

# **Linking Mexican Spotted Owl Recovery Guidance and Desired Conditions for Mixed Conifer Forest**



**Shaula Hedwall, U.S. Fish and Wildlife Service  
Joseph L. Ganey, Rocky Mountain Research Station**

# Presentation Outline

- Background
- What do we currently know about owls/forest management
- Revised Recovery Plan Recommendations
- Links with Forest Service Desired Conditions
- Need for additional information



# Background

- **Listed as threatened in 1993 under the ESA, Critical Habitat designated in 2004**
- **Recovery Plan signed in 1995**
- **Recovery Plan Incorporated into Forest Plans by amendment in 1996**
- **Revised Recovery Plan 2012**



# Threats: Then and Now

- **Listing 1993: Even-aged management, lack of regulatory mechanisms**
- **Recovery Plan 1995: Forest management, high-severity wildfire, lack of regulatory mechanisms**
- **Recovery Plan Revision: High-severity wildfire, forest management**

# Key Habitat Components



- Multi-layered canopy with large overstory trees
- Species diversity (conifer and hardwoods)
- Moderate to high canopy closure
- Wide range of tree sizes (“uneven-aged”)
- High levels of large snags and downed woody debris

# a.k.a....Conditions That Make Forest Managers Nervous

- Multi-layered structure can result in fire ladders, crown fire
- Stands with higher tree densities can be more susceptible to insects and pathogens



# Recovery Plan (USDI FWS 1995)

## Recommendations



- Emphasize forest restoration in the pure pine forest
- Treat restricted habitat to create/enhance habitat, reduce fire risk
- Limit treatments in Protected Activity Centers (PACs) until monitoring provides better information

# Recommendations for PAC Treatments

- Recommend thinning trees less than 9 inches DBH
- Recommend avoiding Rx burns in core areas
- Recommend treating 10% PACs in each Recovery Unit and monitoring to inform future treatments





# Managing for Future Owl Habitat (target/threshold)



- Within a sub-set of restricted habitat, recommendation to manage for future nest/roost habitat
- In mixed-conifer, 25% of restricted habitat should be identified as target/threshold habitat.

# What have we learned?

- To date, few treatments have occurred in PACs
- More restricted habitat treatments conducted, but....
- Very little pre- and post-treatment habitat and owl monitoring data available for any of these projects



# Owl Response to Thinning?



- “...territories in which  $\geq 20$  ha of mature conifer forest was altered experienced a 2.5% decline in occupancy probability...” (Seamans and Gutierrez 2007)

# Ecological Forestry\*

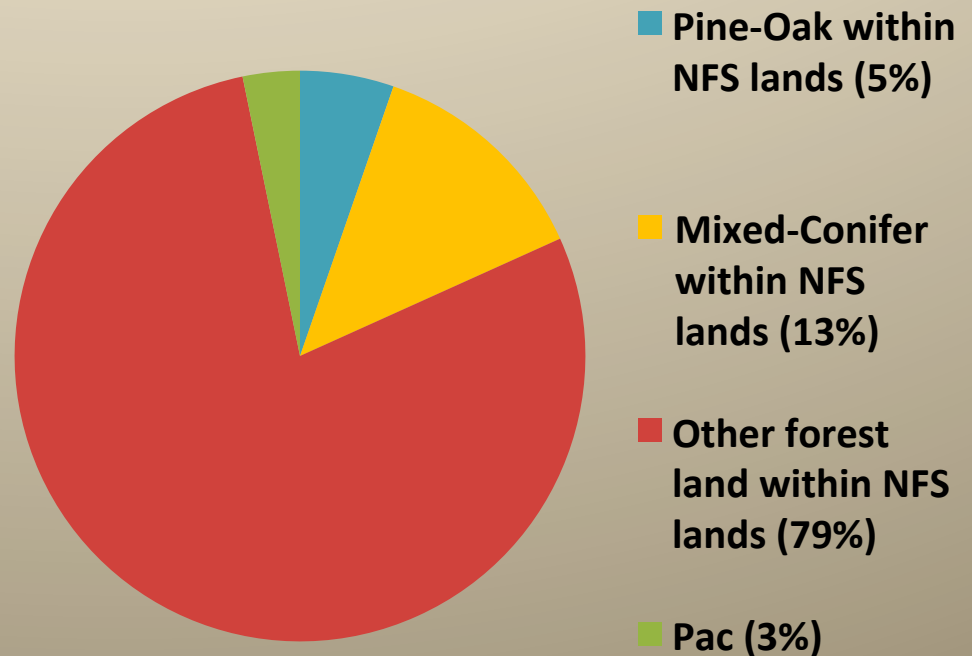


- Retention of structural and compositional elements
- Manipulation to direct forest development
- Identify key structures/ processes (fire!)
- Maintain owl habitat patches or patch clusters

