

# Seminar 15

## Planning Tools for Biodiversity Conservation

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Defenders of Wildlife

# Living Lands: Helping Land Trusts Conserve Biodiversity



# Outline

- Biodiversity planning
- State wildlife action plans
- Land use planning
- Biodiversity information
- Demonstration projects by land trusts

# Biodiversity Definition

- The variety of life and natural processes, including species, variation within species, communities, and ecosystems

# Protecting Communities by Protecting Wildlife

## Wildlife Protection

Reddish Egret

J. Michalak



Chinook Salmon *Mgjefferies'*



Karner Blue Butterfly  
*violetfilm*



Jefferson's Salamander  
*Man of Mud*



Ramsey's Leopard Frog  
*Steve Collins*



Badger  
*rlw5663*



Northern Bobwhite  
*Jim Sullivan*

## Habitat Protection

Wetlands      Forests      Grasslands  
Riparian Buffers      Permeable Surfaces  
Open Space      Streams      Rivers



J. Michalak



J. Michalak



J. Michalak



Photo Courtesy of NRCS

## Ecosystem Services

Climate Stabilization  
Carbon Sequestration  
Air Filtration  
Nutrient Cycling  
Recreation  
Pollination  
Water Purification  
Flood protection  
Freshwater Supplies  
Ground water recharge  
Improved agricultural productivity

Flavio  
Cruvinel  
Brandao's



tobyotter

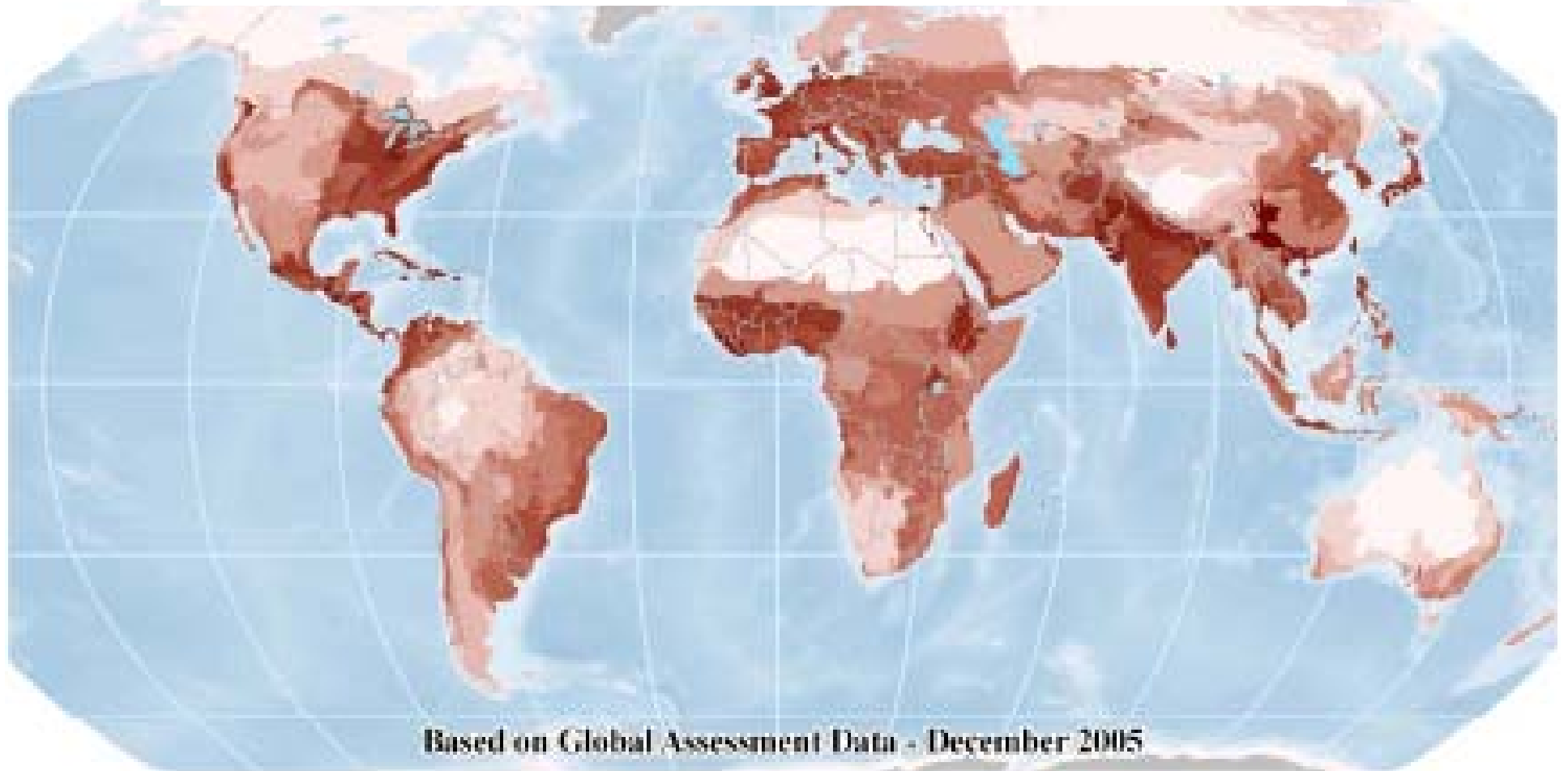


Photos  
Courtesy of  
NRCS

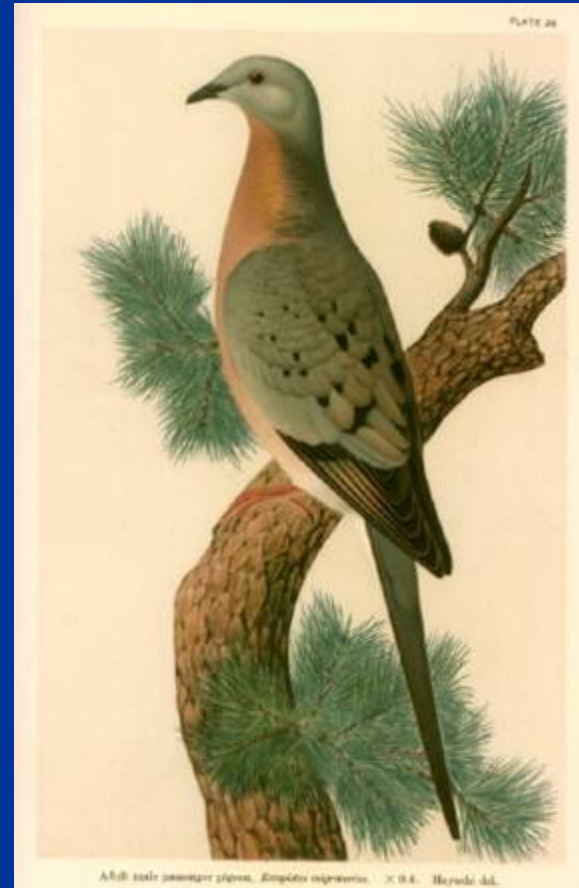


TheManWhoWasn'tThere

# Biodiversity Risk

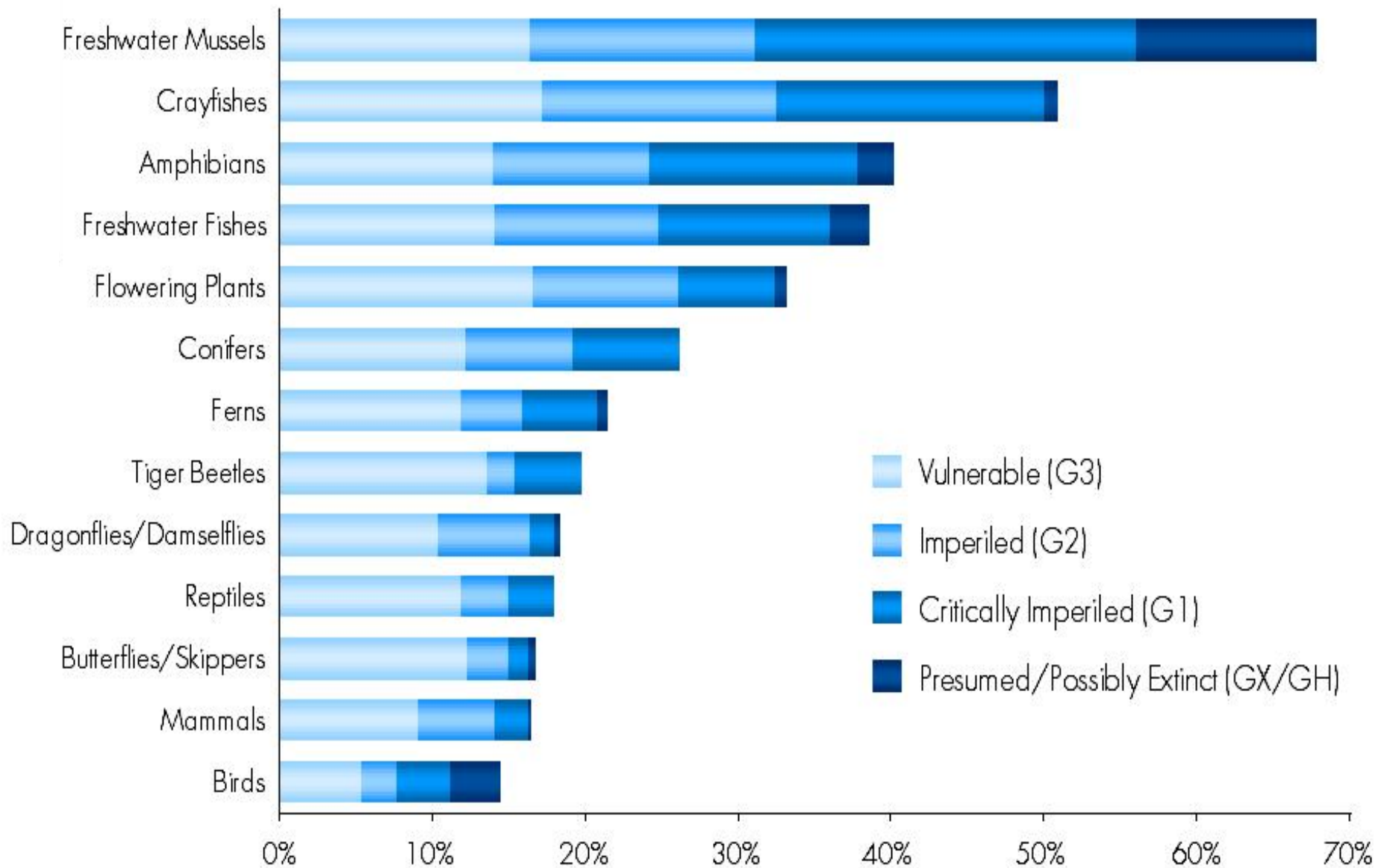


Of the 200,000 plants and animals now known to exist in the US, fully one-third are at risk, with 400 species already lost to extinction and another 100 missing.



Passenger Pigeon

# Proportion of US Species At-Risk

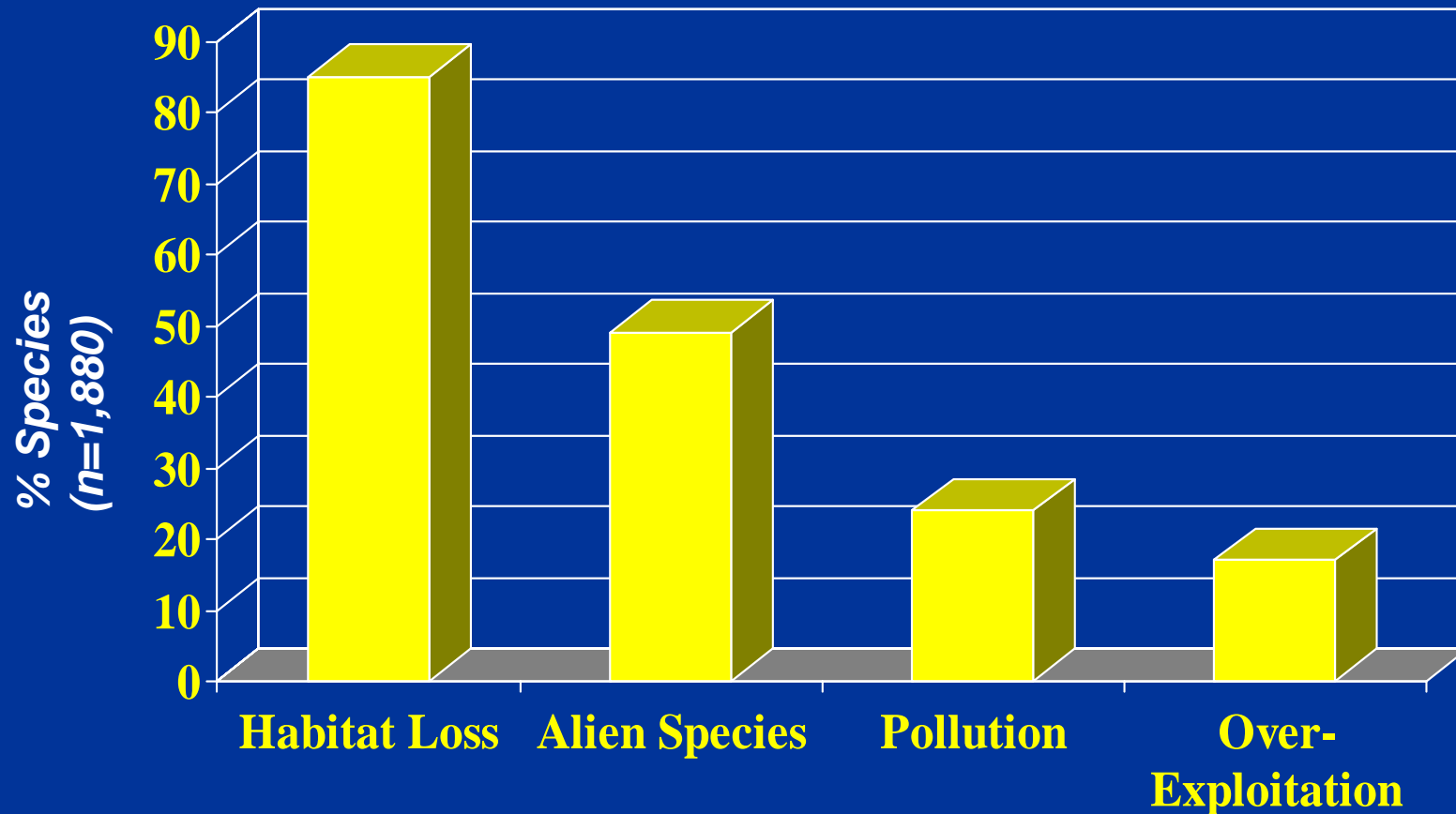


(Stein and Flack 2000)

Living Lands Project



# Habitat Loss: Leading Cause of Species Imperilment



Source: Precious Heritage, 2000

# Essential Questions

- Where should we work?  
(Conservation planning is a spatial exercise)
- What should we do when we get there?  
(Conservation Goals & Actions)
- What do we do first?  
(Prioritization)

# Background Information

- Inventory species, habitats, conditions:
  - Start with: What's there now?
  - Historical context: What was there?
  - Landscape context: What's nearby?

