



# PIEDMONT GRASSLAND BIRD INITIATIVE

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Mentors:

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Alan Williams



# BACKGROUND PGBI

Virginia Working Landscapes &  
Piedmont Environmental Council  
Quail Forever  
American Farmland Trust

- Coordinate and implement Best Management Practices on working landscapes
- Use locally-derived science to unify and align priorities across stakeholders



Smithsonian  
*Conservation Biology Institute*



Piedmont  
Environmental  
Council





## CONSERVATION SIGNIFICANCE

- 80% of native grasslands in North American have been lost
- Agriculture covers 1/3 of Virginia's landscape
- Birds can be a tool for conversations about conservation
- One of these groups of birds are cavity-nesters



- The American Kestrel is North America's smallest and most common falcon.
- Barn owls can save landowners \$7 in pest control per rodent

# OUTREACH MATERIAL

Goal: create a user-friendly resource for landowners

- How to build or obtain a nest box for specific species
- How to choose an attractive spot for installation
- How to deal with invasive species
- Focus on the benefits of their ecosystem services

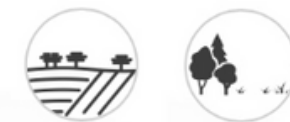
## BARN OWL

*Tyto alba*

Presence (yellow) and Nesting (red) in Virginia



Habitat Type in Virginia



Open Field Forest Edge

Diet

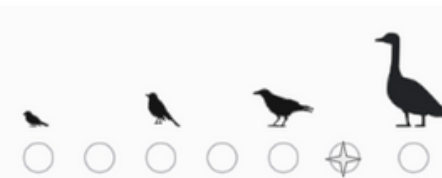
carnivorous



Conservation Status



in decline



## AMERICAN KESTREL

*Falco sparverius*

Presence (yellow) and Nesting (red) in Virginia



Habitat Type in Virginia



Open Field Forest Edge

Diet

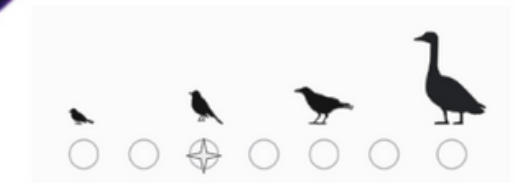
carnivorous



Conservation Status



in decline





# VISUALIZING

Alan Williams' data



**OWL NEST BOX**



**KESTREL NEST BOX**

# METHODS



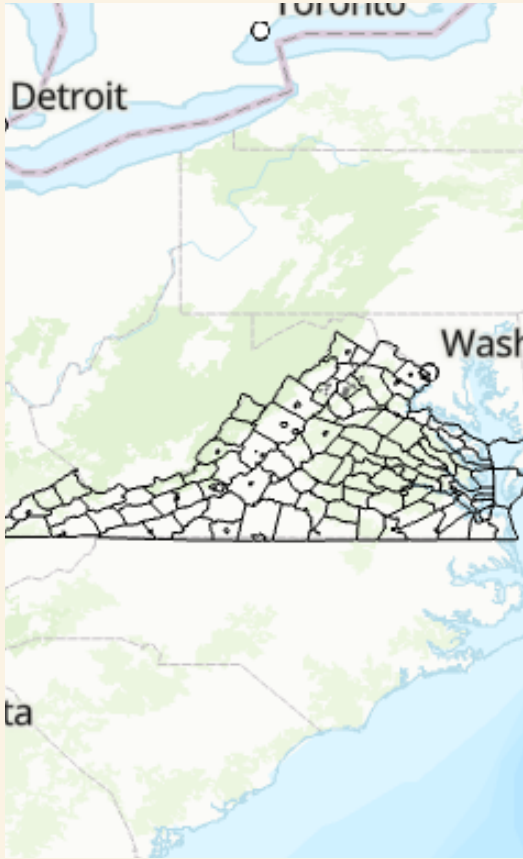
## LEARN AND COLLECT DATA

- field skills

	Box.Num	Latitude	Long
1	b-FAU01	38.99265	
2	b-FAU01	38.99265	
3	b-FAU02	38.99019	
4	b-FAU02	38.99019	
5	b-FAU03	38.97592	
6	b-FAU04	38.78413	
7	b-FAU04	38.78413	
8	b-FAU04	38.78413	
9	b-FAU05	38.78236	
10	b-FAU05	38.78236	
11	b-FAU05	38.78236	
12	b-FAU06	38.82775	
13	b-FAU06	38.82775	