\*Franklin et al. 2007

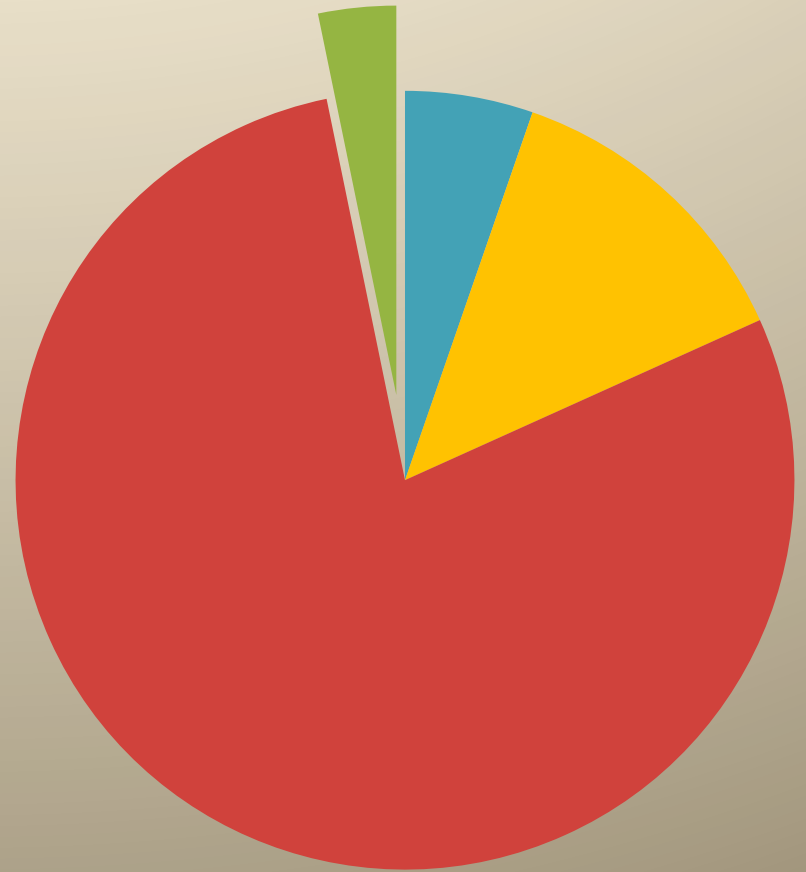
# General Management Recommendations in Revised Recovery Plan (in press)

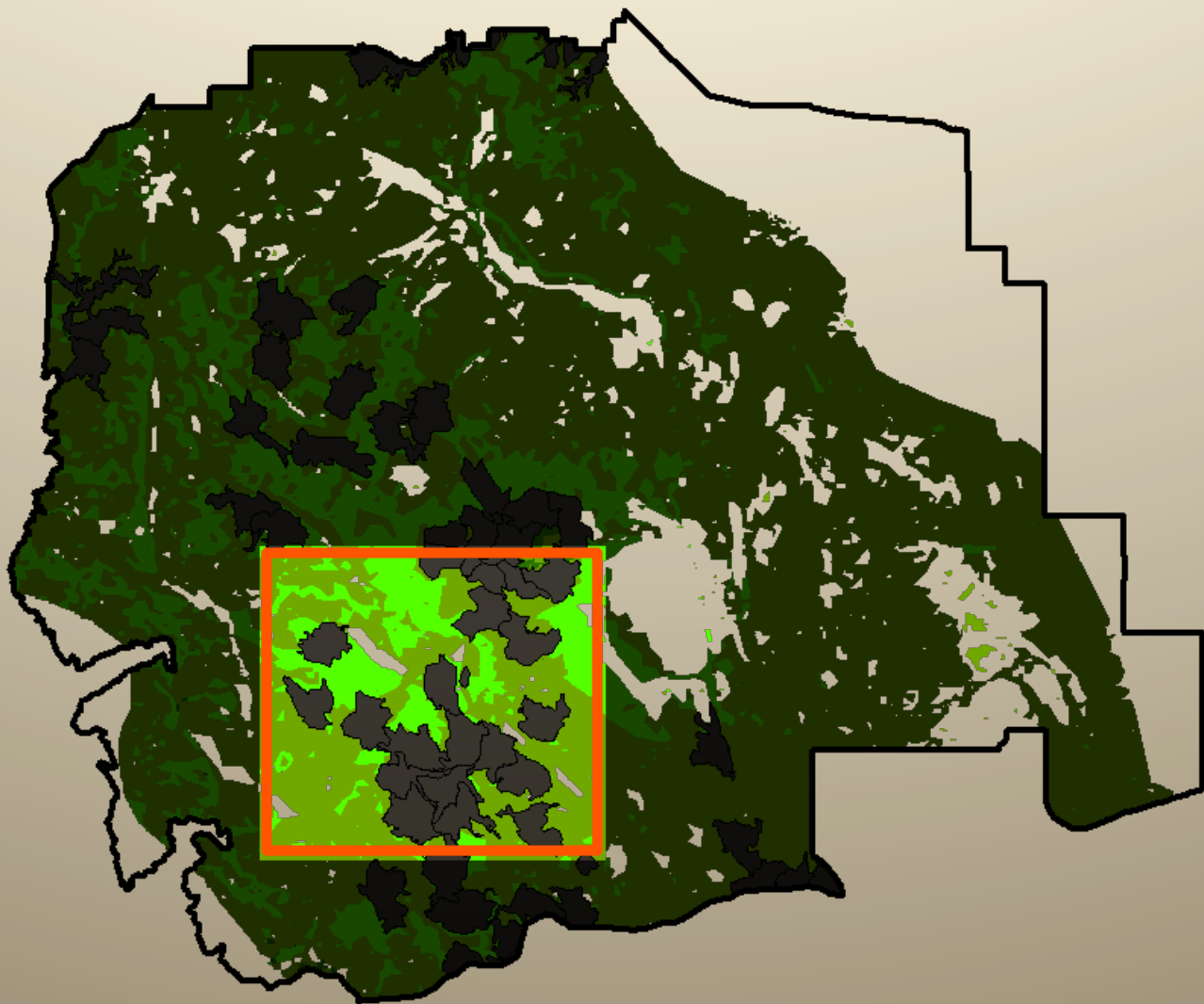
- Protect known territories (PACs)
- Manage for replacement nest/roost habitat
- Other forest and woodland types