# Site Selection

- Identify high priorities at landscape level:
  - Representation (types of sites)
  - Resiliency (size of sites)
  - Redundancy (number of sites)
  - Restoration (habitat potential)

# Site Selection

- Priority areas should therefore include:
  - At-risk / rare habitats
  - Habitats for multiple species, including at-risk species
  - Functioning ecosystems

# Operating Assumption

- Actively managed network of lands dedicated to conservation
- Surrounded by semi-natural matrix lands, managed compatibly with conservation goals, and
- Supported by practices and regulations that keep overall conditions relatively healthy

# Conservation Networks

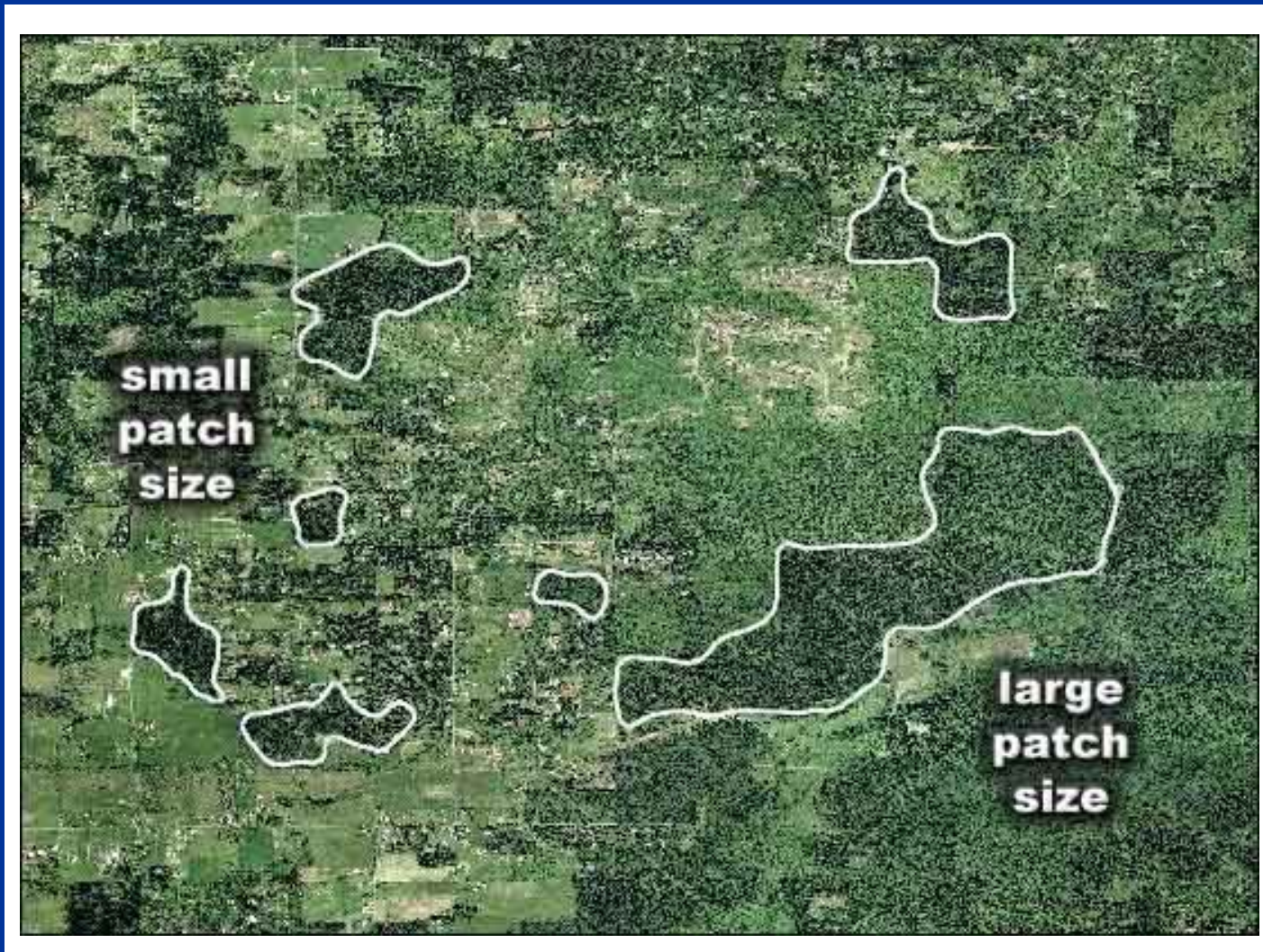
- A **conservation network** is a system of land and water that is managed for the primary purpose of conserving the representative ecological attributes of a region. A conservation network may include lands that are used for other purposes, like recreation, agriculture, or forestry, as long as the ecological values are given special consideration, and the overall configuration of the network accommodates the needs of native species.

# Conservation Network Design

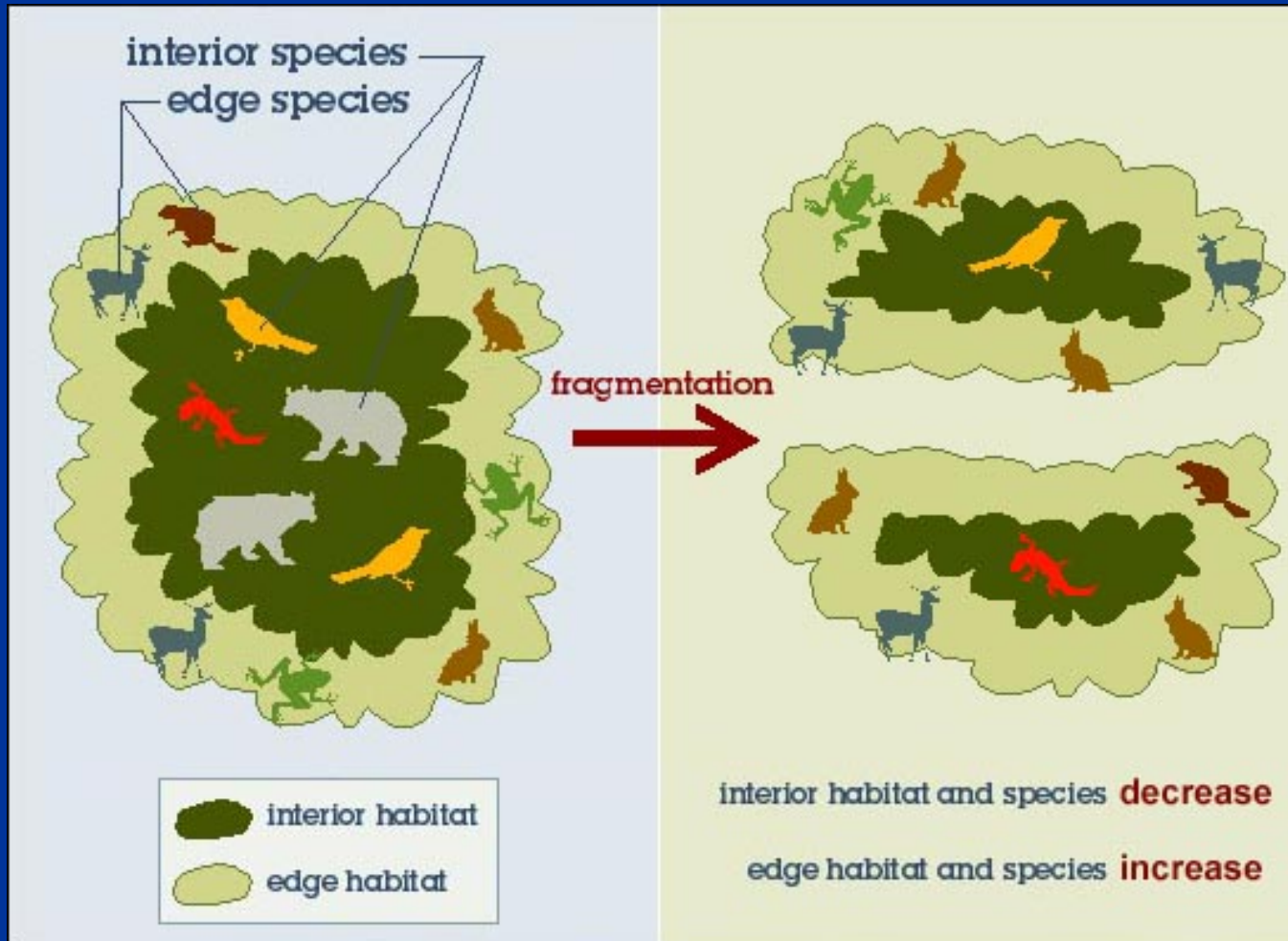
- Patch Size
  - Proximity
  - Connectivity
  - Patch Shape
- 
- Module on network design at:  
[www.biodiversitypartners.org](http://www.biodiversitypartners.org)