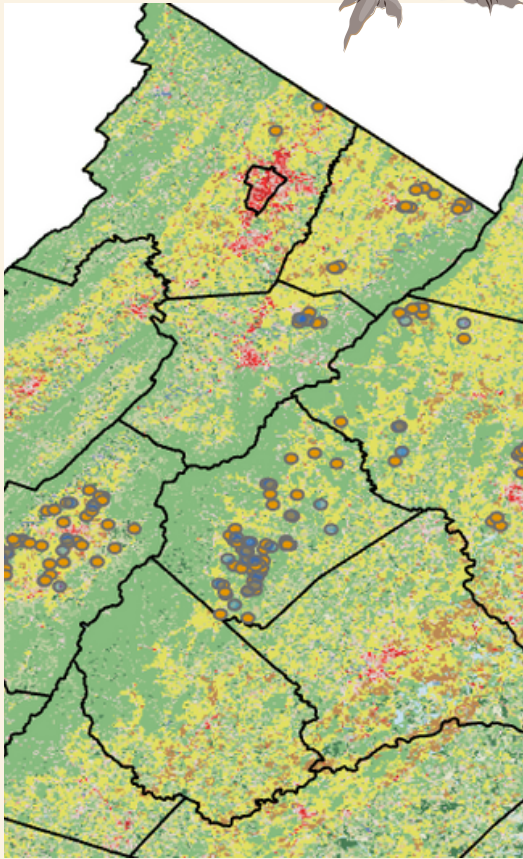
## CLEAN AND MERGE DATA

- site descriptions
- observations



## DISPLAY DATA

- download open source data



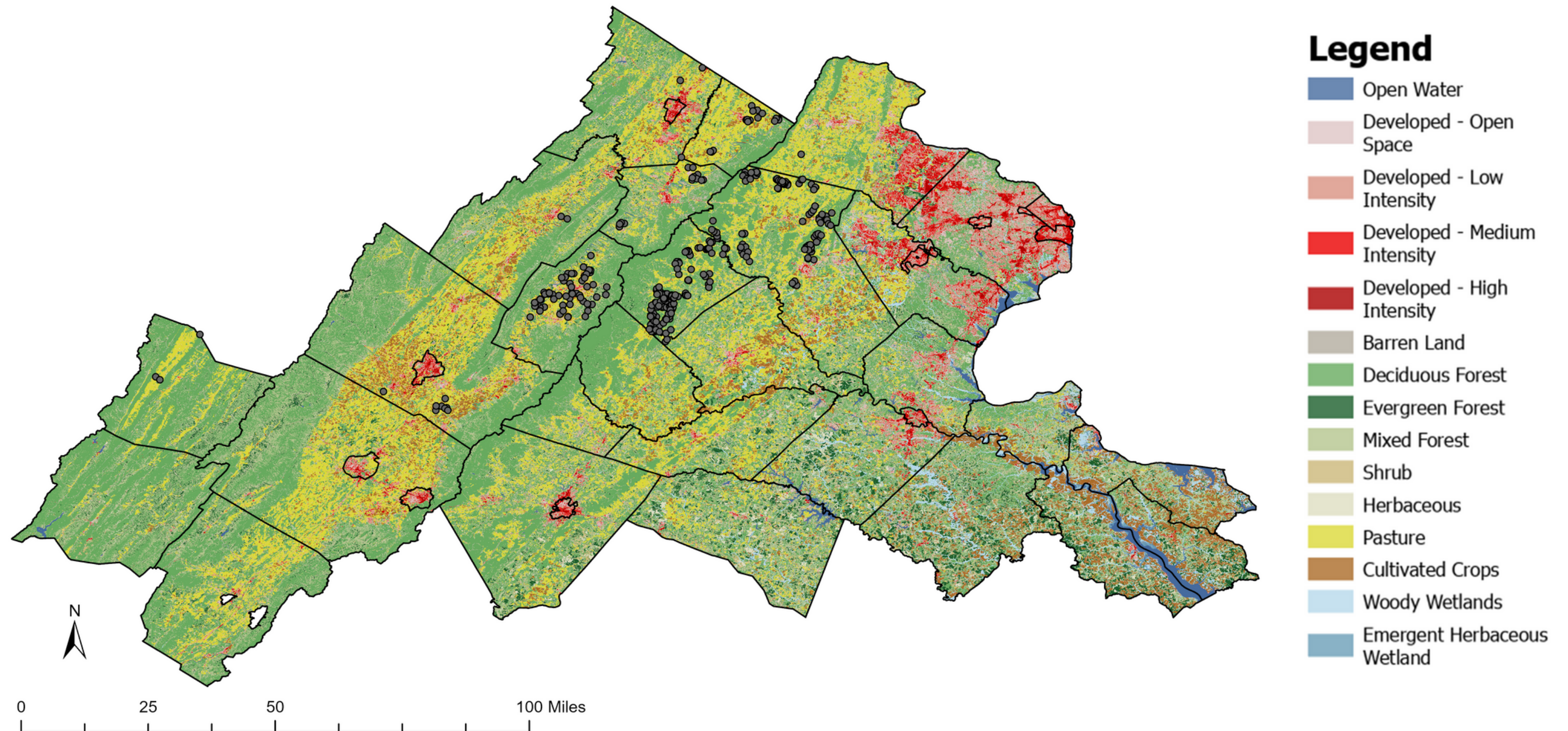
## SUMMARIZE VISULATIONS

- tabulate habitat information





# ALL NEST BOXES ACROSS NORTHERN SHENANDOAH VALLEY AND PIEDMONT REGION



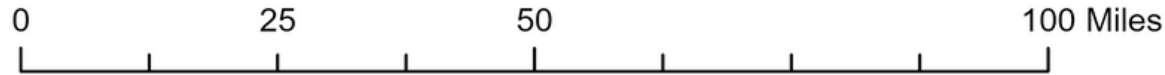
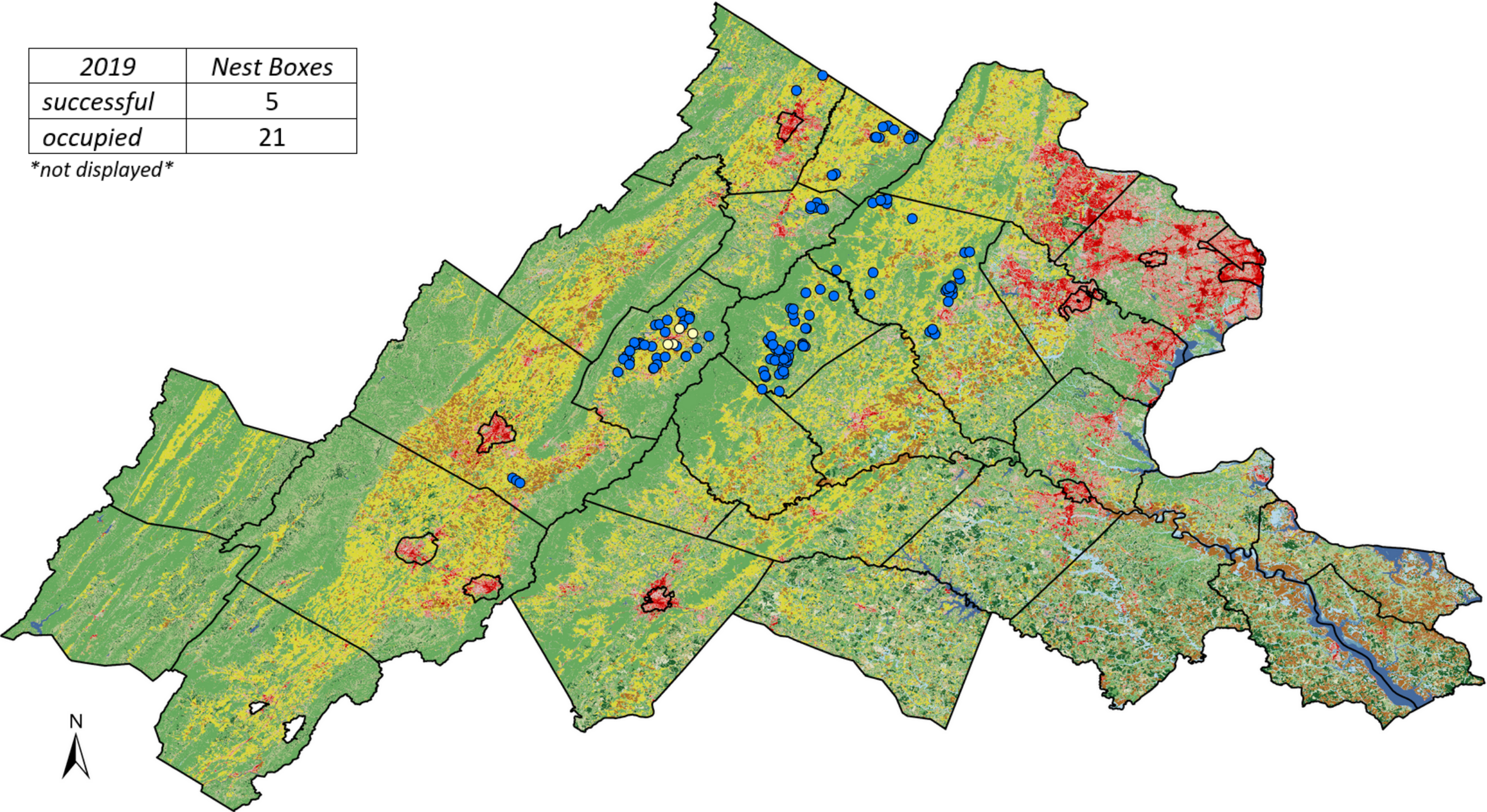


