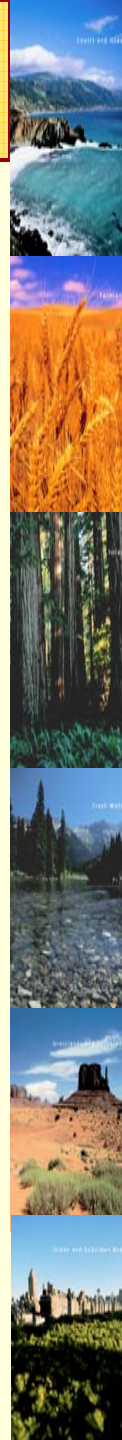

The State of the Nation's Ecosystems:

An Experiment in Cross-Ecosystem Integration

Robin O'Malley
The H. John Heinz III Center for Science, Economics and the Environment

Project Goals

- Identify strategic indicators of condition and use of U.S. ecosystems
- Lay the groundwork for periodic, high-quality, non-partisan reporting

Key Principles

- Scientifically excellent
- Politically neutral
- Policy relevant
- Focus on state
- Not a one-time report

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The State of the Nation's Ecosystems

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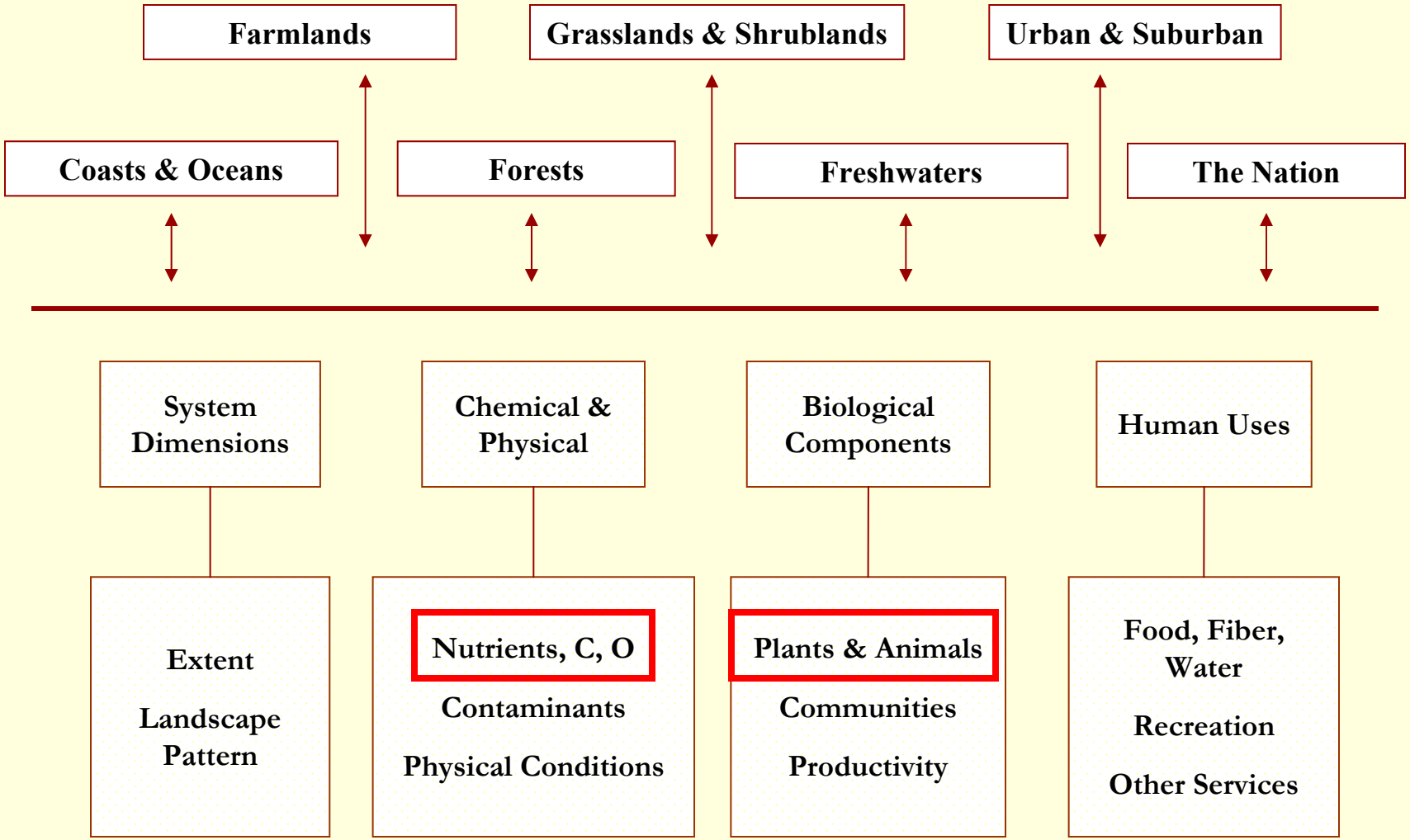
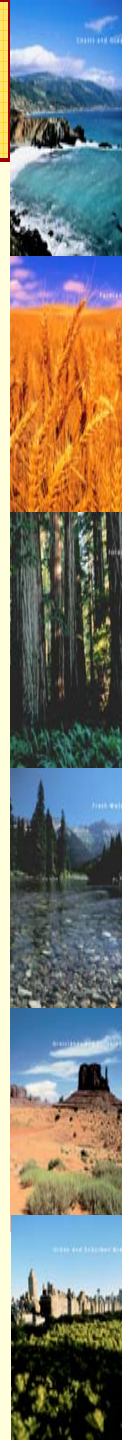
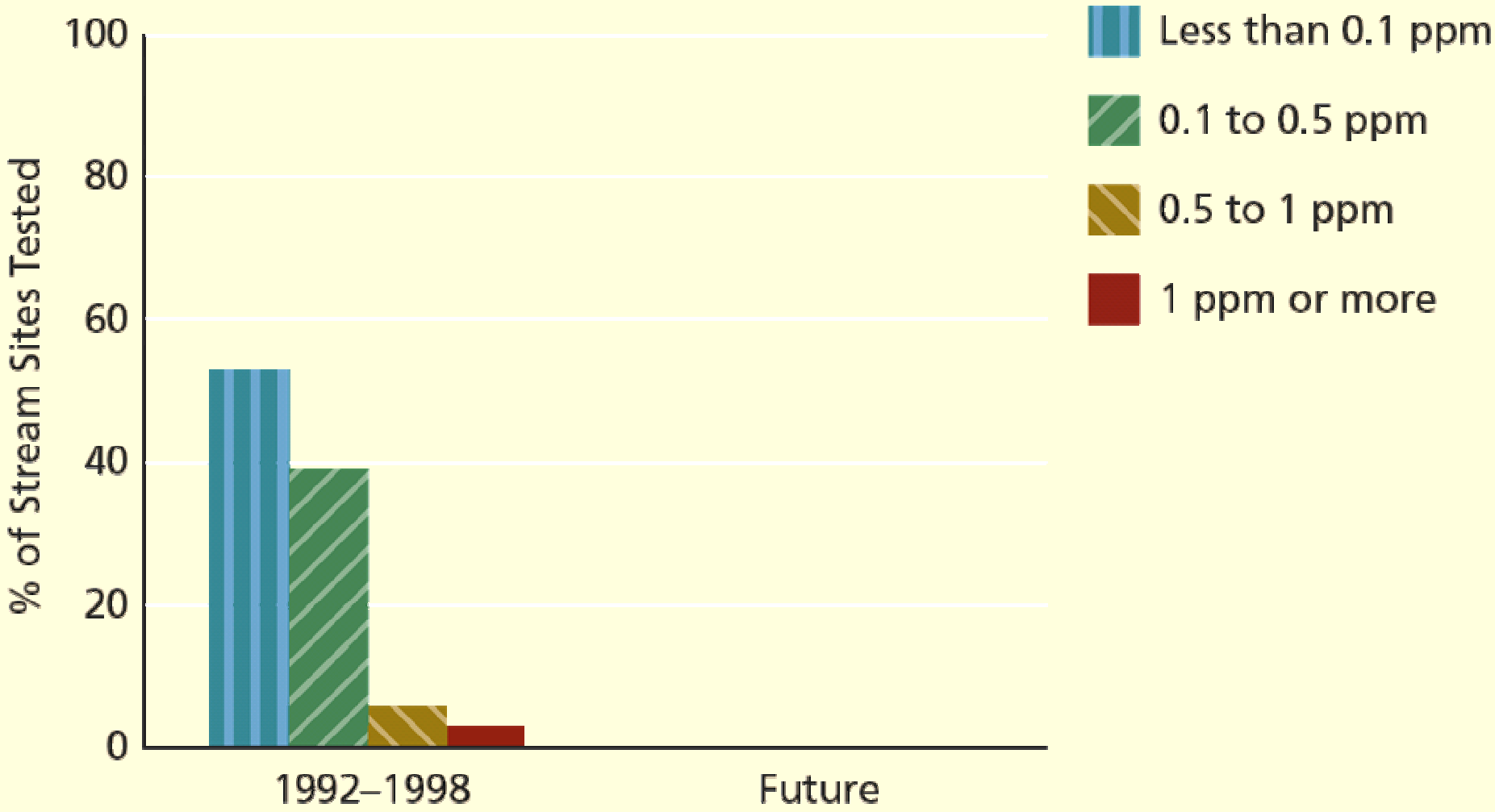




