

A Conceptual Approach to Prioritizing Landscapes for Fuels Treatments in Northern Spotted Owl Habitats



Acknowledgements

A photograph of a brown and white spotted owl perched on a mossy branch in a forest. The owl is the central focus, looking slightly to the left. The background is a soft-focus green forest with some blue light spots. The text 'Acknowledgements' is overlaid in large, bold, orange letters at the top.

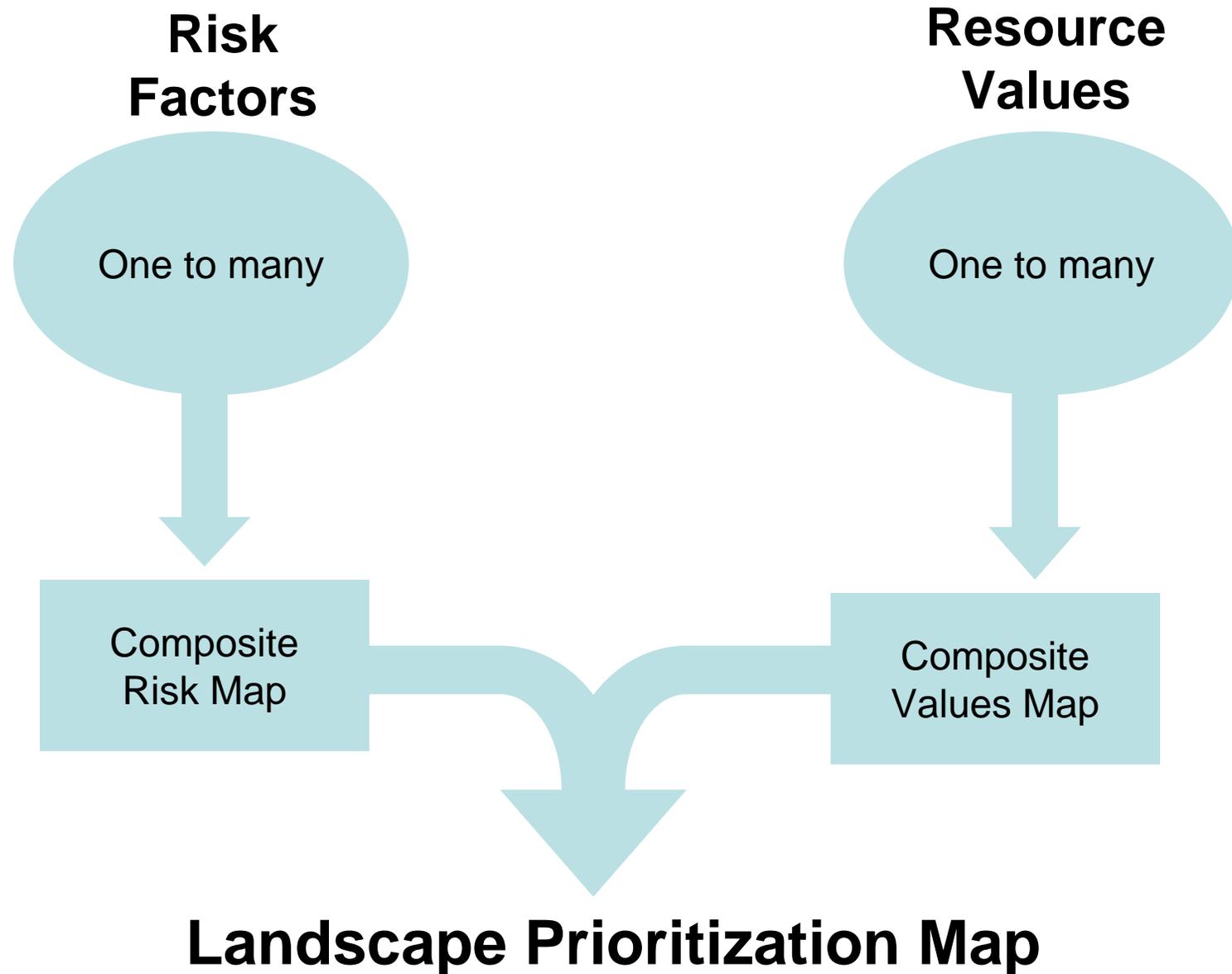
Scott Center
Cindy Donegan
Lynn Gemlo

Problem Statement

The paradox facing land managers today is the need to treat northern spotted owl habitat in order to save it (Agee 1992).

To achieve this, we need to identify priority areas for reducing the risk of stand replacement wildfires in areas with high habitat values.

Conceptual Model



Northern Spotted Owl and the Northwest Forest Plan



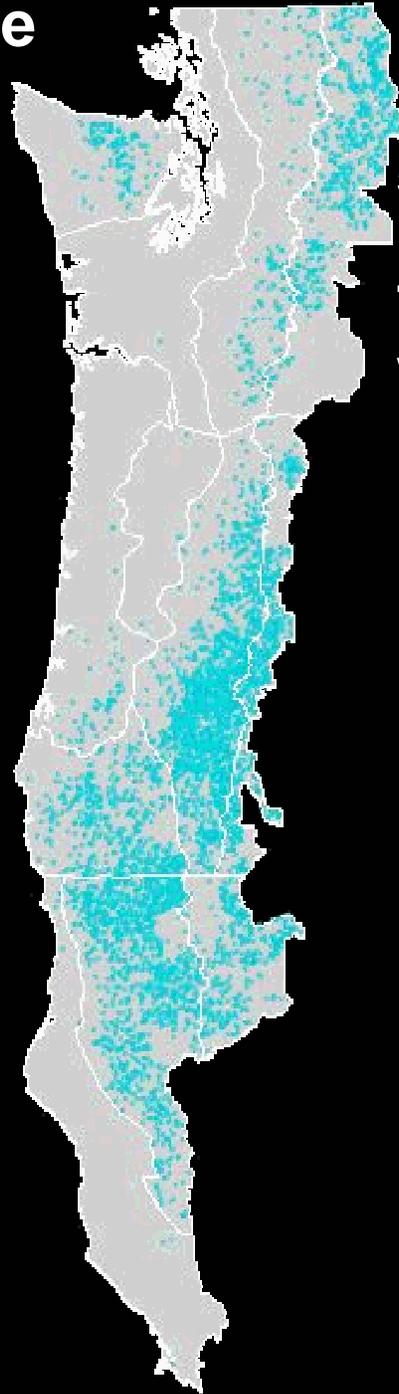
- 18.1 million acres of habitat capable Federal land
- 9.3 million acres of habitat
- Declining populations
- Habitat at risk



Lightning Ignited Wildfire during the First Decade (1994-2003)



Around 13,200 wildfires
were recorded on Federal
lands, burning about 1.7
million acres

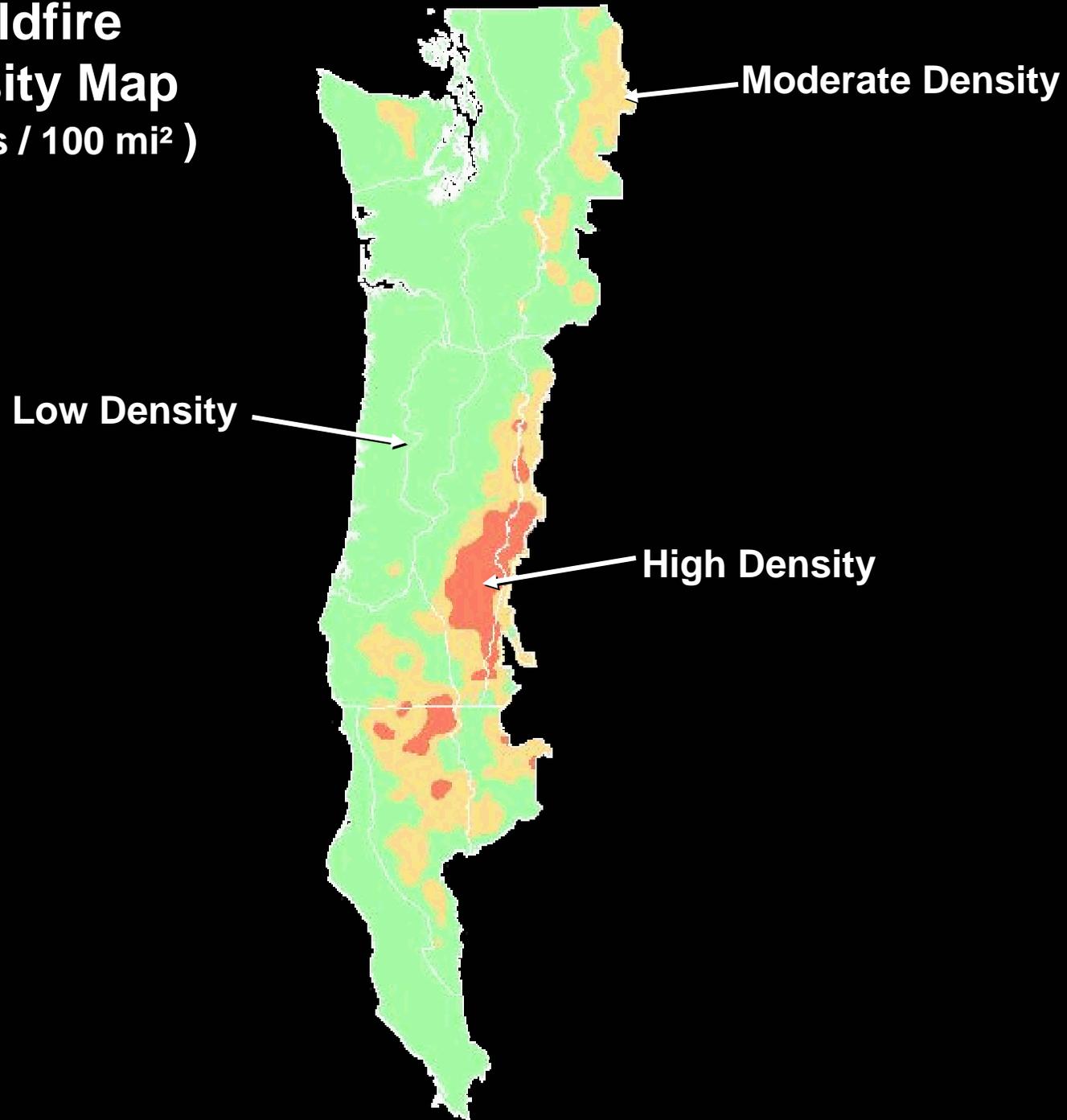


50% were caused by lightning

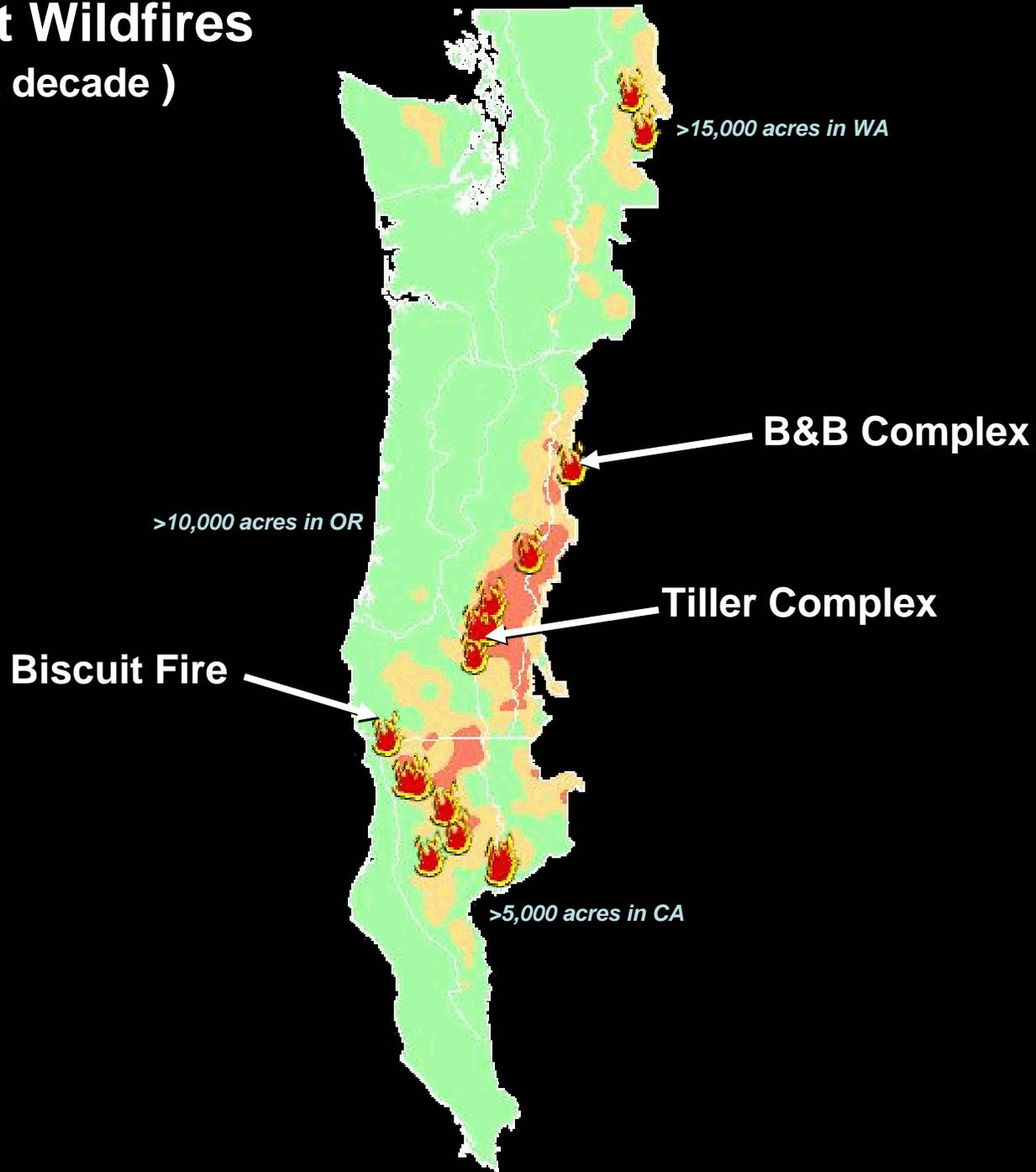
75% of the total area burned
was the result of lightning



Wildfire Density Map (# Fires / 100 mi²)

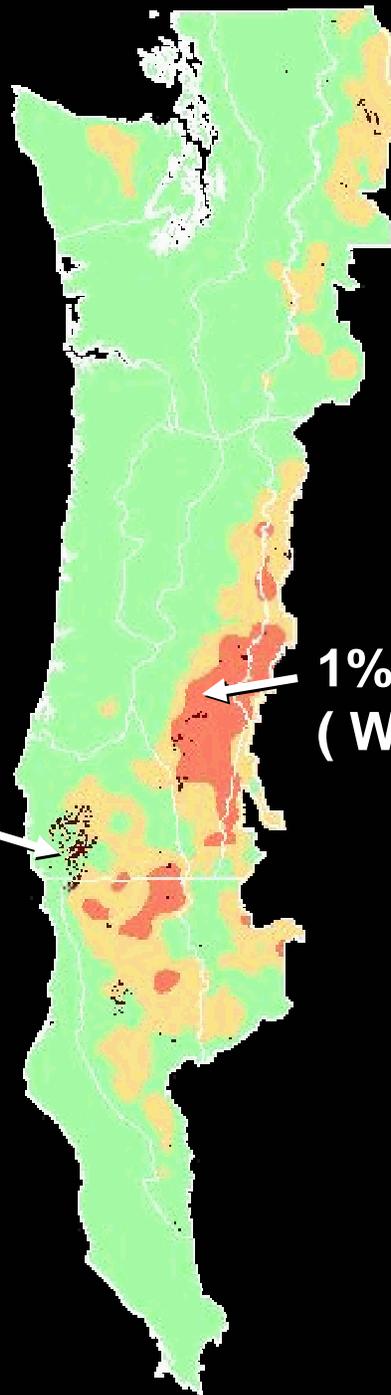


Largest Wildfires (first decade)



**Resulting in
Loss of Habitat
(first decade)**

**7% Habitat Loss
(Klamath)**



**1% Habitat Loss
(East Cascades)**

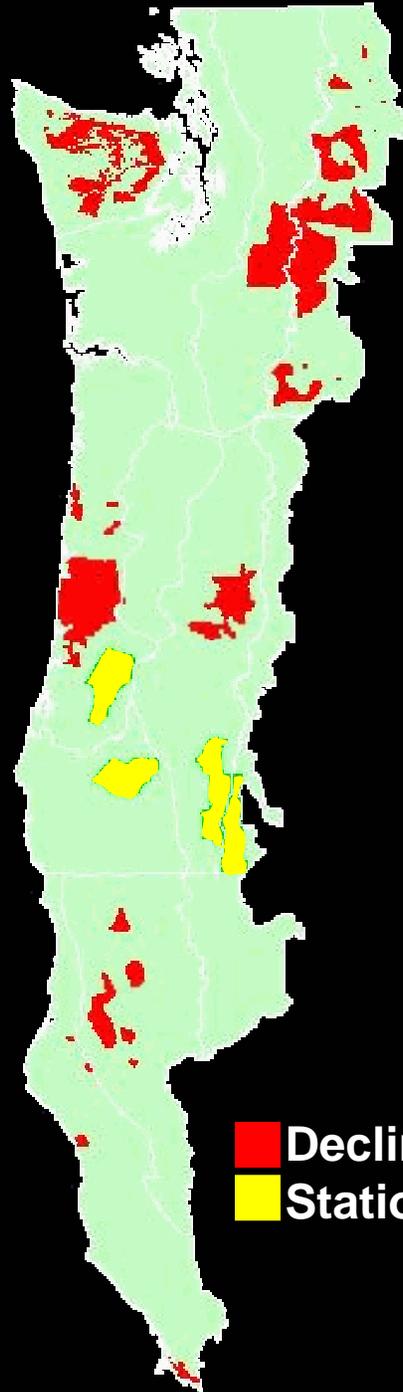
**1% Habitat Loss
(West Cascades)**

**230,000 acres of habitat
were lost range wide to
wildfire in the 1st decade.**

**About a 1.3% decrease
across the range.**

**About 5x as much than
was lost from clearcut
timber harvesting.**

Spotted Owl Population Trends (Anthony et al. 2005)



