

# Willamette Valley Conservation Study

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## *Strategic Habitat Conservation in Oregon's Willamette Valley*

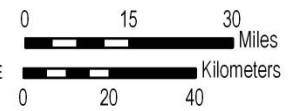
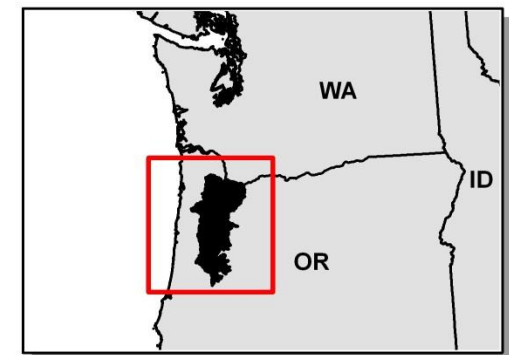
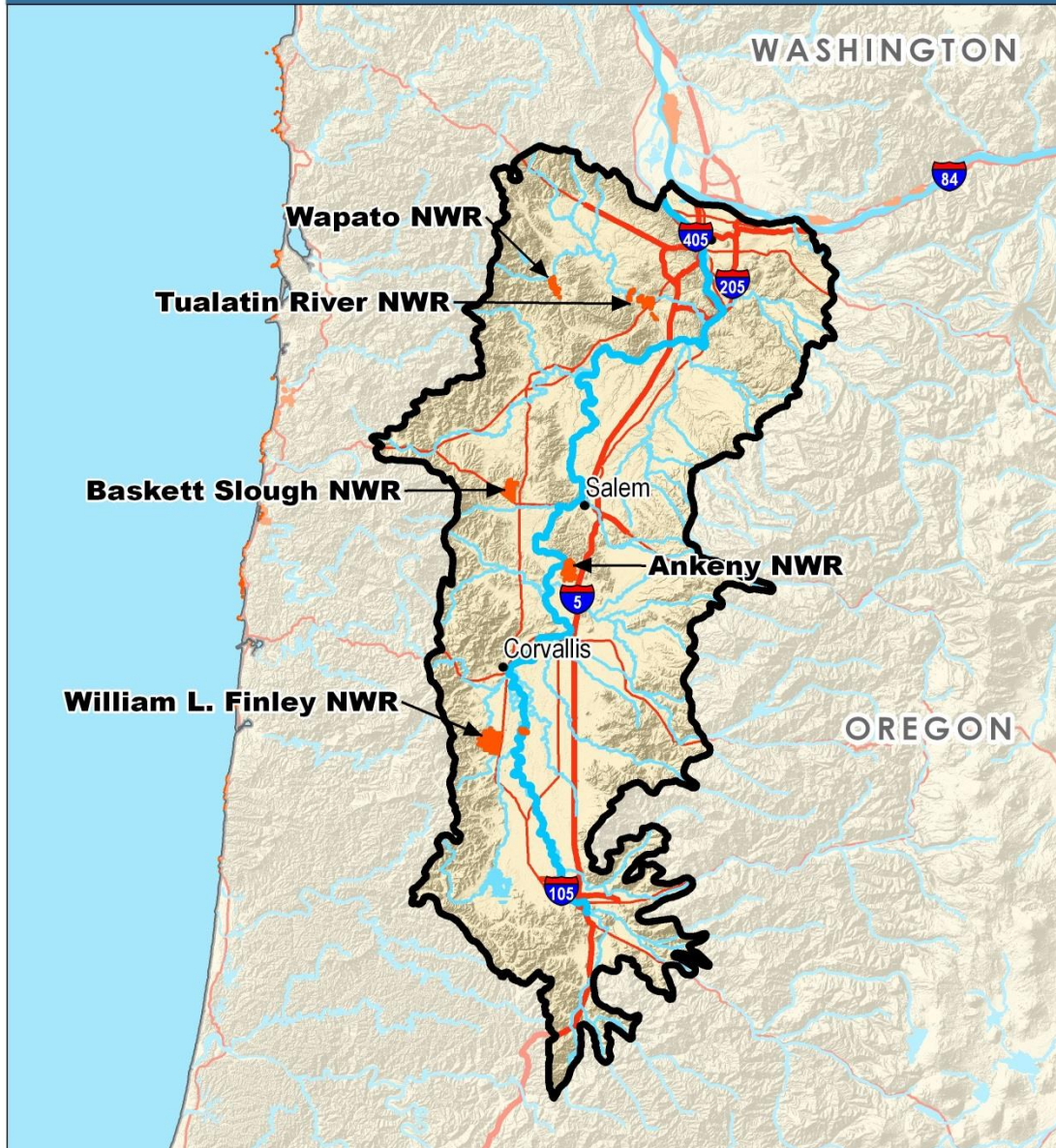
U.S. Fish and Wildlife Service, Pacific Region  
National Wildlife Refuge System



# **Willamette Valley Conservation Study**

- **Assessment of declining native species and habitats and land-based conservation needs and opportunities**
  - **Conservation Study (LCD)**
    - **Strategic Habitat Conservation (SHC) – a species-based, objectives setting approach**
    - **Identify Priority Conservation Areas**
    - **Provide rationale: why action needed, what needs to happen, where, and resulting benefits**
  - **Land Protection Plan (LPP)**
    - **National Wildlife Refuge System - authority to expand**

# Willamette Valley Conservation Study Area

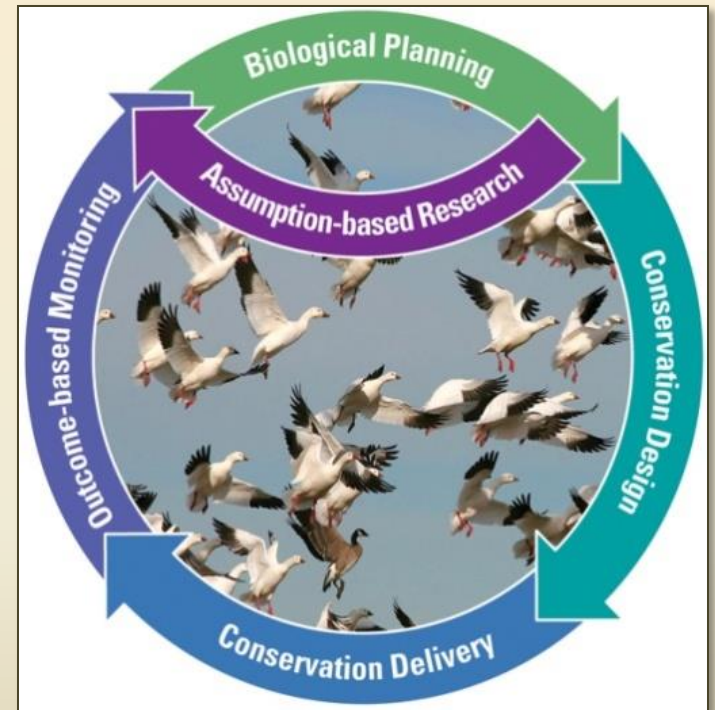


Map Date: 12/4/13

File: 10-179-3.MXD

# SHC Planning Process

- Goals
- Conservation Targets
  - Represent Habitat
  - Conservation Concern
- Limiting Factors
- Set Objectives
  - Population & Habitat
- ID Priority Areas
- Strategies



We are here

# WVCS Conservation Targets

## Representing Habitat

| Species                                     | Habitat                    |
|---------------------------------------------|----------------------------|
| Western meadowlark<br>Oregon vesper sparrow | Prairie (upland and wet)   |
| Western bluebird                            | Oak savanna                |
| Slender-billed white-breasted nuthatch      | Oak woodland               |
| Yellow warbler                              | Bottomland hardwood forest |
| Yellow-breasted chat                        | Riparian shrublands        |

Coarse-filter species used to identify large-scale priority areas

# Conservation Targets

## Species of Conservation Concern

| <u>Plants</u>           | <u>Invertebrates</u>           |
|-------------------------|--------------------------------|
| Bradshaw's lomatium     | Fender's blue butterfly        |
| Golden paintbrush       | Taylor's checkerspot butterfly |
| Kincaid's lupine        | <u>Birds</u>                   |
| Nelson's checker-mallow | Canada goose                   |
| Willamette valley daisy | Streaked horned lark           |

Fine-filter species requiring site specific actions

# Population/Habitat Objectives

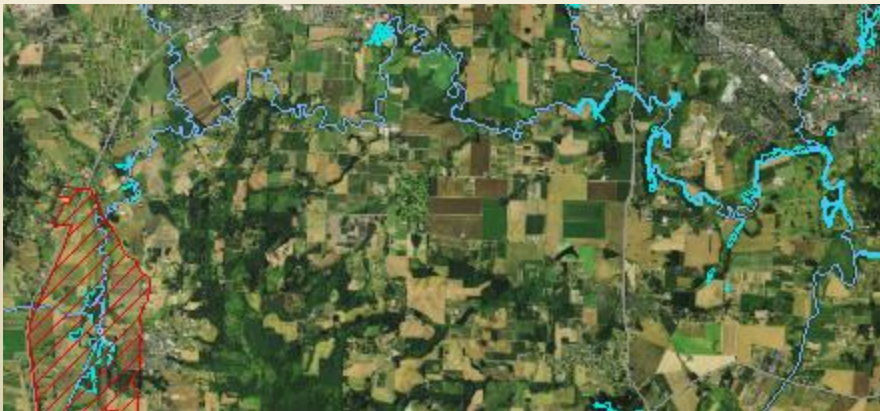
## Listed Plants and Butterflies

- Governed by Recovery Plan (USFWS 2010).
- Fine-filter: locked-in polygons of known locations for spatial analysis.
  - Ensures populations included in priority areas.



# Wetland Objectives

- TWC mapped wetlands of conservation concern for Western Governor's Crucial Habitat Assessment Tool (CHAT).
- Included high-scoring wetlands as a conservation target – high degree of overlap with riparian targets.



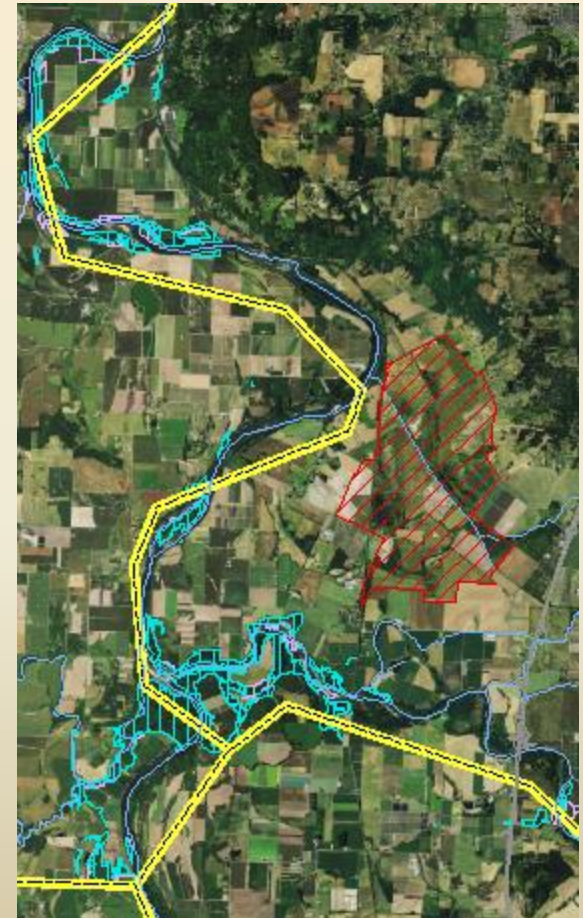
Wapato Lake NWR  
Tualatin River

W. L. Finley NWR  
Muddy Creek



# Riverine Objectives

- Numerous studies identify priority areas
  - Willamette Slices
    - High restoration potential/  
low social constraints
    - Cold water refugia
  - OWEB anchor habitats
  - Corps prioritized revetments  
for removal
  - 2-year flood inundation map



Willamette/Santiam Confluence  
Zones of Influence

# Applying SHC to Landbirds

## Coarse-Filter Targets

- **Population Objectives**
  - Long-term goals
  - Stepped down to shorter term objectives
- **Limiting Factors**
- **Habitat Objectives**
  - Number, size, and distribution of suitable habitat patches to meet population objectives



Oregon vesper sparrow

# Landbirds – Population Objectives

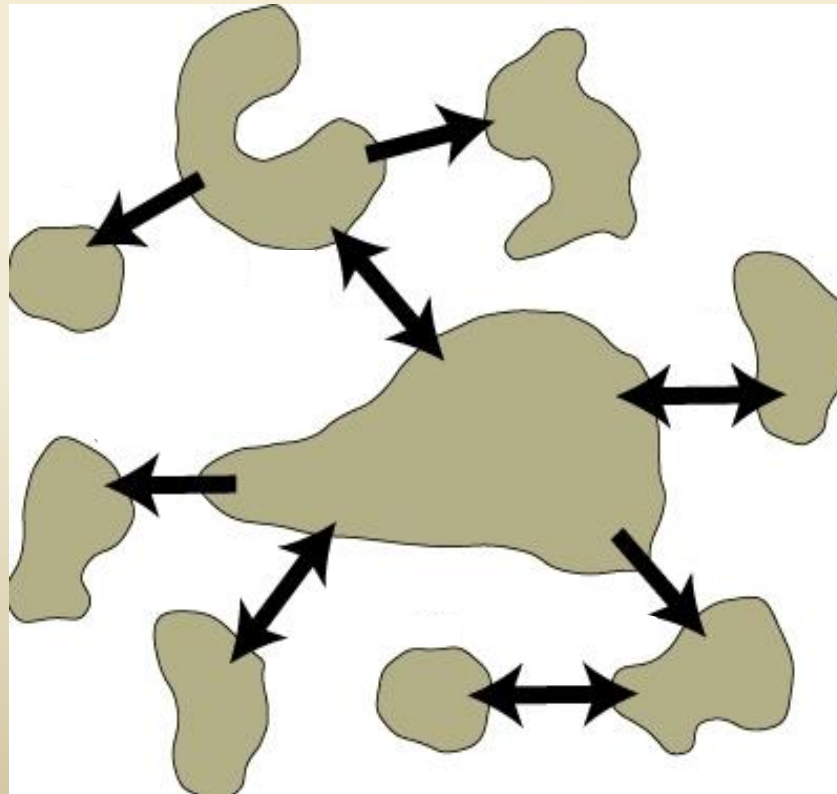
| Species                                                | Willamette Valley Population (estimate) | Population Goal | Population Objective | Habitat Objective (acres) |
|--------------------------------------------------------|-----------------------------------------|-----------------|----------------------|---------------------------|
| Western meadowlark<br>( <i>Grasslands</i> )            | 1,200                                   | 6,000           | 1,656                | 18,750                    |
| Oregon vesper sparrow<br>( <i>Grasslands</i> )         | 400                                     | 6,000           | 688                  | 6,273                     |
| Western bluebird<br>( <i>Oak Savanna</i> )             | 2,000                                   | 6,000           | 2,490                | 6,200                     |
| Yellow-breasted chat<br>( <i>Riparian Shrublands</i> ) | 900                                     | 6,000           | 1,315                | 1,980                     |
| White-breasted nuthatch<br>( <i>Oak Woodlands</i> )    | 12,100                                  | 18,150          | 13,122               | 65,600                    |
| Yellow warbler<br>( <i>Riparian Forests</i> )          | 12,400                                  | 18,600          | 13,447               | 20,160                    |

