

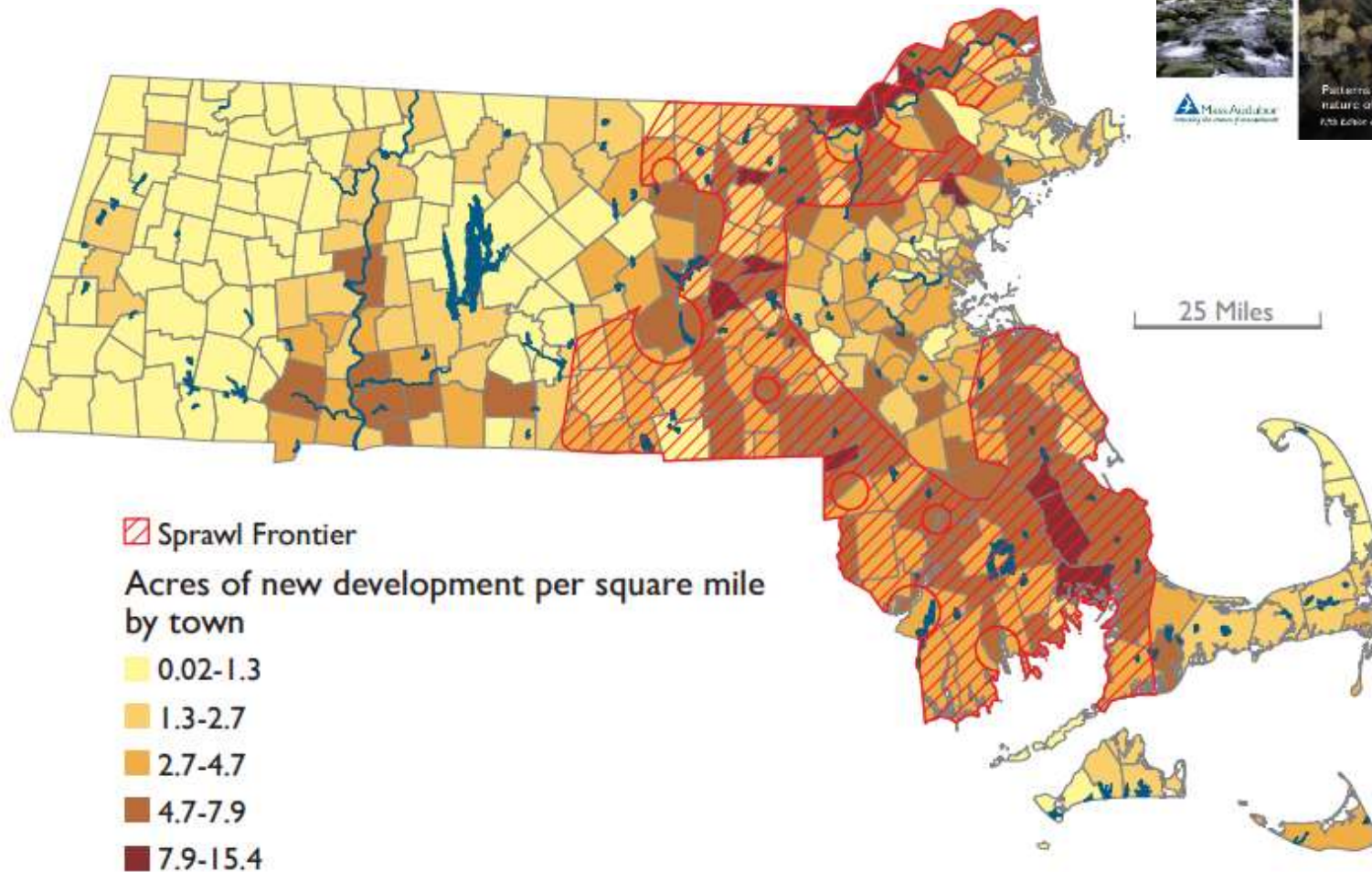
Making Mapping Simple: Three clicks to identifying conservation land with MAPPR

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scovino@massaudubon.org

MACC Conference
College of the Holy Cross
March 4, 2017

Losing Ground



Losing Ground

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



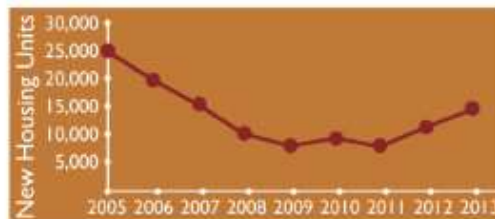
Recent Trends

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”



