THE LINK BETWEEN FOREST CERTIFICATION AND RESEARCH

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WHY SPONSOR RESEARCH?

- Knowledge gaps
- Changing management practices
- Ensure management is sustainable
- Science-based policies
- Relationships with experts
- Integrated into certification
- Incremental science-based improvement

CHANGING FOCUS THROUGH TIME

- 1970's – response of game species (deer, turkey, bear, quail) to intensive forest management
- Today – expanded focus on non-game species, plant community, landscape

STRENGTH THROUGH PARTNERSHIPS

NatureServe

FOREST SERVICE U S DEPARTMENT OF AGRICULTURE

UNIVERSITY OF ARKANSAS

The Nature Conservancy
Protecting nature. Preserving life.®

VirginiaTech

CLEMSON UNIVERSITY

UNCG

NORTH CAROLINA Wildlife RESOURCES COMMISSION

MISSISSIPPI STATE UNIVERSITY

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

Biofuels Center of North Carolina
www.biofuelscenter.org

NC STATE UNIVERSITY

ROLE OF NCASI

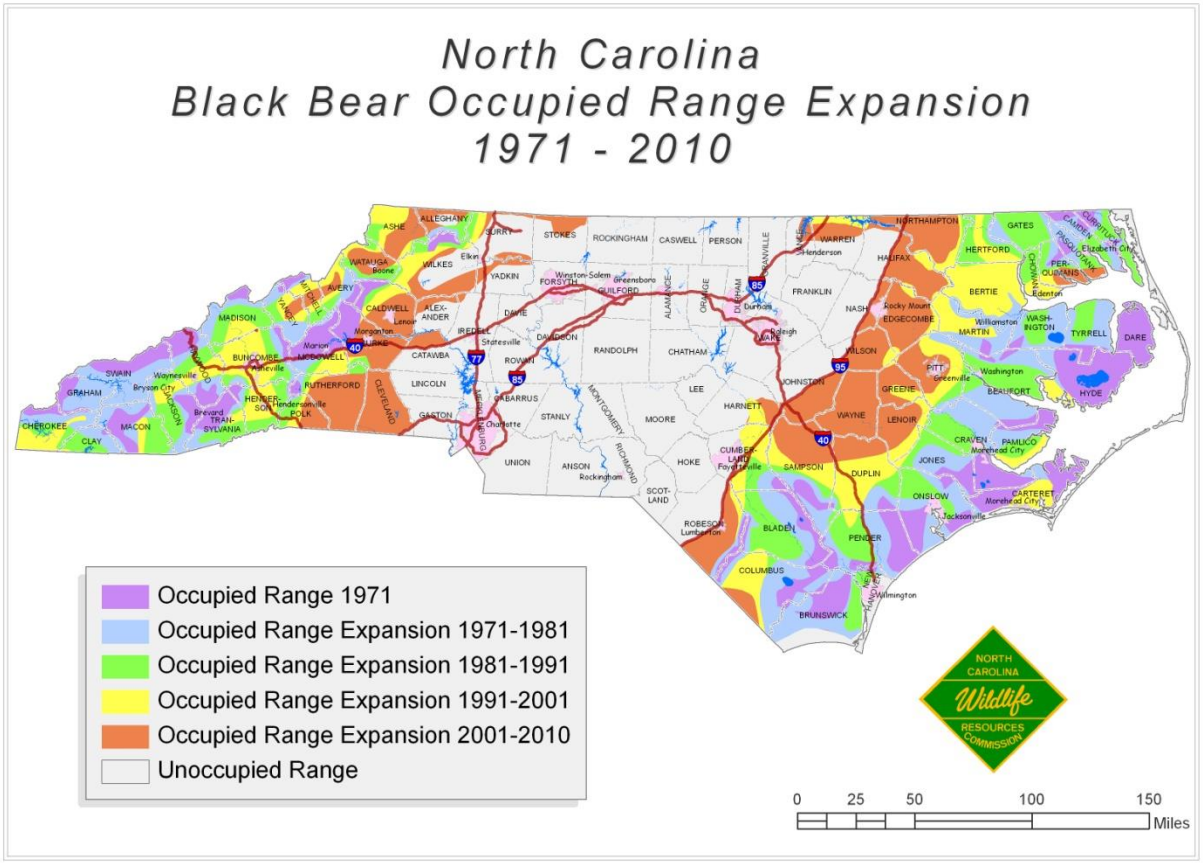
- Independent non-profit research institute
- Focused on environmental and sustainability issues relevant to forest management
- Began with manufacturing impacts
- Coordinates and executes research
- Collates data across companies

