Why do we care about aquatic species and their habitats?

- Indicators of ecological health of a watershed
- Indicators of status of our water supplies
- Indicators of our stewardship

And of course, because we like them!

Biological Processes and Communities of Stream Corridors are Influenced by the Conditions and Processes of the Catchment, or Watershed

Landscape Controls
(Geology, Vegetation, Climate

Watershed Processes
(Material transfer, hydrology, connectivity)

Land Use

Restoration or enhancement

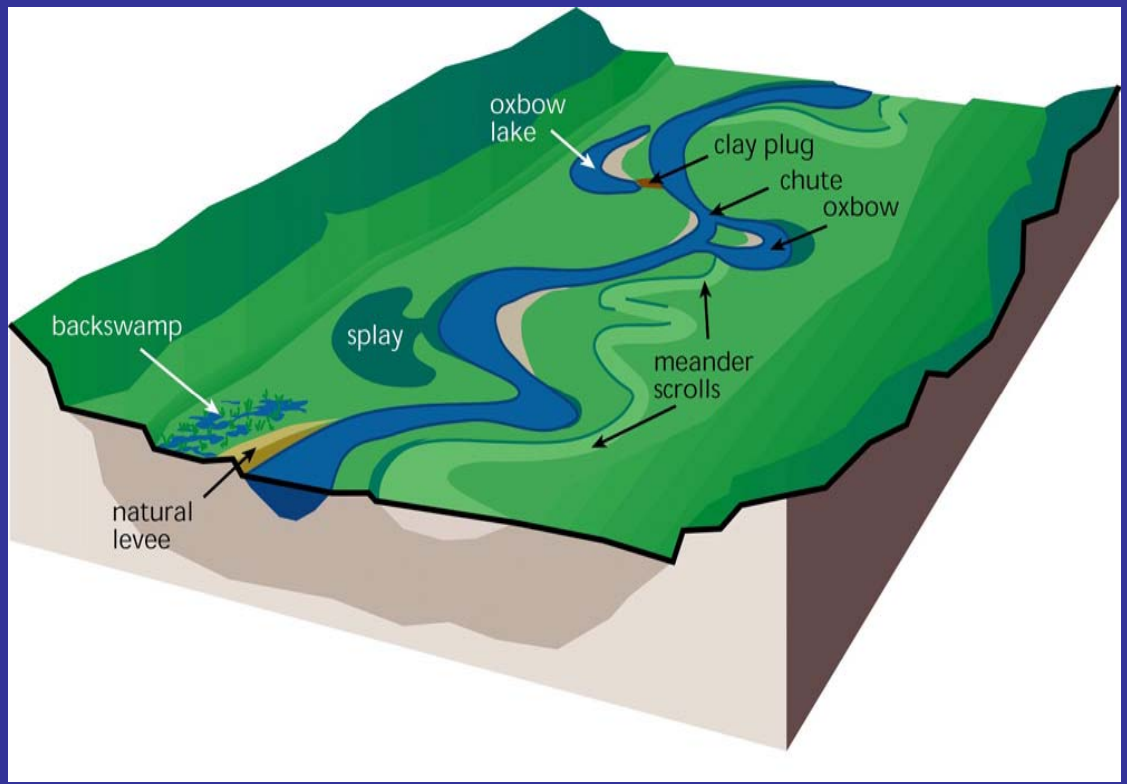
Habitat Conditions

Biological Response

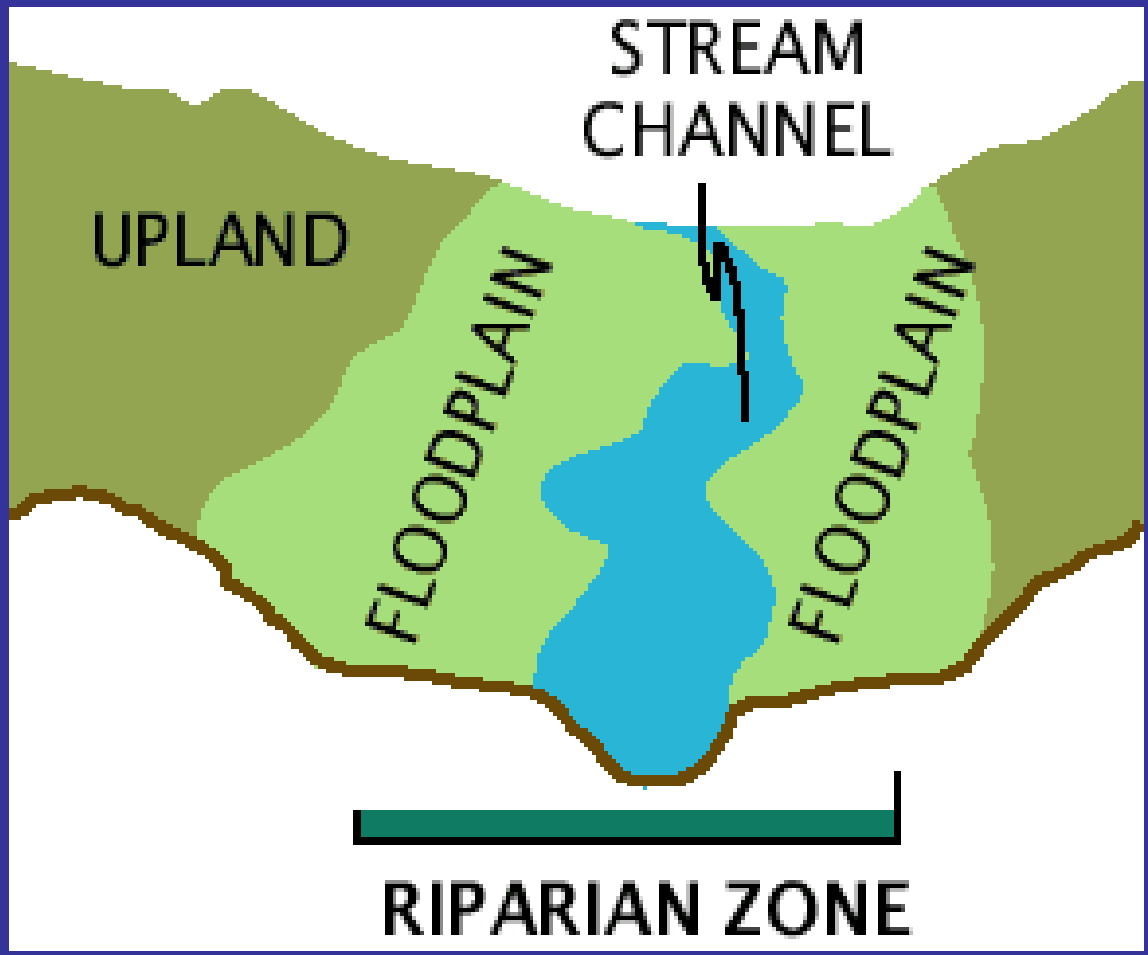
Biological Processes and Communities of Stream Corridors are Influenced by the Watershed

- Physical setting
- Land use/land cover
- Historical conditions
- Disturbance
- Degree of connectivity of stream networks