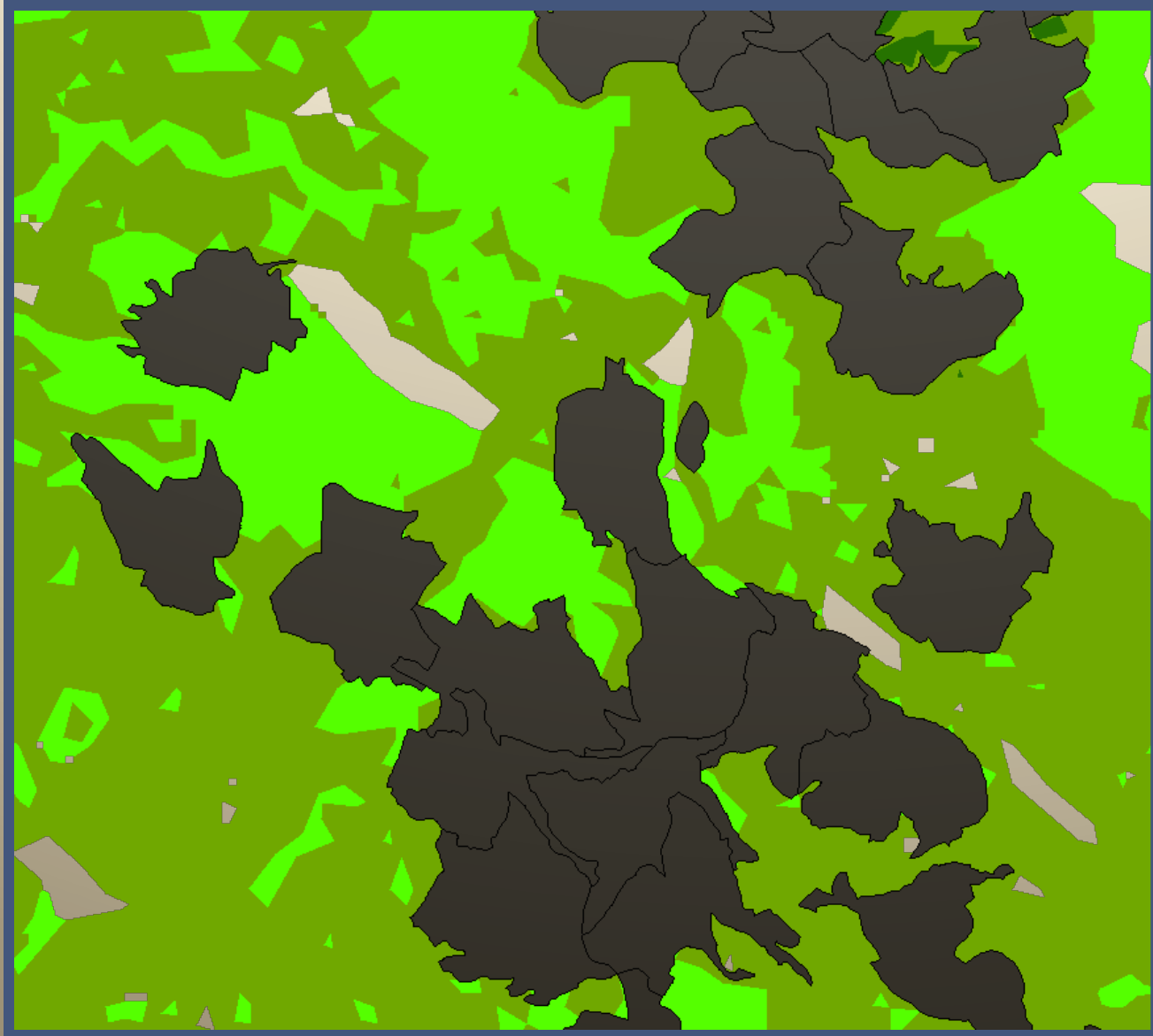


# PAC Recommendations in Revised Recovery Plan

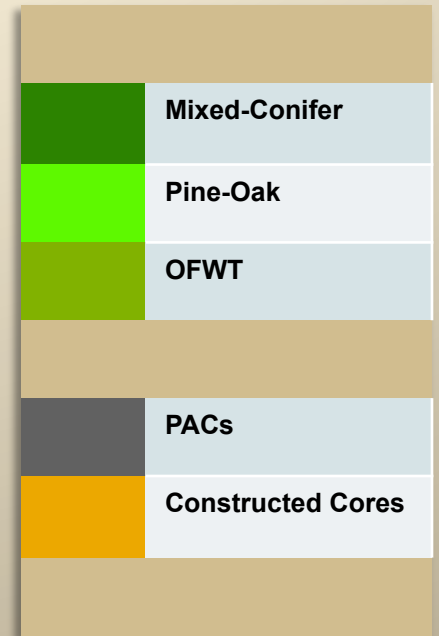
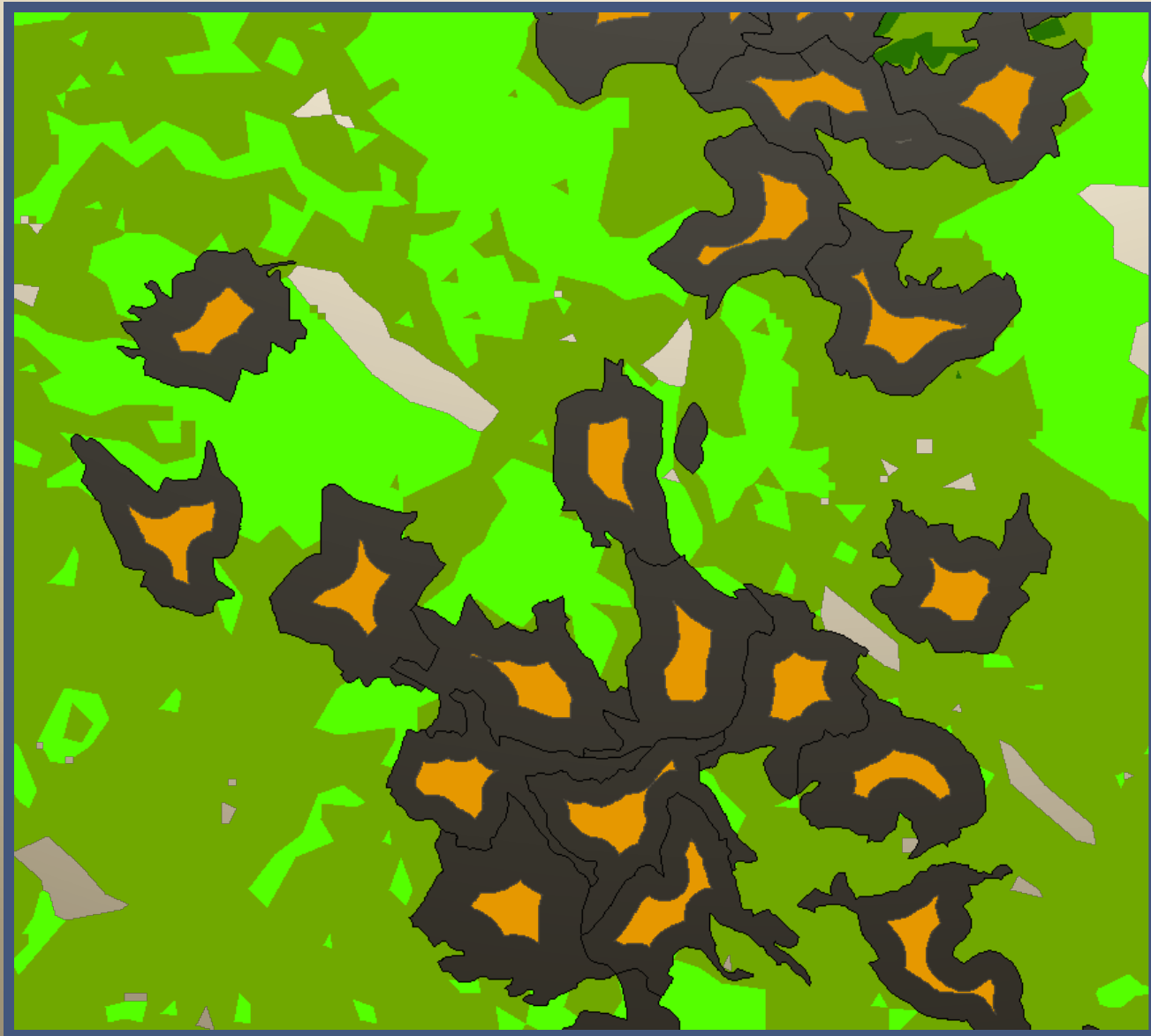
- Delineate ~600 acres around known owl sites
- Delineate ~100-acre nest/roost core within PAC
- Rx fire recommended outside breeding season in PAC
- May thin 20% of PAC area in each Ecological Management Unit