OBJECTIVES AND STANDARDS

- **SFI- Performance Measure 4.2. "*Program Participants shall apply knowledge gained through research, science, technology and field experience to manage wildlife habitat and contribute to the conservation of biological diversity.*"**
- **SFI- Objective 15: "*To support forestry research, science, and technology, upon which sustainable forest management decisions are based.*"**
  - *Water quality and BMPs*
  - *Wildlife at stand and landscape-levels*
  - *Conservation of biological diversity*
- **FSC- Principle 8.2: "*Forest management should include the research … to monitor…*"**
  - *Observed changes in flora and fauna*
  - *Environmental impacts of harvesting and operations*

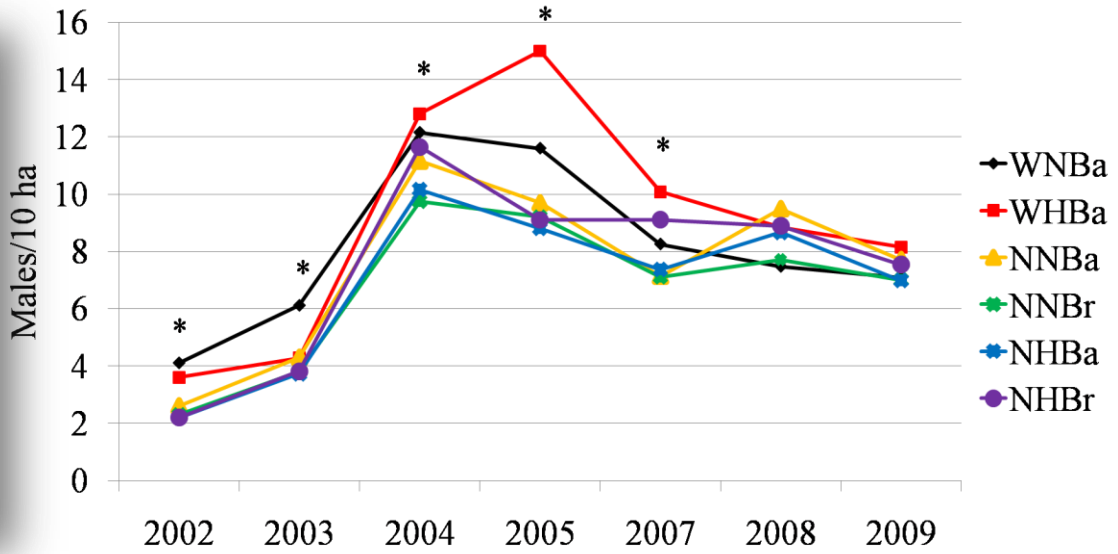
RESEARCH EXAMPLES

- **Black bears in southeastern forests**



FOREST HERBICIDES

- Symposium at The Wildlife Society Annual Meeting
- Special issue of Wildlife Society Bulletin
- Intensive management project
- Burn-herbicide project



BURN-HERBICIDE PROJECT

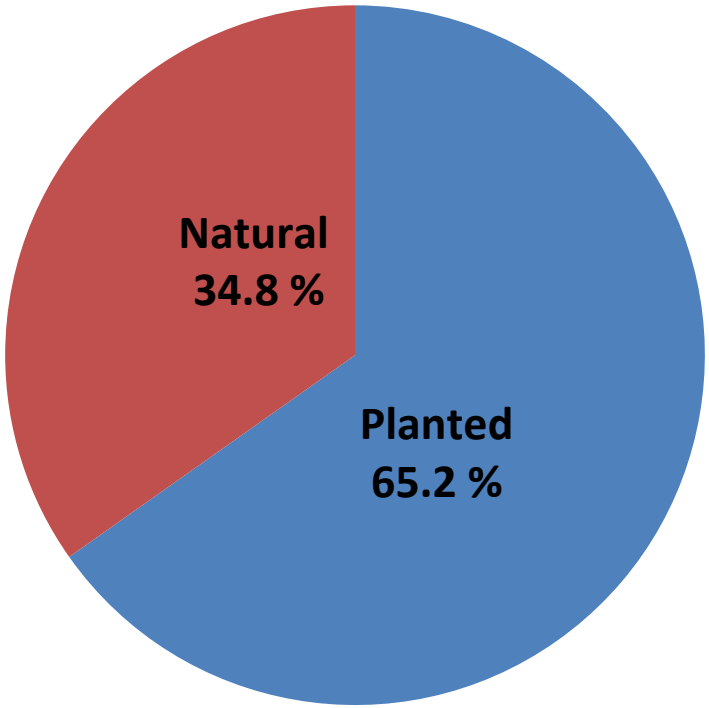
- **Examine: Plant and Animal Response to Burning and Herbicide Treatments in Thinned Pine Plantations**
- **High species diversity: 78 birds, 21 reptiles, 15 amphibians, 9 orders/classes invertebrates, approx. 390 plants**