Hydrologically Un-altered Rivers

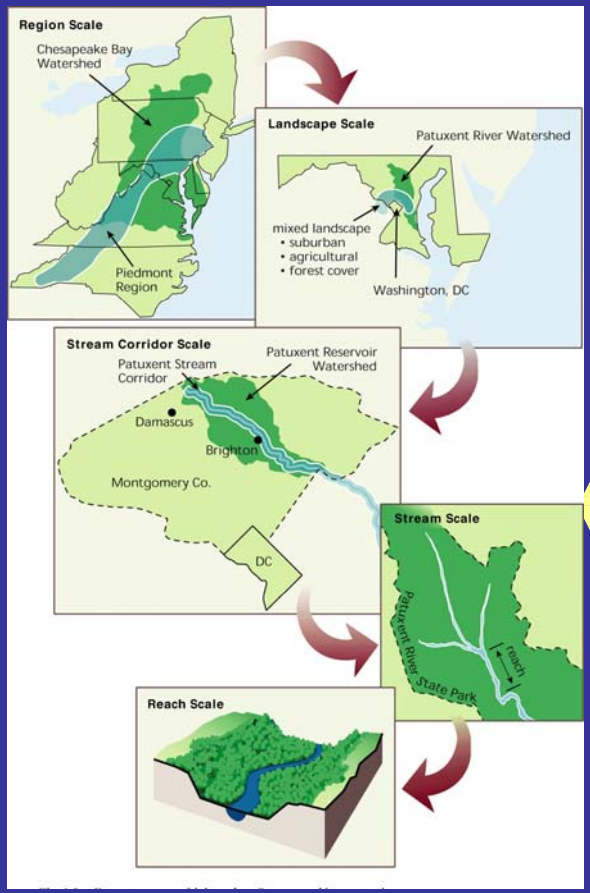


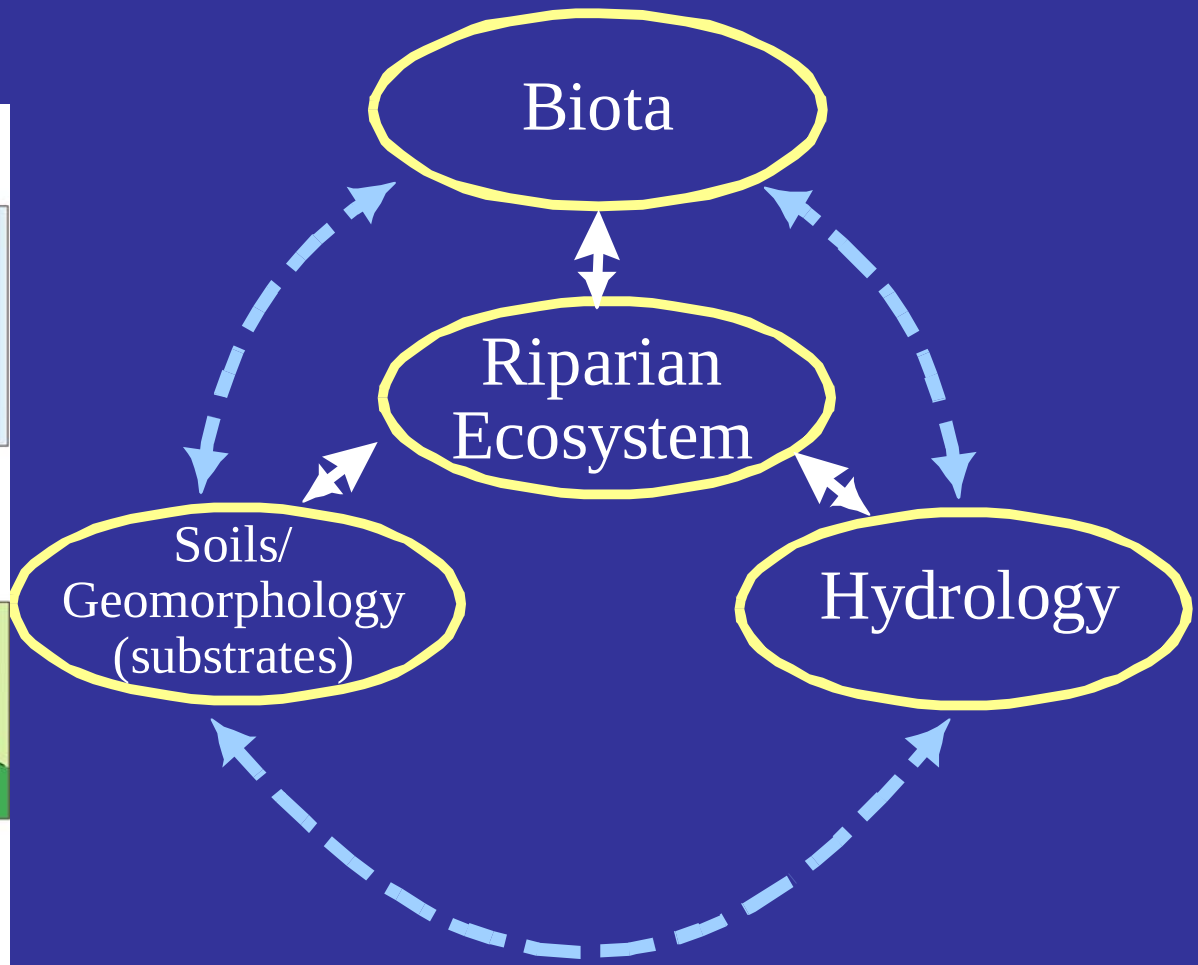
Stream/Riparian Systems are inter-related, as are the habitats they support