Climate Change



Climate Change Adaptation

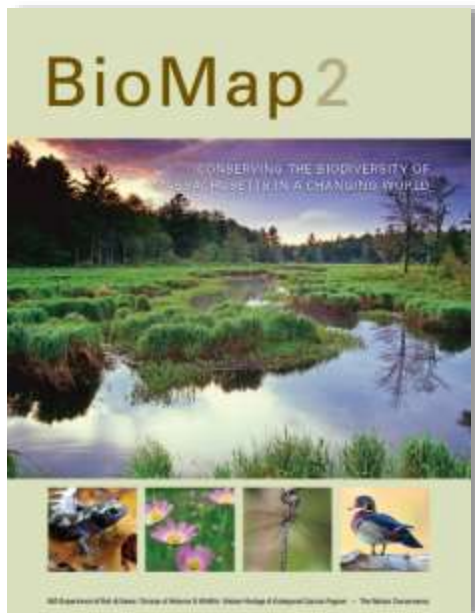
- How do we help ecosystems and species cope with and adapt to these changes?
- How do we avoid or reduce impacts to infrastructure?

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



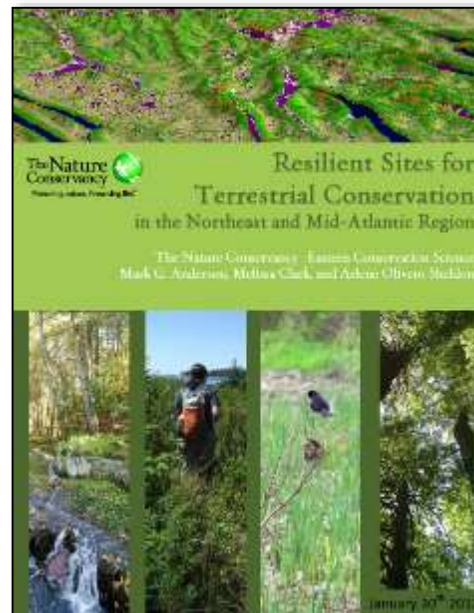
Where are these resilient places?

MAPPR: Mapping And Prioritizing Parcels for Resilience



BioMap2:
Habitat, Biodiversity

- Parcel Size
- Block Size



TNC Resilience:
Climate Adaptation

- Adjacent to Protected Land
- Under-protected Settings



Critical Linkages:
Ecological Connectivity

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

Landscape Complexity

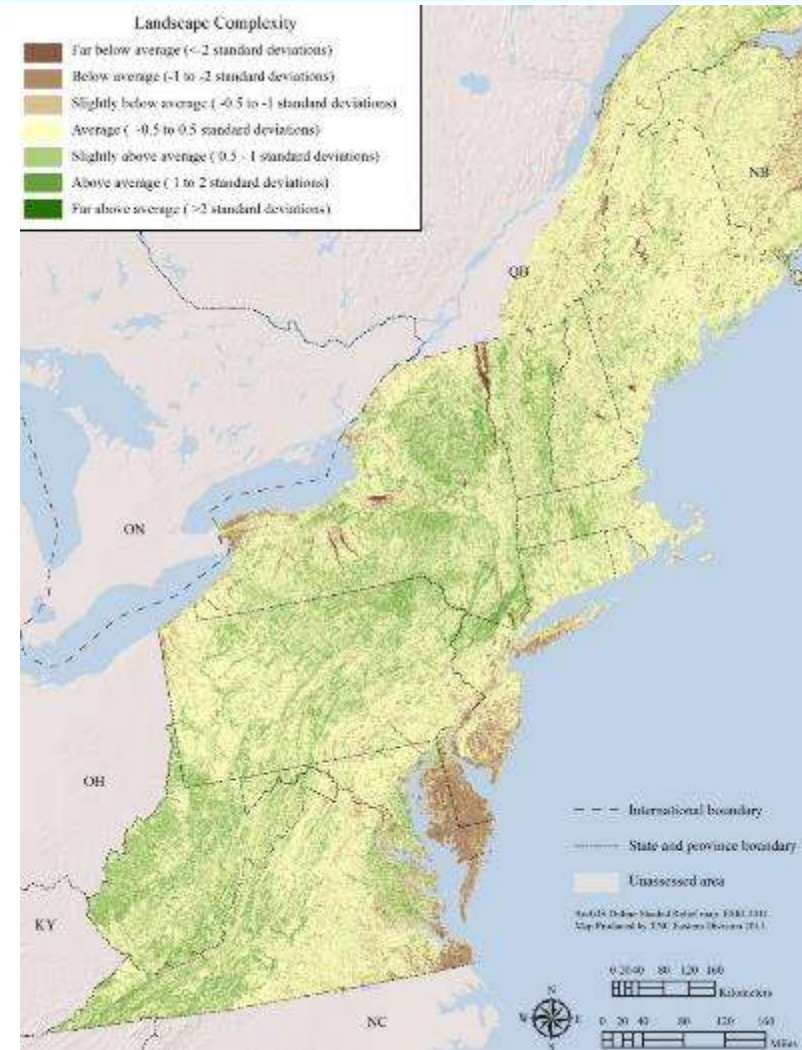
Number of microclimates are found in the area