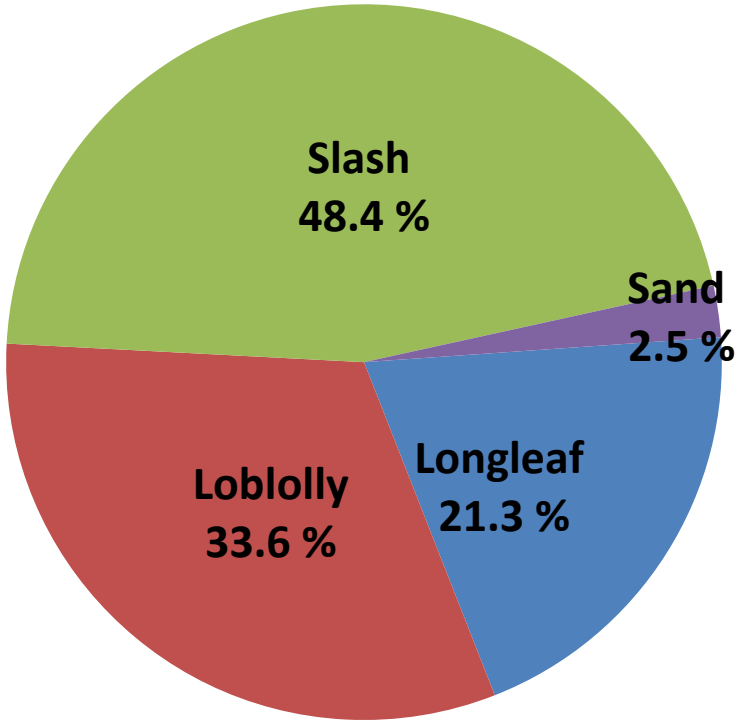
CURRENT FOCI

- **Sensitive species with knowledge gaps**
- **Aquatic/semi-aquatic species**
- **Landscape scale conservation**

SENSITIVE SPECIES: EASTERN DIAMONDBACK RATTLESNAKES

- **Little knowledge regarding species and intensive forestry**
- **Collaboration with Panama City FO**





