioMap2 Critical Natural Landscape | <input type="checkbox"/> |
| <input type="checkbox"/> BioMap2 Landscape Blocks | <input type="checkbox"/> |
| <input type="checkbox"/> BioMap2 Coastal Adaptation | <input type="checkbox"/> |
| <input type="checkbox"/> Parcel Size | <input type="checkbox"/> |
| <input type="checkbox"/> Block Size | <input type="checkbox"/> |
| <input type="checkbox"/> Adjacent to Protection | <input type="checkbox"/> |
| <input type="checkbox"/> Under-represented Settings | <input type="checkbox"/> |

Ref Layer [?](#)

Filter by Parcel Size [?](#)

select min parcel size [v](#)

Filter by Block Size (Unprotected Acres) [?](#)

select min block size [v](#)

Constrain Model Only Adjacent to Protection [?](#)

Misc. Controls [?](#)

- Show parcel priority ranks
- Show parcel export IDs
- Hide parcel labels
- Parcel priority rank colors
- Mass GIS Open Space Layer
- Blocks of Contiguous Parcels

Map Type Selector [?](#)

- Street Map
- Satellite

[Run Model >](#)

Study Area [?](#)

Choose a category

Town

County

Watershed

Study Area [?](#)

select a town [v](#) X

- Barnstable
- Barre
- Becket
- Bedford
- Belchertown
- Bellingham
- Belmont
- Berkley
- Berlin
- Bernardston
- Beverly
- Billerica
- Blackstone
- Blandford
- Bolton
- Boston
- Bourne**
- Boxborough
- Boxford
- Boylston

Coming soon: Regional Land Trusts and Mass DFW Districts

2. WHAT

Choose a pre-calculated model

MAPPR Tool

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Instructions [show](#)

Examples [show](#)

Study Area [?](#)

None selected - select one now.

Pre-calculated Models [?](#)

- Balanced Model
- Resilience Model
- Aquatic Model
- Biological Model

Assign Model Values [?](#)

- Resilient Sites for Conservation
- Critical Linkages Priorities
- BioMap2 Core Habitat
 - BioMap2 Priority Natural Communities
 - BioMap2 Forest Cores
 - BioMap2 Vernal Pool Cores
 - BioMap2 Wetland Cores
 - BioMap2 Aquatic Cores
 - BioMap2 Species of Conservation Concern
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- Block Size
- Adjacent to Protection
- Under-represented Settings

Ref Layer [?](#)



Filter by Parcel Size [?](#)

select min parcel size ▾

Filter by Block Size (Unprotected Acres) [?](#)

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Map Type Selector [?](#)

- Street Map
- Satellite

[Run Model >](#)

Pre-calculated Models [?](#)

- Balanced Model
- Resilience Model
- Aquatic Model
- Biological Model

2. WHAT

Or choose your own adventure

MAPPR Tool

Mapping and Prioritizing Parcels for Resilience (MAPPR) allows land conservationists to identify the parcels within an area of interest that are the highest priorities for protection based on habitat quality, climate change resilience, and other metrics such as parcel size and adjacency to existing protected parcels. Analyses are based on open space data and assessor parcel data available through MassGIS as of April 2015. As a result, ownership information and protection status may be inaccurate for some parcels. Check with your town assessor for the most up-to-date information. Please email any comments to mappr@massaudubon.org.

Instructions [show](#)

Examples [show](#)

Study Area [?](#)

None selected - select one now.

Pre-calculated Models [?](#)

- Balanced Model
- Resilience Model
- Aquatic Model
- Biogeographical Model

Assign Model Values [?](#)

Ref Layer [?](#)

- Resilient Sites for Conservation
- Critical Linkages Priorities
- BioMap2 Core Habitat
 - BioMap2 Priority Natural Communities
 - BioMap2 Forest Cores
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Assign Model Values [?](#)