Landscape Connectivity

Possibility for individuals and populations to move among these microclimates

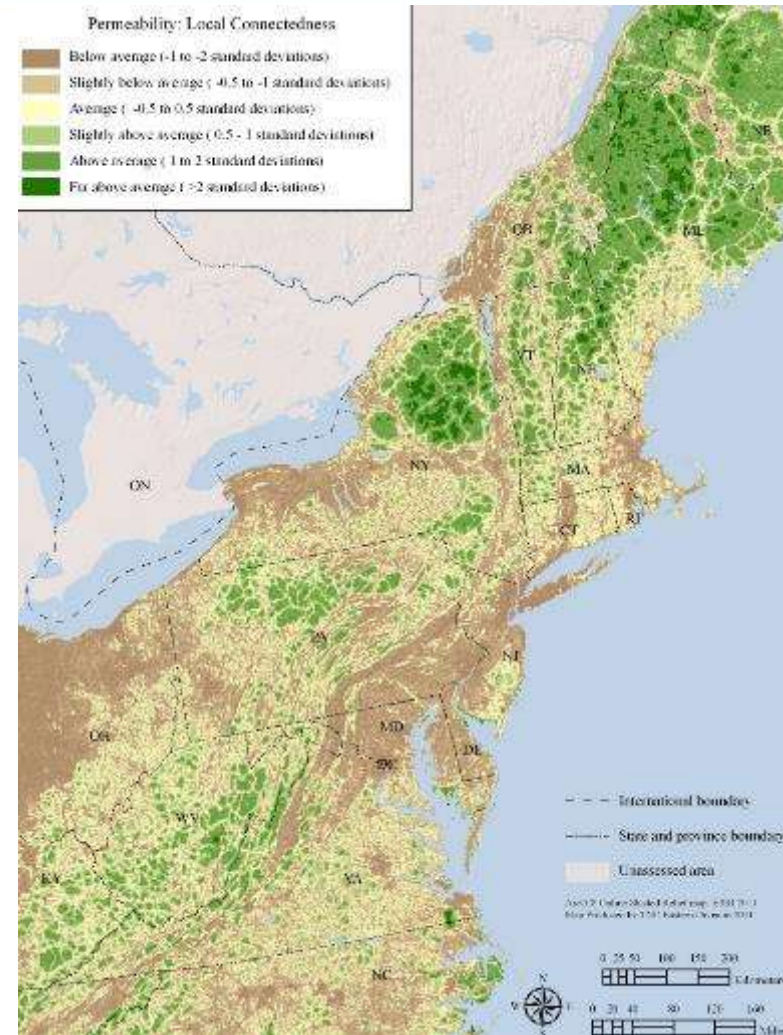
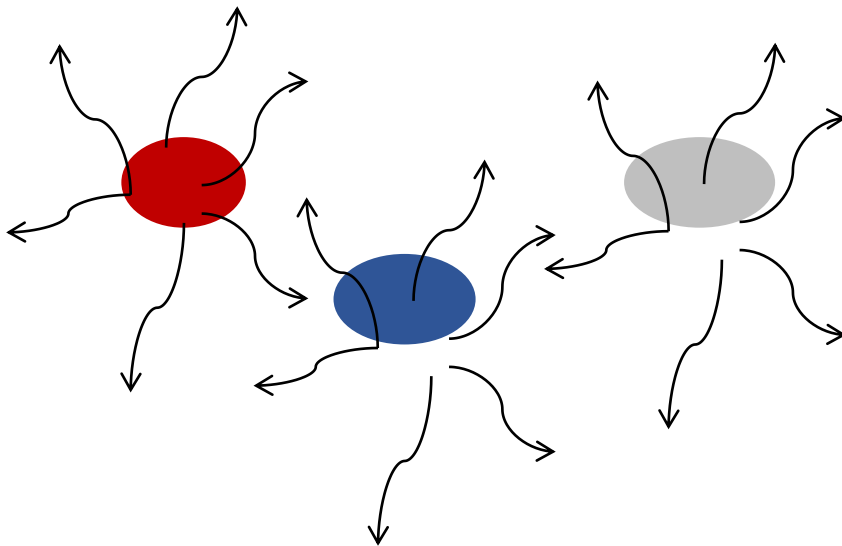


