

# 2020 Forest Assessment Maps and Analysis

An Update



# Forest Issues

- Fragmentation
- Soil & Water
- Invasive Species
- Biodiversity
- Recreation
- Wood Products

# Procedures

- Base Forest Cover layer from 2017 National Agricultural Statistics Survey (NASS)
- Removed pixels 15 m from highways
- USDA Cost Share boundaries were removed in 2010 but the data is no longer available
- Other state and federal data inputs as needed



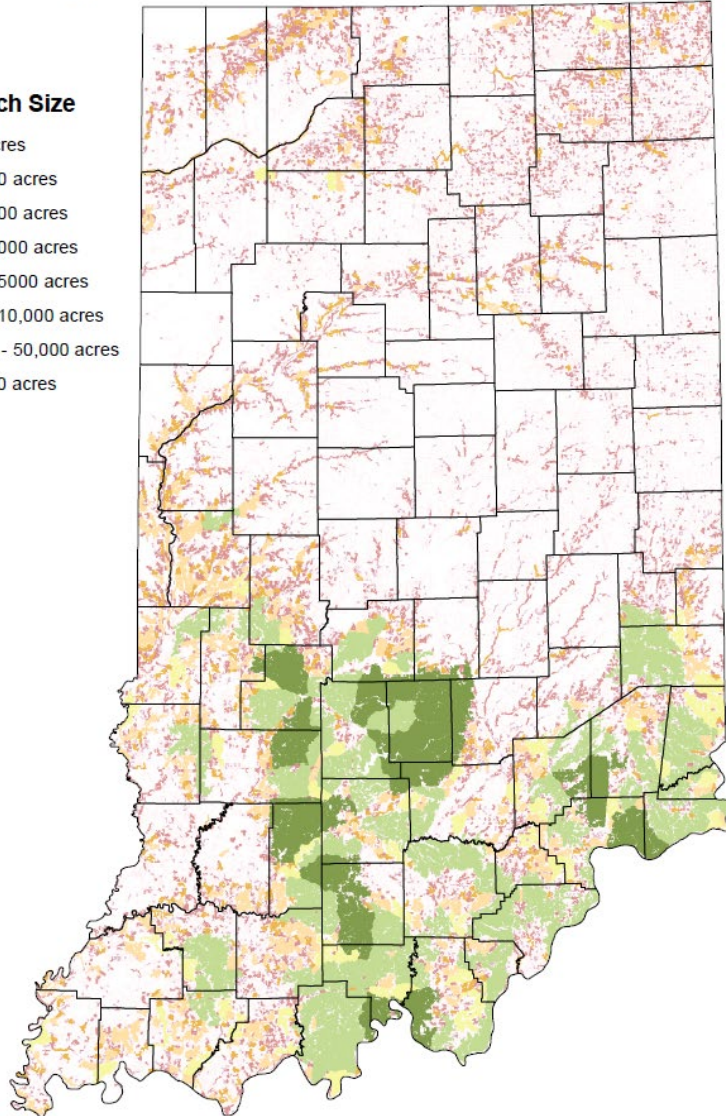
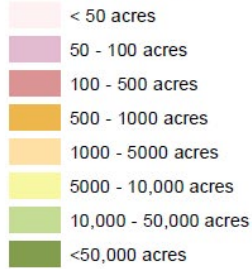
# Fragmentation Components

- Forest Patch Size
- Roadless Forest Patches
- Projected Development
- Percent Forest Cover (1 km radius)
- Percent Forest Cover (10 km radius)

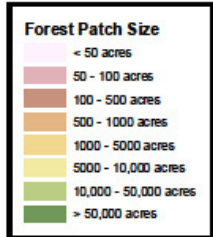
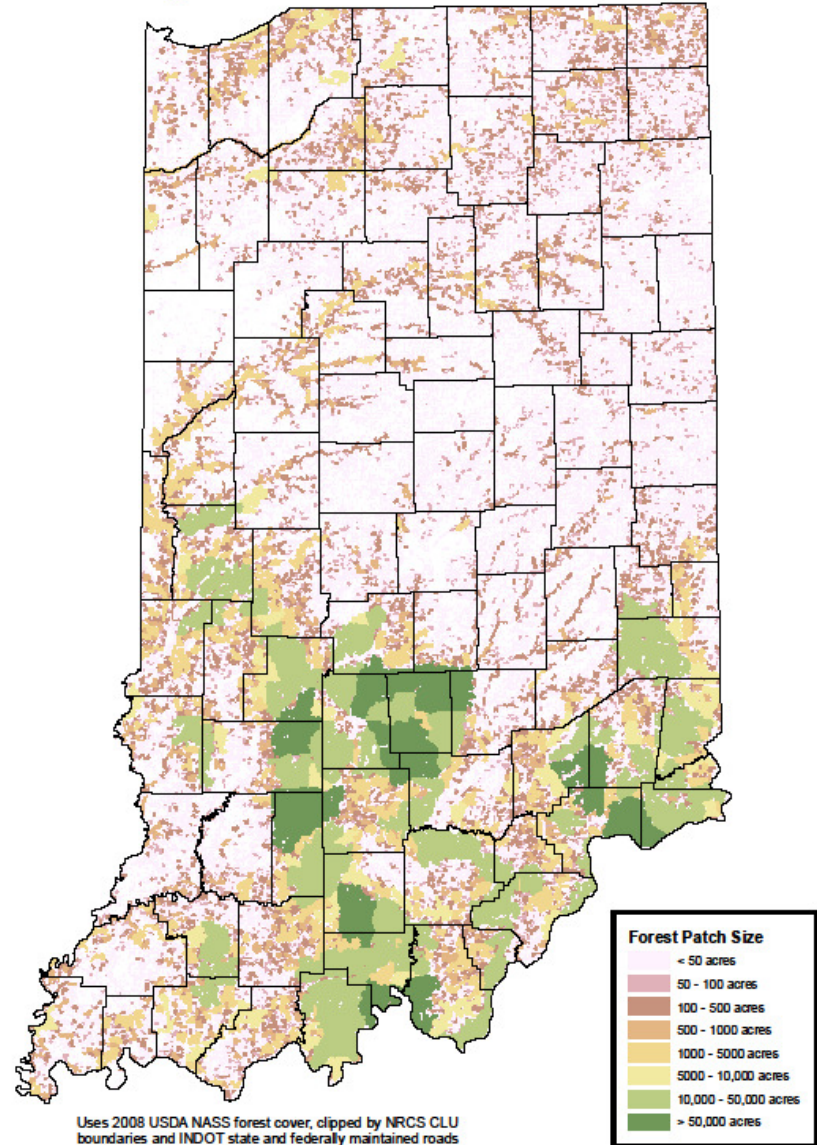


## Fragmentation: Forest Patch Size

### Forest Patch Size



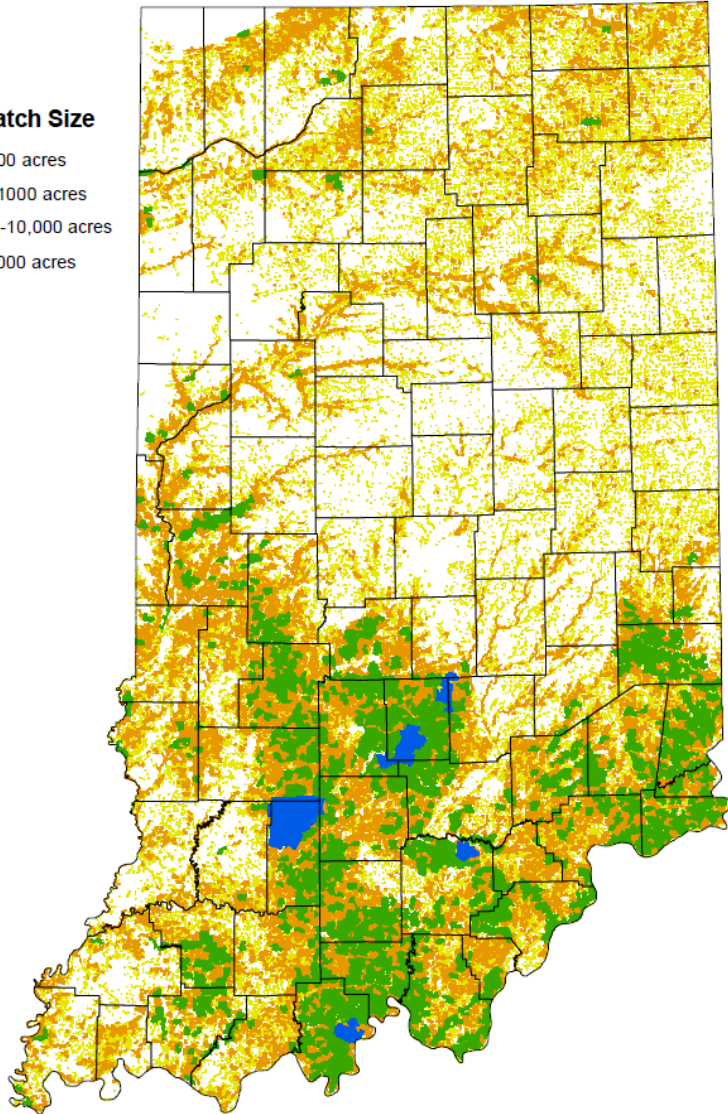
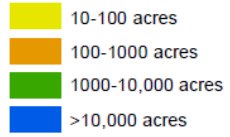
## Fragmentation: Forest Patch Size



Uses 2008 USDA NASS forest cover, clipped by NRCS CLU boundaries and INDOT state and federally maintained roads

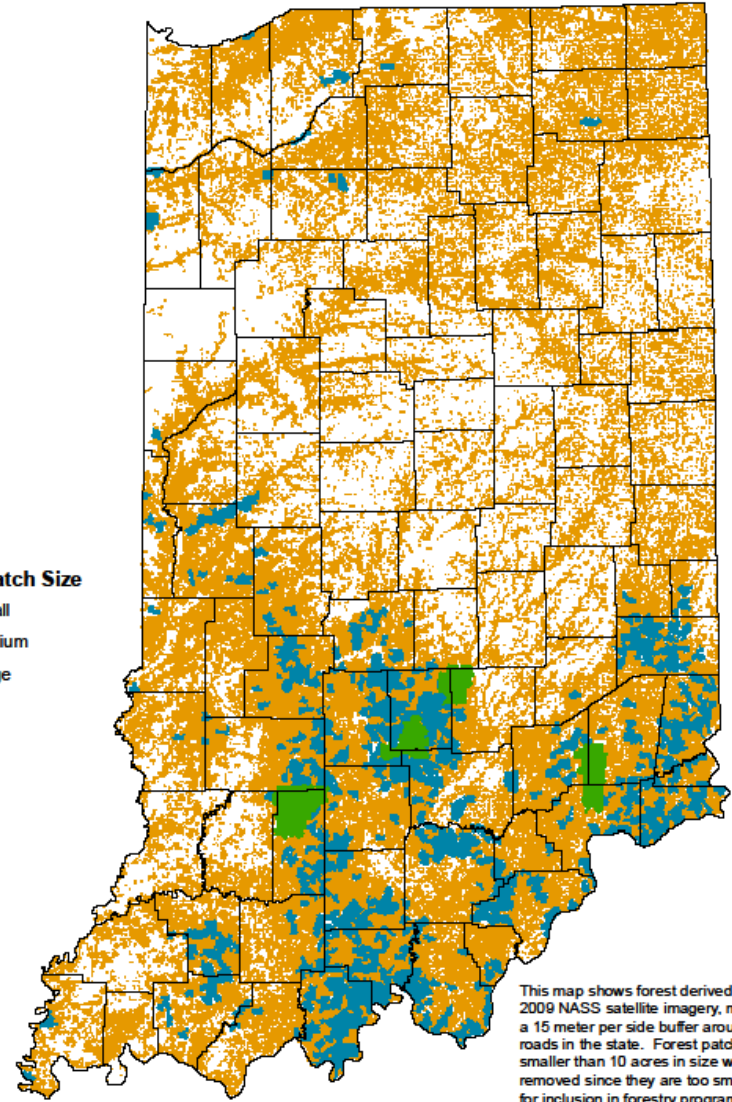
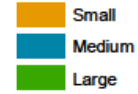
## Roadless Forest Patches

### Forest Patch Size



## Roadless Forest Patches

### Forest Patch Size



This map shows forest derived from 2009 NASS satellite imagery, minus a 15 meter per side buffer around all roads in the state. Forest patches smaller than 10 acres in size were removed since they are too small for inclusion in forestry programs.

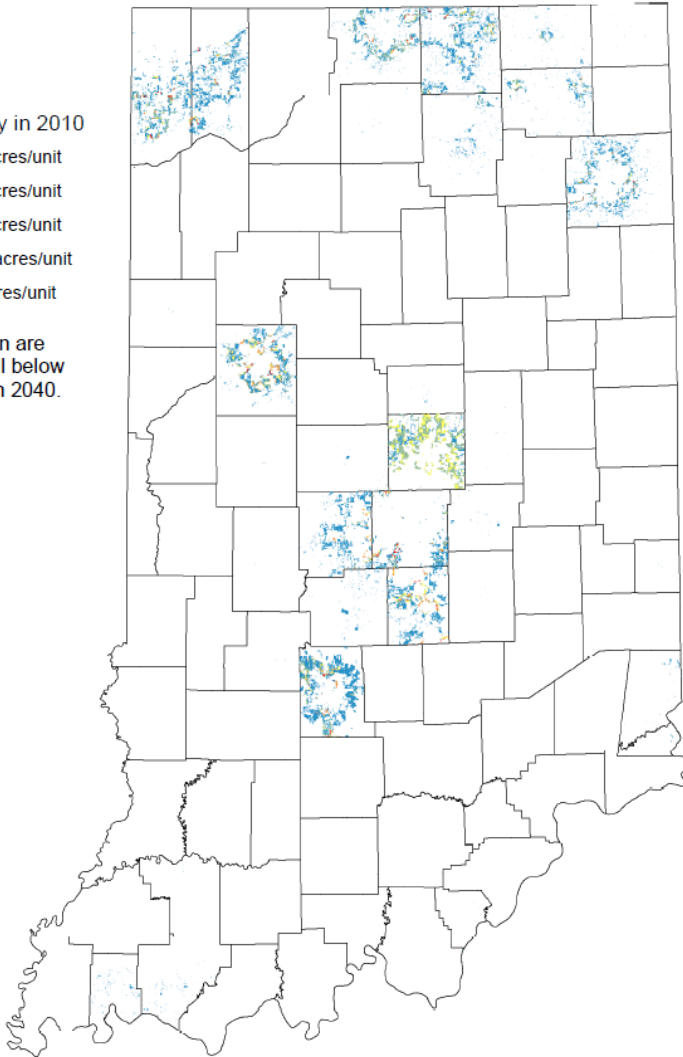


## Projected Development Patterns to 2040

### Home Density in 2010

- 10-20 acres/unit
- 20-40 acres/unit
- 40-80 acres/unit
- 80-160 acres/unit
- >160 acres/unit

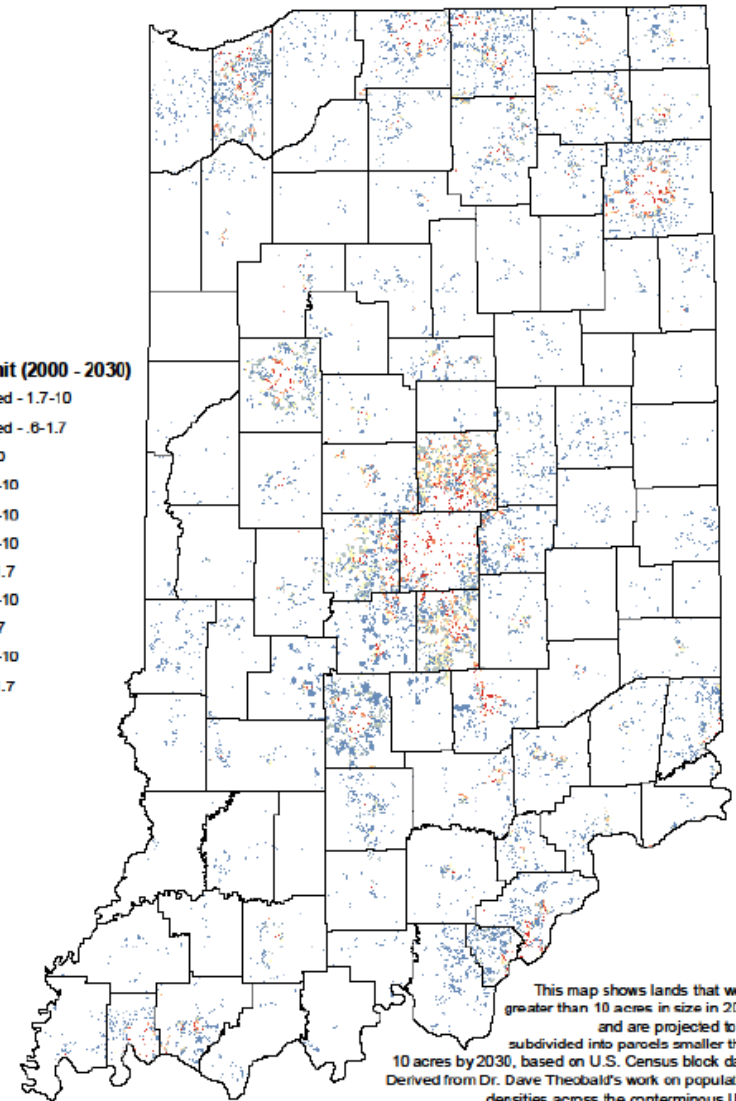
All areas shown are projected to fall below 10 acres/unit in 2040.



## Projected Development Patterns to 2030

### Acres/home unit (2000 - 2030)

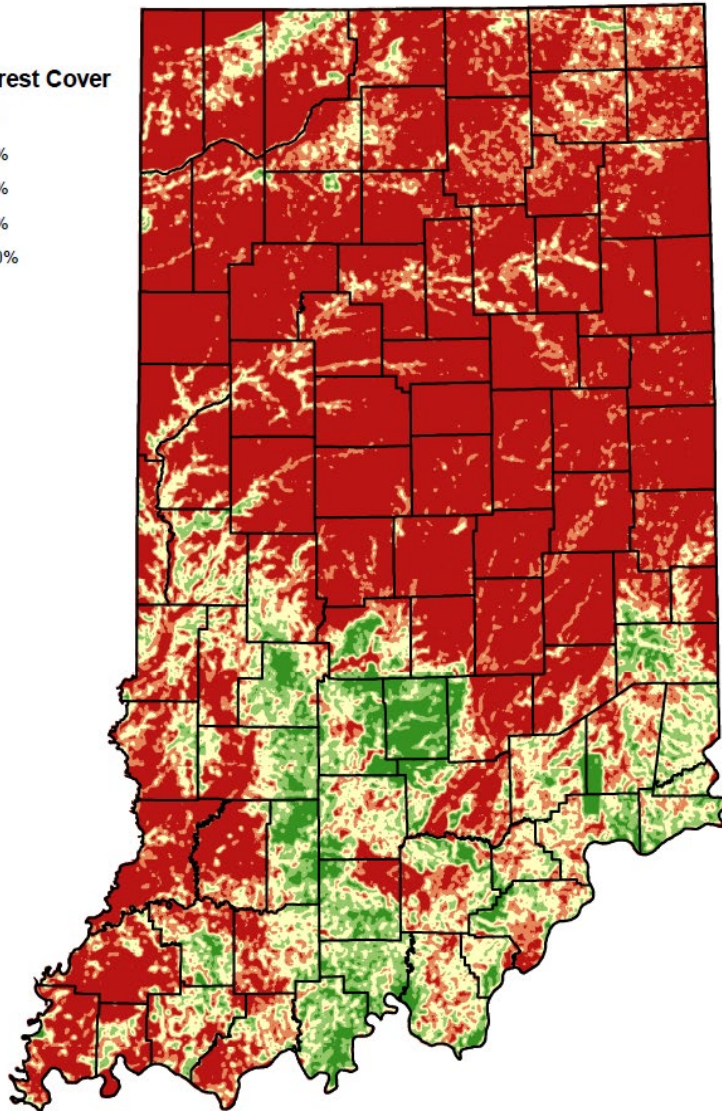
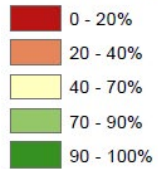
- Undeveloped - 1.7-10
- Undeveloped - 6-1.7
- >80 - 1.7-10
- 50-80 - 1.7-10
- 40-50 - 1.7-10
- 30-40 - 1.7-10
- 30-40 - 6-1.7
- 20-30 - 1.7-10
- 20-30 - 6-1.7
- 10-20 - 1.7-10
- 10-20 - 0-1.7



This map shows lands that were greater than 10 acres in size in 2000 and are projected to be subdivided into parcels smaller than 10 acres by 2030, based on U.S. Census block data. Derived from Dr. Dave Theobald's work on population densities across the conterminous U.S.

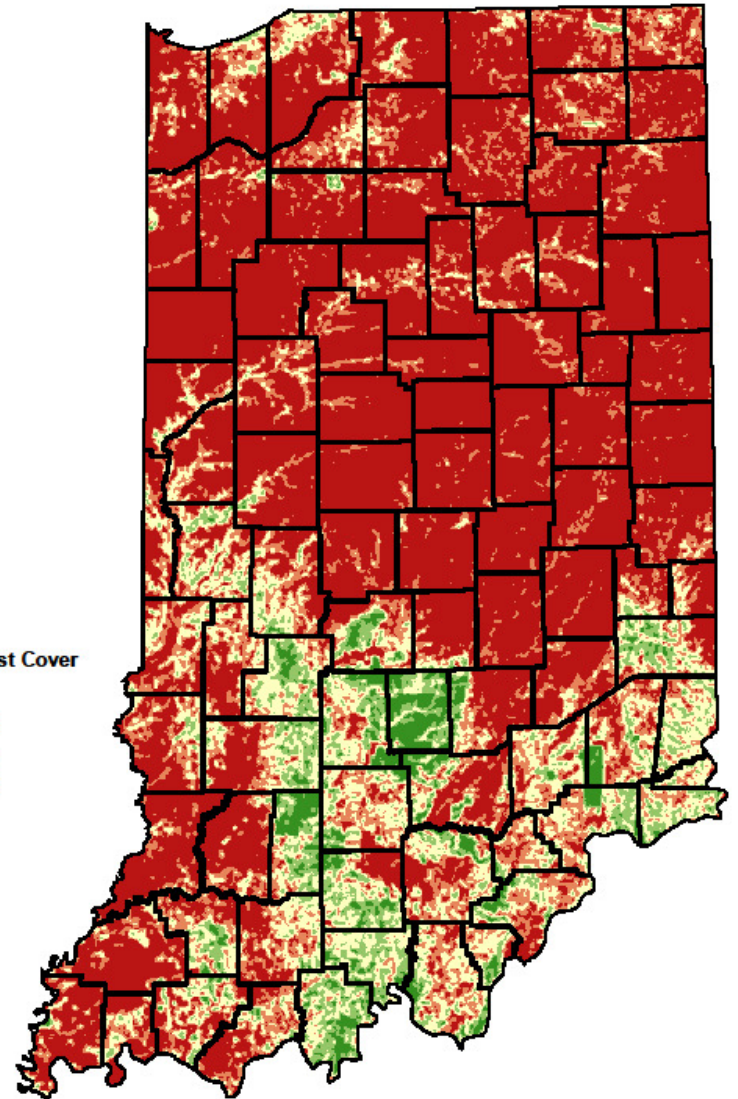
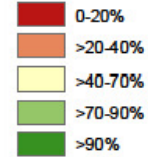
Percent Forest Cover in a 1 KM Radius

Percent Forest Cover



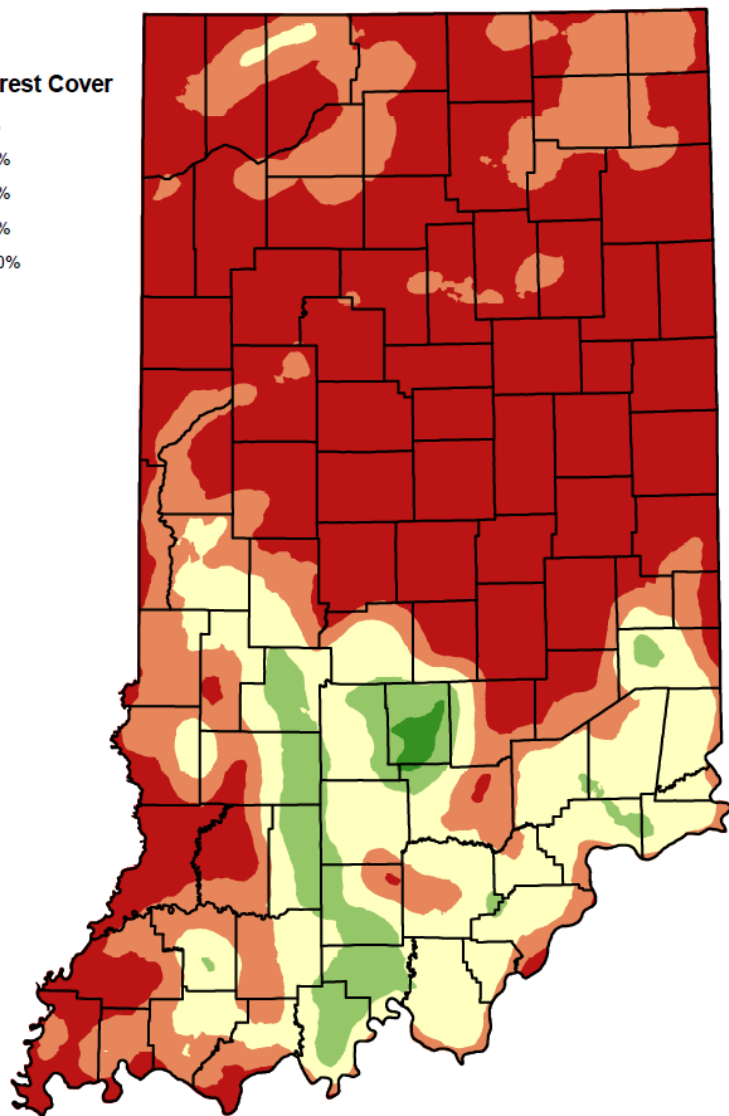
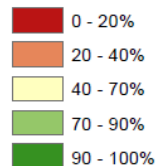
Percent Forest Cover in a 1 KM Radius