Nutrients:

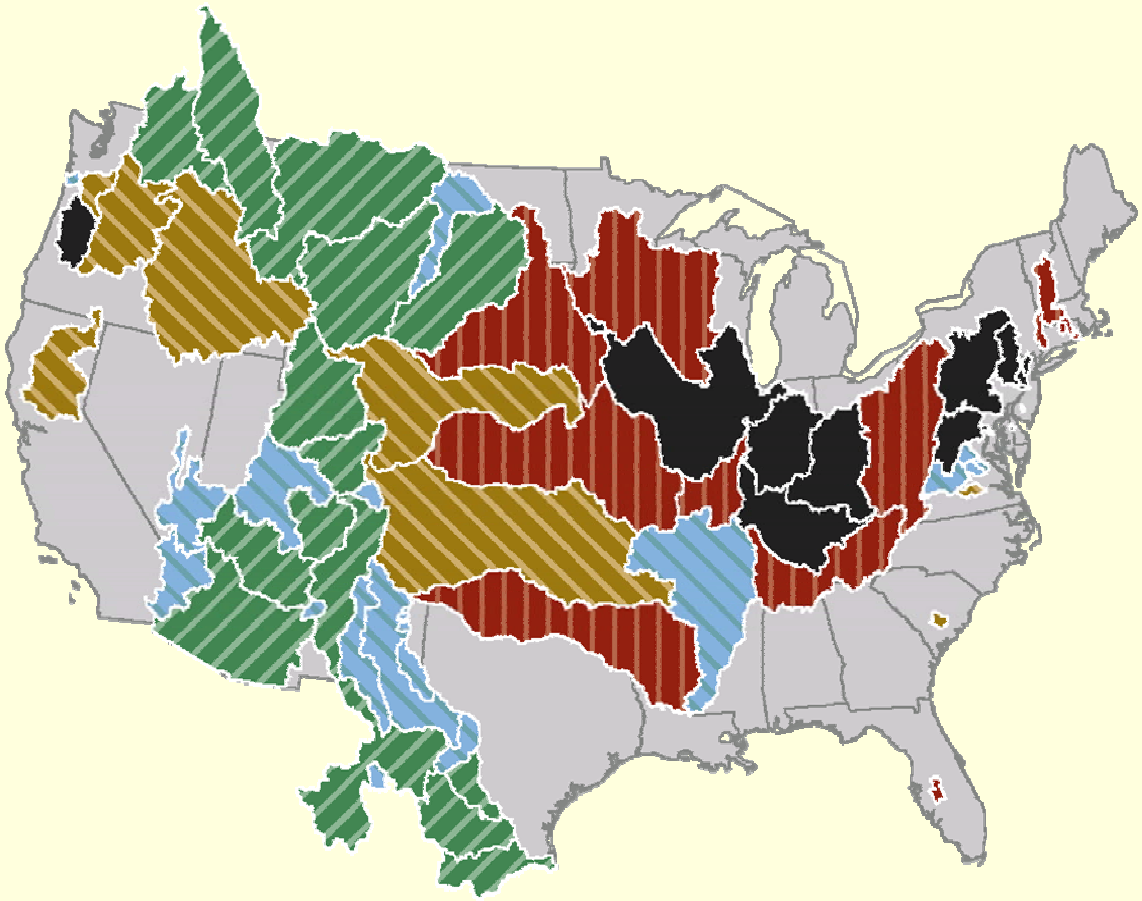
- Concentrations of N in waters by ecosystem
- Concentrations of P in waters by ecosystem
- Total loadings to coastal regions

Nitrate in Forest Streams



Data Source: USGS National Water Quality Assessment. Coverage: lower 48 states. Each sampling area was sampled intensively for approximately 2 years during 1992–1998.

Yield of Total Nitrogen from Major Watersheds (1996–1999)

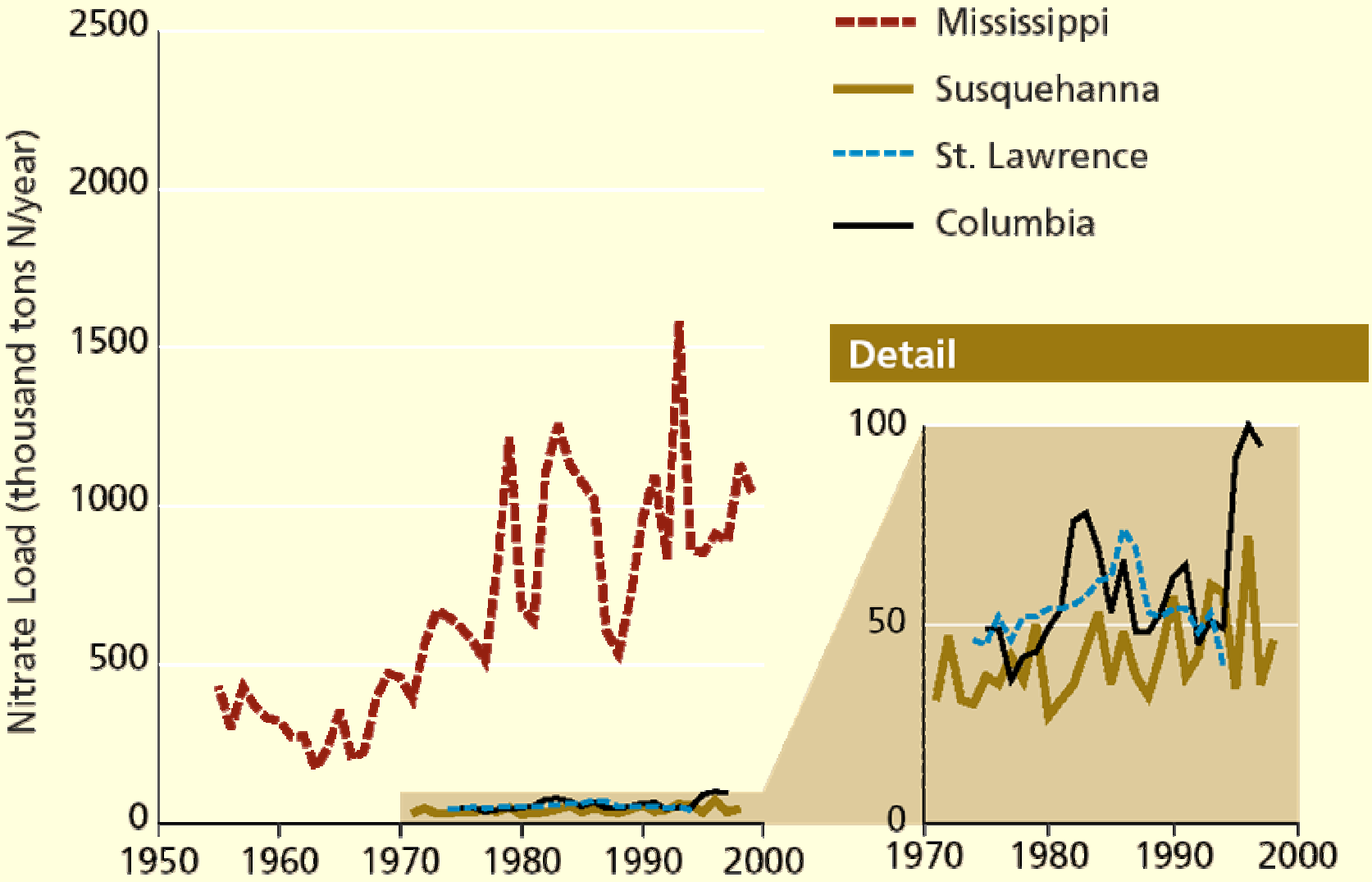


Total Nitrogen (pounds of nitrogen per sq. mile per year)

- Data Not Available
- Less than 10
- 10-600
- 600-1,500
- 1,500-3,000
- 3,000-10,000

Data Source: U.S. Geological Survey National Stream Quality Network (NASQAN), National Water Quality Assessment (NAWQA), and Federal–State Cooperative Program. Coverage: selected areas of lower 48 states.