Declining
Stationary

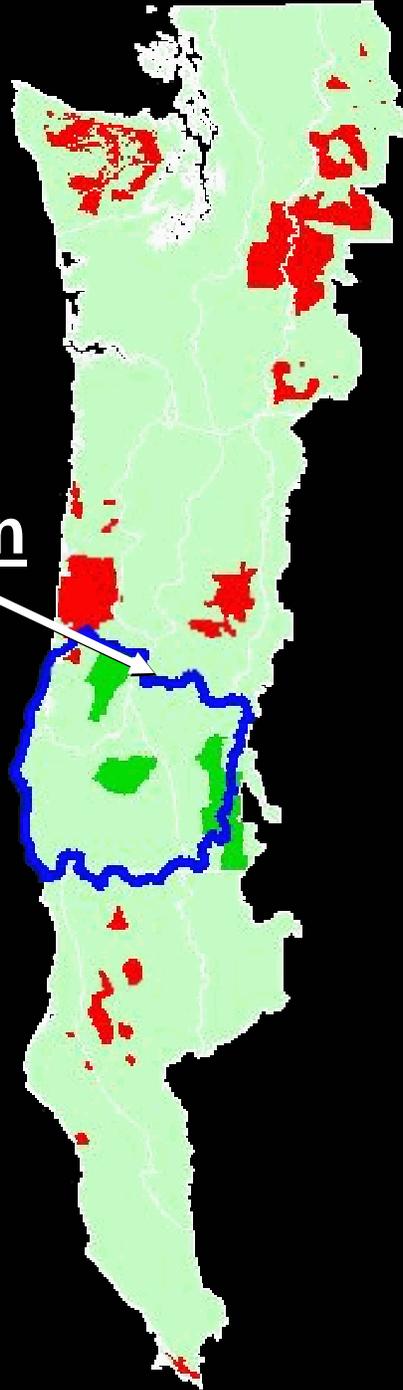
NSO Demography Areas



Conceptual Landscape Analysis Area

Southwestern Oregon

- Stationary populations
- Active wildfire history



Analysis Area Location Map

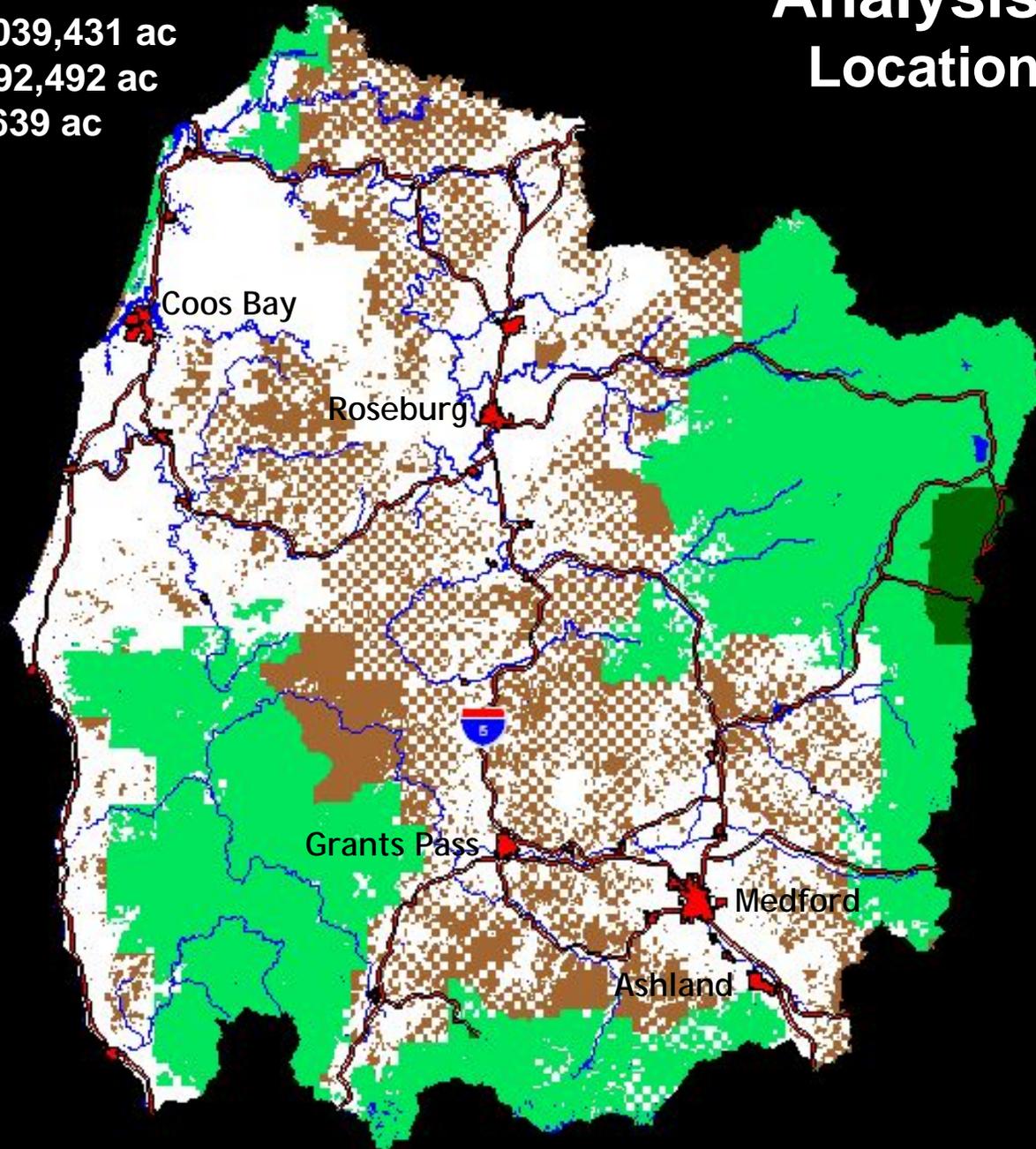
**Southern Oregon
Coastal Basin
(HUC 3)**

**8.2 million total acres
41% Federal land**



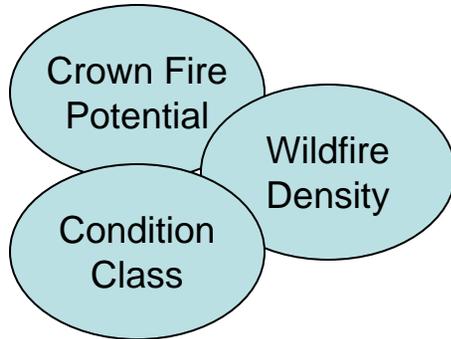
Analysis Area Location Map

- USFS = 2,039,431 ac
- BLM = 1,292,492 ac
- NPS = 36,639 ac

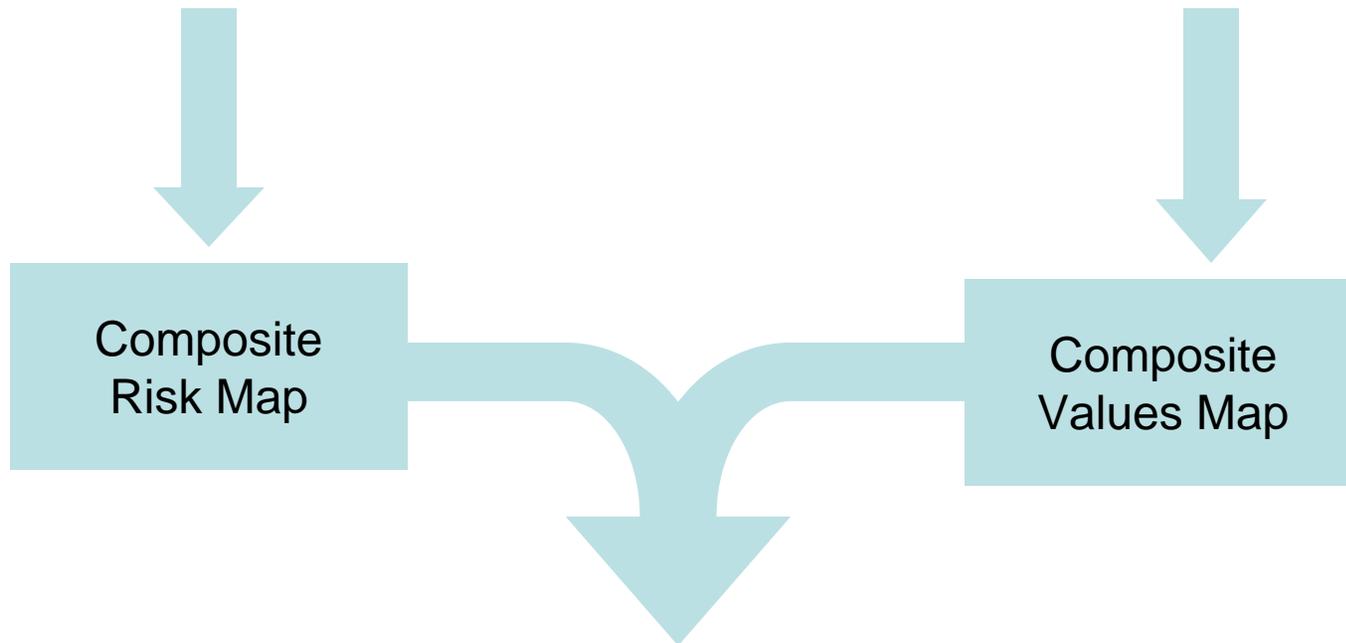
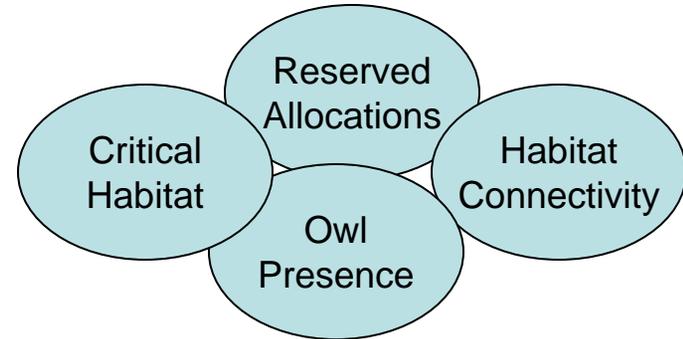


Conceptual Model

Wildfire Elements



Spotted Owl Elements



Landscape Prioritization Map

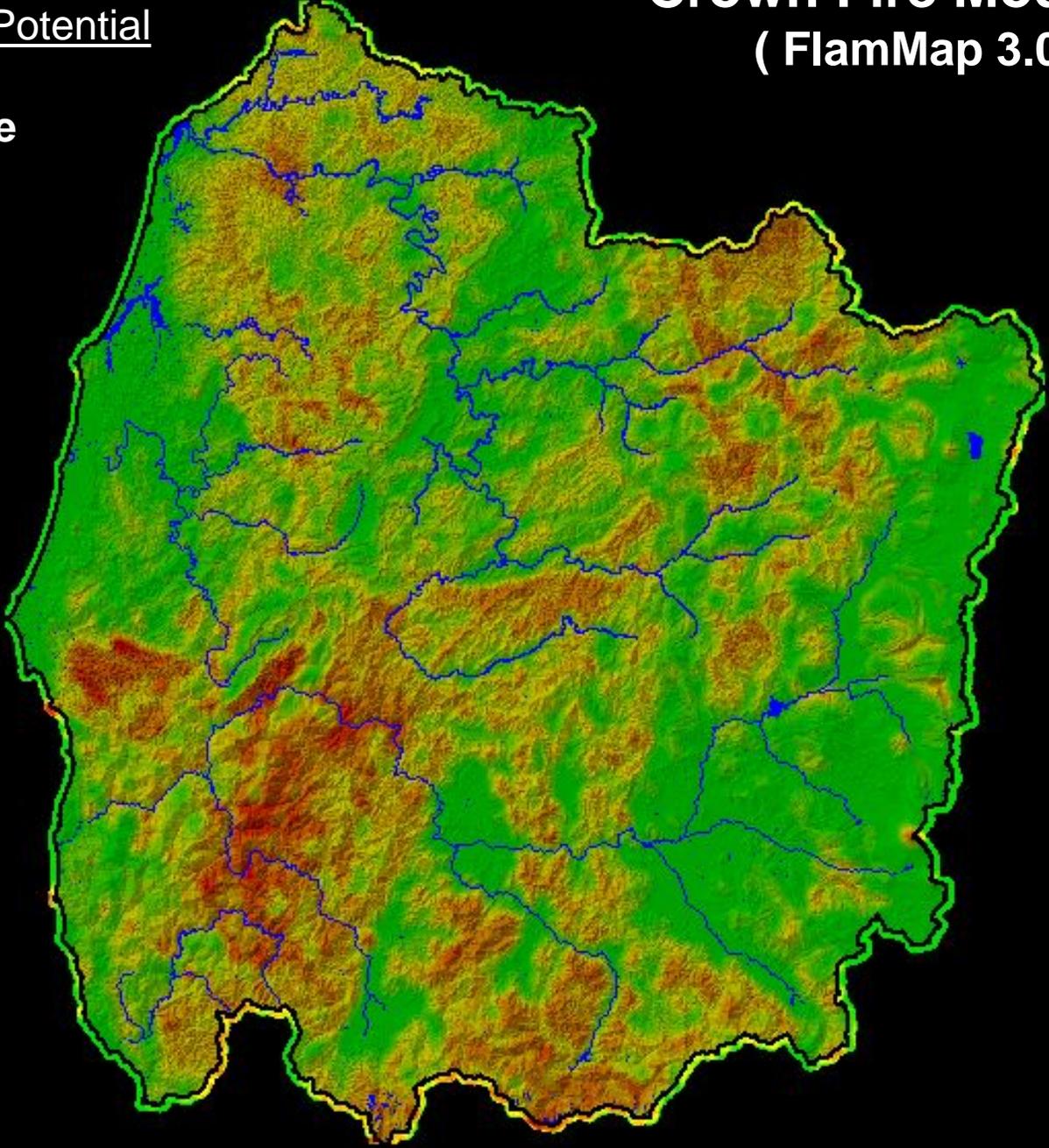
A photograph of a wildfire in a forest. A road with yellow double lines curves through the foreground. The fire is intense, with bright orange and yellow flames rising from the forest floor, surrounded by thick, dark smoke that fills the upper portion of the image. The trees are green, and the overall scene is dramatic and dangerous.

WILDFIRE ELEMENTS

Crown Fire Modeling (FlamMap 3.0)

Crown Fire Potential

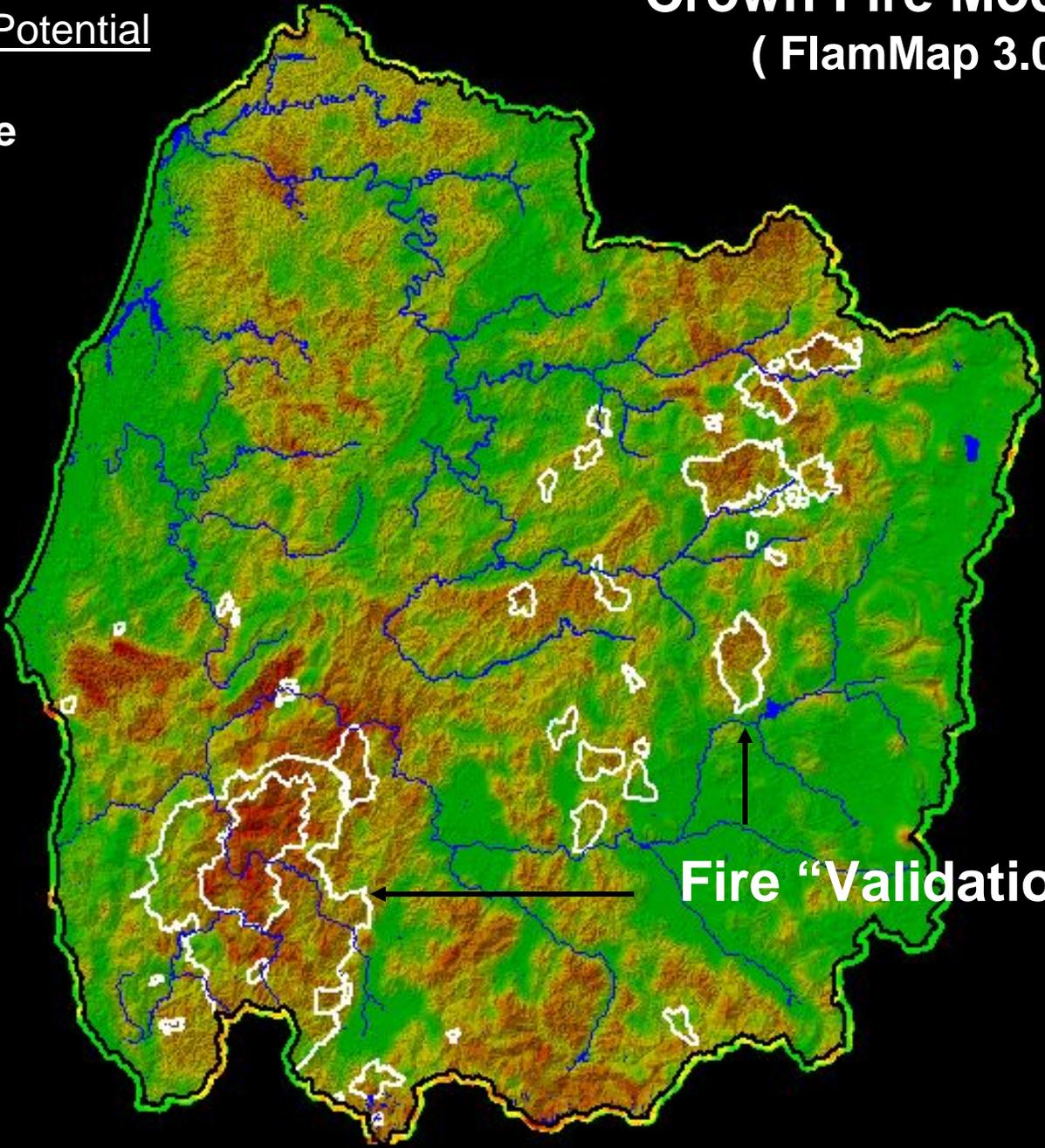
- High
- Moderate
- Low



Crown Fire Modeling (FlamMap 3.0)