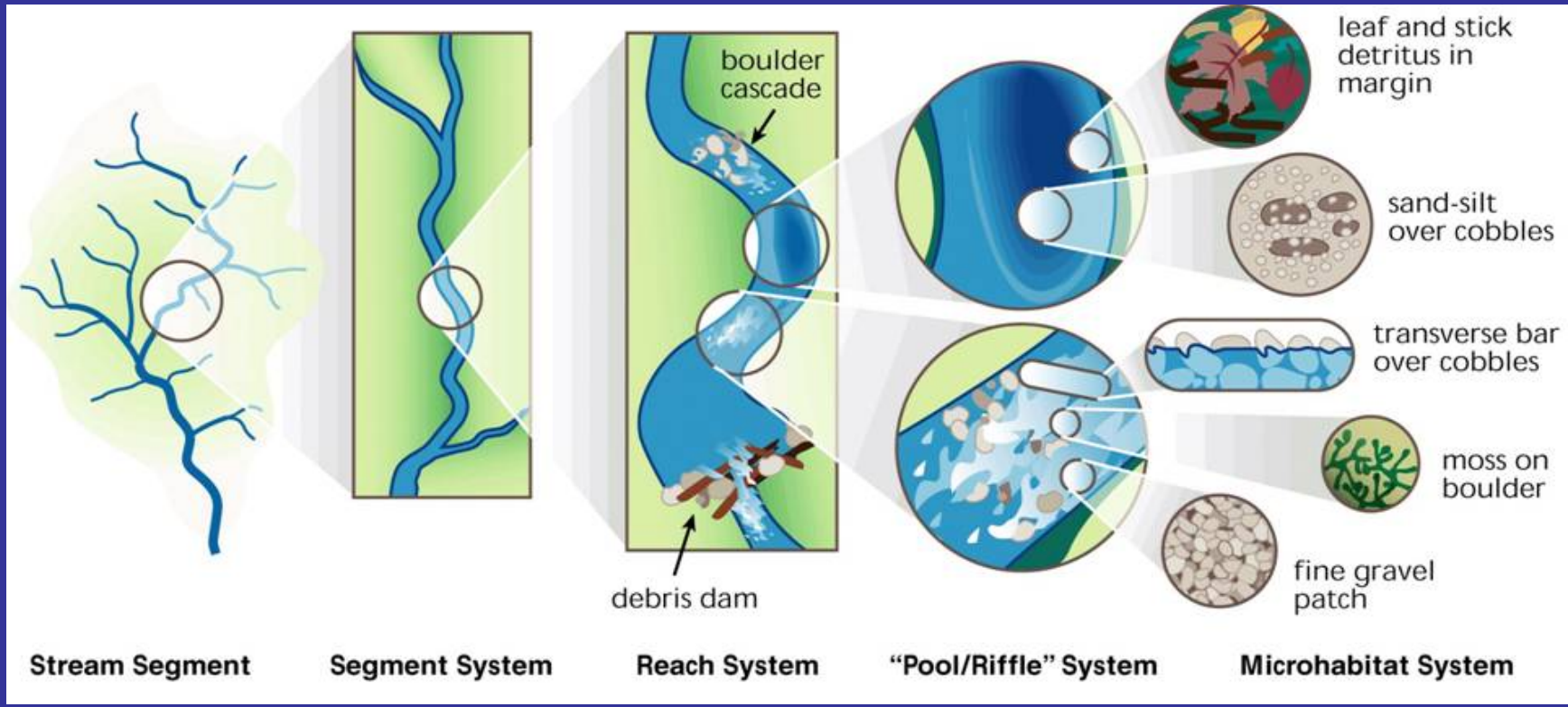
Biological Processes and Communities of Streams are ***very closely influenced by and integrated with*** the riparian zone/floodplain