Percent Forest Cover



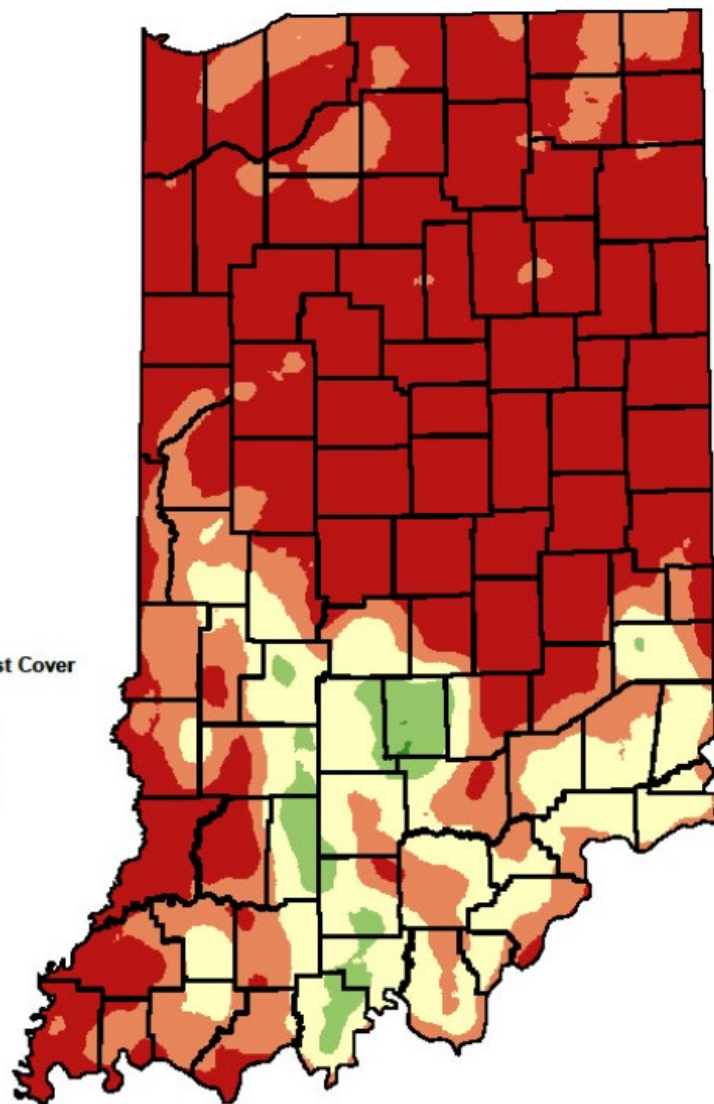
Percent Forest Cover in a 10 KM Radius

Percent Forest Cover



Percent Forest Cover in a 10 KM Radius

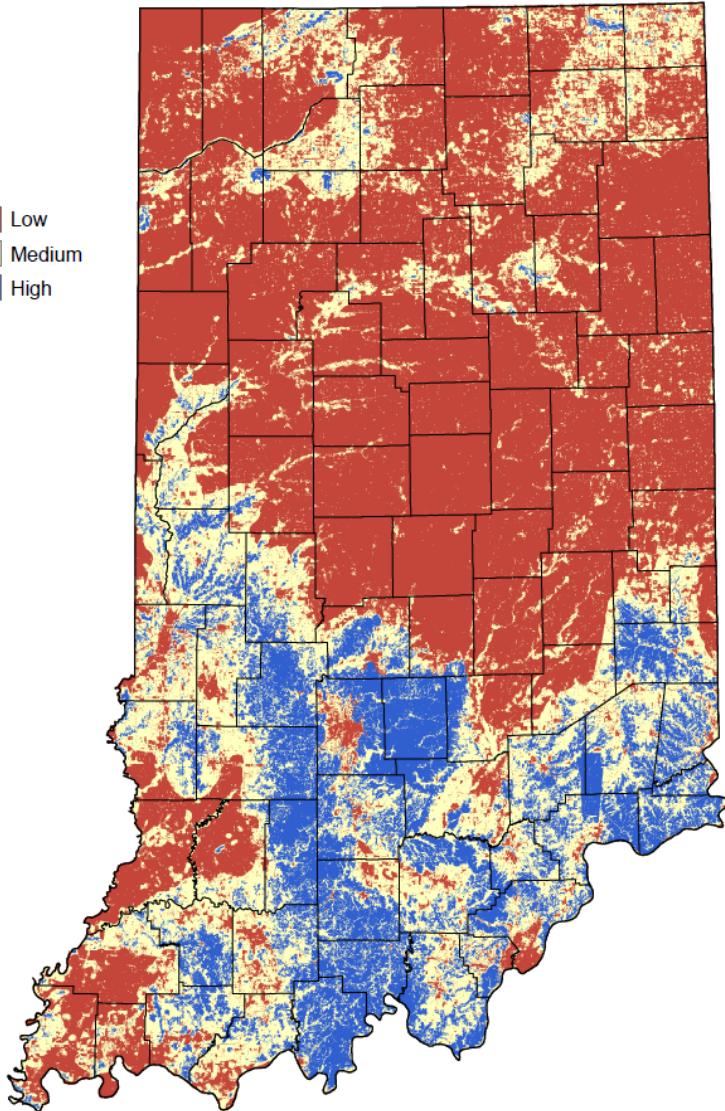
Percent Forest Cover





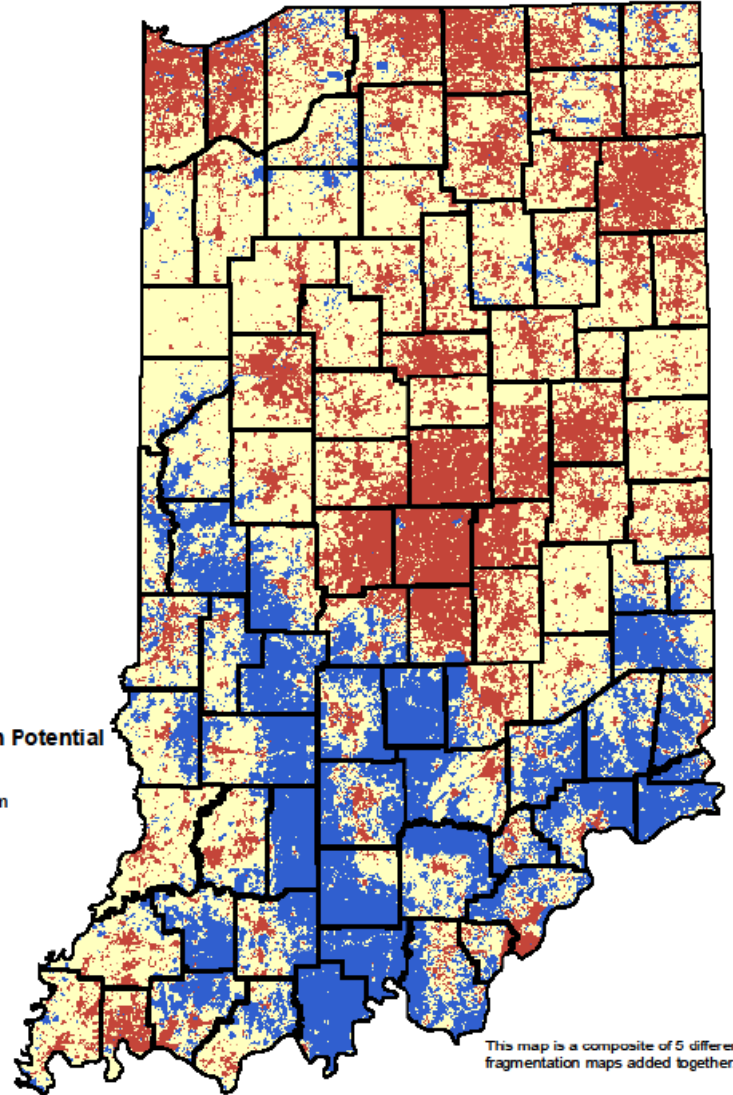
### Potential to Prevent Fragmentation

- Low
- Medium
- High



### Potential to Prevent Fragmentation

- Prevention Potential**
- Low
  - Medium
  - High



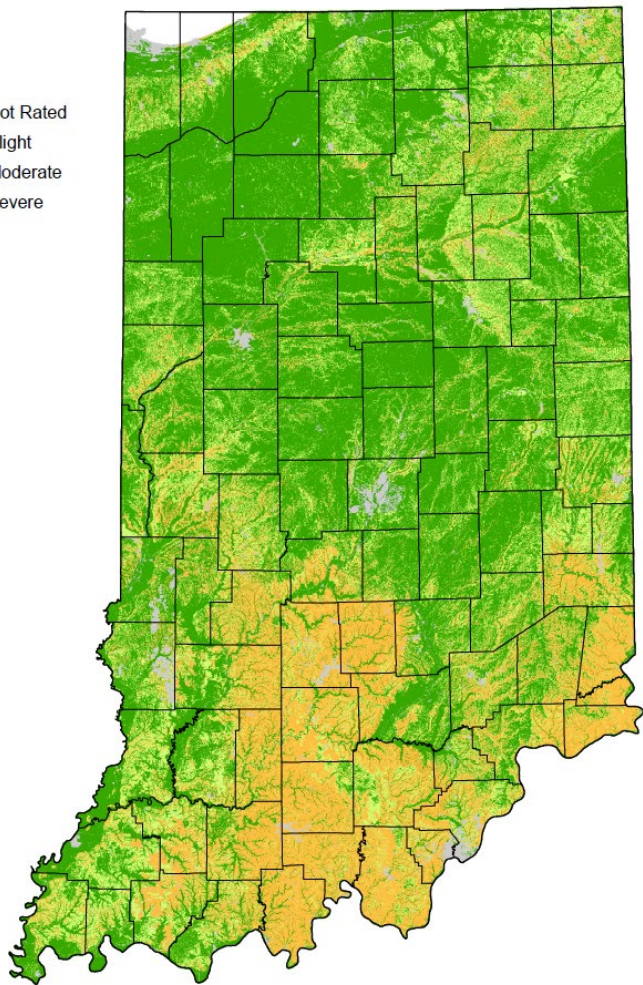
# Soil & Water Components

- Erosion Potential
- Perennial Water Features
- Public Water Supply Areas
- Karst Features
- Stream Impairment
- Percent Forest by Watershed
- Forested Riparian Areas
- Impervious Surfaces
- Targeted Slope Percentages



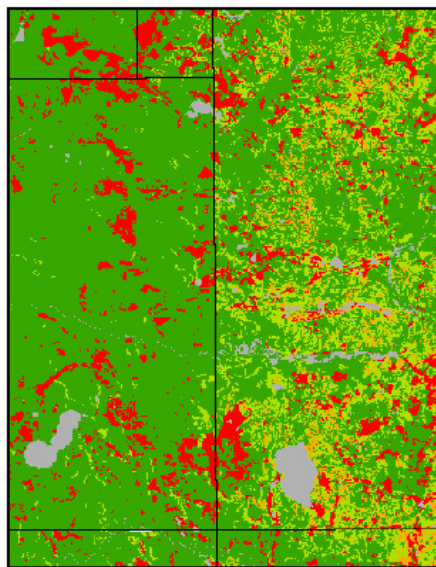
# Erosion Potential

- Not Rated
- Slight
- Moderate
- Severe

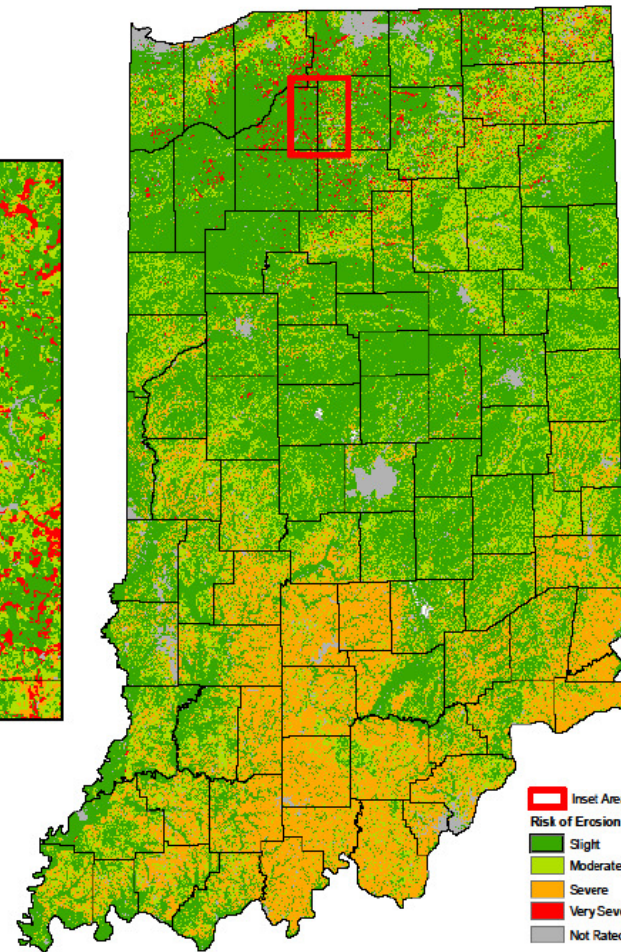


# Erosion Potential

Inset Area  
(enlarged to show detail)



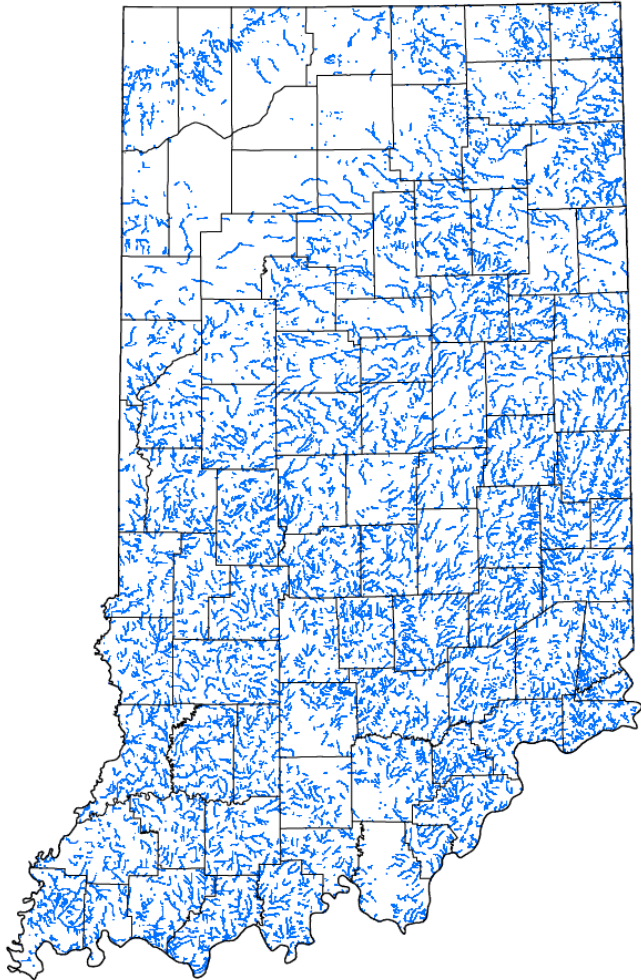
This map shows NRCS designations of soil erosion risk if a dirt road were built, with an inset showing part of north-central Indiana as an example.



- Inset Area
- Risk of Erosion
  - Slight
  - Moderate
  - Severe
  - Very Severe
  - Not Rated

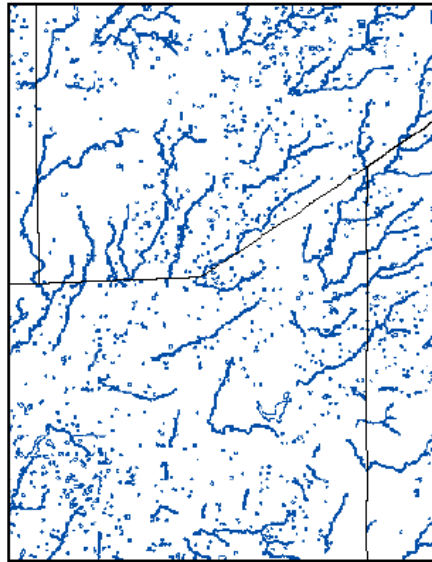


Buffer of Perennial Water Features

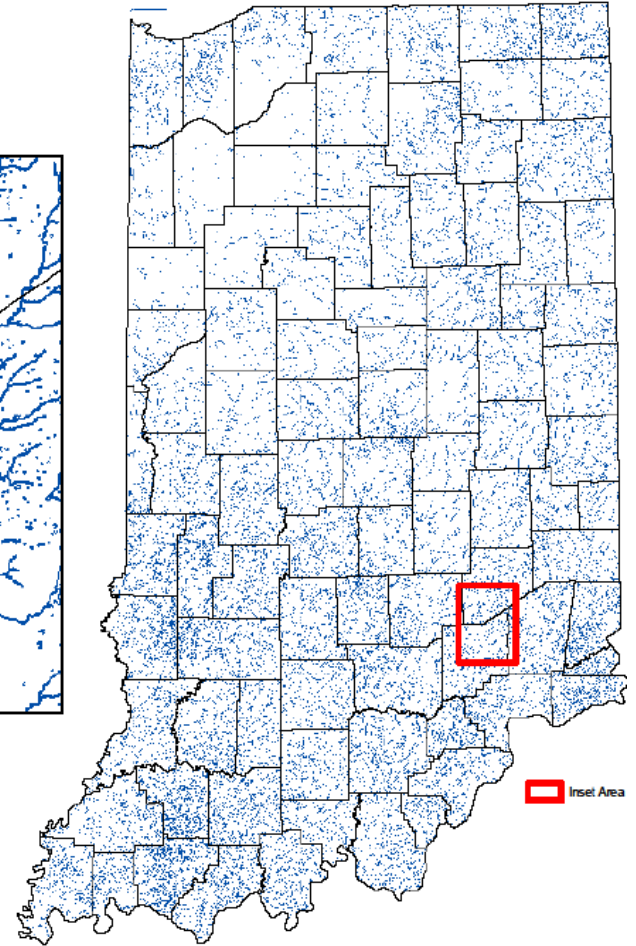


Buffer of Perennial Water Features

Inset Area  
(enlarged to show detail)

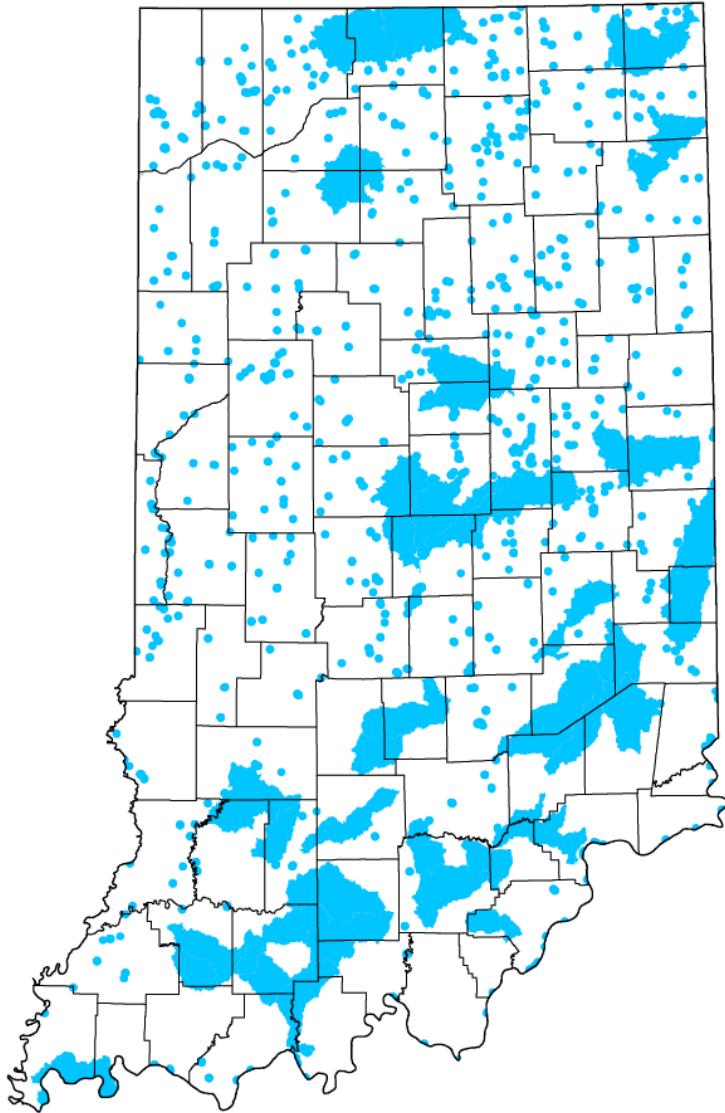


This map shows a 300' buffer around perennial water features in Indiana, with an inset showing part of southeastern Indiana as an example