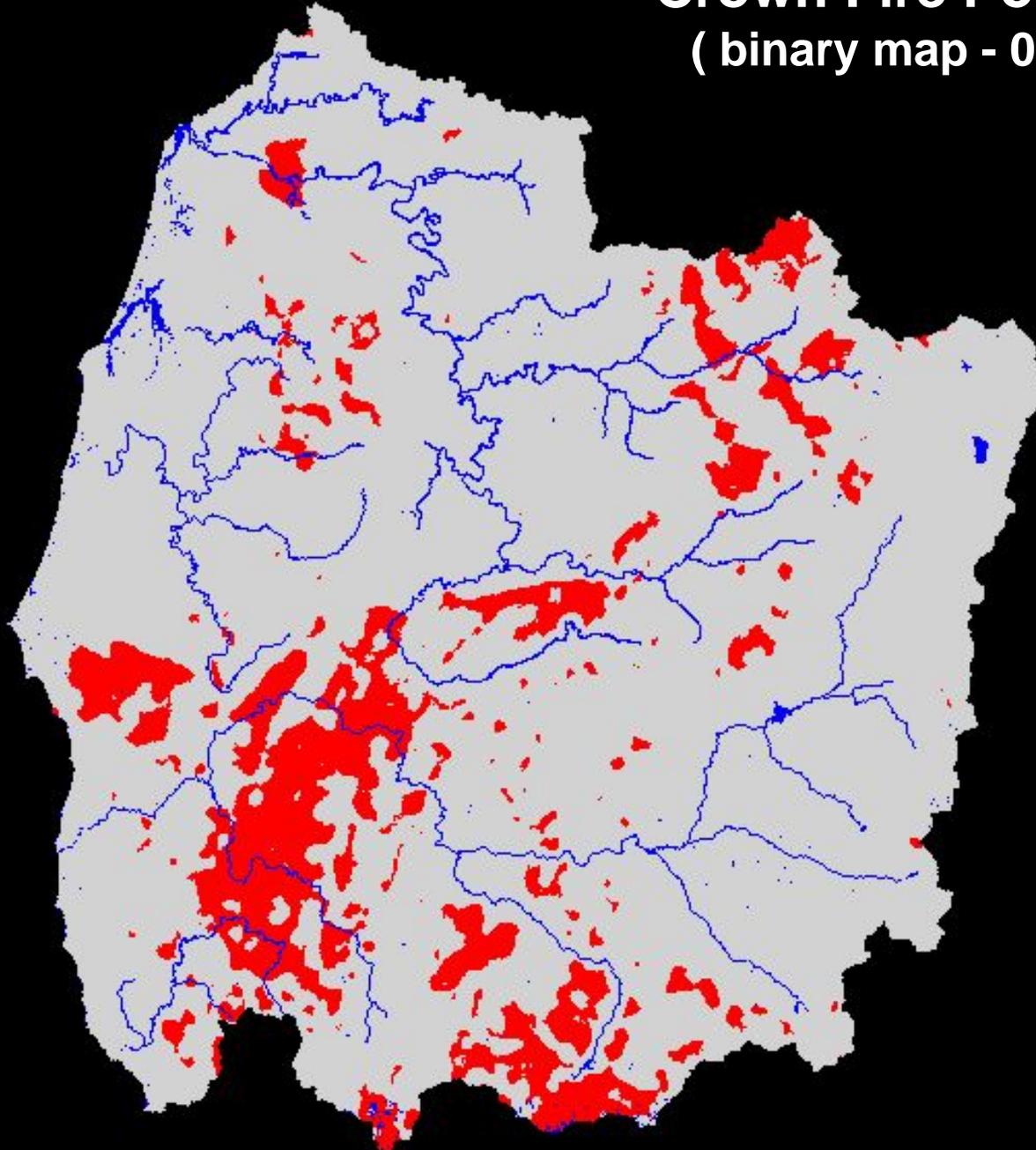
Crown Fire Potential

- High
- Moderate
- Low

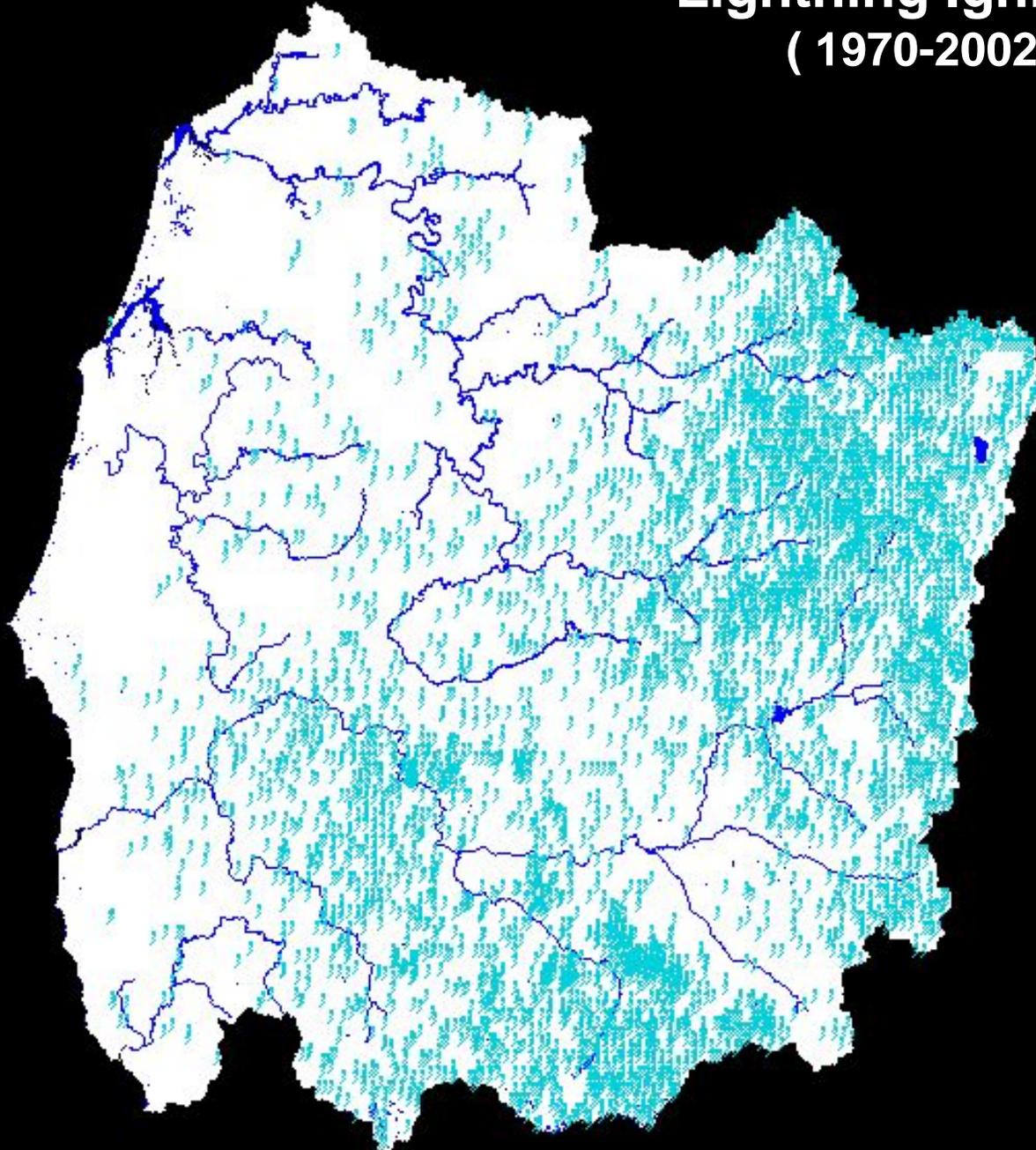


Fire "Validation"

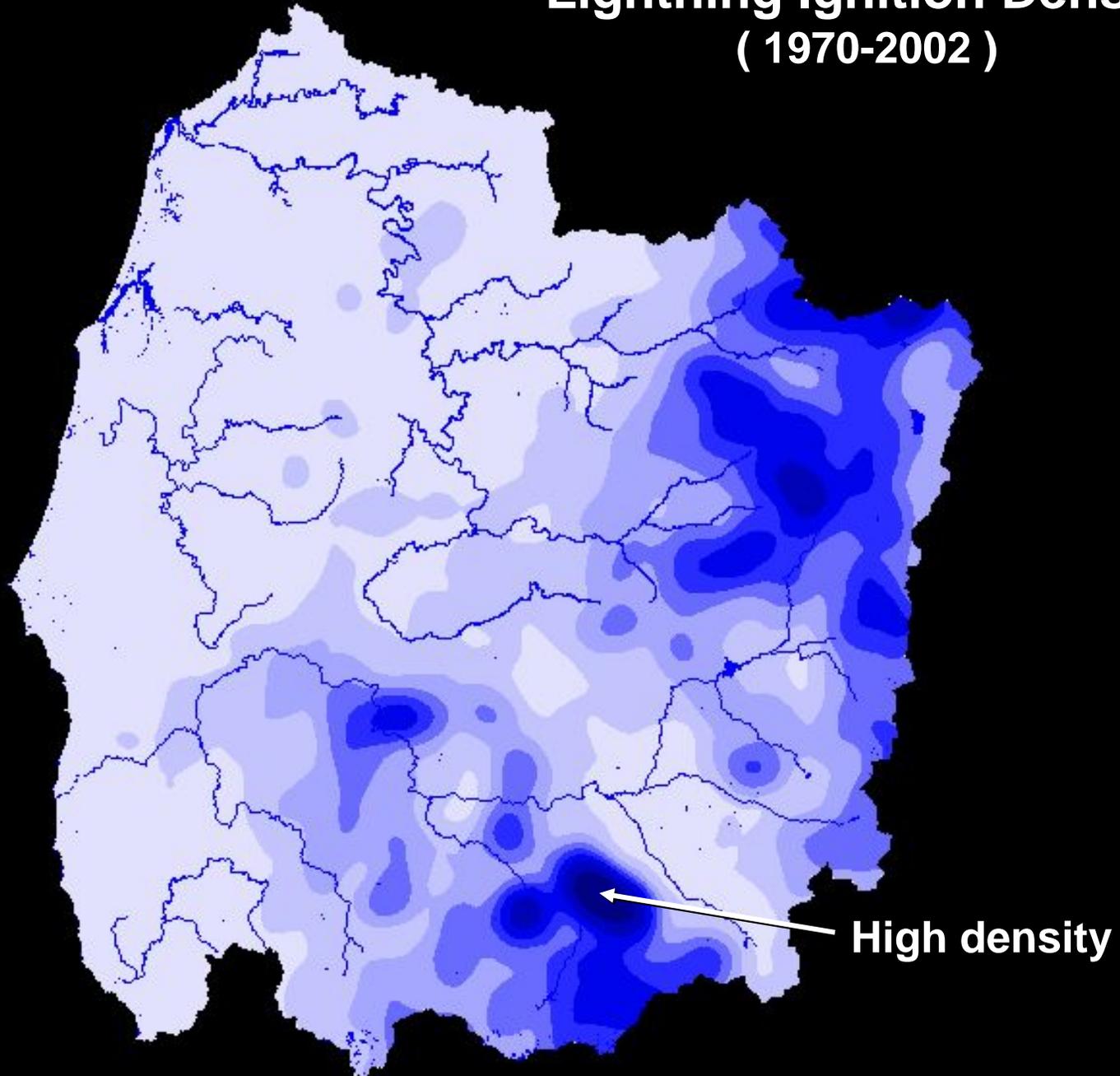
Crown Fire Potential (binary map - 0 or 1)



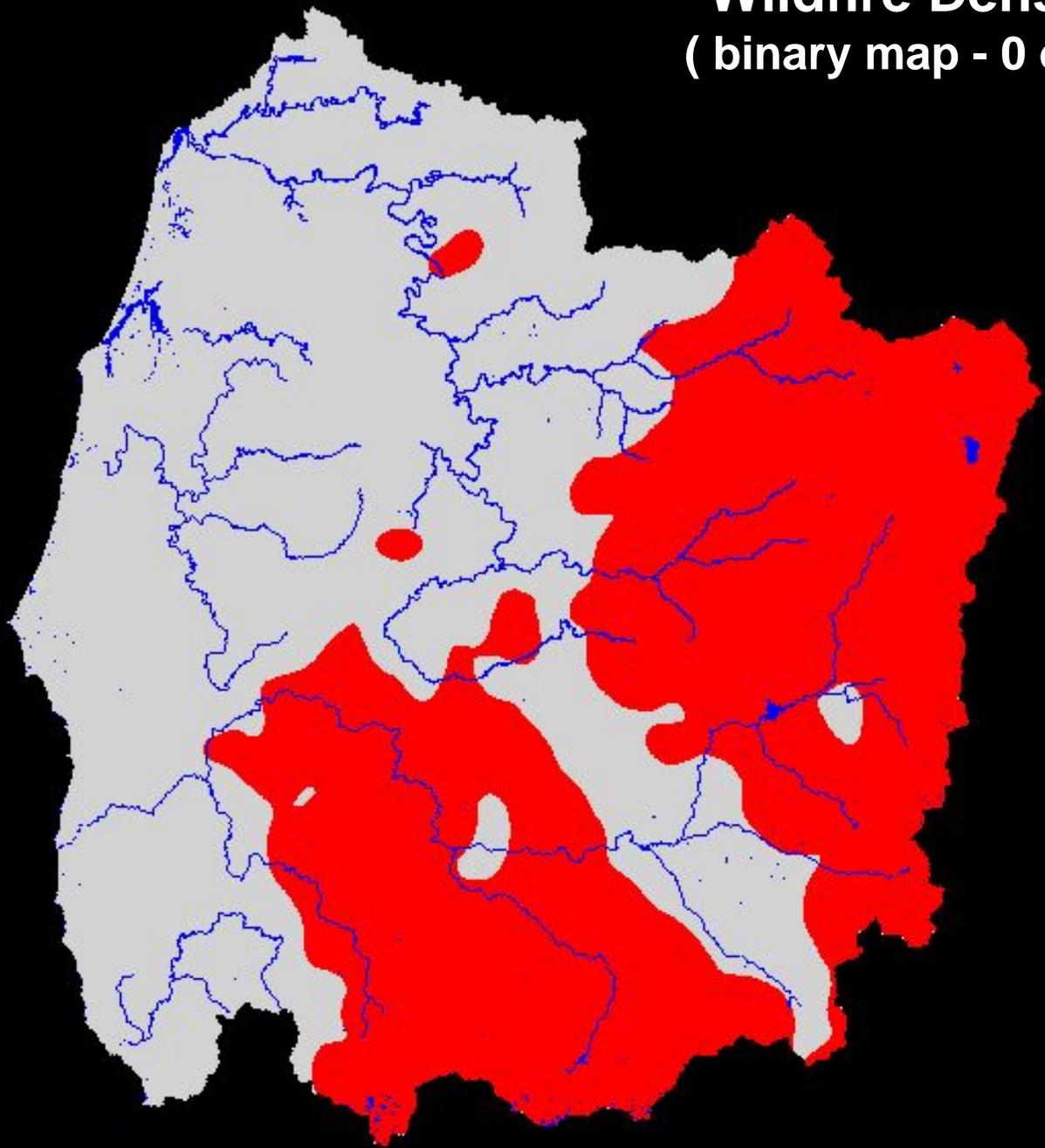
Lightning Ignitions (1970-2002)



Lightning Ignition Density (1970-2002)



Wildfire Density (binary map - 0 or 1)

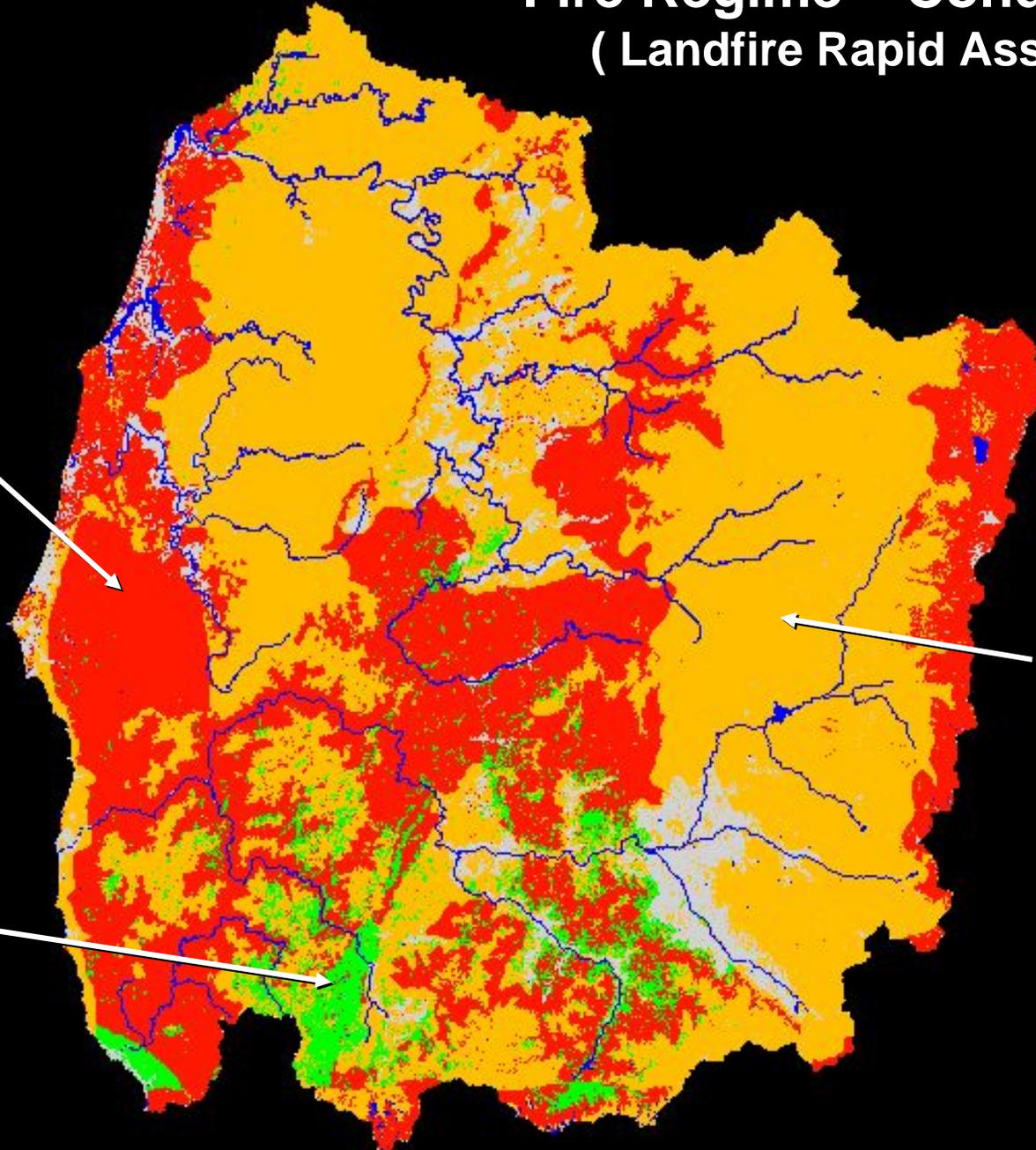


Fire Regime – Condition Class (Landfire Rapid Assessment)