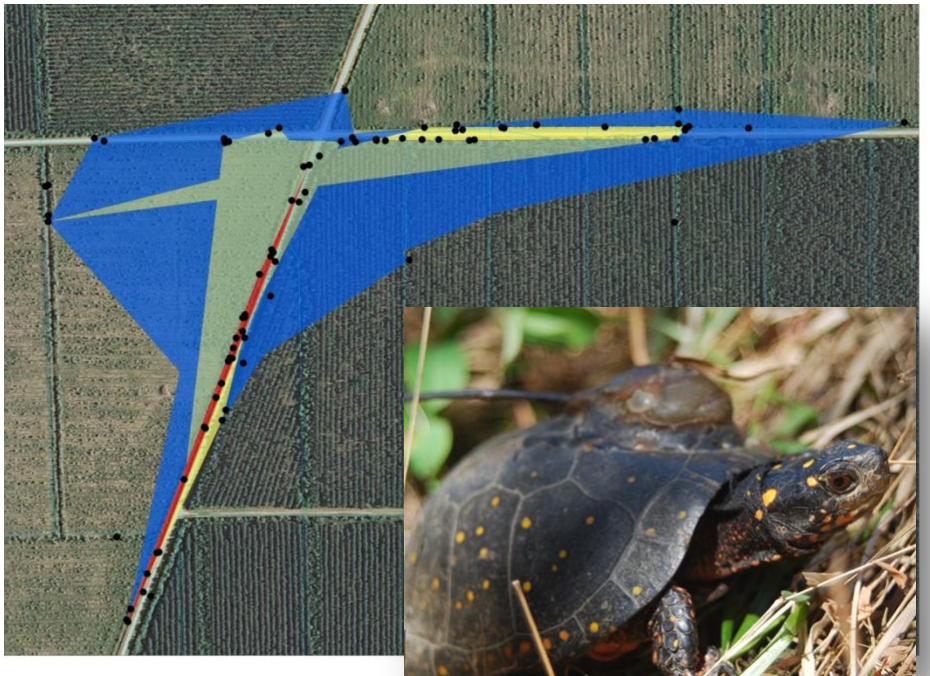
193 total observations in 78 counties

SENSITIVE SPECIES: GOPHER TORTOISES

- Surveys for GT across >11,000 ha of loblolly and slash pine plantations in western portion of range
- Substantial GT burrows observed in a range of stand structural conditions and soil types
- Active burrows across plantations aged 13-41
- Results detailed in Wigley et al. SJAF 2012

SENSITIVE SPECIES: SPOTTED TURTLES

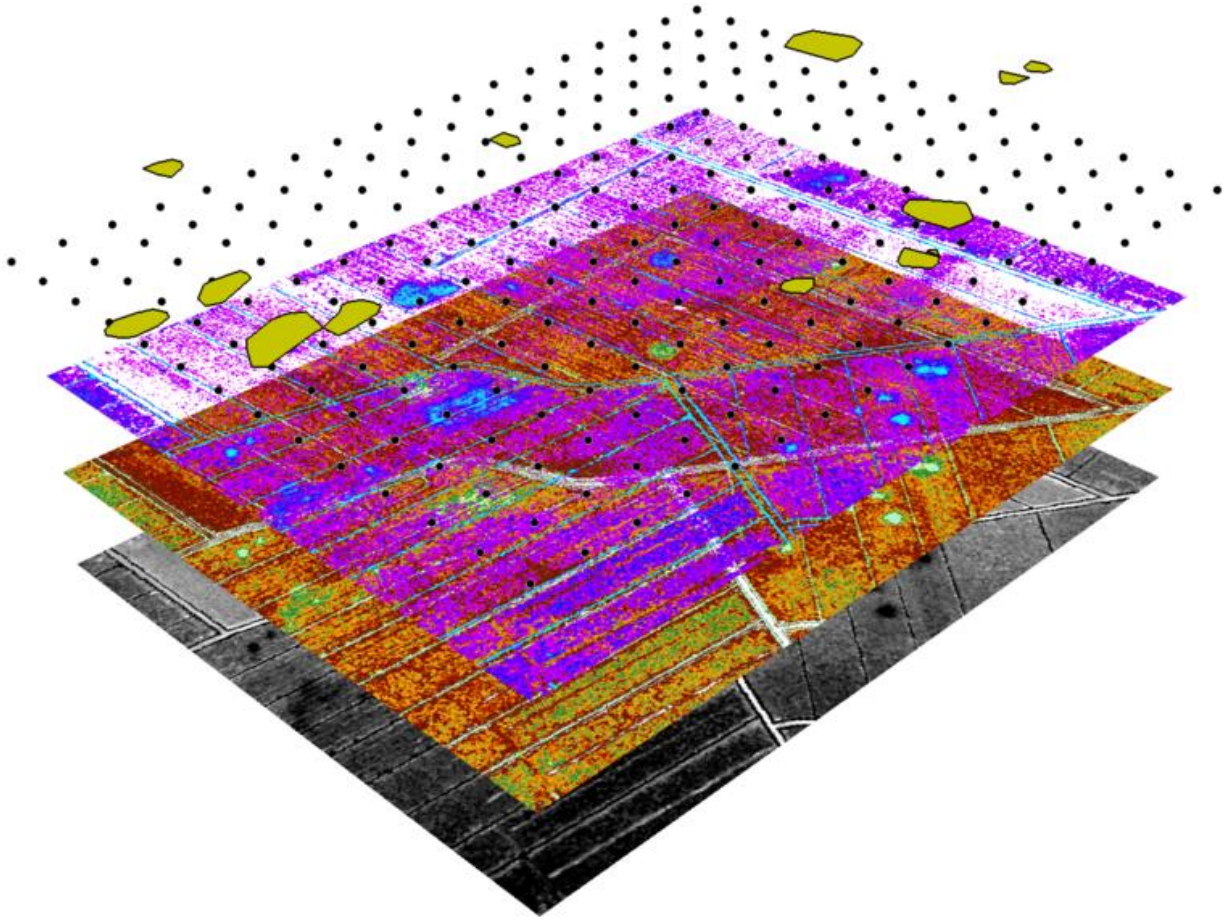
- Population and habitat ecology study on intensively managed pine landscape in NC
- 280 turtles marked, 31 radio-marked, 2012-2013
- Turtles associated with extensive systems of historic drainage ditches
- Thesis forthcoming