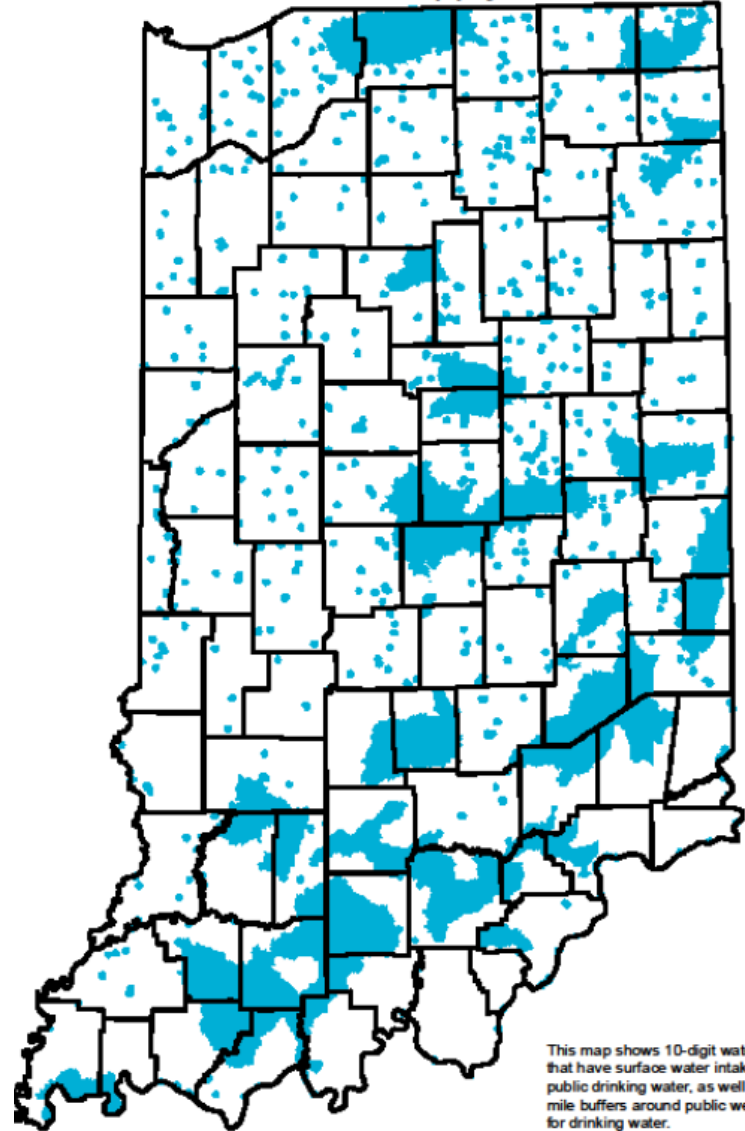


Inset Area

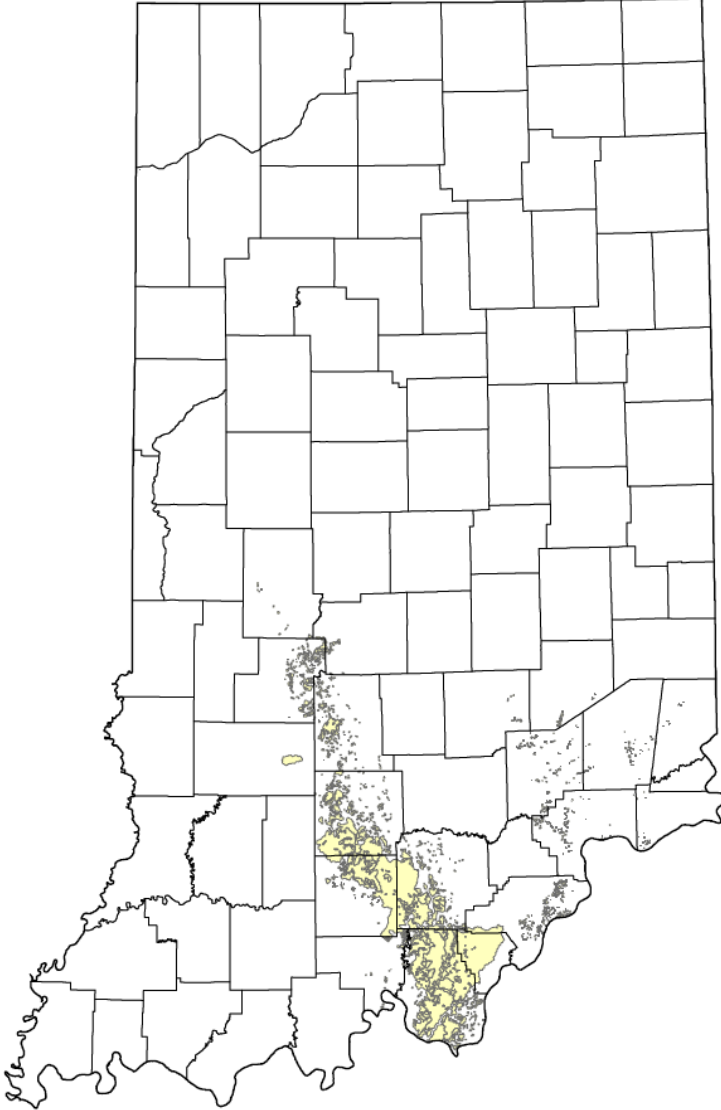
Public Water Supply Areas



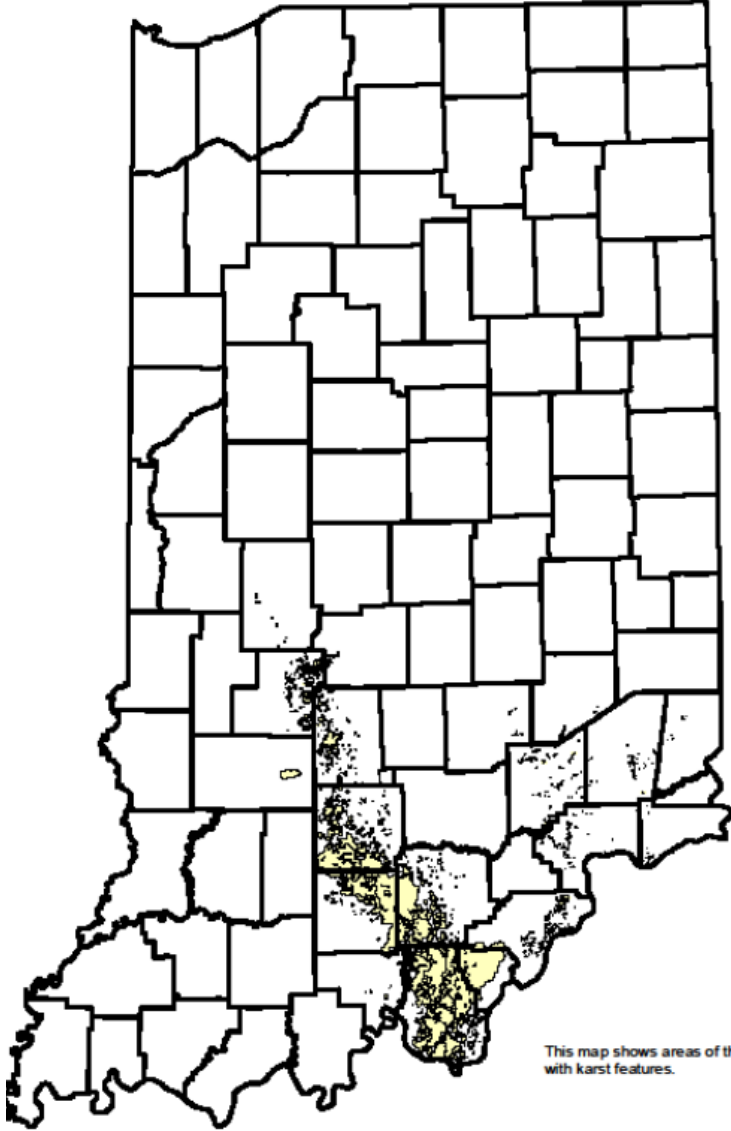
Public Water Supply Areas



Karst Features in Indiana

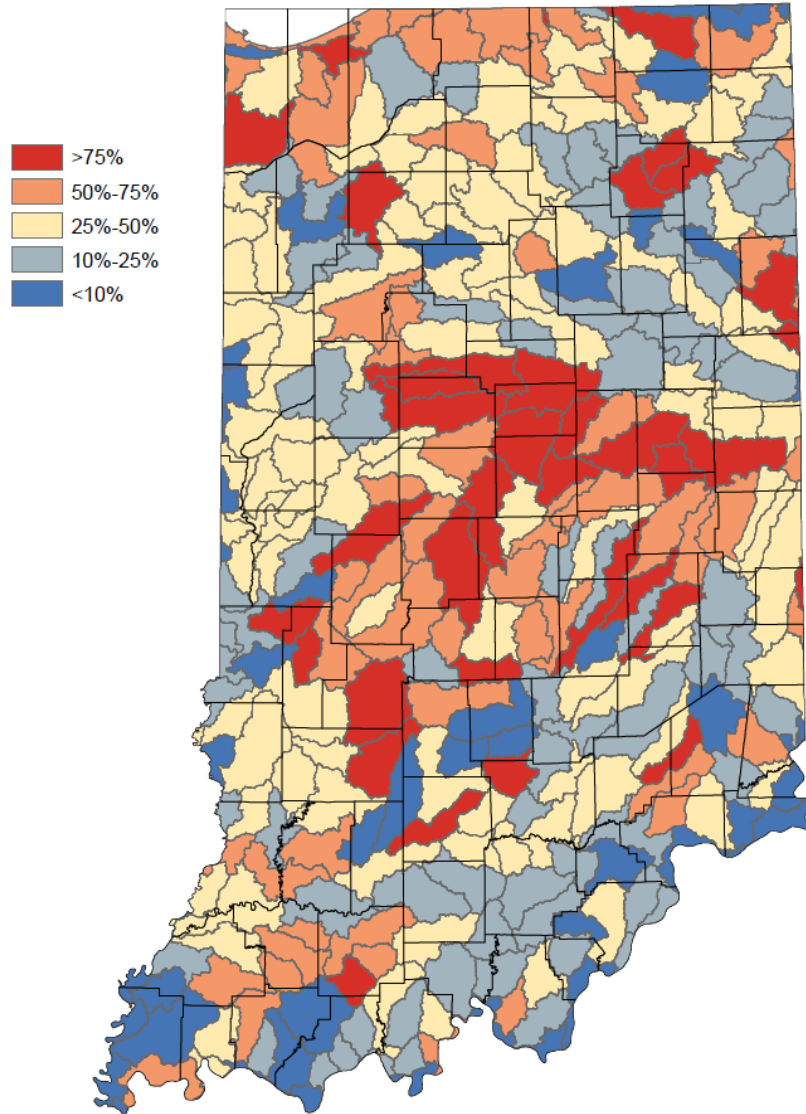


Karst Features in Indiana

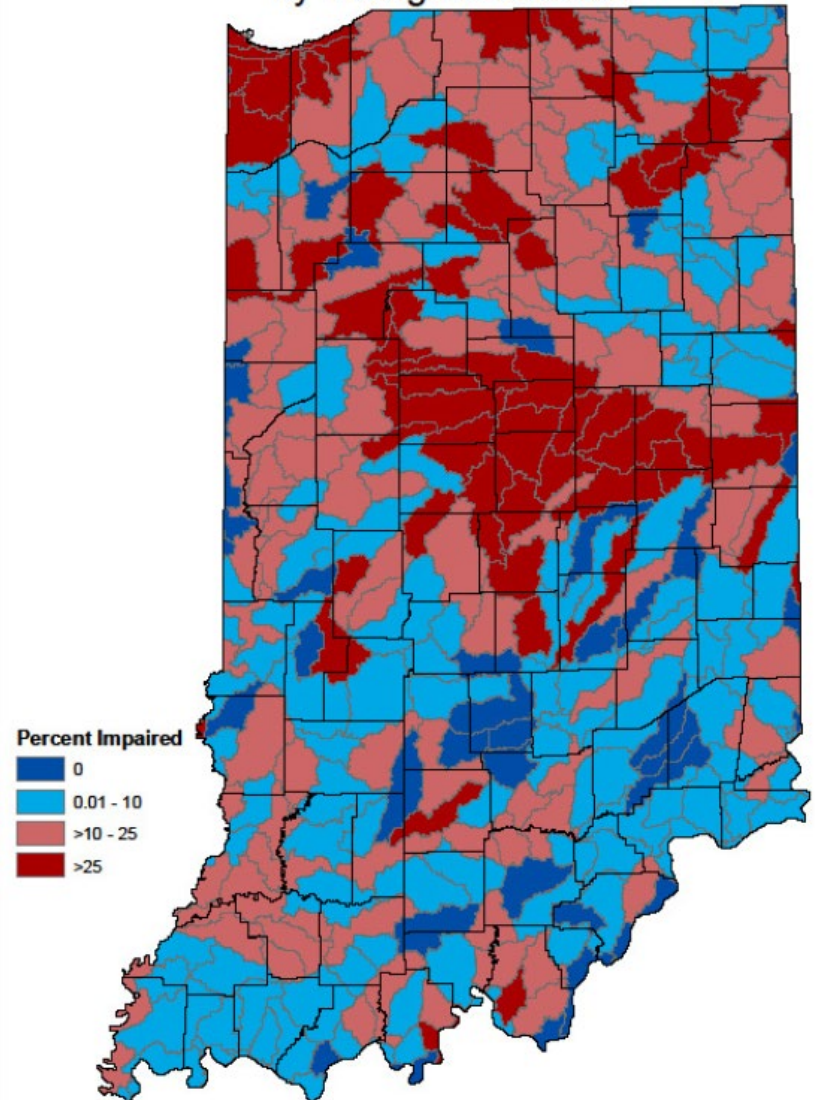


This map shows areas of the state with karst features.

Percent Impaired Streams by 10-digit Watershed



Percentage of Impaired Stream Miles by 10-digit watershed

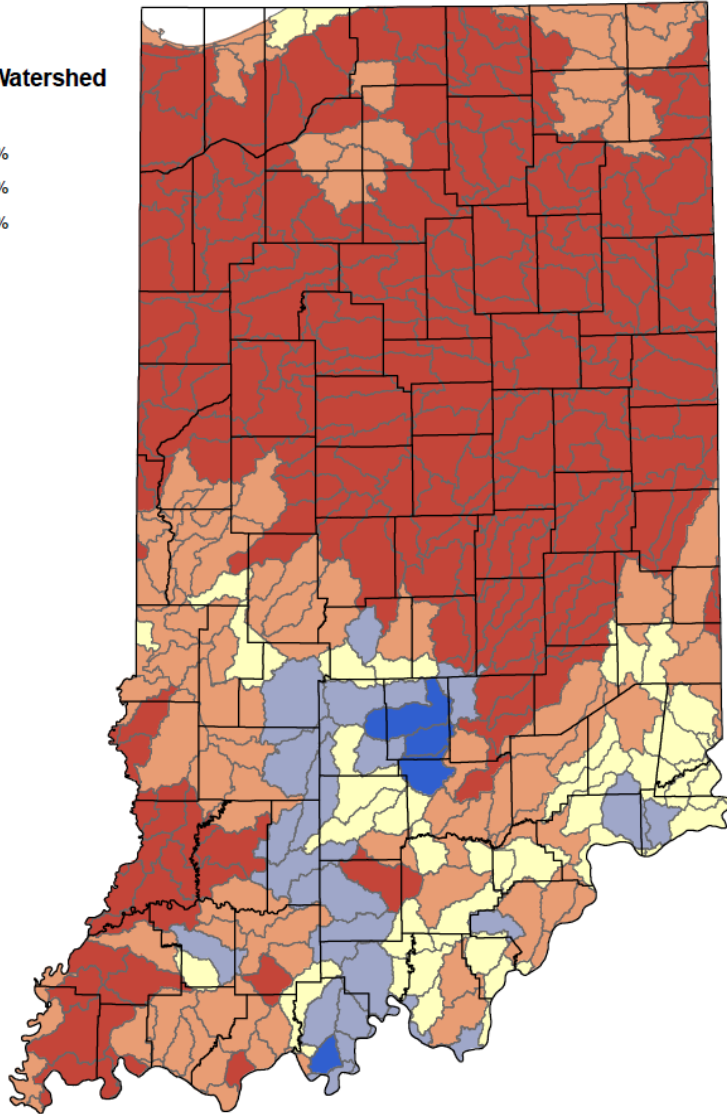




### Percent Forestland by 10-digit Watershed

#### Forest by Watershed

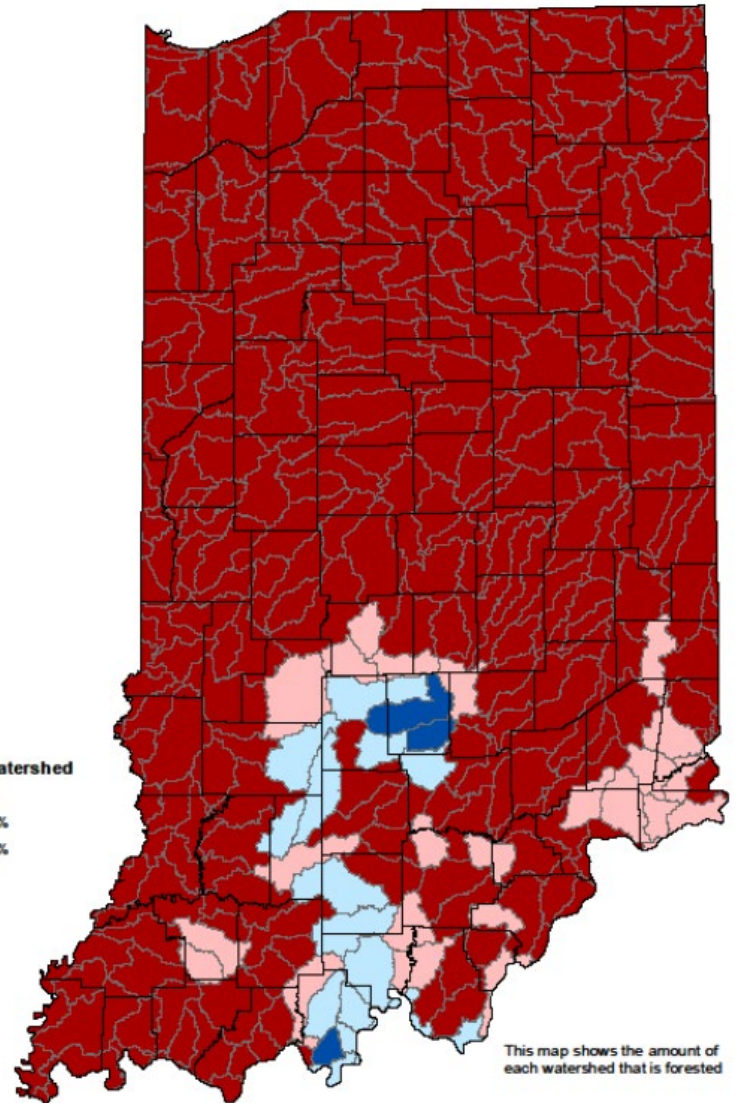
- < 25%
- 25 - 50%
- 50 - 65%
- 65 - 80%
- > 80%



### Percentage Forestland by 10-digit Watershed

#### Forest by Watershed

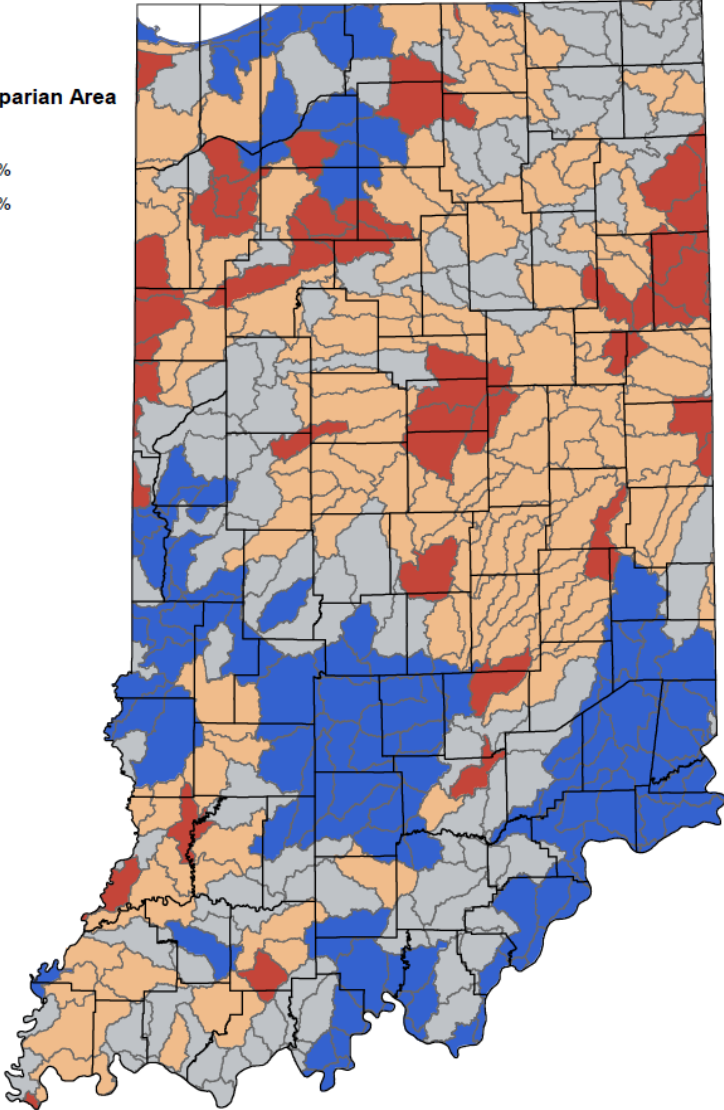
- 0 - 50%
- >50 - 65%
- >65 - 80%
- >80%



### Percent Forested Riparian Areas by Watershed

**Forested Riparian Area**

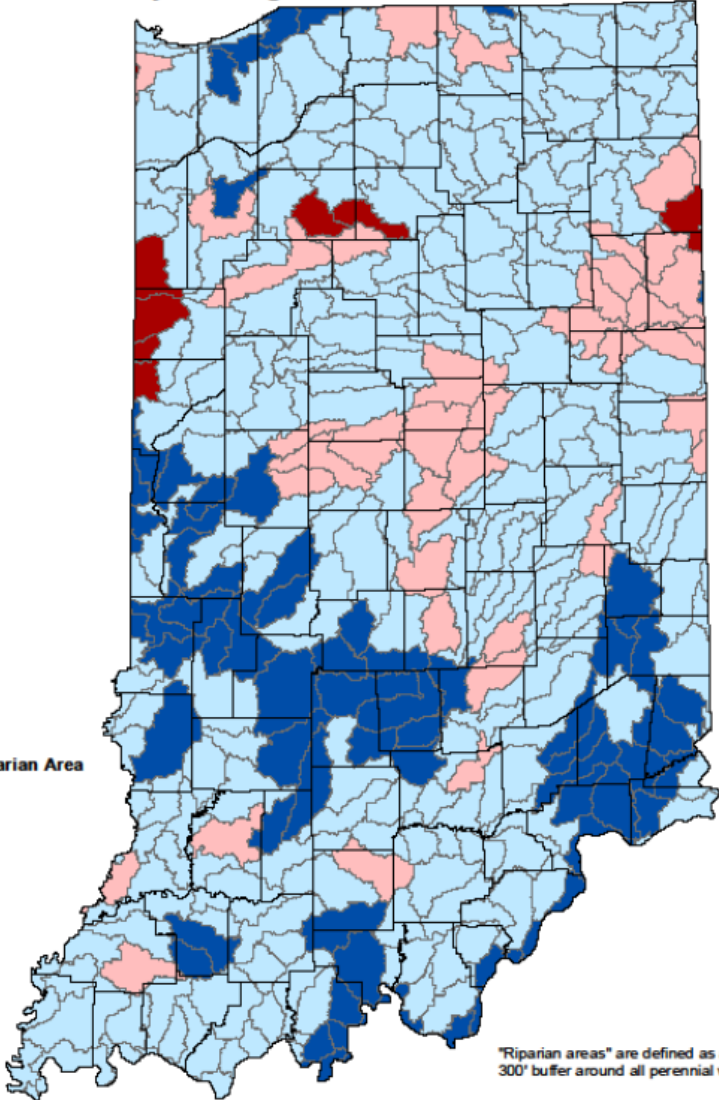
- > 20%
- 20 - 40%
- 40 - 60%
- > 60%



### Percentage of Forested Riparian Areas by 10-digit Watershed

**Forested Riparian Area**

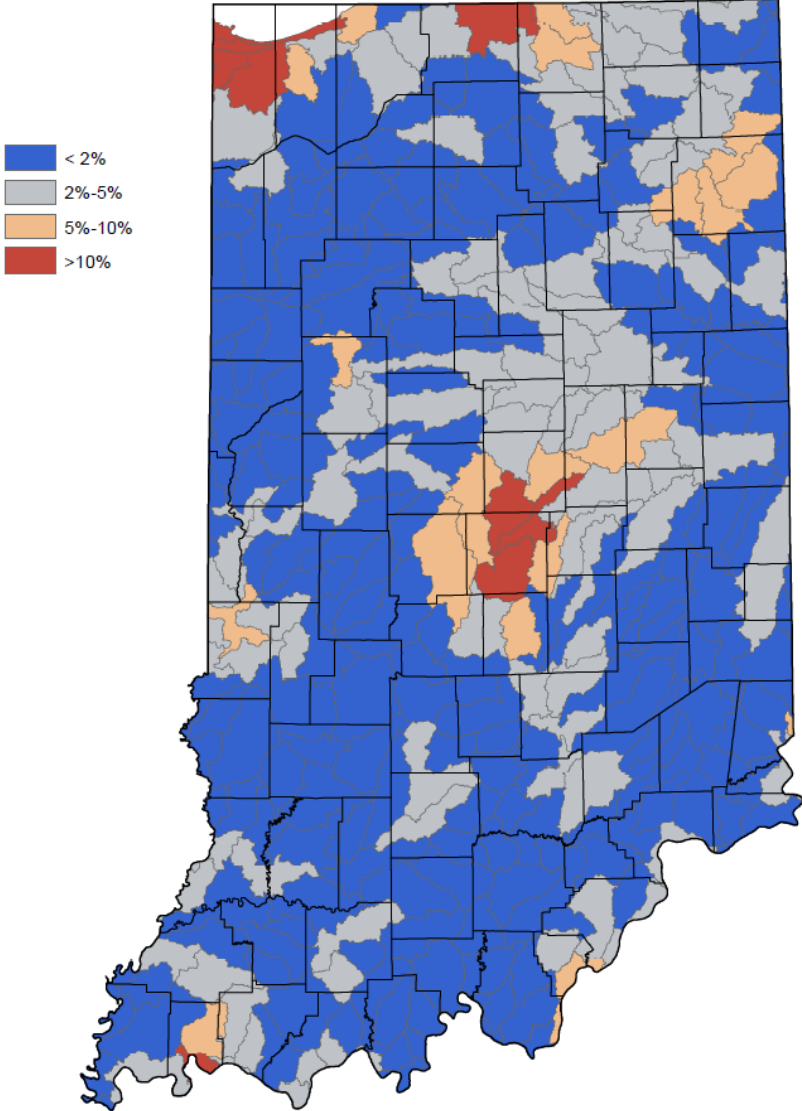
- 0 - 10%
- >10 - 20%
- >20 - 50%
- >50%



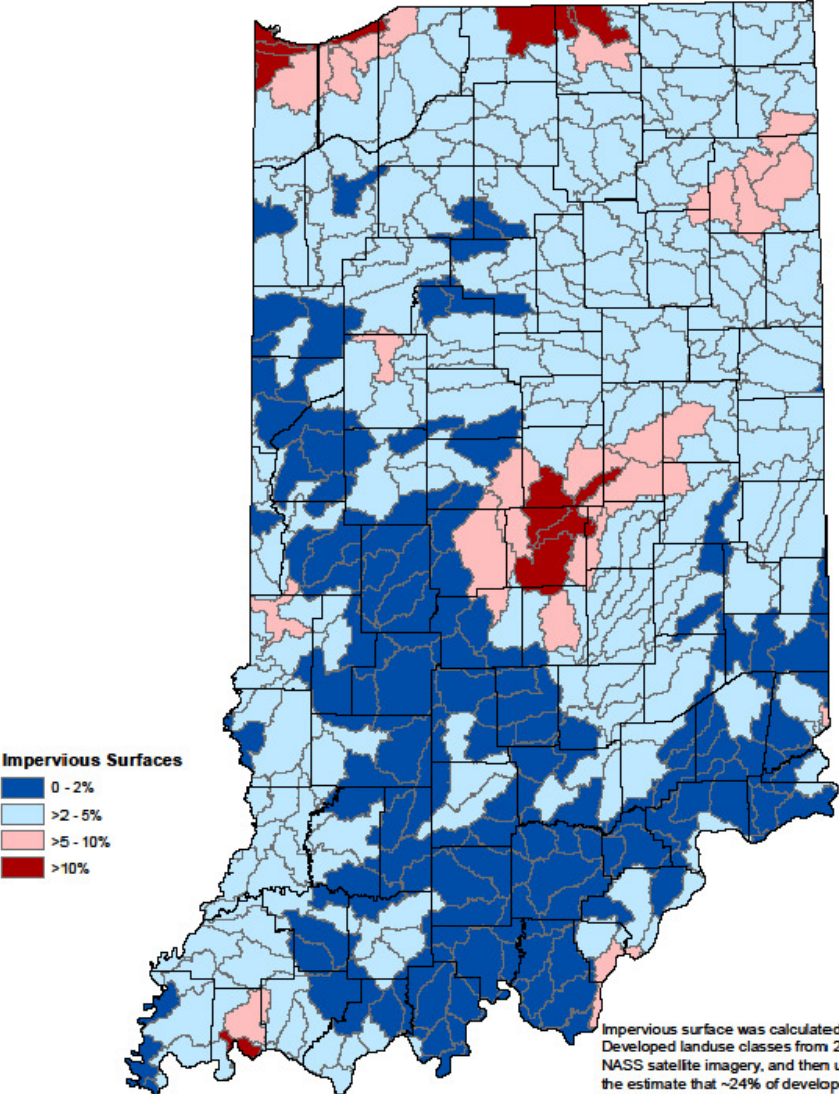
\*Riparian areas\* are defined as a 300' buffer around all perennial water



