Land Trust Strategies for Securing Corridors

- Strategic landscape-scale planning and mapping
  - Brief overview of Anderson’s recommendations for regional connectivity

- Understanding and Promoting installation of wildlife crossings
  - Wildlands Network NC case study

- Restoring and protecting connectivity at the project level
  - Resilient and Connected Conservation Easements (and fee ownership)

- Promoting healthy forest and natural habitat management
Importance of Local and Regional Connectivity

Local Movements microclimates

Upslope short term relief

Northward long term adjustments

Riparian cool moist microclimates
Landscape Diversity
Create climate options

Locally Connected
Allows species to move

= Climate Resilience
Regional Connectivity gradual movement of plant and animal populations in response to changes in the climate.

Flow analysis models movement in N-S and E-W direction with preference for upslope and northward movement.
Strategies for Addressing Regional Connectivity: Riparian Climate Corridors

- **Riparian Climate Corridors**: Riparian areas are the floodplains and zones along water bodies that serve as interfaces between terrestrial and aquatic ecosystems.
- Protecting and restoring intact riparian floodplain areas that serve as natural corridors will facilitate movement of plants and wildlife linearly.
Strategies for Addressing Regional Connectivity:
Incorporate connectivity as a priority in conservation planning

**Diffuse flow:** Areas that are extremely intact and consequently facilitate high levels of dispersed flow.

- Keep natural areas intact and prevent the flow from becoming concentrated. *This might be achievable through land management or broad-scale conservation easement.*
Strategies for Addressing Regional Connectivity: Incorporate connectivity as a priority in conservation planning

- **Concentrated flow**: areas where large quantities of flow are concentrated through a narrow area.
- Because of their importance in maintaining flow across a larger network, these pinch points are **good candidates for permanent land conservation (ideally fee simple)**.
Strategies for Addressing Regional Connectivity:
Incorporate connectivity as a priority in conservation planning

• **Constrained flow**: areas of low flow that are neither concentrated nor fully blocked
  - Presents a conservation challenge in some cases, *restoring a riparian network might present the best option*, concentrating the flow and creating a linkage that will be easier to maintain.

• **Blocked/Low flow**: Could be important areas to restore native vegetation or alter road infrastructure to reestablish a historic connection.
• Examined major road crossings in areas of concentrated flow

• 201 areas where major roads intersected with areas of concentrated regional flow.

• Road/flow crossings were greatest in Pennsylvania (21) followed by Florida (12), Georgia (16), and Quebec (19)
Wildlands Network Case Study for Prioritizing Road Crossings
Opportunities for land trusts to restore connectivity
The Case for Connectivity and Human Safety Issue

- 4 million miles of roads.

- Collisions kill up to one million vertebrates each day.

- NC alone (2014-2016) experienced over 61,000 wildlife-vehicle crashes, resulting in 20 human fatalities, 3,400 injuries, and $149 million in damages.

- Wildlife underpasses and overpasses can reduce wildlife-vehicle collisions by 80 to 90% and pay for themselves when installed at collision hotspots.

- They can also restore connectivity, reduce wildlife-vehicle collisions, and improve public safety.
Wildlands Network
Large Spp Model for Prioritizing Road Crossings

Large Species Road Priority Rankings

- Traffic Volume
- Speed
- Type of median
- WVC hotspots
- Black Bear connectivity
- Rare or endangered species hotspots
- Protected areas on both sides
Small Species priority road characteristics

- Traffic Volume
- Road Width
- Type of median
- Timber Rattlesnake connectivity
- Box Turtle centrality
- Rare, endemic, or endangered species hotspots
- Nearby wetlands
- Protected areas on both sides
Wildland Network’s road-crossing prioritization model

- **US-17** (red-priority ranking 7)
  - high traffic volume
  - adjacent protected areas
  - high box turtle centrality
  - high timber rattlesnake and black bear connectivity
  - Natural Heritage Element Occurrence.

- **SR-1105** (orange-priority ranking 5)
  - lane width
  - protected areas on both sides
  - high timber rattlesnake and black bear connectivity
  - Natural Heritage Element Occurrence.
The North Carolina DOT produces a Statewide Transportation Improvement Plan (STIP) which forecasts 10-year road project priorities. This spatially-explicit version facilitate the ability of conservation organizations to align DOT project priorities to wildlife considerations.
Resilient and Connected Land Protection Projects
(The Challenge of Perpetuity in a Changing World)
When the landscape changes, conservation easements may run into problems. Landscape changes can create conflicts with conservation easement purposes and specific conservation easement restrictions.

**Conservation Easement**
- Purpose
- Recitals
- Restrictions and reserved rights

Baseline Documentation Report
Conservation Purpose Clause

• The purposes clause is often referred to as the heart of an easement and will be the standard against which current and future activities will be evaluated.

• Establishes what the conservation values are and why they are important.
Resilient Conservation Purpose

- Conservation Easements may contain a severability clause that states when one purpose ceases to exist other purposes that persist take precedence.

- J. Olmsted suggests language that climate change effects cannot serve as a basis for modification or termination of the agreement.
  - protect emerging ecosystems
  - place priority on protecting the resilience characteristics and ecological processes (stage and not the actors)
  - Specifically state a conservation easement will continue to encumber the land despite changes
Incorporating Corridors and Resilience into Recitals

Recitals can enumerate the property’s values
• to conserve aquatic and terrestrial biological resources
• sustaining climate resilience, local and regional corridors.
• the presence of any unique geology types
• the land’s role in providing microclimates
• local and regional connectivity for wildlife.
Reserved Rights and Restrictions

Opportunity to establish enforceable and clear standards for permanent protection of the land’s native biodiversity and resilience characteristics.

The CE can ensure that:

- terrestrial and aquatic wildlife movement are maintained and/or enhanced,
- landforms providing micro-climates are not damaged,
- sensitive or under-protected geology or habitat types have special protections.
- Critical restricted flow areas are protected from conversion and development.
Broaden Baseline Documentation Report

Include a detailed description and maps of the properties climate resilience characteristics and obstacles:

- Identify soils and geophysical settings
- Identify riparian corridors and floodplain areas.
- Map fragmenting features
  - existing roads
  - fencing
  - transmission lines
  - ditching
Importance of Management Plans

- Adaptive-management plans include iterative processes as the land changes and as our information about land management and ecology evolve.

- Requiring a FMP as part of the conservation easement process reduces prescriptive language and avoids amendments.

- Provides opportunity to prioritize habitat retention and restoration along streams, in critical concentrated flow areas, and at the site of road crossings.

- Promote healthy understory management
QUESTIONS?