SENSITIVE SPECIES: NATURESERVE

- **Objective: Enhance ability of managers to consider conservation of at-risk species and communities**
- **Explained NatureServe info resources to forest managers**
- **Enhanced NatureServe website to allow downloads of information about at-risk spp and communities**
- **Developed and tested a habitat-based approach for conserving at risk species**

AQUATICS: REMOTE DETECTION



Probable wetlands
LISA Analysis
Local Relief Model
Terrain Metrics
LiDAR DEM

Used remotely sensed data to identify probable vernal pools in low-topography, forested landscapes

Leonard et al. FEM: 2012

AQUATICS: EPHEMERAL HABITATS

- Objective: Compare landscape scale and local site factors affecting occupancy of ephemeral aquatic habitats by herpetofauna
- On-going work has identified 40 amphibian and reptile species across 52 study sites
- Will bring understanding how forested landscapes contribute to regional diversity

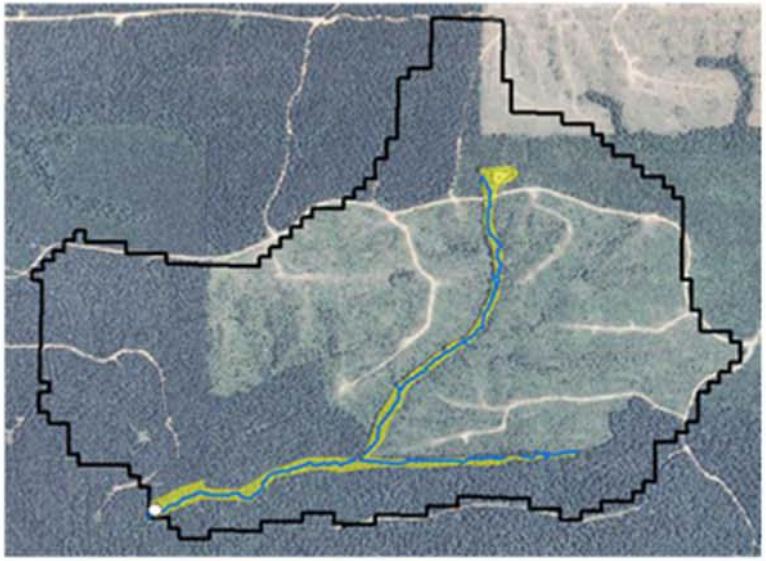
Small Ephemeral Pools

High-Value Ponds

Roadside Ditches

AQUATICS: SALAMANDERS IN SMZS

- **Examining relationships between SMZs and occupancy of streamside salamanders in AR**
- **Effects of local and landscape scale influences on occupancy and survival**
- **Initial phases of project**