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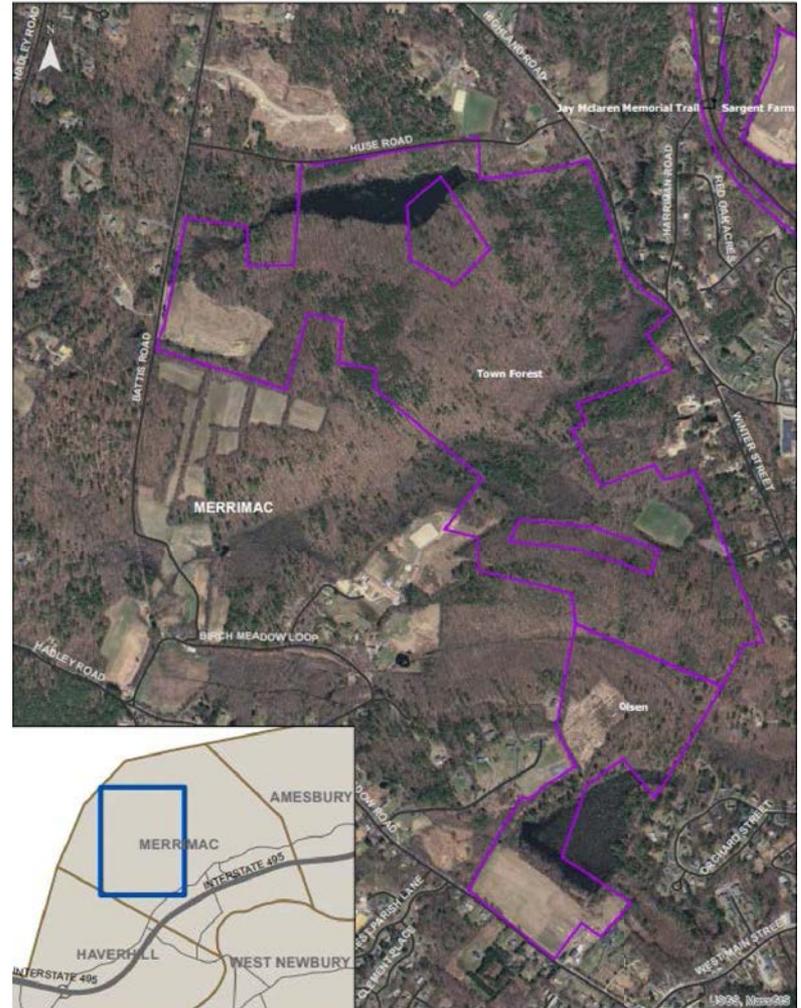
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Coming soon: Prime Farmland, Surface Water Protection Zones, and Wellhead Protection Areas