Stream Corridor Processes





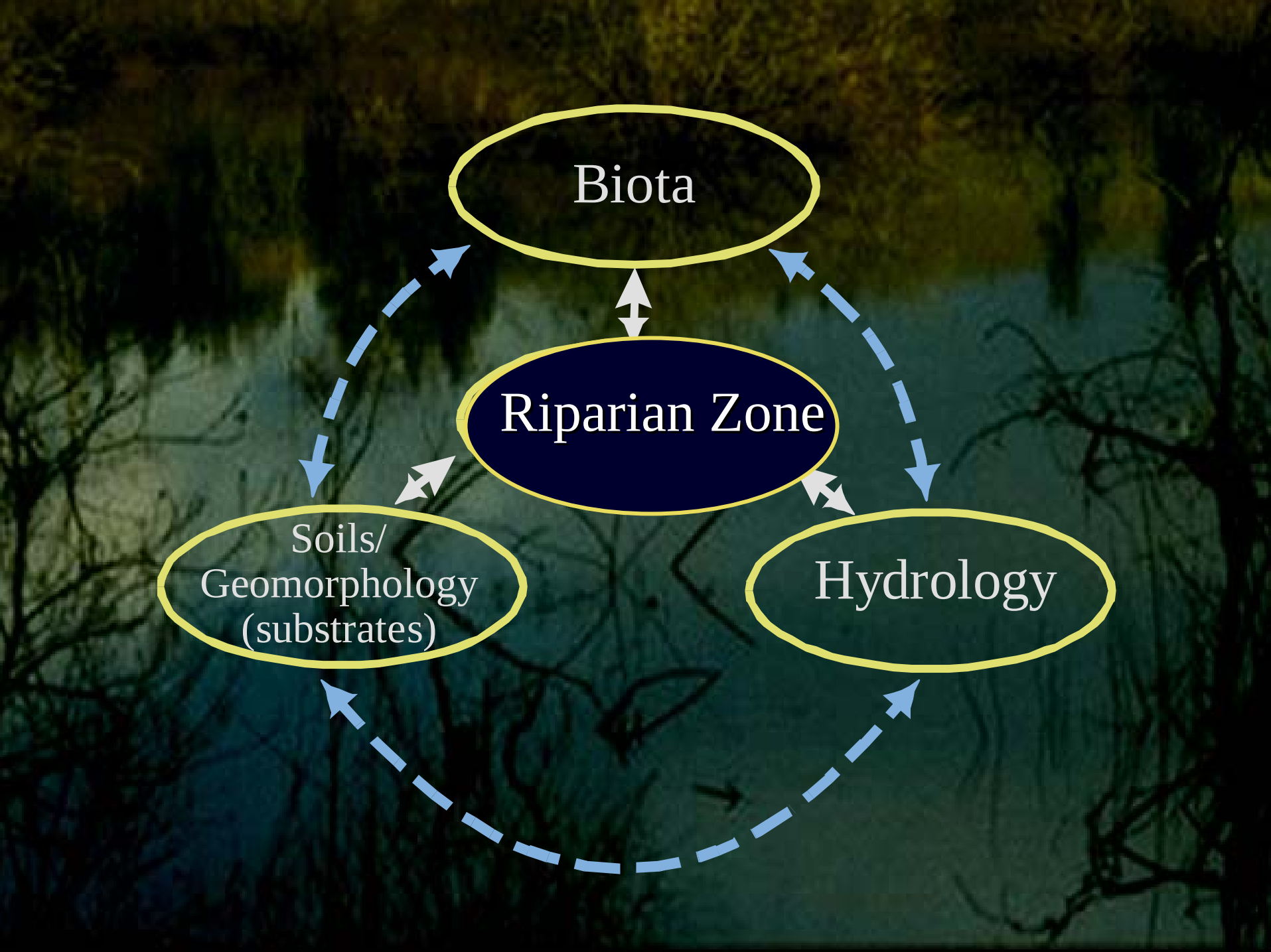
Habitat conservation and management at multiple scales



Riparian Habitats:

What is a riparian zone?

What is a buffer?