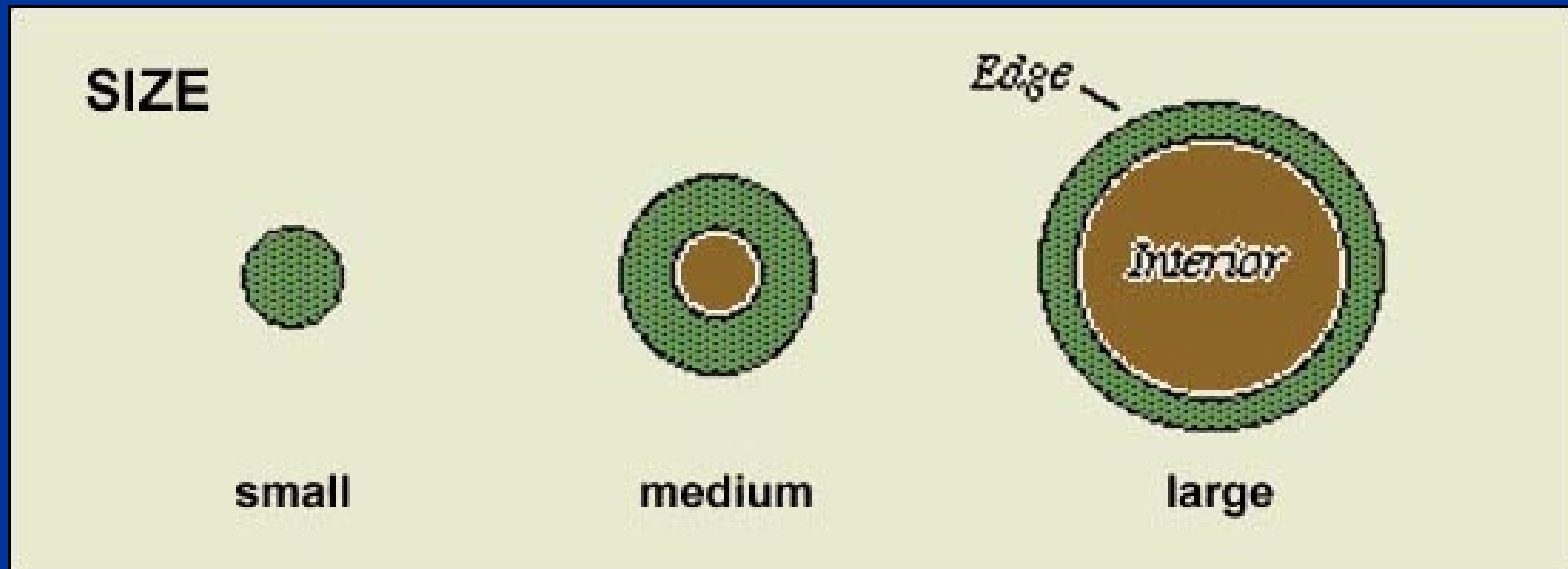
# Size



# Size: Habitat Fragmentation

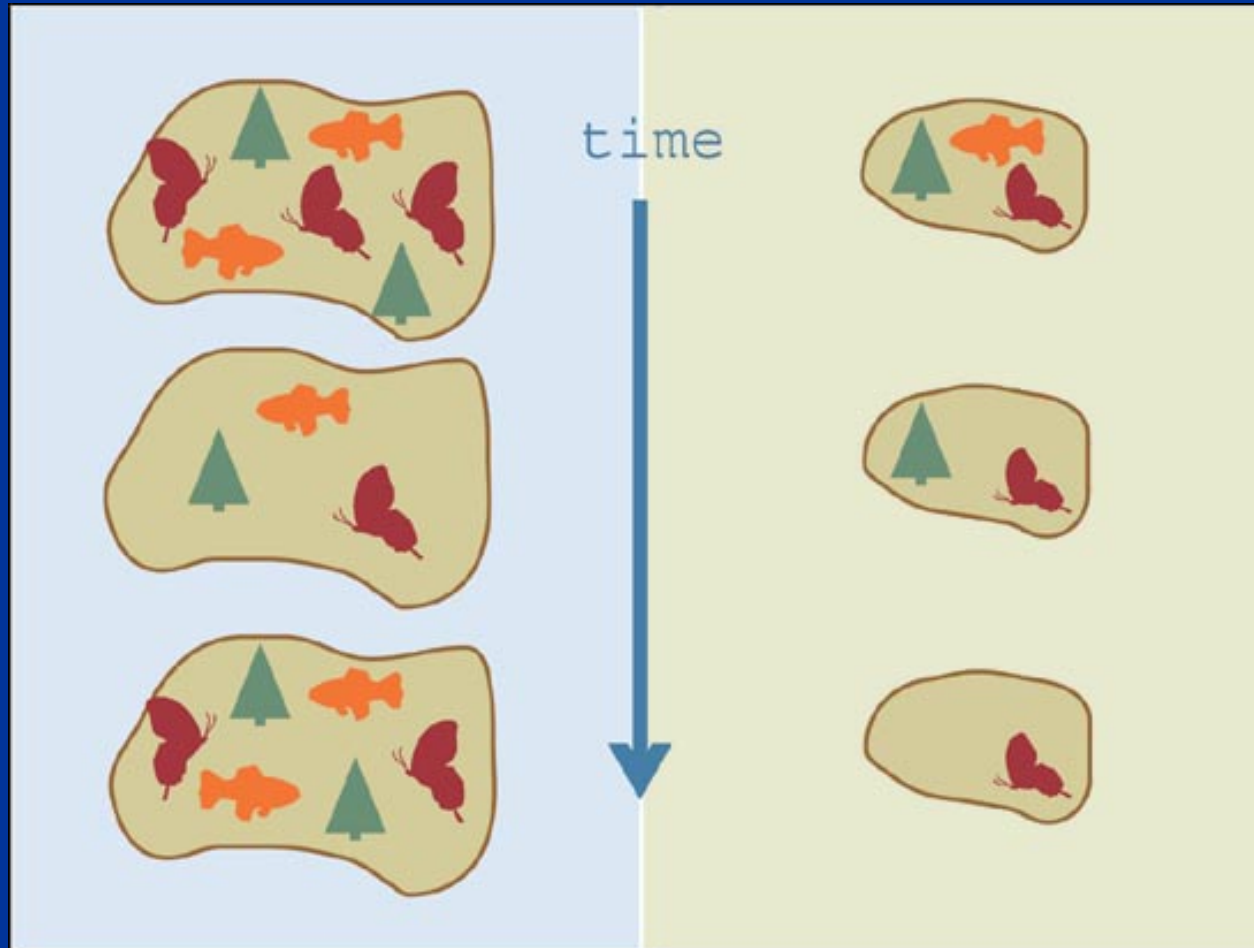


# Size: Interior & Edge Habitat

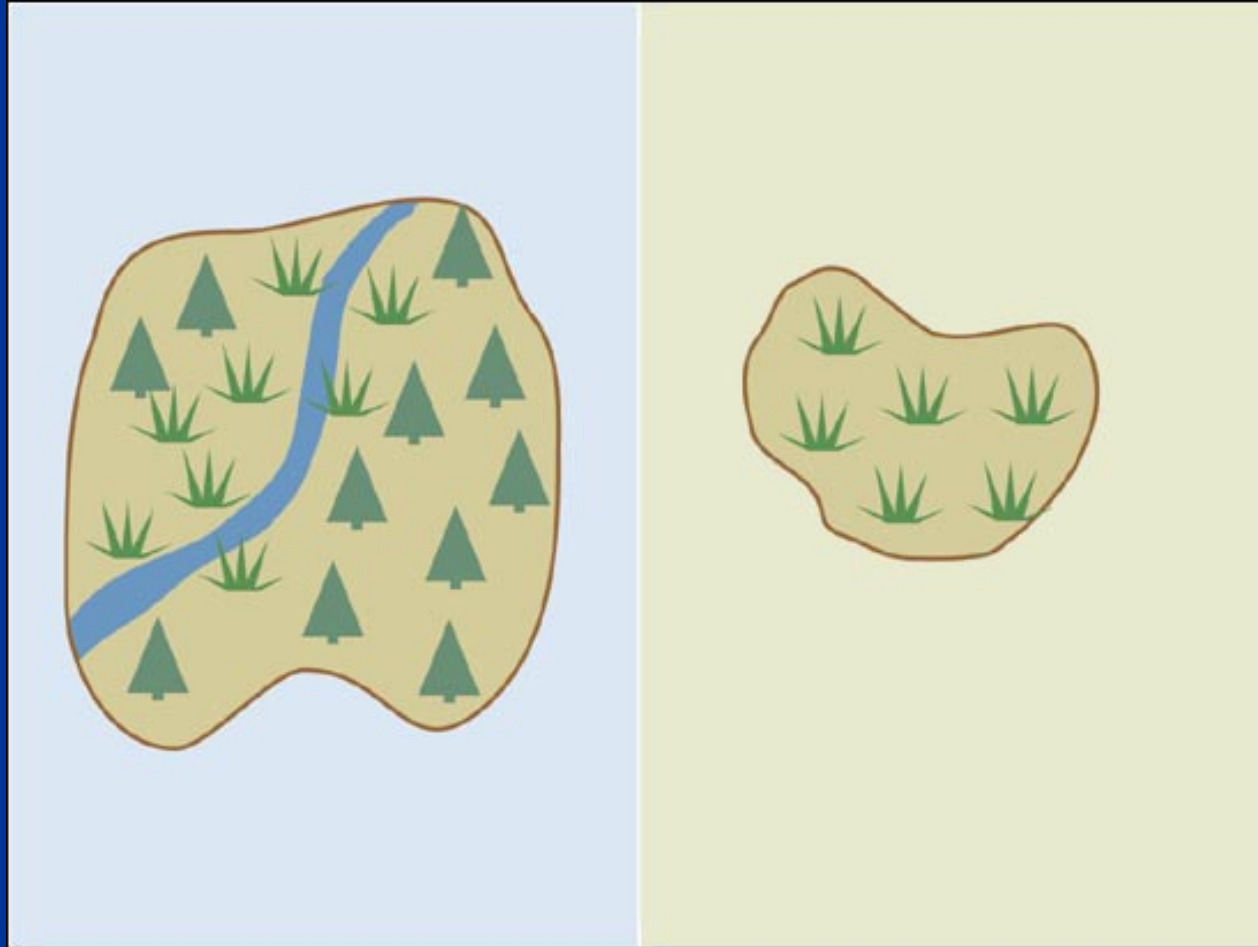




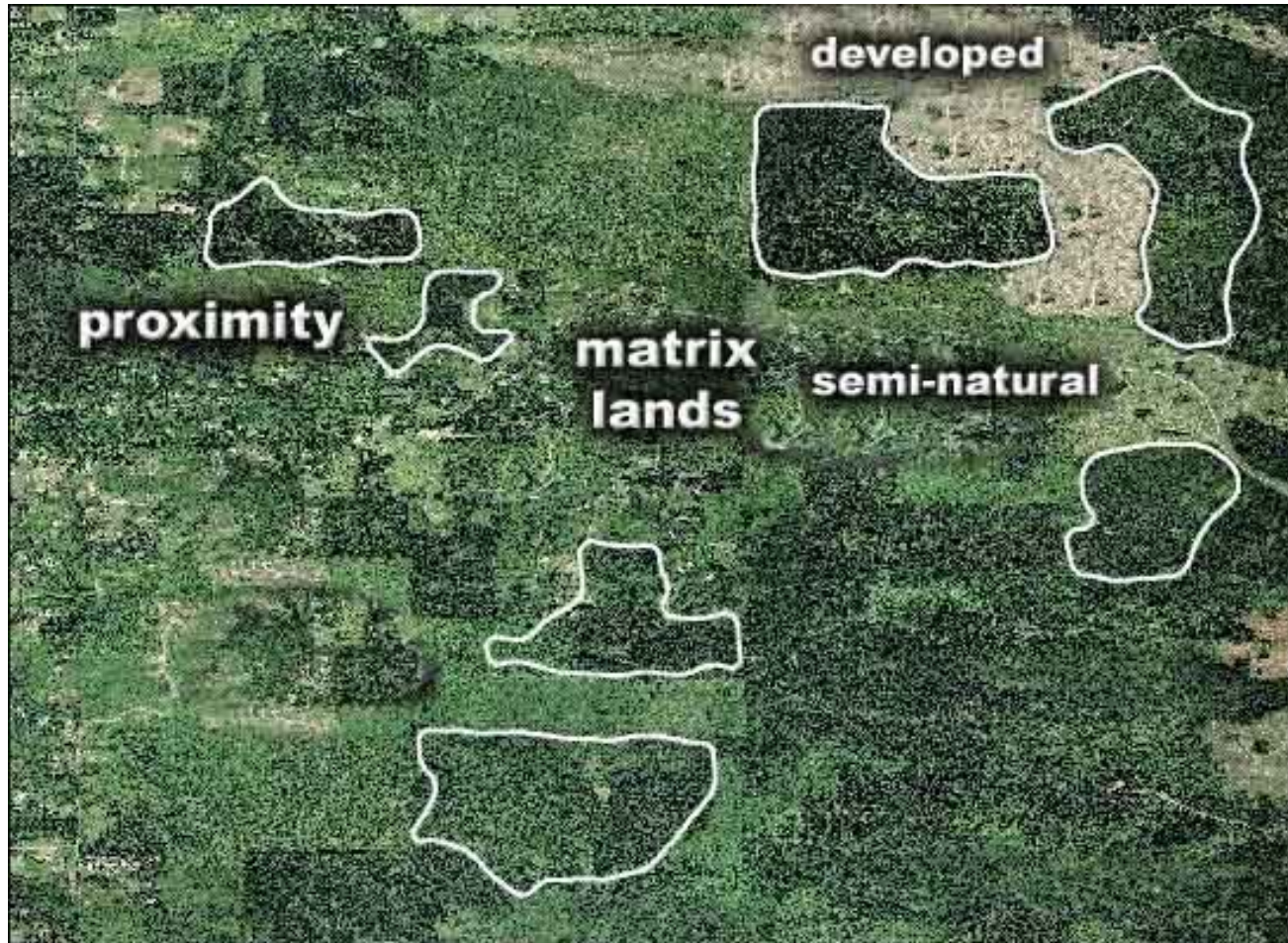
# Size: Population Stability



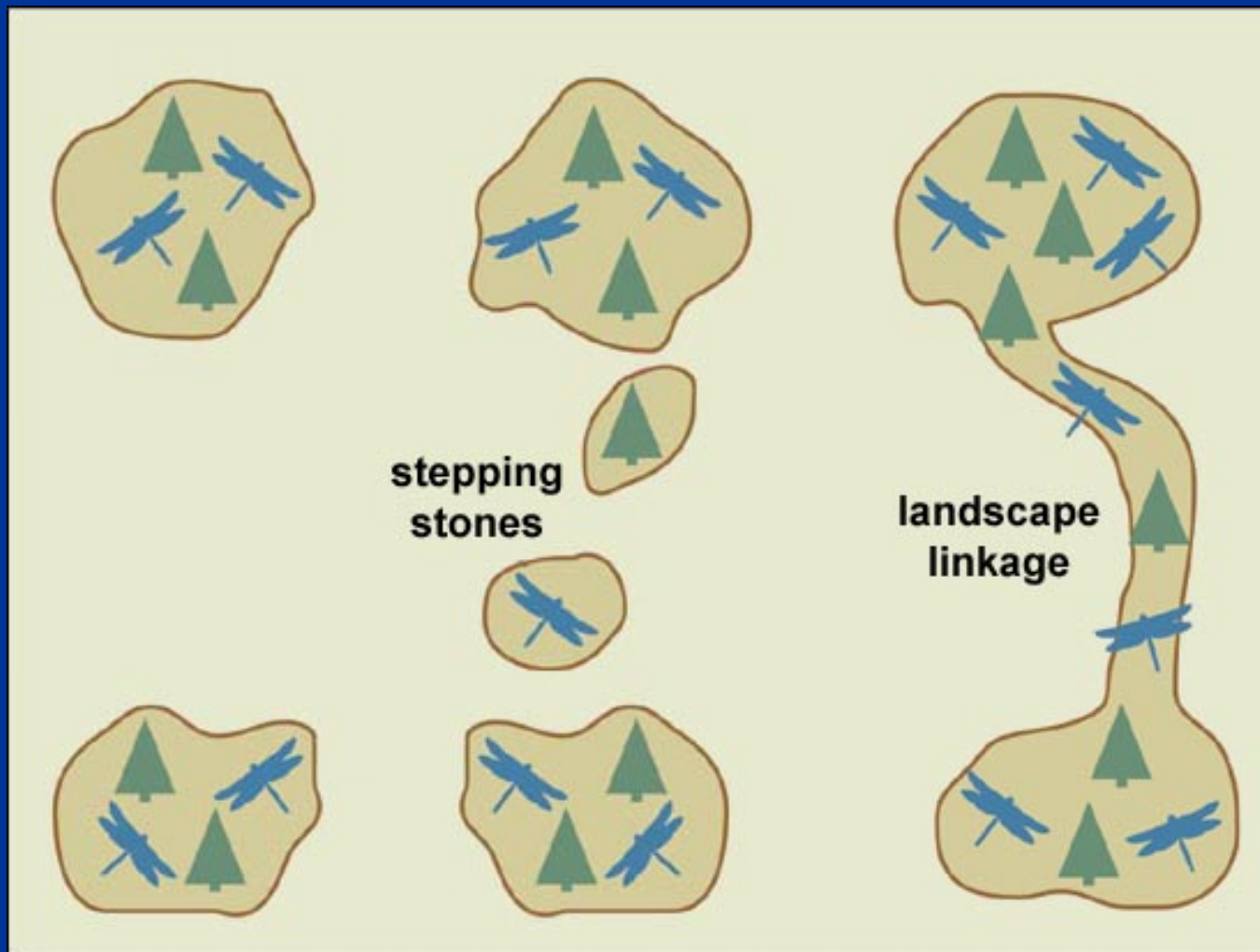
# Size: Diversity



# Proximity

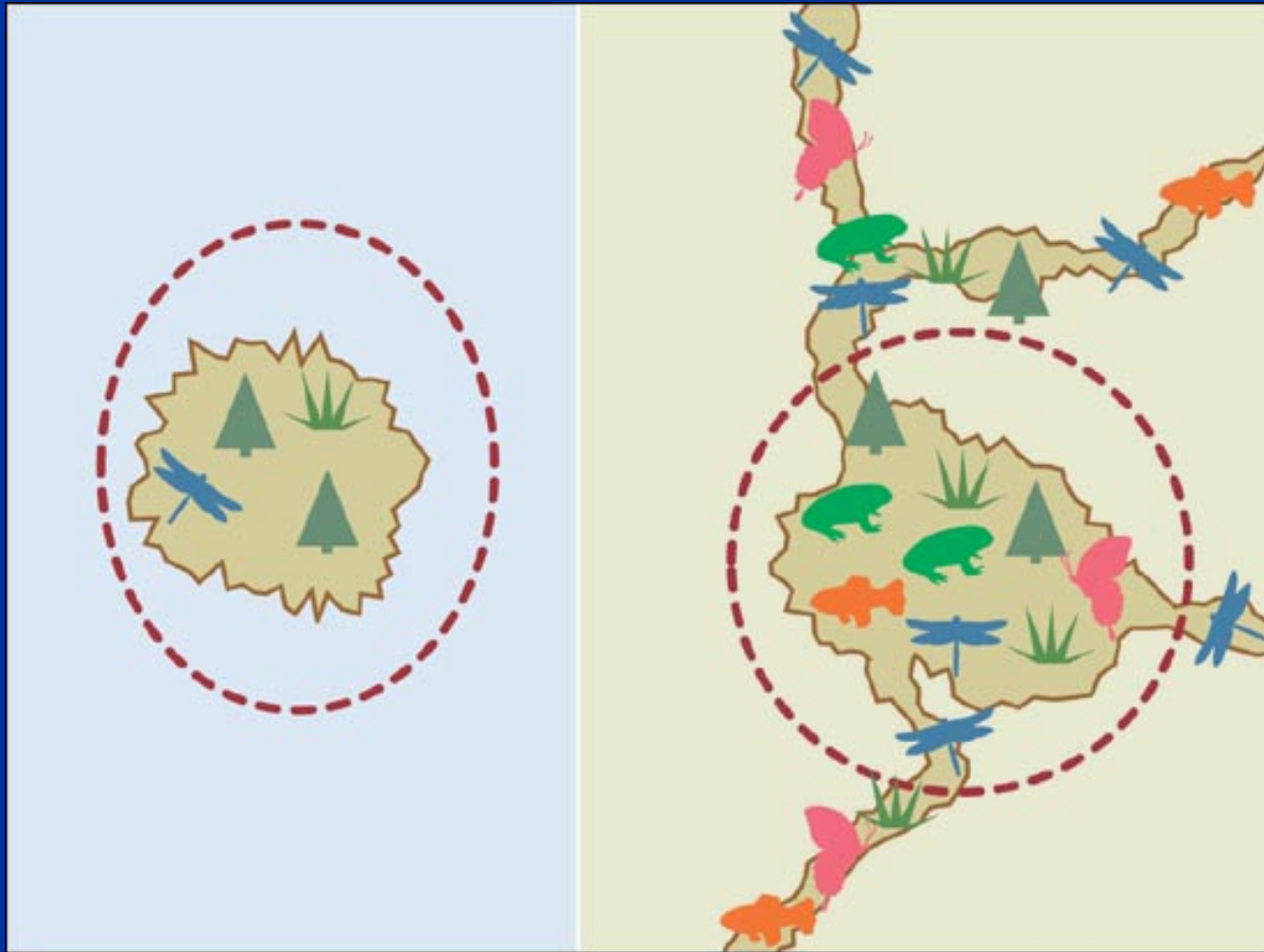


# Connectivity



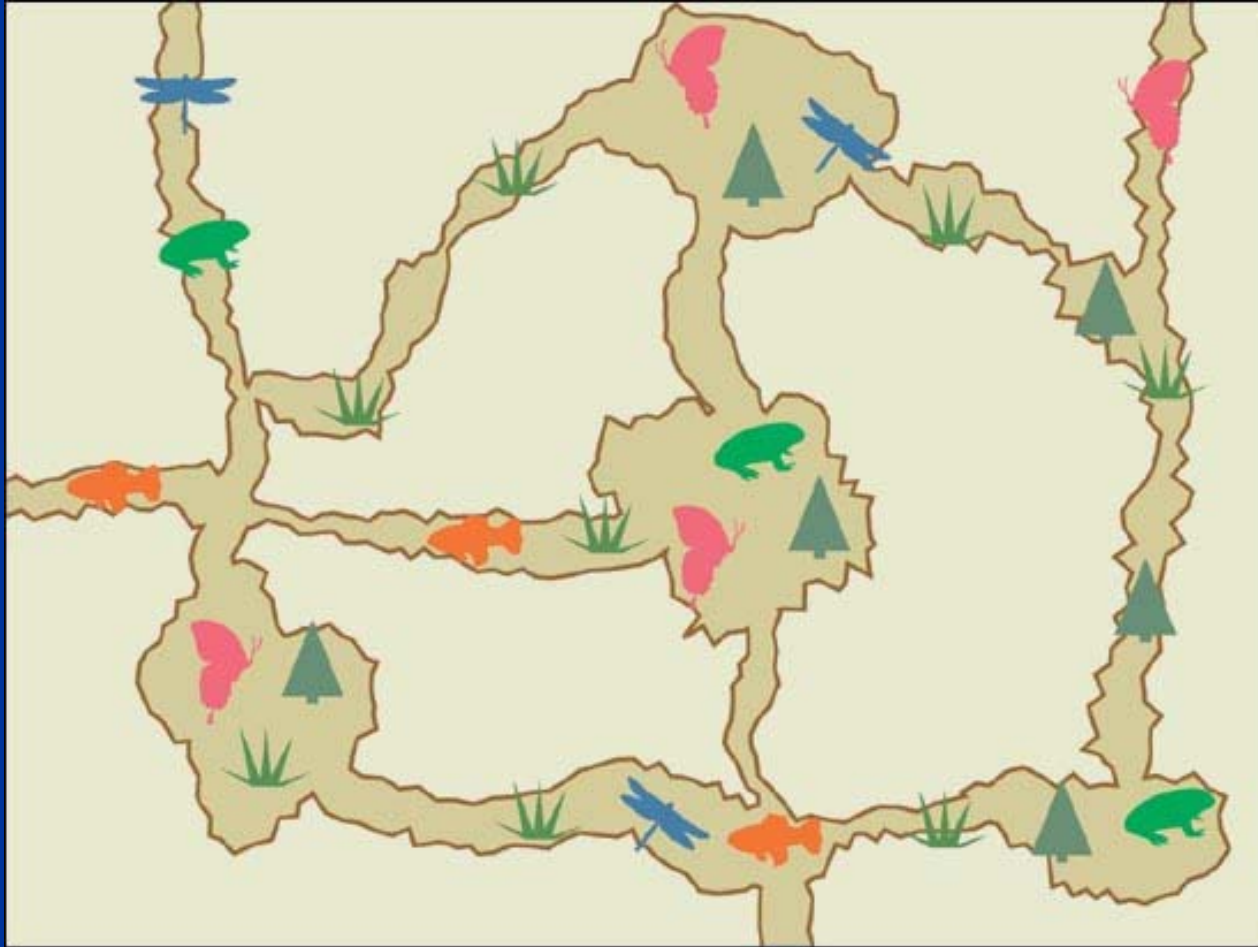


# Connectivity: Isolation





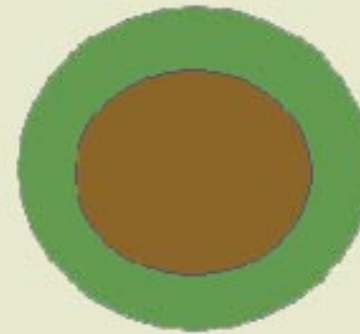
# Connectivity: Interconnectedness



# Shape



large core area - high edge



large core area - low edge



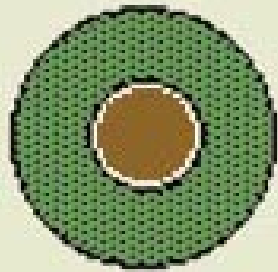
small core area - high edge