# OCCUPIED AND SUCCESSFUL KESTREL BOXES 2019



2019	Nest Boxes
successful	5
occupied	21

*\*not displayed\**



## Legend

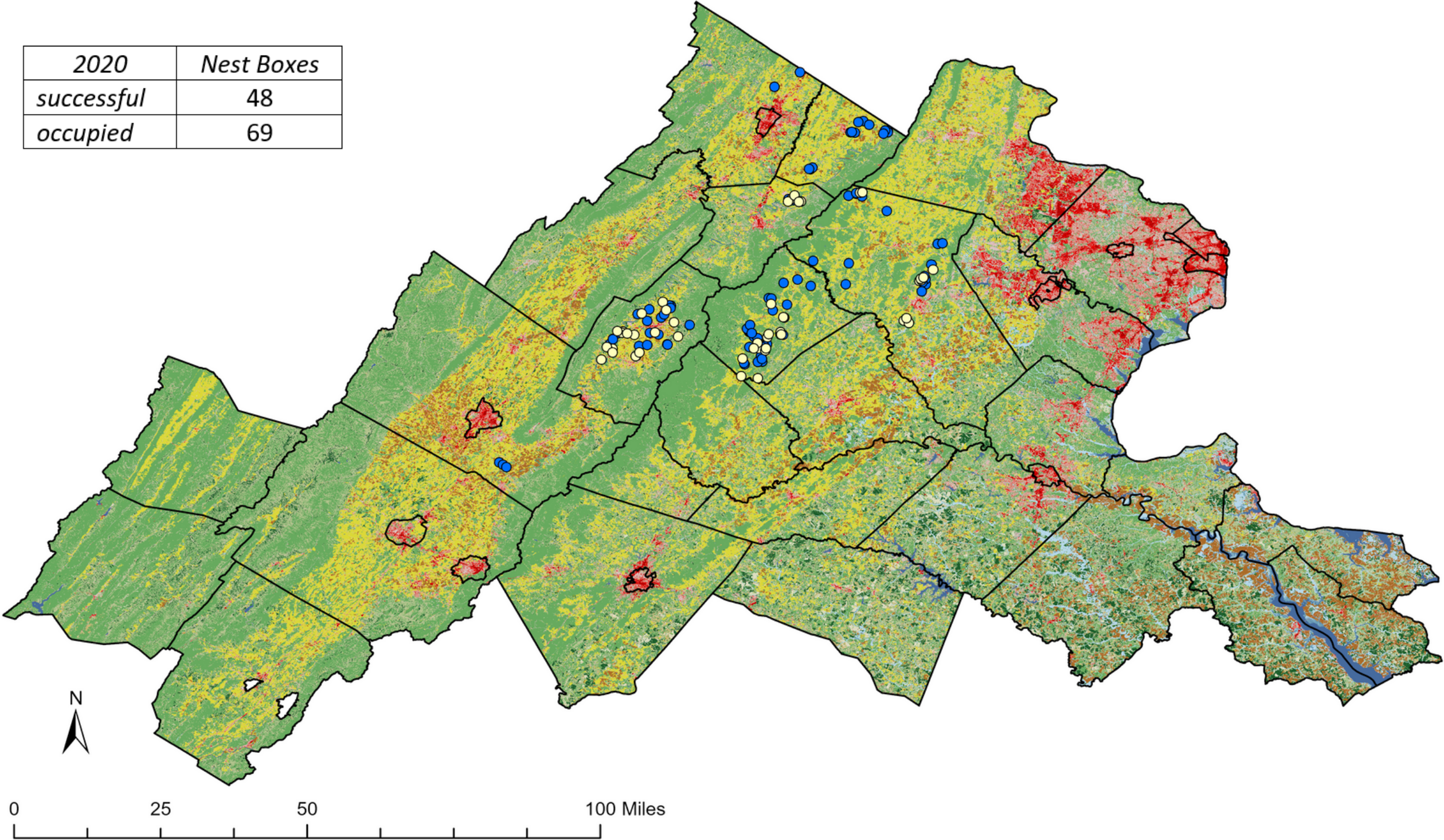
- Open Water
- Developed - Open Space
- Developed - Low Intensity
- Developed - Medium Intensity
- Developed - High Intensity
- Barren Land
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub
- Herbaceous
- Pasture
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetland



