

**Assessing Landscape change
due to Marcellus Shale drilling
operations and devising
remediation strategies to
minimize impacts**

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PENNSSTATE



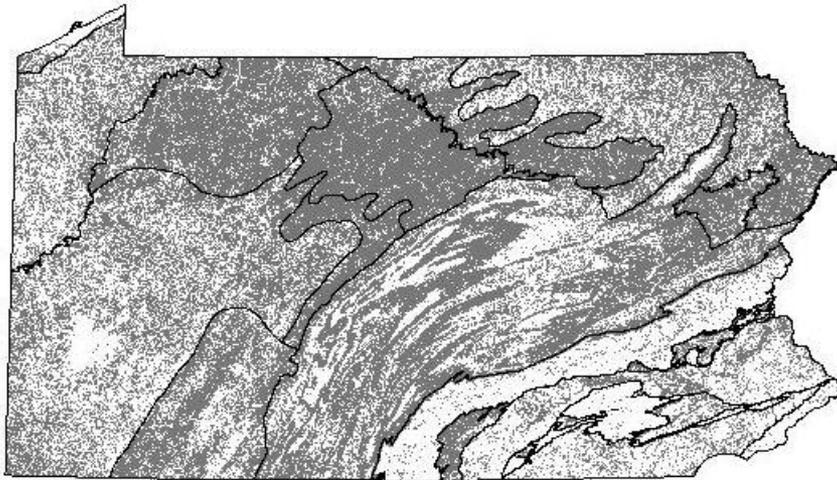
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Agricultural
Sciences**

Landscape disturbance and habitat fragmentation are by products of natural gas exploration and development