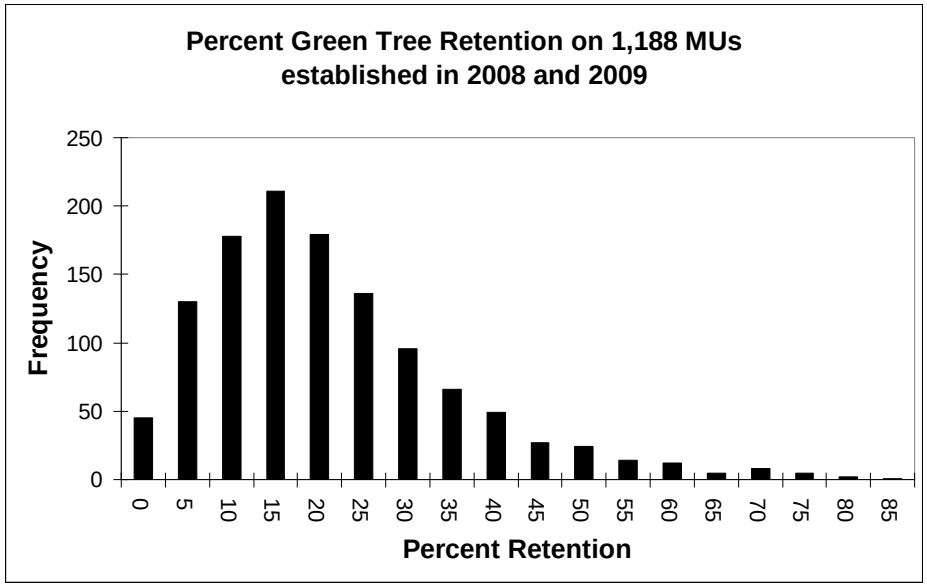


AQUATICS: CRAYFISH IN MISSISSIPPI

- Objective: To examine presence/absence of Yalobusha Riverlet Crayfish and Shutispear Crayfish in an intensively managed watershed
- Both species identified in field sampling, 2011-2013
- Populations of both G1 species persist on this managed landscape
- Cooperative study with USDA-FS

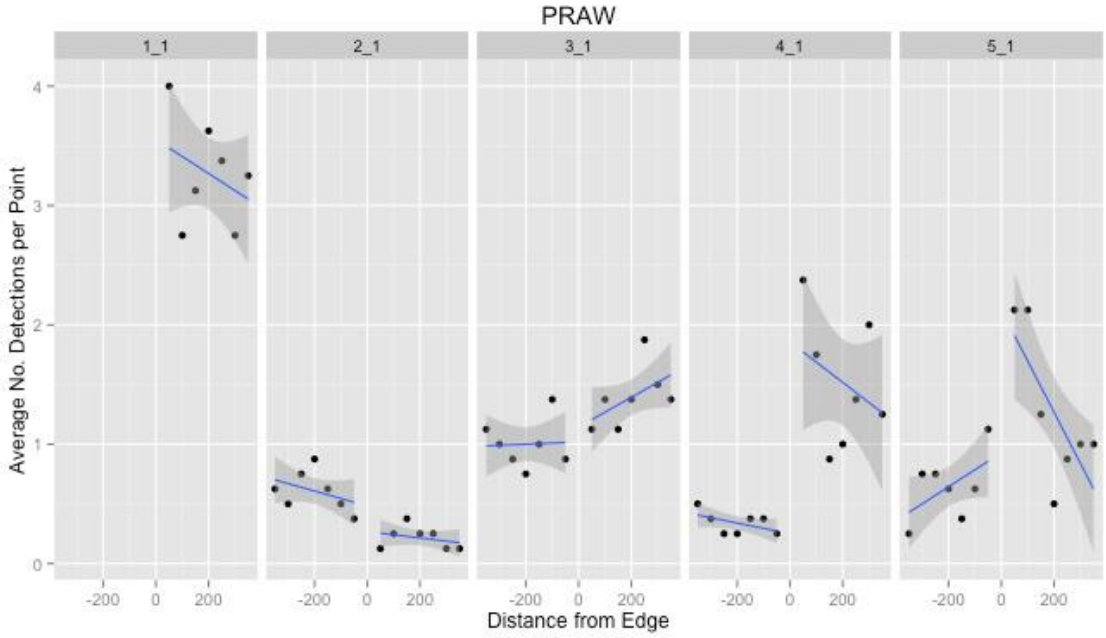
LANDSCAPE: RETAINED STRUCTURES

- **Two phase project examining (1) amount of retained structures in pine stands and (2) relationships with avian species**
- **Area of green tree retention via SMZs or other set-asides averaged 20%**
- **94 bird species detected**



LANDSCAPE: STAND ADJACENCY

- **Effects of adjacency of forest stands (i.e., edge effects) on avifauna in relation to vegetation characteristics at the plot, stand, and landscape scale**
- **64 species detected across 20 sites in MS**



LANDSCAPE: ARKANSAS LANDSCAPE

- Collaborative study with USDA-FS that examined 4 forested watersheds across a range of intensity of use and relationships with bird species

- Examining hypothesis that richness positively associated with interaction between local habitat characteristics and mature hardwood at the landscape level
- Results indicate richness was associated with local, and not landscape, conditions

CONCLUSIONS

- **Wealth of knowledge regarding contributions of managed forests to conservation of biological diversity**
- **Forest certification provides an important link between applying research in a management framework**
- **New management techniques and environmental concerns will always lead to new research needs**
- **Forest industry and their partners remain well-poised to contribute to these gaps**