# OCCUPIED AND SUCCESSFUL KESTREL BOXES 2020



2020	Nest Boxes
successful	48
occupied	69



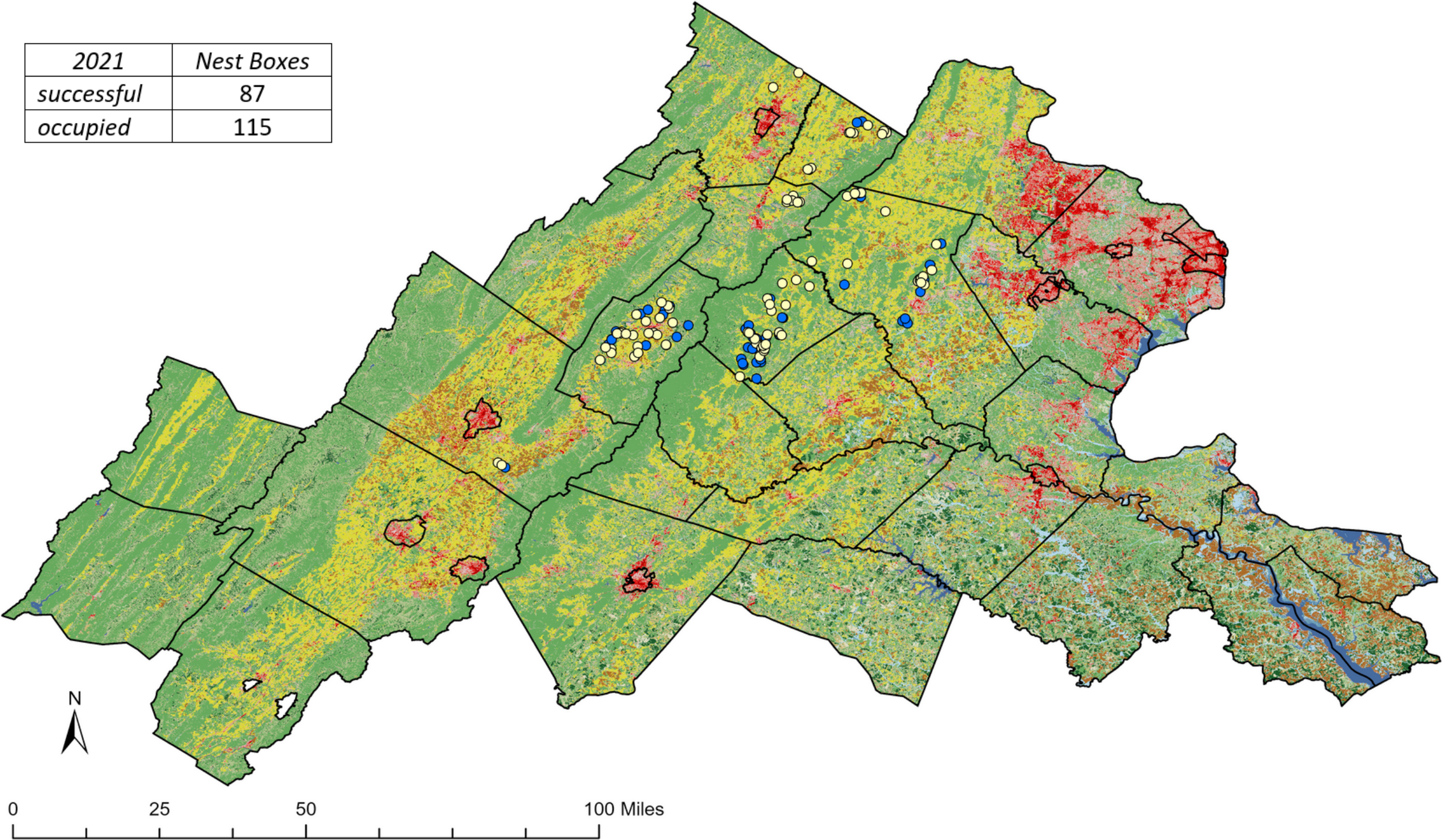
- Legend**
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# OCCUPIED AND SUCCESSFUL KESTREL BOXES 2021