Nitrate Load Carried by Major Rivers



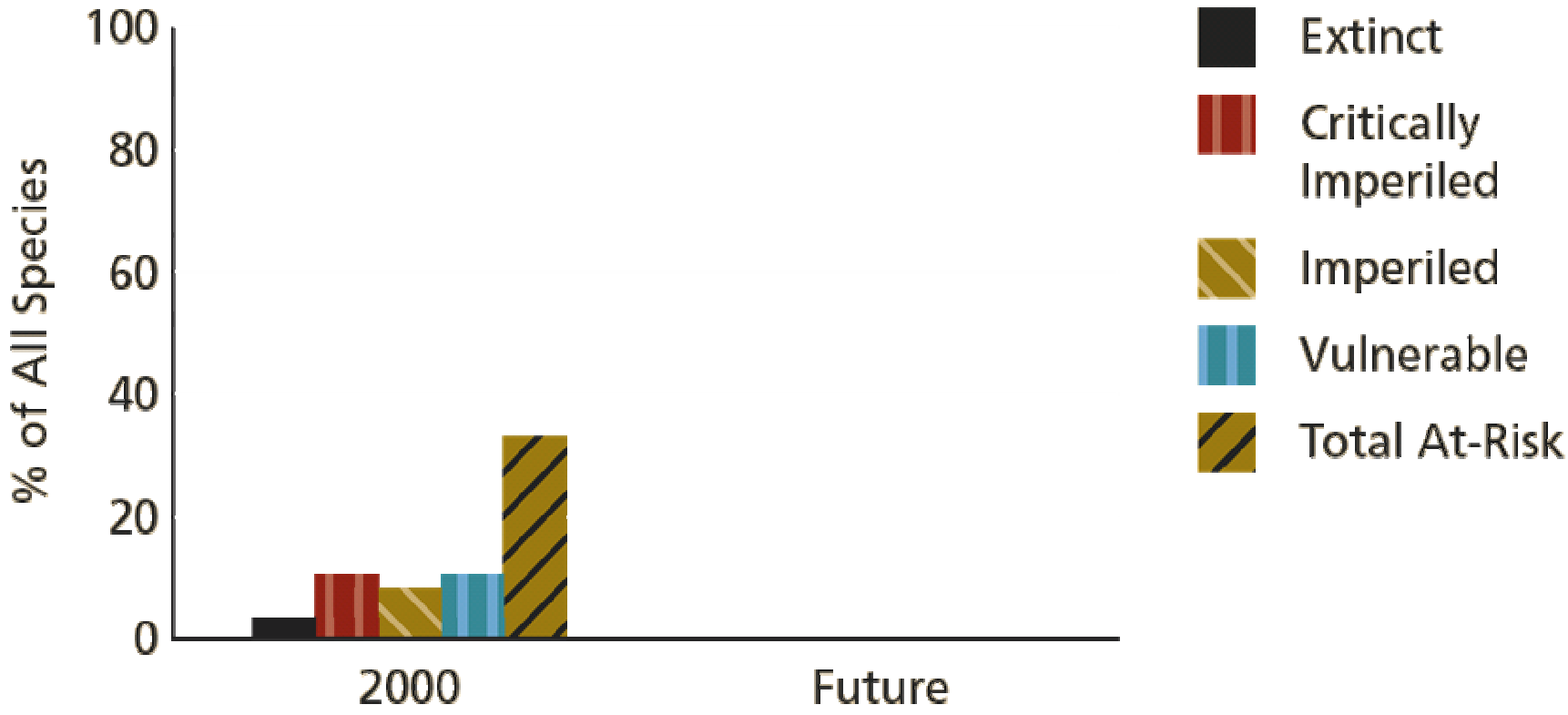
Data Source: U.S. Geological Survey National Stream Quality Network (NASQAN), National Water Quality Assessment (NAWQA), and Federal–State Cooperative Program. Coverage: selected major rivers.