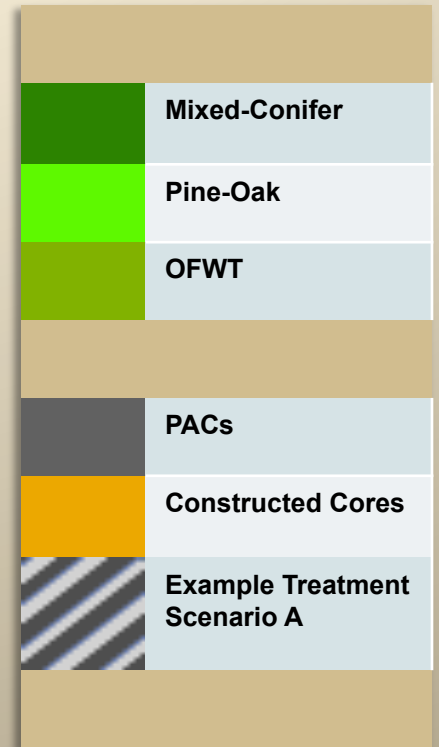
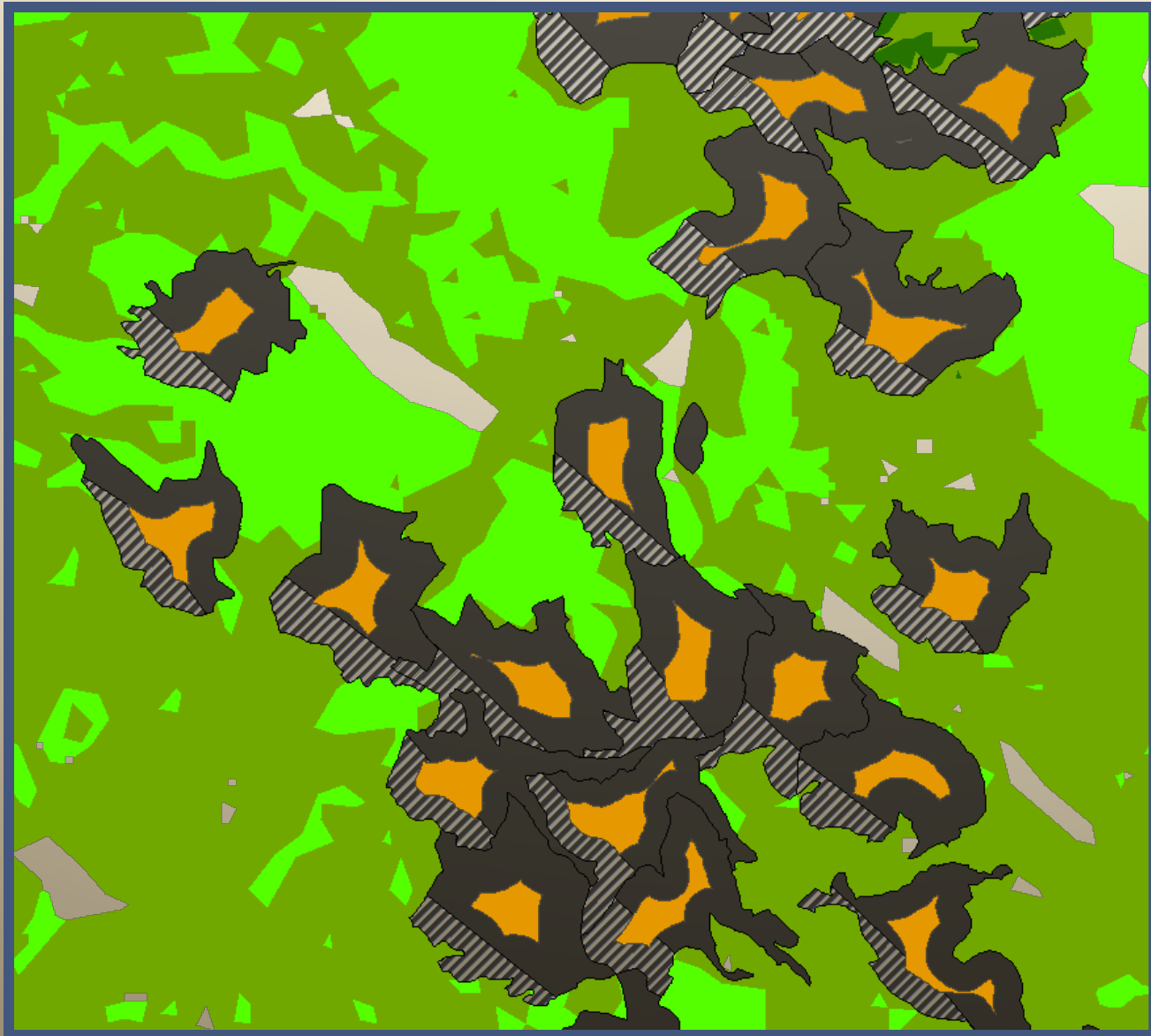