2021	Nest Boxes
successful	87
occupied	115



## Legend

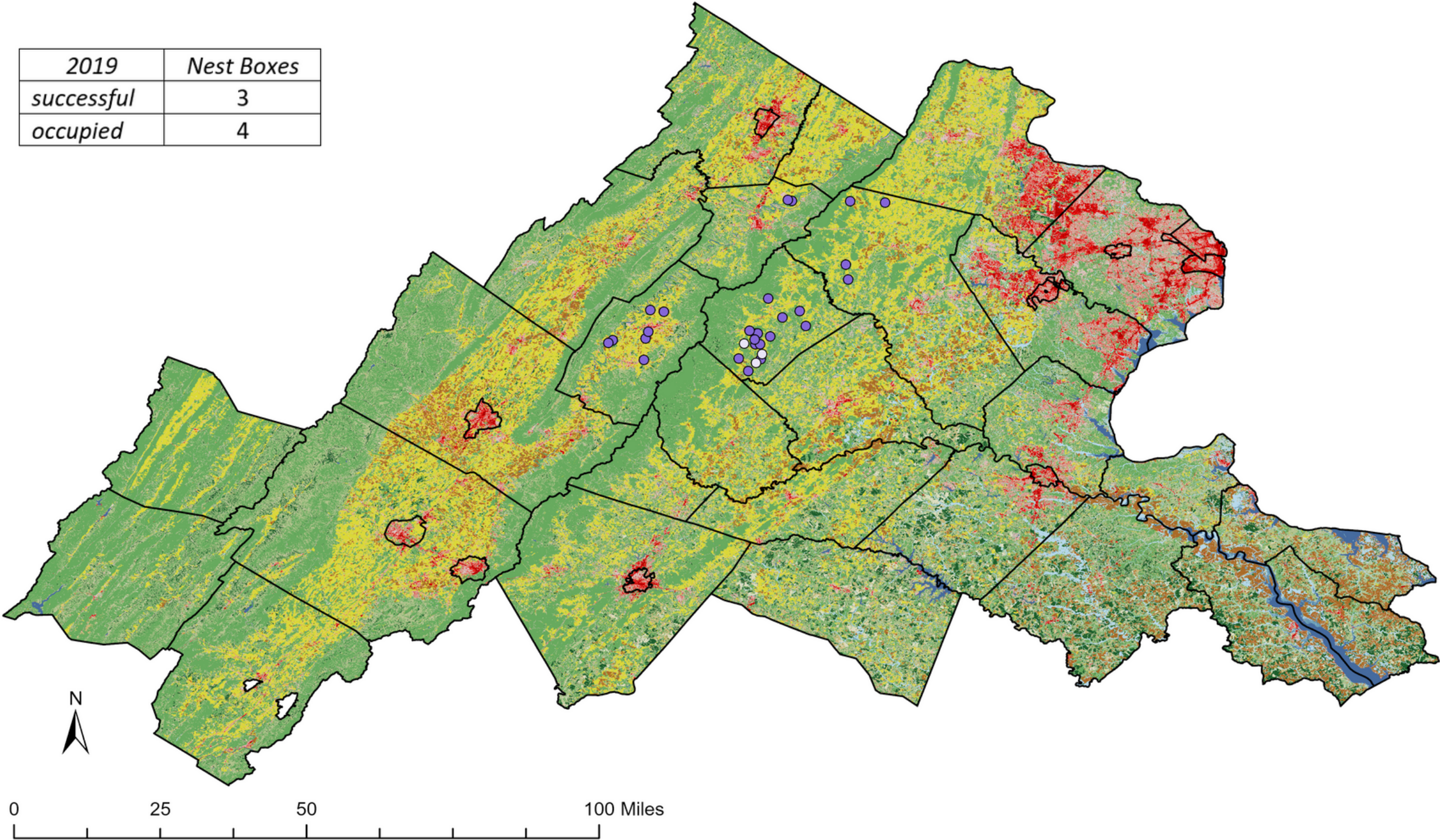
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# OCCUPIED AND SUCCESSFUL OWL BOXES 2019



2019	Nest Boxes
successful	3
occupied	4



## Legend

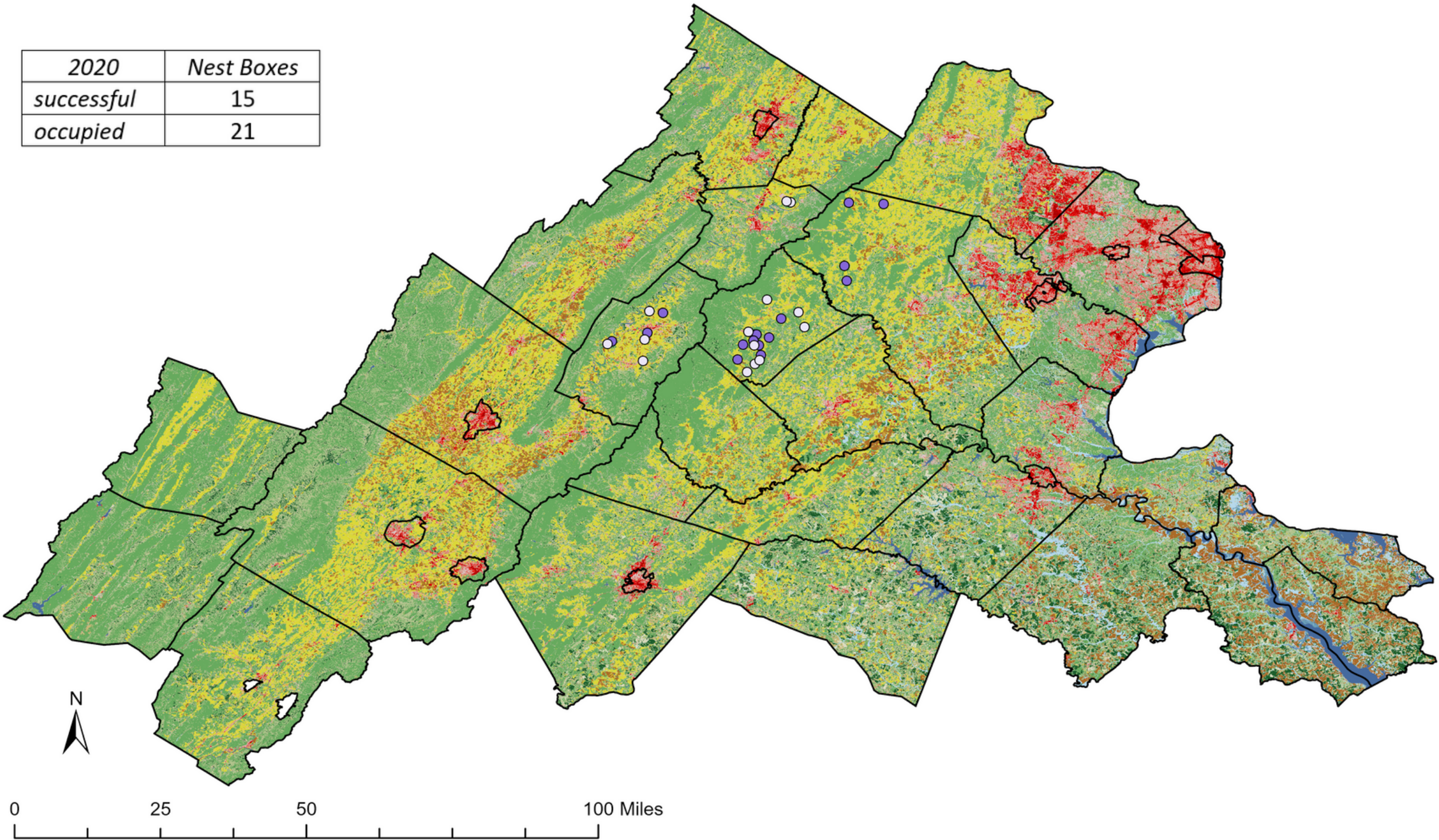
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# OCCUPIED AND SUCCESSFUL OWL BOXES 2020