small core area - low edge

# Shape: Linear vs. Blocks

**SHAPE**

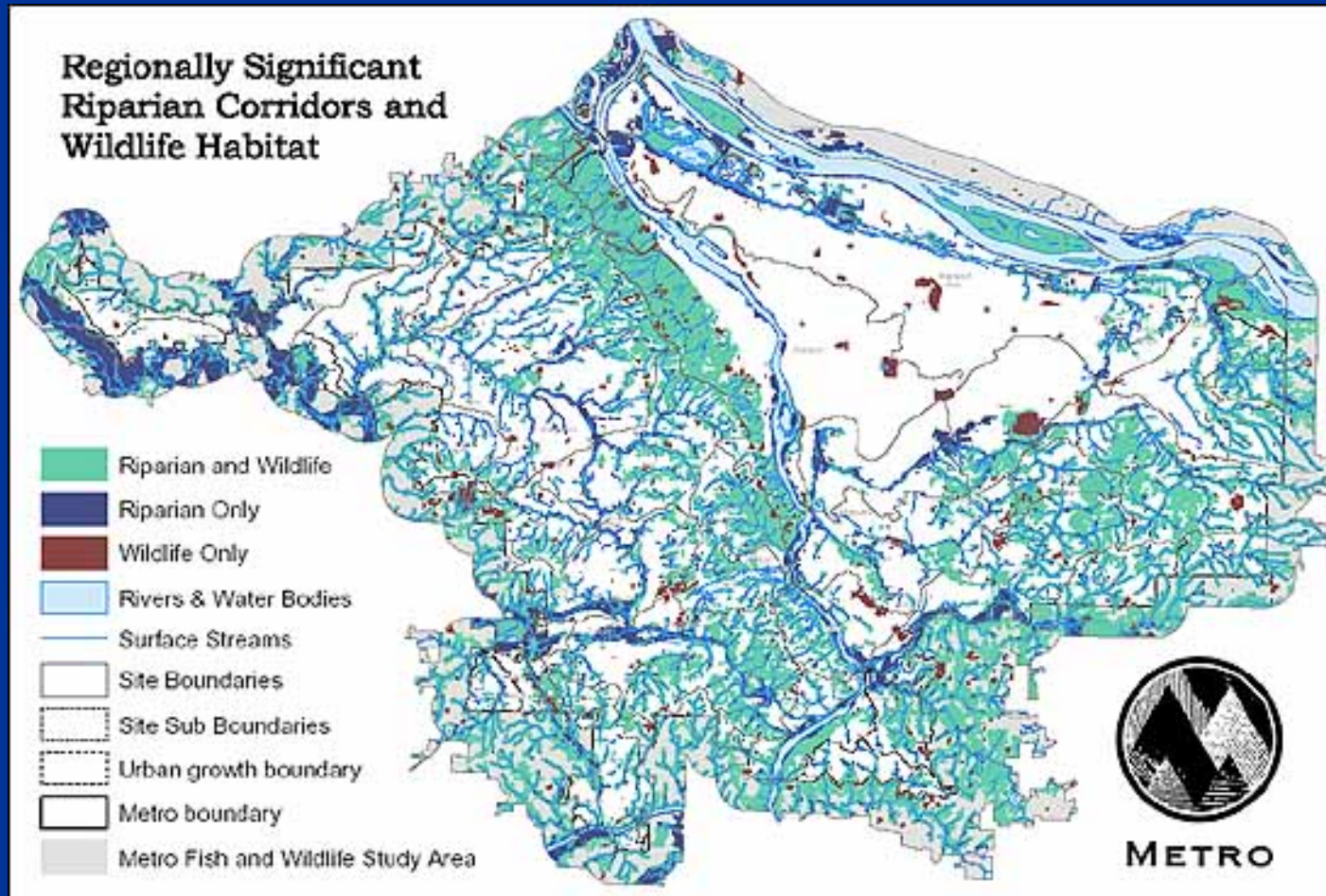


**more interior habitat**



**less interior habitat**

# Integrating Terrestrial & Aquatic



# Scale



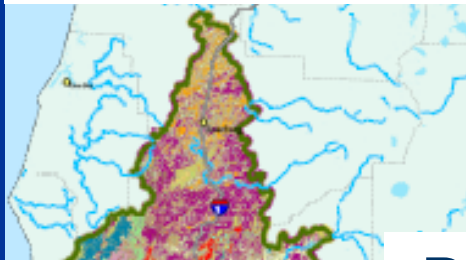
# Planning Process

- Identify biodiversity
- Assemble data
- Assess existing conservation network
- Set Goals
- Evaluate the viability of the occurrences
- Analyze data to select a network of conservation areas
- Assess threats and set priorities



# Data Assembly

Vegetation



Species



Ownership



Protected Areas

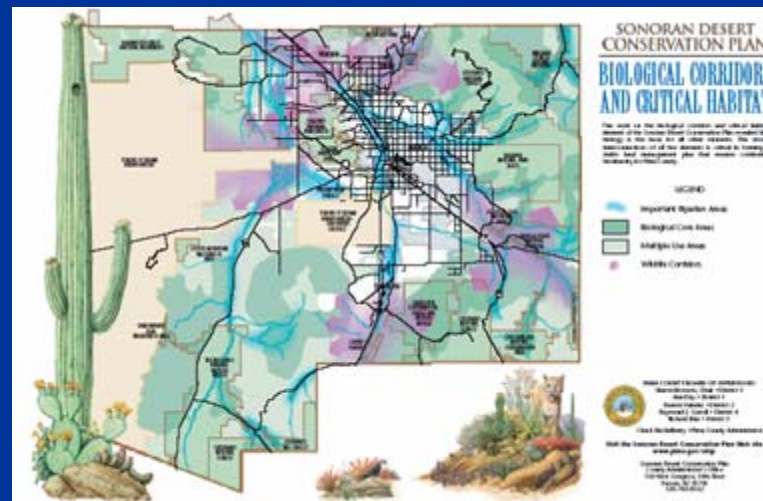
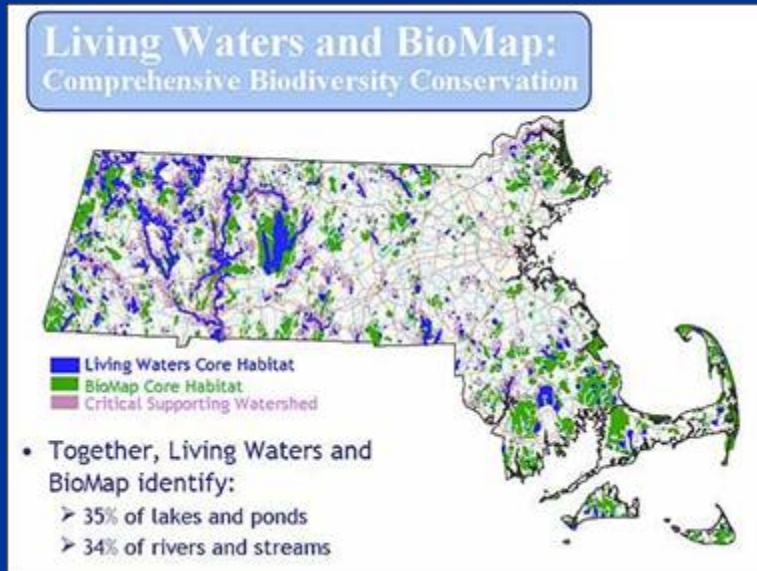
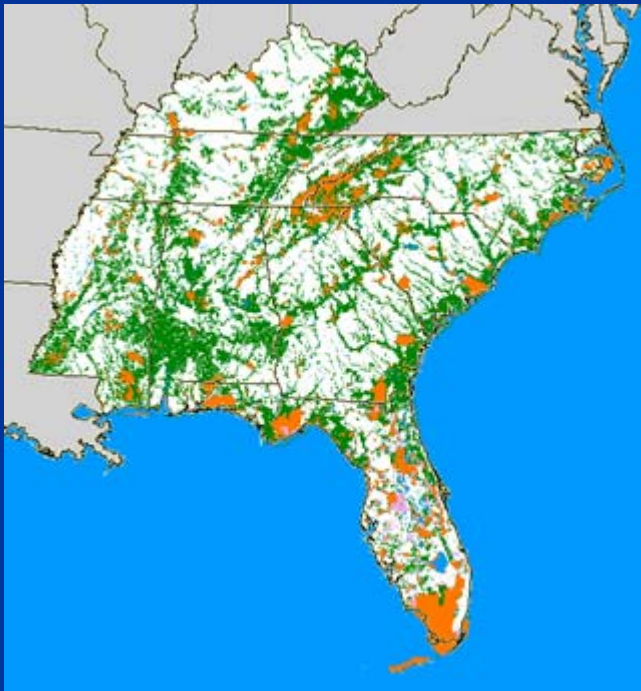