Percent Impervious Surface by 10-digit Watershed

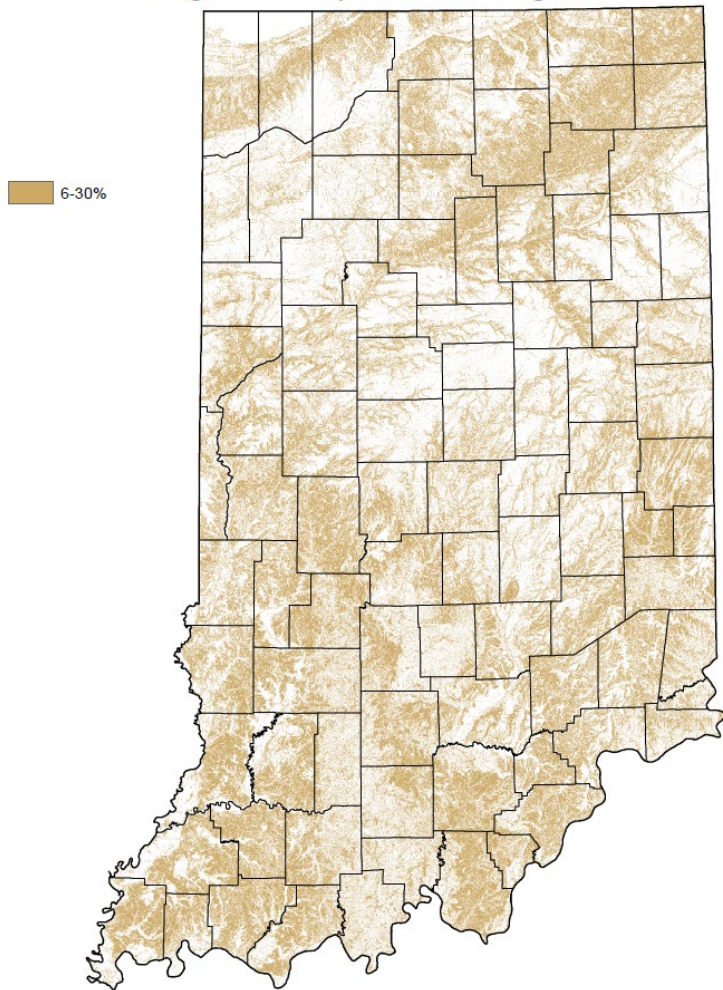


Percentage Impervious Surface by 10-digit Watershed

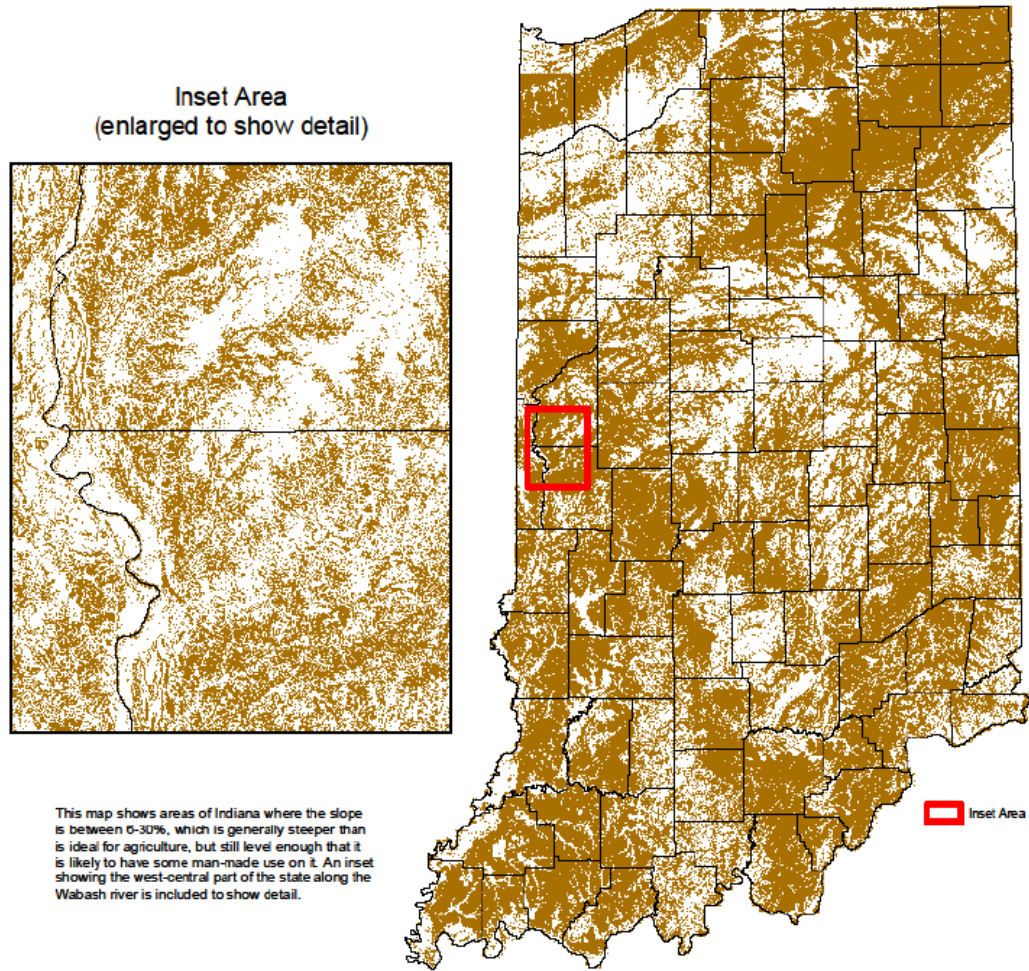


Impervious surface was calculated using Developed landuse classes from 2009 NASS satellite imagery, and then using the estimate that ~24% of developed land is impervious

# Targeted Slope Percentages



# Targeted Slope Percentages



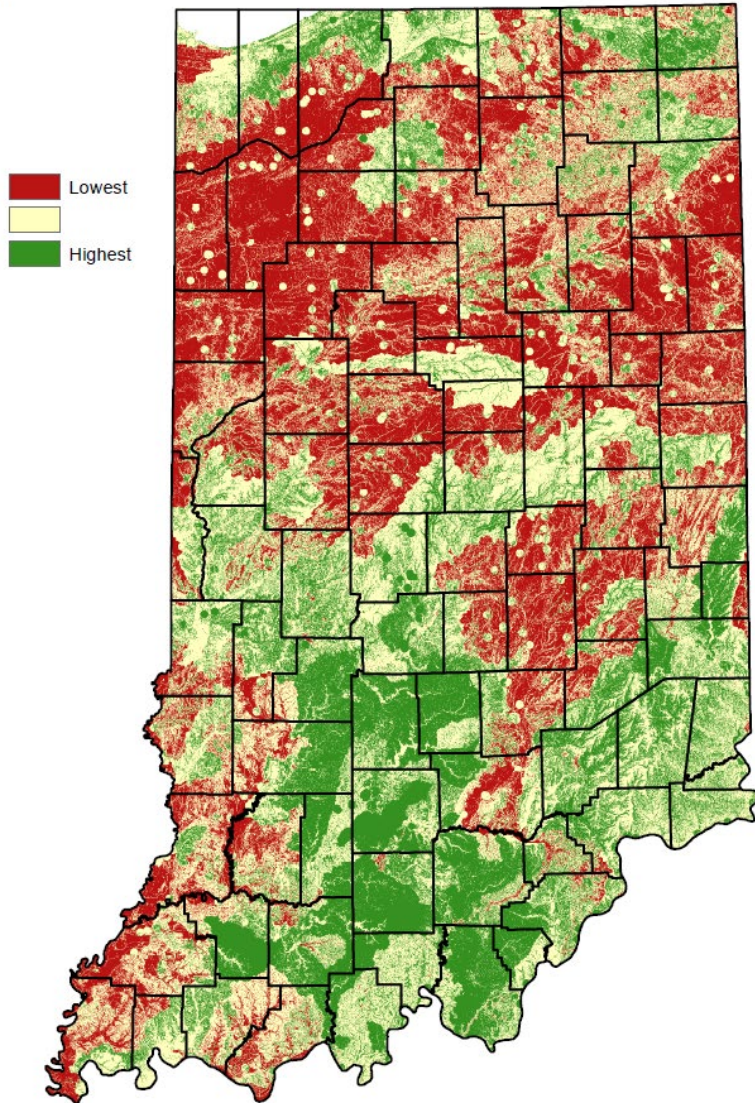
Inset Area  
(enlarged to show detail)

This map shows areas of Indiana where the slope is between 6-30%, which is generally steeper than is ideal for agriculture, but still level enough that it is likely to have some man-made use on it. An inset showing the west-central part of the state along the Wabash river is included to show detail.

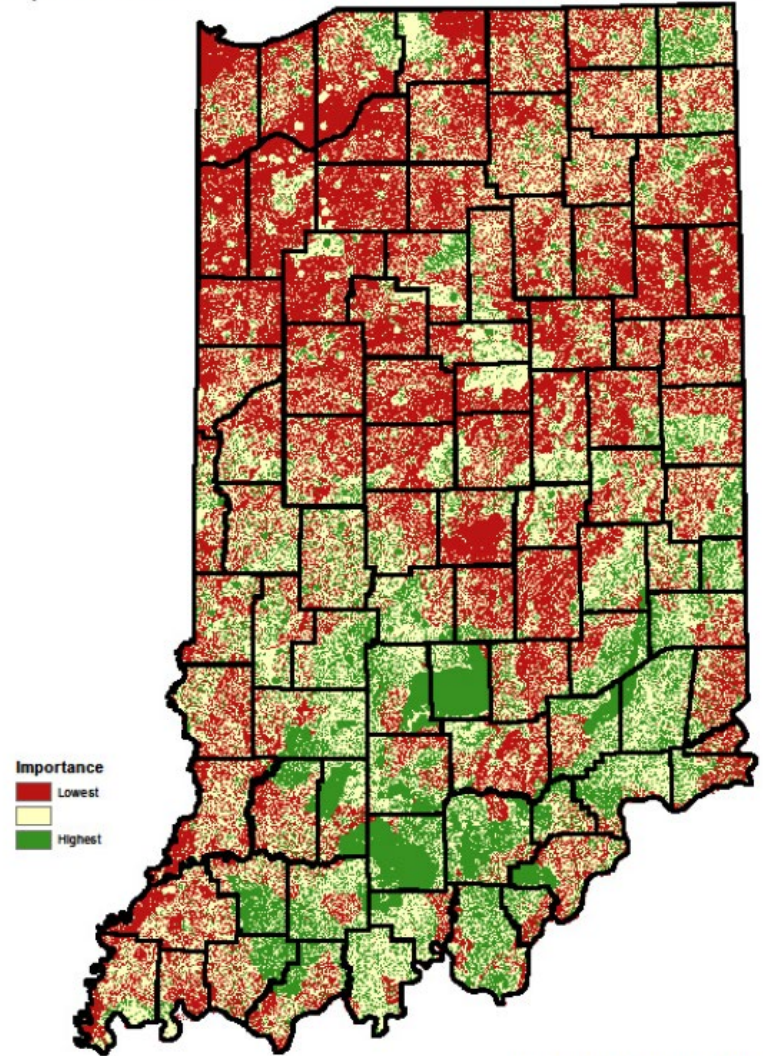
Inset Area



Importance of Lands for Soil and Water Conservation



Importance of Lands for Soil and Water Conservation

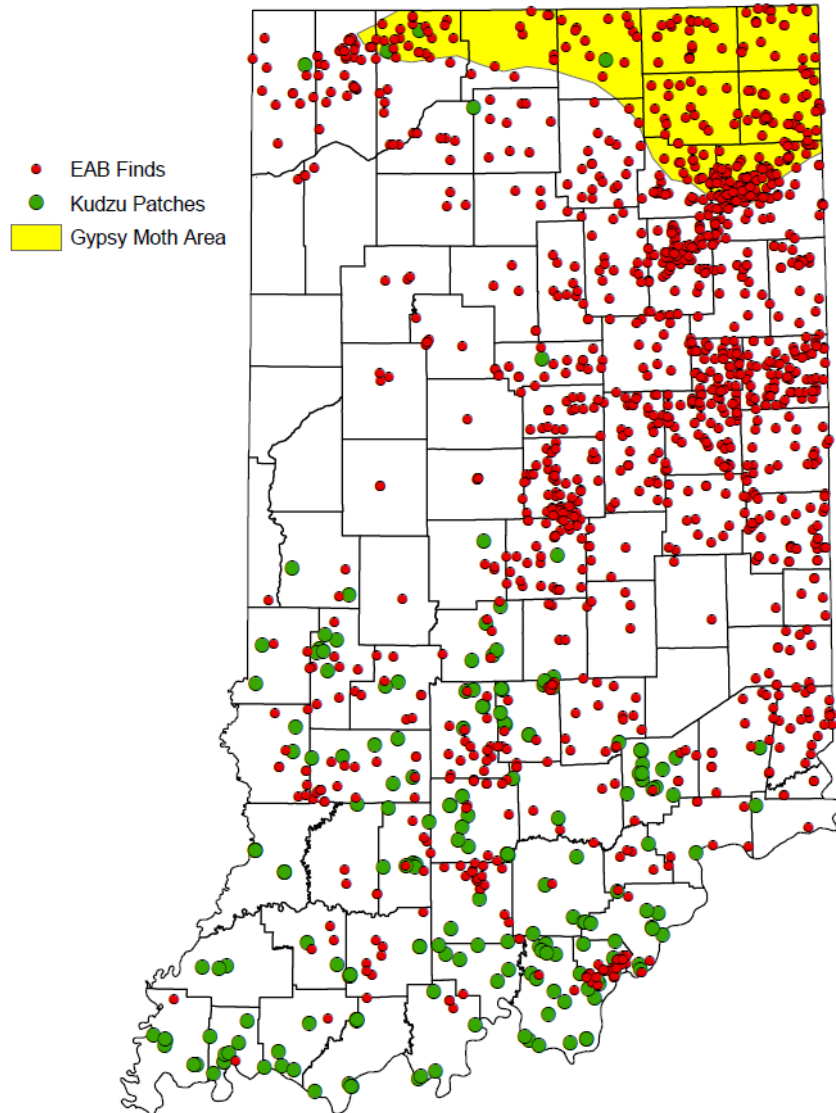


This map is a composite of 9 different layers of various soil and water factors added together