# Limiting Factors

- **Habitat loss, fragmentation, and degradation**
  - Loss of disturbance regimes
  - Invasive species
  - Loss of connectivity and complexity
- **Small, disjunct populations**
- **Mgt. practices during nesting times**
- **Fewer mature oaks with cavities**
- **Competition for nesting sites**

# The Question

**How would you design the valley to address those factors limiting numbers and distribution?**



# The Answer

- Establish a network of suitable habitat where successful breeding and rearing is prioritized over other management concerns.
  - Number
  - Size
  - Distribution
- Strategy: Stabilize and work outward from existing population centers by addressing limiting factors

# Landbirds – Population Objectives

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# Network Objectives: Size

|        | Grasslands<br>(WEME)       | Savanna<br>(WEBL) | Oak<br>Woodland<br>(SBNU) | Riparian<br>Forest<br>(YEWA) | Riparian<br>Shrubland<br>(YBCH) |
|--------|----------------------------|-------------------|---------------------------|------------------------------|---------------------------------|
| Large  | 30-40 pairs<br>1,300 acres | 30-40<br>260      | 50<br>900                 | 100-140<br>540               | 25-35<br>450                    |
| Medium | 20-30<br>950               | 20-30<br>190      | 30-50<br>600              | 60-100<br>360                | 15-25<br>300                    |
| Small  | 10-20<br>550               | 10-20<br>110      | 10-30<br>300              | 20-60<br>180                 | 5-15<br>150                     |

# Network Objectives: Number and Distribution

|        | Grasslands<br>(WEME)              | Savanna<br>(WEBL) | Oak<br>Woodland<br>(SBNU) | Riparian<br>Forest<br>(YEWA) | Riparian<br>Shrubland<br>(YBCH) |
|--------|-----------------------------------|-------------------|---------------------------|------------------------------|---------------------------------|
| Large  | 0 - North<br>1 - Mid<br>1 - South | 1<br>2<br>1       | 5<br>5<br>5               | 3<br>2<br>2                  | 1<br>1<br>1                     |
| Medium | 1<br>2<br>2                       | 3<br>3<br>3       | 10<br>10<br>9             | 5<br>5<br>5                  | 2<br>3<br>2                     |
| Small  | 2<br>4<br>6                       | 6<br>6<br>5       | 20<br>20<br>19            | 11<br>11<br>11               | 4<br>3<br>3                     |

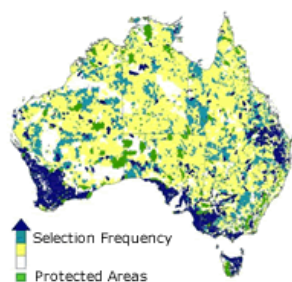
# Marxan

Informing Conservation Decisions Globally

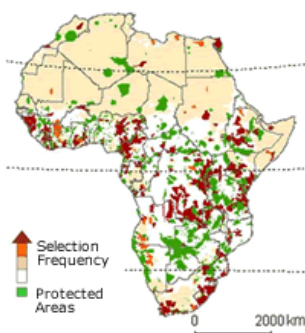
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*Klein et al. 2008a*



## Marxan is freely available conservation planning software.

It provides decision support to a range of conservation planning problems, including:

- the design of new reserve systems
- reporting on the performance of existing reserve systems
- developing multiple-use zoning plans for natural resource management

## What makes Marxan the most widely used conservation planning software in the world?

Marxan is flexible- it can be applied to a wide range of problems such as reserve design and natural resource management in terrestrial, freshwater, and marine systems.

Marxan is efficient and repeatable- it provides many good solutions to complex problems, providing a number of options and encouraging stakeholder participation.

These features provide users with decision support to achieve an efficient allocation of resources across a range of different uses.

## News & Events

- › New Marxan software release
- › LATEST NEWS: Marxan Train the Trainer course - 21-23 November 2011
- › LATEST NEWS: Marxan Intro course - 22-23 November 2011
- › Systematic Conservation Course - Sabah, Malaysia, July 2010
- › Systematic Conservation Planning - Bali Workshop, July 2010. Presentations

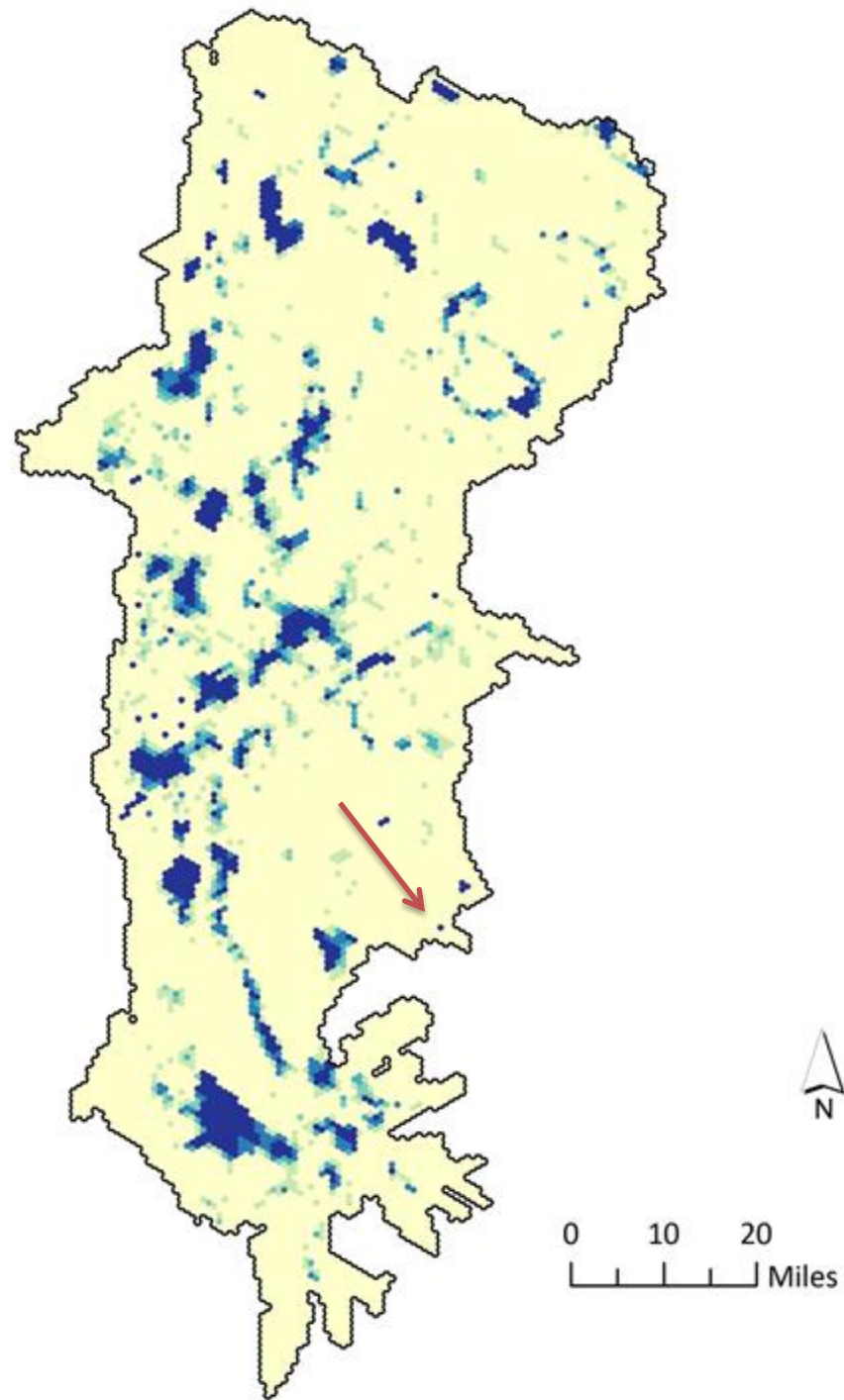
## Join the Marxan Mailing List

Sign up for the Marxan email list to communicate with other Marxan users!

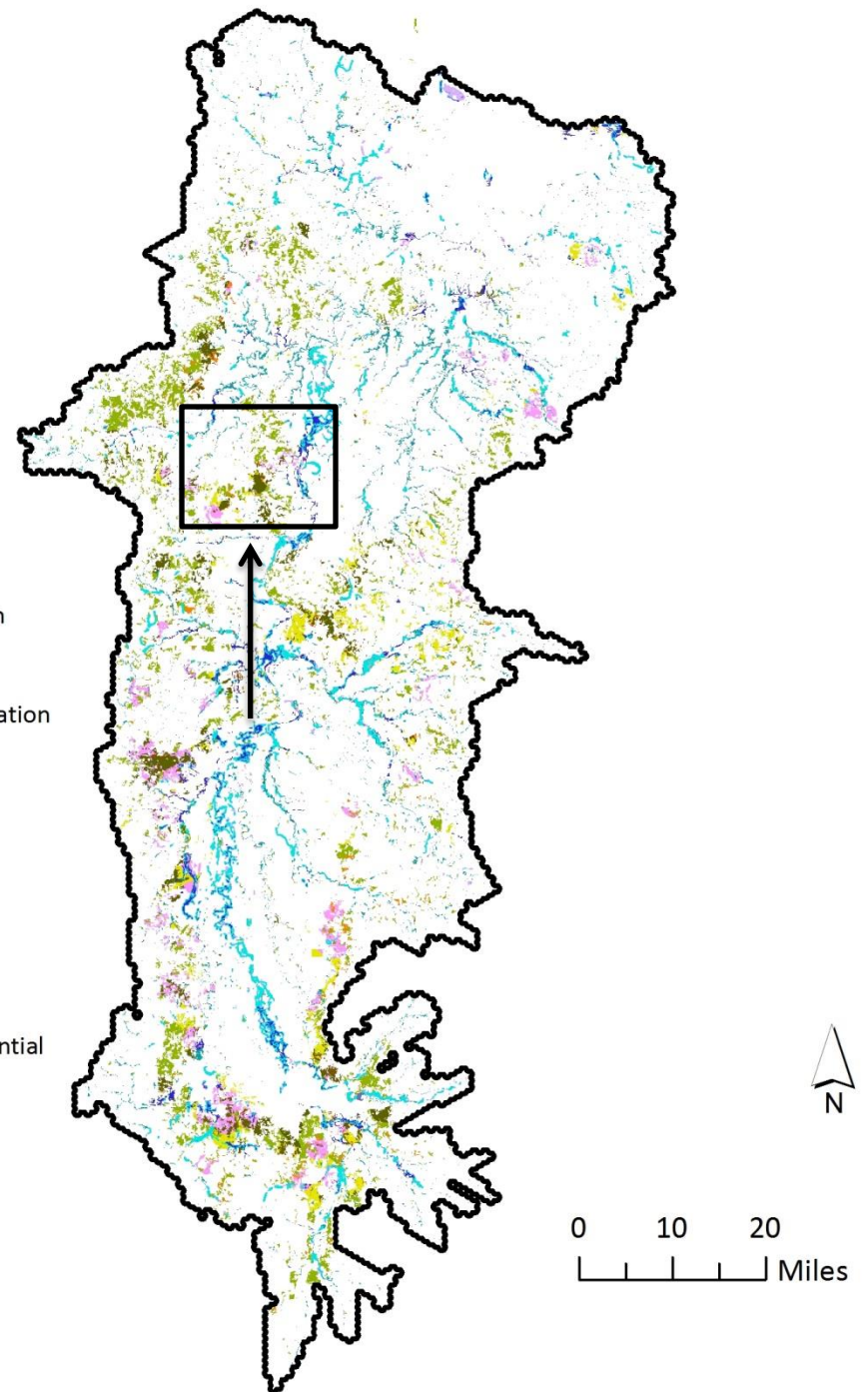
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# Marxan

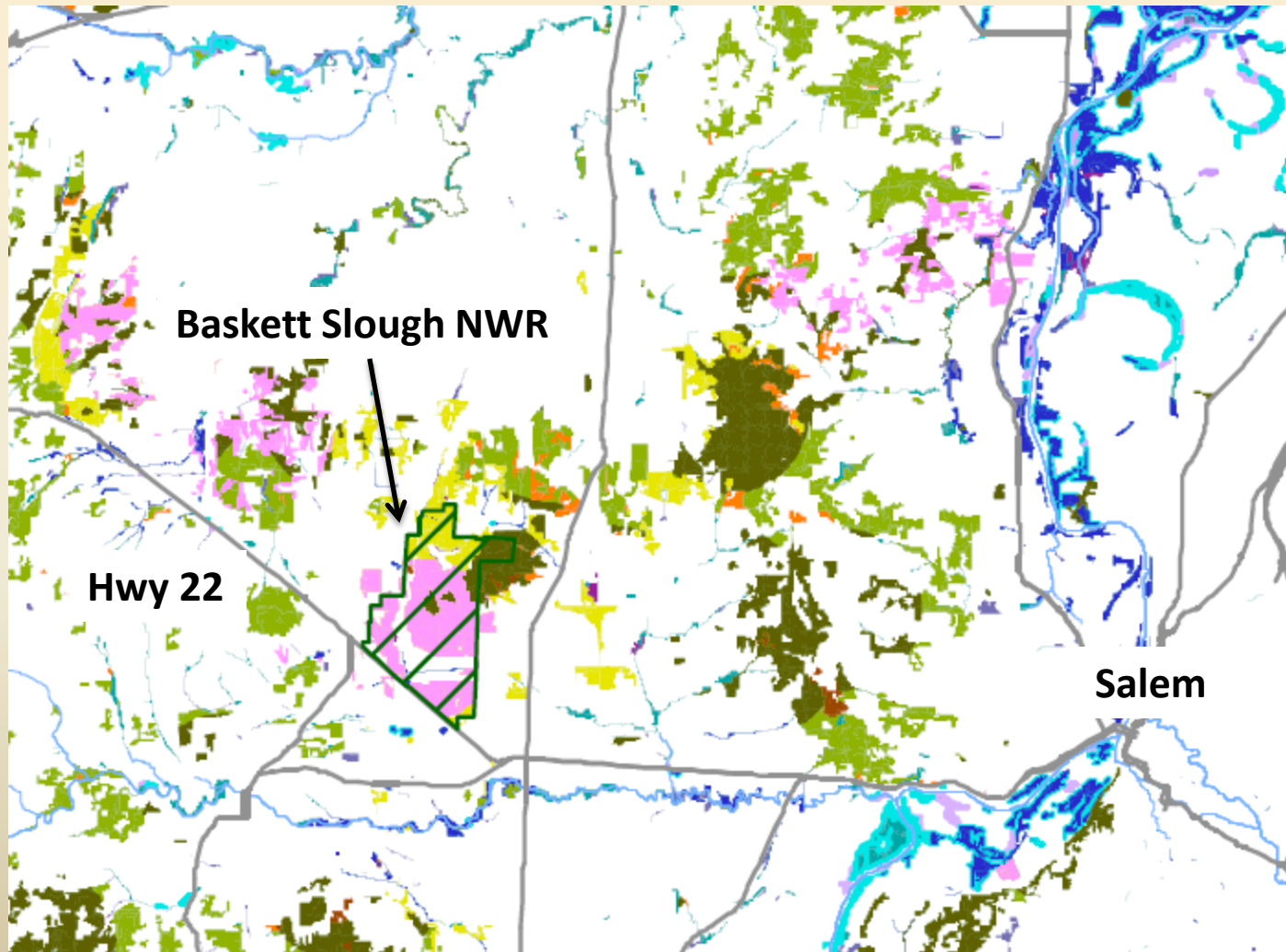
- Heuristic: finds an optimal solution to the problem at hand – smallest footprint that meets our objectives in the least constrained areas.
- With 13,388 planning units (each 250 acres) there are  $2^{13,388}$  possible reserve designs.
- Identify priority areas that meet multiple conservation goals.