Suitability



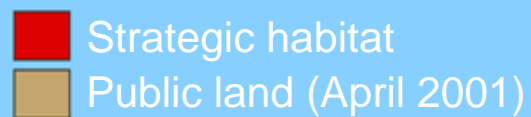
# Conservation Planning Solutions

Variety of:  
Methods,  
Scales,  
Jurisdictions



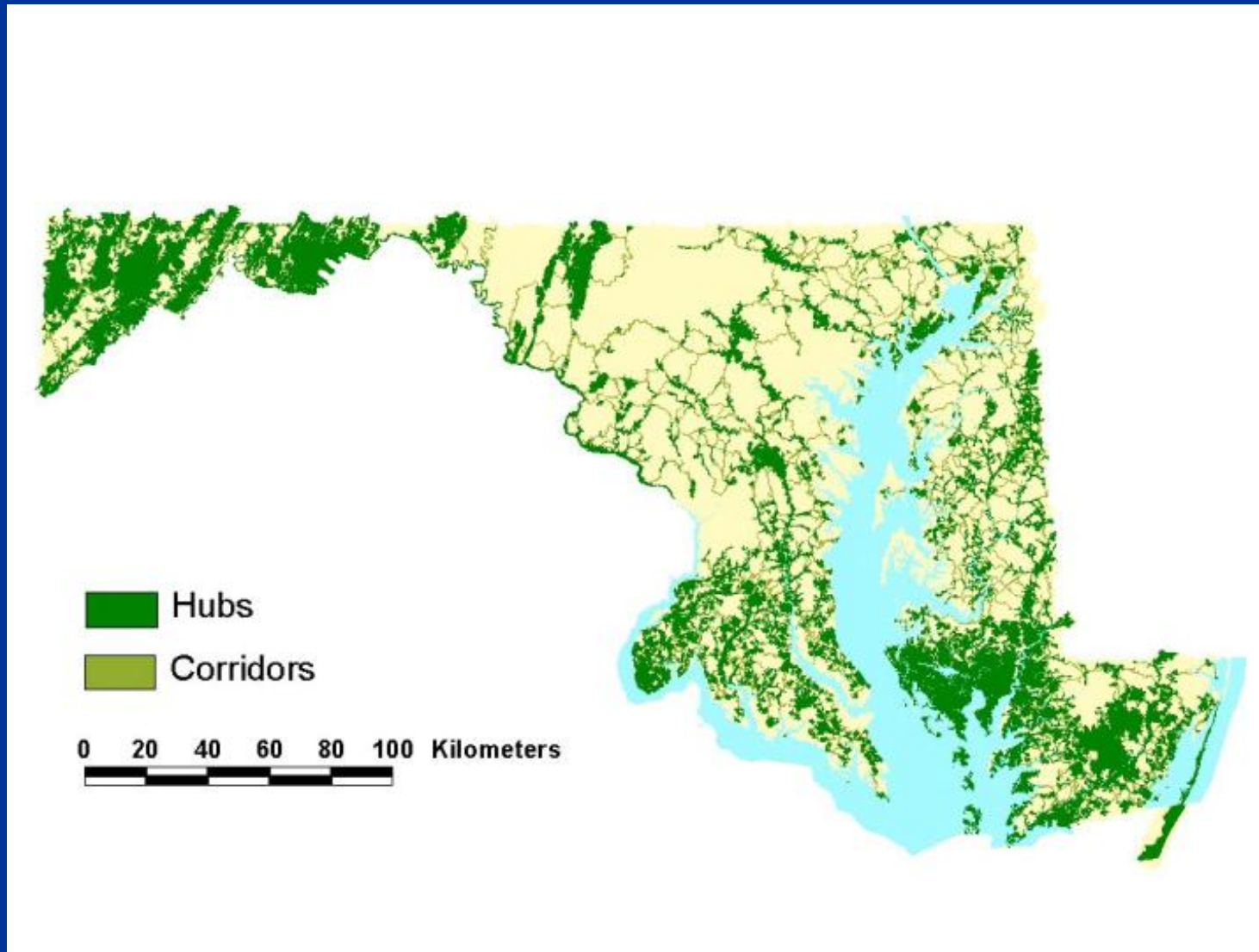


# Florida Strategic Habitat Conservation Areas

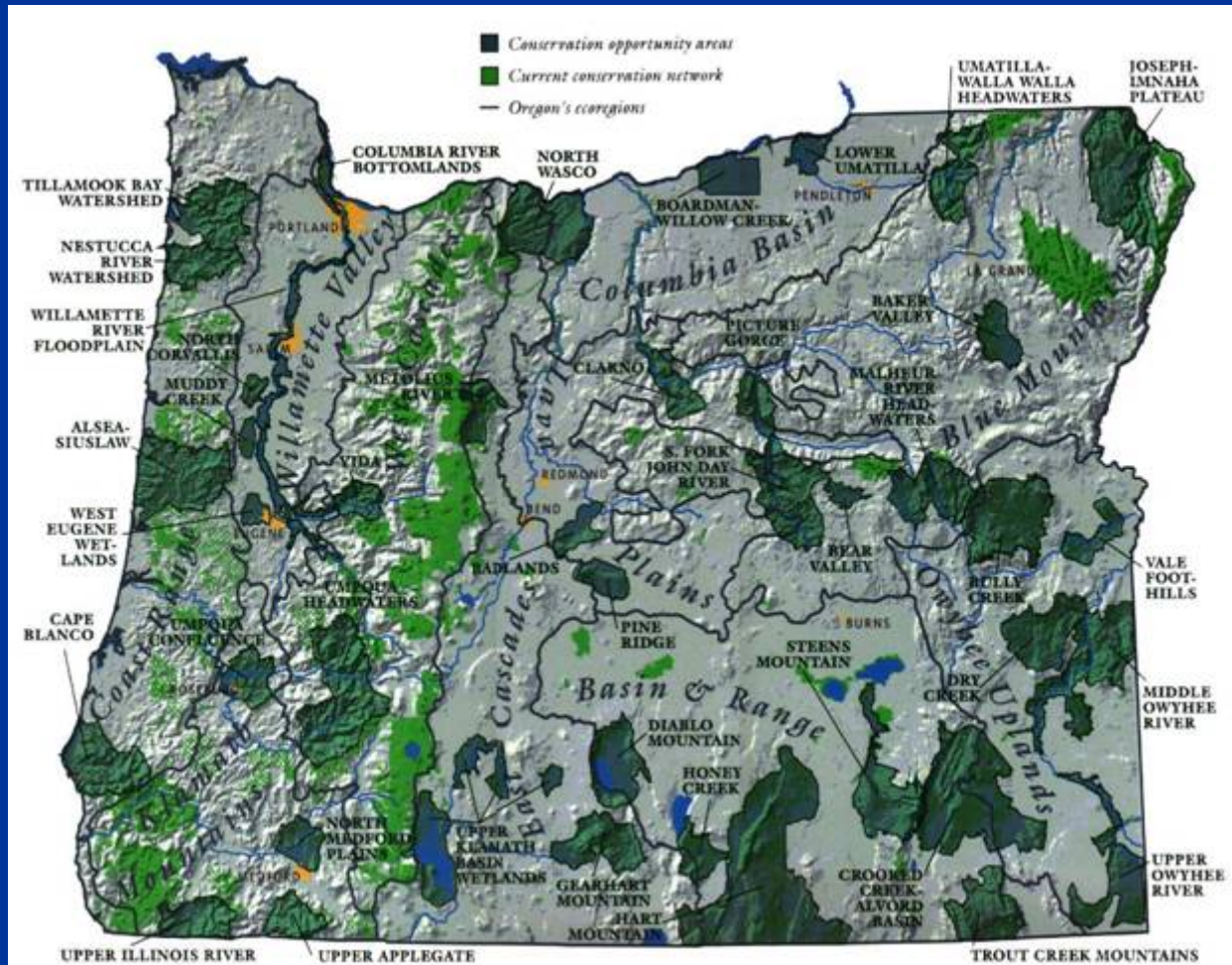


Source: Cox, J. R. Kautz, M. MacLaughlin, and T. Gilbert. 1994. Closing the gaps in Florida's wildlife habitat conservation system. Florida Fish and Wildlife Conservation Commission, Tallahassee.

# Maryland GreenPrint

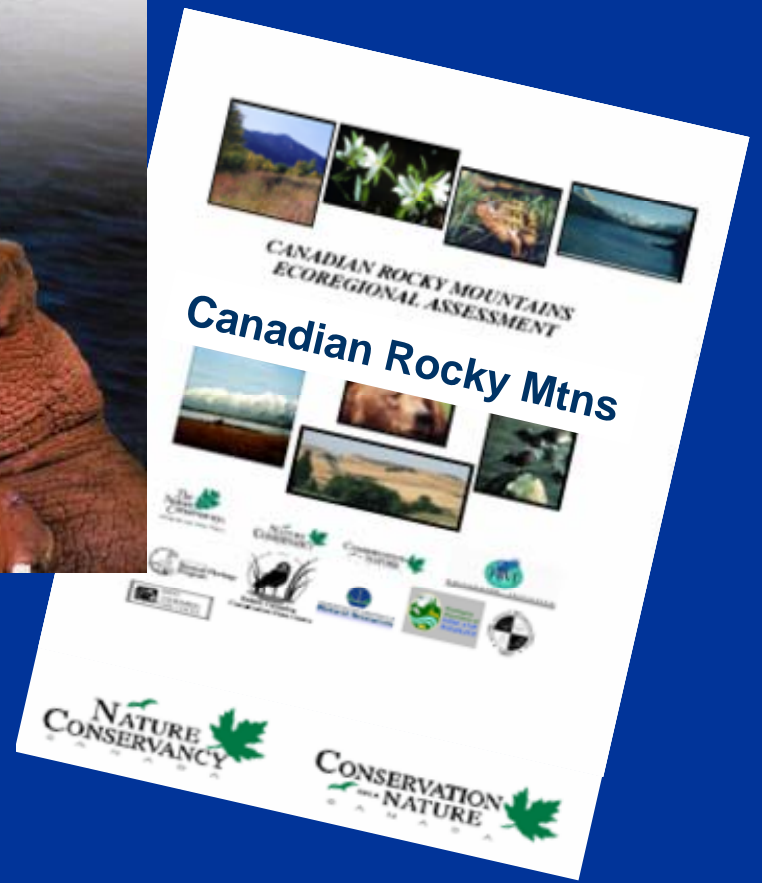


# Oregon Biodiversity Project





# Ecoregional Plans



# Areas of Biodiversity Significance





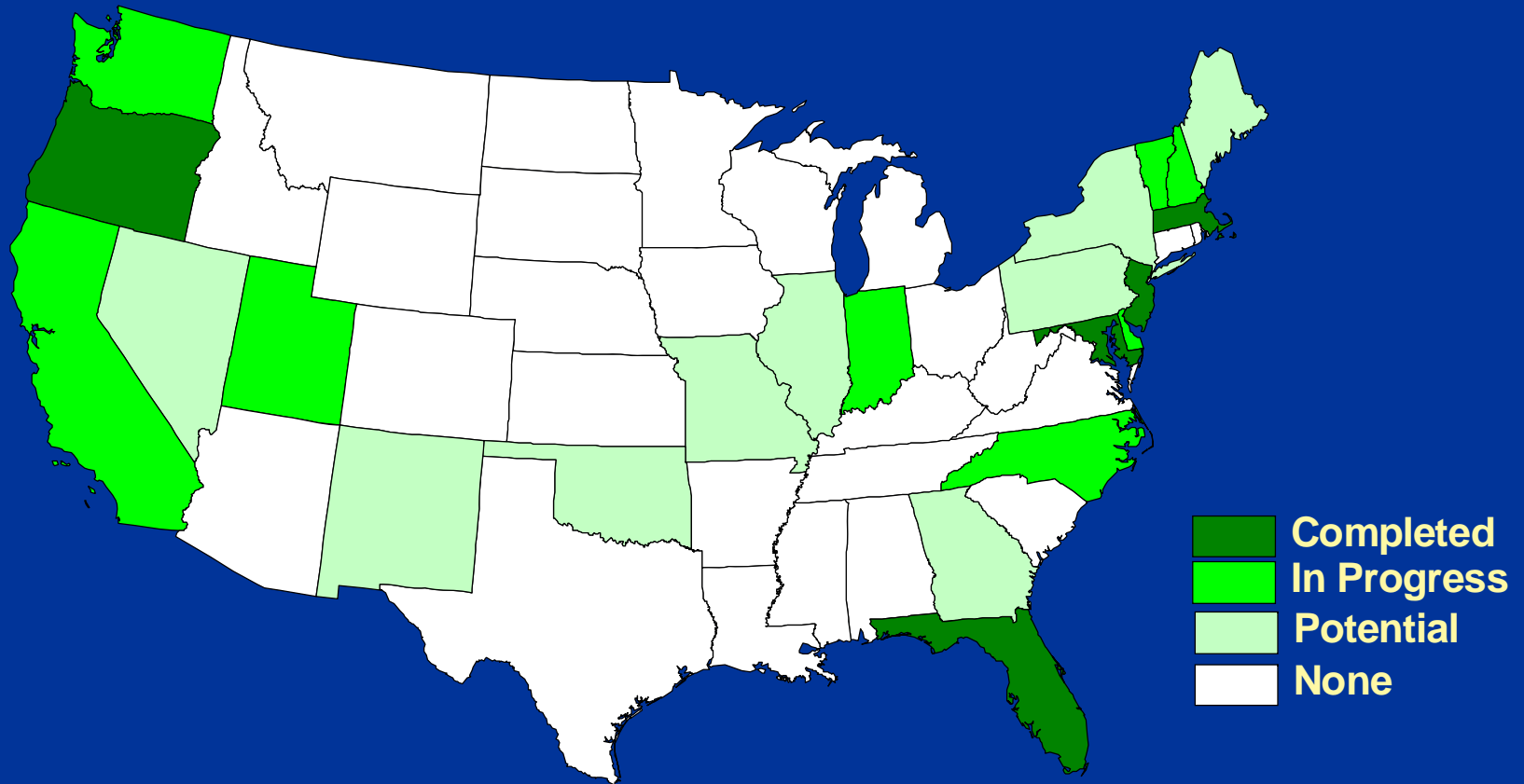
# State & Tribal Wildlife Grants Program

- Established in 2000 through Interior Appropriations – administered by USFWS
- Focus on Species of Greatest Conservation Need (SGCN) to avoid future listings
- Non-regulatory proactive solution based on Fish & Wildlife Conservation Act of 1980
- State Comprehensive Wildlife Conservation Plans completed October 2005

# Importance of State Wildlife Grants Program

- **Conservation Planning** – Most states have never done a comprehensive wildlife plan
- **Habitat Conservation** – Habitat loss is the main problem for wildlife. Plans can map out habitat areas to conserve
- **Policy Connections** – To address habitat, plans can be used to inform land use decisions
- **Funding** – Plans can be used to inform other funded planning & conservation investments

# Statewide Biodiversity Planning Status (Prior to 2000)





# Wildlife Plans Review

- Comments on Plans
- Review Criteria
- Database
- Summary of Results in “Conservation Across the Landscape: A Review of the State Wildlife Action Plans”
- Defenders Emphasis: In short, a good conservation plan will tell you what needs to be done (actions), where (maps) and in what order (prioritization)