Condition
Class 3

Condition
Class 2

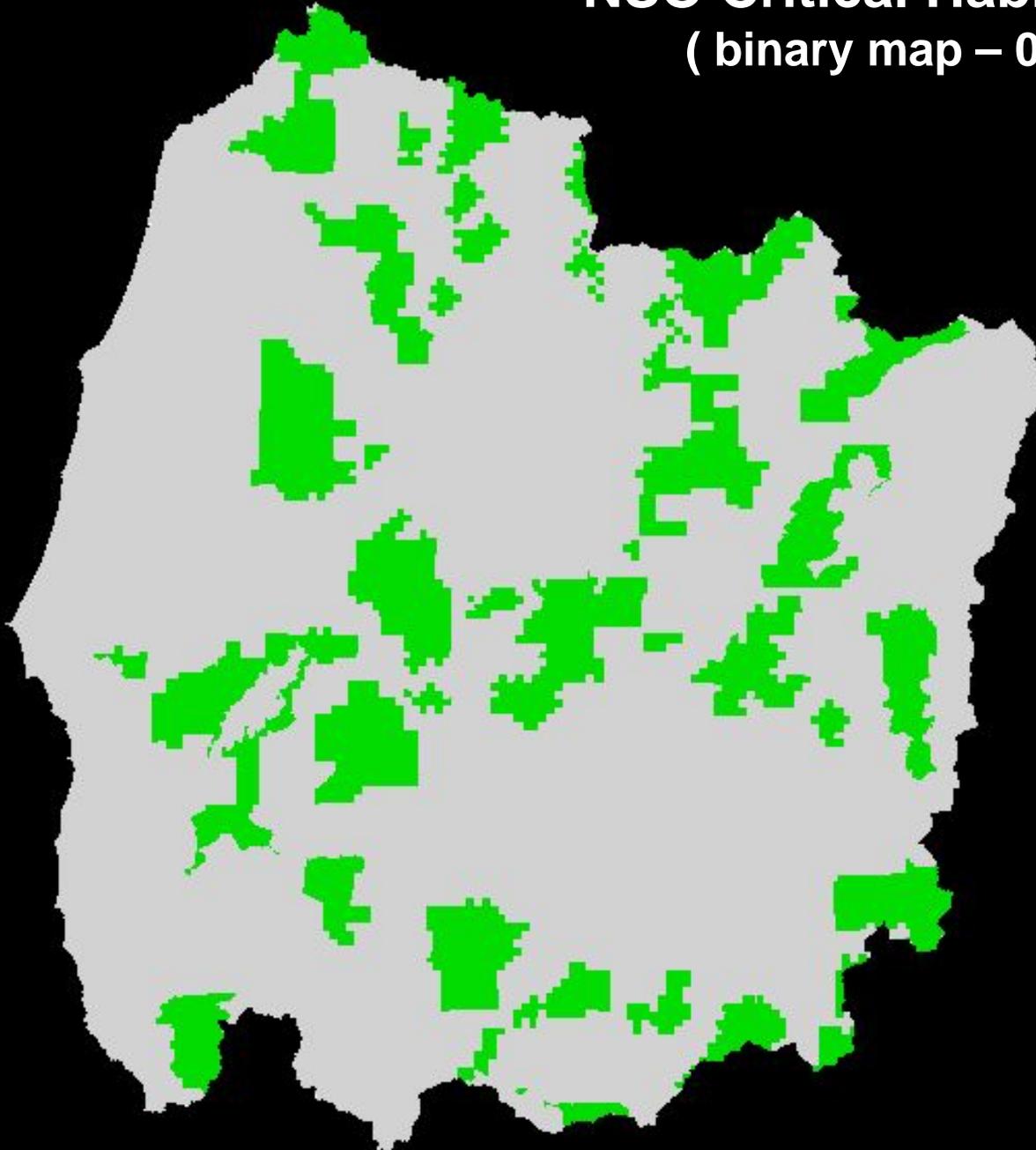
Condition
Class 1



SPOTTED OWL ELEMENTS

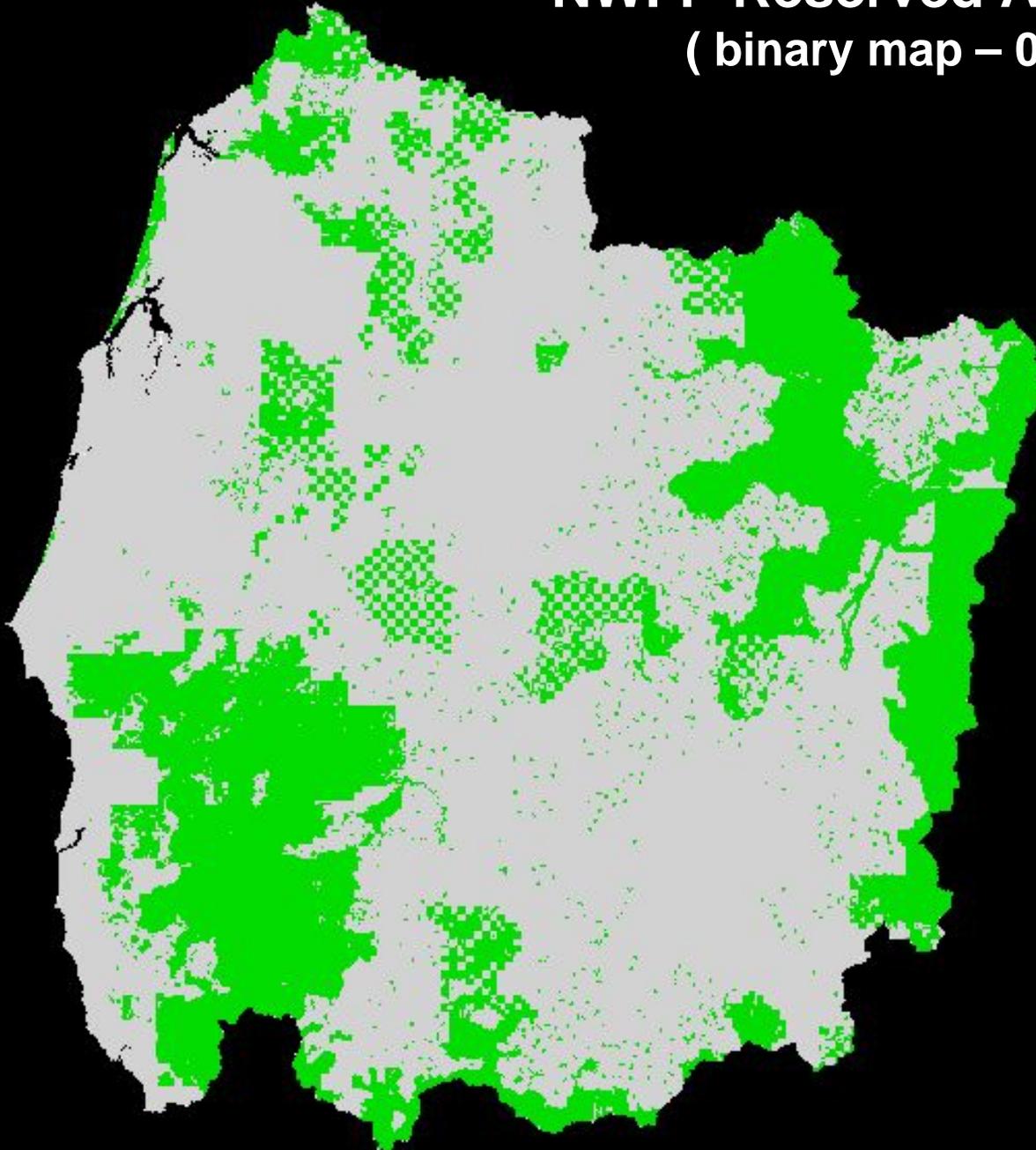


NSO Critical Habitat Units (binary map – 0 or 1)



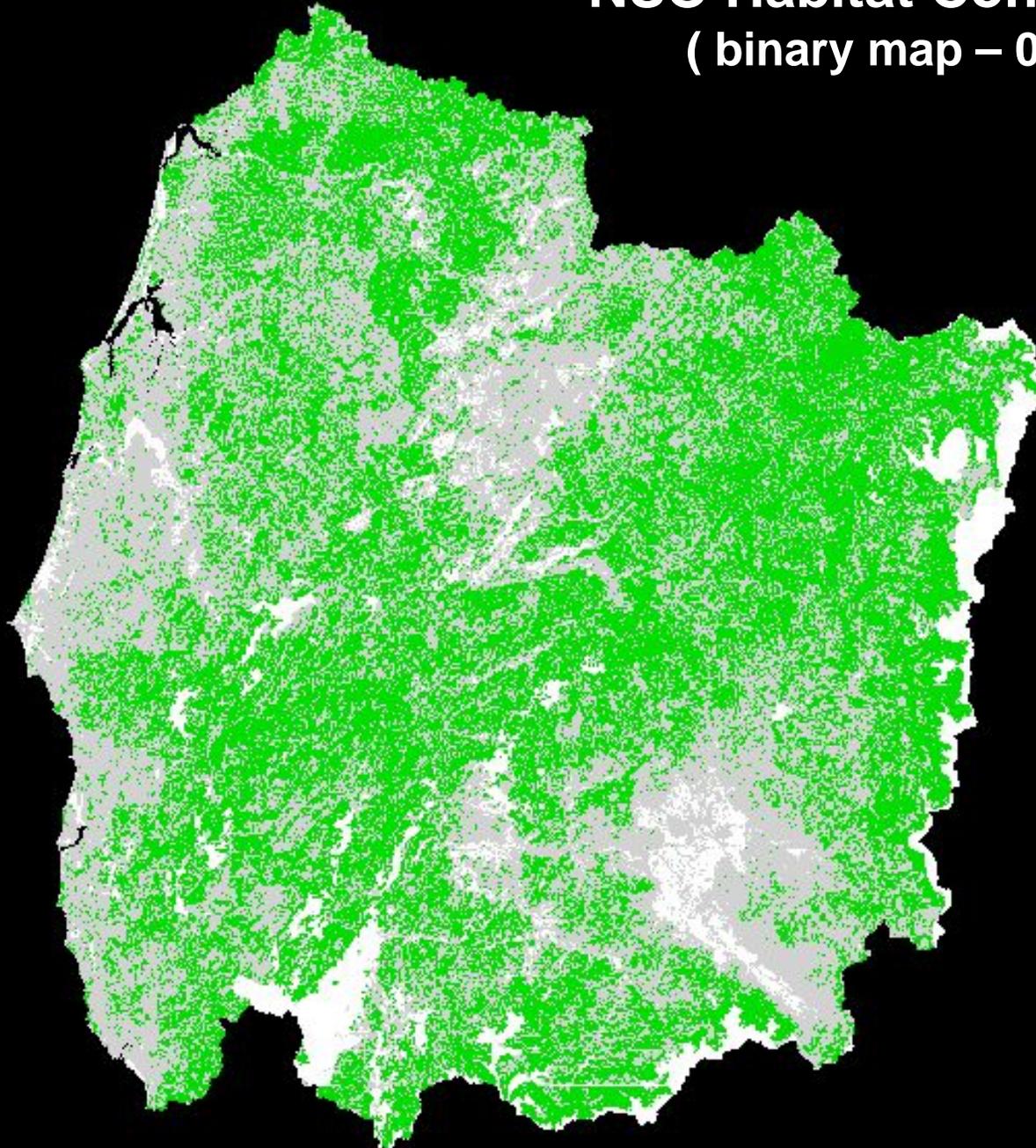
USFWS 1992

NWFP Reserved Allocations (binary map – 0 or 1)

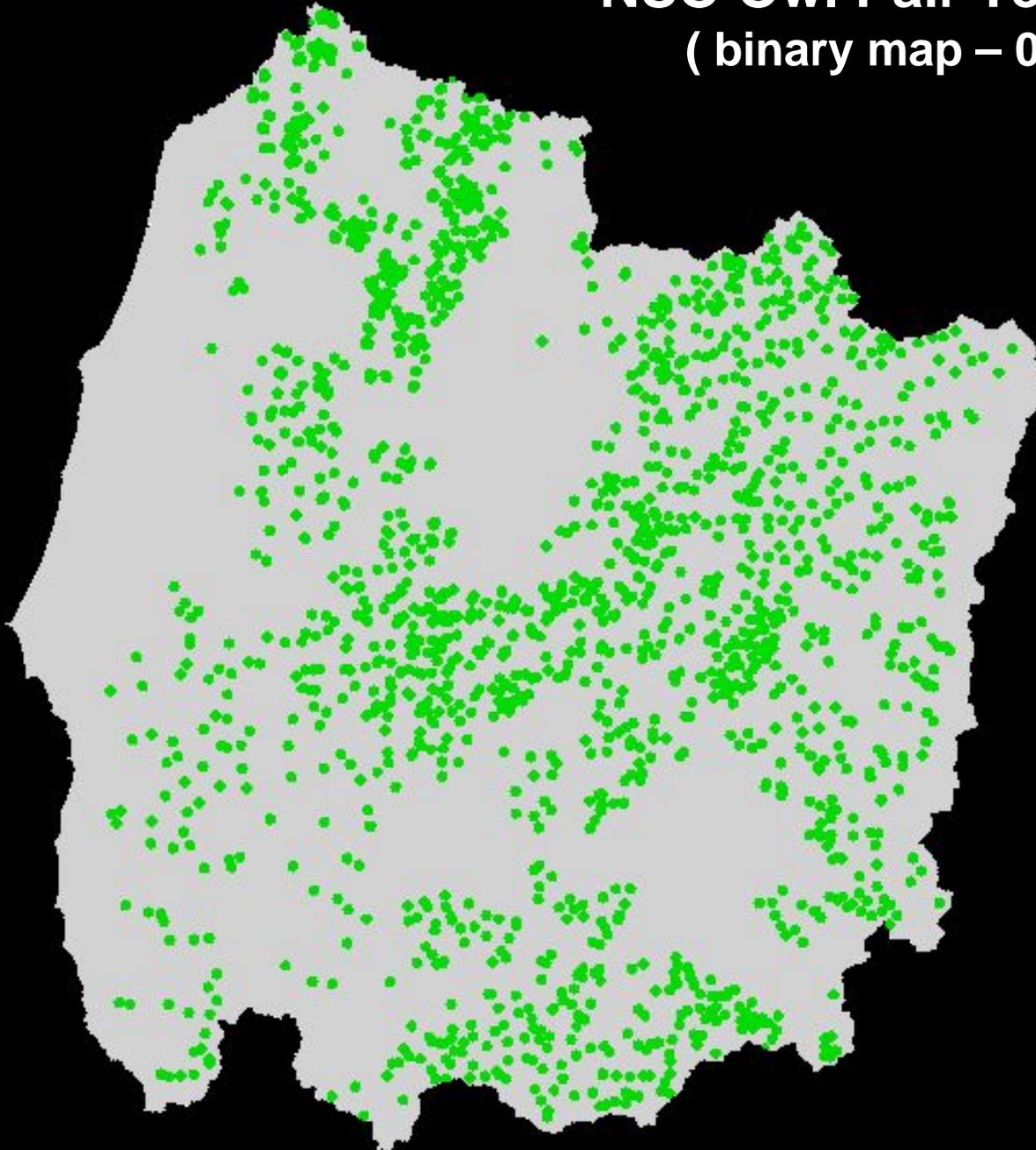


FEMAT 1994

NSO Habitat Connectivity (binary map – 0 or 1)

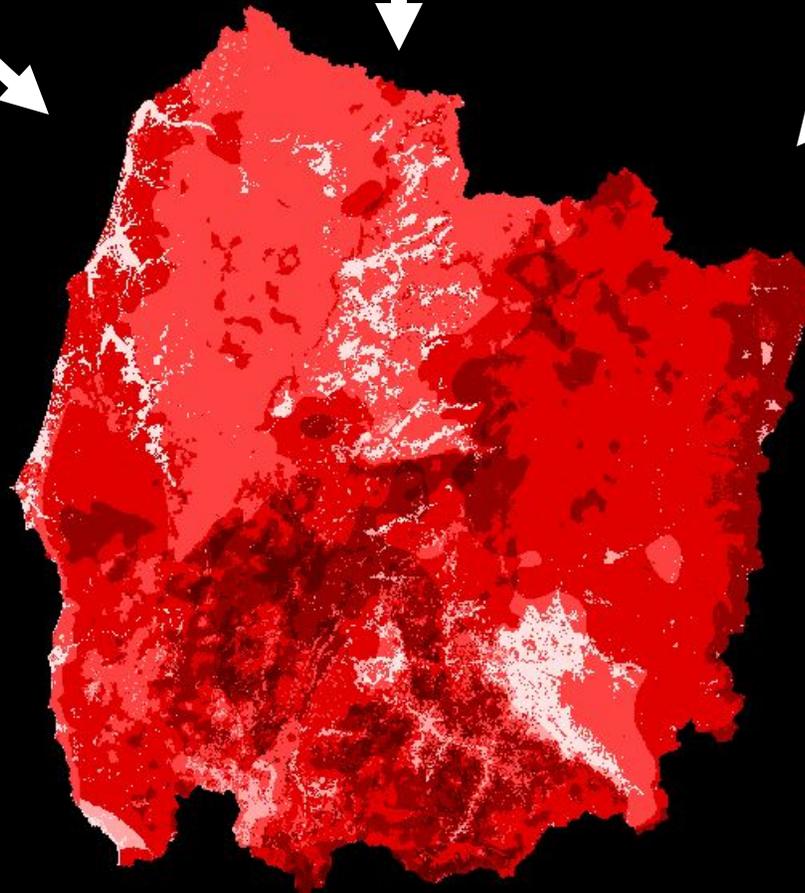
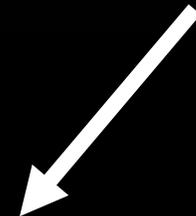
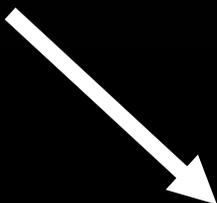
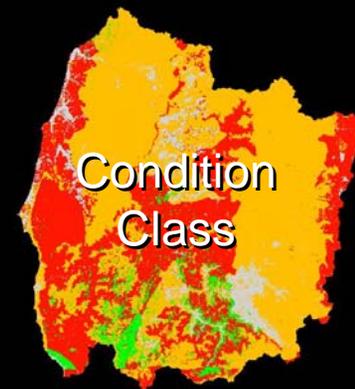


NSO Owl Pair Territories (binary map – 0 or 1)