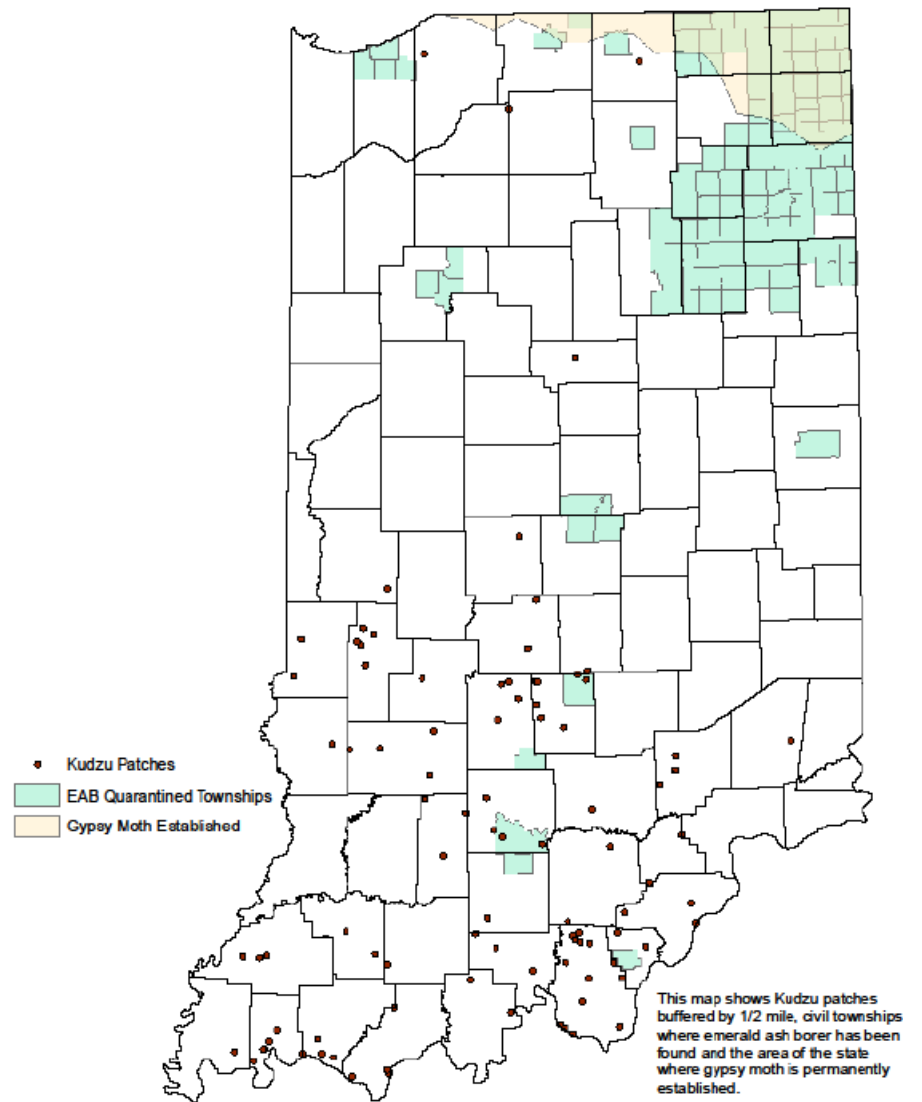
# Invasive Species Components

- Emerald Ash Borer (EAB)
- Gypsy Moth
- Kudzu
- Forest Corridors
- Home Density

## Emerald Ash Borer, Gypsy Moth, and Kudzu

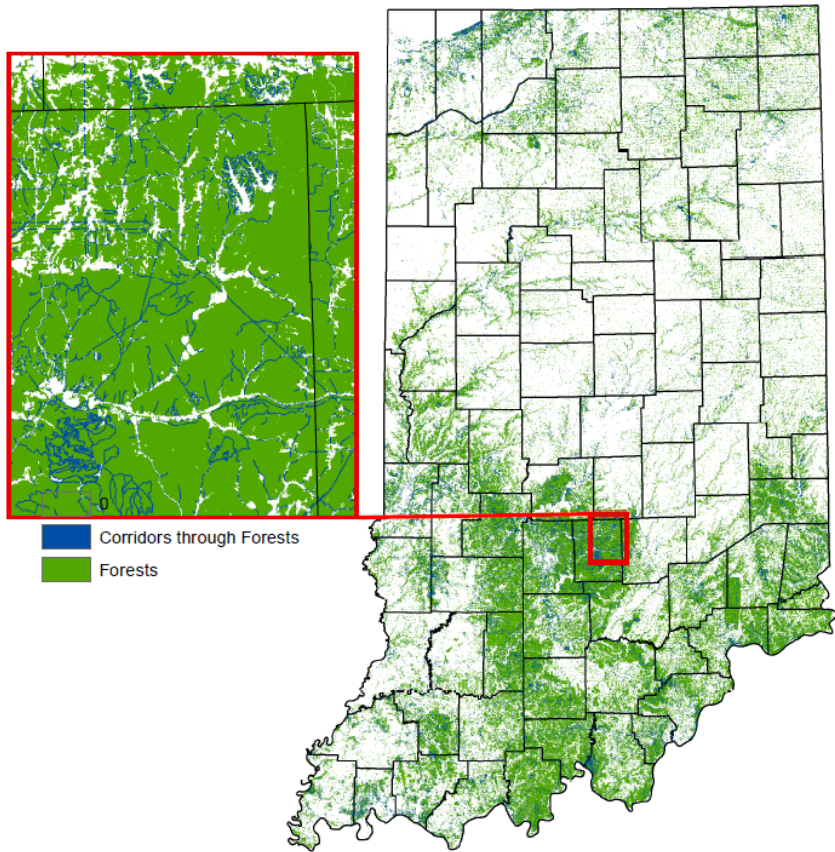


## Emerald Ash Borer, Gypsy Moth and Kudzu Locations

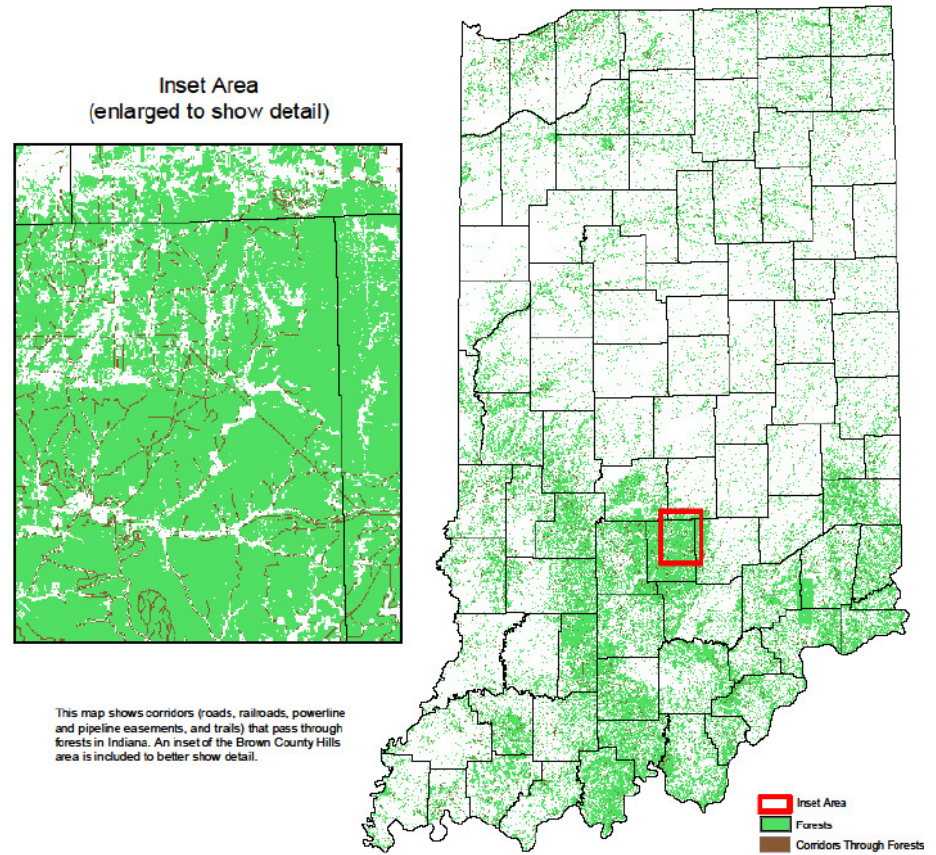




# Maintained Corridors through Forests

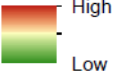


# Maintained Corridors Through Forests

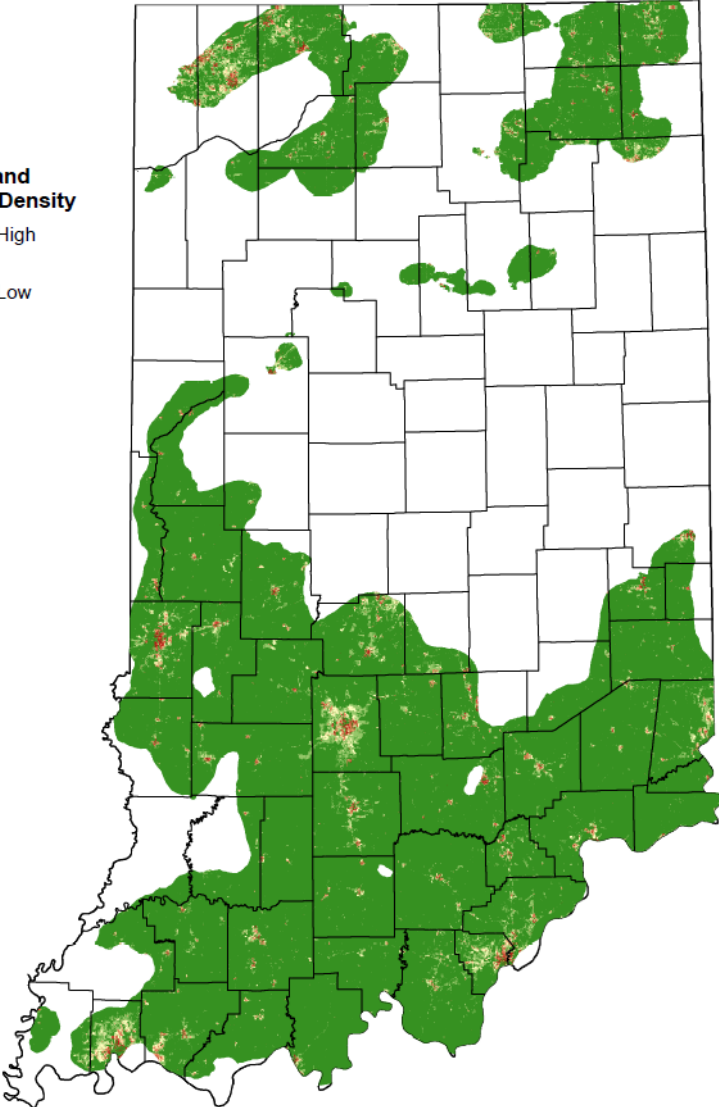


### Home Density and Forest Cover

Home and Forest Density




High  
Low

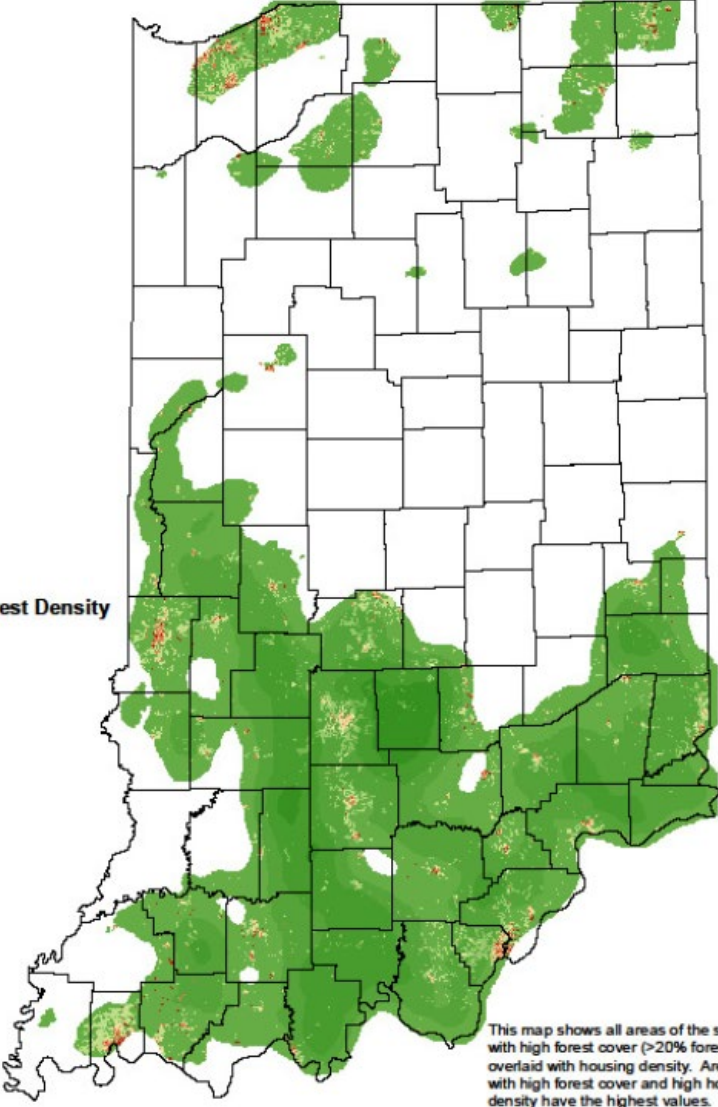


### Home Density and Forest Cover

Home and Forest Density

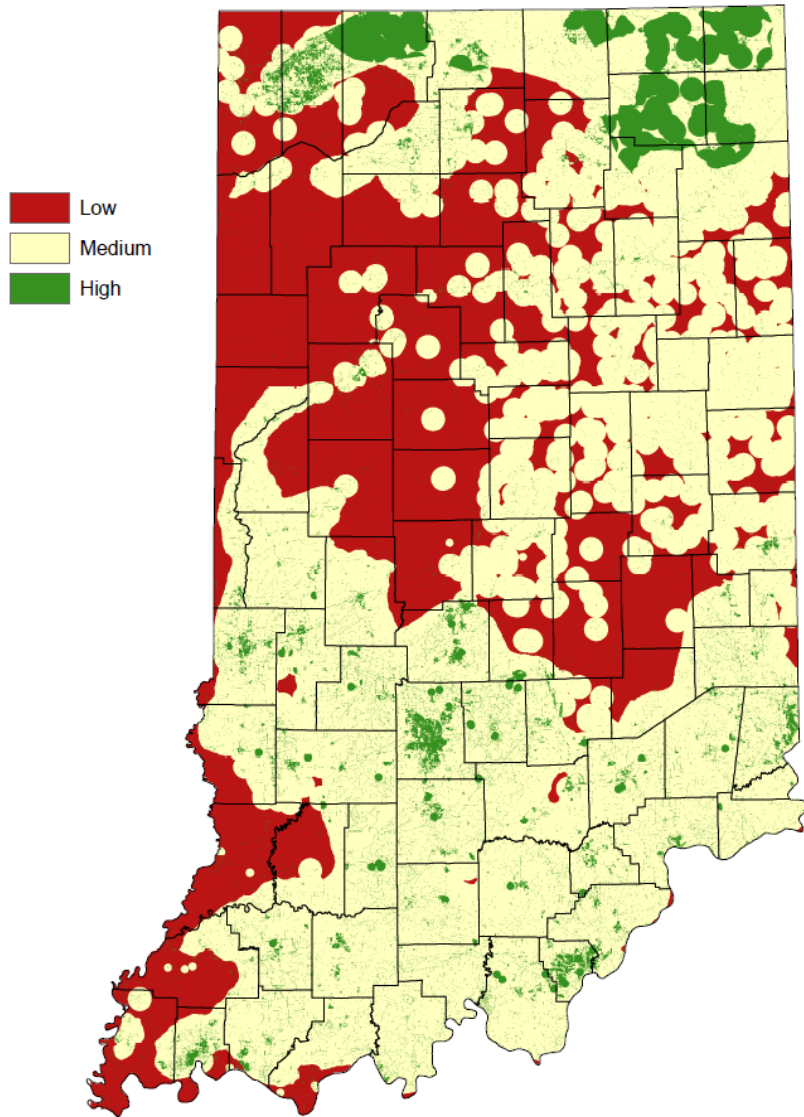


High  
Low

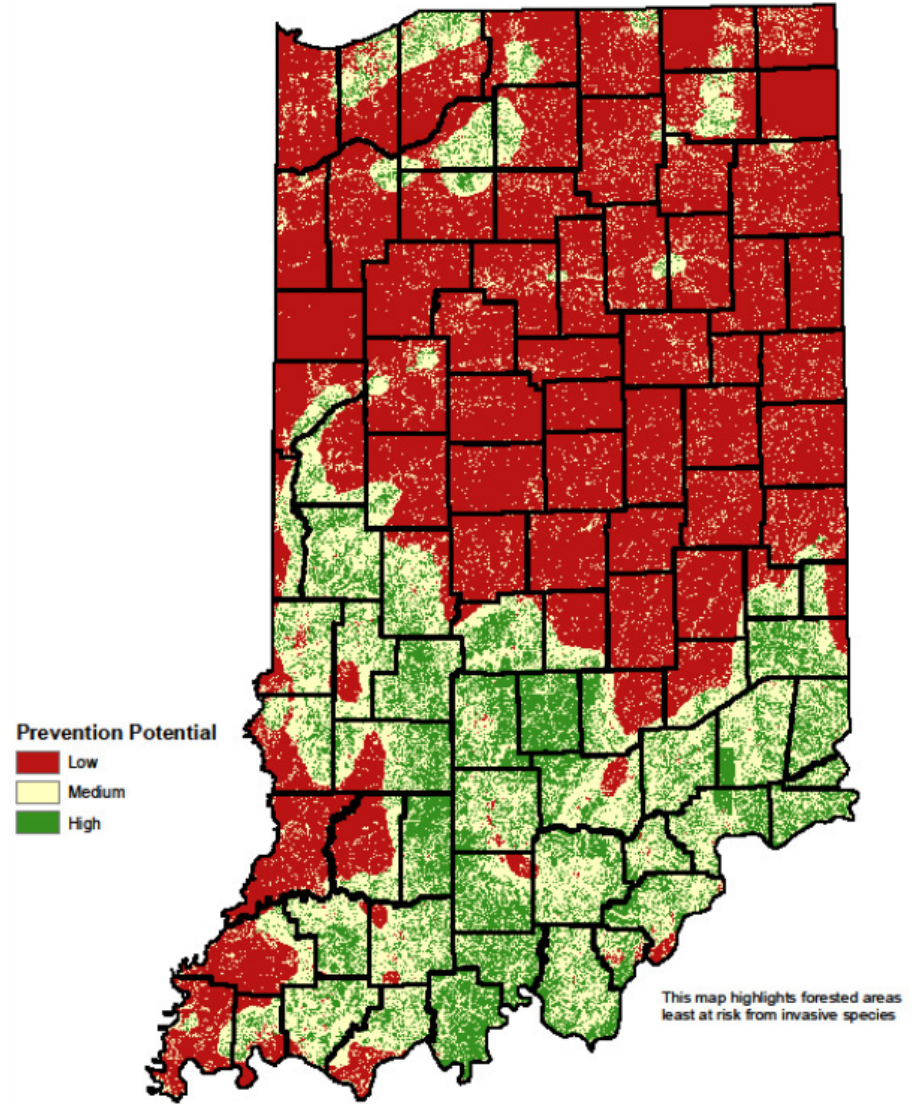




### Potential to Prevent Invasive Species



### Potential to Prevent Invasive Species



# Biodiversity Components

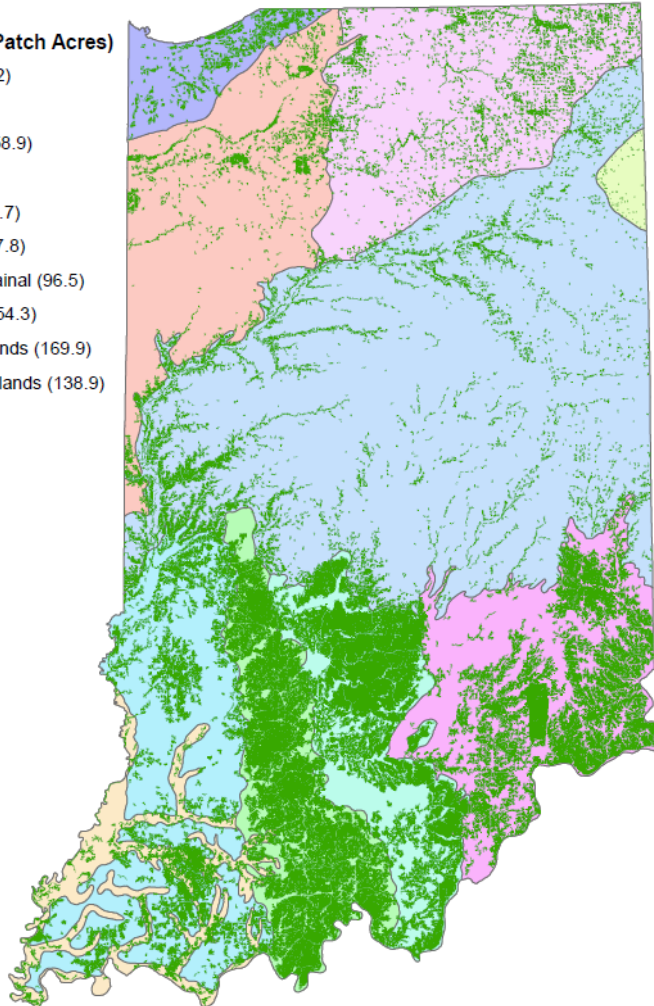
- Above Average Forest Patches by Natural Region
- Buffered Wetlands
- Rare Forest Communities
- Large Forest Patches in Areas of Low Forest Cover

## Above Average Forest Patches by Natural Region

### Natural Region (Avg. Patch Acres)

Black Swamp (24.2)
Bluegrass (276.8)
Central Till Plain (58.9)
Grand Prairie (65)
Highland Rim (583.7)
Northern Lakes (57.8)
Northwestern Morainal (96.5)
Shawnee Hills (1254.3)
Southern Bottomlands (169.9)
Southwestern Lowlands (138.9)

### Forest Patches

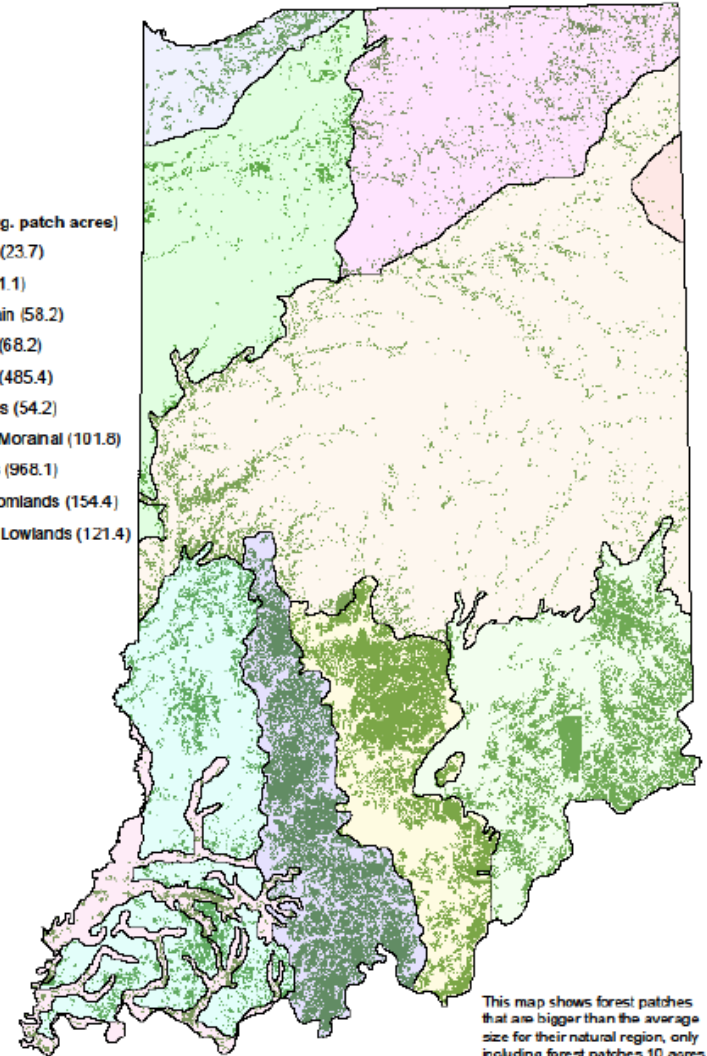


## Above Average Forest Patches by Natural Region

### Natural Regions (Avg. patch acres)

Black Swamp (23.7)
Bluegrass (241.1)
Central Till Plain (58.2)
Grand Prairie (68.2)
Highland Rim (485.4)
Northern Lakes (54.2)
Northwestern Morainal (101.8)
Shawnee Hills (968.1)
Southern Bottomlands (154.4)
Southwestern Lowlands (121.4)

### Forest Patches

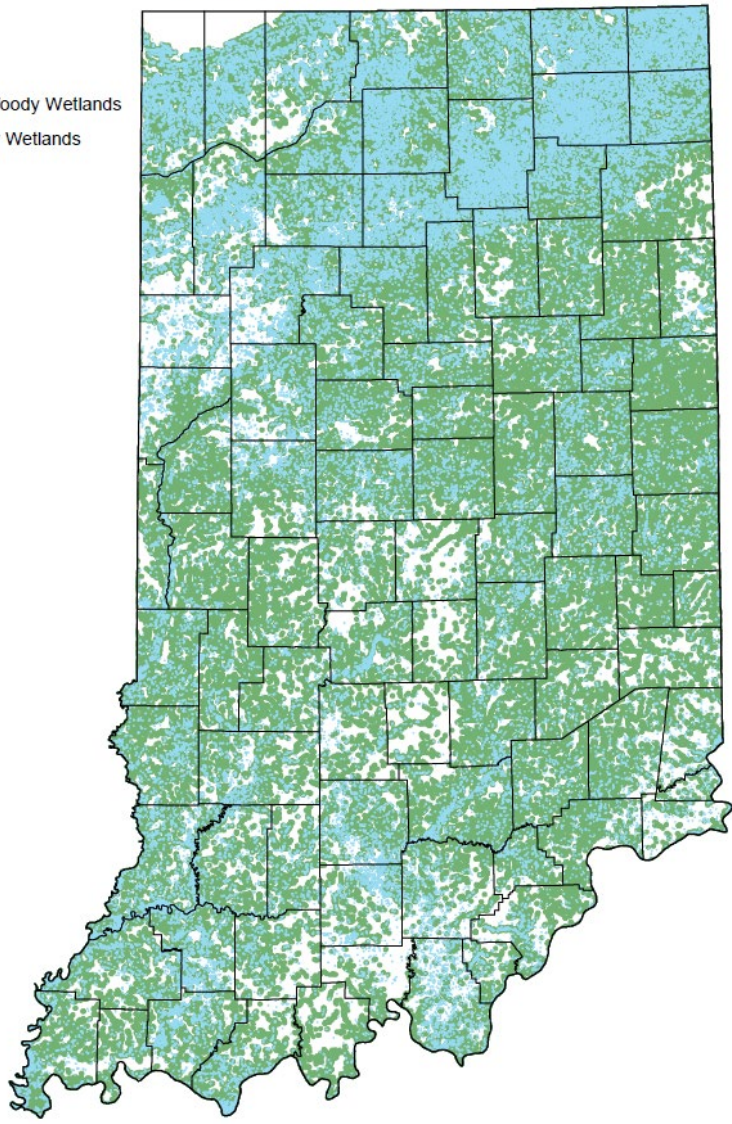


This map shows forest patches that are bigger than the average size for their natural region, only including forest patches 10 acres or greater in size.



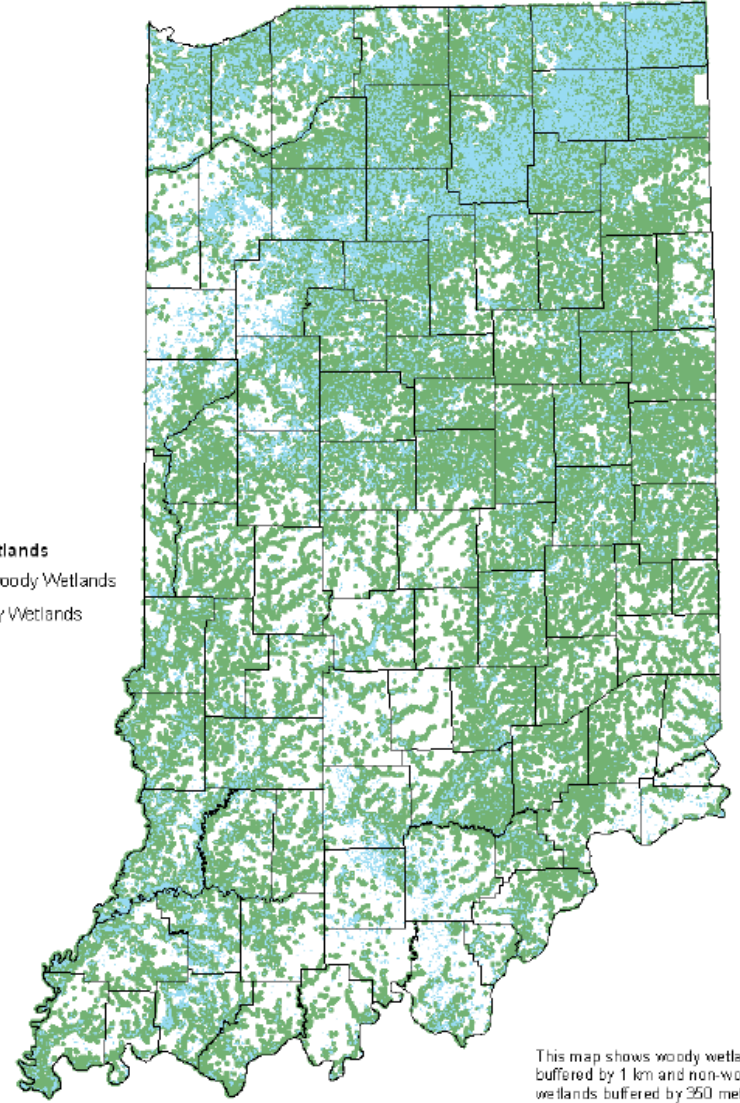
## Buffered Wetlands

- Non-Woody Wetlands
- Woody Wetlands



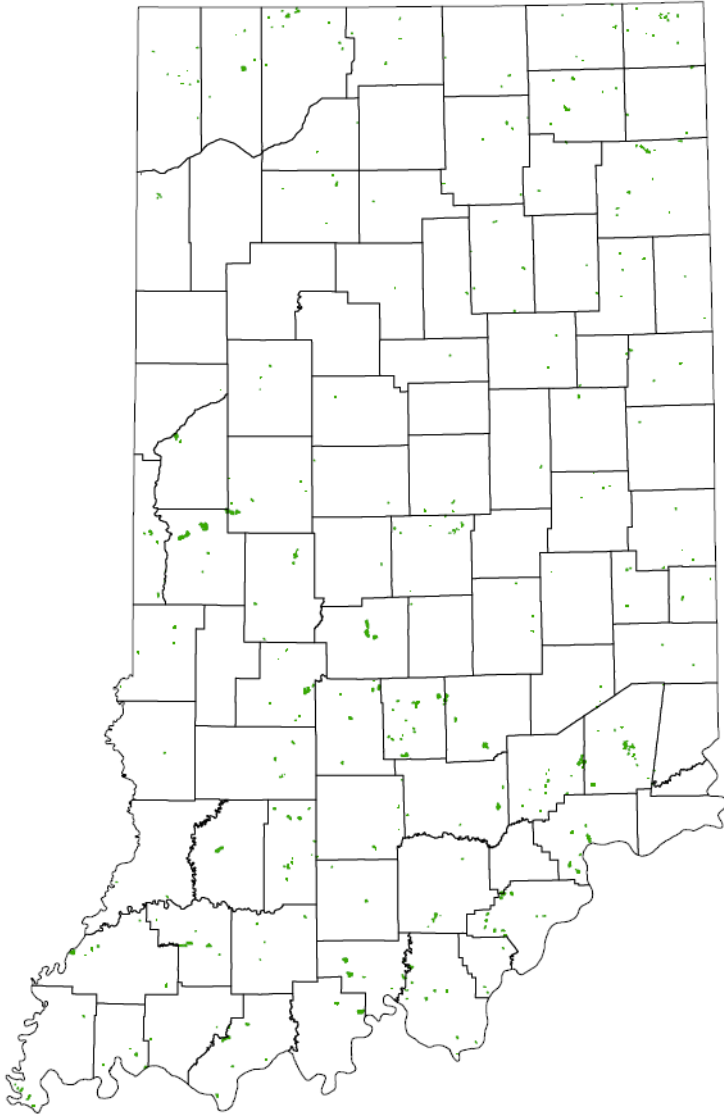
## Buffered Wetlands

- Buffered Wetlands**
- Non-woody Wetlands
  - Woody Wetlands

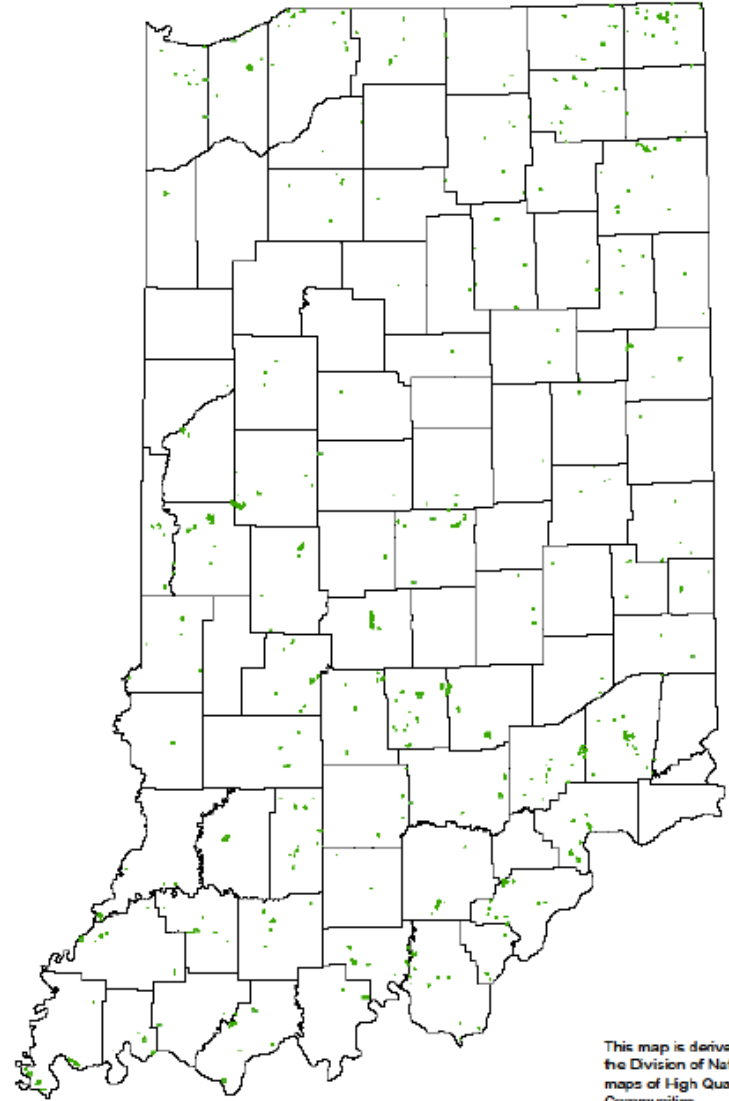


This map shows woody wetlands buffered by 1 km and non-woody wetlands buffered by 350 meters.