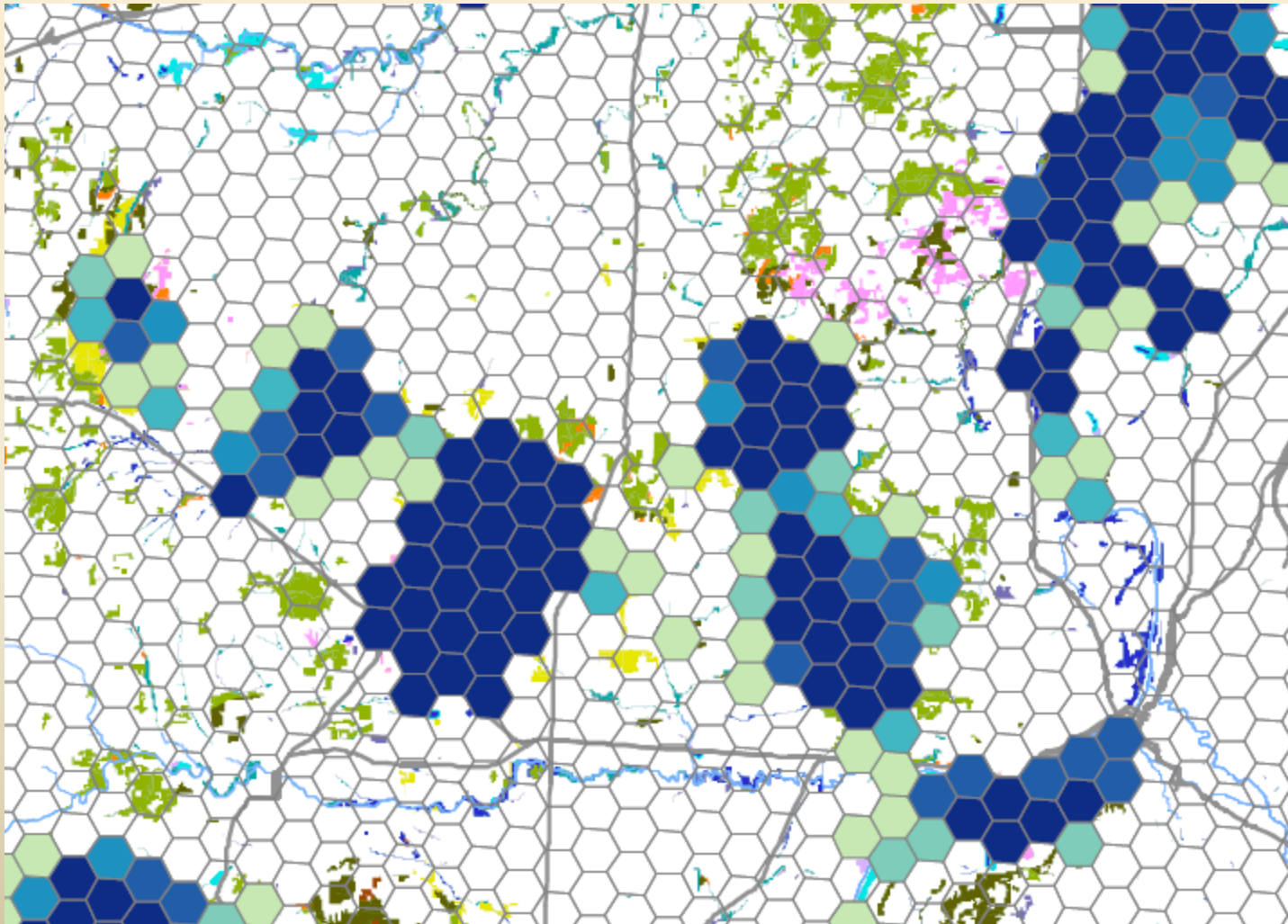
# WVCS Marxan Targets



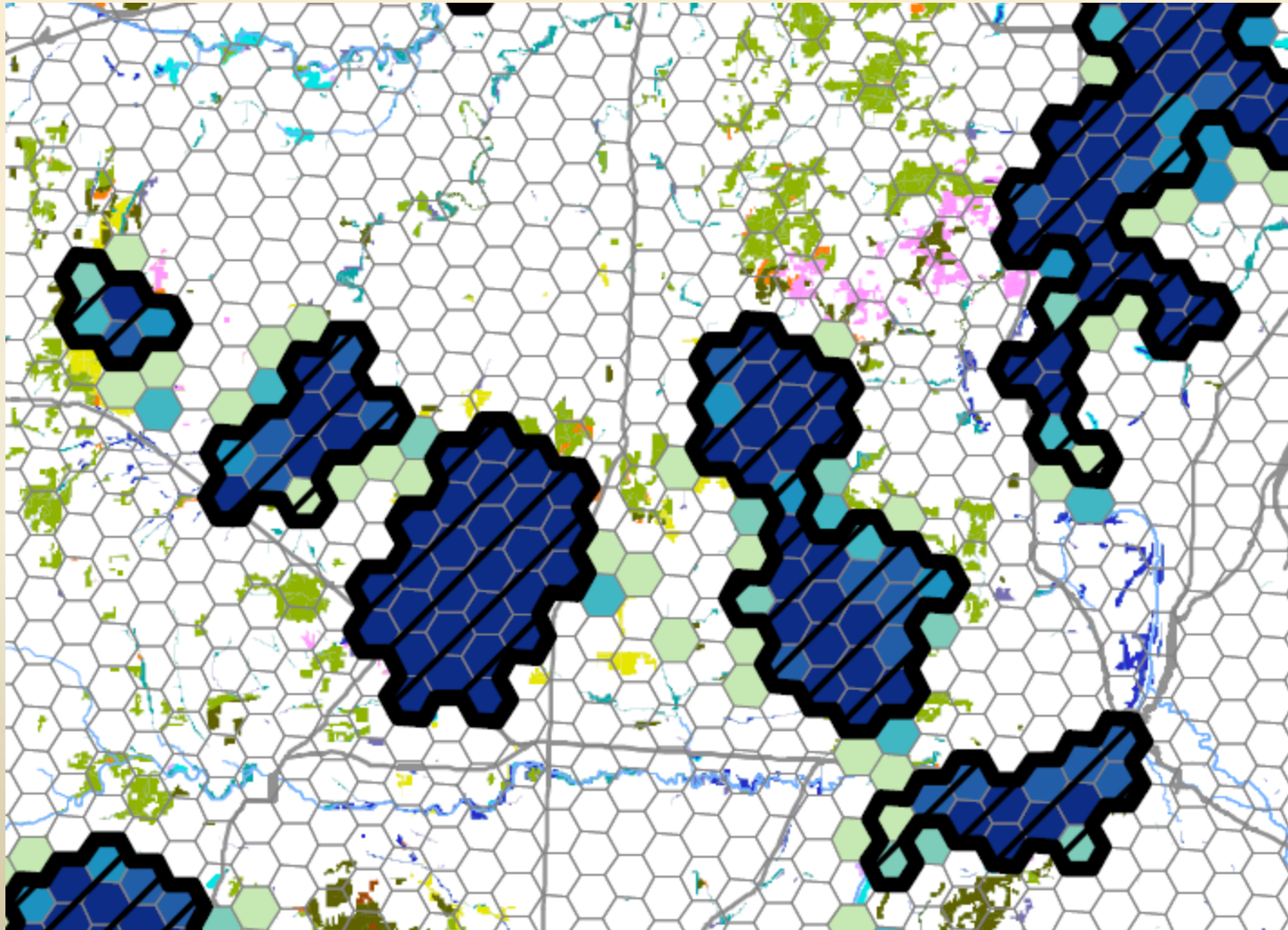
# Mapped Habitat



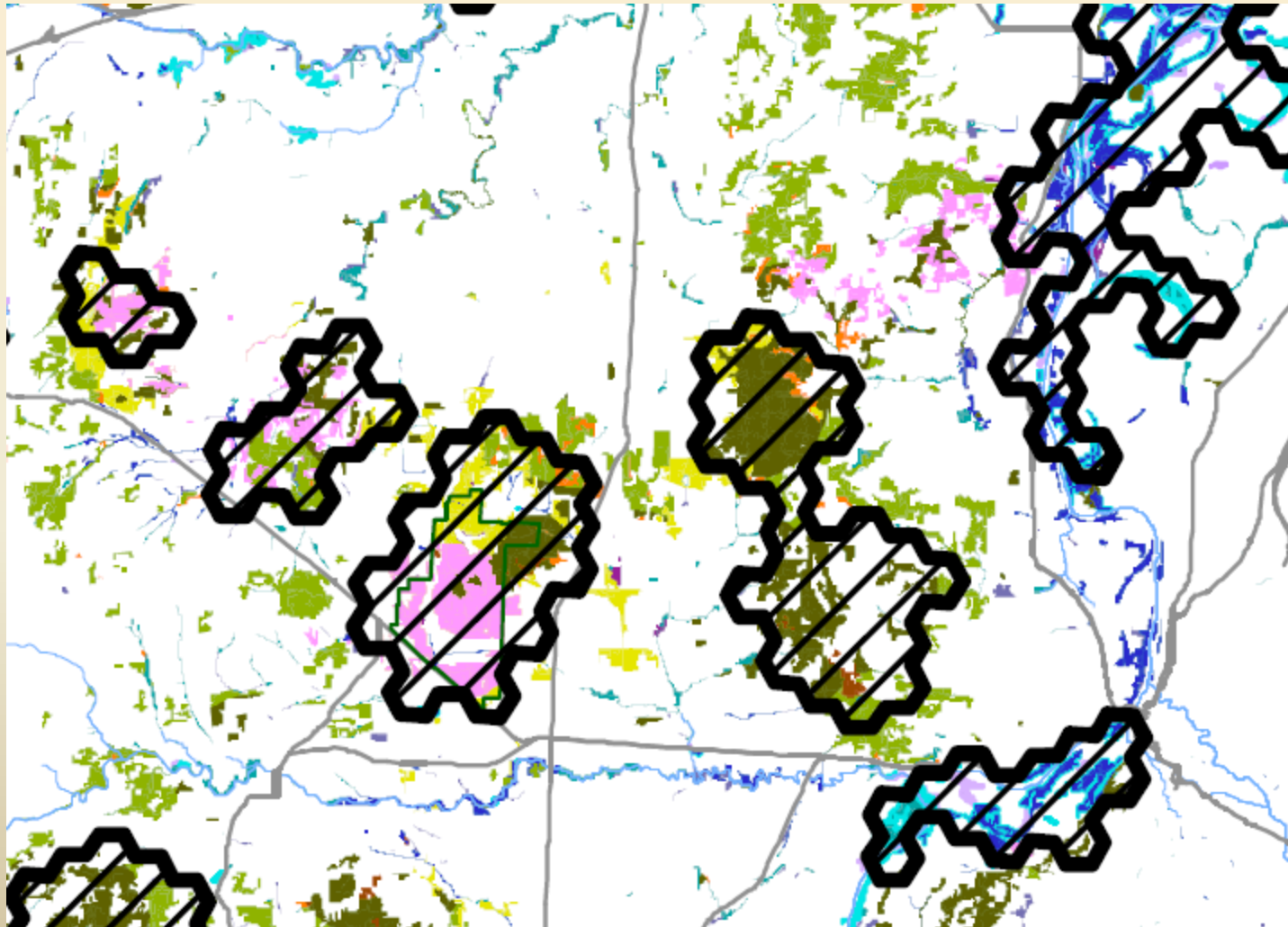
# Marxan Selection Frequency



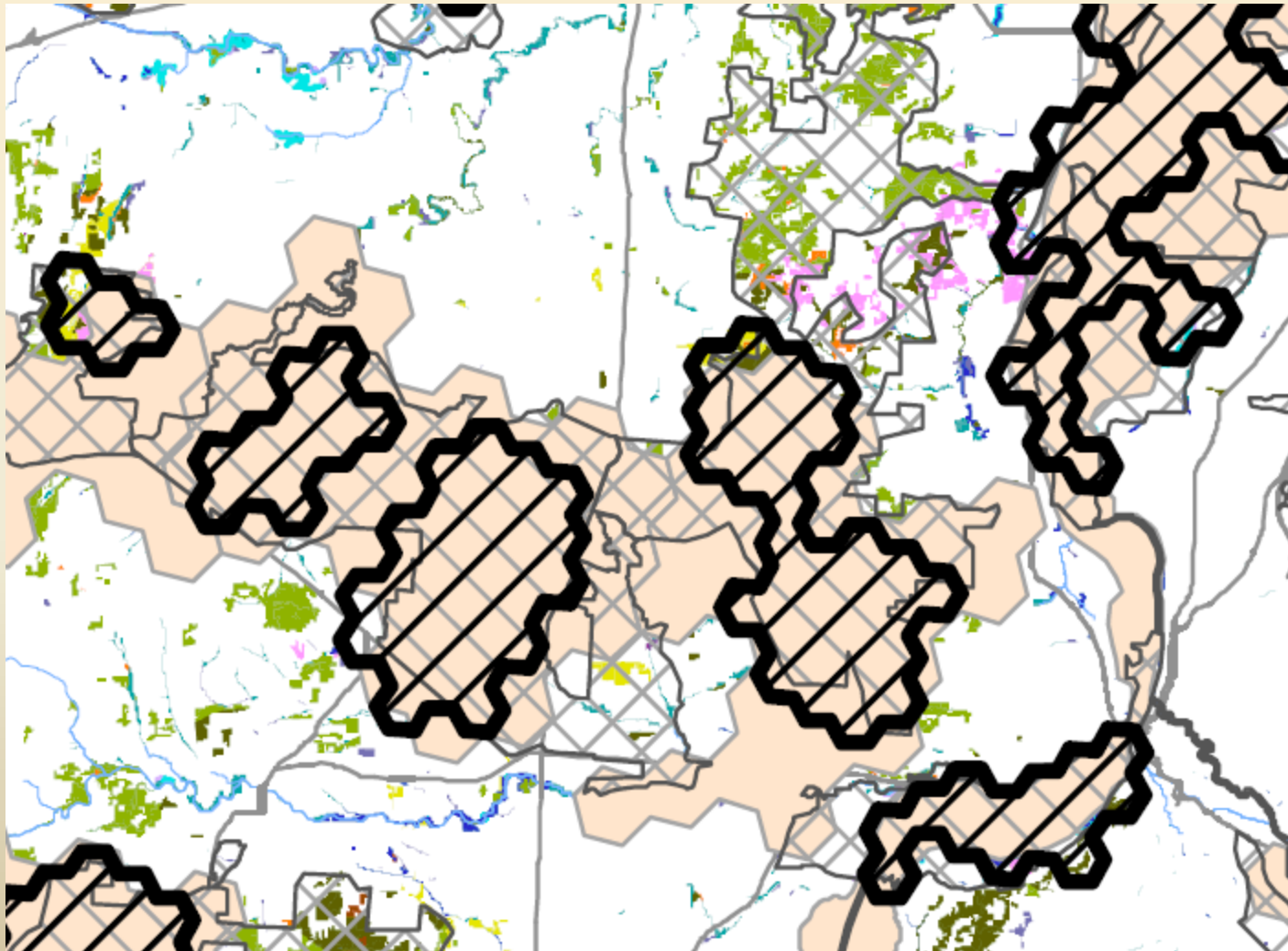
# Marxan “Best Solution”