Species At Risk

- Numbers of "at risk" species (Heritage) by ecosystem and region

At-Risk Animal Species, by Risk Category

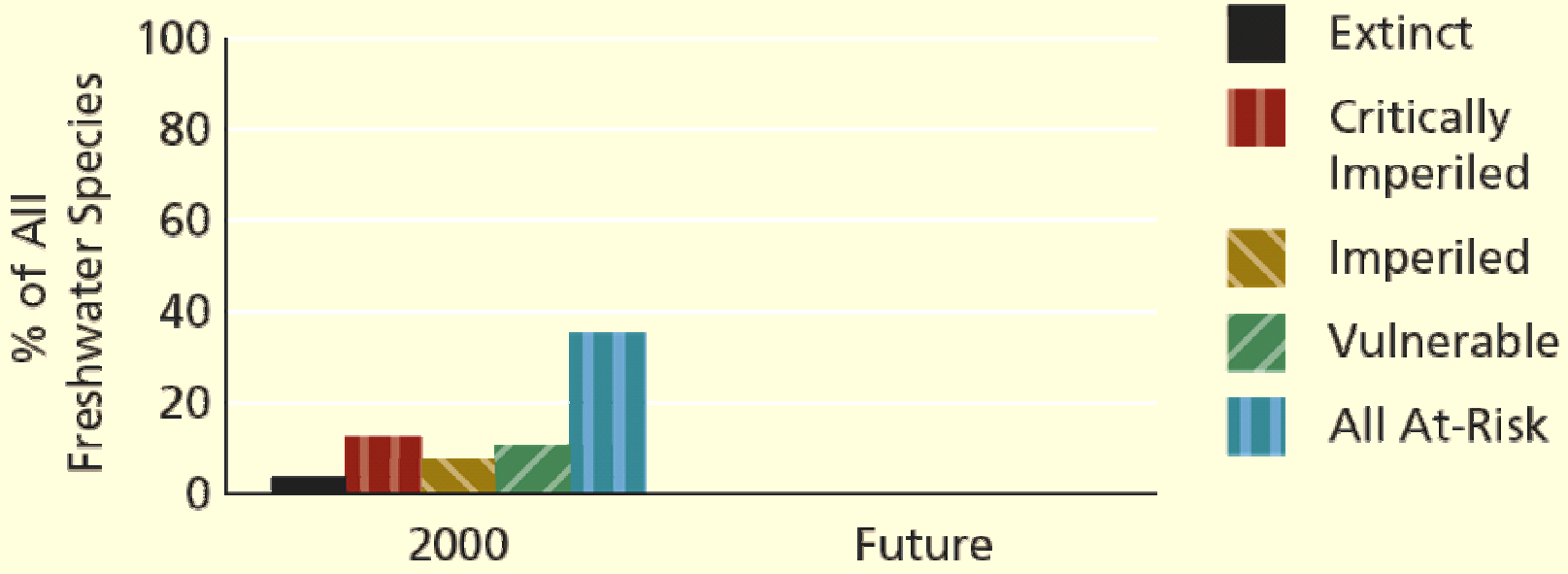
Partial Indicator Data: Land Animals, Freshwater Animals



Source: NatureServe and its natural heritage member programs.
Coverage: all 50 states.

At Risk Species – Freshwater – By Risk Category

Partial Indicator Data: Freshwater Animals



Source: NatureServe and its natural heritage member programs.
Coverage: all 50 states.

The State of the Nation's Ecosystems

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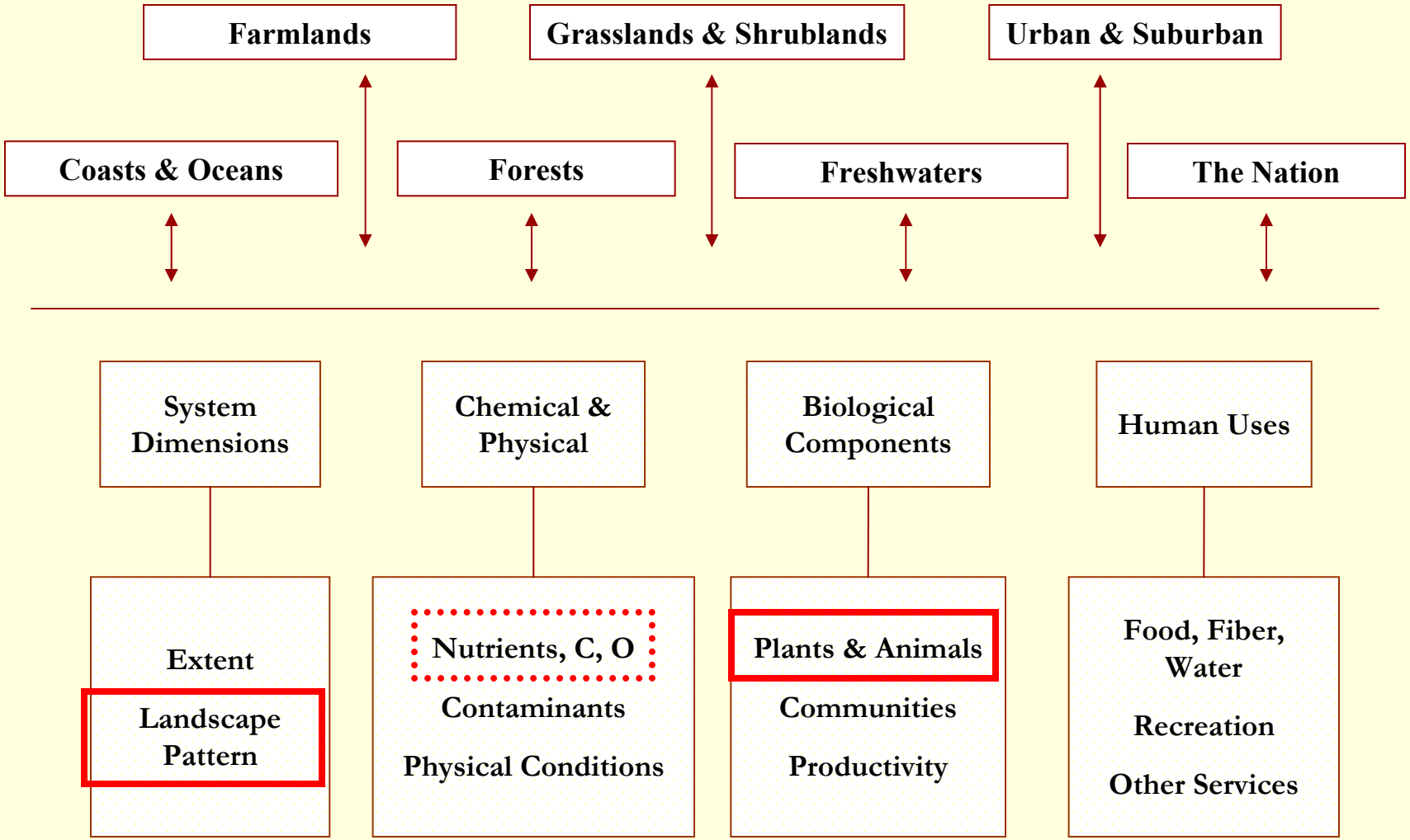