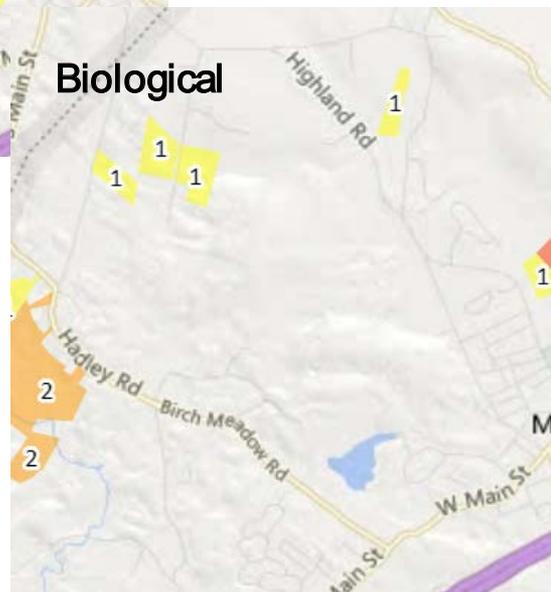
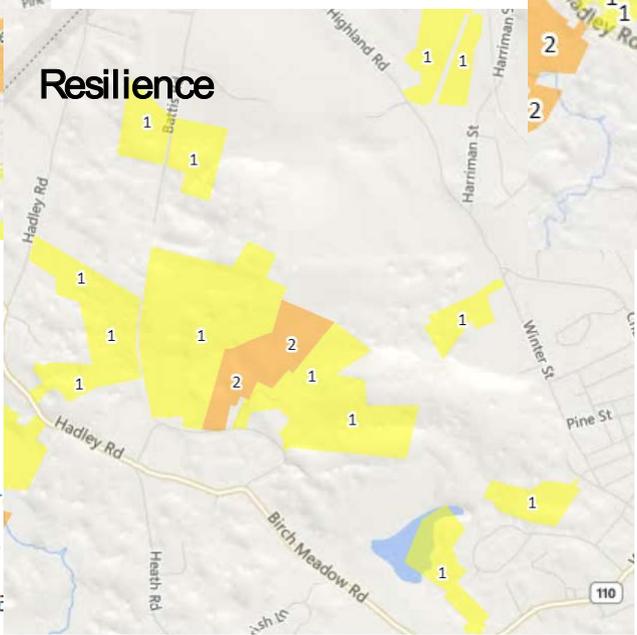
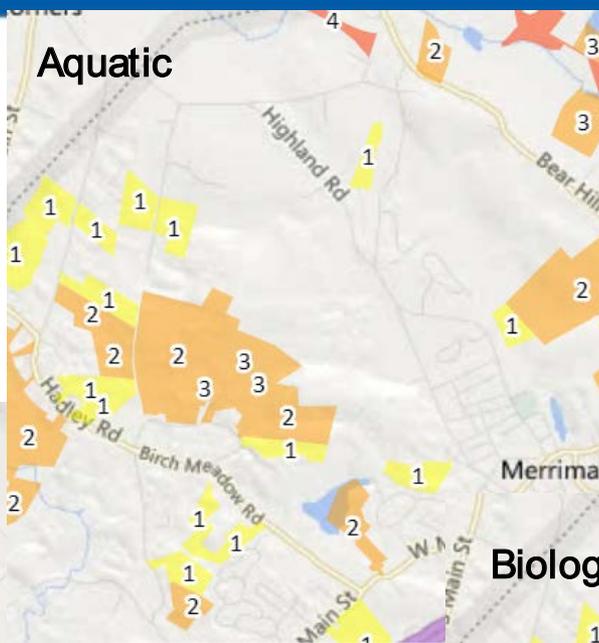
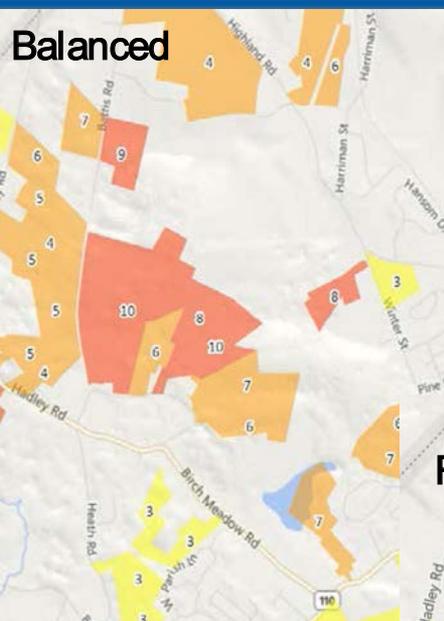
Let's Try An Example Merrimac Town Forest

We're going to run the 4
pre-calculated models

- Balanced
- Resilience
- Aquatic
- Biological



The different models Merrimac Town Forest



- Priority**
- High Priority Parcel
 - Medium Priority Parcel
 - Lower Priority Parcel

Parcel Labels: Numbers vs. Colors

Each parcel has both a color and a number

- **The COLOR is relative**

- Parcels are shown as yellow (low level priority), orange (medium), or red (high).

Note: parcels with no color may be existing protected areas (which will show up if “MassGIS Open Space Layer” is turned on), under one acre in size (not considered in this analysis), or did not show up for protection value.

- Depending on the region you’re searching within (town, county, watershed, DFW District, or Land Trust region), parcels may show as low, medium, or high priority.

- **The NUMBER is absolute**

- Each parcel that was included in the search will also show a number. The parcel is given a ranking of 0 - 3 for *each* input such as Critical Linkages or Resilient Sites for Conservation.
- There is no “goal number” to achieve – it depends on which inputs you’ve included. If you’re only searching for parcels with Critical Linkages, you can only get a score of 3 since there’s only one input. If you search for the balanced model, there are numerous inputs and the score could be higher, depending on which resources are present.
- *Regardless of the search area (town, county, etc.), the parcel number stays*

Additional considerations

MAPPR Tool

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Instructions [show](#)

Examples [show](#)

Study Area [?](#)

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Pre-calculated Models [?](#)

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- Aquatic Model
- Biological Model

Assign Model Values [?](#)

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Ref Layer [?](#)



Filter by Parcel Size [?](#)

select min parcel size ▾

Filter by Block Size (Unprotected Acres) [?](#)

select min block size ▾

Constrain Model Only Adjacent to Protection [?](#)



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- Street Map
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[Run Model >](#)

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Thank you!
massaudubon.org/mappr

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