# Review Criteria

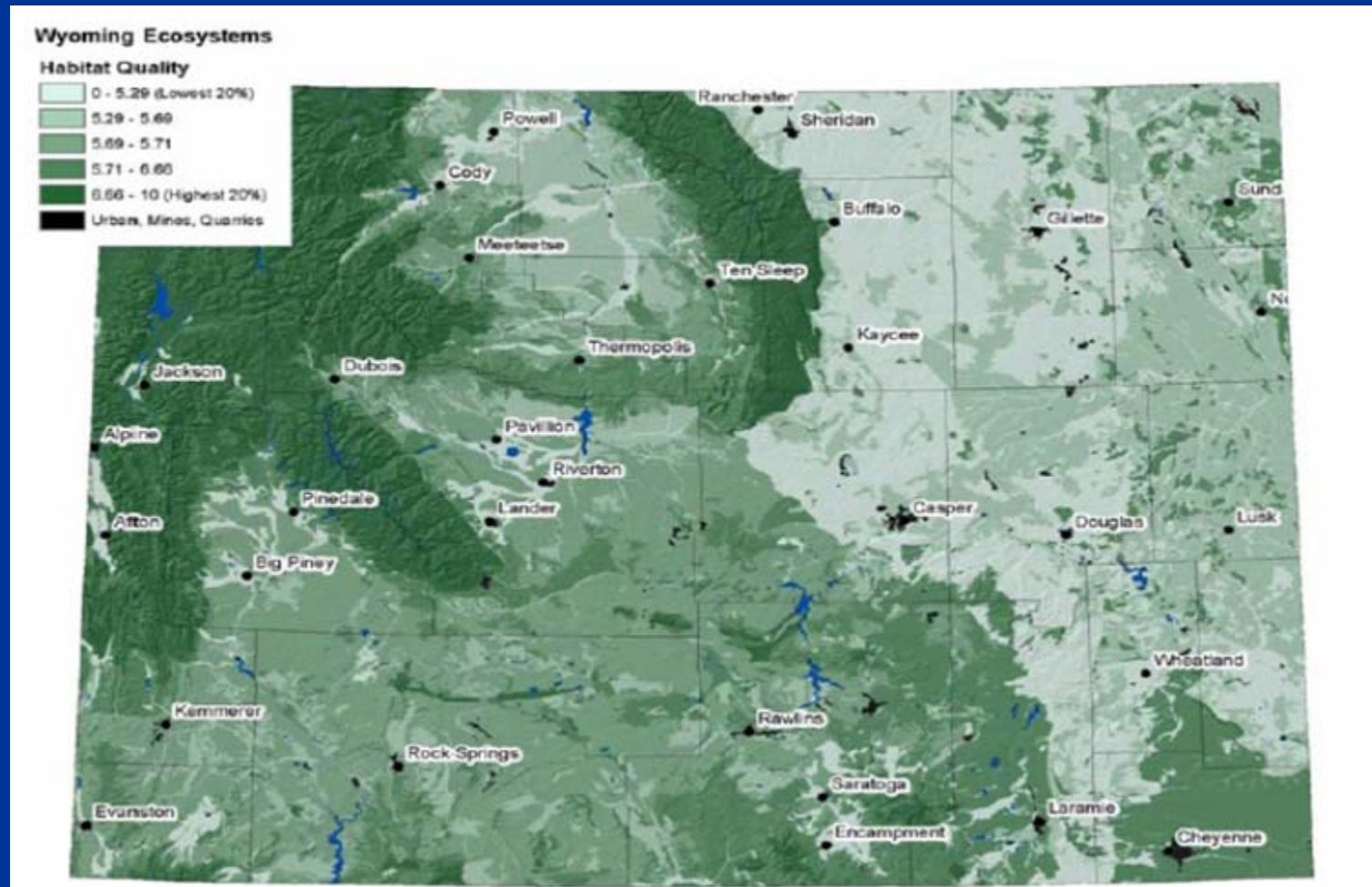
## Eight Elements

- Species
- Habitat
- Threats
- Actions
- Monitoring
- Coordination
- Periodic Review
- Public Participation

## Additional Categories

- Goals
- Maps
- Methods
- Leadership
- Policy Connections
- Funding
- Format

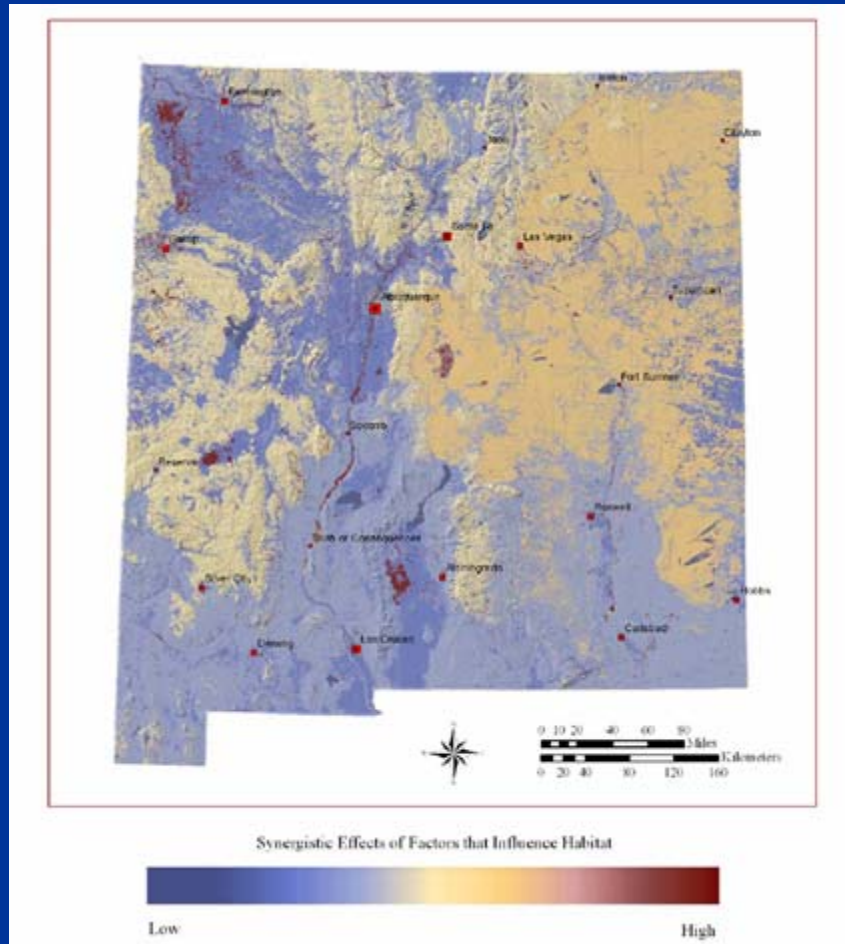
# Assessments of Wildlife



Source: Wyoming Game & Fish Department, 2005

# Assessments of Wildlife

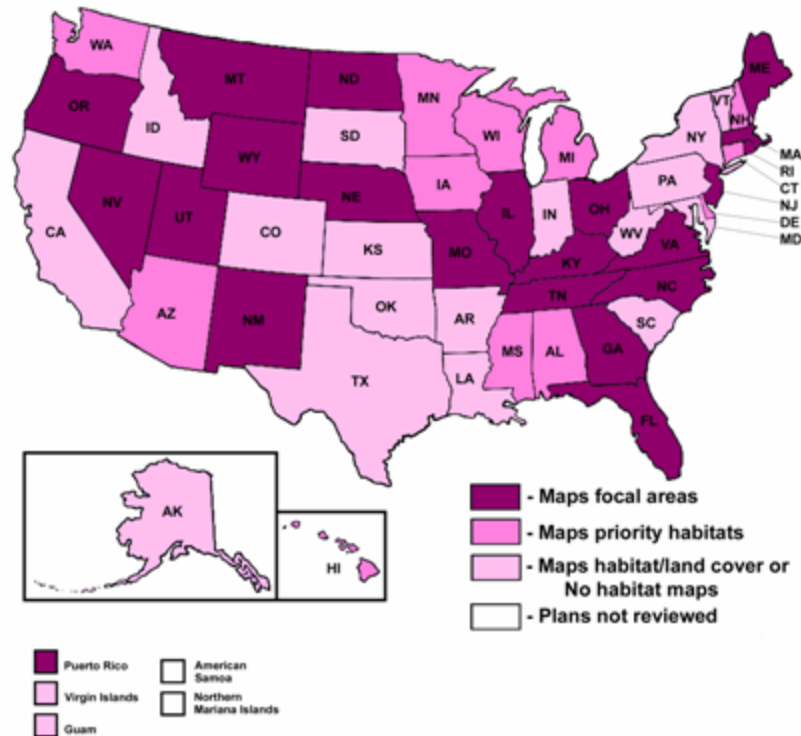
Threats Map:  
Synergistic Effects of  
Factors that  
Influence Habitat  
(NMGFD, 2005)



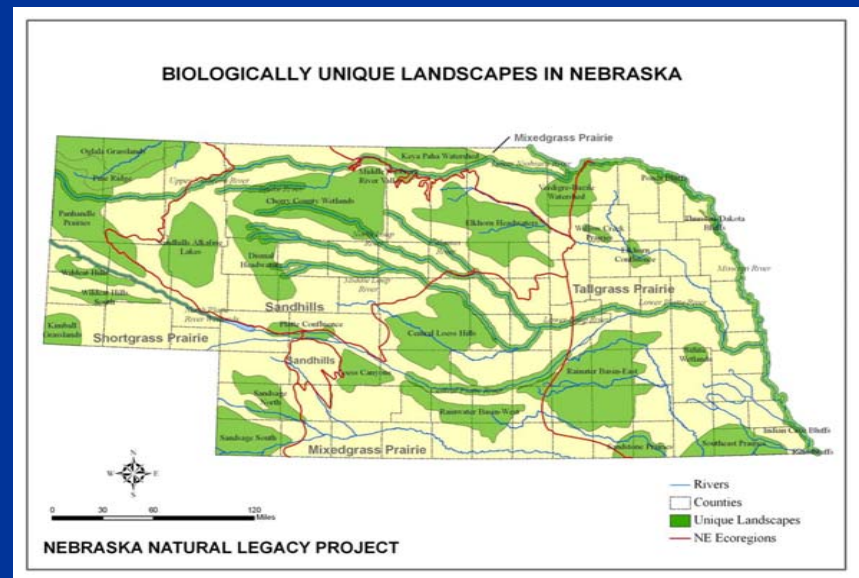
# Habitat Conservation: Mapping is Key

## STATE WILDLIFE PLANS: PRIORITY MAPS

Winter 2006

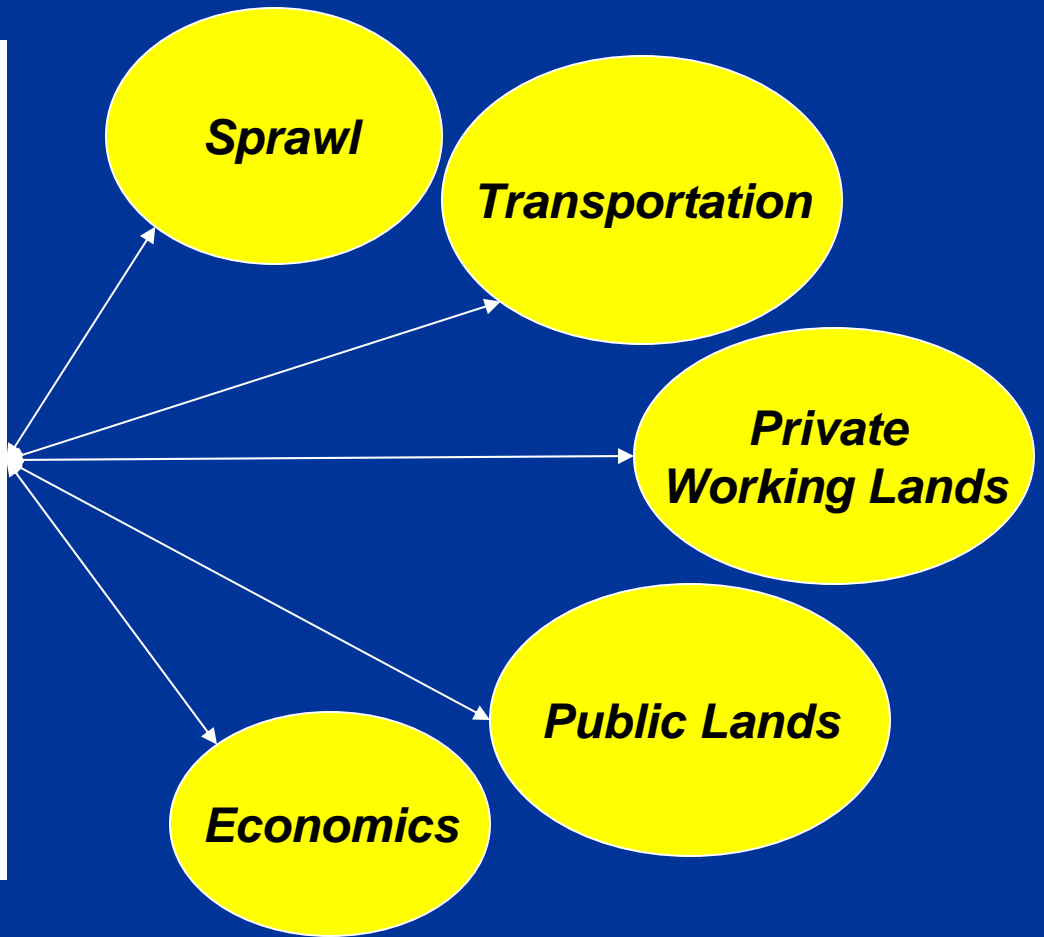
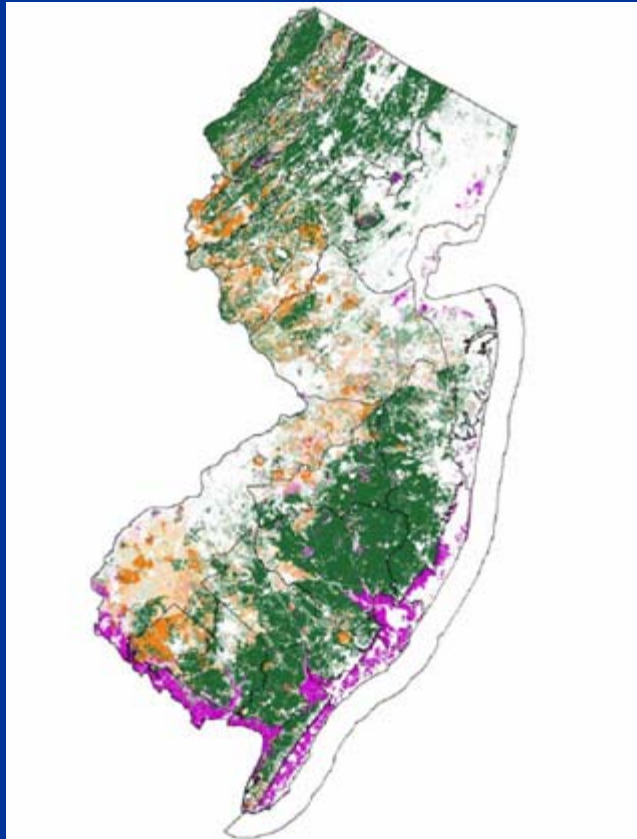


40% of States produced maps showing conservation focal areas





# Conservation Plans & Policy Connections



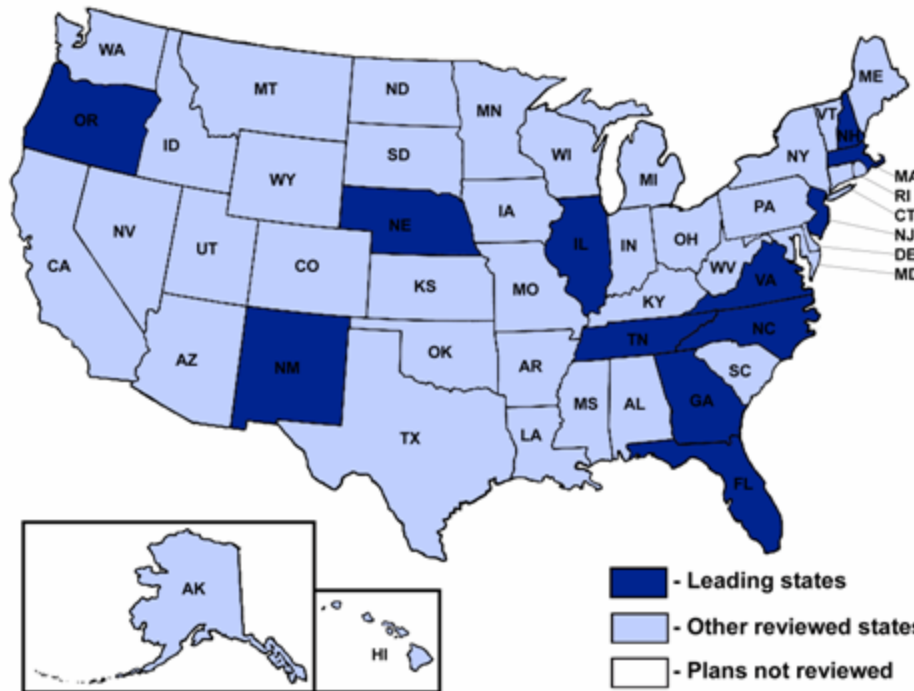
Conservation plans should address land use decisions that cause habitat loss