## Rare Forest Communities

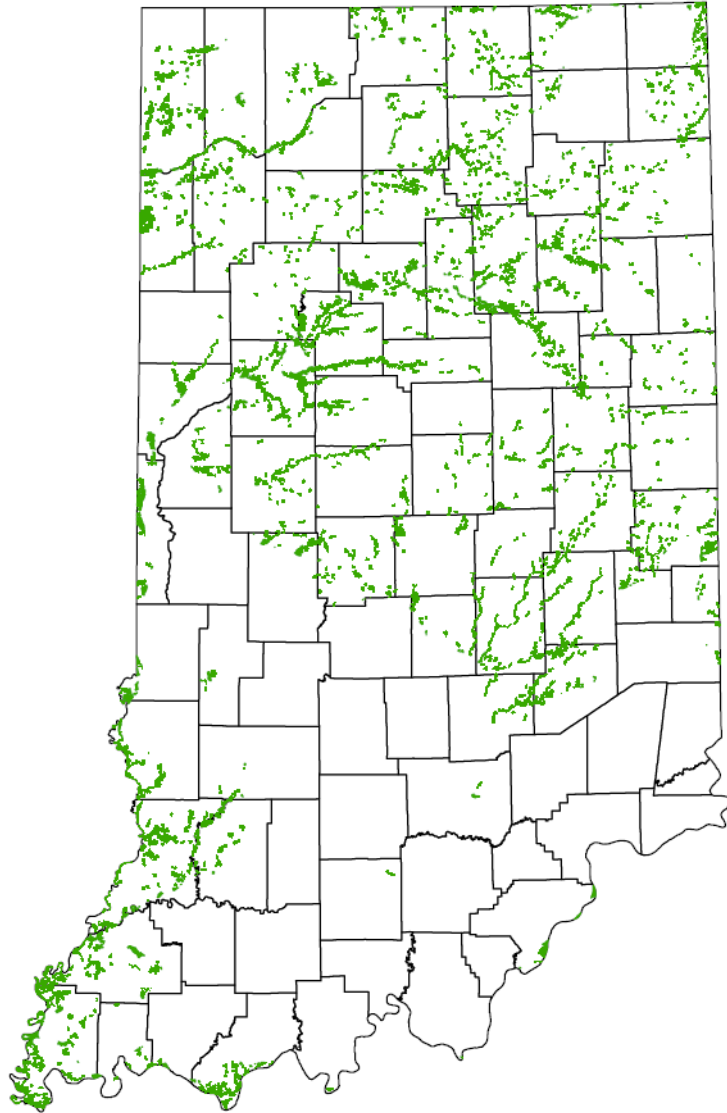


## Rare Forest Communities

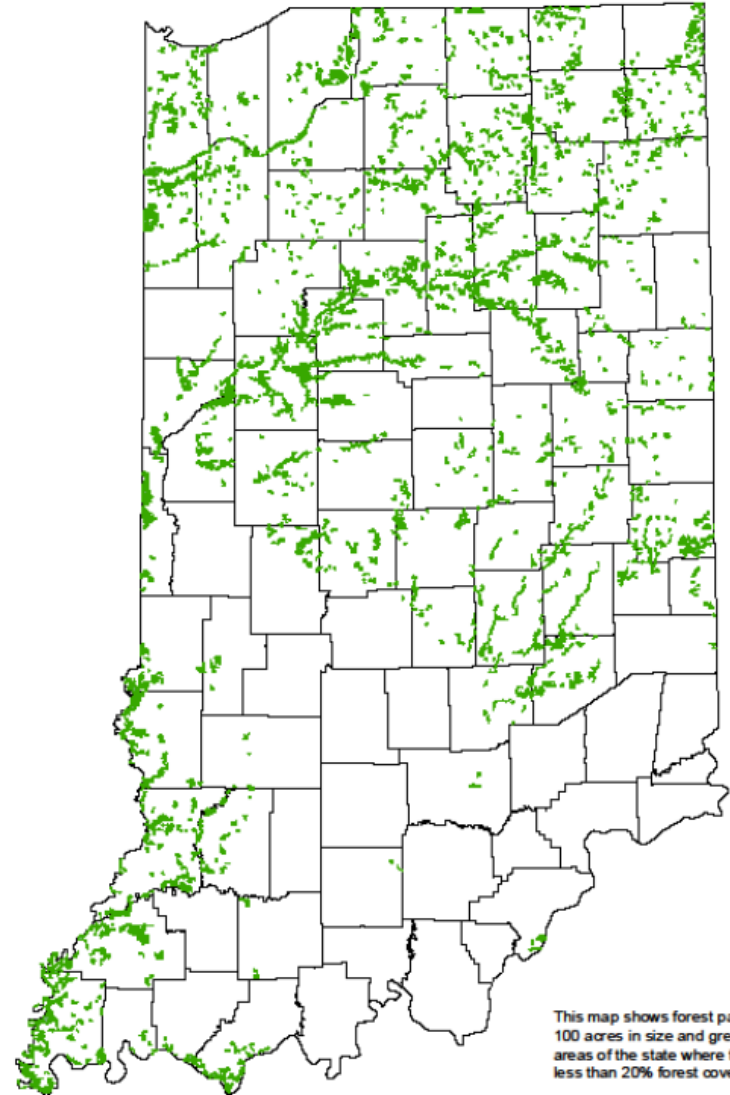


This map is derived from  
the Division of Nature Preserves  
maps of High Quality Natural  
Communities

Large Forest Patches in Areas of Low Forest Cover



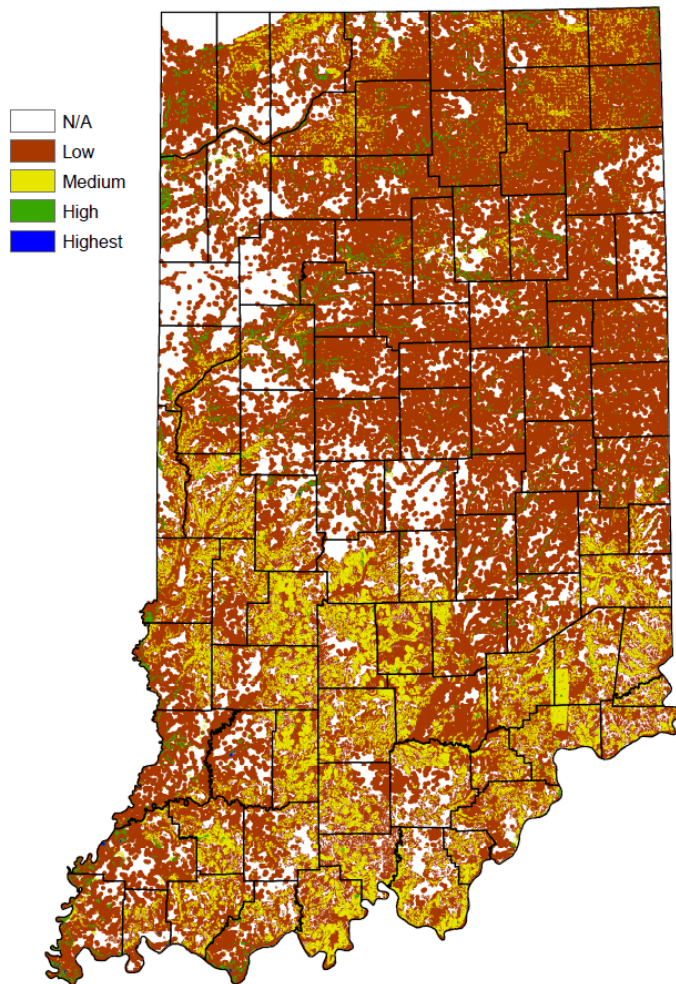
Large Forest Patches in Areas of Low Forest Cover



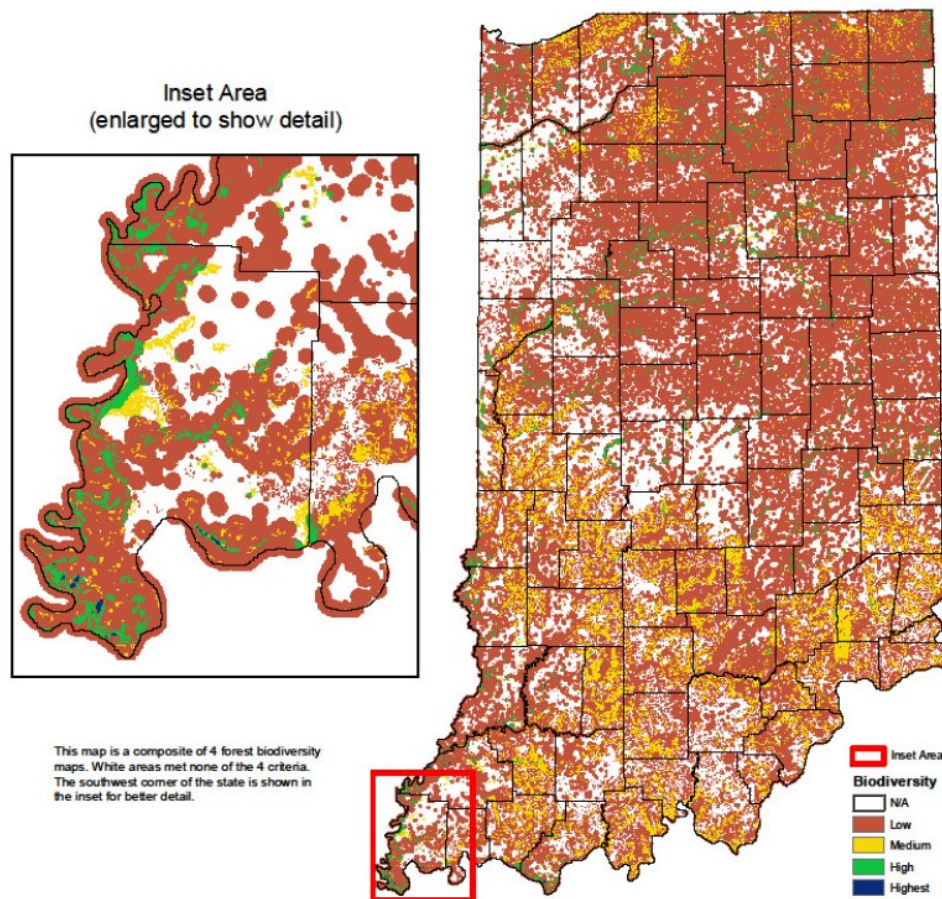
This map shows forest patches 100 acres in size and greater in areas of the state where there is less than 20% forest cover



## Forest Biodiversity Potential



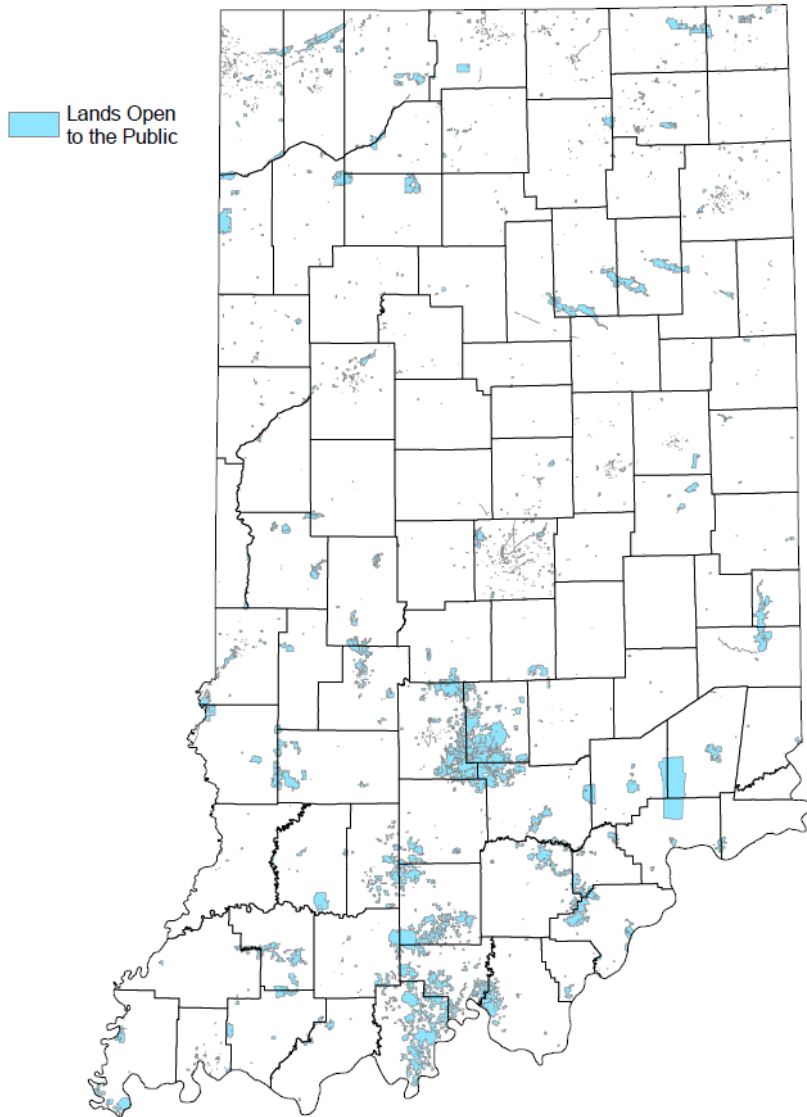
## Forest Biodiversity Potential



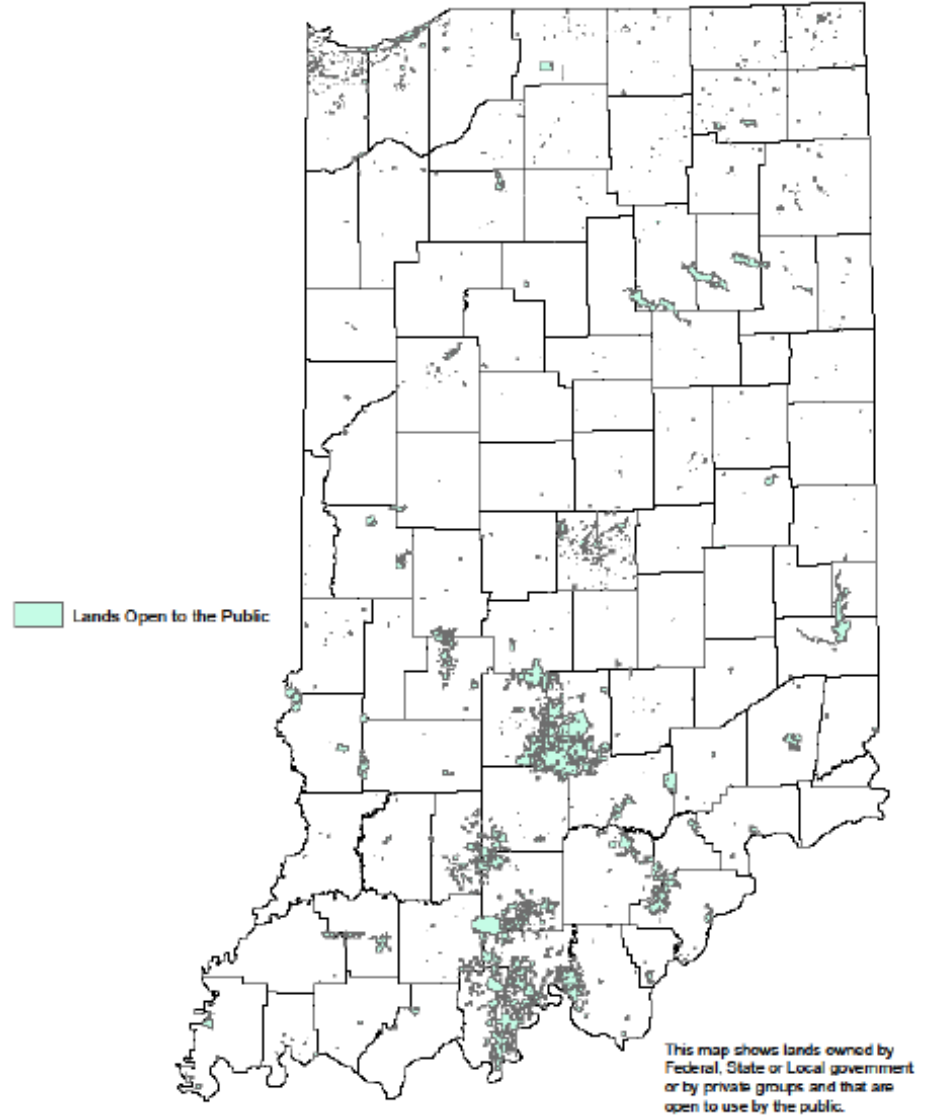
# Recreation Components

- Land Available for Recreation

## Land Available for Recreation



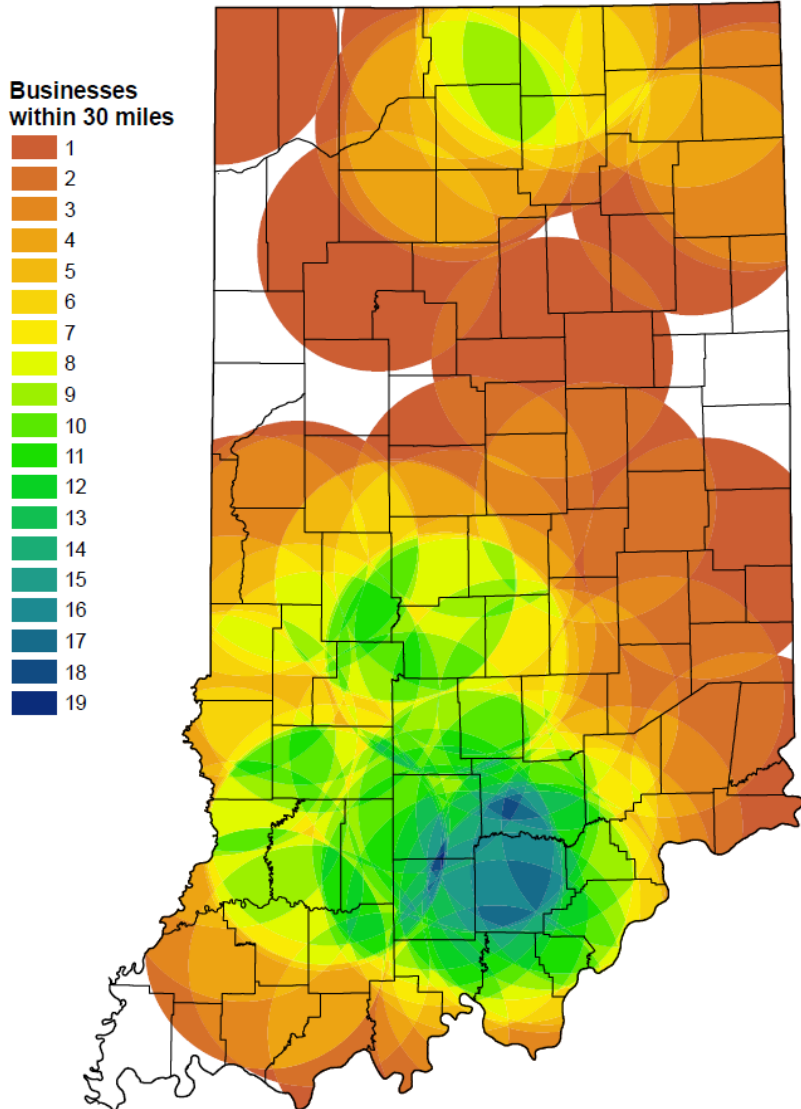
## Land Available for Recreation



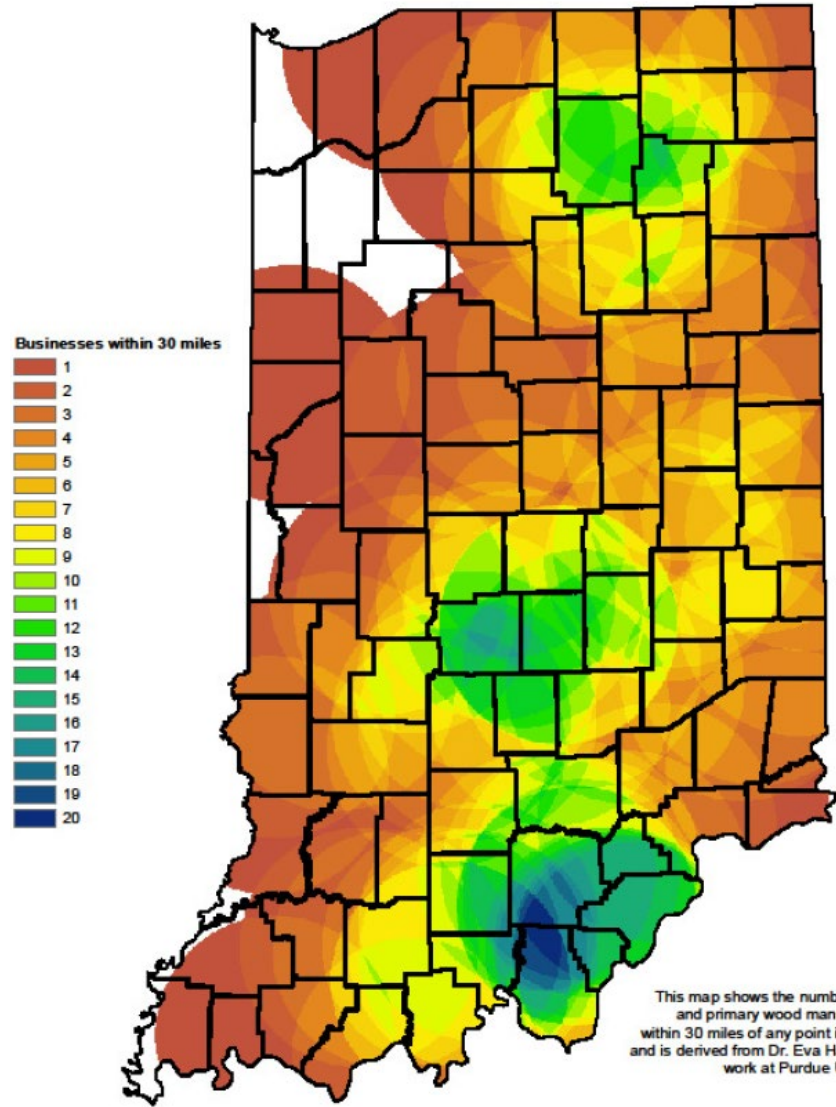
# Wood Products Components

- Access to Mills and Primary Manufacturers
- Above Ground Forest Biomass per Acre
- State and Federal Lands with Active Harvesting
- Classified Forest and Wildlands

### Access to Mills and Primary Manufacturers



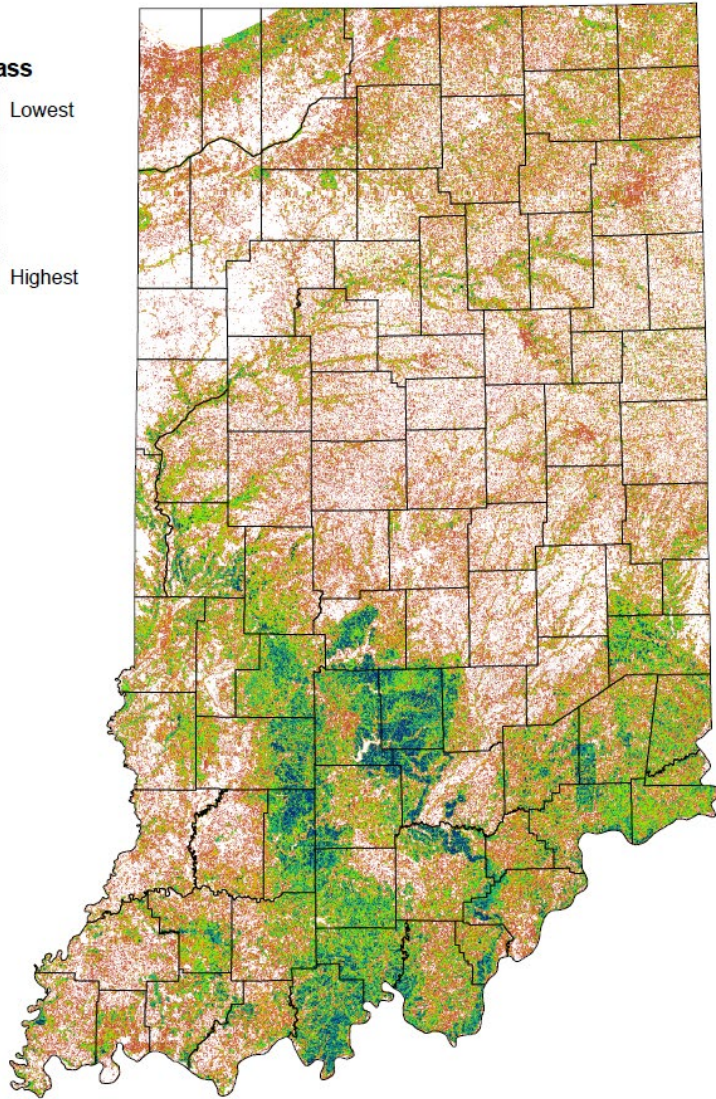
### Access to Mills and Primary Manufacturers



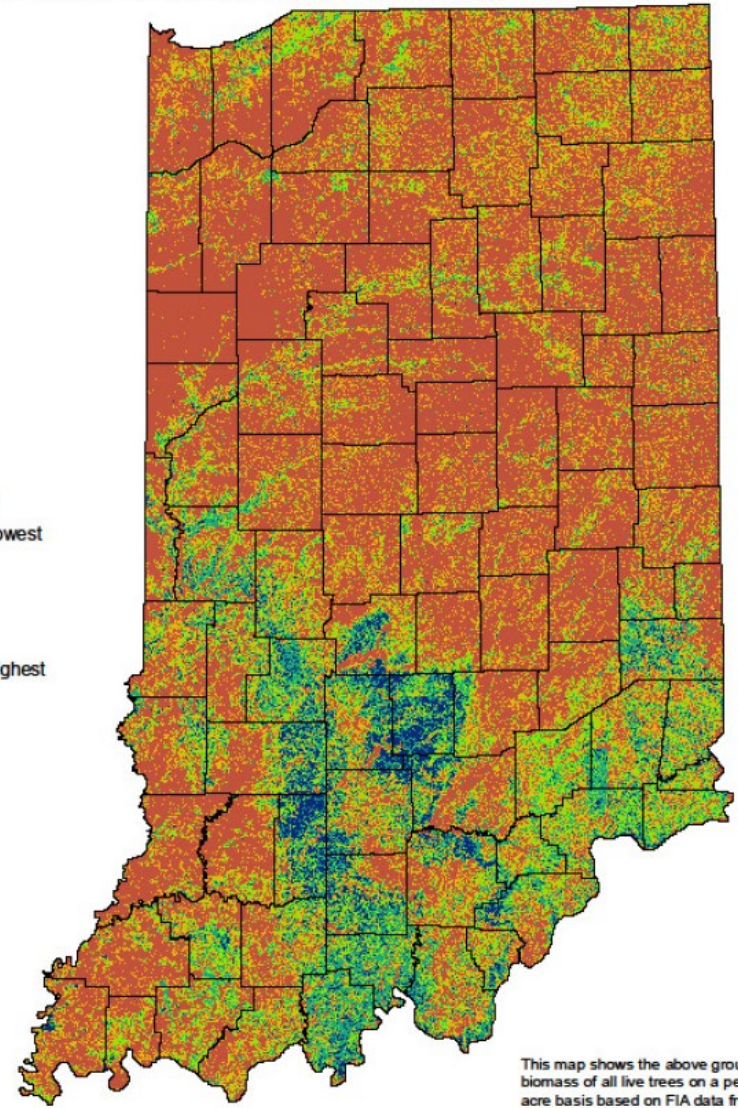
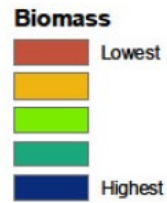
This map shows the number of mills and primary wood manufacturers within 30 miles of any point in Indiana, and is derived from Dr. Eva Haviarova's work at Purdue University.