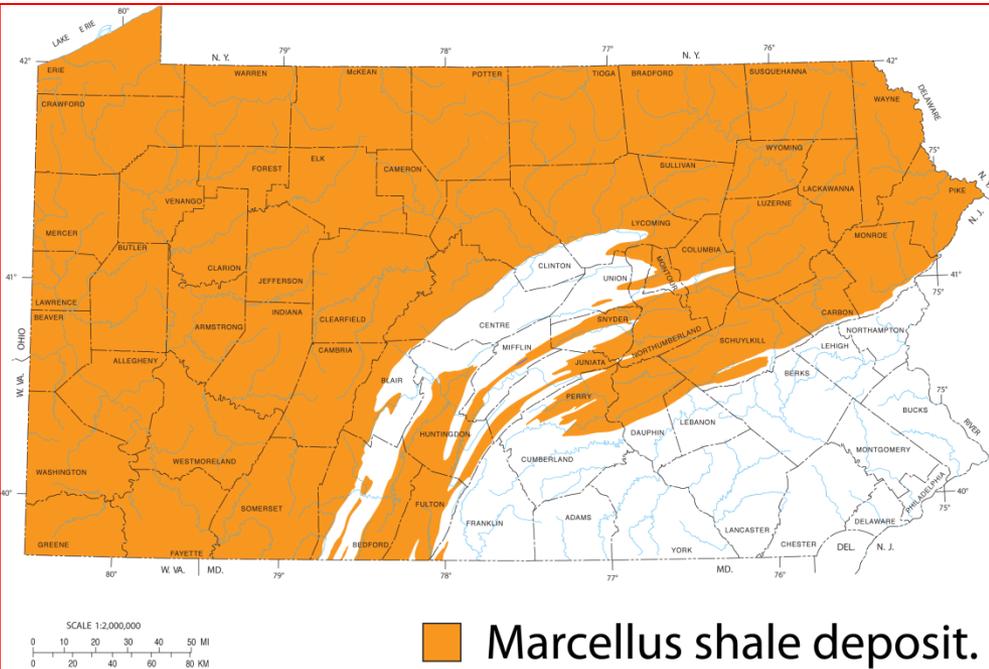


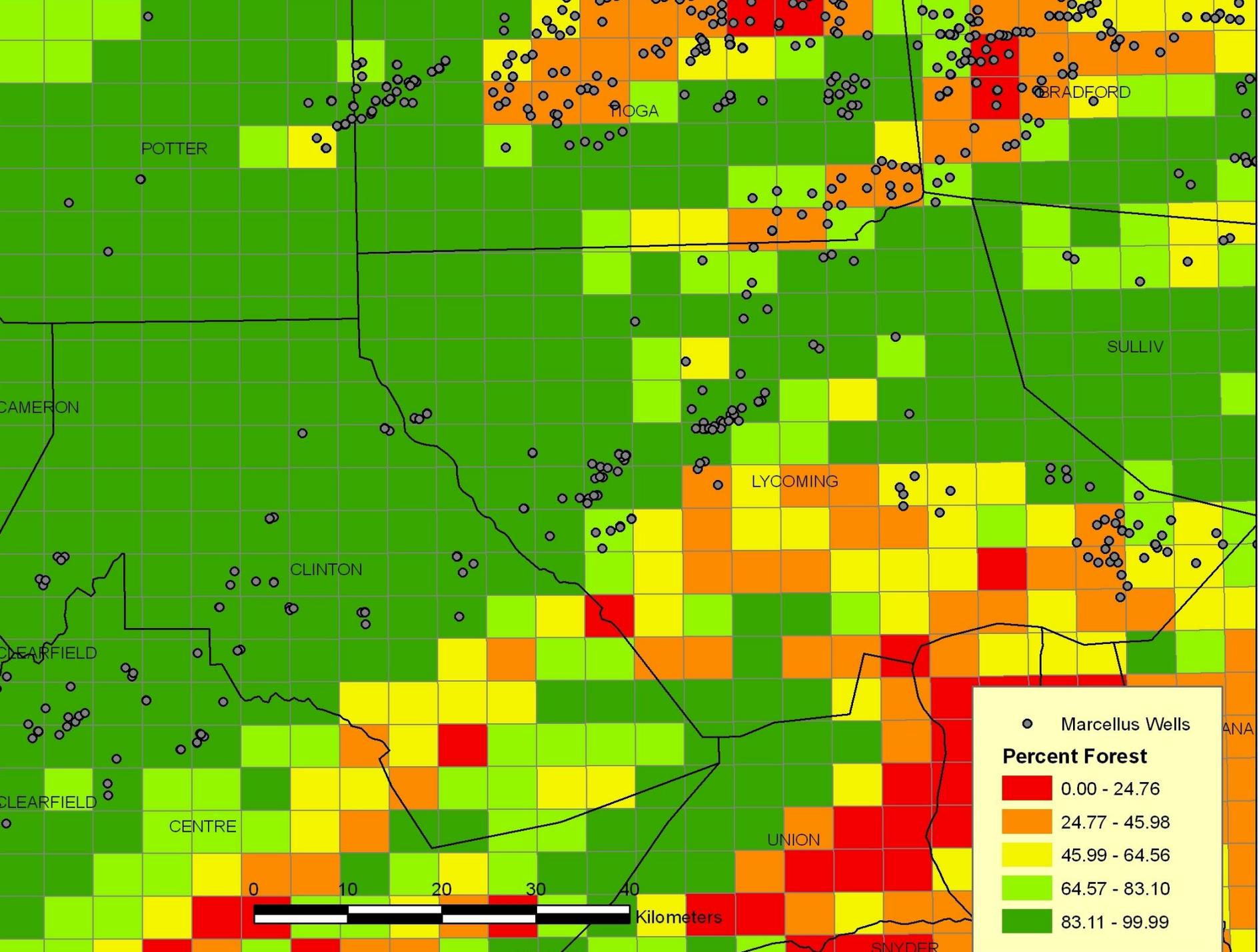


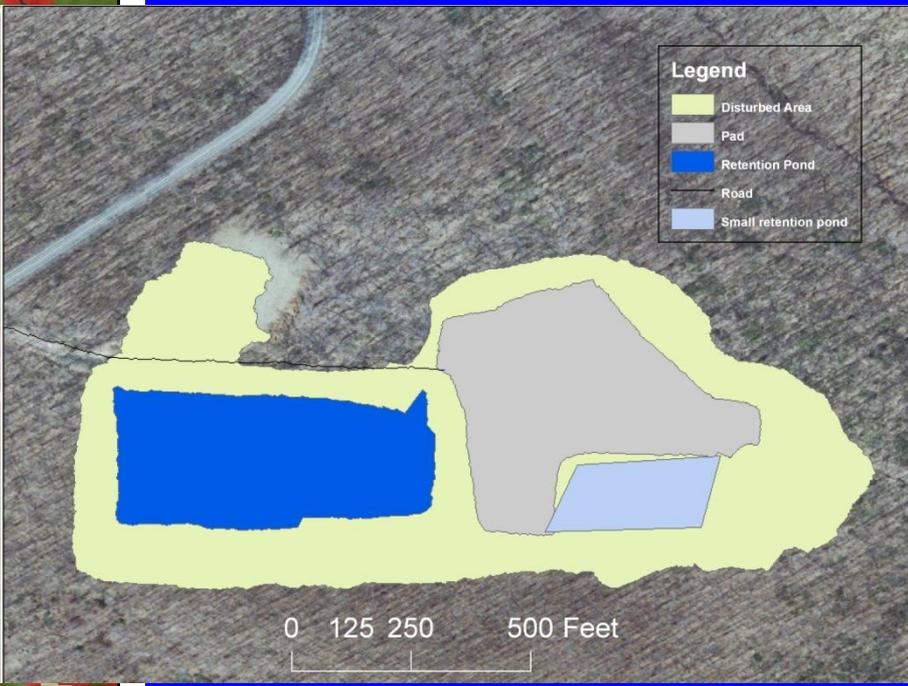
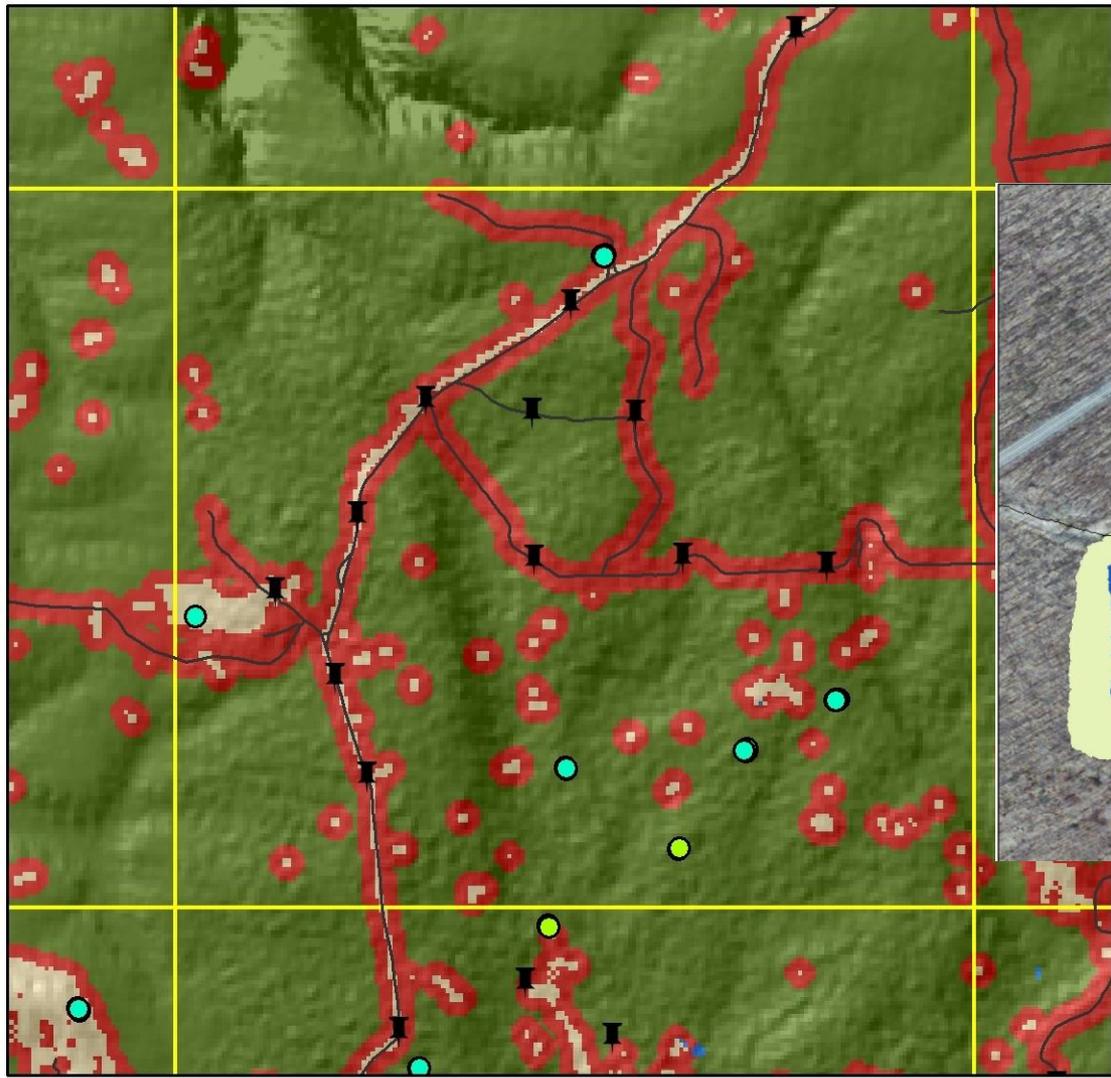
Our study is focused primarily on forest habitat in the NC part of state



50 0 50 100 Kilometers







- | | | | |
|--|---------------------------------|--|-------------|
| | ACTIVE | | BBA Grid |
| | INACTIVE | | Water |
| | PLUGGED OG WELL | | Disturbed |
| | PROPOSED BUT NEVER MATERIALIZED | | Core Forest |
| | BBA Road Survey | | Edge Forest |

- Legend**
- Disturbed Area
 - Pad
 - Retention Pond
 - Road
 - Small retention pond

0 125 250 500 Feet

Quantify effects of the well pad and local pipelines and roads on the forest ecosystem

- Use a paired design of well pad site and undisturbed control
- Focus on birds, vegetation, soils
- Select sites in landscapes with different levels of disturbance



Evaluate land management and restoration practices attempted on public and private well pads and pipelines

- Specific practices
- Successes and failures
- Site preparation
- Comparison to un-restored sites



Develop an electronic Field Guide to Land Management Practices associated with natural gas extraction in the Marcellus Shale

- Web-based field guide
- Combine traditional handbook with web 2.0 technology
- Material reviewed by a council of editors

Assistance Needed

- Access to inactive well-pad sites
- Identification of and access to sites where reclamation has been attempted.

Thank You