# Overall Top Quality Plans

## STATE WILDLIFE PLANS: STATE LEADERS

Winter 2006



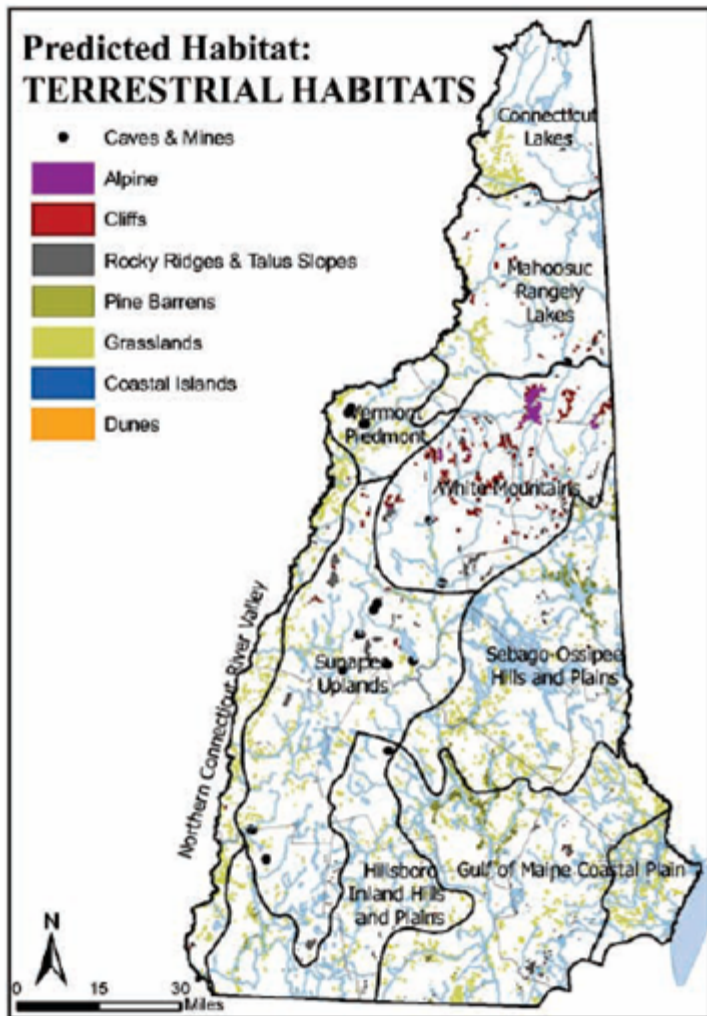
- Puerto Rico
- Virgin Islands
- Guam
- American Samoa
- Northern Mariana Islands

# Next Steps

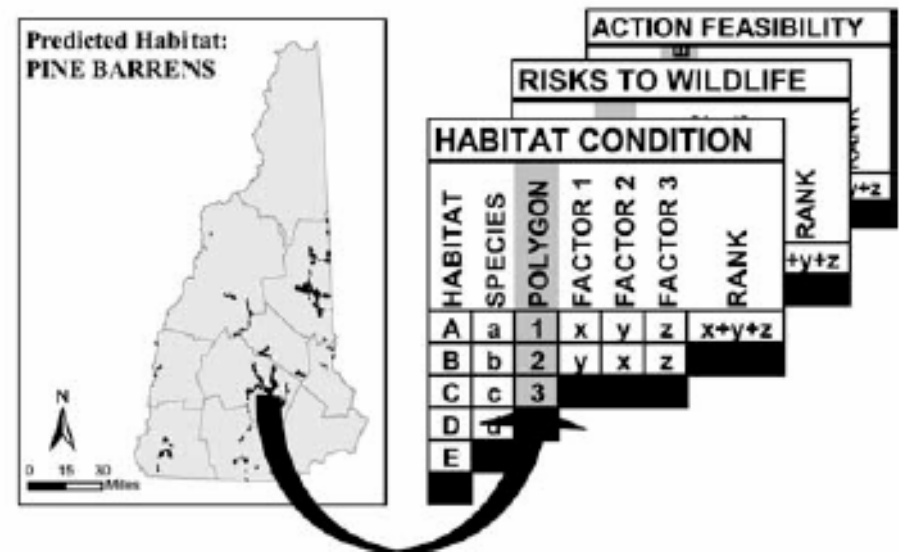
- Set Goals & Objectives
- Produce Focal Area Maps
- Prioritize Actions
- Make Policy Connections
- Coordinate with Others
- Develop Monitoring Systems
- Establish Implementation Committees

# New Hampshire

- Landscape analysis
- Focal maps to communities
- Land protection strategy
- Landowner incentives



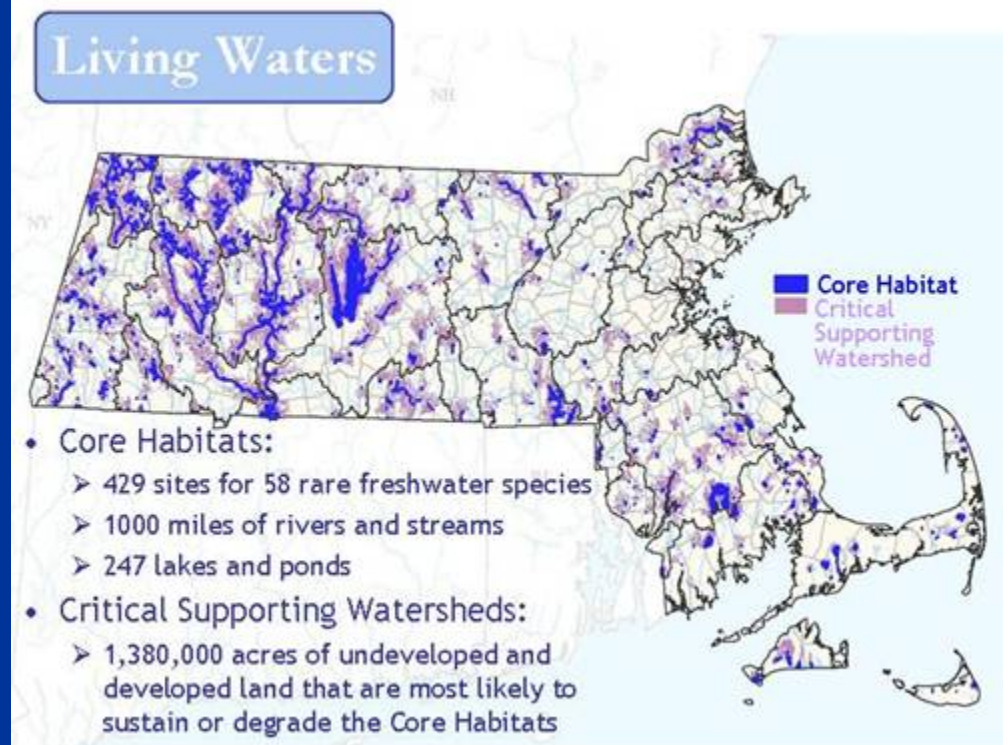
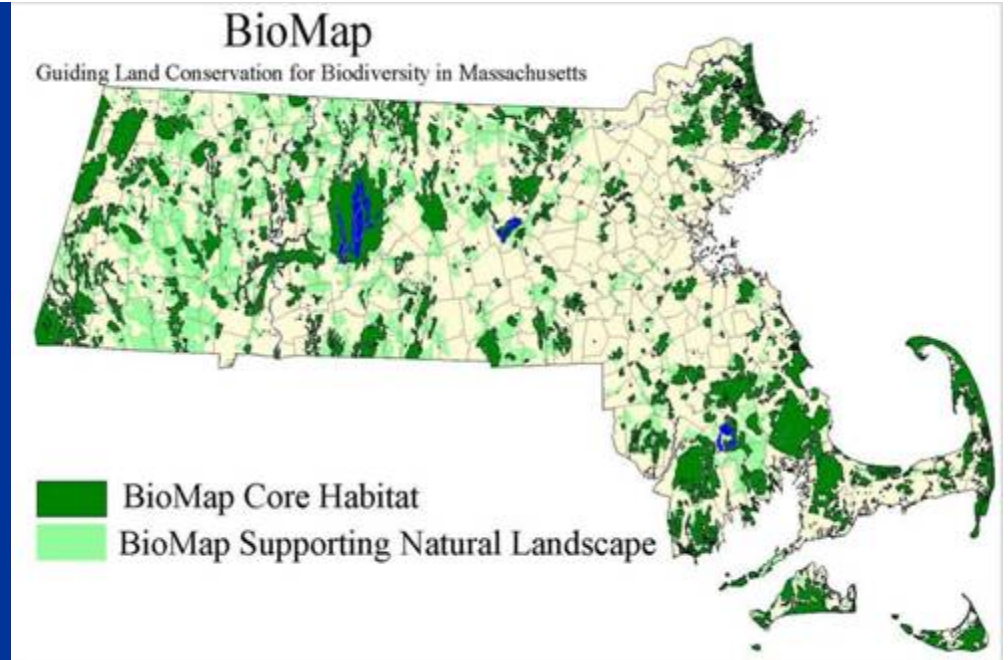
**FIGURE 3-8.** Predicted Terrestrial Habitats. Terrestrial Habitat maps were created by NHFG and NHB. Map validation is a priority WAP objective.



**FIGURE 3-2.** Mapping and Data Diagram. Data describing the condition of each habitat polygon were entered into a database for use in comparative analyses.

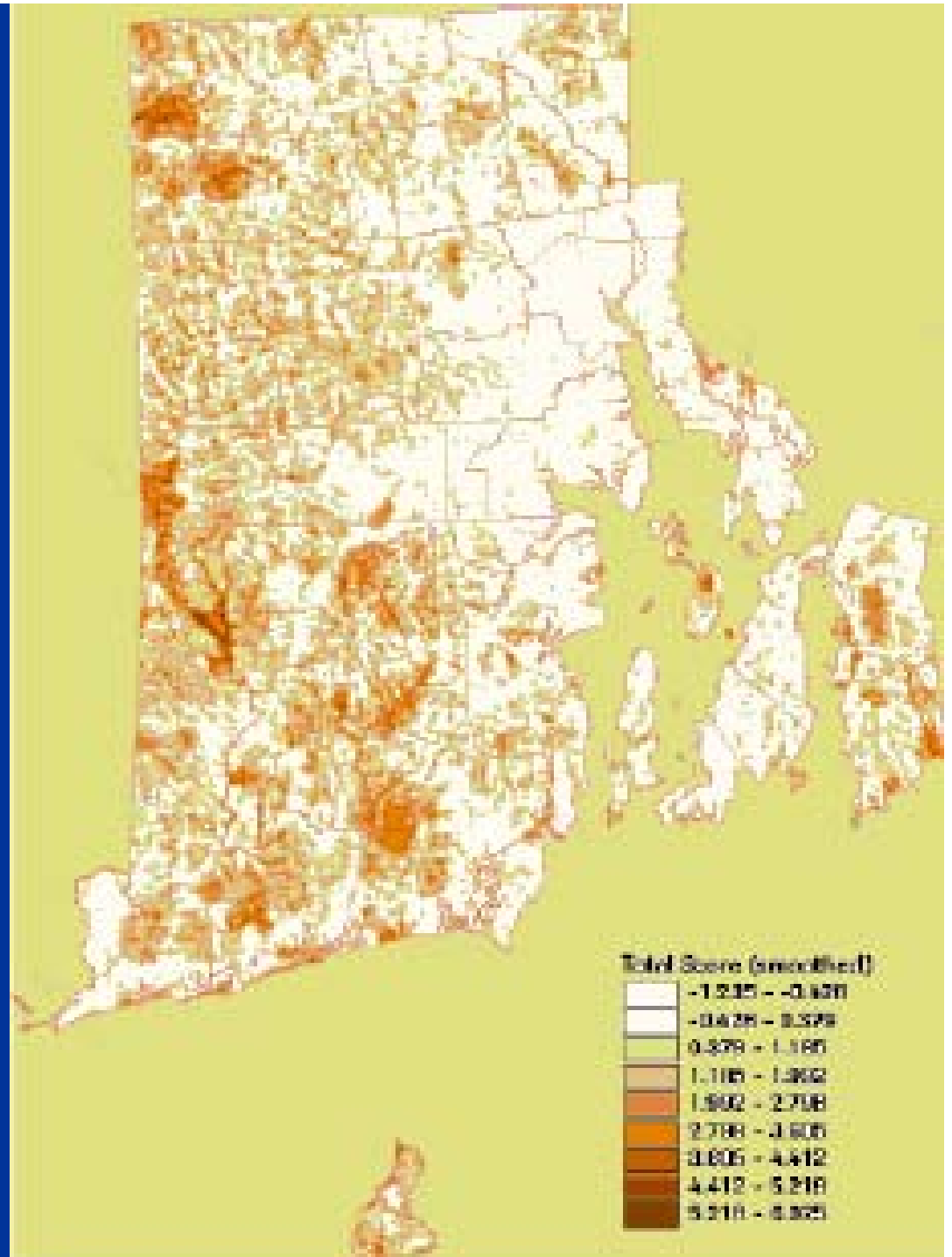
# Massachusetts

- BioMap and Living Waters
- Maps incorporated into local planning



# Rhode Island

- Compilation of previous planning efforts
- Figure 4.3 CWCS Composite Score Smoothed





# Maine

- Focus Areas
- Beginning with Habitat

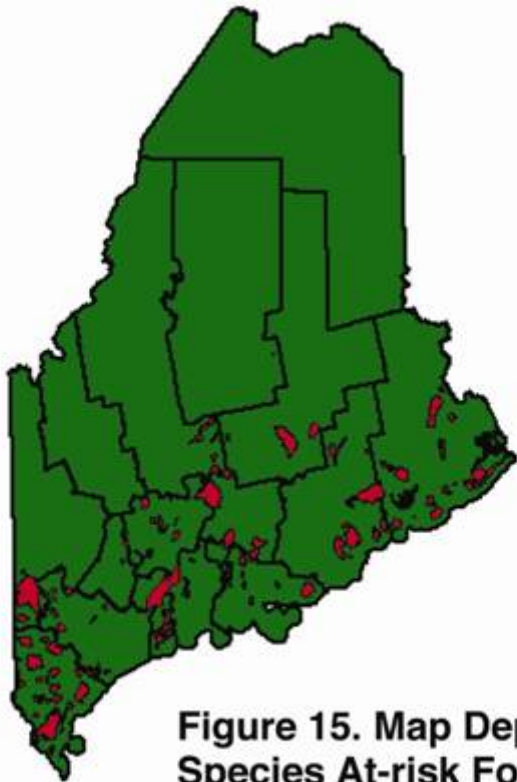
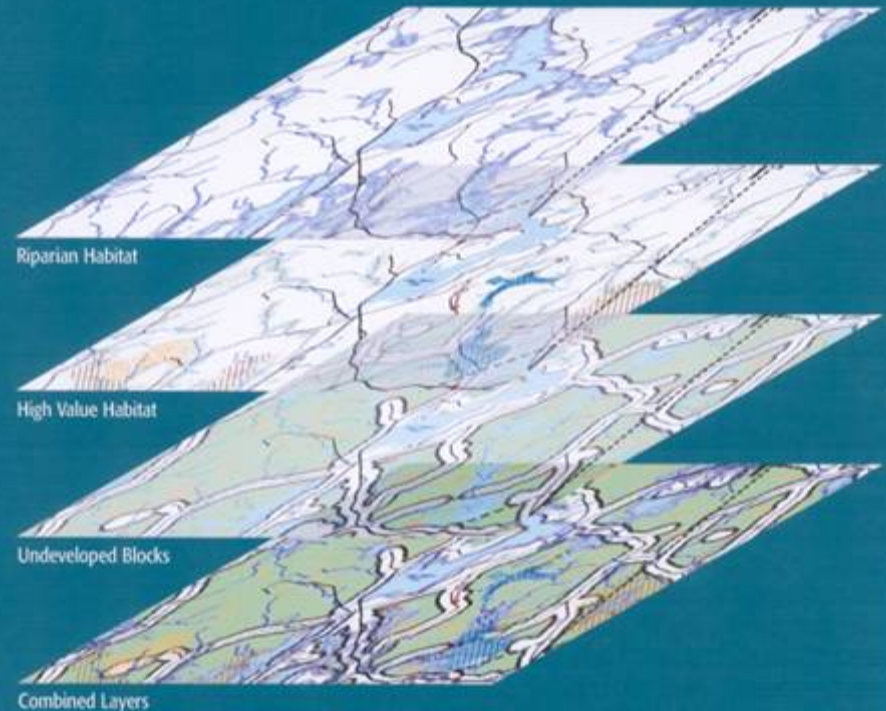


Figure 15. Map Depicting Species At-risk Focus Areas Identified through 2004.