Landscape Complexity



Landscape Connectivity

The degree to which the
landscape supports
movement



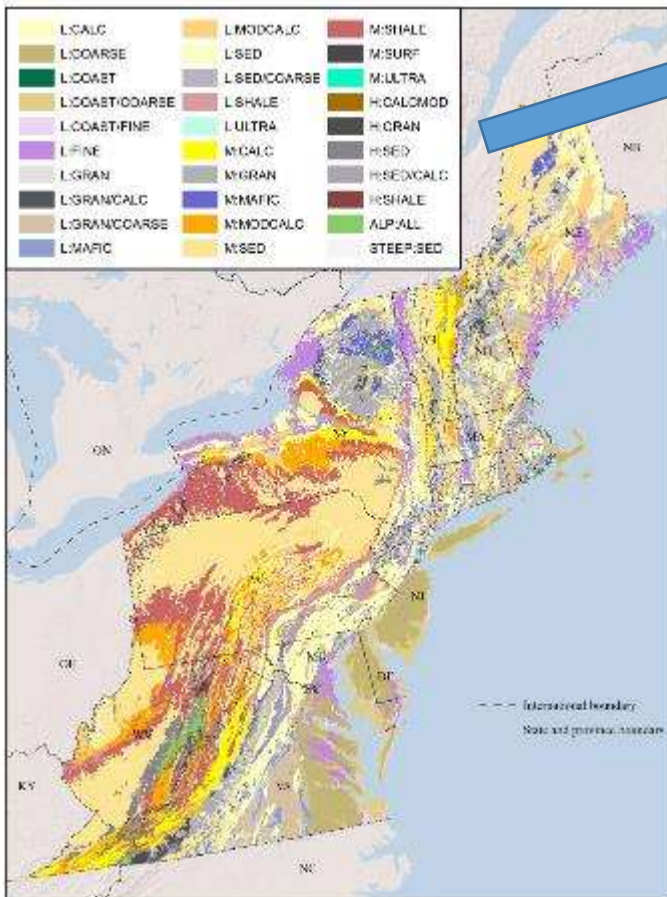
Complexity + Connectivity: Resilient Network that Represent a Full Suite of Biodiversity