# Priority Conservation Areas

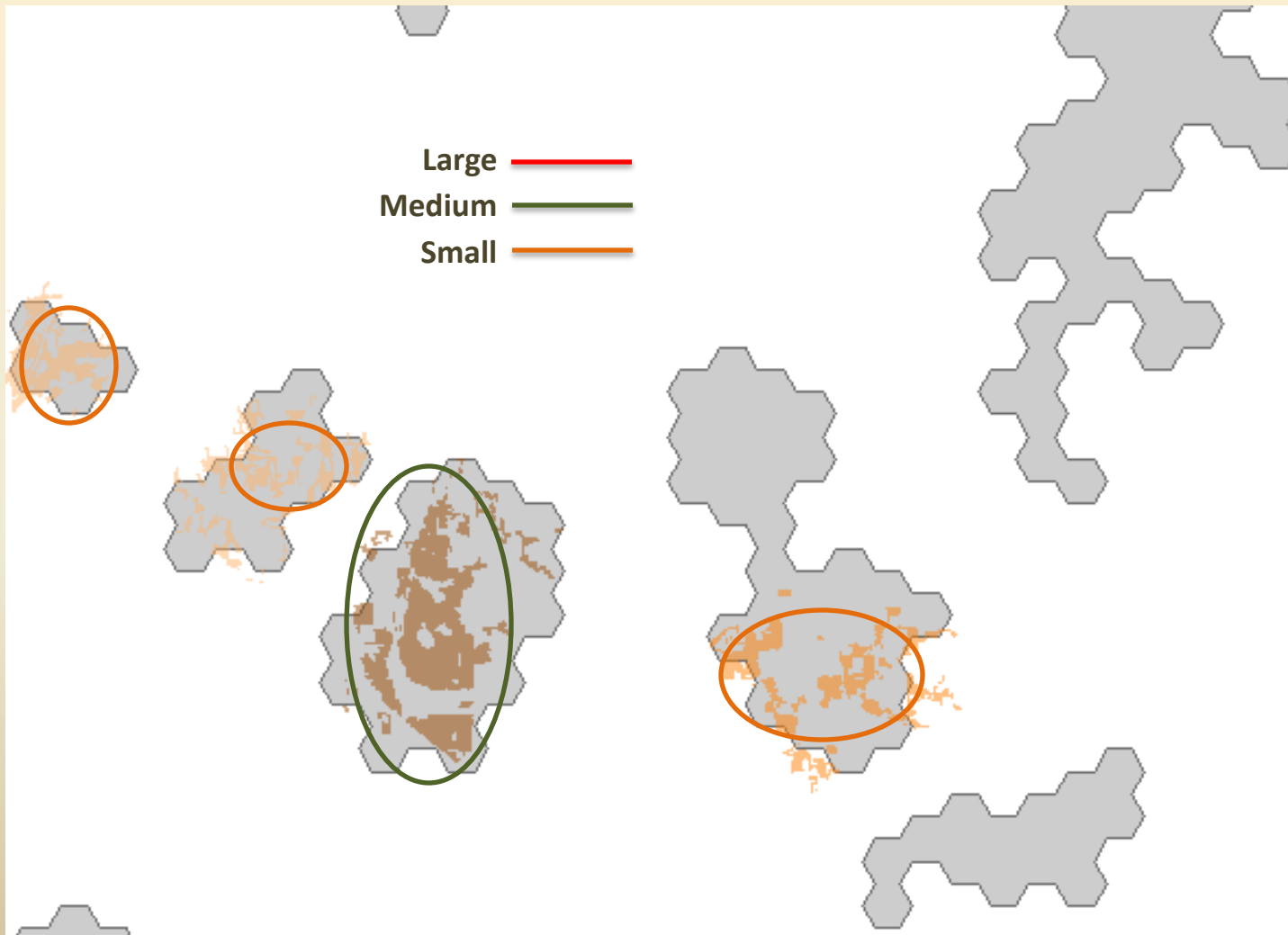


# COA/PCA Alignment



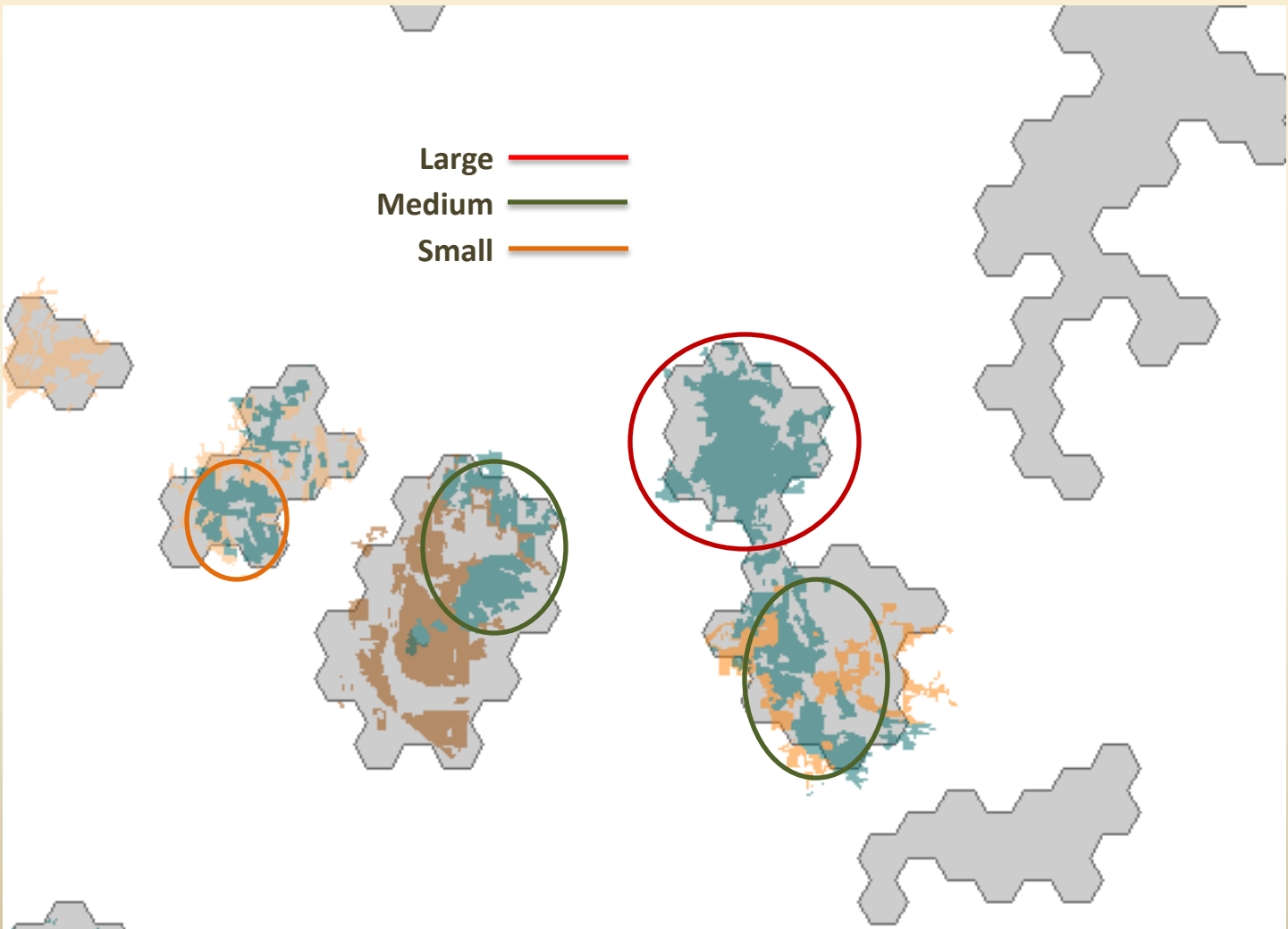
# Building the Network

## Western Meadowlark Patches

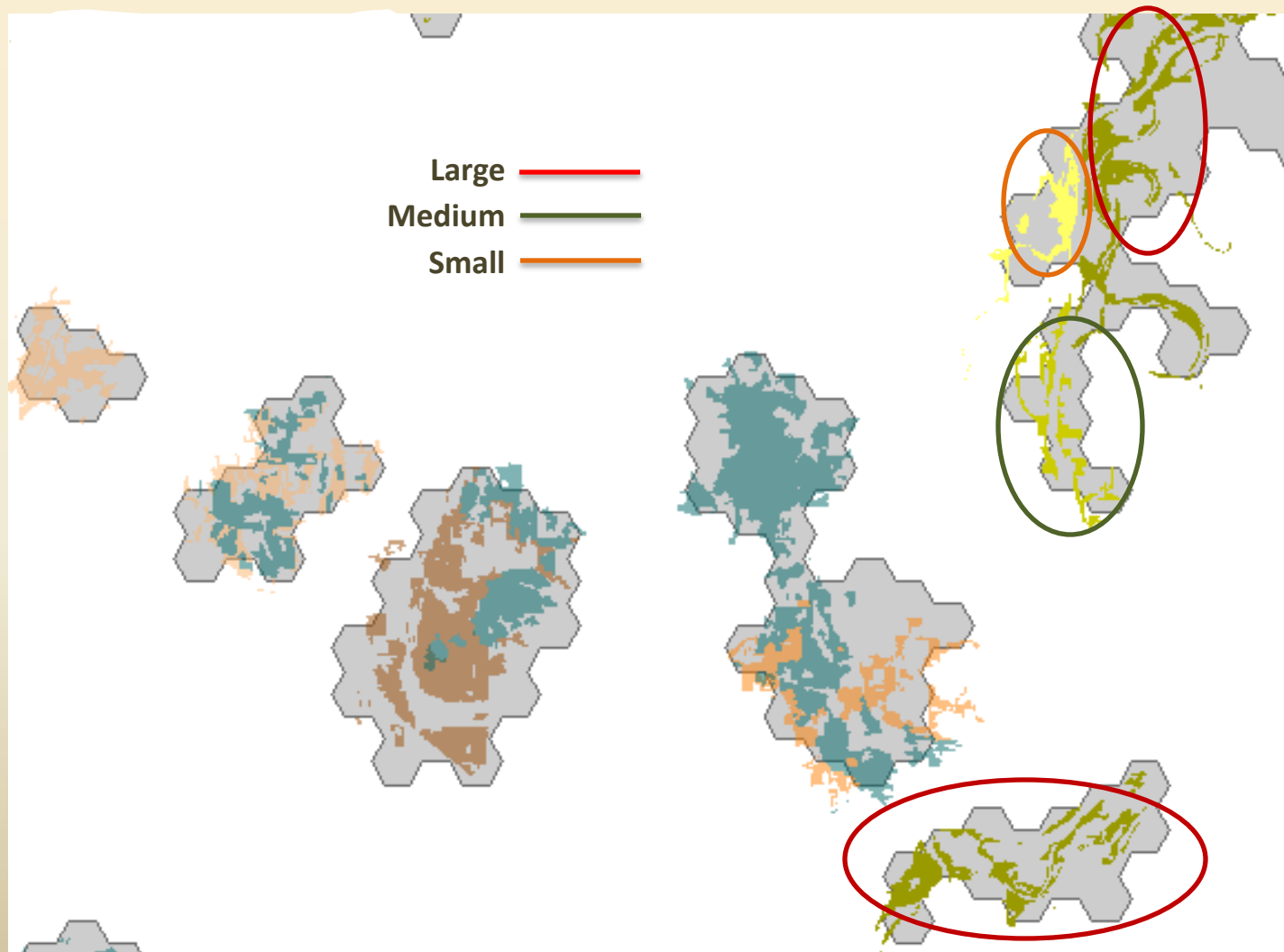


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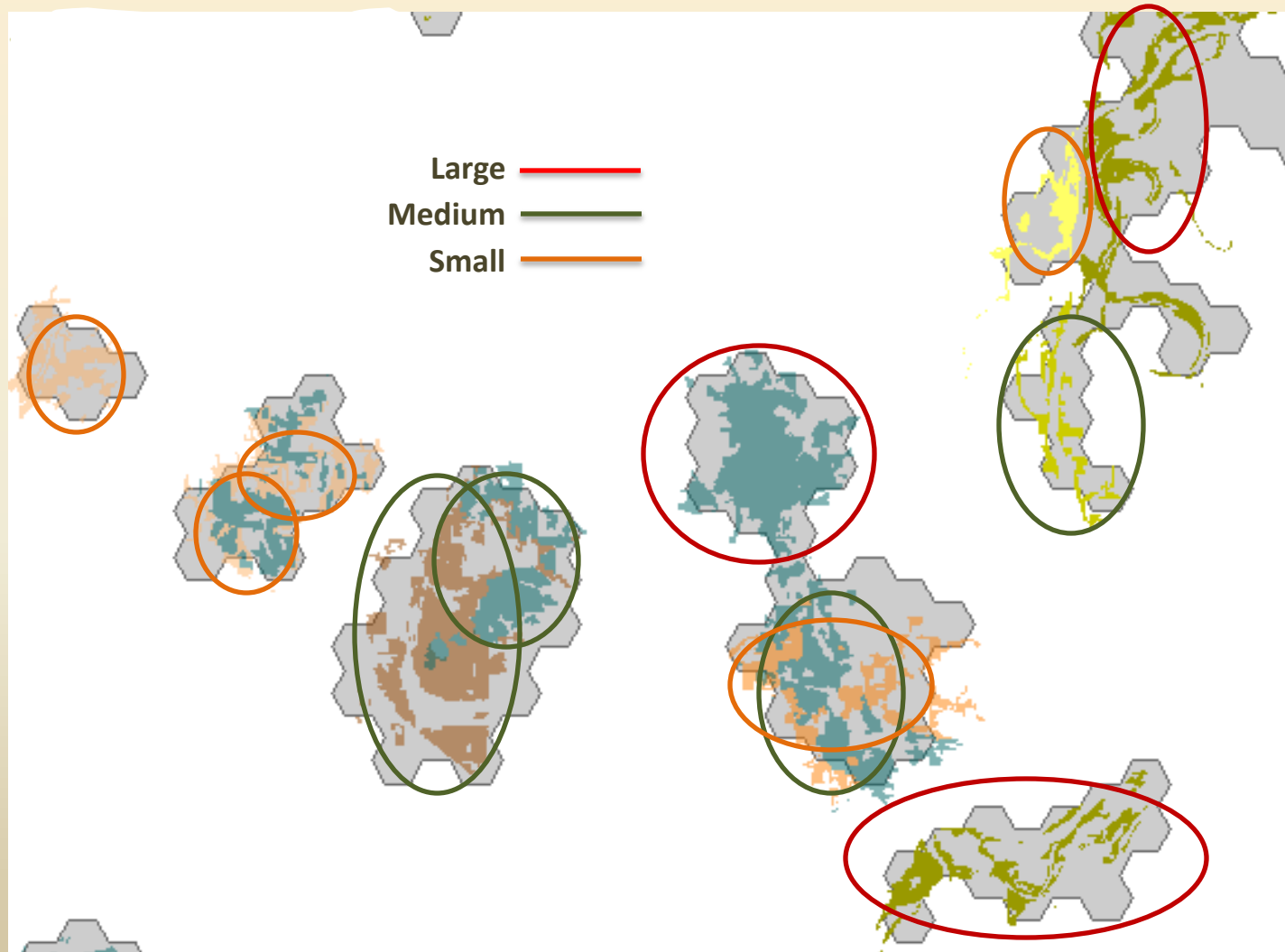
## White-breasted Nuthatch Patches