Biota
Riparian Zone
Soils/
Geomorphology
(substrates)
Hydrology

Functions of Riparian Buffers

SOURCE of energy and materials

FILTER for contaminants

SINK for nutrients

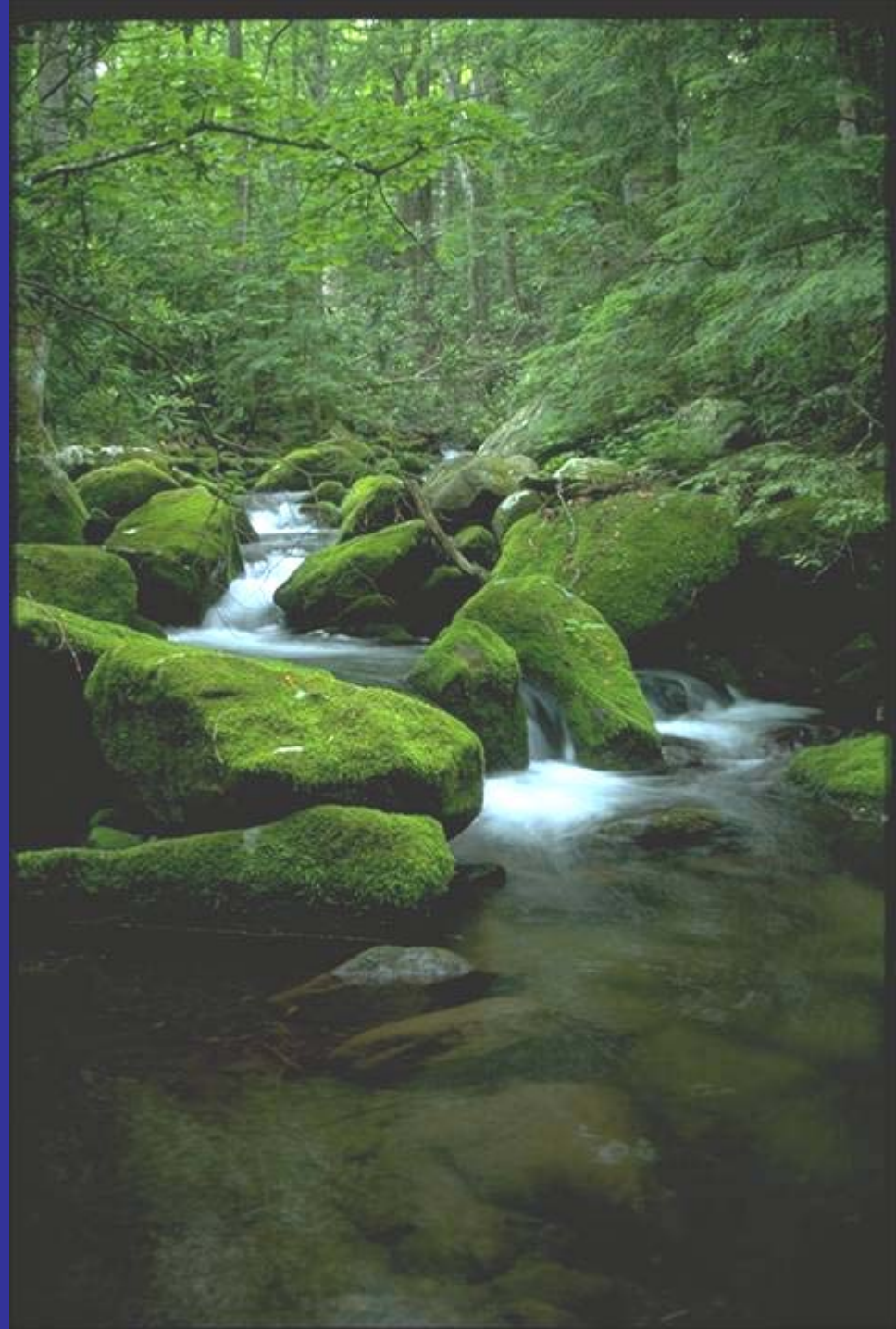
TRANSFORMER of chemical compounds, such as nitrates

HABITAT components for riparian and aquatic species

Aquatic Habitats – formed by movement of water and materials, during high flows

Pools

- Refuge for fish during low flow,drought periods
- Resting and feeding area
- Refuge from predators