2020	Nest Boxes
successful	15
occupied	21



## Legend

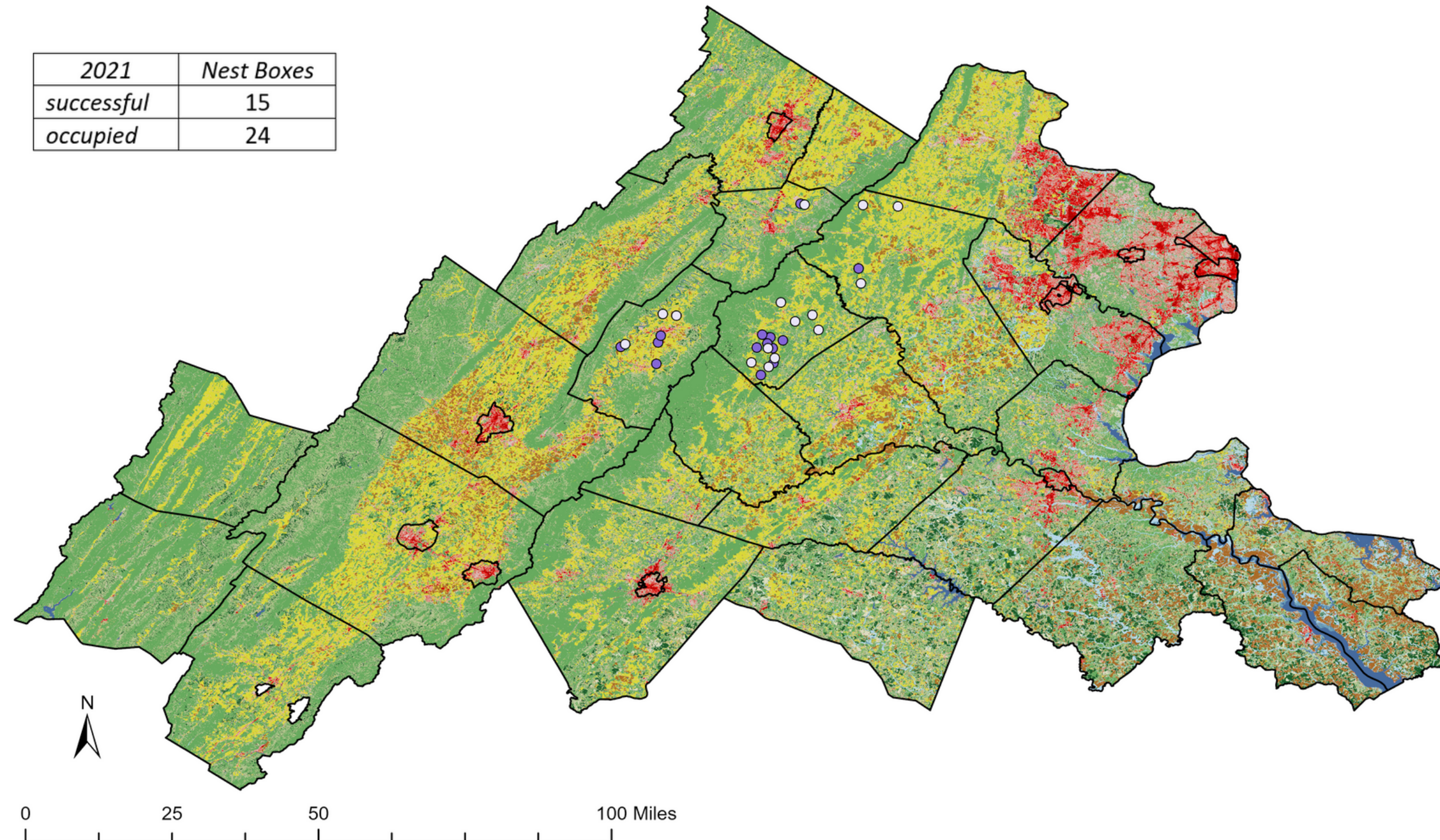
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# OCCUPIED AND SUCCESSFUL OWL BOXES 2021