Landscape Pattern / Fragmentation

- Contiguity of croplands and development
- Edge:area ratio of farmland "natural" patches
- Forest / non-forest "neighborhood"
- Area, size of grass/shrub patches
- Area, size of urban "natural" patches

Non-native Species

- Plant cover (3)
- # species combined with species cover
- # species per watershed
- Population trends (invasive/non-invasive)
- "Disruptive" (native + non-native)

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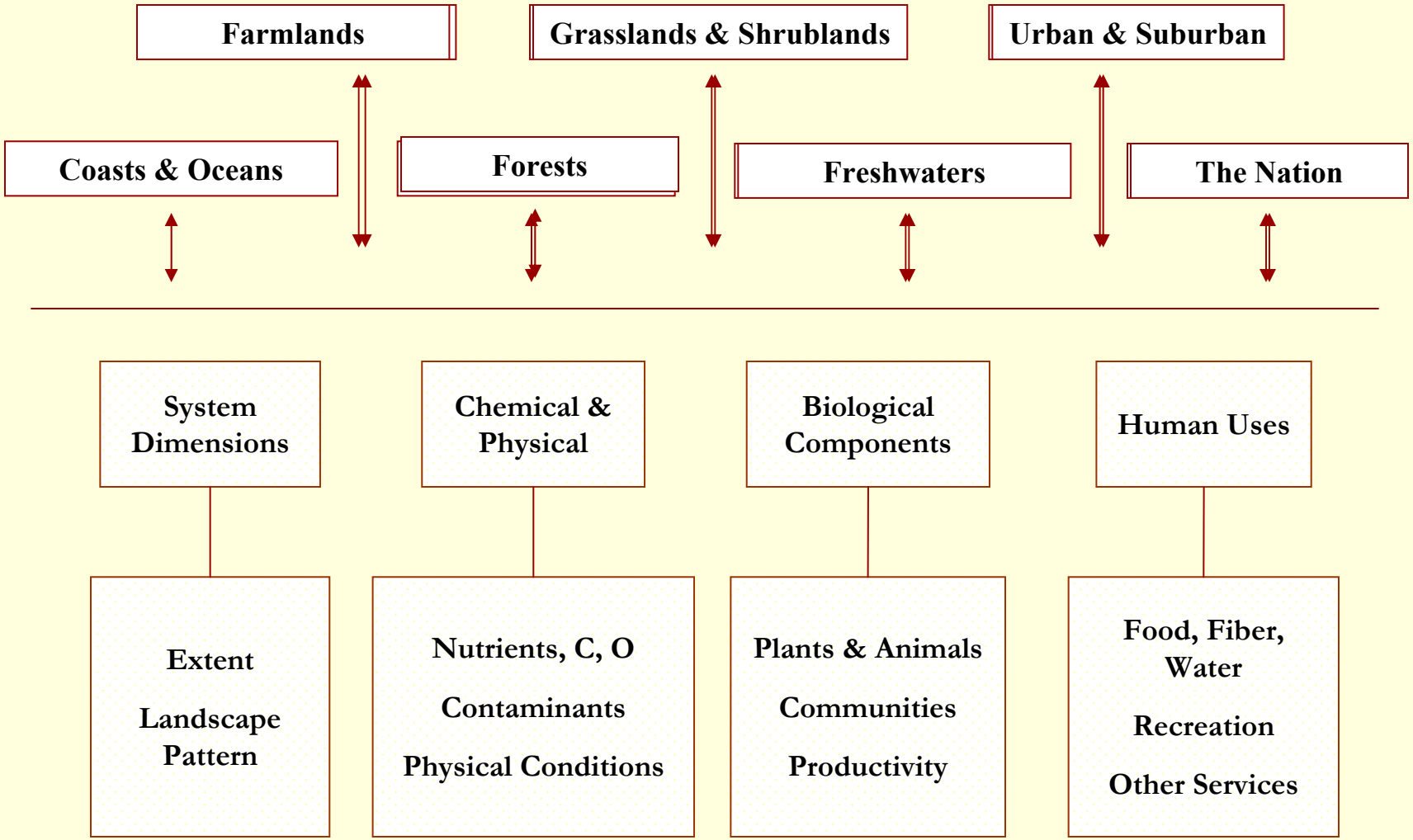
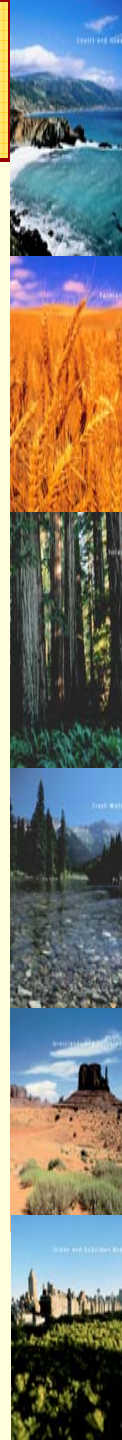