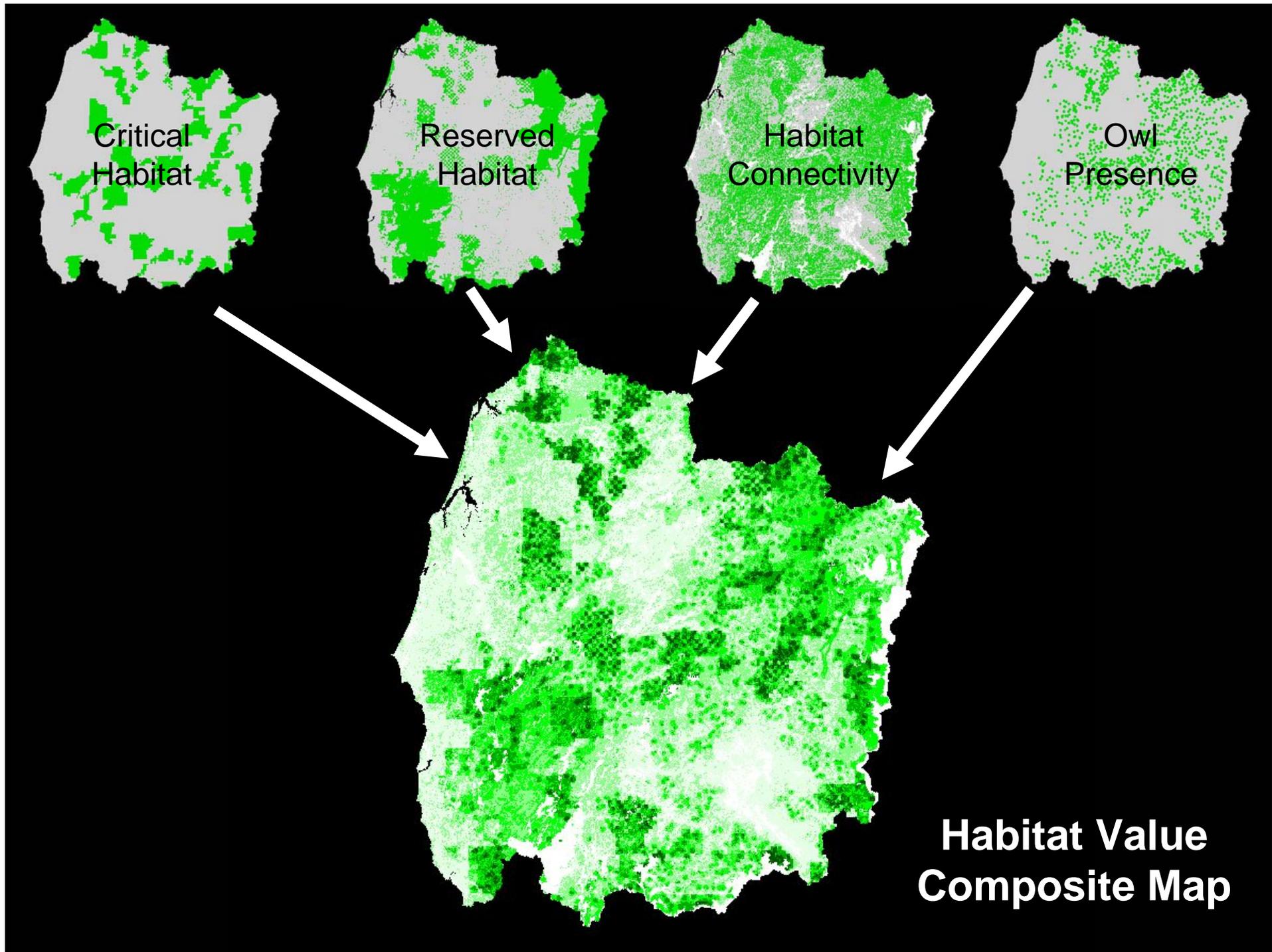


Putting It Together

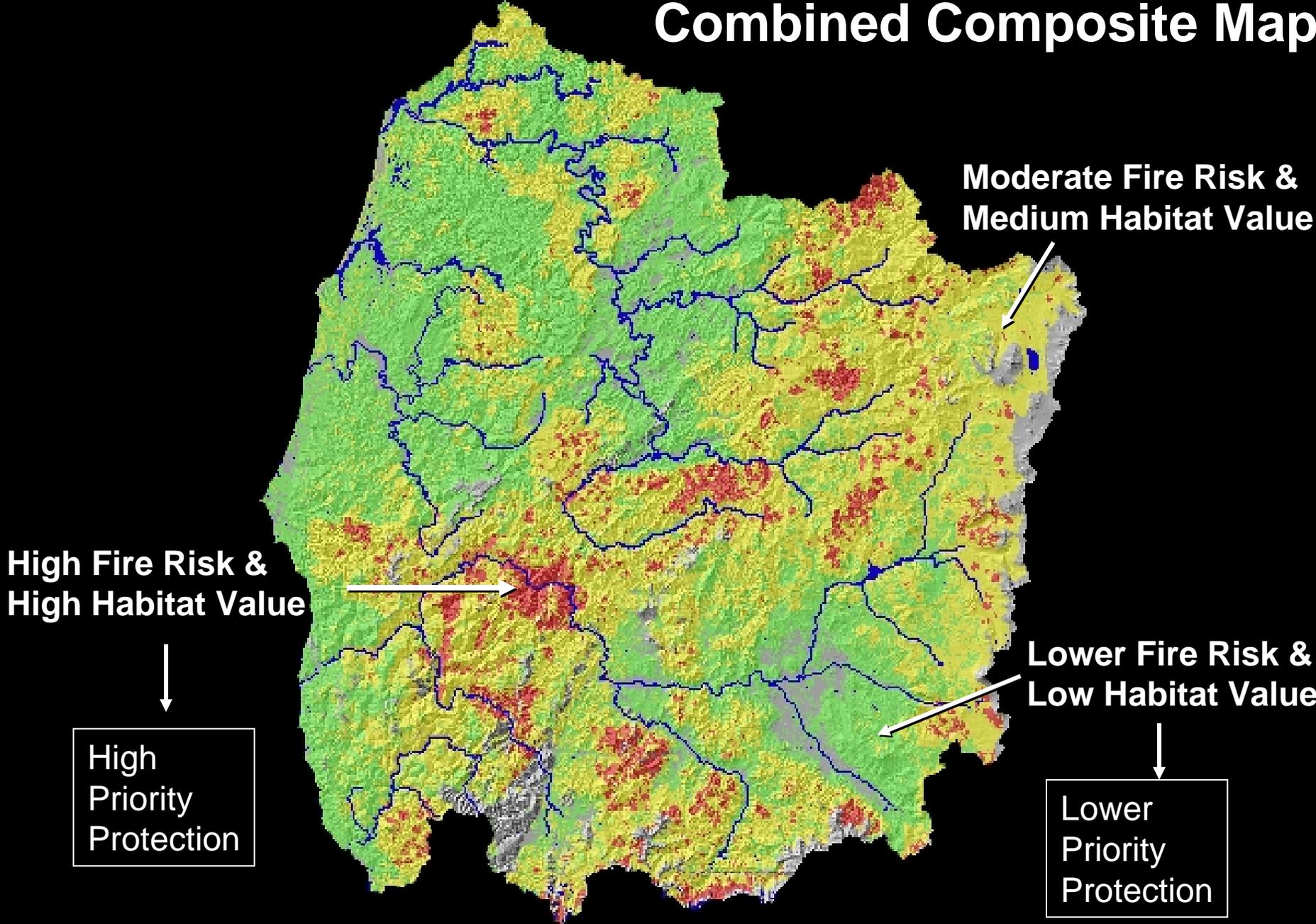




**Fire Risk
Composite Map**



Combined Composite Map



Moderate Fire Risk & Medium Habitat Value

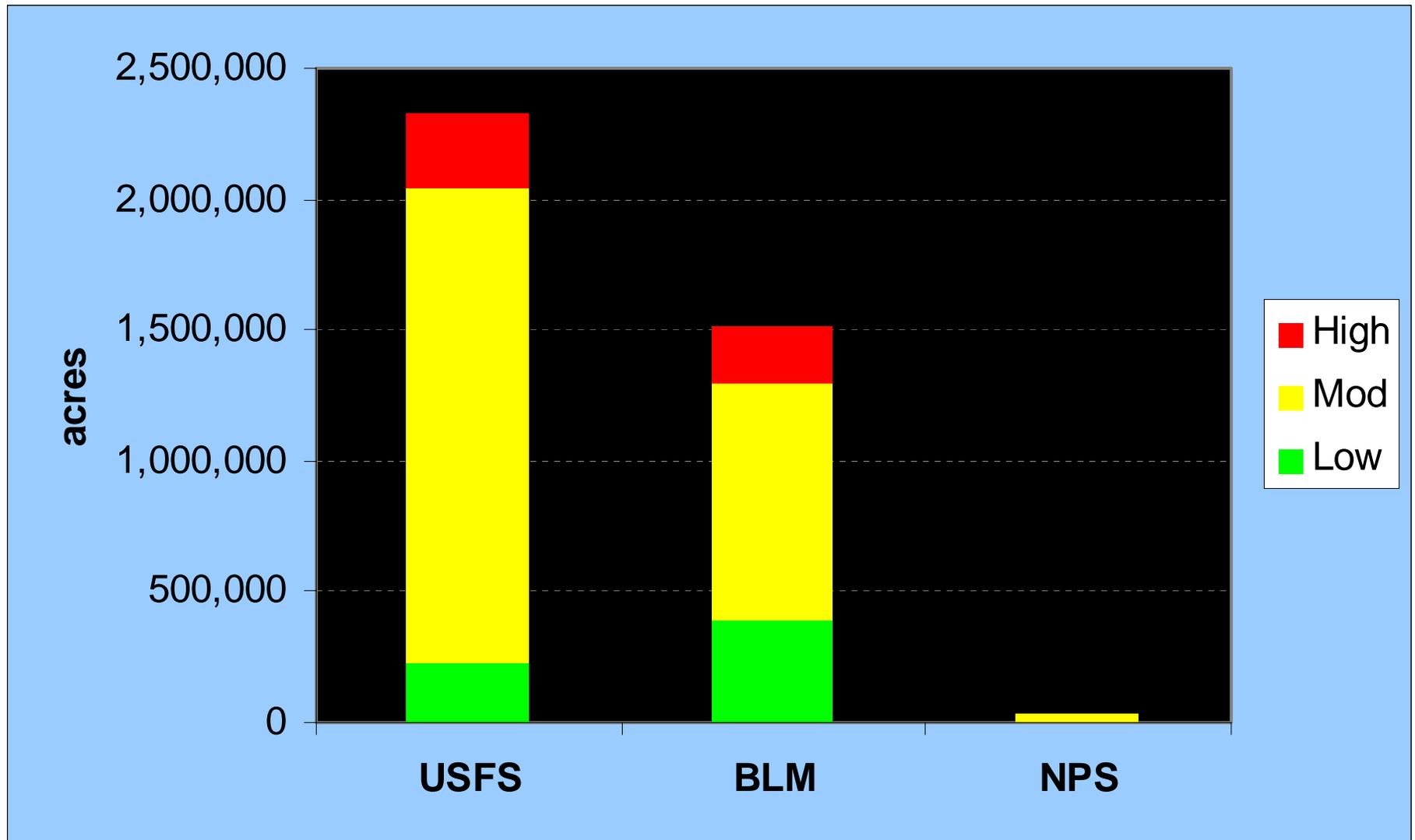
High Fire Risk & High Habitat Value

Lower Fire Risk & Low Habitat Value

High Priority Protection

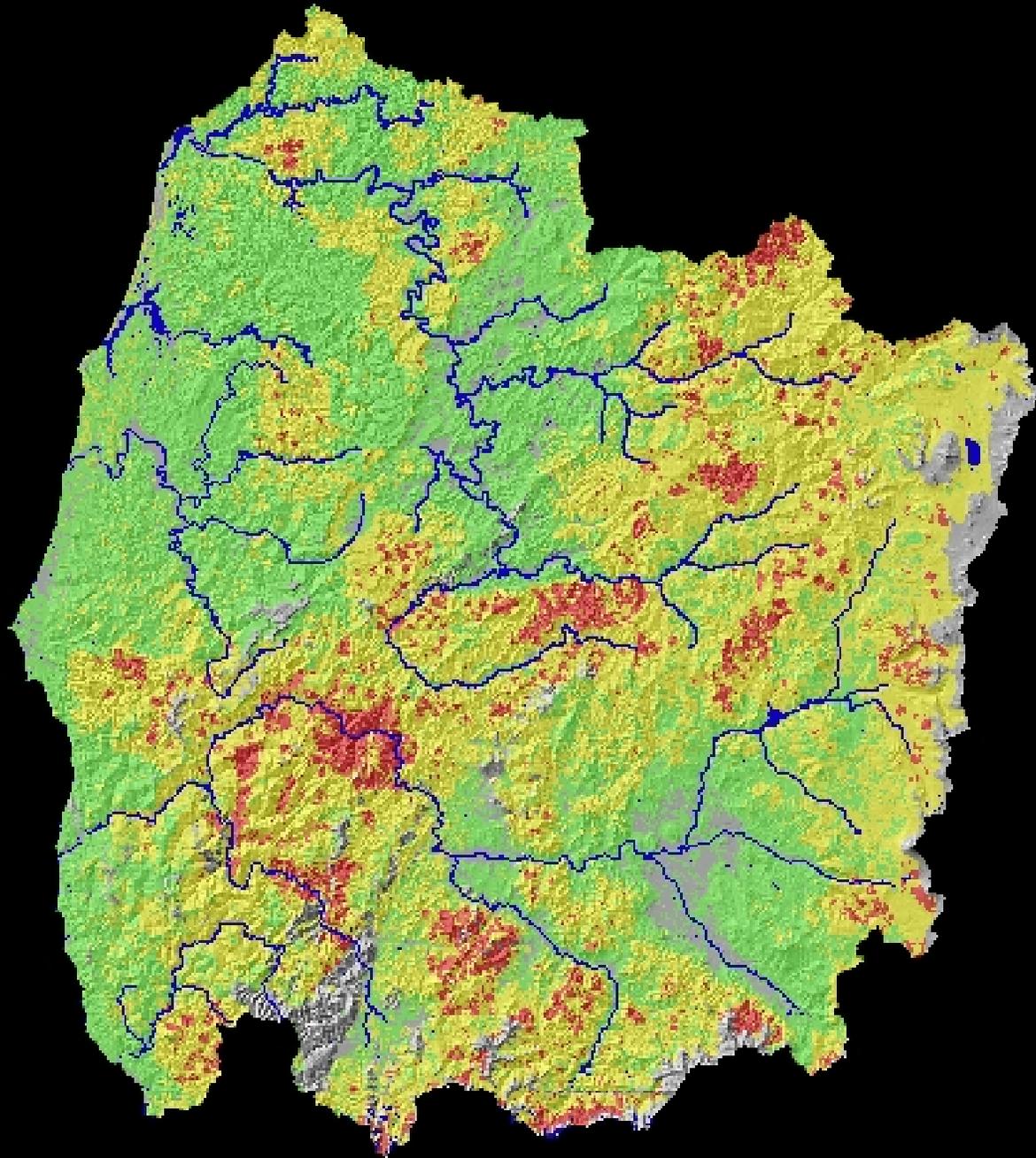
Lower Priority Protection

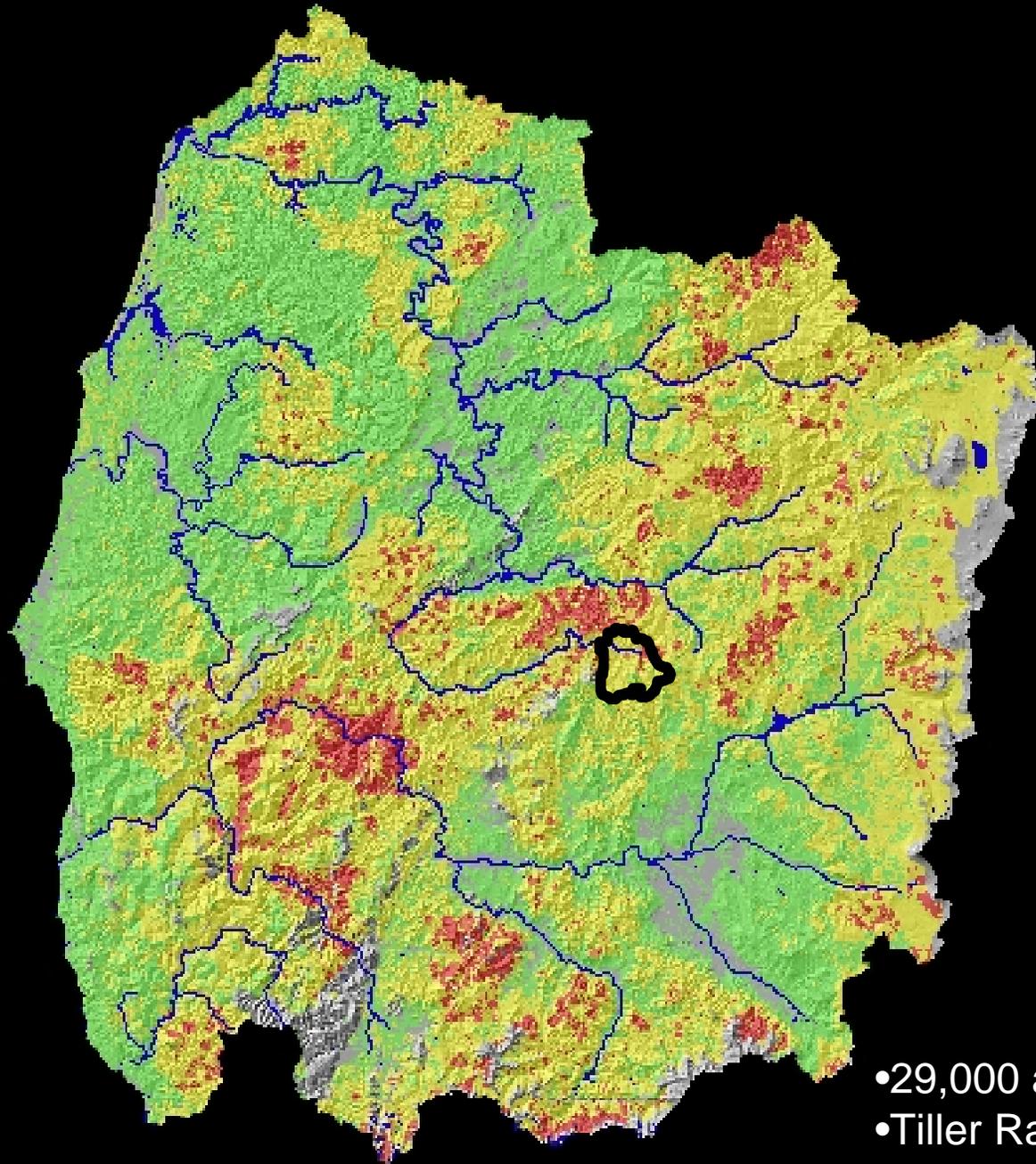
Amount of Prioritized Treatment Acres Within Analysis Area