30 Settings:
Geology & Elevation

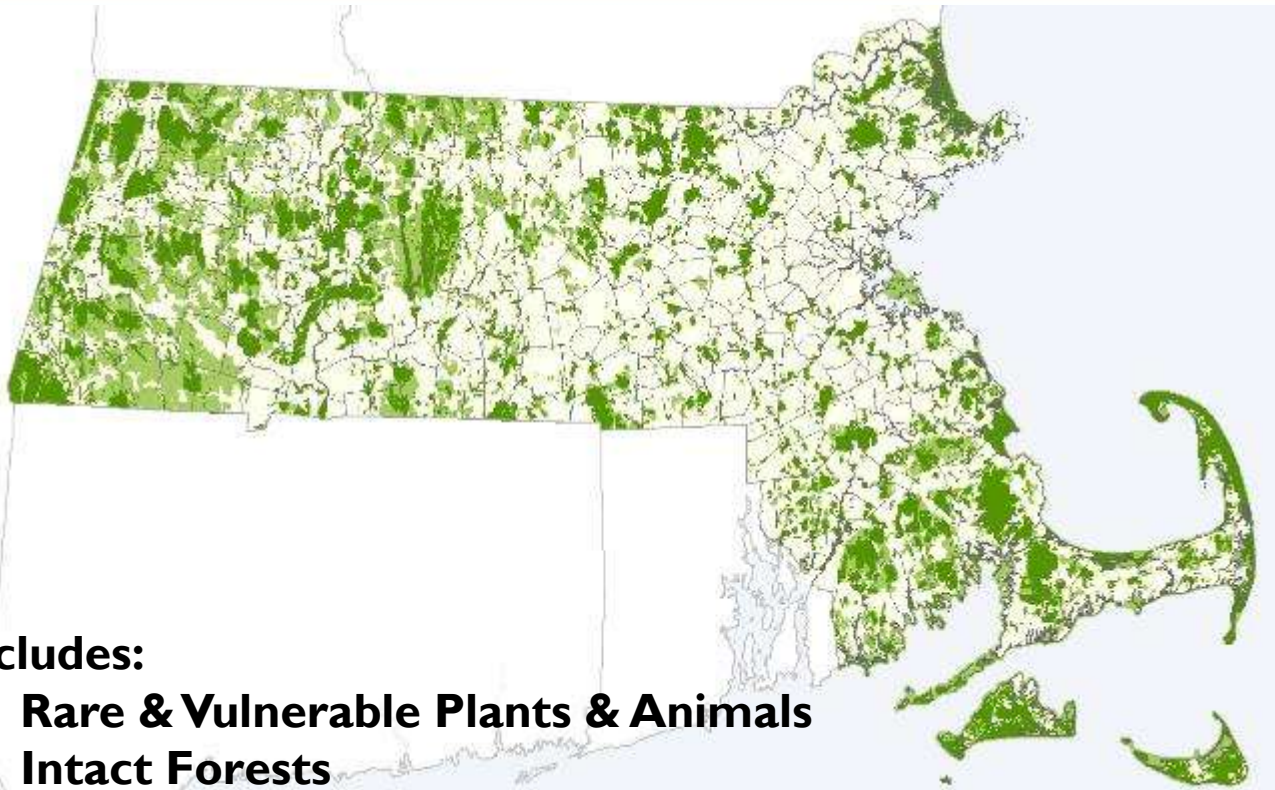
Resilience =
Complexity
+
Connectivity

within each setting

Goal:
**Protect the stage,
not the actors**



BioMap2



Includes:

Rare & Vulnerable Plants & Animals

Intact Forests

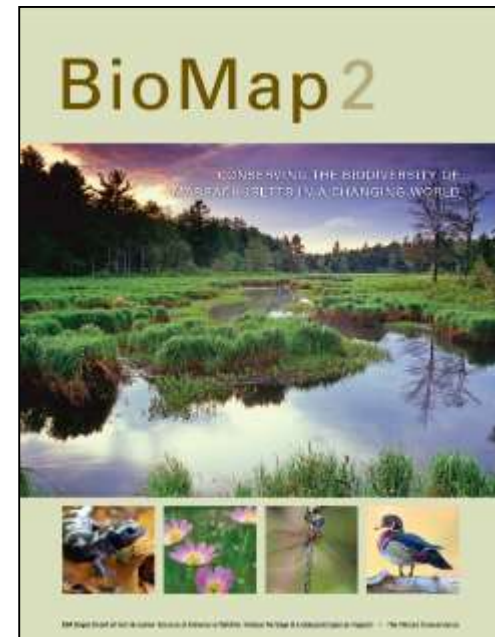
Intact Wetlands

Intact Rivers

Vernal Pools

Intact Landscape

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



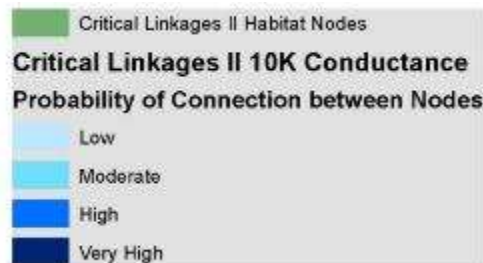
Critical Linkages II

- **Conservation Nodes**

- Conservation Areas

- **Conductance**

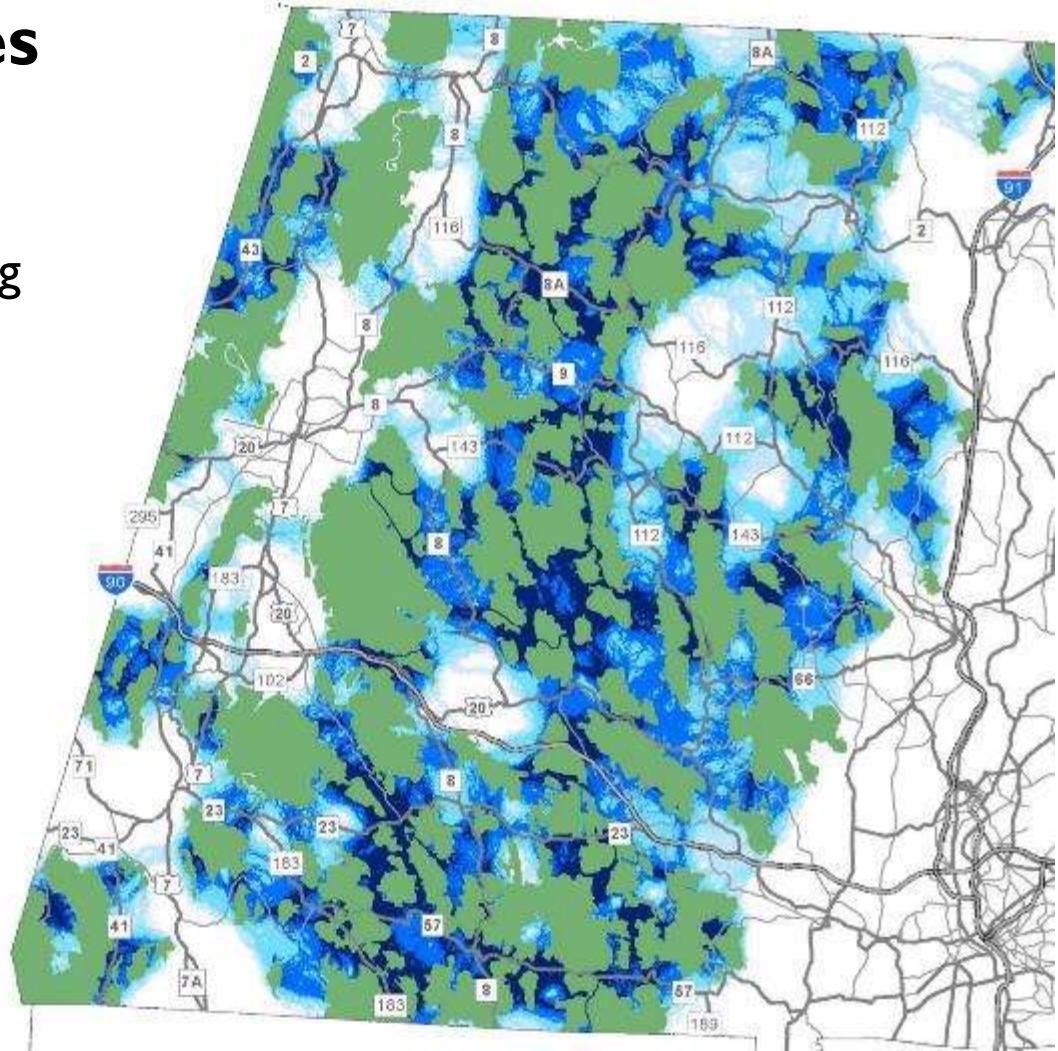
- Probability of animals moving



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



LandVest®

MAPPR: 3 Steps

I

Select a study area

- Town, county, or watershed

2

Choose model

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

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

Instructions & Examples

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
- ☐ Biological Model

Assign Model Values ?

- ☐ Resilient Sites for Conservation
- ☐ Critical Linkages Priorities
- ☐ BioMap2 Core Habitat
 - ☐ BioMap2 Priority Natural Communities
 - ☐ BioMap2 Forest Cores
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 - ☐ BioMap2 Landscape Blocks
 - ☐ BioMap2 Coastal Adaptation
- ☐ Parcel Size
- ☐ Block Size
- ☐ Adjacent to Protection
- ☐ Under-represented Settings

Ref Layer ?