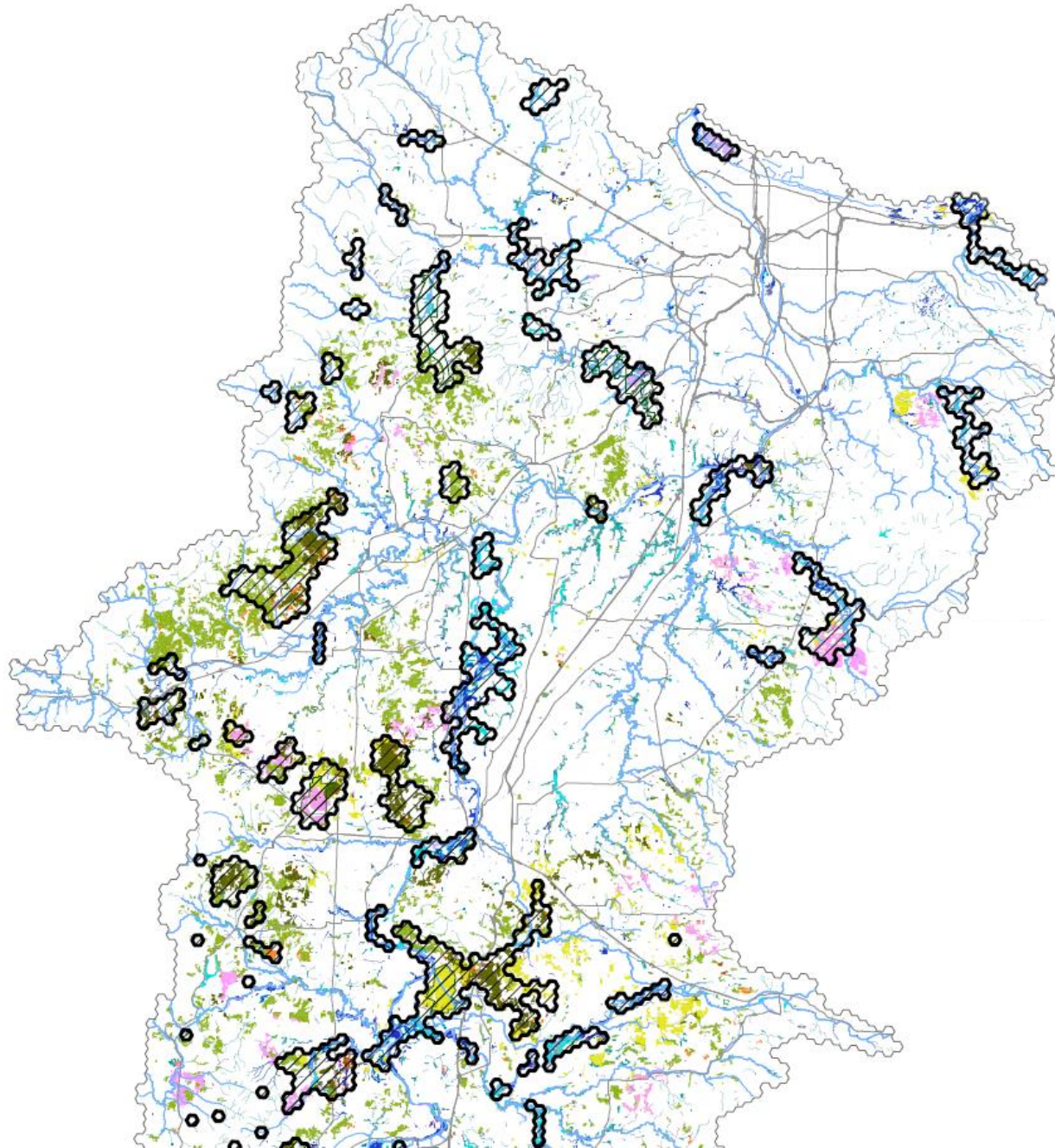


# Building the Network Yellow Warbler Patches

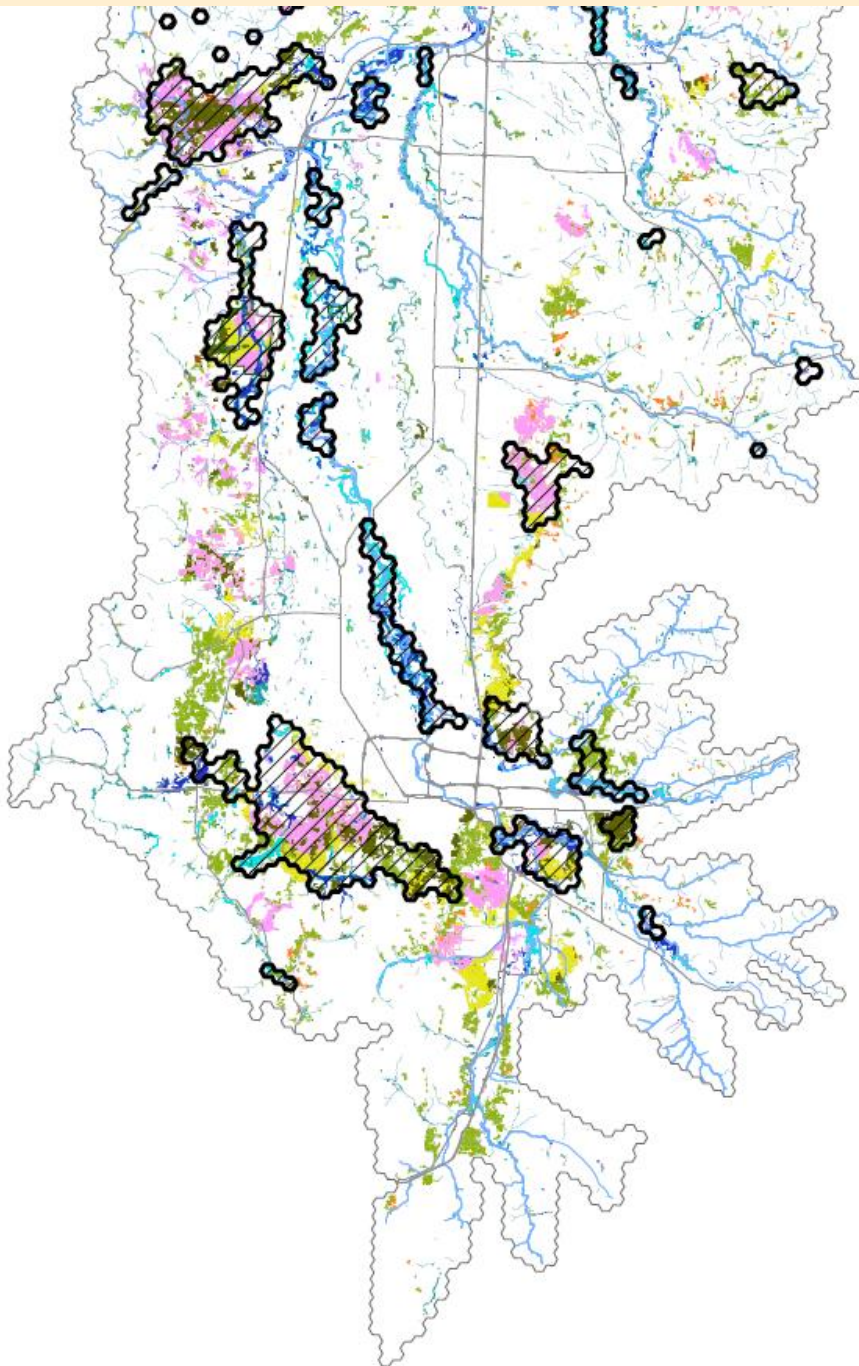


# Building the Network





# North Valley PCAs

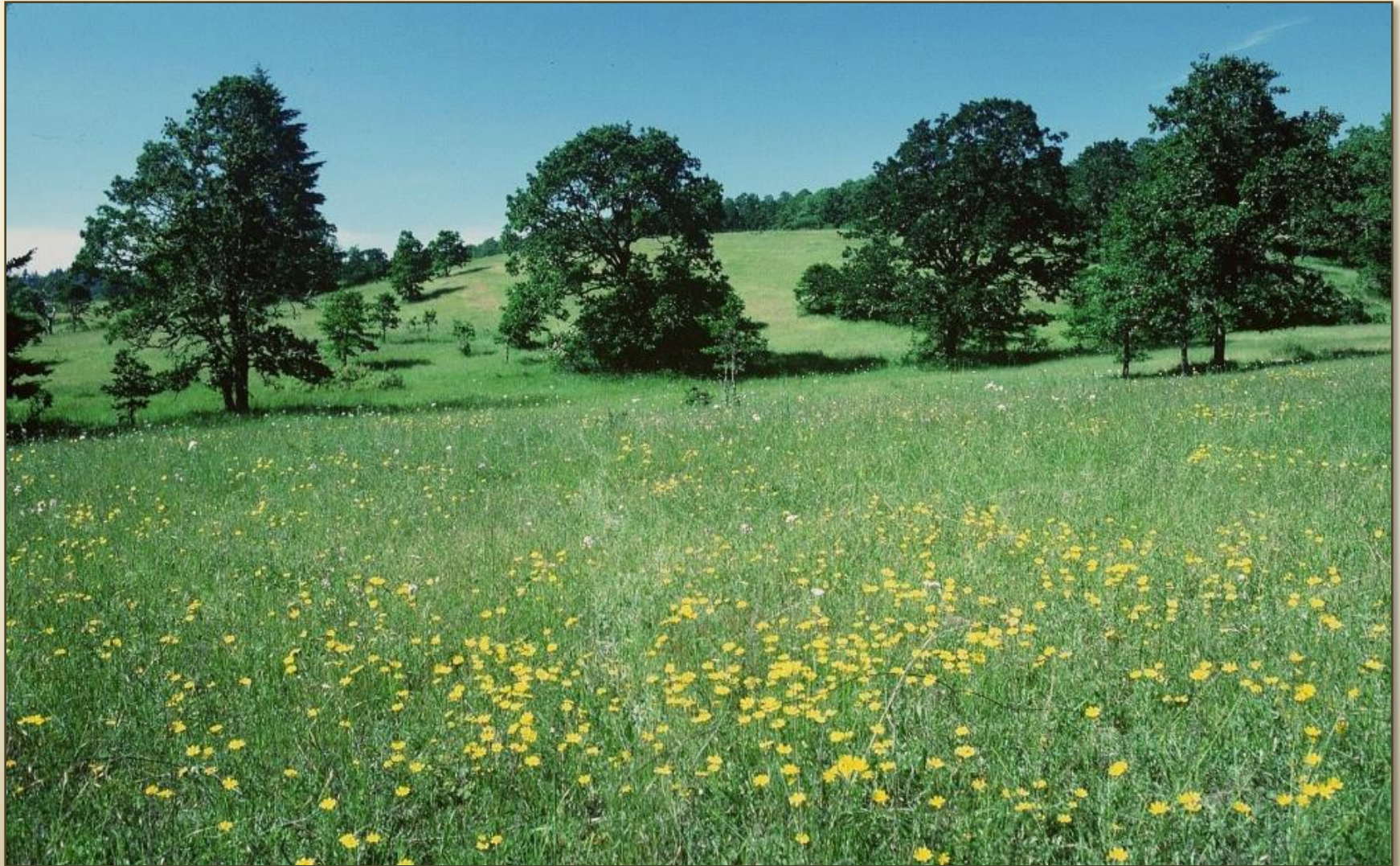


# South Valley PCAs

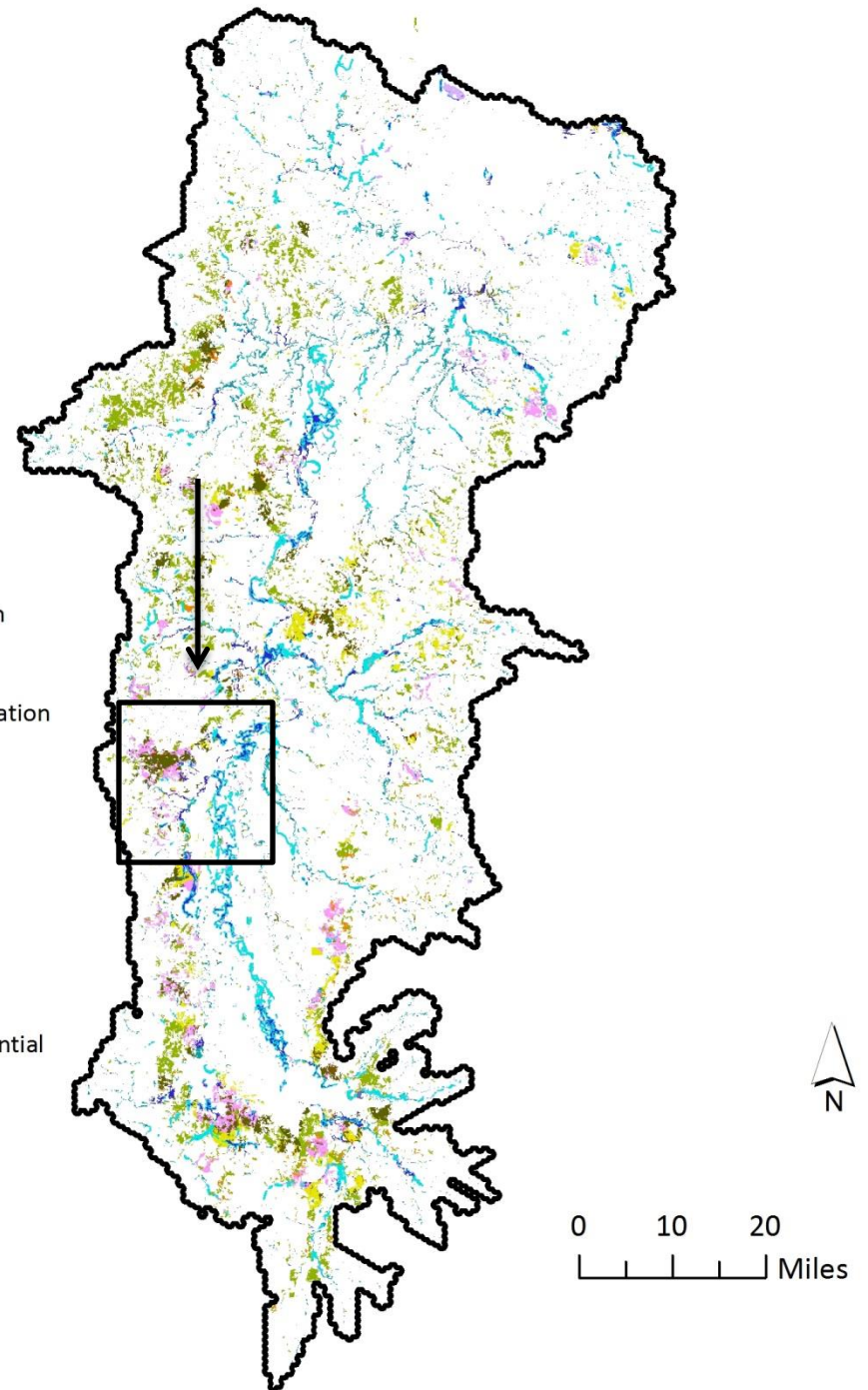
# What's Next

- **Ongoing Discussions**
  - ODFW
  - SWCDs, Watershed Councils
  - Land Trusts
  - NRCS
- **Pacific Bird Habitat Joint Venture**
  - Prairie-Oak Focus
- **USFWS**
  - Coordinated Work Plan
  - Land Protection Planning