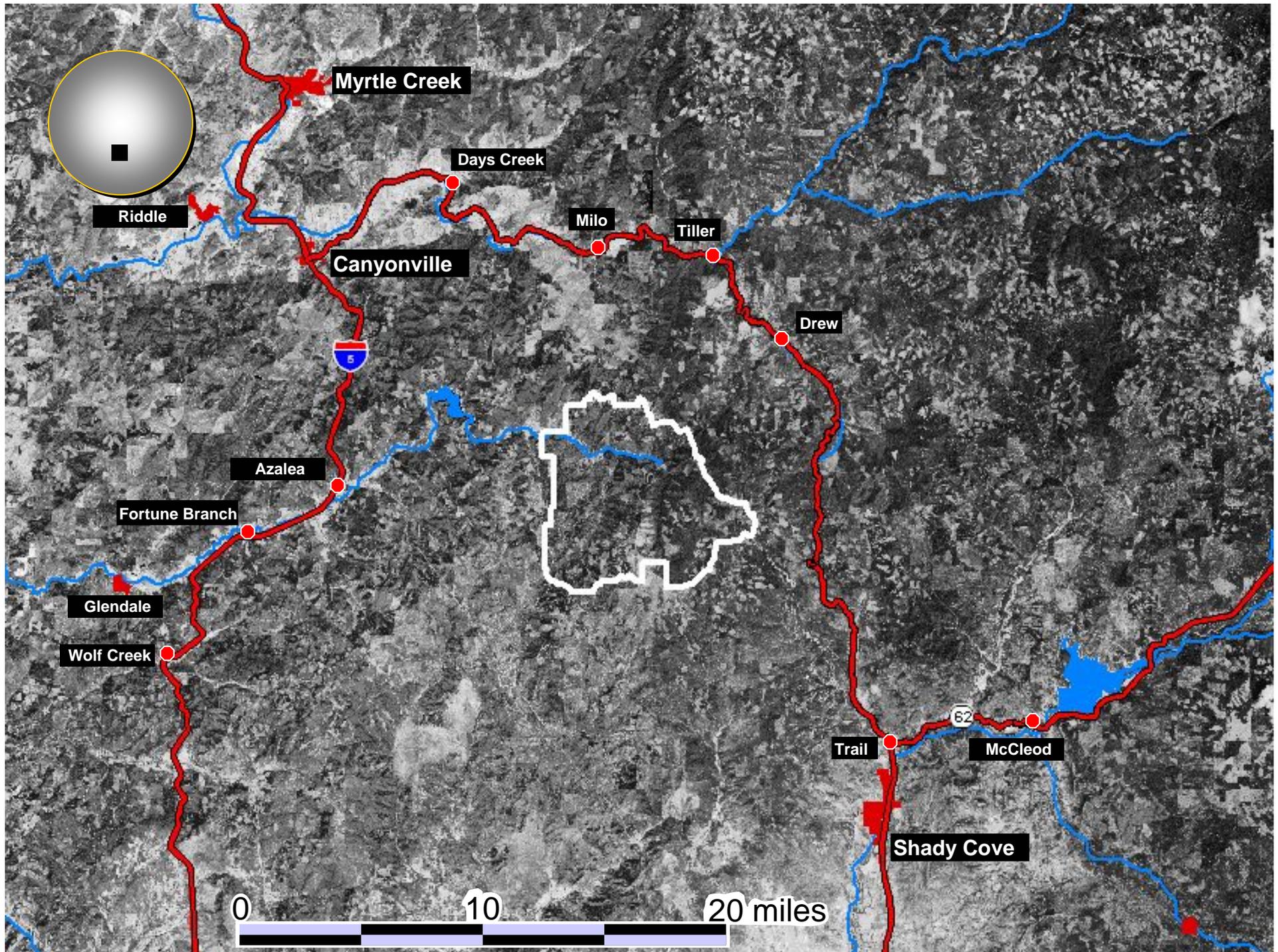
Application

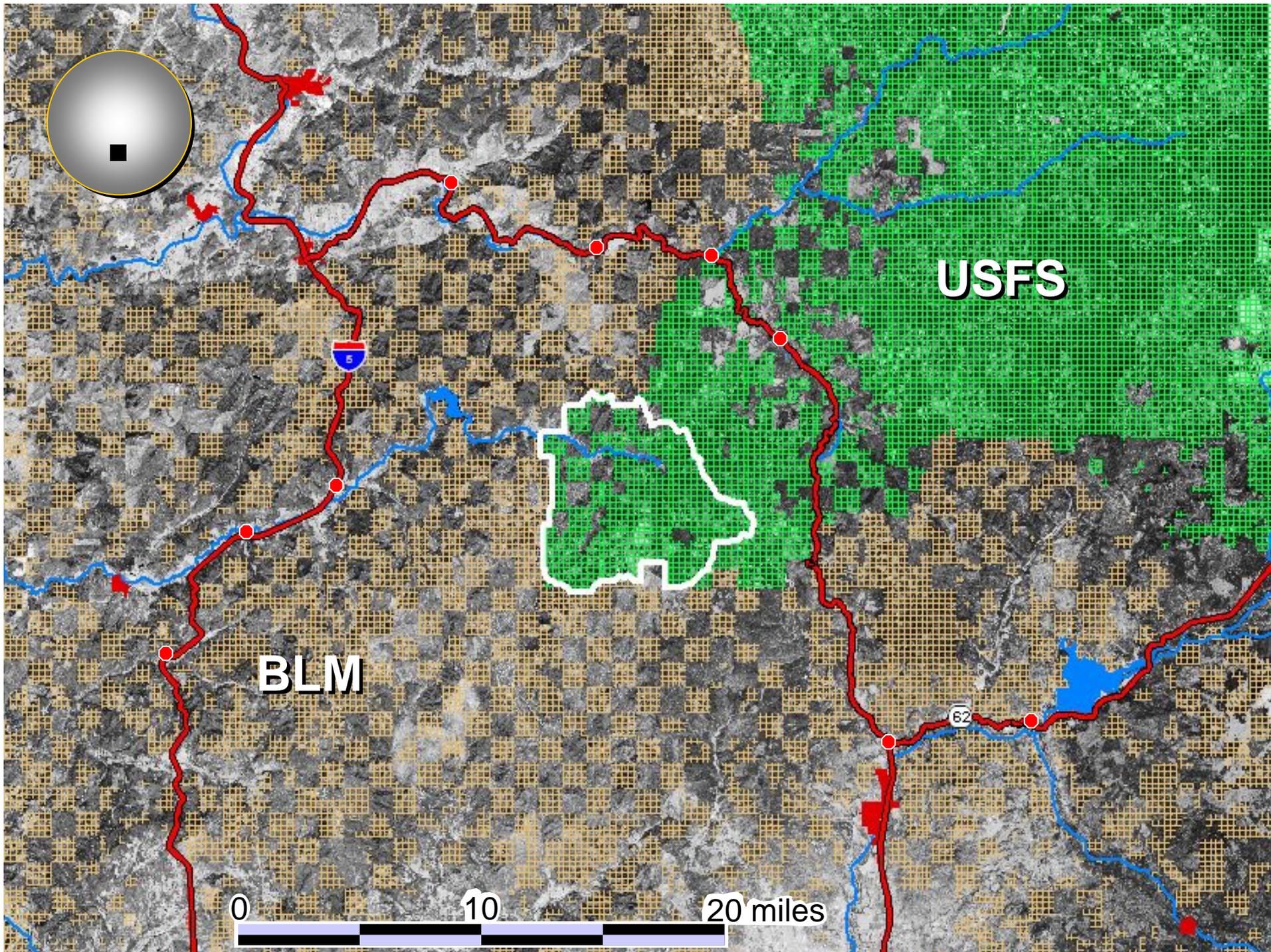
Cow Creek Project



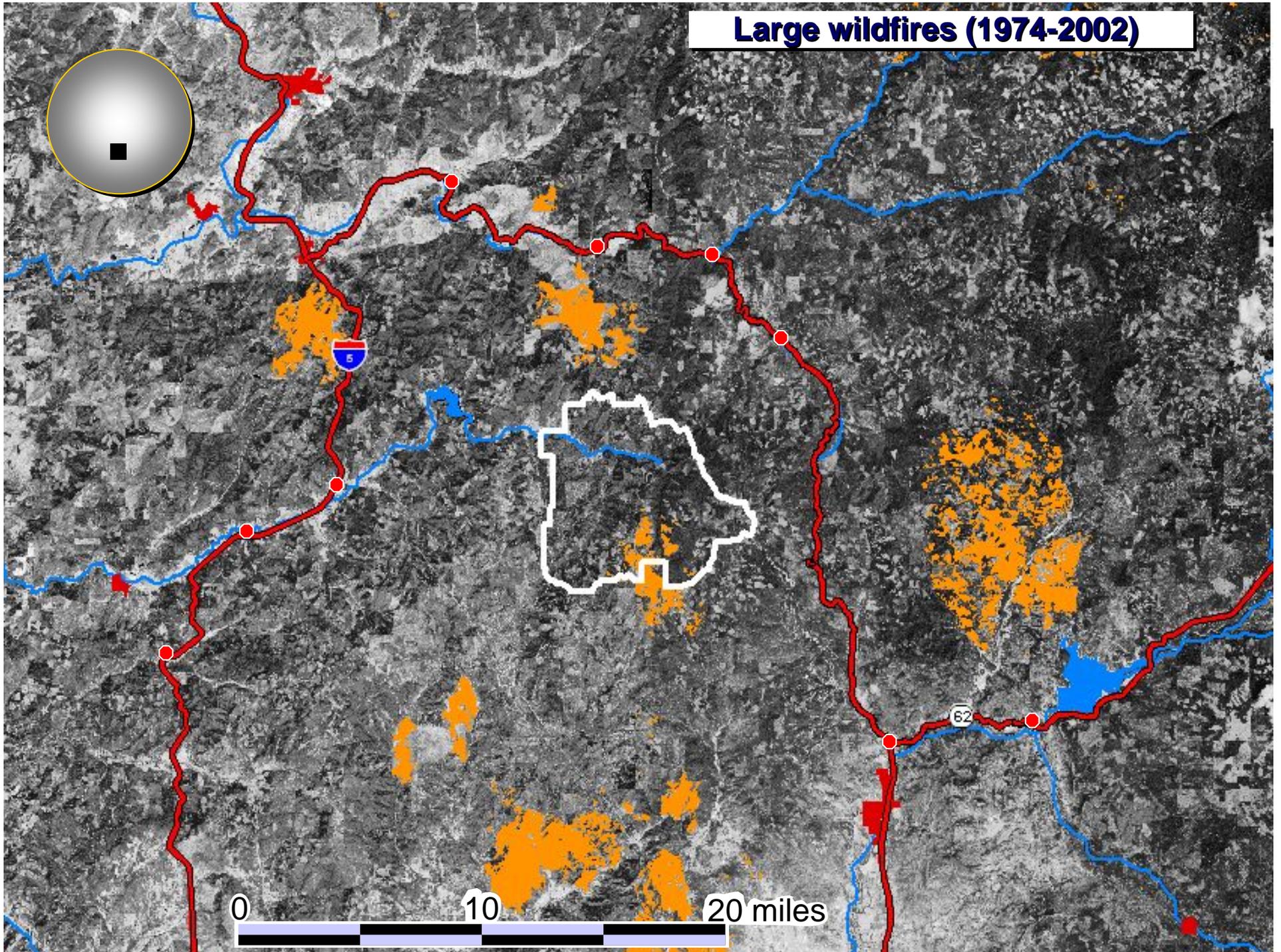


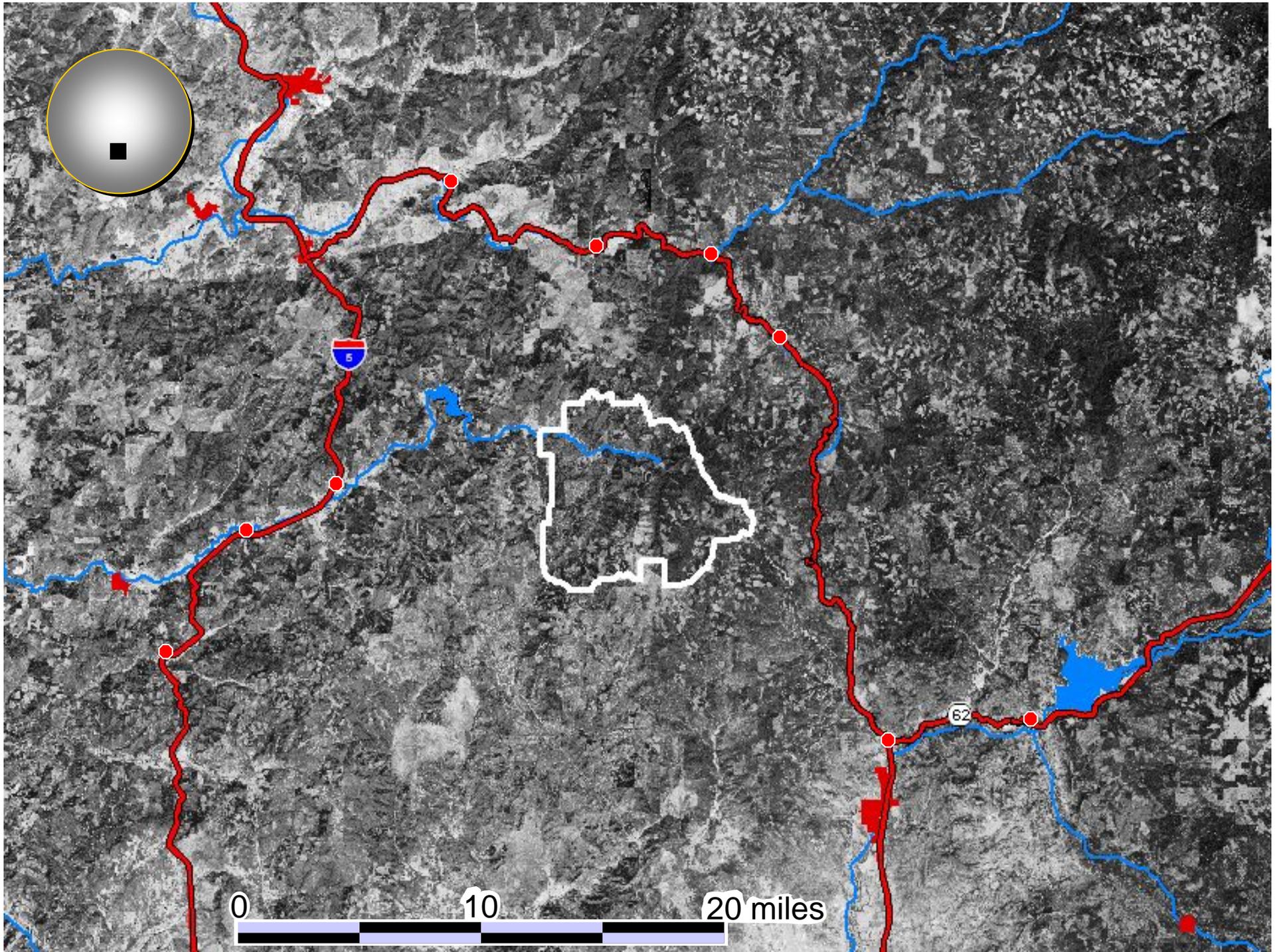
- 29,000 acres
- Tiller Ranger District
- Umpqua National Forest



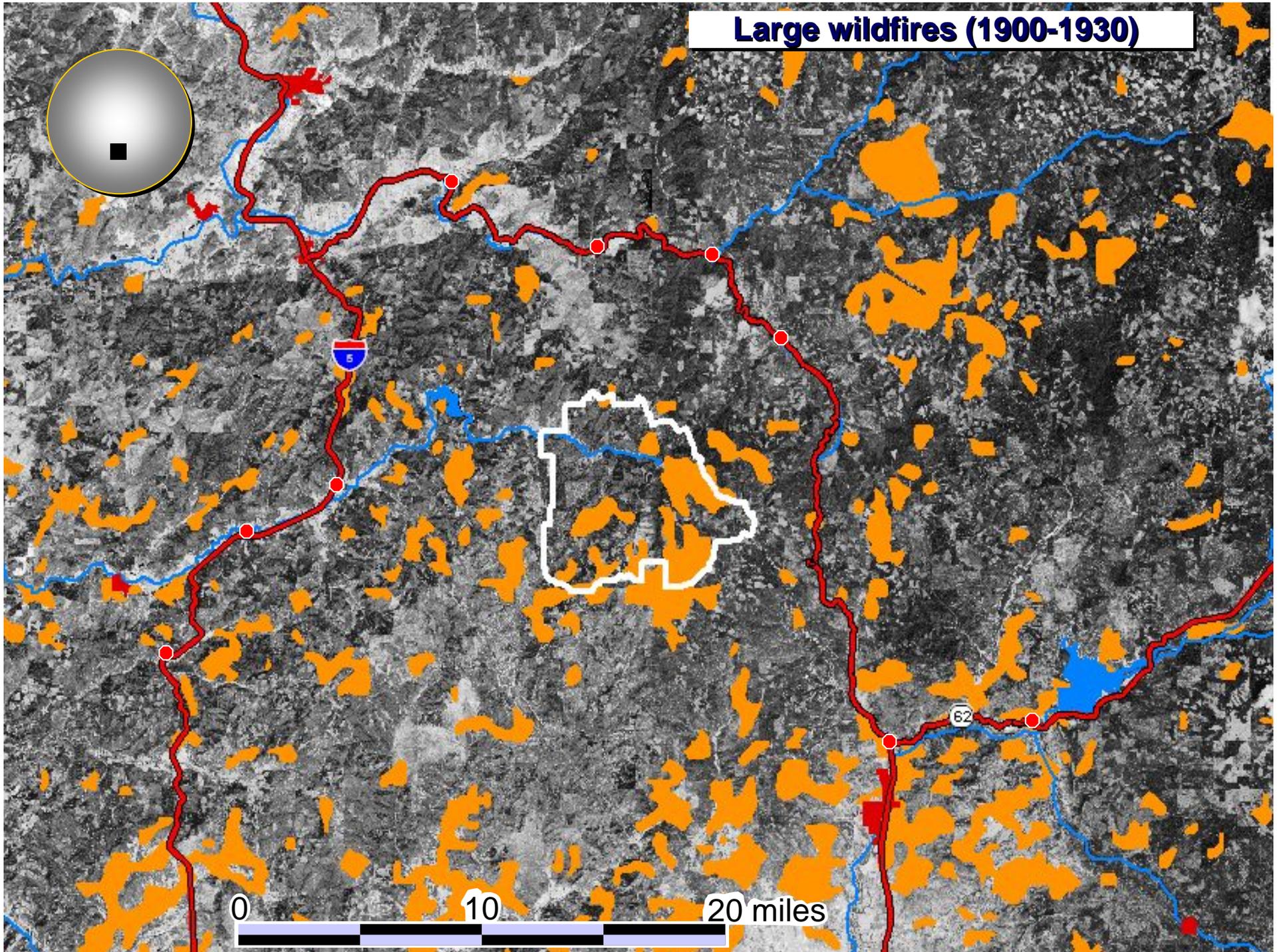


Large wildfires (1974-2002)