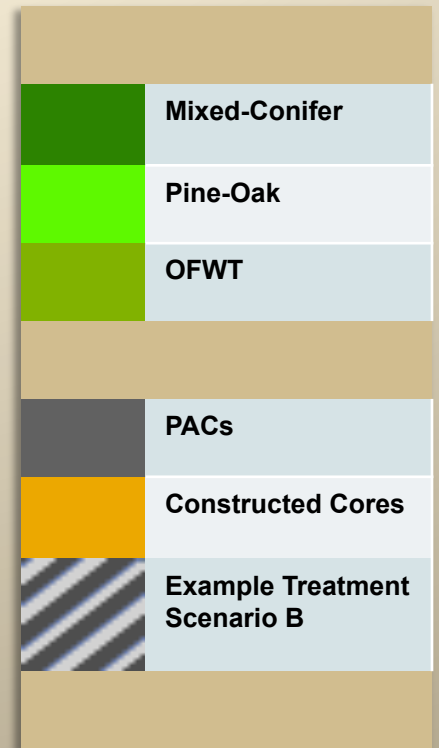
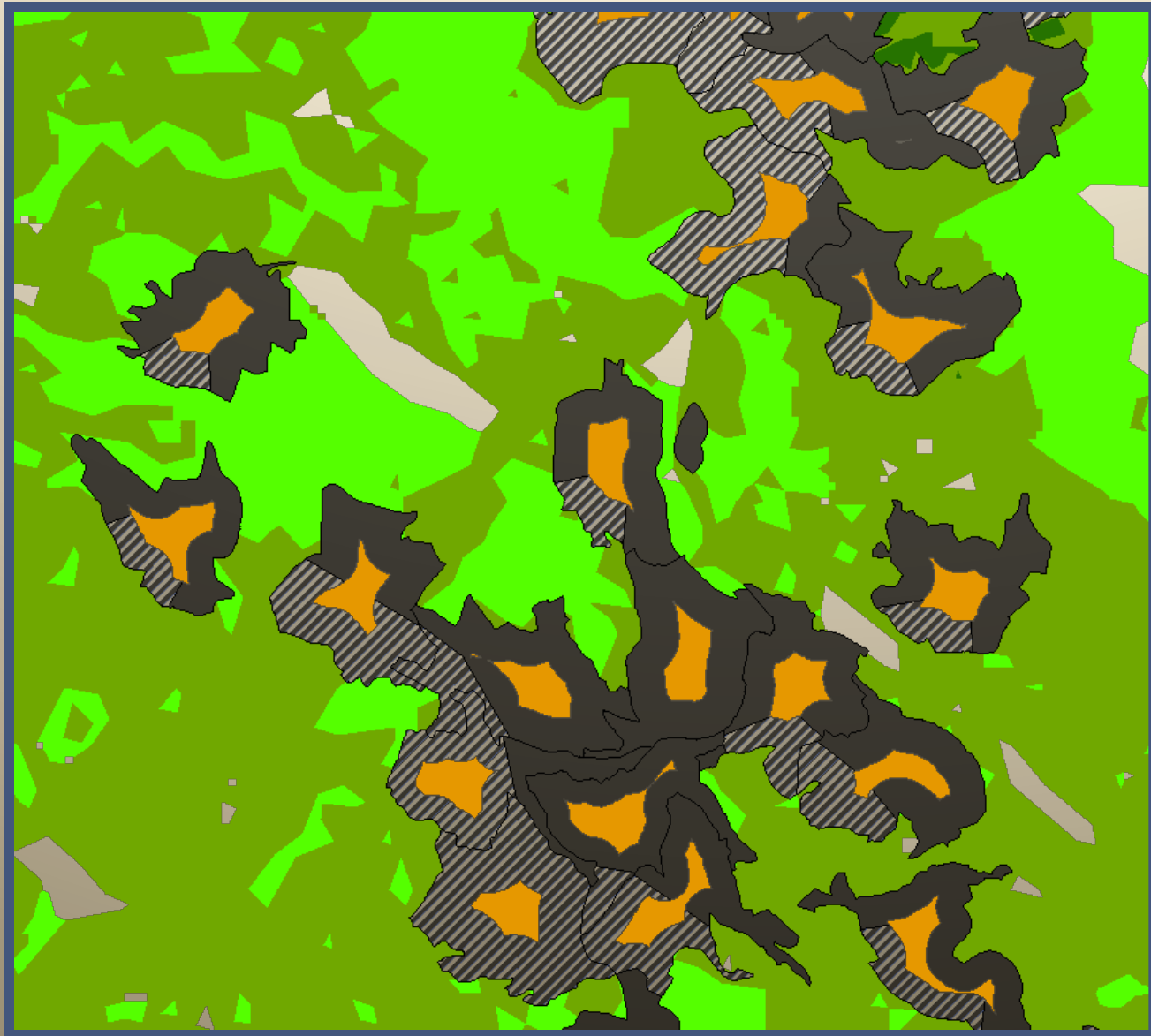