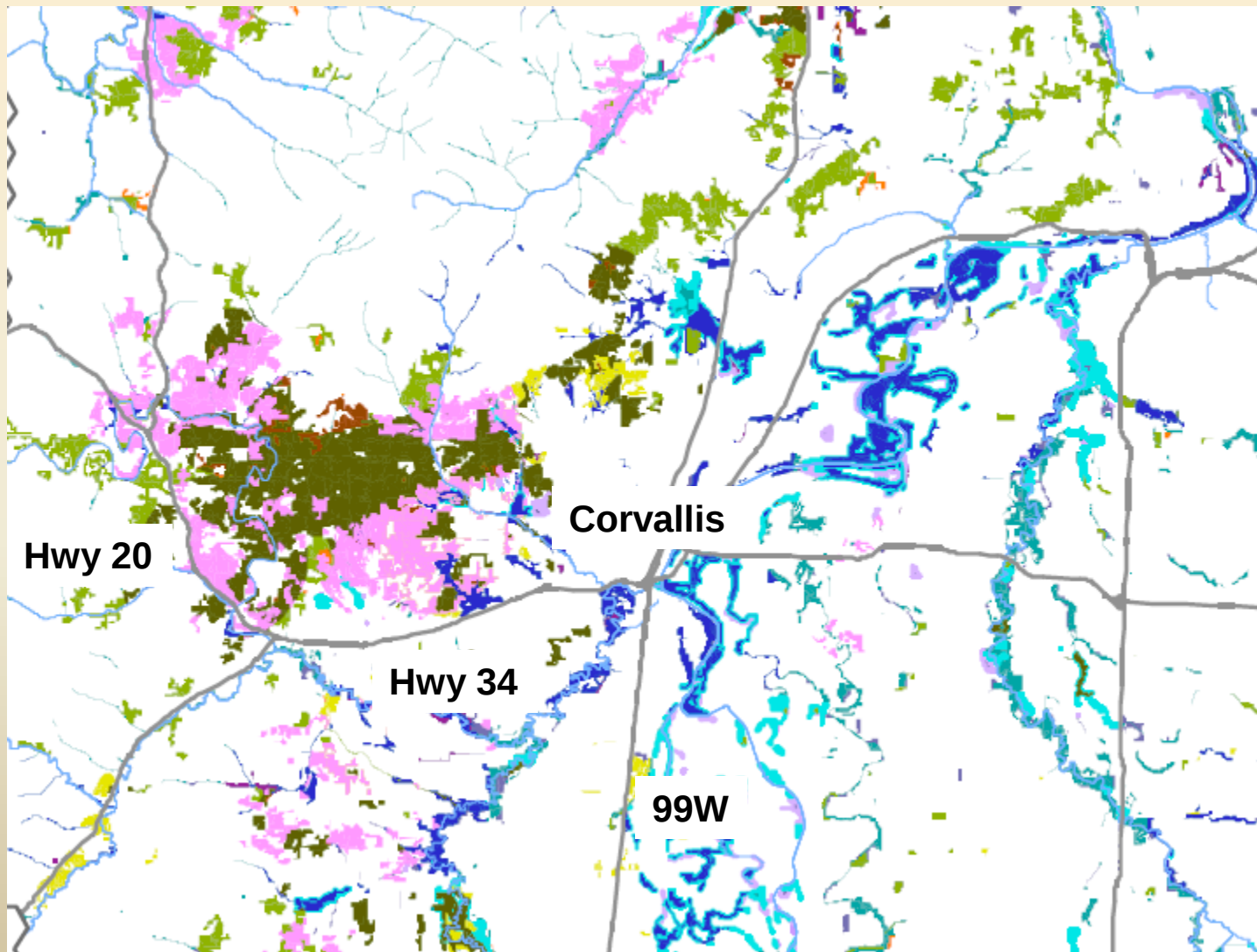
# Thank You



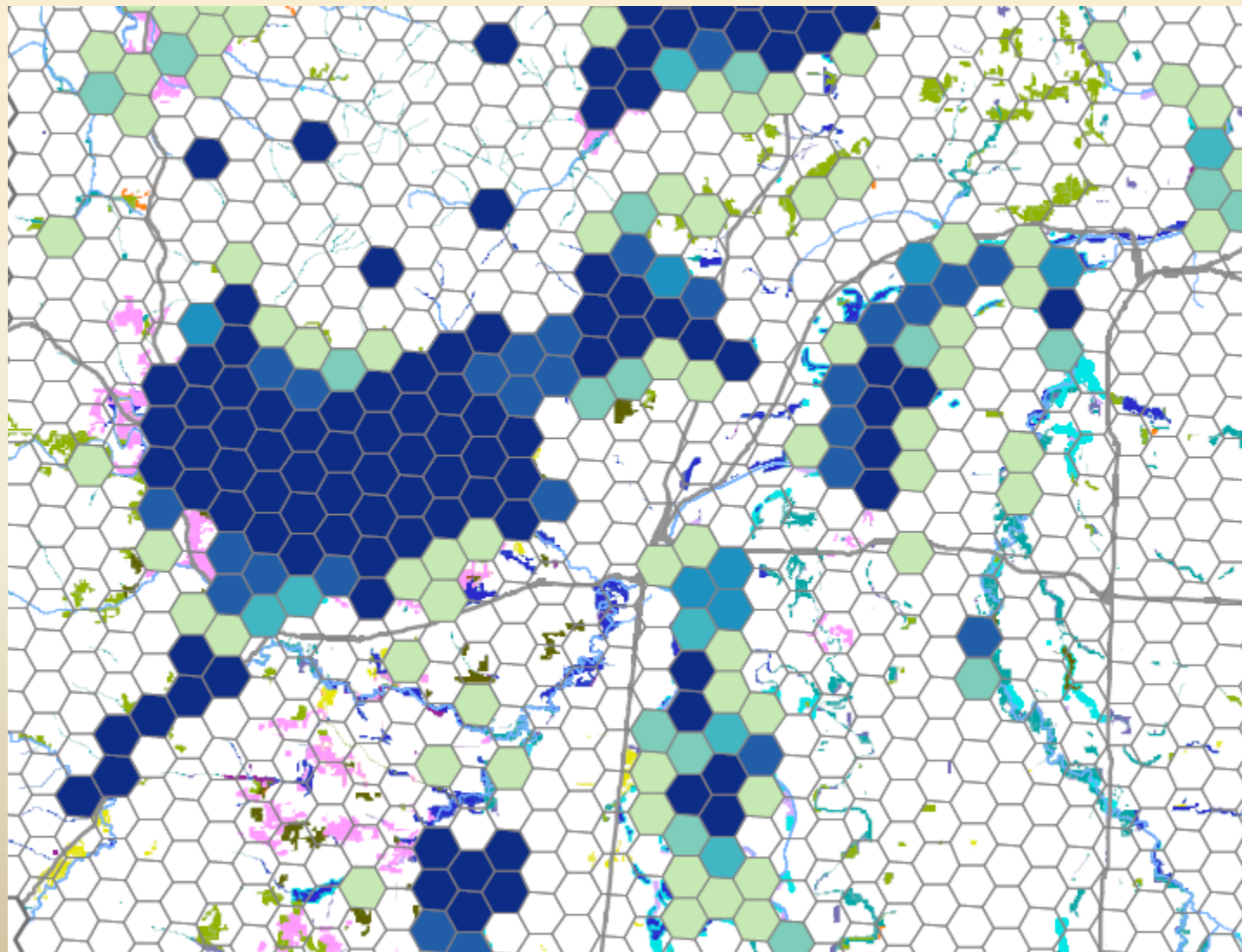
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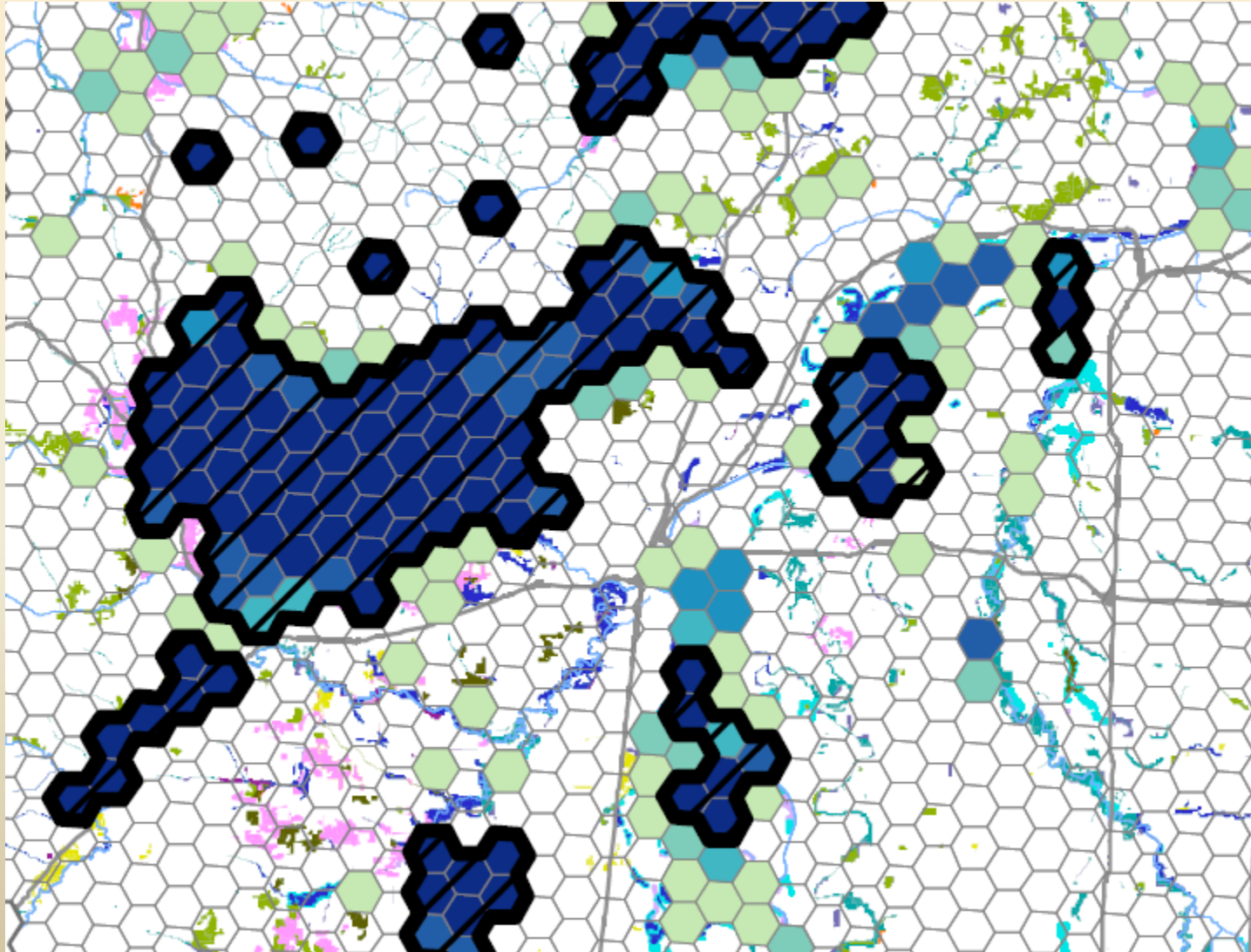
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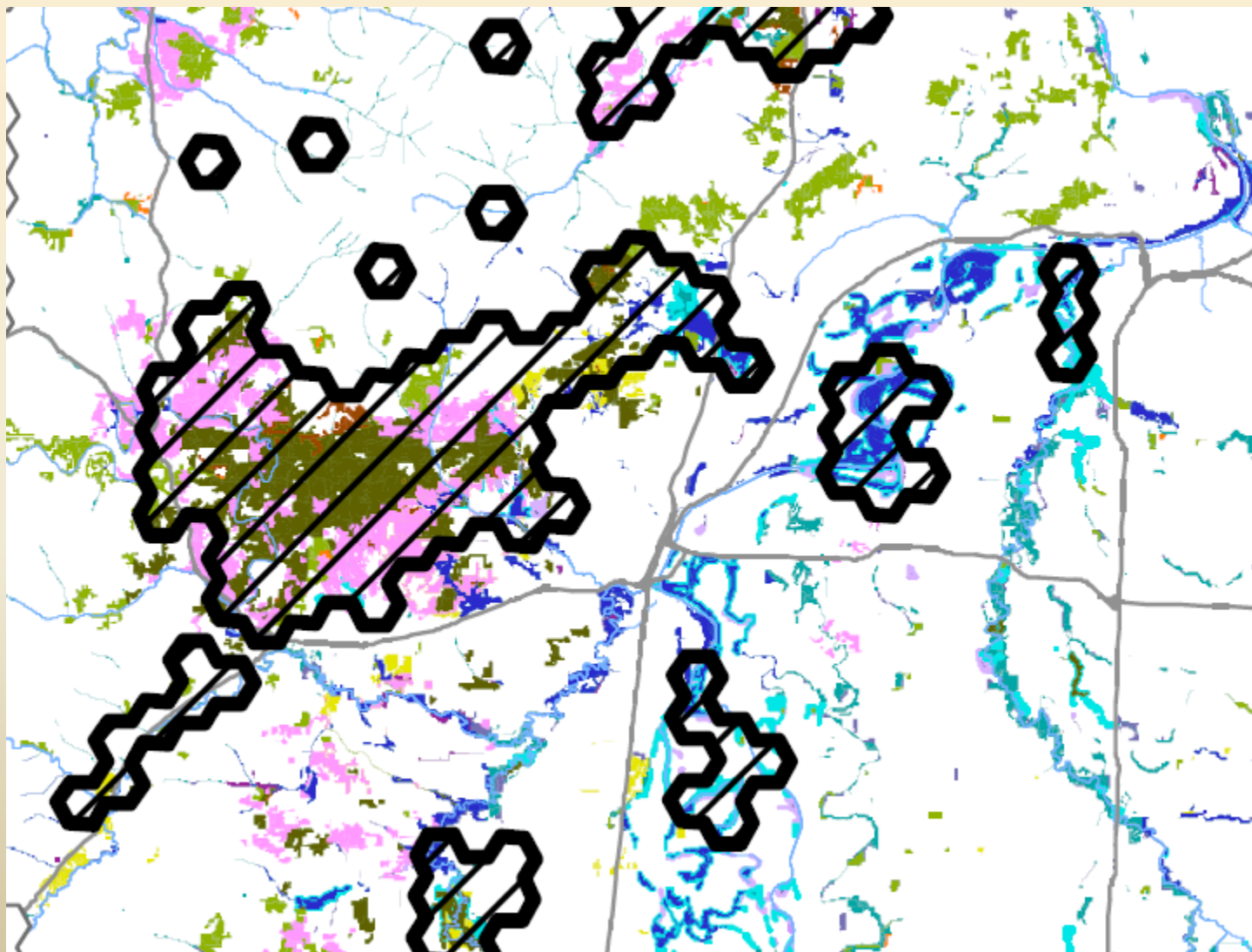