2021	Nest Boxes
successful	15
occupied	24



## Legend

- Open Water
- Developed - Open Space
- Developed - Low Intensity
- Developed - Medium Intensity
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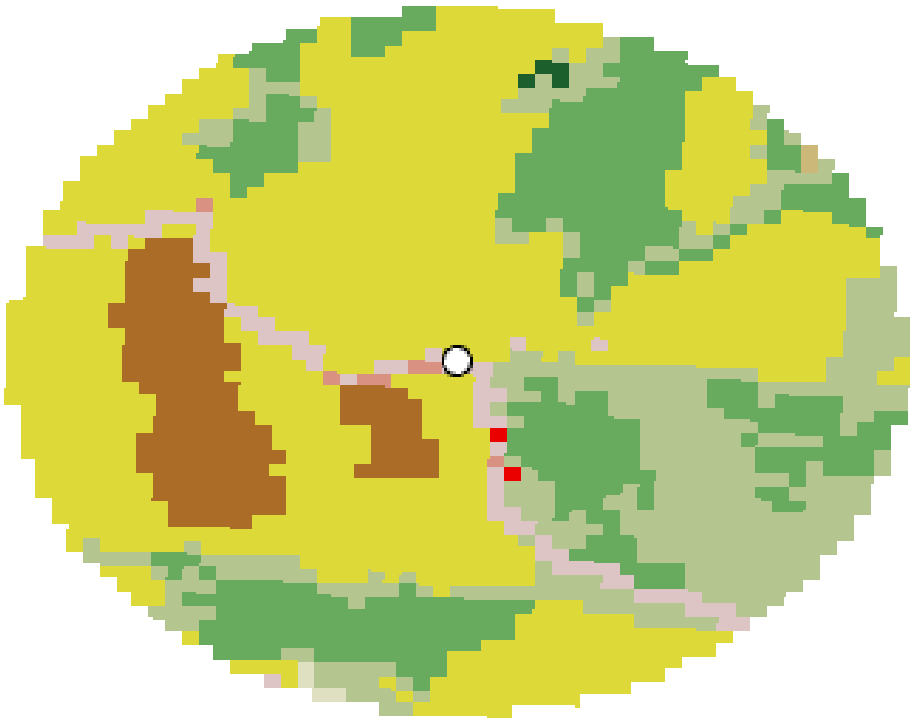
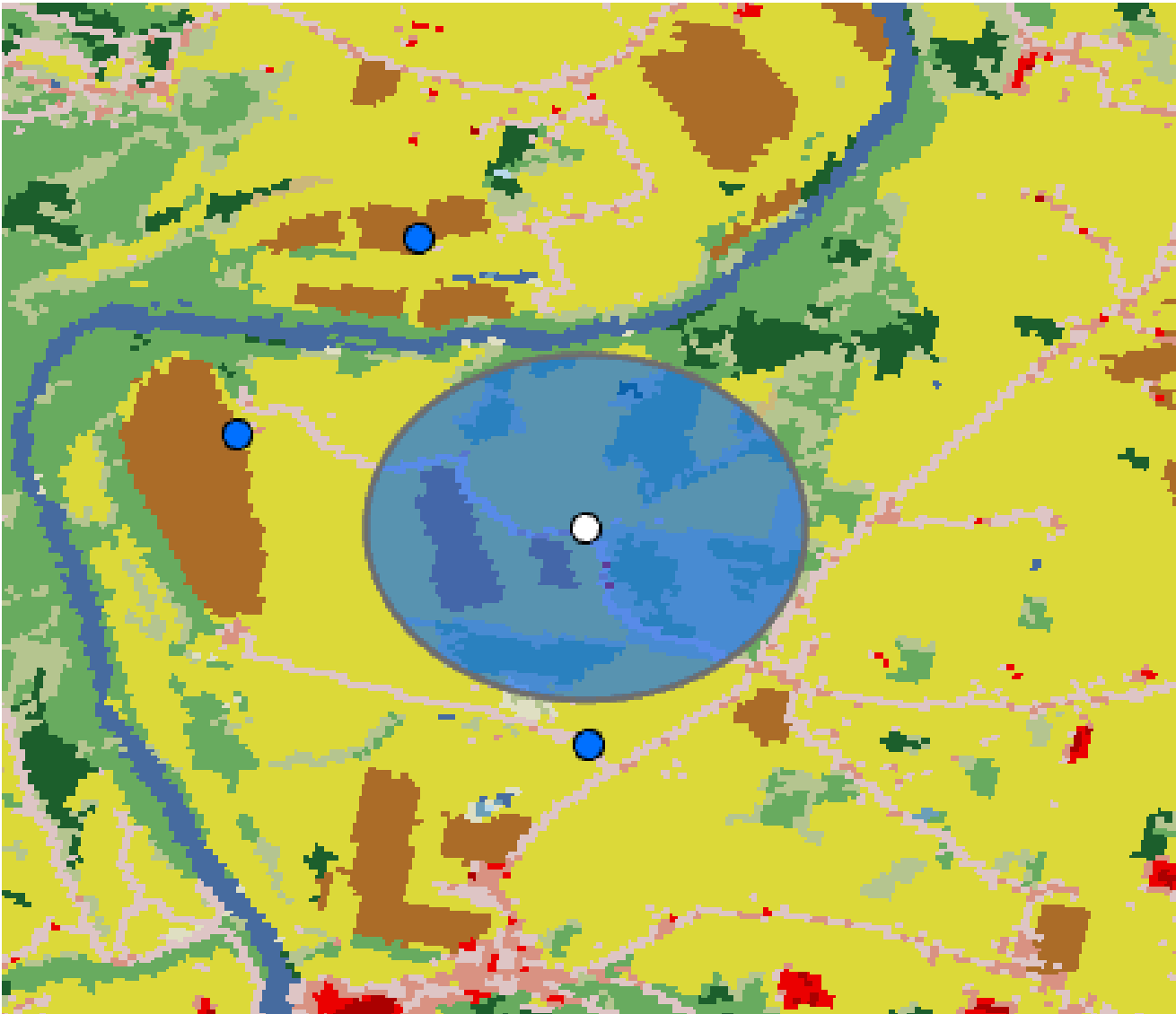