Topic

Non-native Species

Landscape Pattern

Farmlands

Grasslands & Shrublands

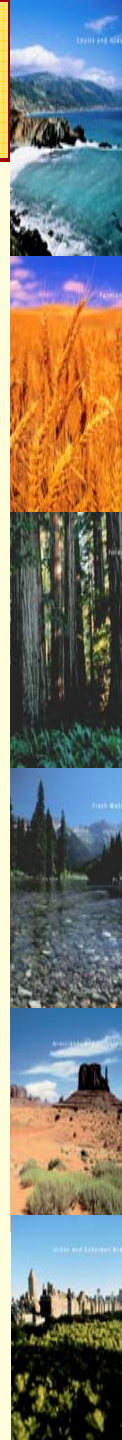
Urban & Suburban

Coasts & Oceans

Forests

Freshwaters

The Nation

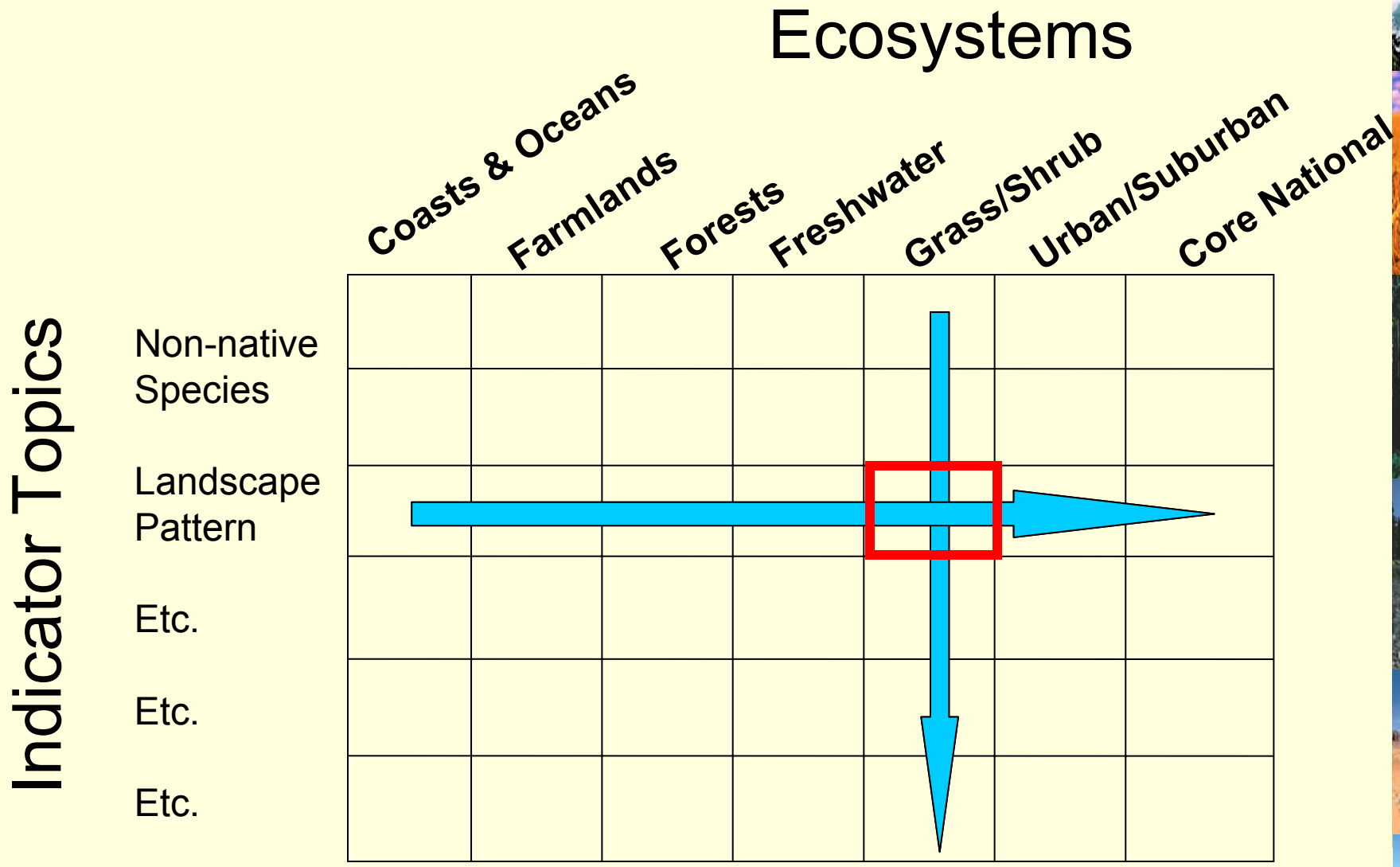


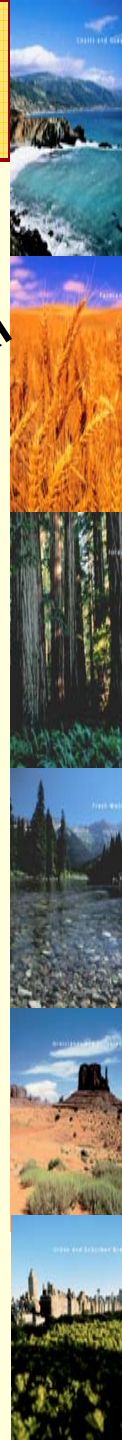
Landscape Pattern / Fragmentation

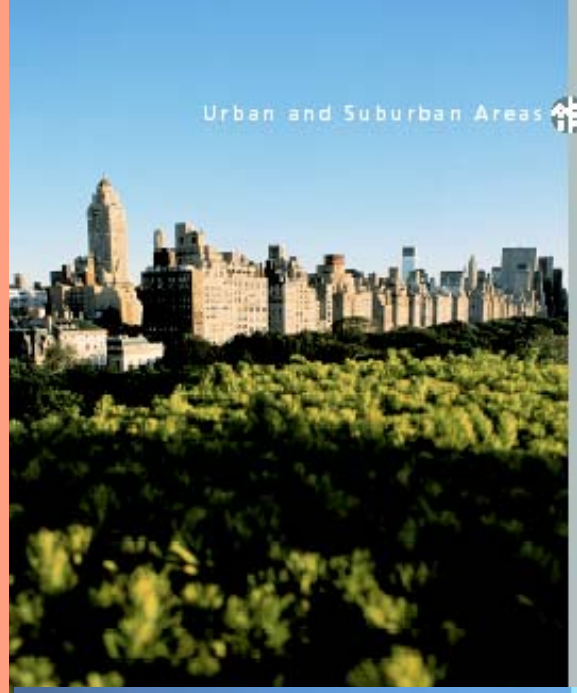
- Roads
- Contiguity

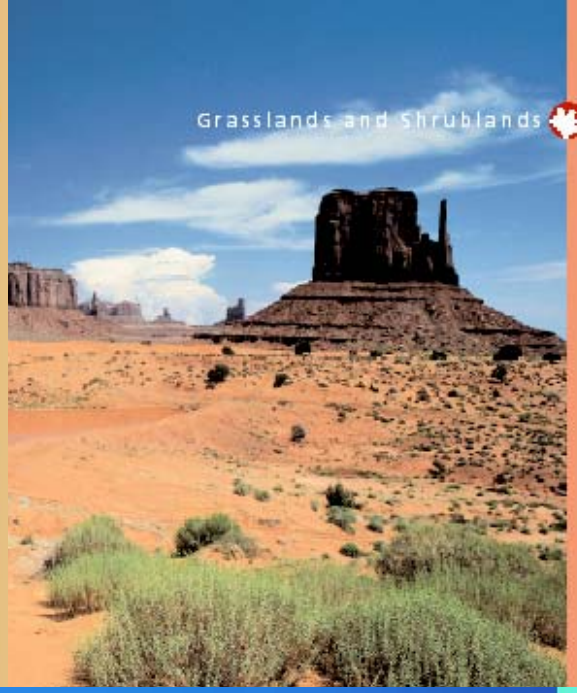