Filter by Parcel Size ?

select min parcel size ▼

Filter by Block Size (Un

select min block size ▼

Constrain Model Only ?



Misc. Controls ?

- ☒ Show parcel p
- ☐ Show parcel e
- ☐ Hide parcel lab
- ☒ Parcel priority
- ☐ Mass GIS Oper
- ☐ Blocks of Cont

Map Type Selector ?

- ☒ Street Map
- ☐ Satellite

[Run Model >](#)

Instructions hide

Step 1 - Select your study area.

Step 2 -

Choose to run a custom model using one of our **Pre-calculated Models** or the **Assign Model Values** section.

Step 3 - Apply additional criteria/filters.

Step 4 - Click Run Model button.

Step 5 - After the model has run.

Examples hide

Example 1

Example 2

I. 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 [show](#)

Study Area [?](#)

None selected - select one now.

Previously Selected 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"/> |

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 [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

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 mappre@massaudubon.org.

Instructions [show](#)

Examples [show](#)

Study Area [?](#)

None selected - select one now.

Pre-calculated Models [?](#)

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- ☐ Biological Model

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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) [?](#)

select min block size ▾

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



Misc. Controls [?](#)



Map Type Selector [?](#)



Run Model >

Pre-calculated Models [?](#)

- ☒ Balanced Model
- ☐ Resilience Model
- ☐ Aquatic Model
- ☐ Biological Model

2. WHAT

Or choose your own adventure

MAPPR Tool

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Instructions [show](#)

Examples [show](#)

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Filter by Parcel Size [?](#)

select min parcel size

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

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

☐

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Map Type Selector [?](#)

- ☒ Street Map
- ☐ Satellite

Run Model [➔](#)

Assign Model Values [?](#)

Ref Layer [?](#)

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- ☐ Under-represented Settings

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

3. RUN

Run model and view results

MAPPR Tool

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[Instructions](#) [show](#)

[Examples](#) [show](#)

[Study Area](#) [?](#)

None selected [+ select one now.](#)

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[Ref Layer](#) [?](#)



[Filter by Parcel Size](#) [?](#)

select min parcel size ▾

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

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



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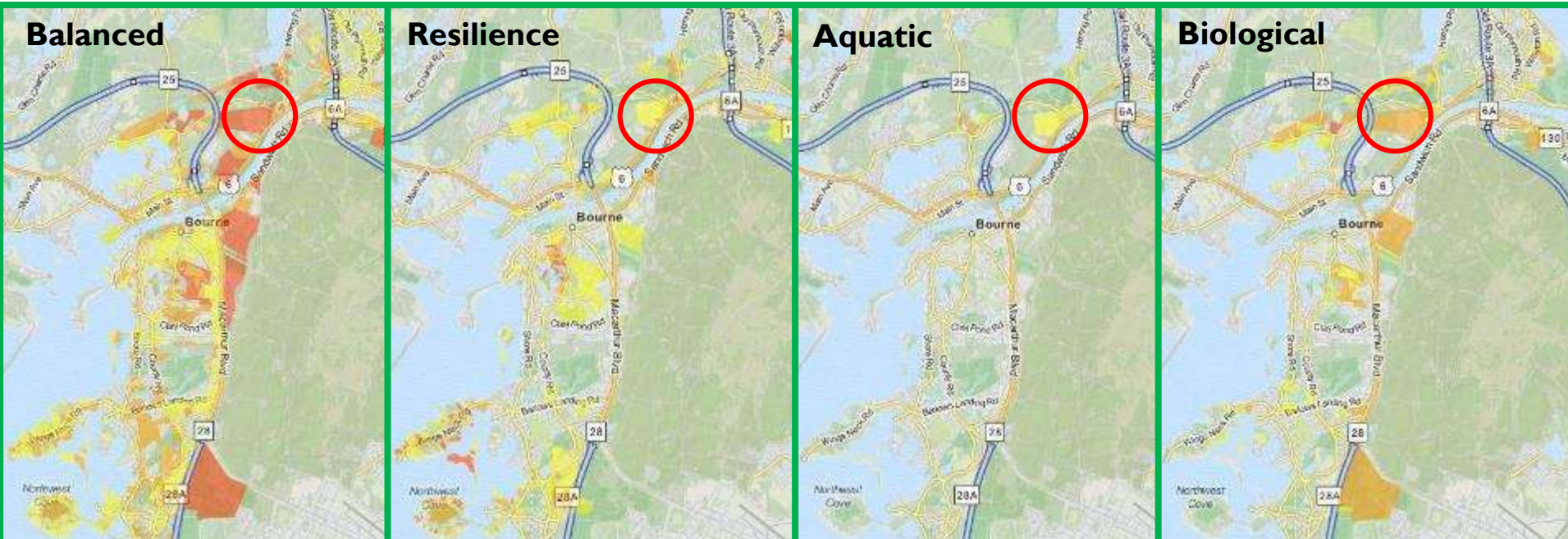
[Map Type Selector](#) [?](#)