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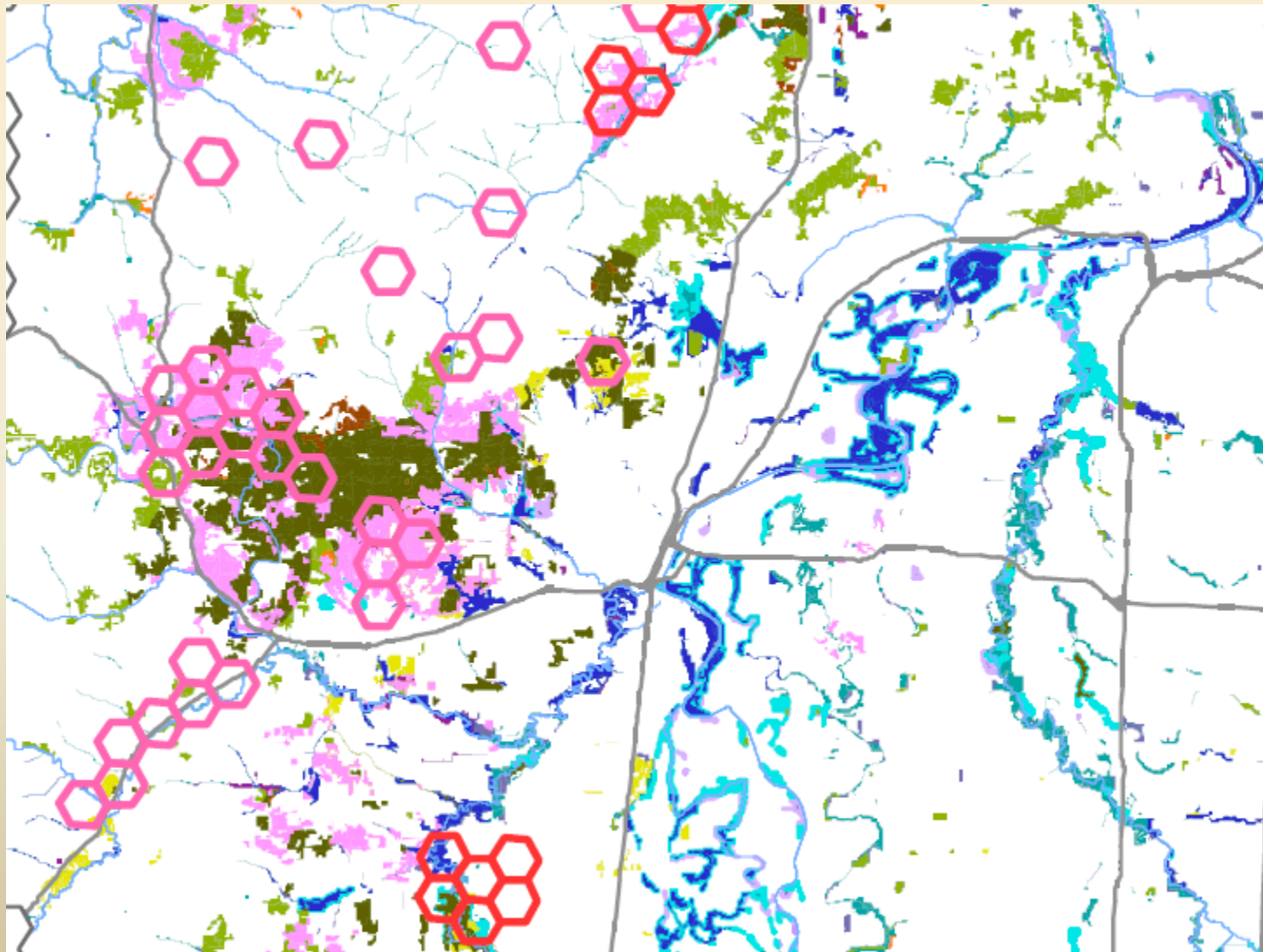
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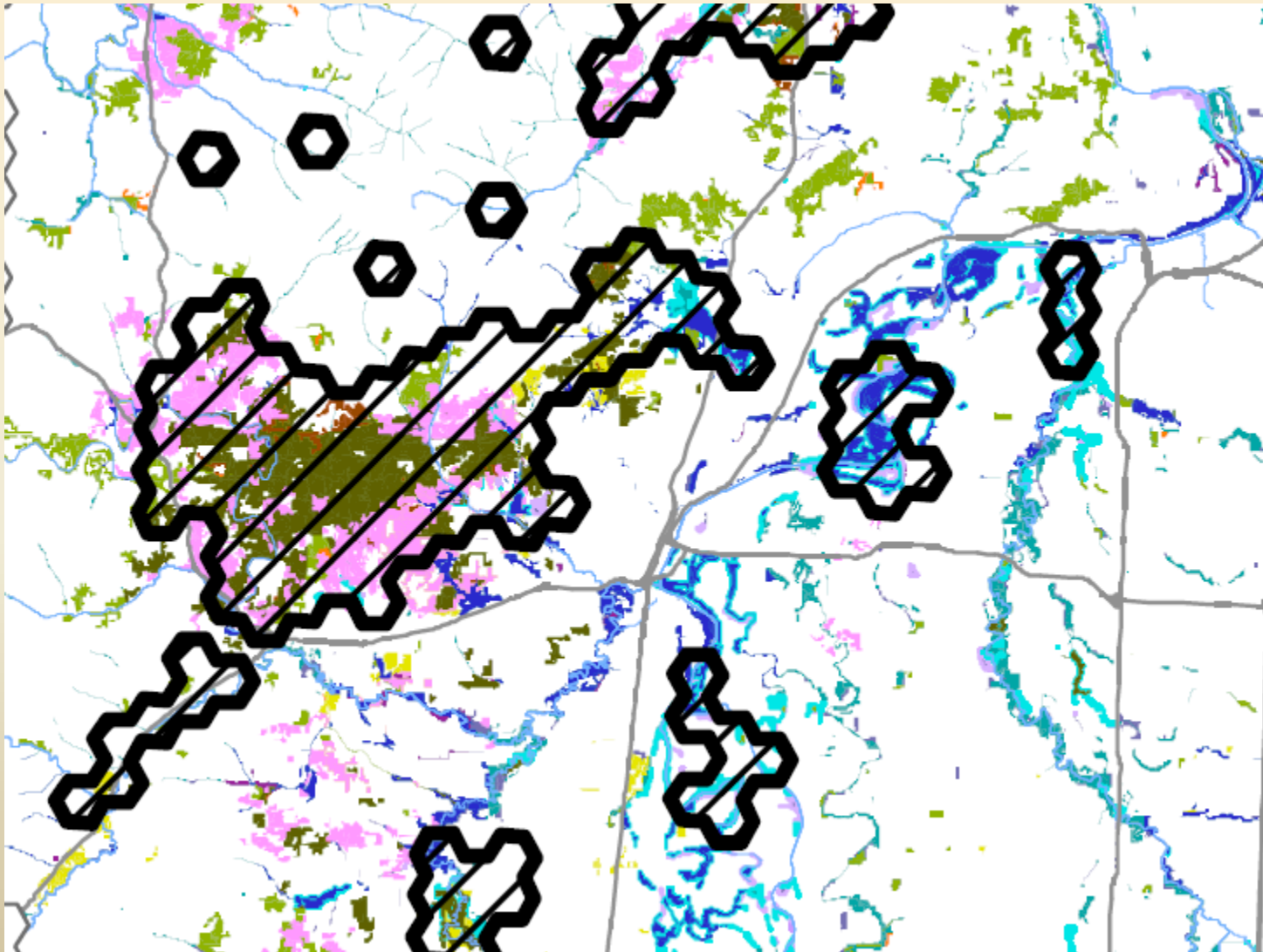
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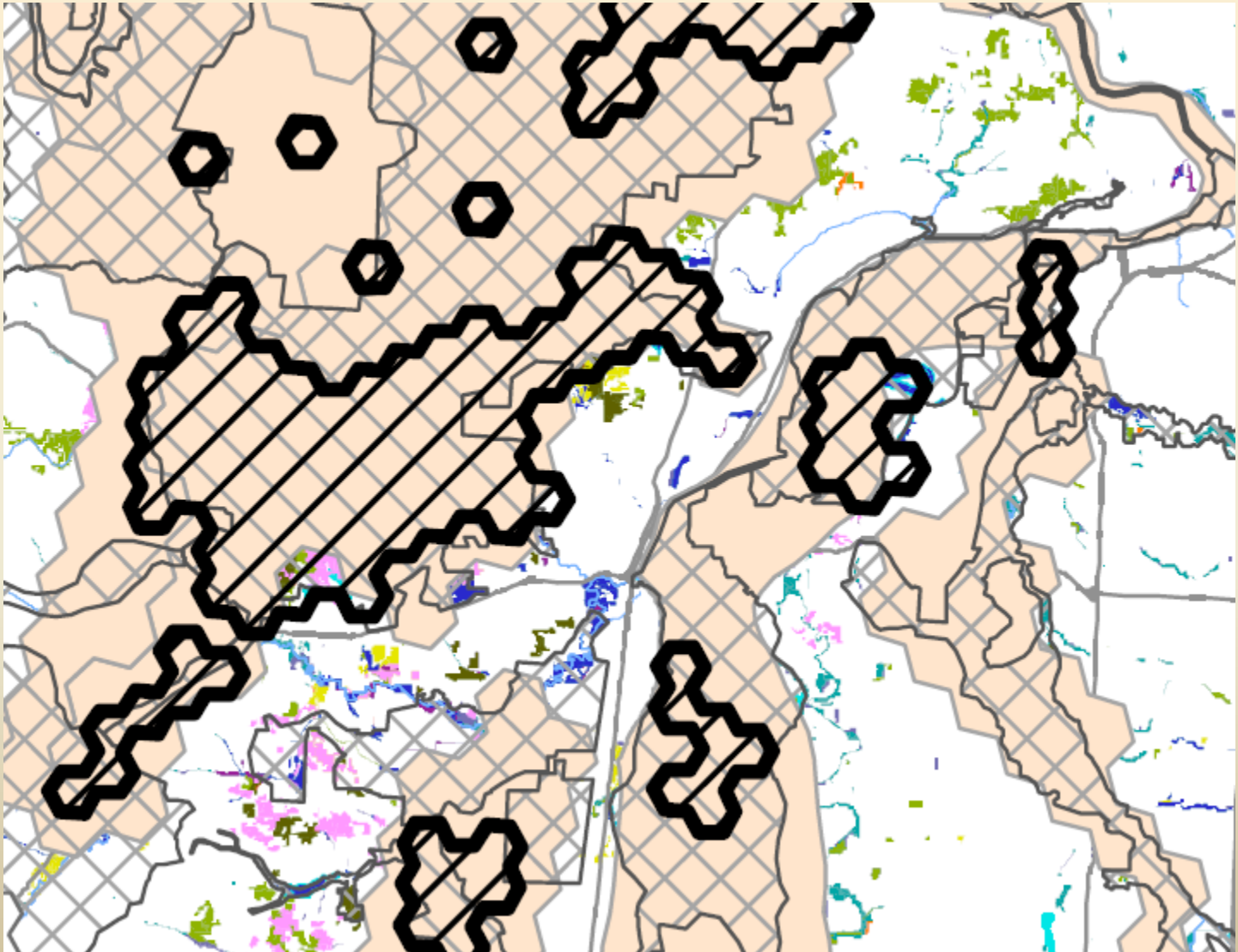
# Locked-in Planning Units