# K-PAG05



## Legend

- Open Water
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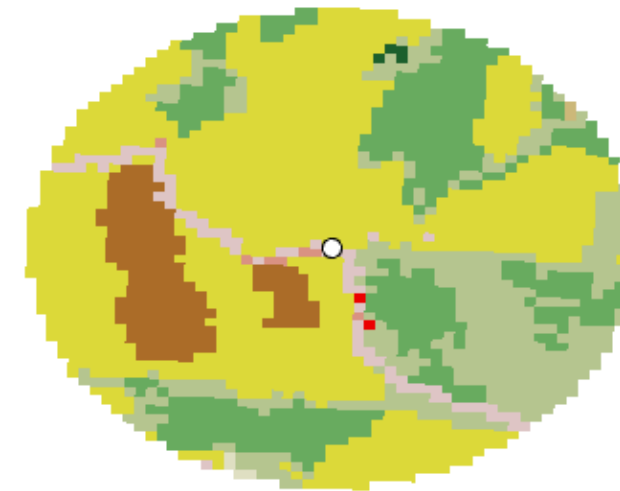


## FINDINGS

- These were consistently the dominant land cover types for boxes that were occupied and successful
- This supports the understanding that these raptors rely heavily on pasture habitats
- Higher proportions of forest habitat are interesting



### KESTRELS

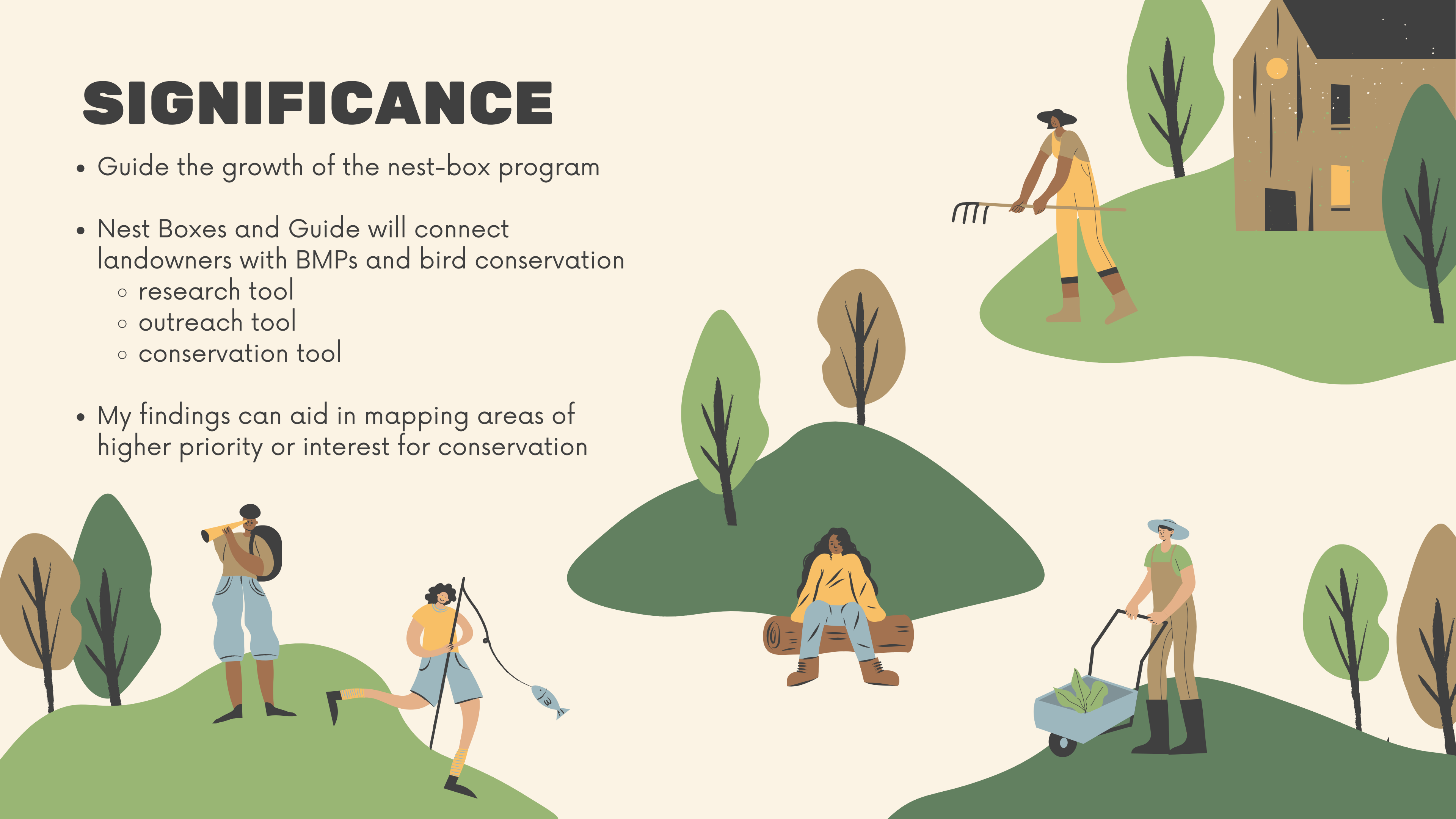


### OWLS



# SIGNIFICANCE

- Guide the growth of the nest-box program
- Nest Boxes and Guide will connect landowners with BMPs and bird conservation
  - research tool
  - outreach tool
  - conservation tool
- My findings can aid in mapping areas of higher priority or interest for conservation





# IMPLICATIONS

Guide other investigations such as:  
Does land cover type and area have a relationship with occupancy and success of nest boxes?

By using bird conservation as a tool, we can create all-hands-on-deck alliances

VWL's mission is to help build back biodiversity on private working landscapes



# THANK YOU !

Justin Proctor  
October Greenfield  
Alan Williams  
Craig Fergus  
Joe Kolowski  
Kristal Miller  
Amy Johnson  
My Professors !



Smithsonian  
*Conservation Biology Institute*



Piedmont  
Environmental  
Council



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