## What do you want your town to look like in 50 years?

To ensure a rich complement of plants and animals, which are so important to many Maine communities, we must find ways to conserve wetland and riparian areas, plant and animal habitats, and large habitat blocks, weaving them together in a landscape tapestry. **There are many ways your town can use the plant and wildlife habitat data on these maps:** You can use it for land-use planning; to inform and direct land protection initiatives; to develop joint conservation strategies with neighboring towns; and for outreach and education.



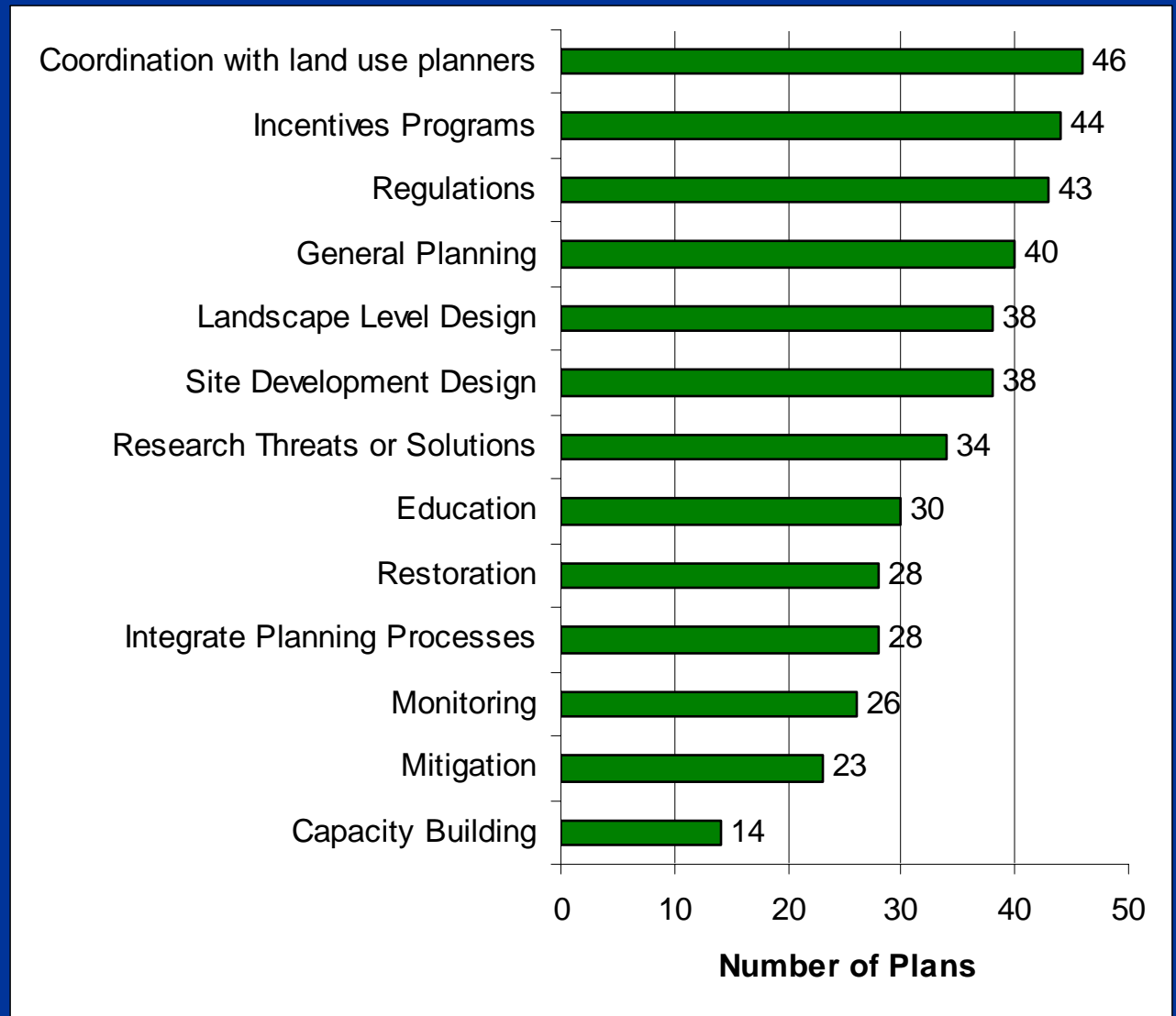
# Development threats to wildlife



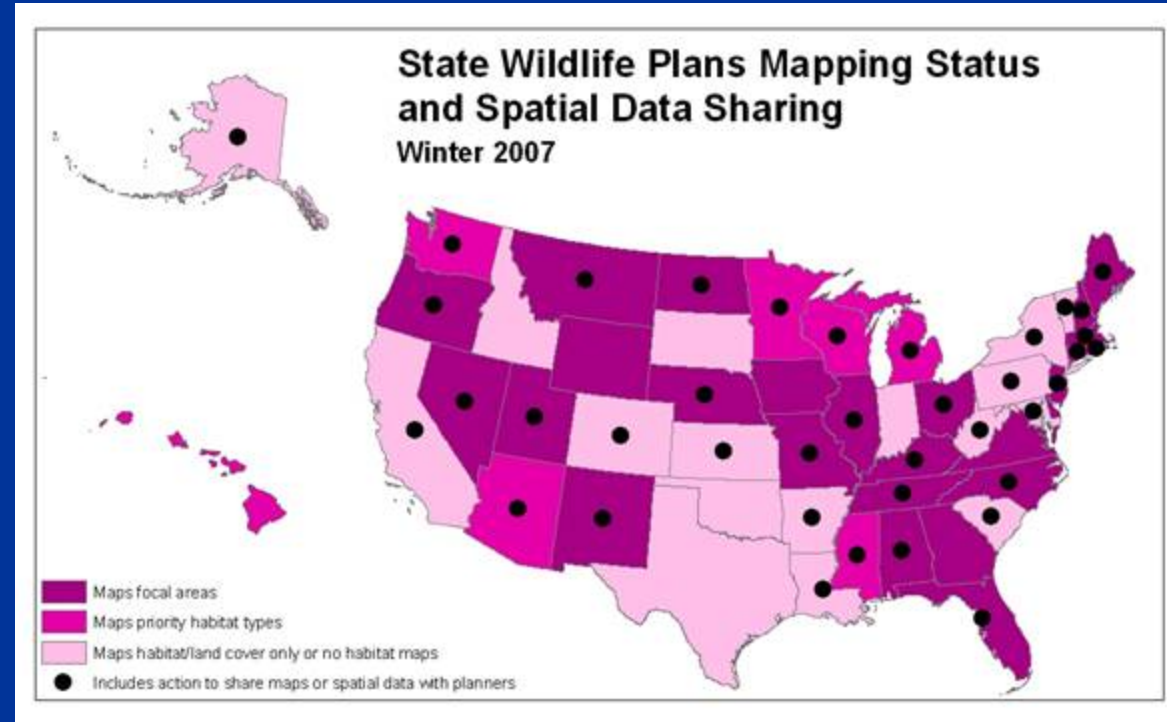
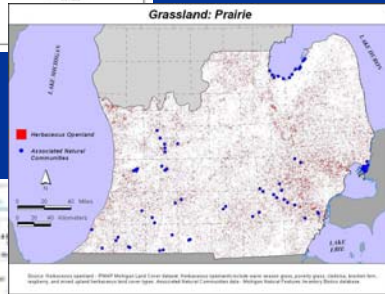
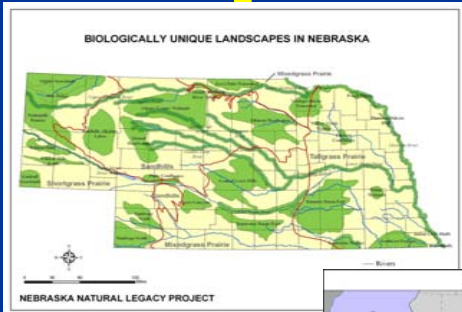
- All 51 Plans indicated that development is an issue for wildlife
- 8 Plans indicate that development is *the greatest threat* to wildlife in their state
- 17 Plans indicated that development is *a top threat* to a specific region or habitat
- 12 Plans indicated that development is *a significant issue* of concern

# Conservation Actions

- All 51 Plans indicated that the land use planning process needs to play a role in conservation
- Identified 75 action themes within 13 broad categories
- Coordination actions most frequently mentioned
- Capacity building actions least frequently mentioned

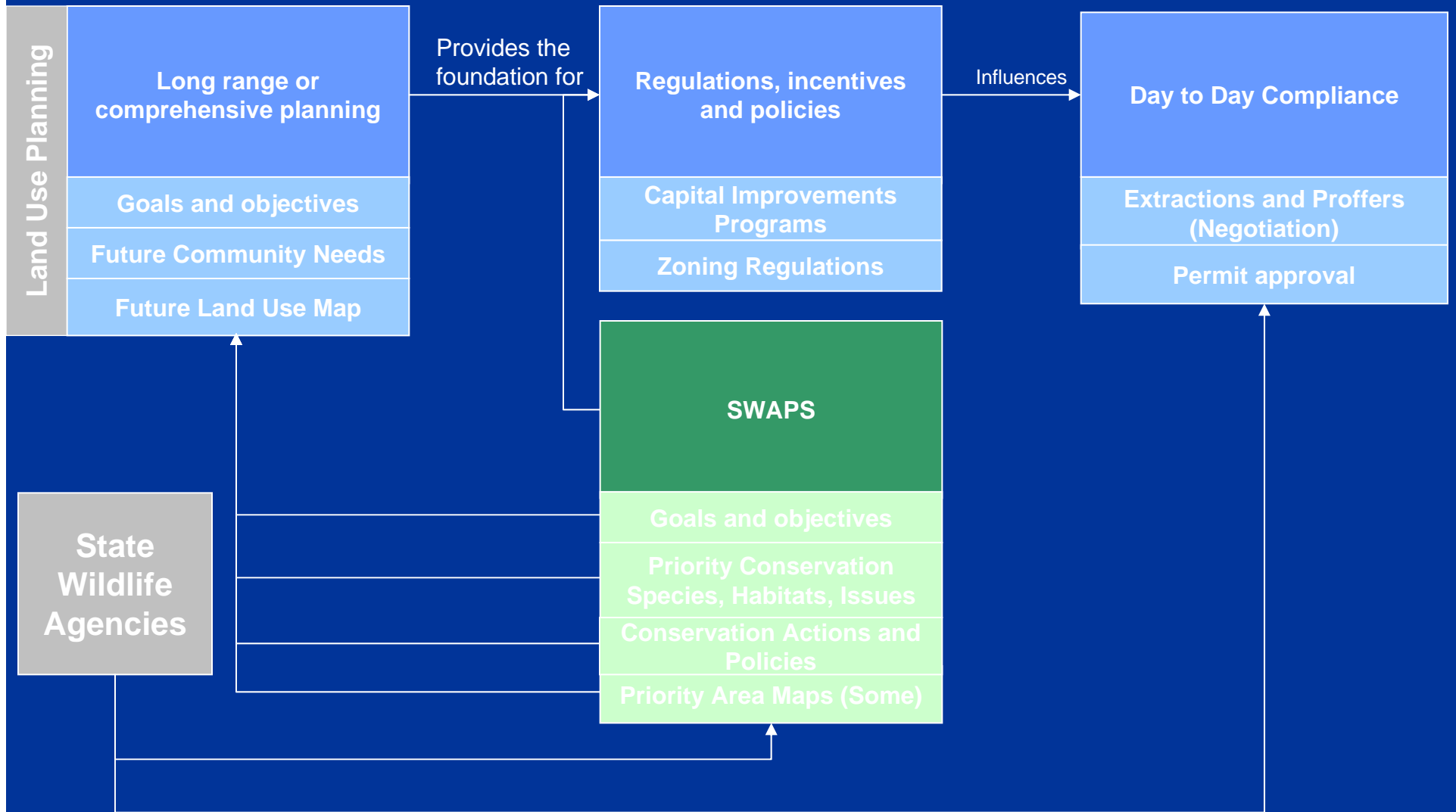


# Spatial Actions Relating to Land Use Planning



- 39 plans included sharing spatial data with land use planners as an action
  - creating maps of priority areas
  - identify priority areas to protect from development
  - sharing general spatial data (such as habitat and species locations)
  - Watershed planning or Habitat Conservation Planning

# Points of Intervention





# Funding: Strategic Investment in Habitat Conservation

- The U.S. spends approximately \$4 Billion a year on land conservation.
- State Wildlife Grants provides \$65 million a year for wildlife planning, research and some habitat conservation.
- More strategic use of land conservation spending for habitat values is critical and achievable with conservation plans.

# Conclusions

- Land uses that impact habitat will continue to put species at risk
- ESA implementation will continue to be controversial, upstream solutions are needed
- Numerous plans and tools exist in each state, including a comprehensive wildlife conservation plan, with potential to provide strategic direction for wildlife protection and public benefits
- Opportunities for land trust involvement in strategic habitat protection, restoration, policy and funding

# What Can Land Trusts Do?

- Learn about your state wildlife action plan or other regional/statewide biodiversity plans
- Ask states to tell you where it is most important to protect wildlife habitat
- Invest your time and dollars strategically in those places
- Make use of incentive programs to restore or manage habitat and implement actions
- Help your state improve its wildlife plan

**For more information:**

[www.defenders.org/statewildlifeplans](http://www.defenders.org/statewildlifeplans)

[www.biodiversitypartners.org](http://www.biodiversitypartners.org)

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**Living Lands Project**