# Priority Conservation Areas

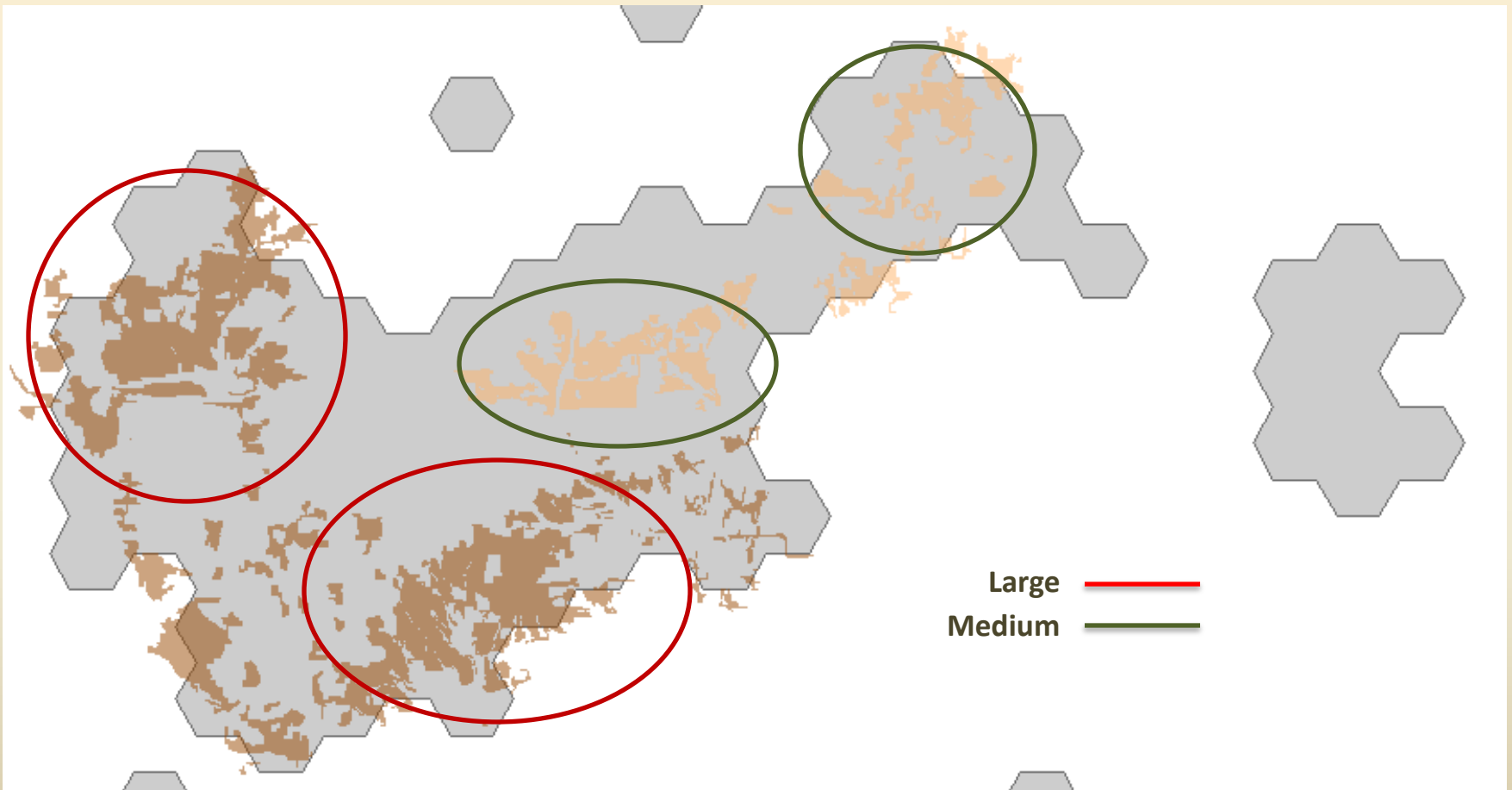


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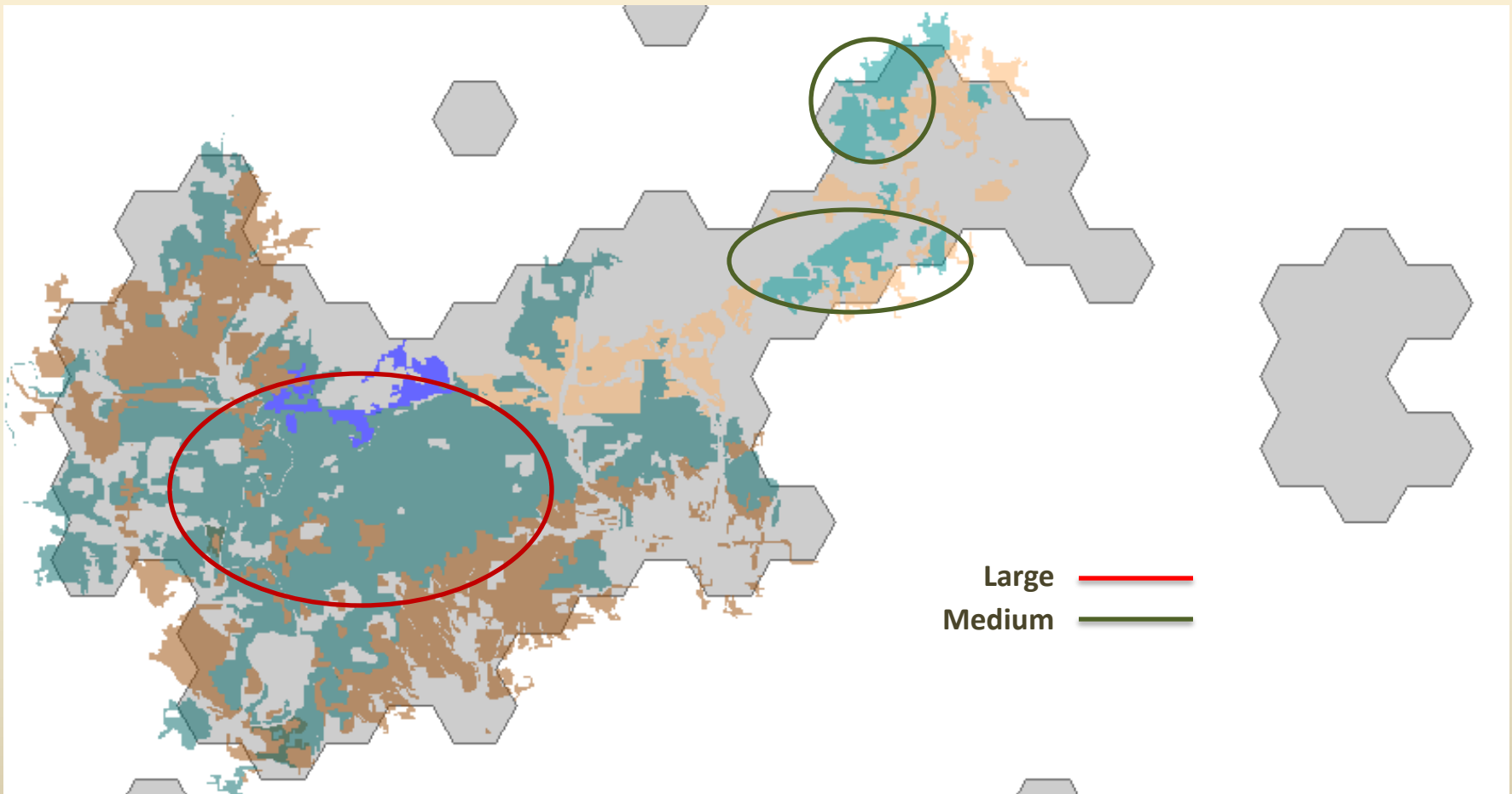


# Building the Network

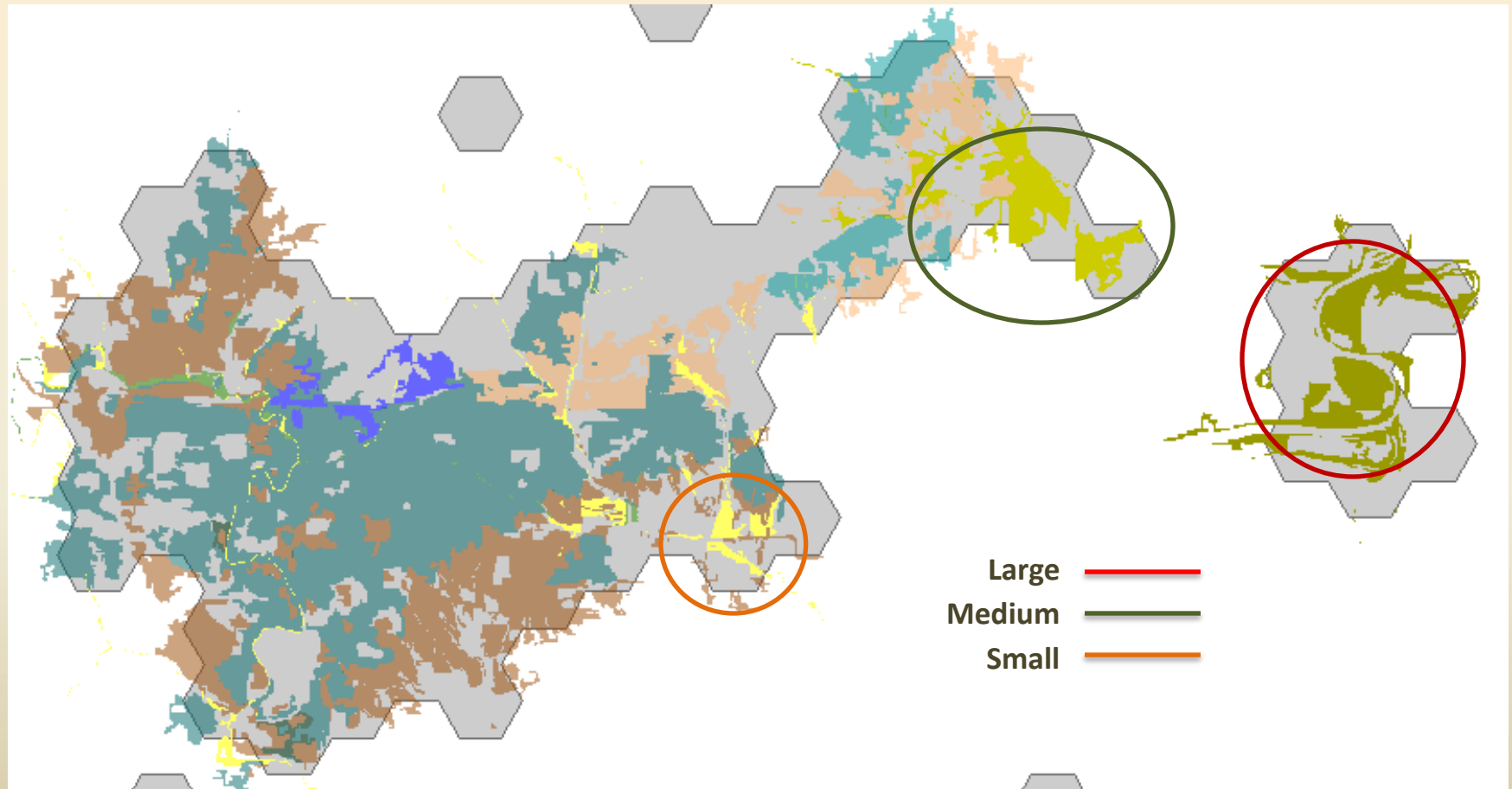
## Western Meadowlark Patches



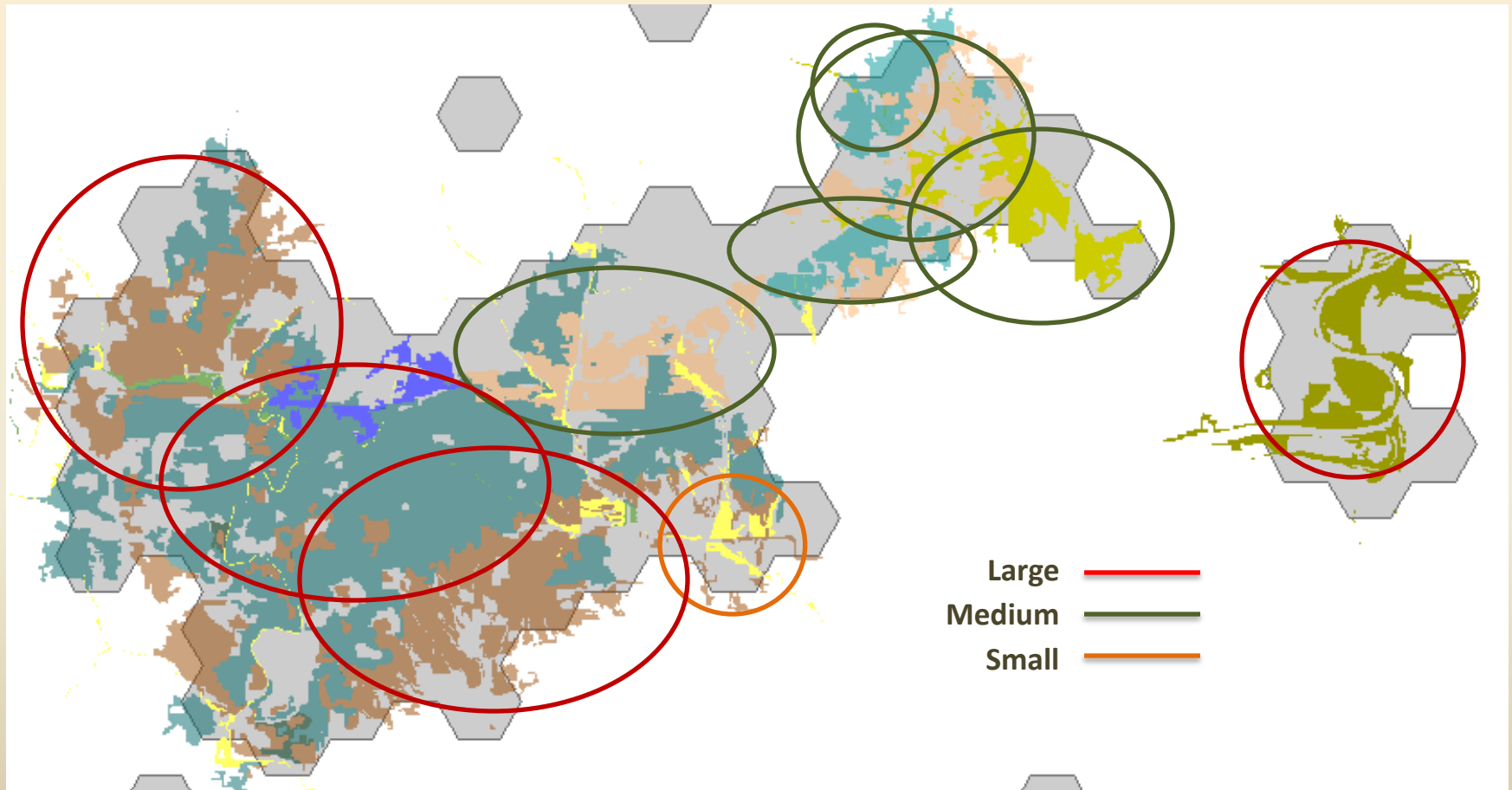
# White-breasted Nuthatch and Western Bluebird Patches



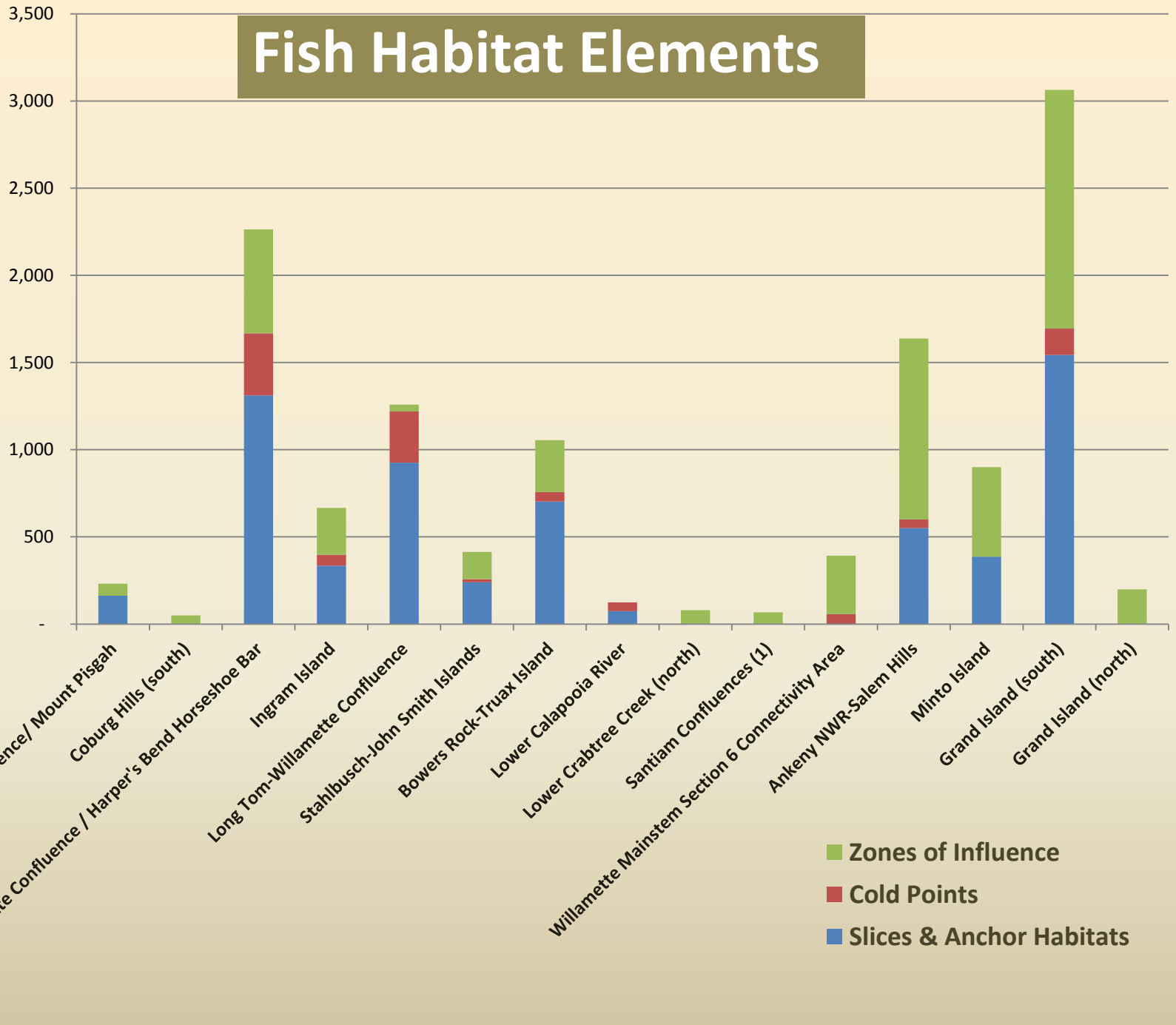
# Building the Network Yellow Warbler Patches



# Building the Network



# Fish Habitat Elements



# Connectivity through COAs