# Above Ground Biomass per Acre



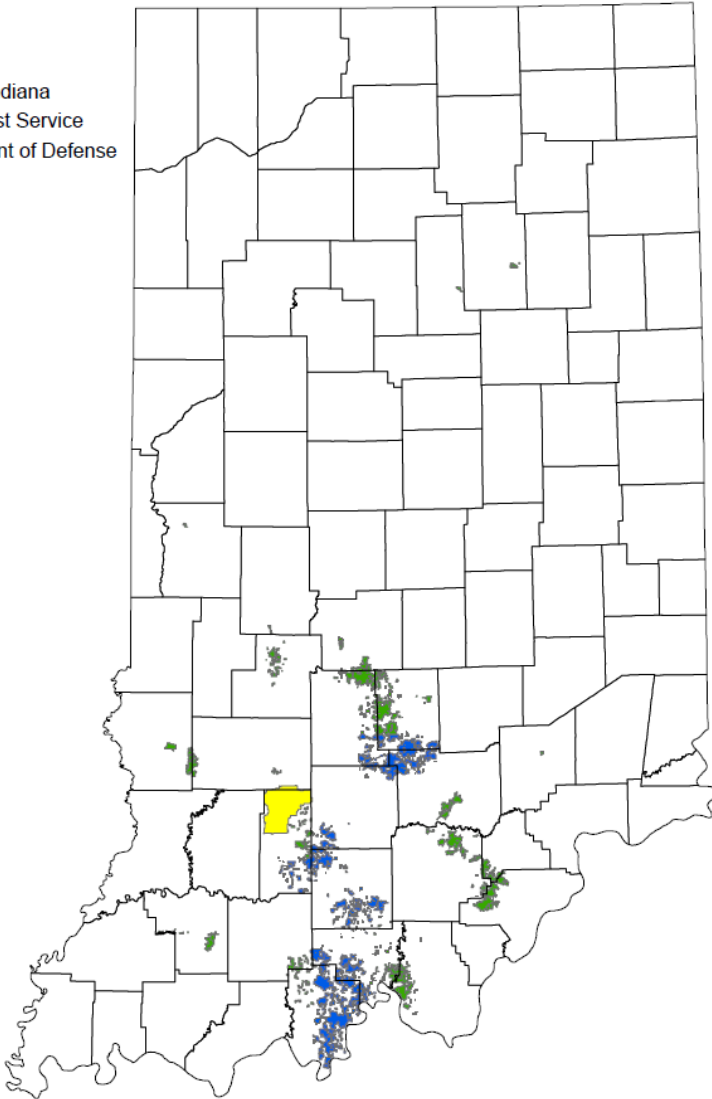
# Above Ground Forest Biomass Per Acre



This map shows the above ground biomass of all live trees on a per acre basis based on FIA data from the USFS Northern Research Station

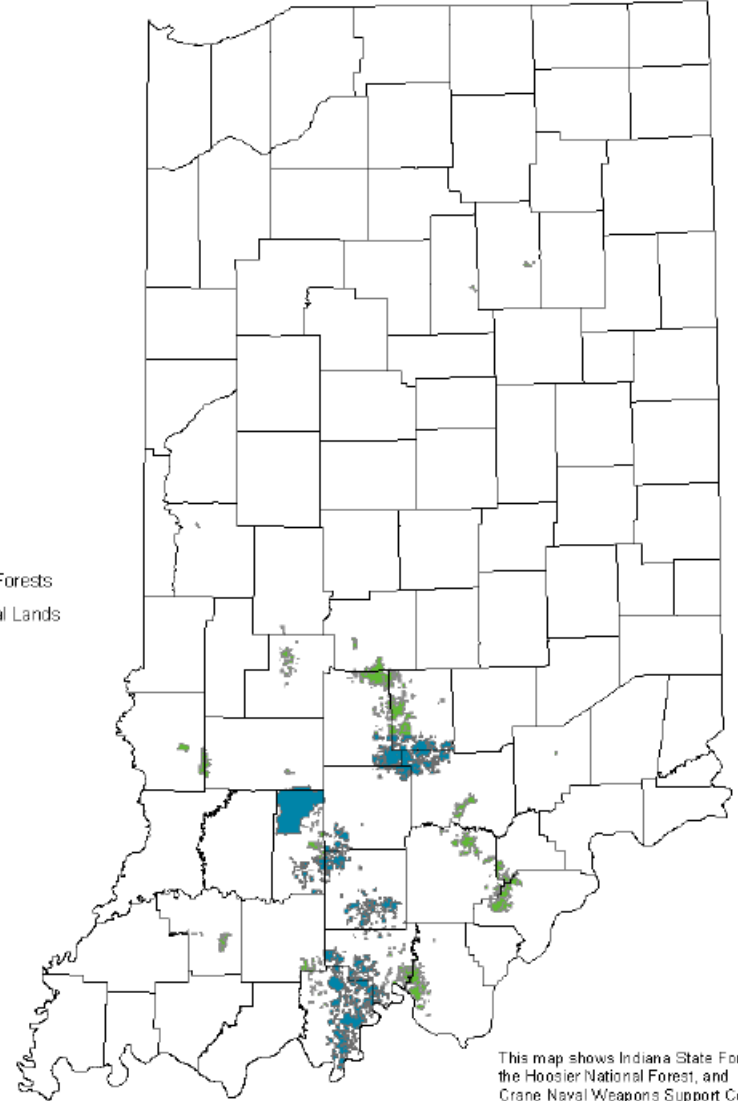
# State and Federal Lands with Active Harvesting

- Owner**
- State of Indiana
  - U.S. Forest Service
  - Department of Defense



# State and Federal Lands With Active Harvesting

- State Forests
- Federal Lands

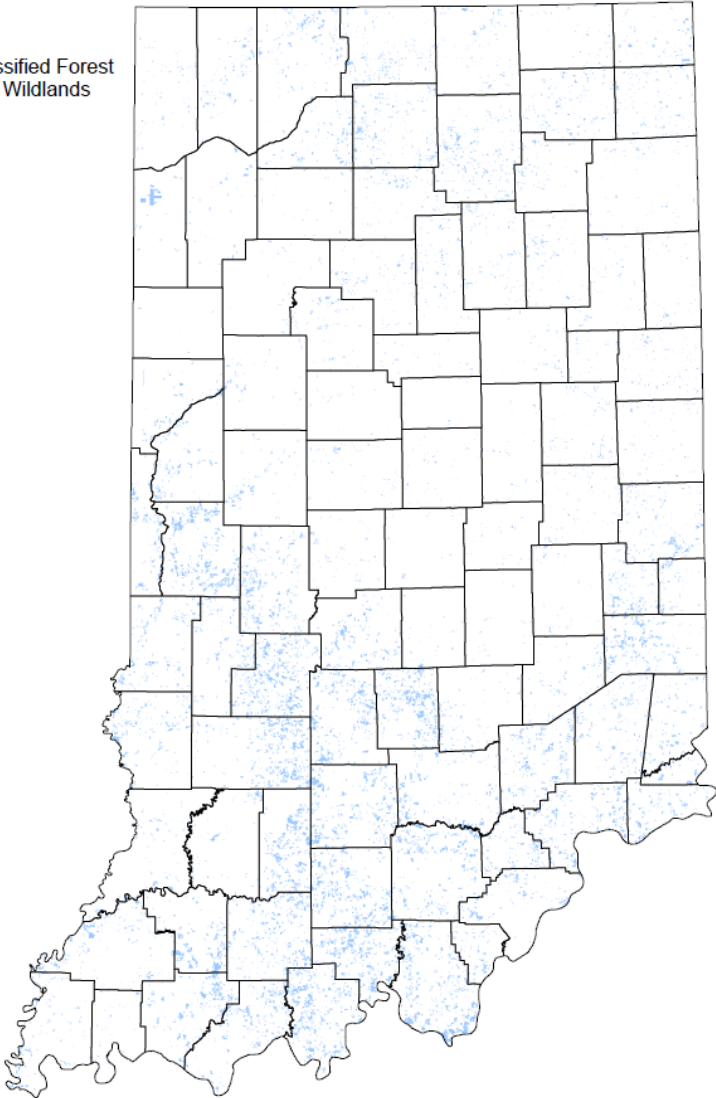


This map shows Indiana State Forests, the Hoosier National Forest, and Crane Naval Weapons Support Center, all of which actively harvest timber.



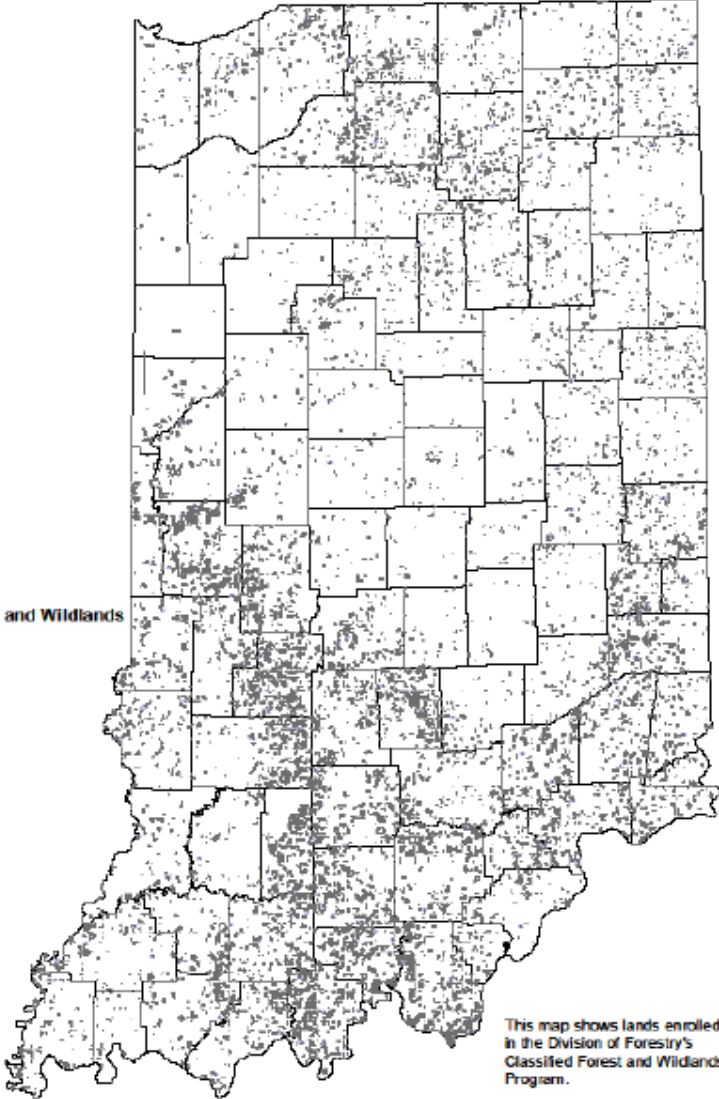
# Classified Forest and Wildlands

Classified Forest and Wildlands



# Classified Forest and Wildlands

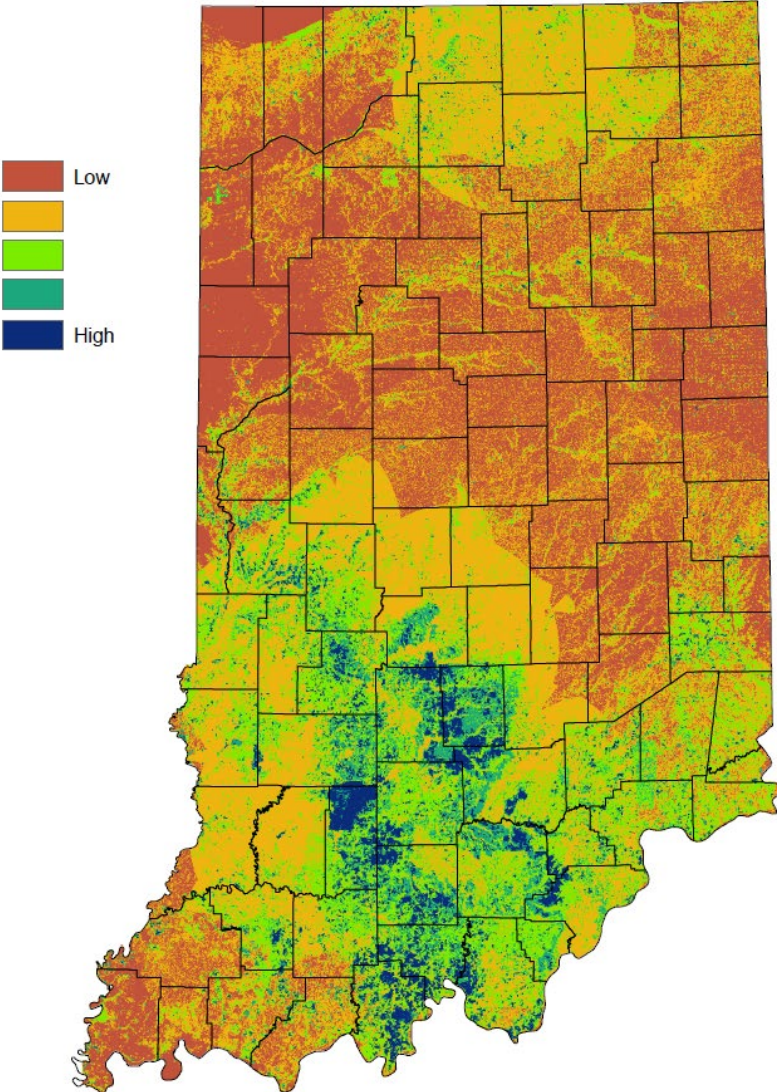
Classified Forest and Wildlands



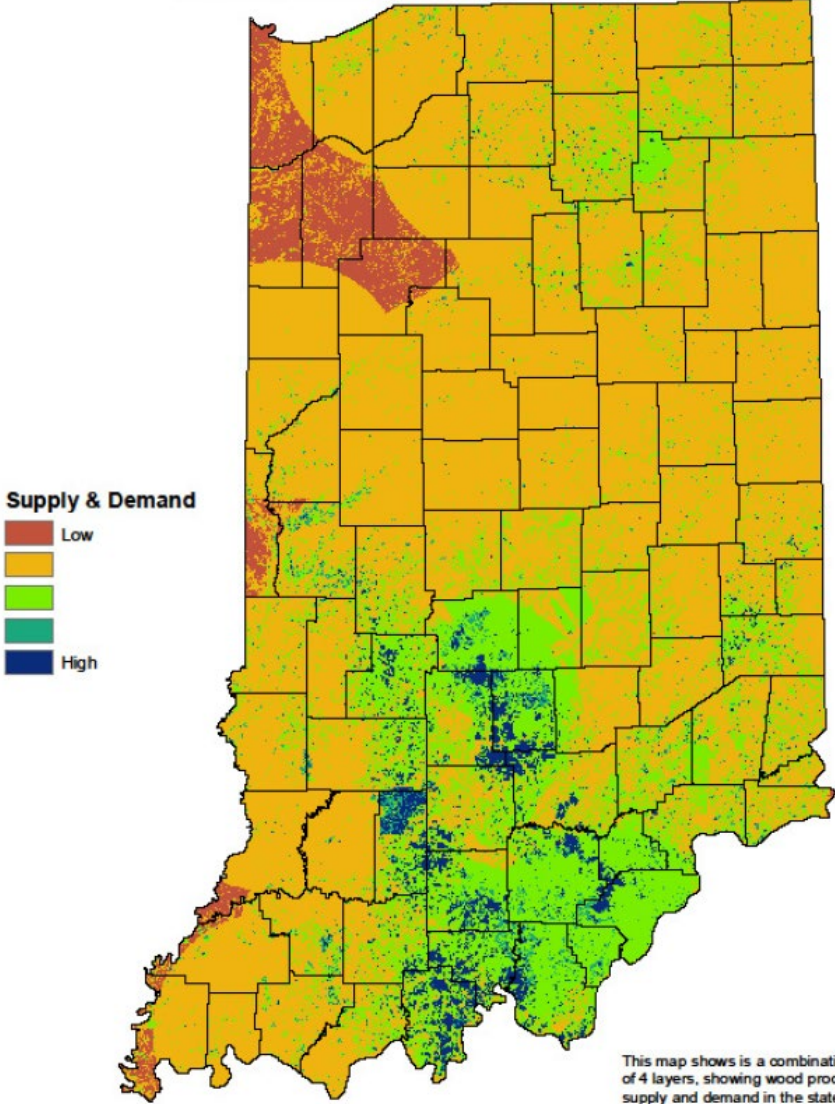
This map shows lands enrolled in the Division of Forestry's Classified Forest and Wildlands Program.



Wood Product Supply & Demand



Wood Product Supply & Demand



# 2010 Composite

From June 2009 survey:

24% Fragmentation

20.1% Soil & Water

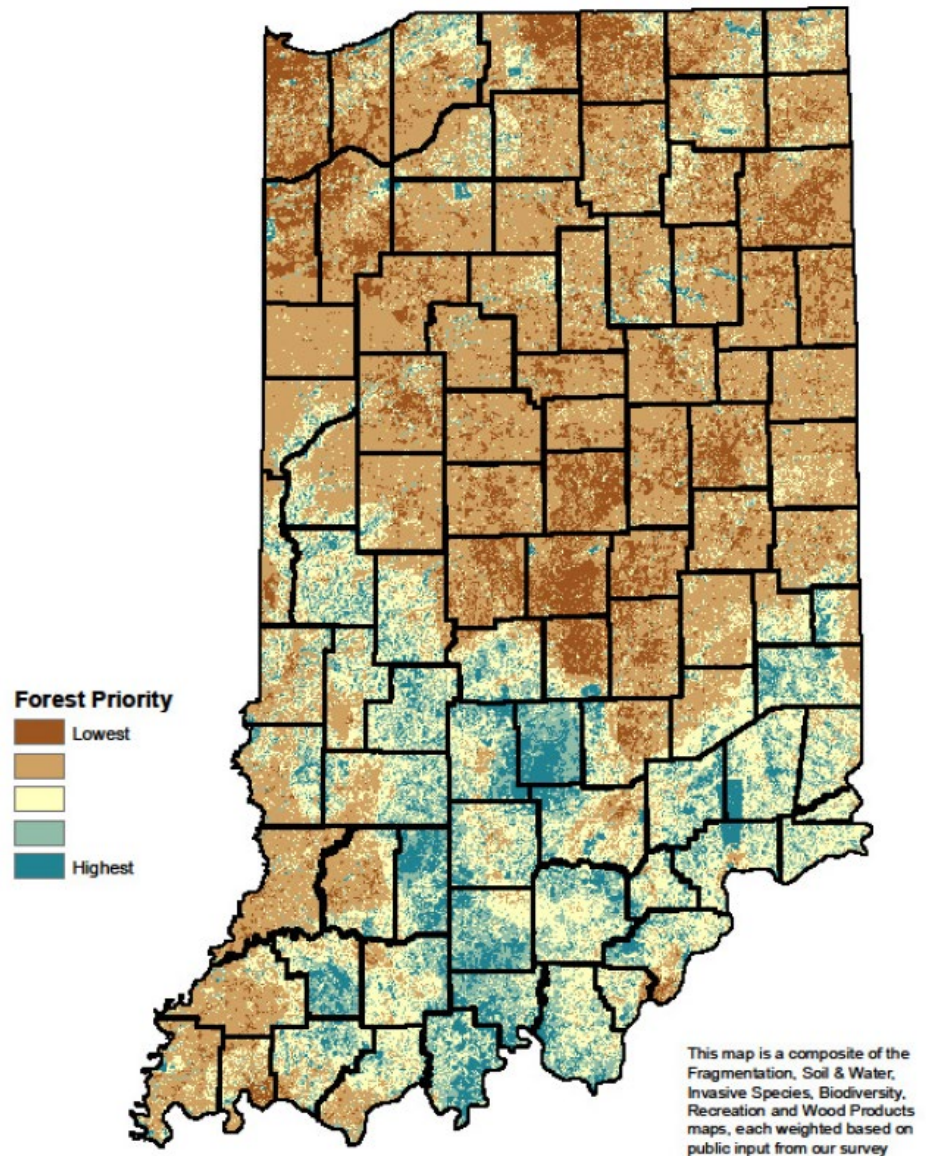
19.9% Invasives

17.2% Biodiversity

11.1% Recreation

7.6% Wood Products

Composite Forest Priority Areas

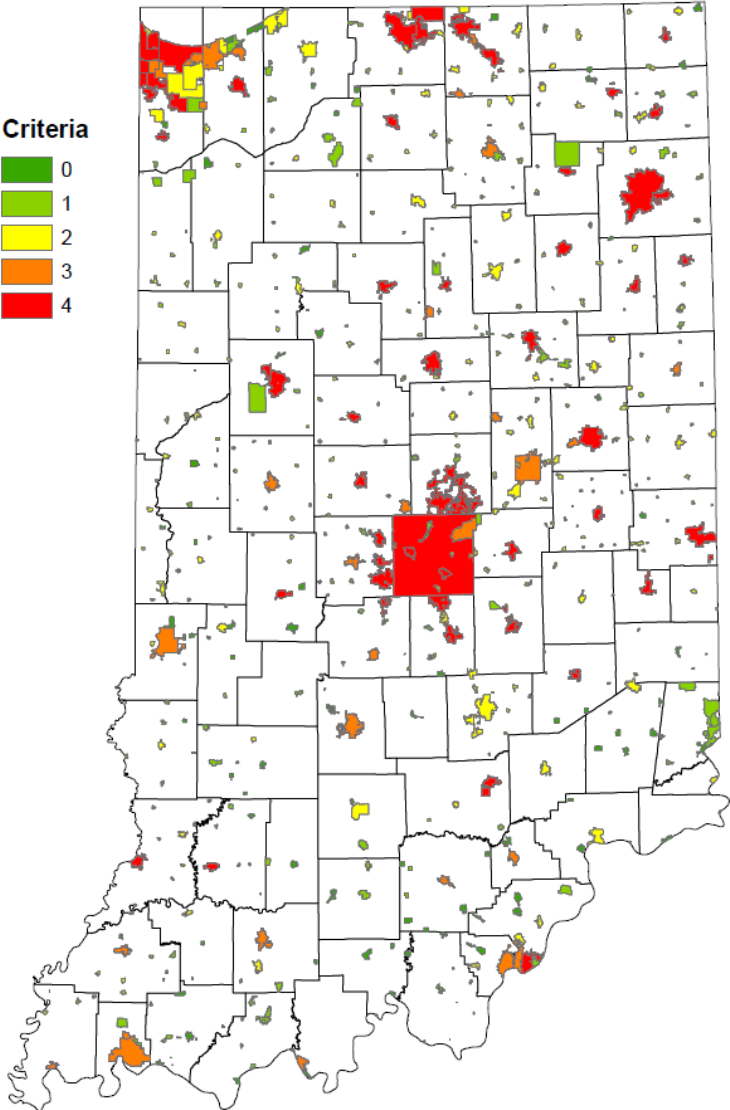


# Urban Areas Criteria

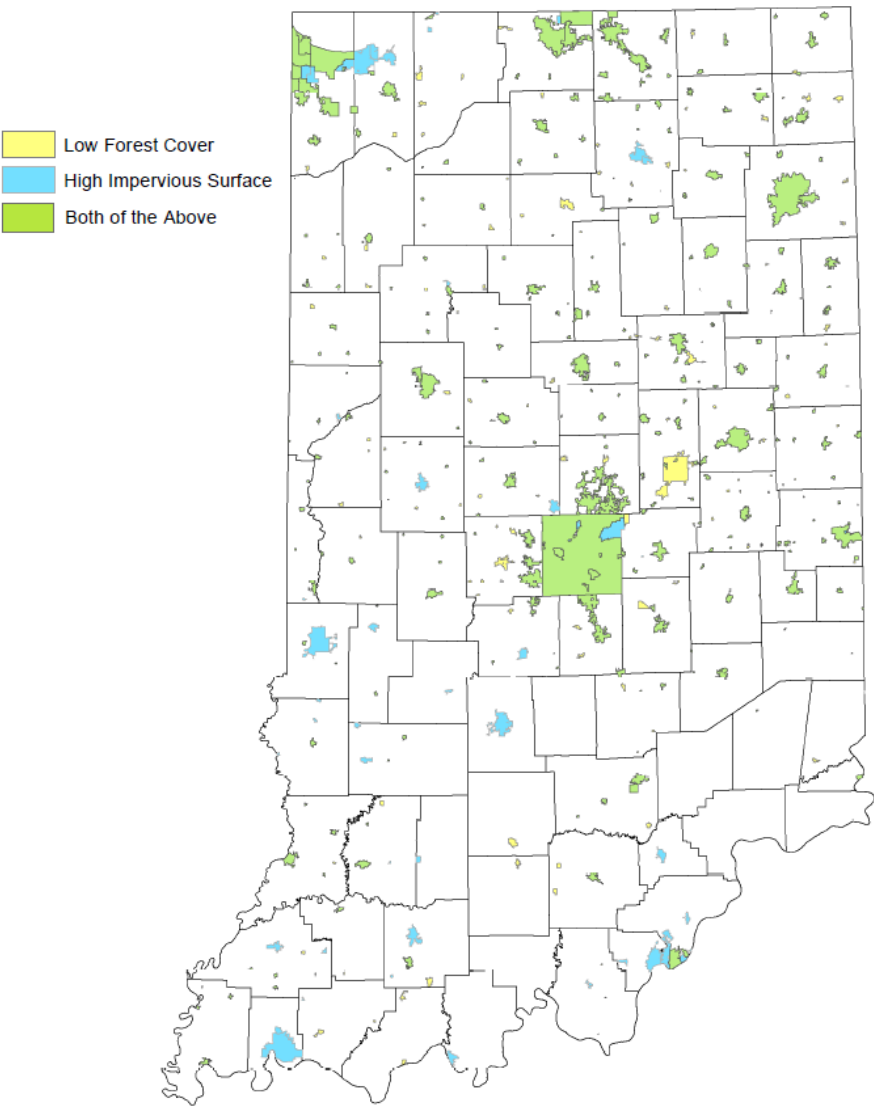
- Greater-than-average area (2145 acres)
- Greater-than-average population (6500 people)
- Greater-than-average impervious surface (59%)
- Less-than-average tree canopy cover (14.4%)



### Urban Areas and Tree Cover



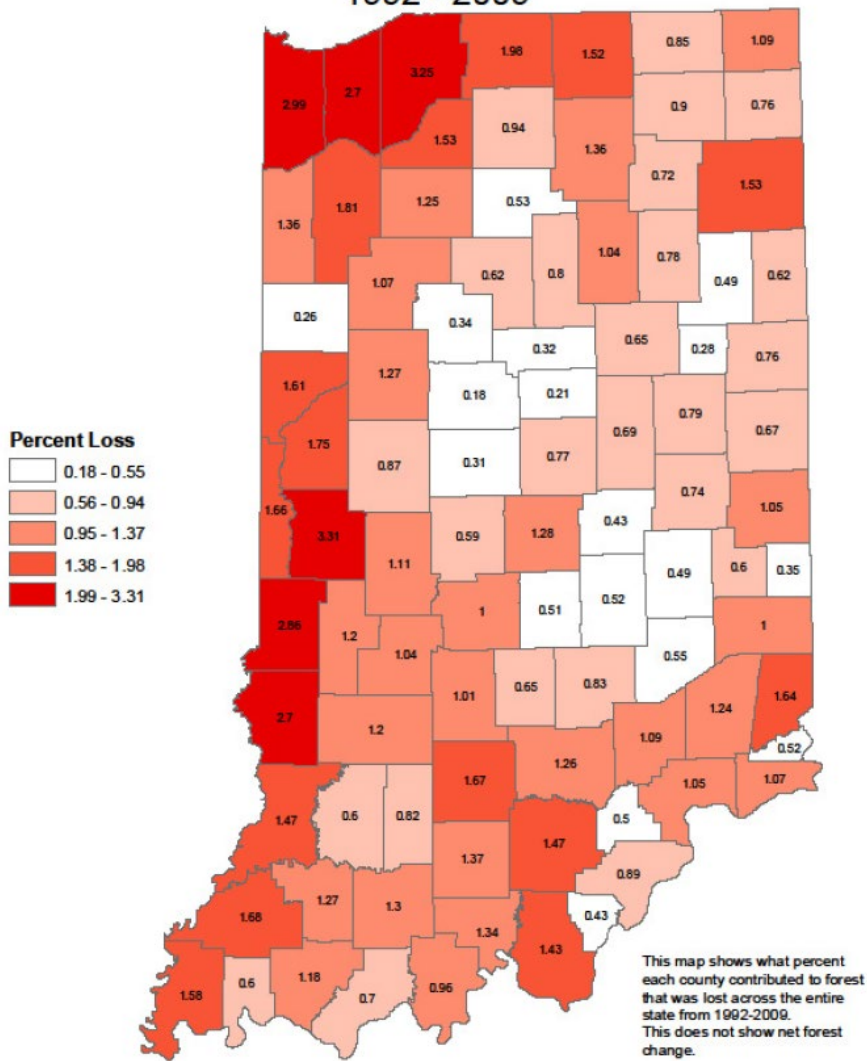
### Urban Forest Cover & Impervious Surfaces