# General Revised RP Recommendations for Forest Management

- Embed high-quality owl habitat patches in a matrix that has been treated
- Embed owl habitat patches where fire refugia may naturally occur
- Focus on creating and enhancing diverse forest structure
- Manage for a range of stand conditions
- Use fire as appropriate
- **MONITOR!!!!!!!!!!**



# **Desired Conditions within PACs and Recovery Nest/Roost Habitat**

- **Diversity of patch size**
- **Horizontal and vertical habitat heterogeneity within patches**
- **Tree species diversity, esp. mix of hardwoods and shade-tolerant spp.**
- **Diverse herbaceous and shrub layer**
- **Openings (0.1 to 2.5 ac)**
- **Minimum canopy cover (60% in MC, 40% in PO)**
- **Diversity of tree sizes, with larger trees contributing >50% of stand BA**

# FS DCs and Revised Recovery Plan Recommendations: Common Ground



- Provide diversity of tree species and age composition
- Diversity of forest spatial characteristics (e.g. openings, patches)
- Manage for biological diversity and natural frequency/level of disturbance

# Challenges



- Scale
- Lack of information
- Cost of treatments, monitoring
- Details, details, details...

# Forest Restoration and Owls

- **Logically, we can assume either:**
  - Patches occupied by owls were rare on the landscape, or
  - Occupied patches were more open
  - Or both?



# Forest Restoration and Owls







- This suggests we could manage for:
  - Fewer patches, or
  - More open patches
- But, where are the thresholds?
  - How much can we open patches?
  - How many patches do we need? How big?
  - How should patches be arranged on the landscape?