Non-Native Species

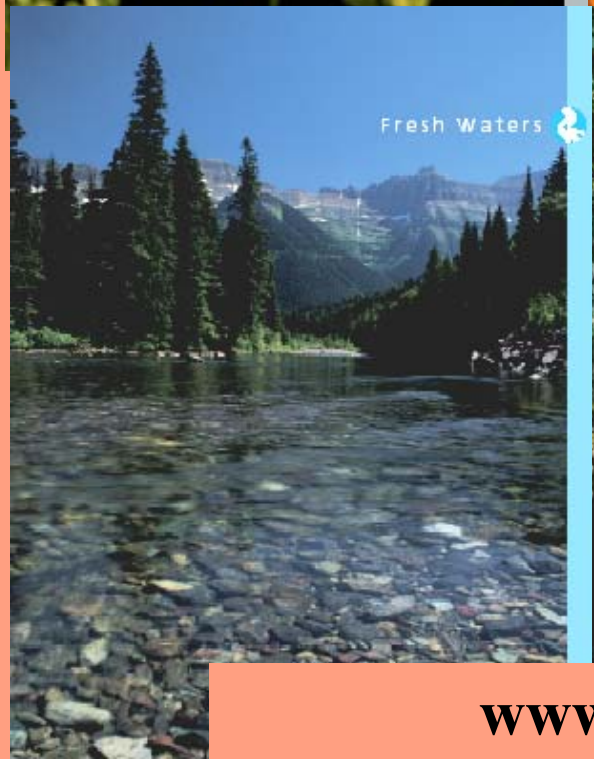
- Frequency of occurrence (all taxa, all ecosystems)
- Taxa (not ecosystem) specific

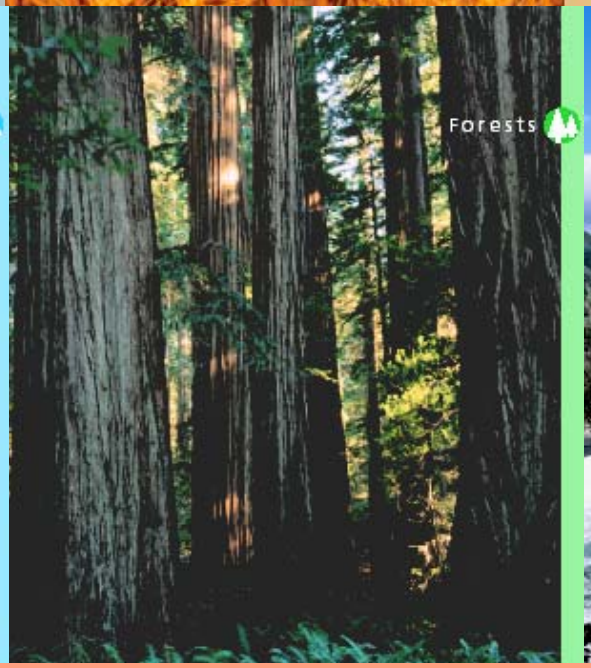

Ecosystems
Coasts & Oceans
Farmlands
Forests
Freshwater
Grass/Shrub
Urban/Suburban
Core National
Indicator Topics
Non-native Species
Landscape Pattern
Etc.
Etc.
Etc.











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