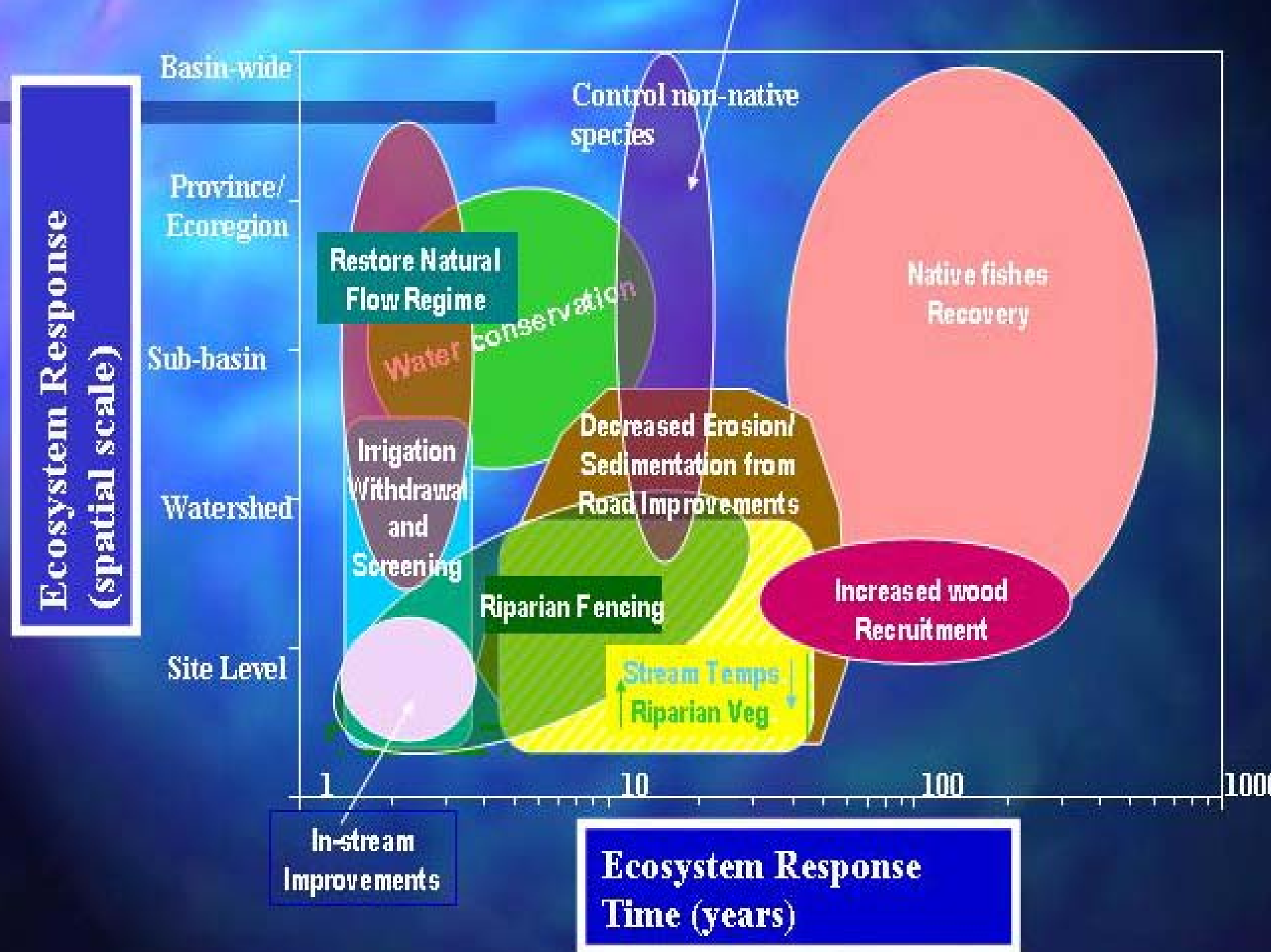


Riffles

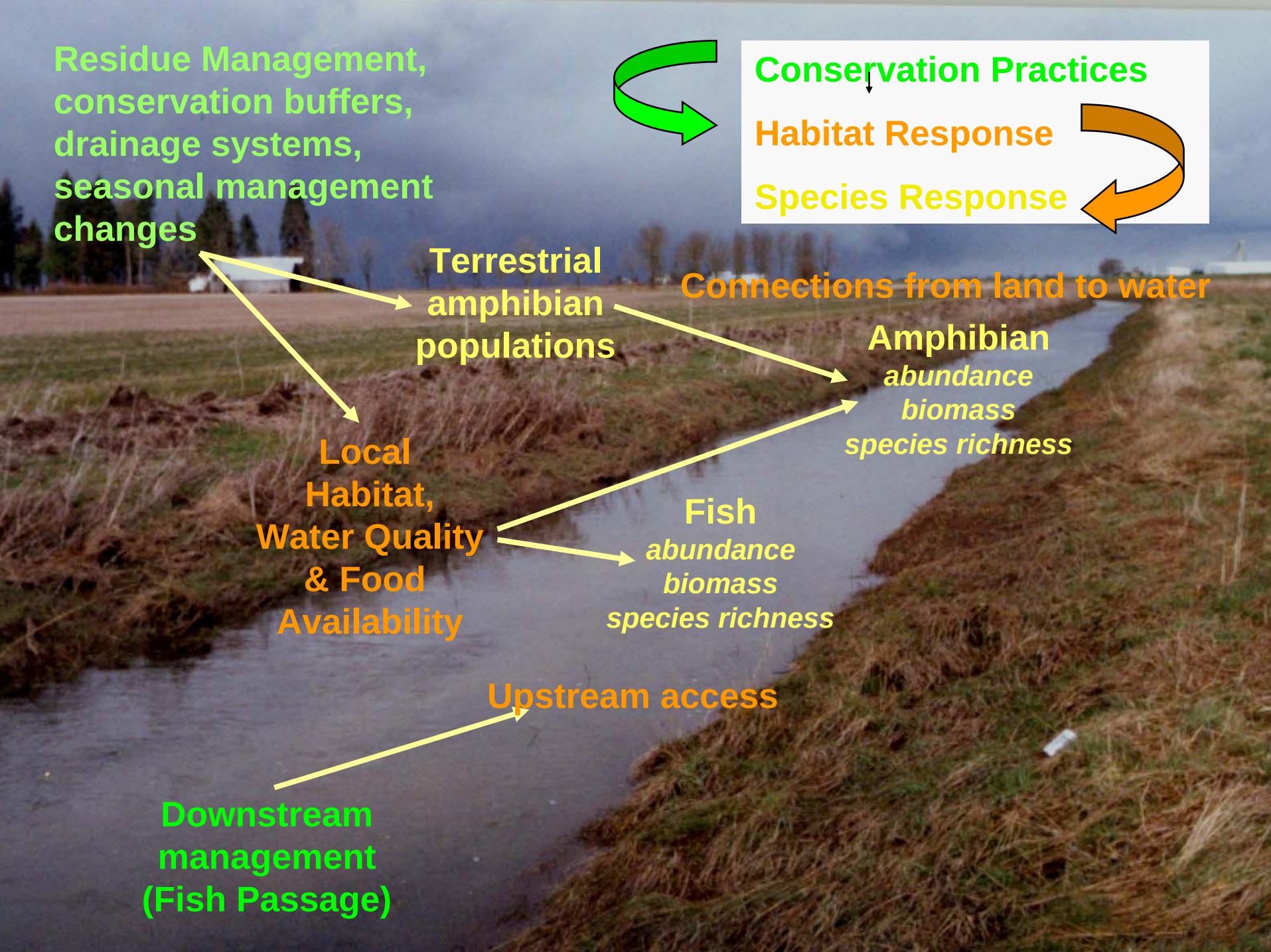
- Higher Dissolved Oxygen
- Diverse substrate size and turbulence offers cover
- Conditions favored by macroinvertebrates

Challenges for Conservationists

- Large scale decrease in biological diversity
- Widespread loss of free-flowing habitats
- Multiple jurisdictional boundaries of watersheds and streams
- High costs and long time intervals needed for restoration


Ecosystem Response (spatial scale)
Basin-wide
Province/ Ecoregion
Sub-basin
Watershed
Site Level
Control non-native species
Restore Natural Flow Regime
Water conservation
Native fishes Recovery
Irrigation Withdrawal and Screening
Decreased Erosion/ Sedimentation from Road Improvements
Riparian Fencing
Increased wood Recruitment
Stream Temps
Riparian Veg
In-stream Improvements
1
10
100
1000
Ecosystem Response Time (years)

Basic Habitat Components: Aquatic Species


Residue Management, conservation buffers, drainage systems, seasonal management changes
Conservation Practices
Habitat Response
Species Response
Terrestrial amphibian populations
Connections from land to water
Amphibian
abundance
biomass
species richness
Local Habitat, Water Quality & Food Availability
Fish
abundance
biomass
species richness
Upstream access
Downstream management (Fish Passage)