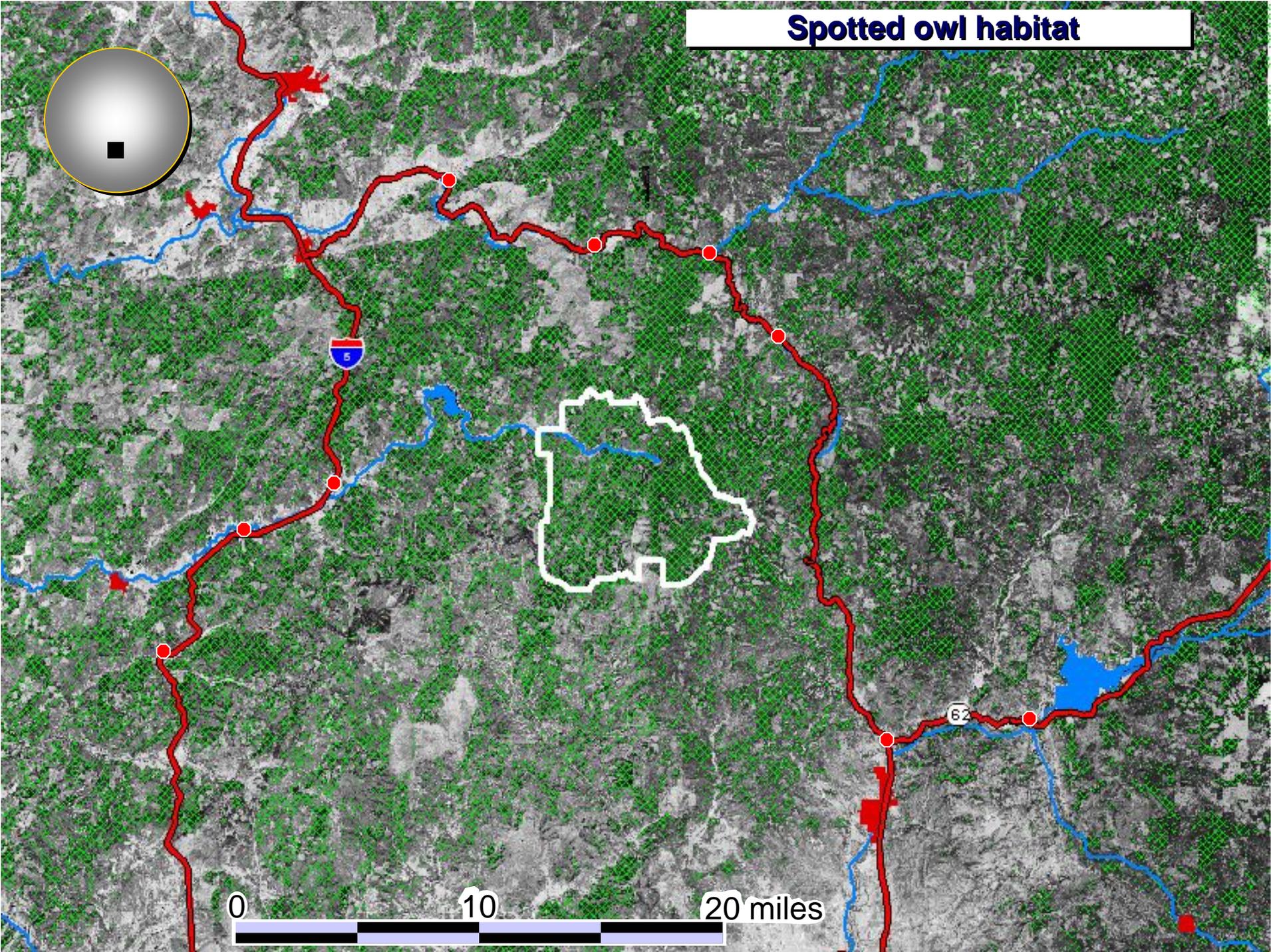




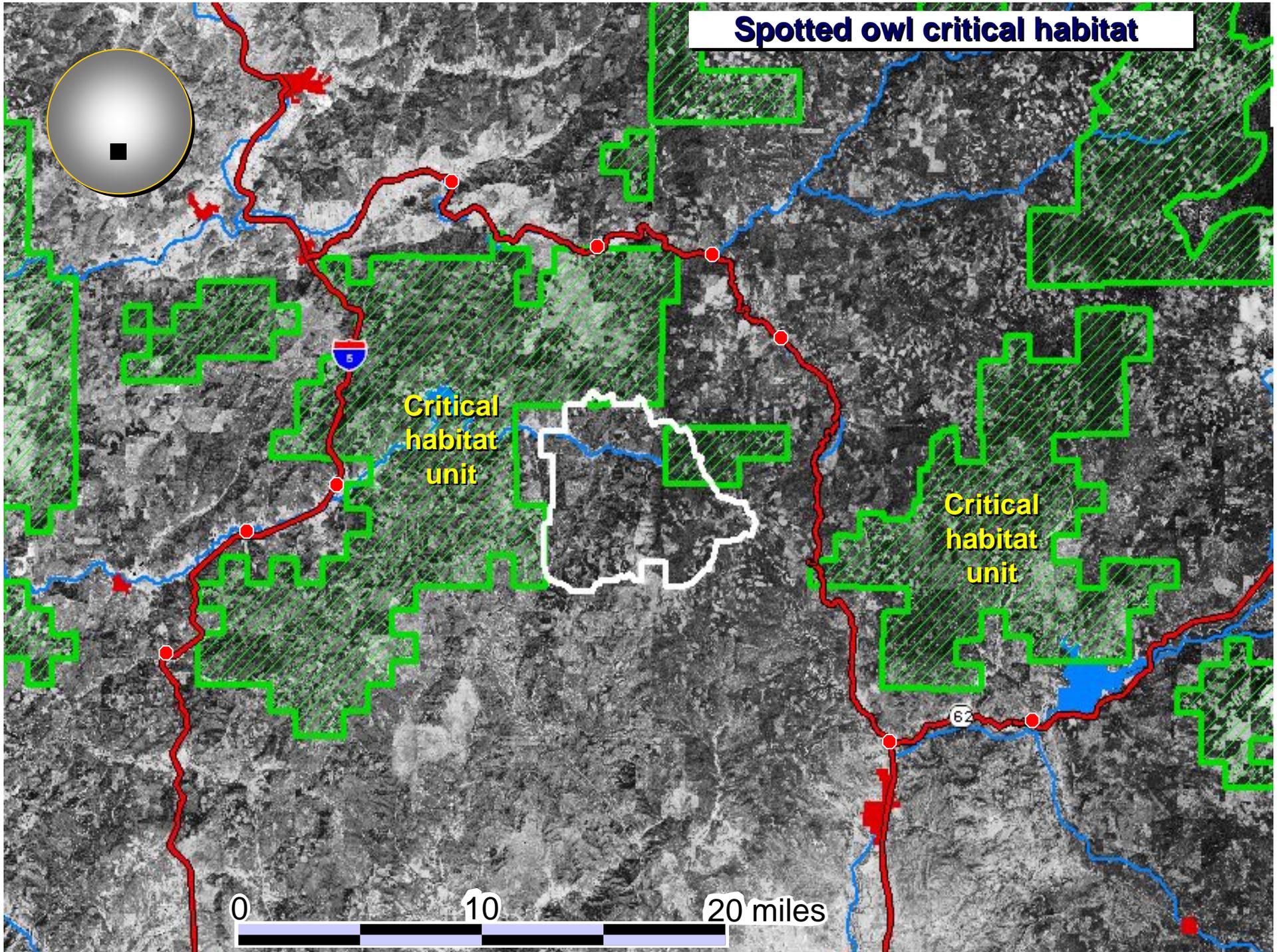
Large wildfires (1900-1930)