# How do we link Desired Conditions and Recovery?

- Integrating management of owl habitat with landscape-scale restoration is a major challenge
- However, planning at the landscape scale may be key



# Revised Mexican Spotted Owl Management Guidelines

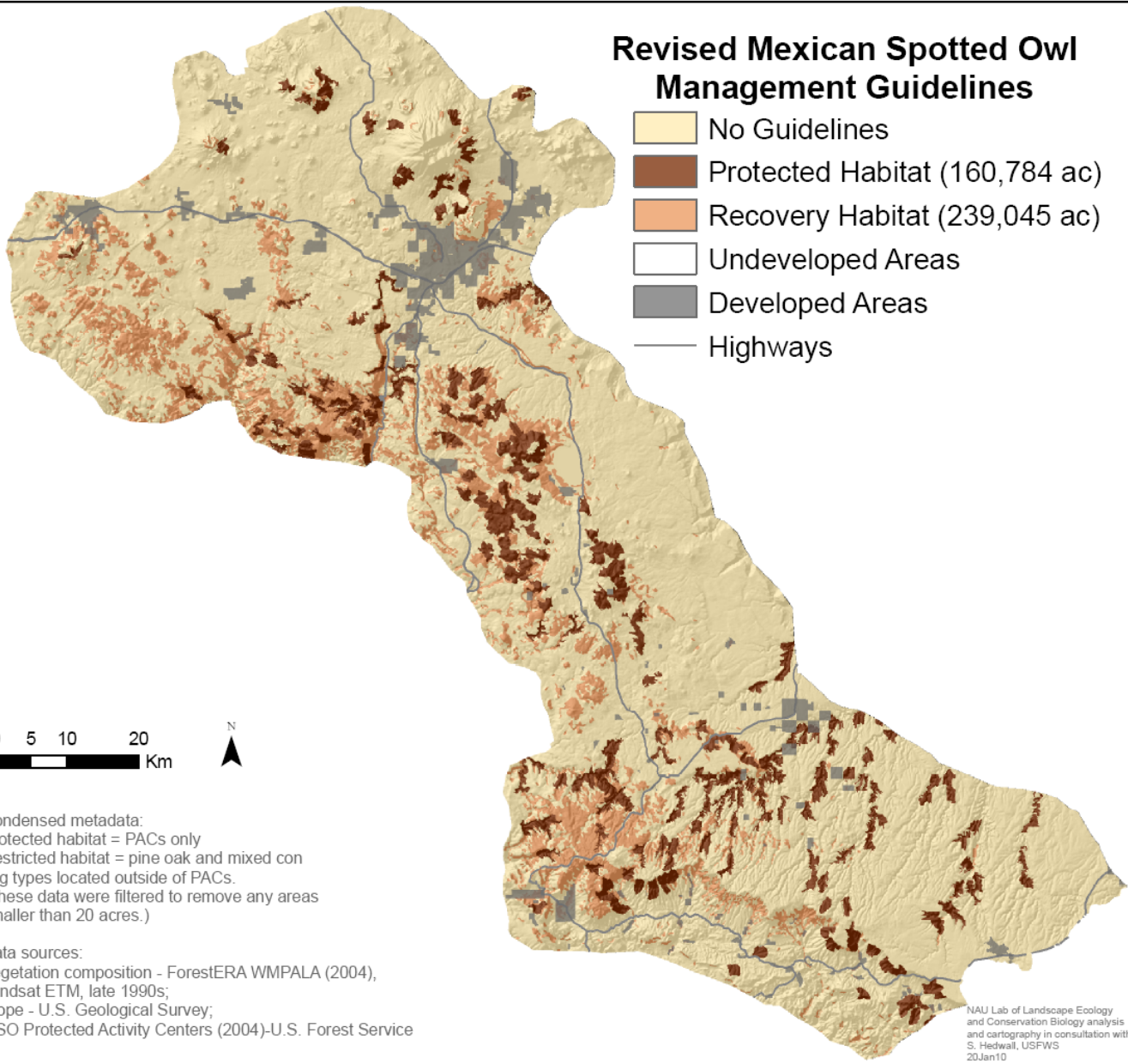
-  No Guidelines
-  Protected Habitat (160,784 ac)
-  Recovery Habitat (239,045 ac)
-  Undeveloped Areas
-  Developed Areas
-  Highways



Condensed metadata:  
Protected habitat = PACs only  
Restricted habitat = pine oak and mixed con  
veg types located outside of PACs.  
(These data were filtered to remove any areas  
smaller than 20 acres.)

Data sources:  
Vegetation composition - ForestERA WMPALA (2004),  
Landsat ETM, late 1990s;  
Slope - U.S. Geological Survey;  
MSO Protected Activity Centers (2004)-U.S. Forest Service

NAU Lab of Landscape Ecology  
and Conservation Biology analysis  
and cartography in consultation with  
S. Hedwall, USFWS  
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# Implementation and Need for Additional Information

- We cannot move forward without learning from what we are doing. Research is needed to understand how thinning and fire affects owls.
- If PACs are treated, it should be within an adaptive management framework.
- We need to determine how we collectively will conduct rigorous, scientifically-based monitoring.
- Monitoring should be dual-faceted: effectiveness and overall population monitoring needed.