- ☒ Street Map
- ☐ Satellite

[Run Model >](#)

The different models.

Example: Bourne

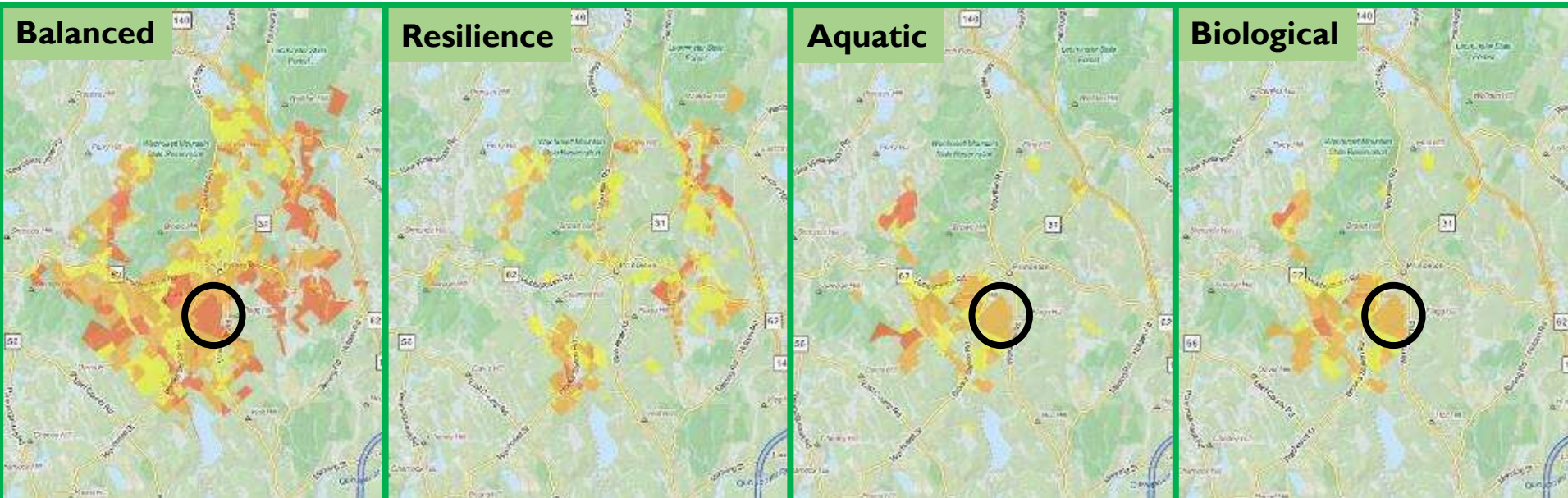


Priority

- High Priority Parcels
- Medium Priority Parcels
- Lower Priority Parcels

The different models.

Example: Princeton



Priority

- High Priority Parcels
- Medium Priority Parcels
- Lower Priority Parcels

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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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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- ☐ Mass GIS Open Space Layer
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Map Type Selector ?

- ☒ Street Map
- ☐ Satellite

Run Model >

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select min parcel size

Filter by Block Size (Unprotected Acres) ?

select min block size ▾

Constrain Model Only Adjacent to Protection

☐

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- ☒ Hide parcel labels
- ☒ Parcel priority rank colors
- ☐ Mass GIS Open Space Layer
- ☐ Blocks of Contiguous Parcels

Map Type Selector ⓘ

- ☒ Street Map
☐ Satellite

www.massaudubon.org/mappr

“**Health** is the capacity of the land for self-renewal.

Conservation is our effort to understand and preserve this capacity.”

- Aldo Leopold 1949