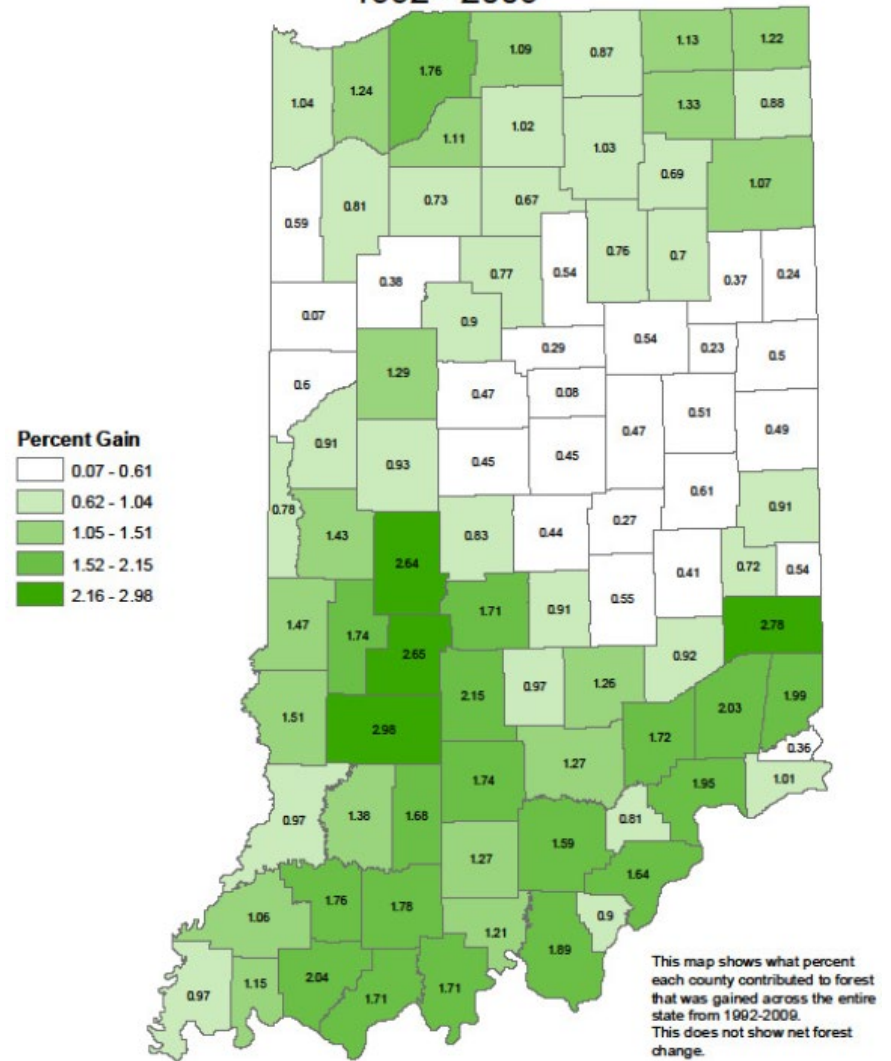
# Maps not used for Compositing

- Lands with limitations on conversion
- Percent of households with a person > 65 years
- Deer Collisions
- Urban Areas and Tree Cover

Percent Total Forest Loss By County  
1992 - 2009

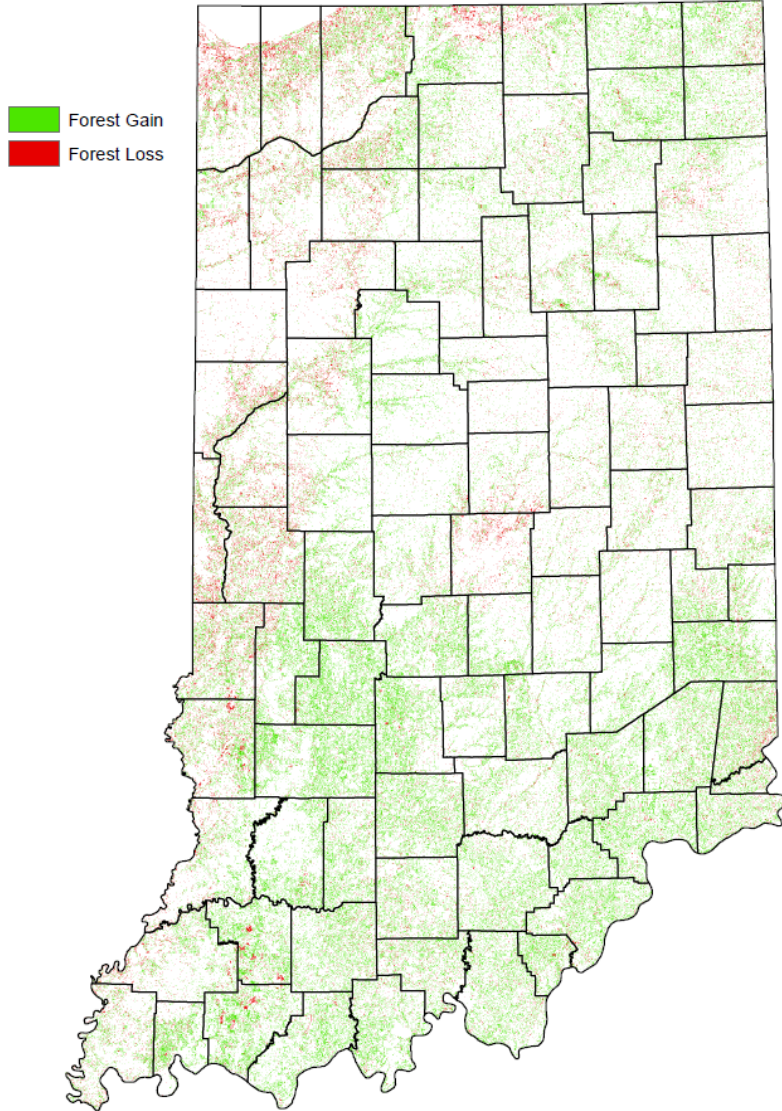


Percent Total Forest Gain By County  
1992 - 2009

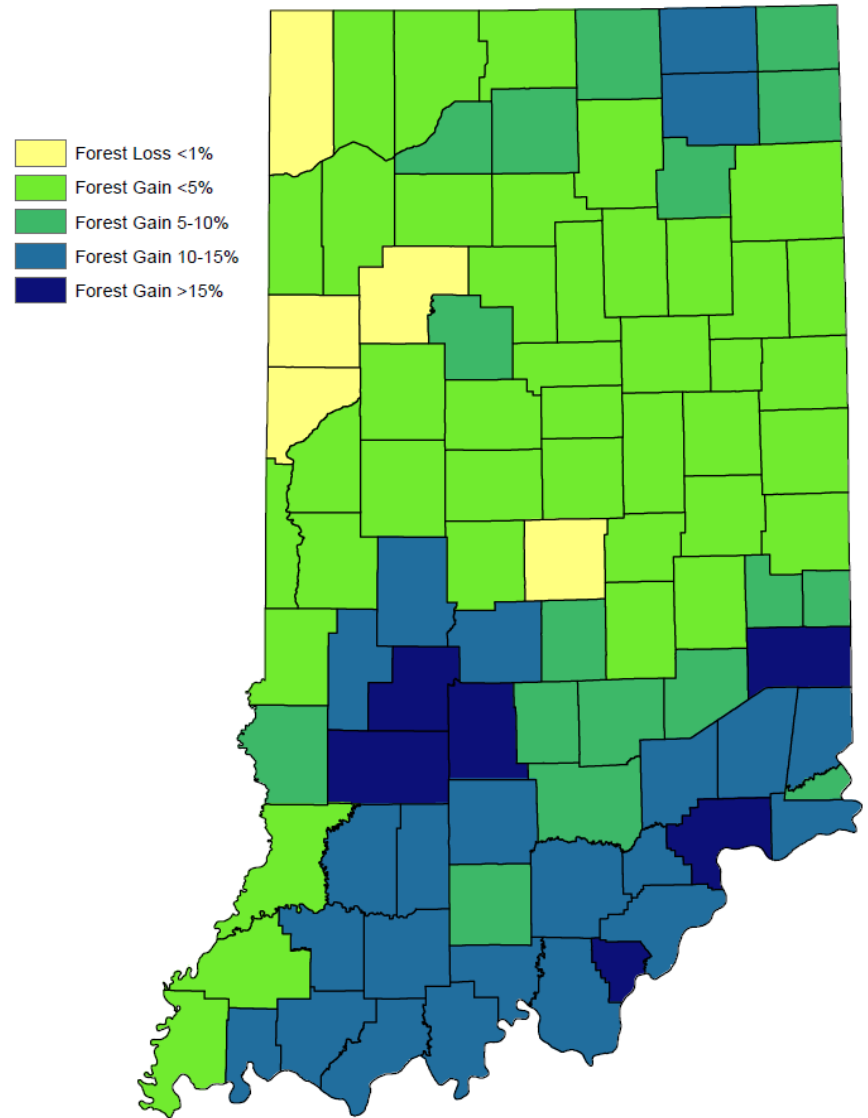




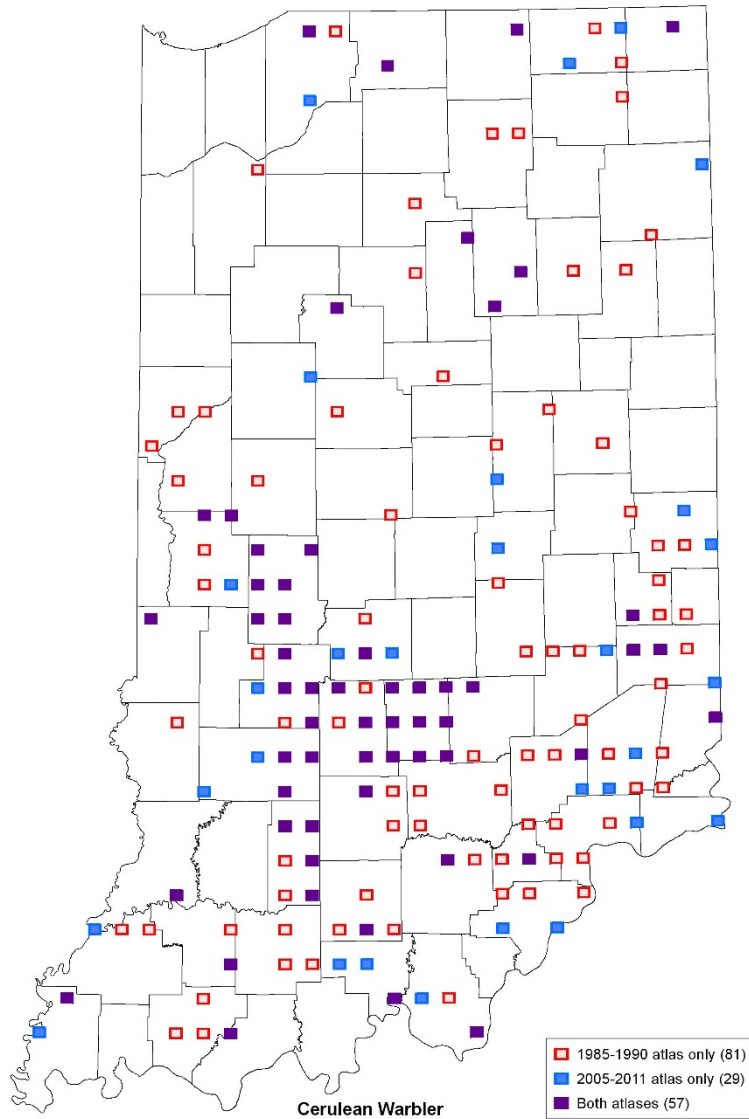
### Forest Gain and Loss 1992-2017



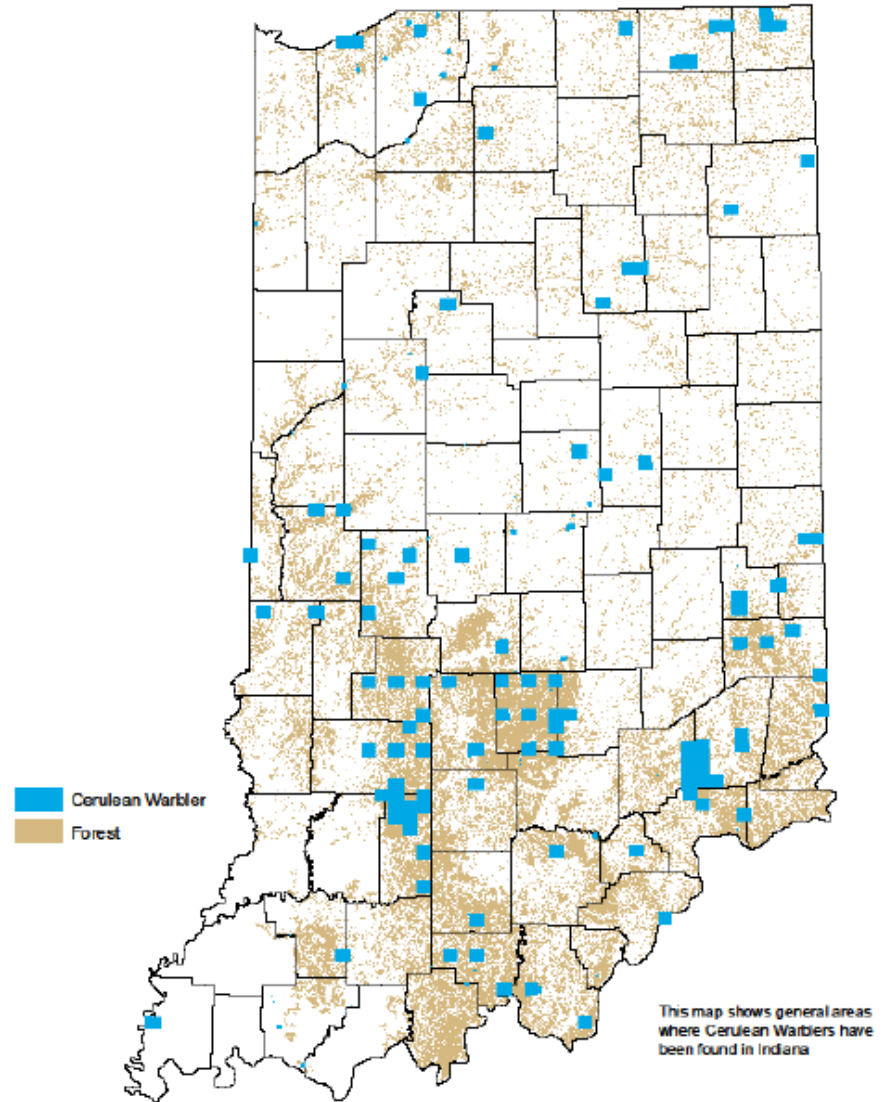
### Net Landscape Change 1992-2017



# Cerulean Warbler Sightings

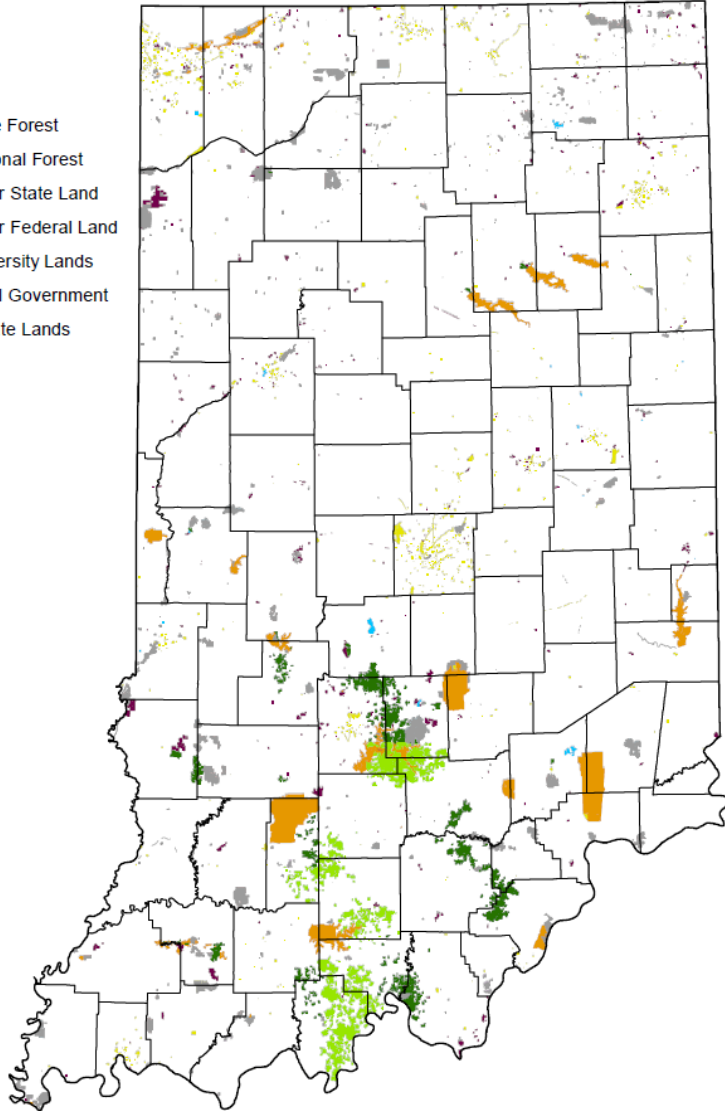


# Cerulean Warbler Sightings



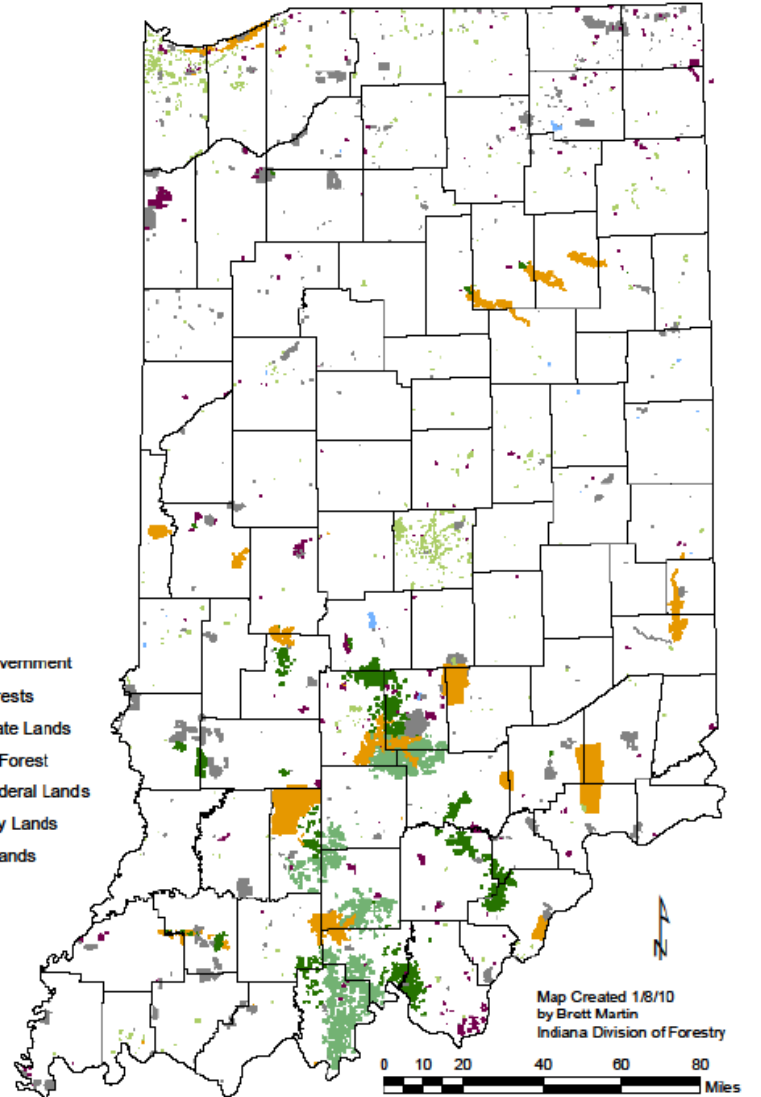
# Lands with Limitations on Conversion

- State Forest
- National Forest
- Other State Land
- Other Federal Land
- University Lands
- Local Government
- Private Lands



# Lands with Limitations on Conversion

- Local Government
- State Forests
- Other State Lands
- National Forest
- Other Federal Lands
- University Lands
- Private Lands

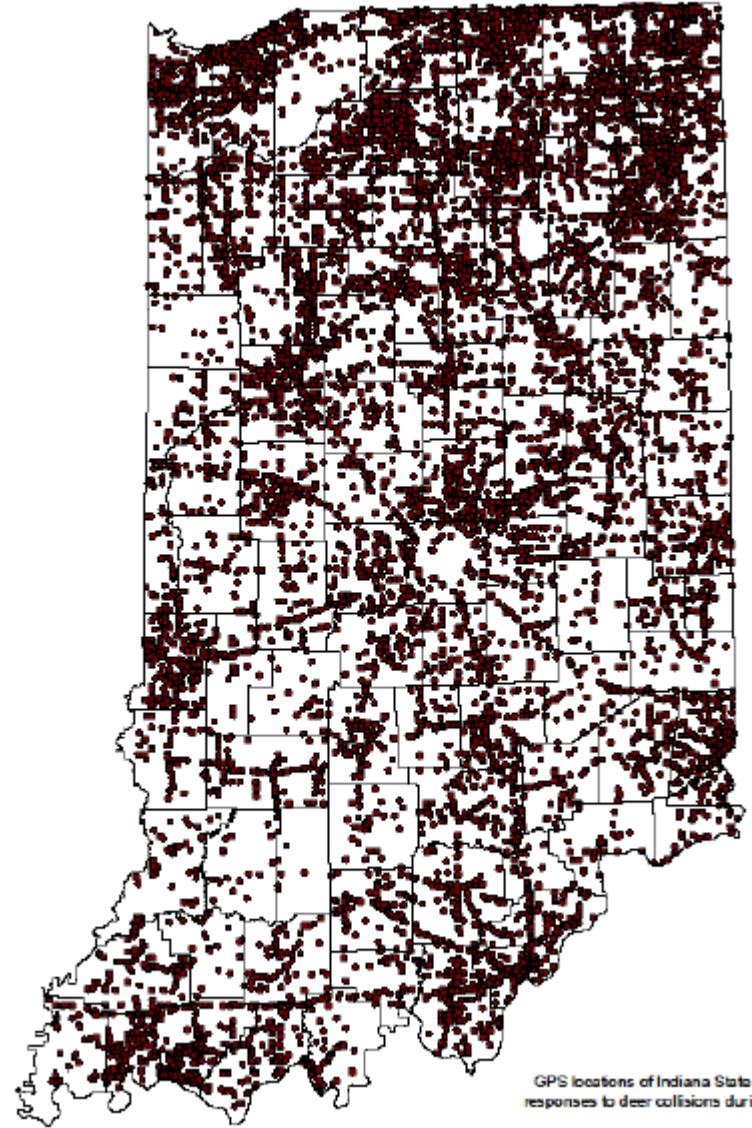




Deer Collisions in 2017



Deer Collisions in 2008

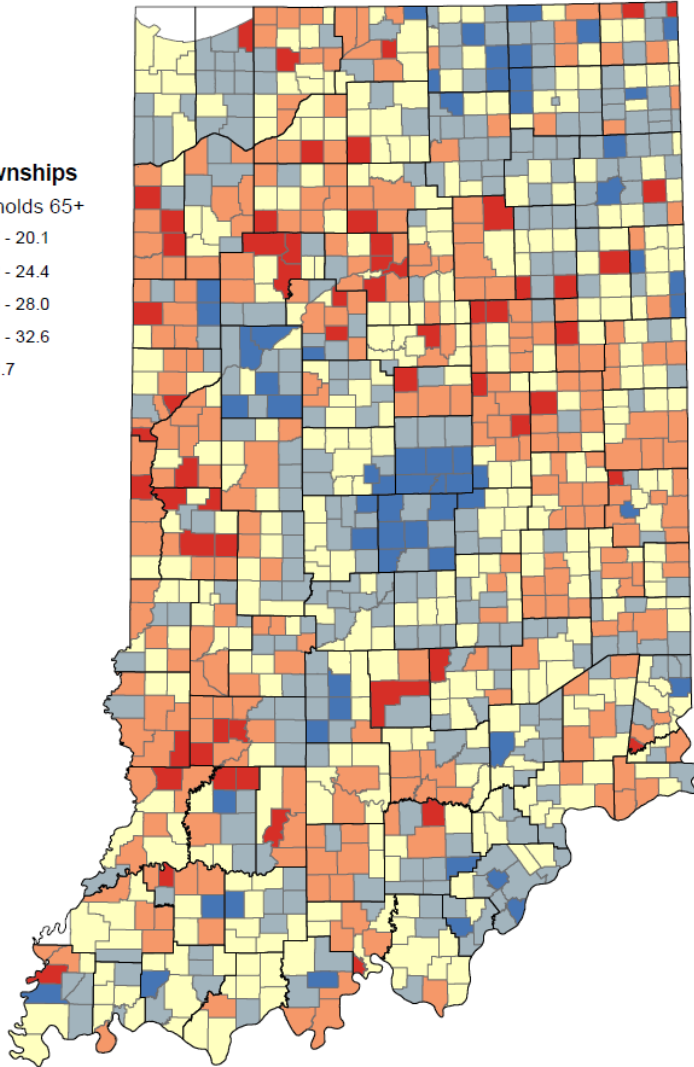
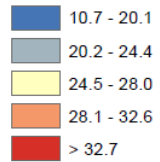


GPS locations of Indiana State Police responses to deer collisions during 2008

Percent of Households with a Person 65 Years or Older

**Civil Townships**

% Households 65+



Percent of Households with a Person 65 Years or Older

**Civil Townships**

% Households 65+