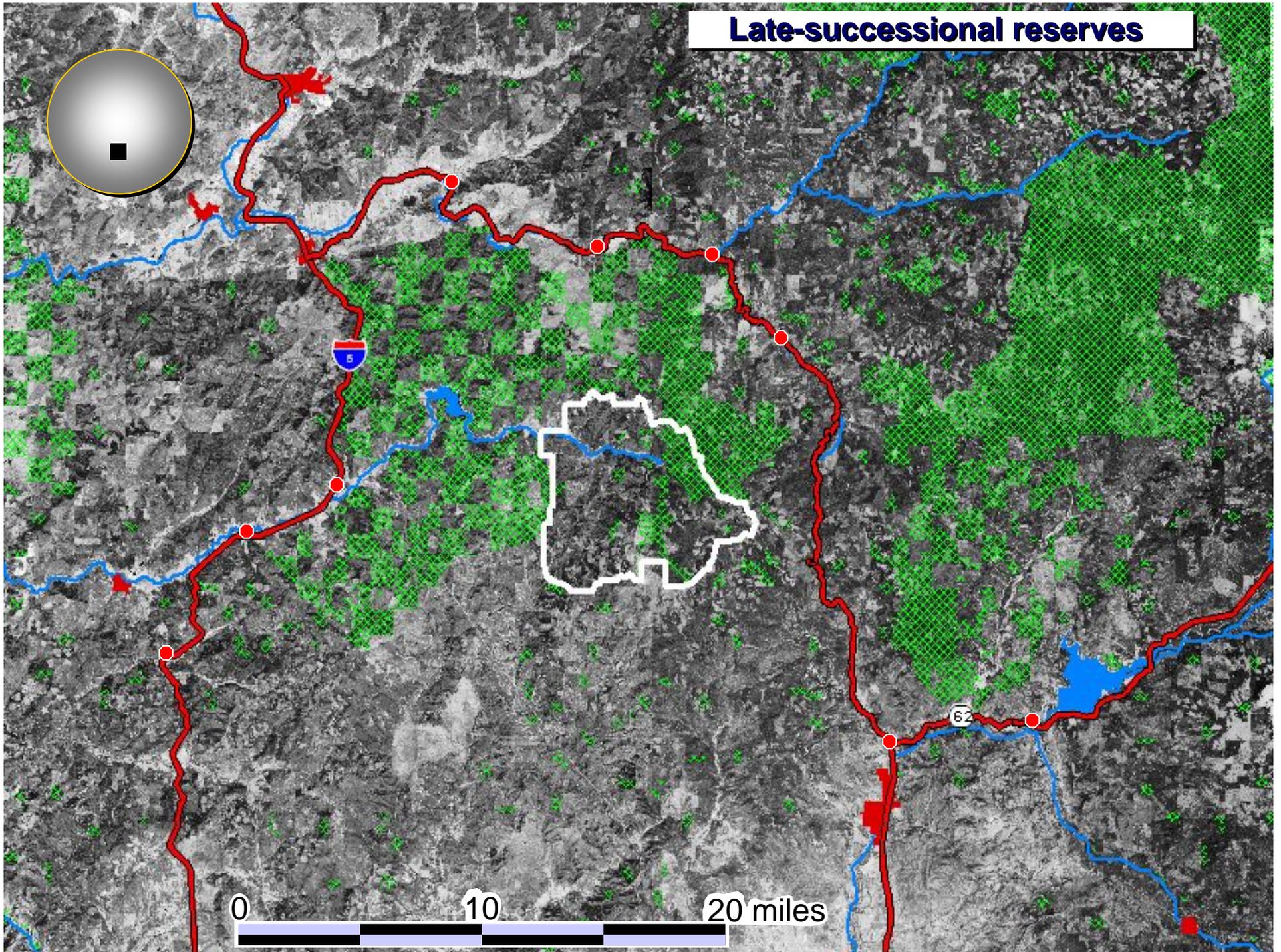
Spotted owl habitat



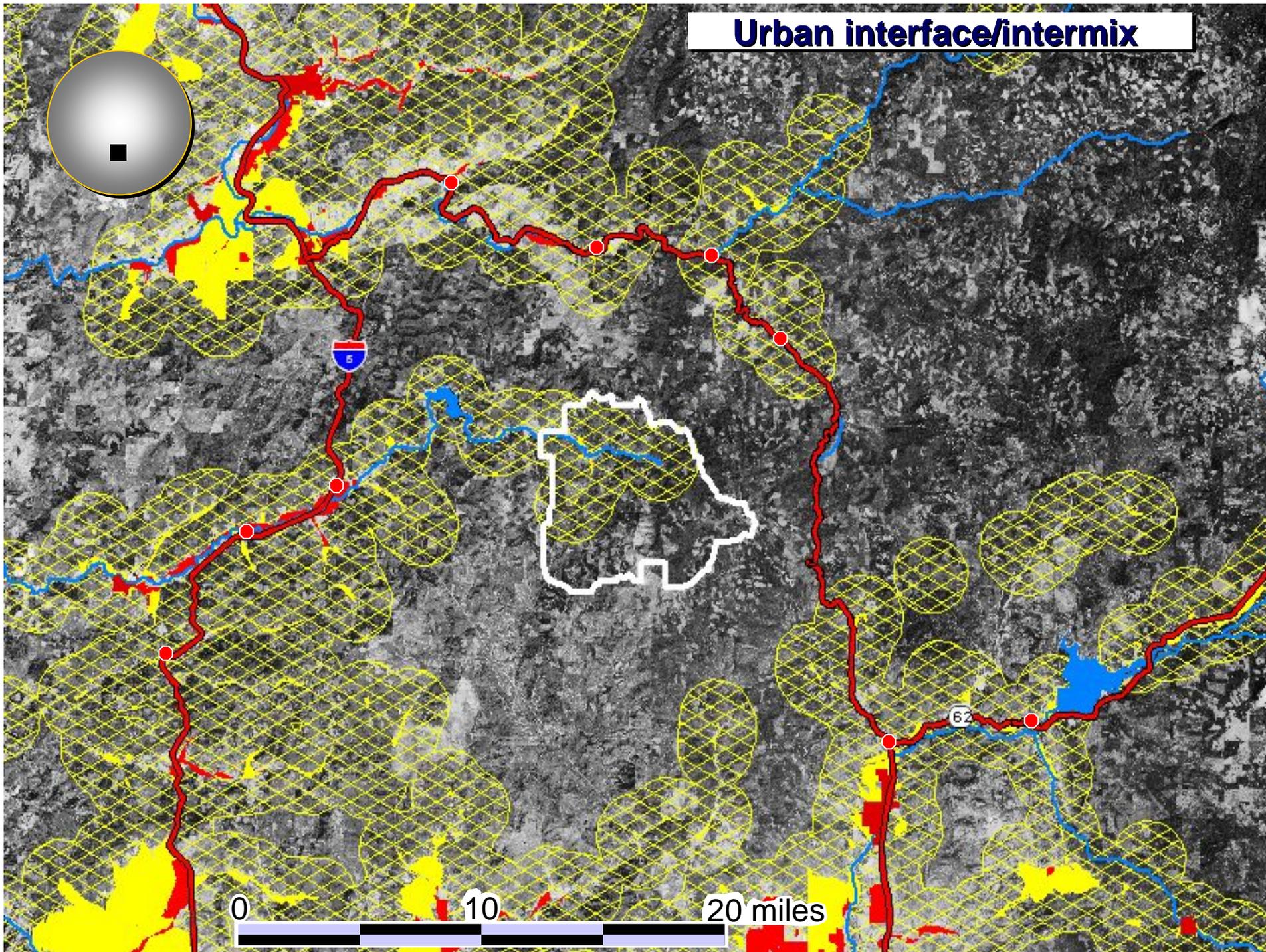
Spotted owl critical habitat

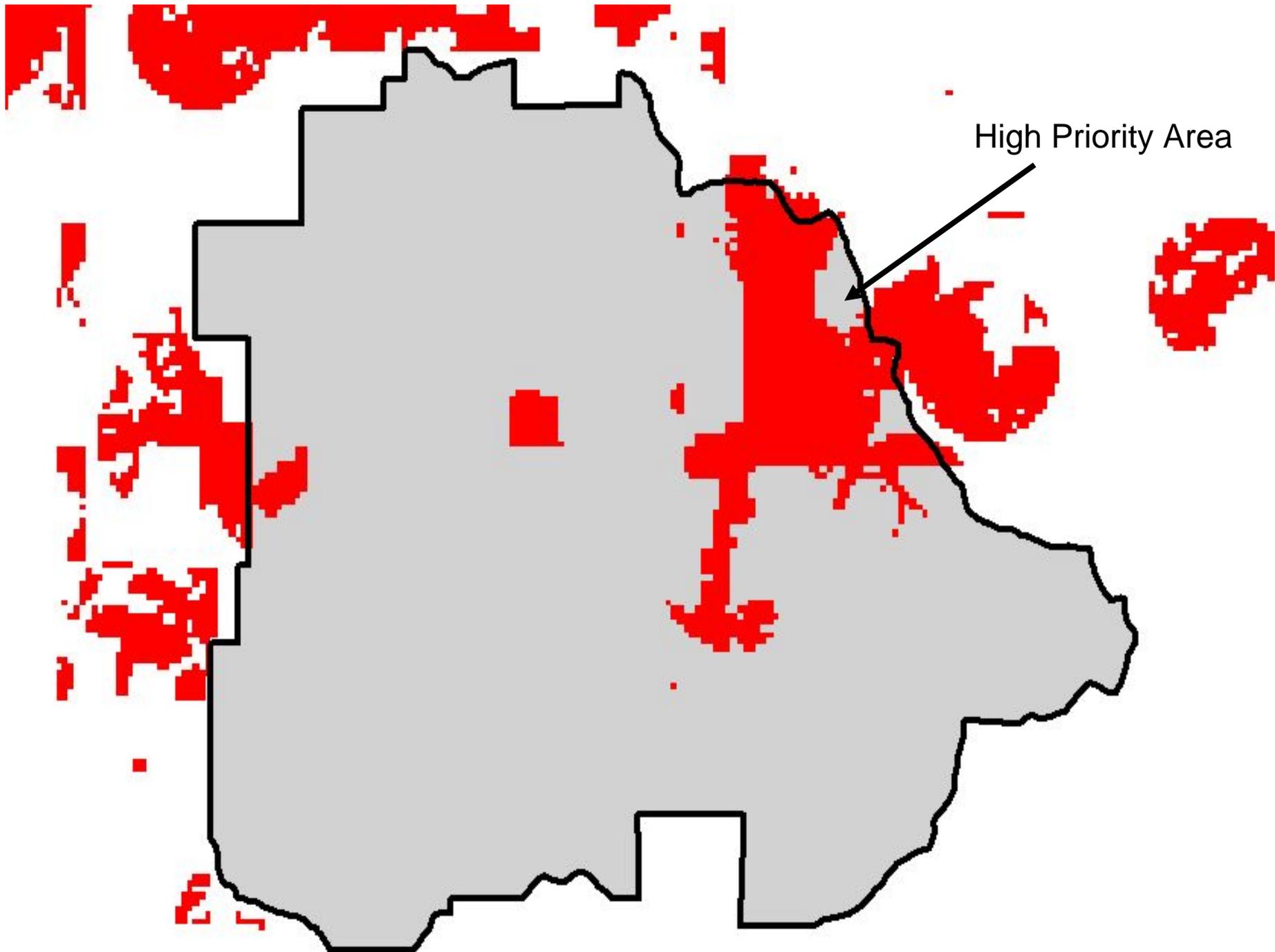


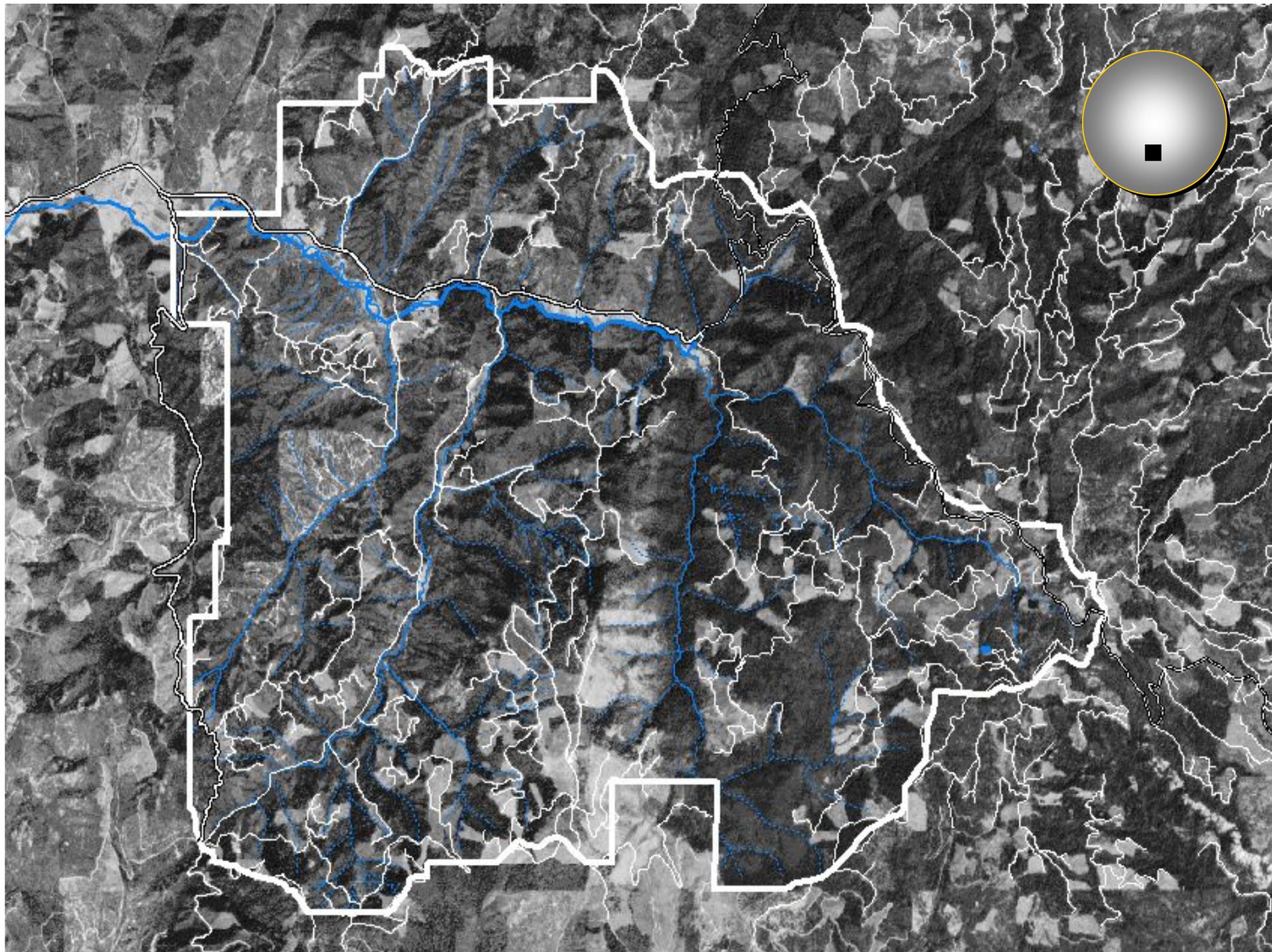
Late-successional reserves



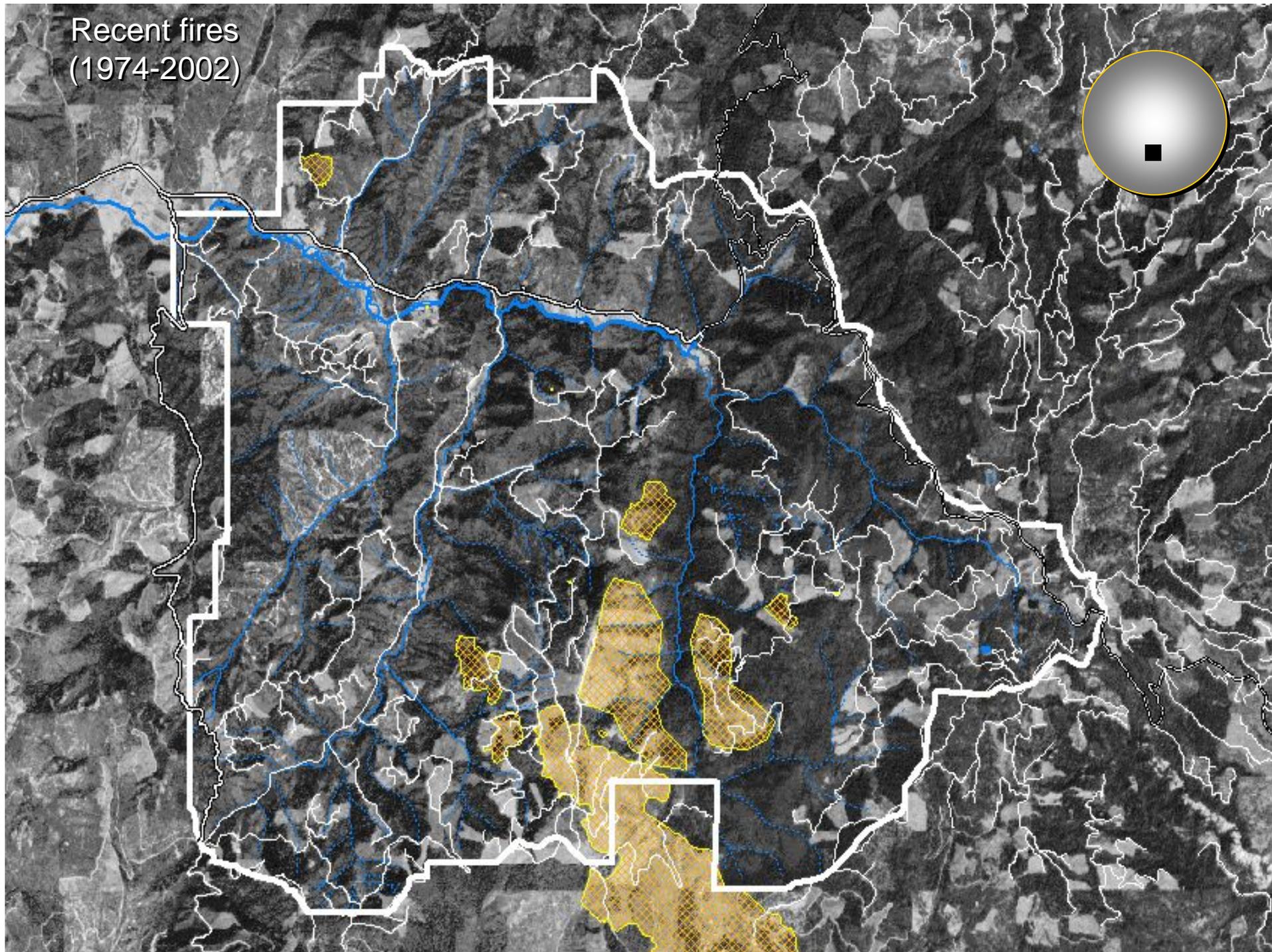
Urban interface/intermix



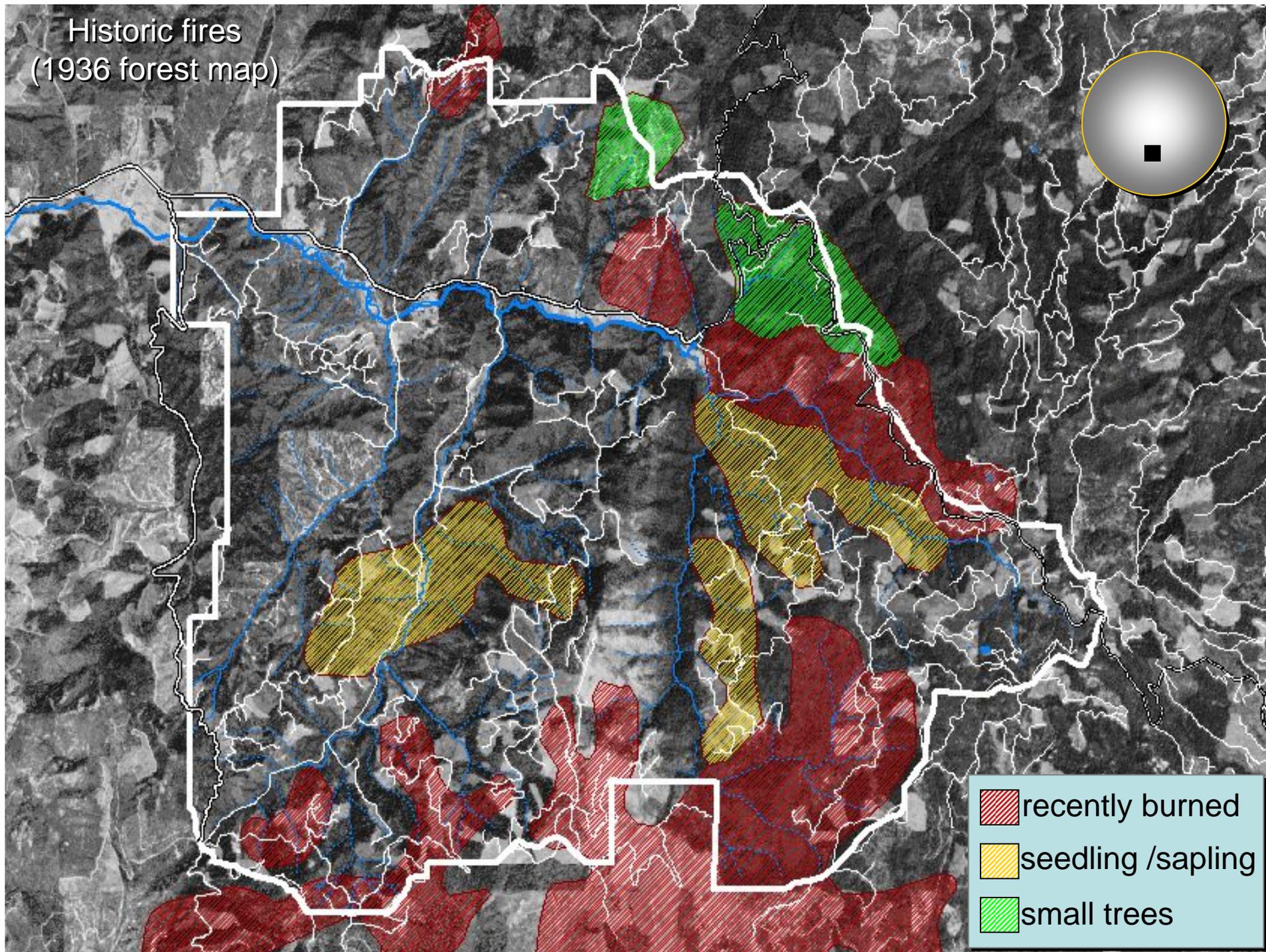




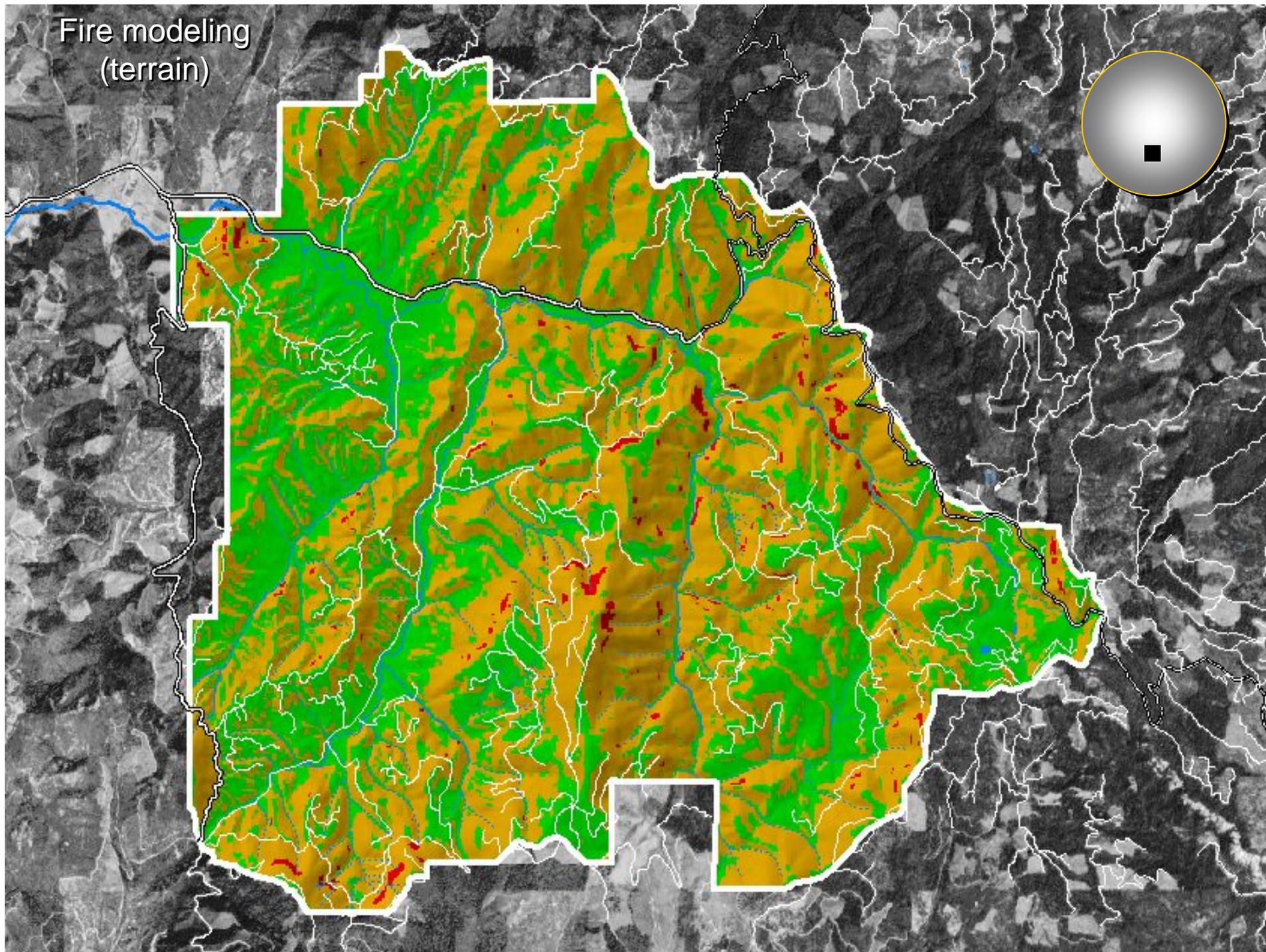
Recent fires
(1974-2002)



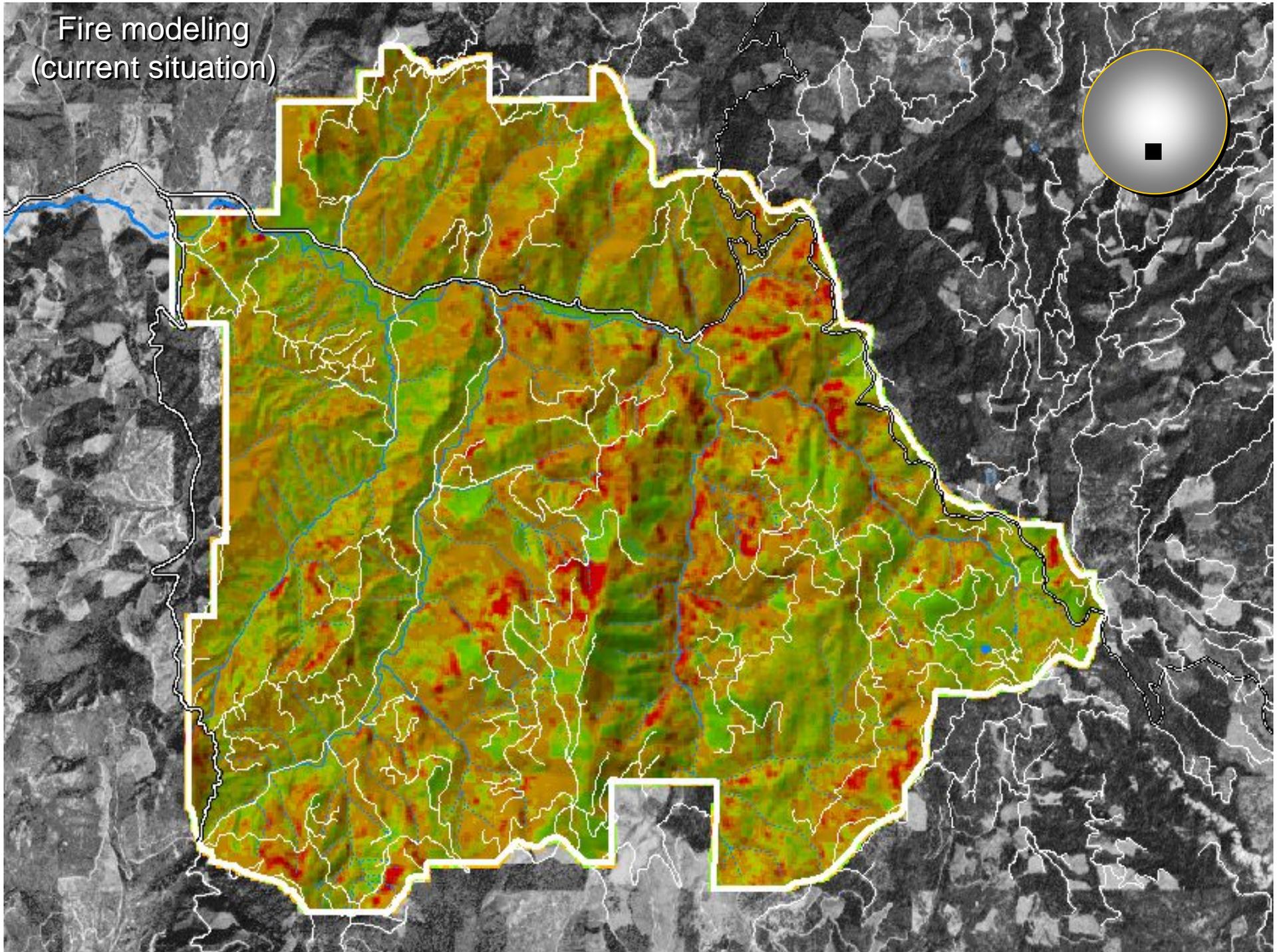
Historic fires
(1936 forest map)



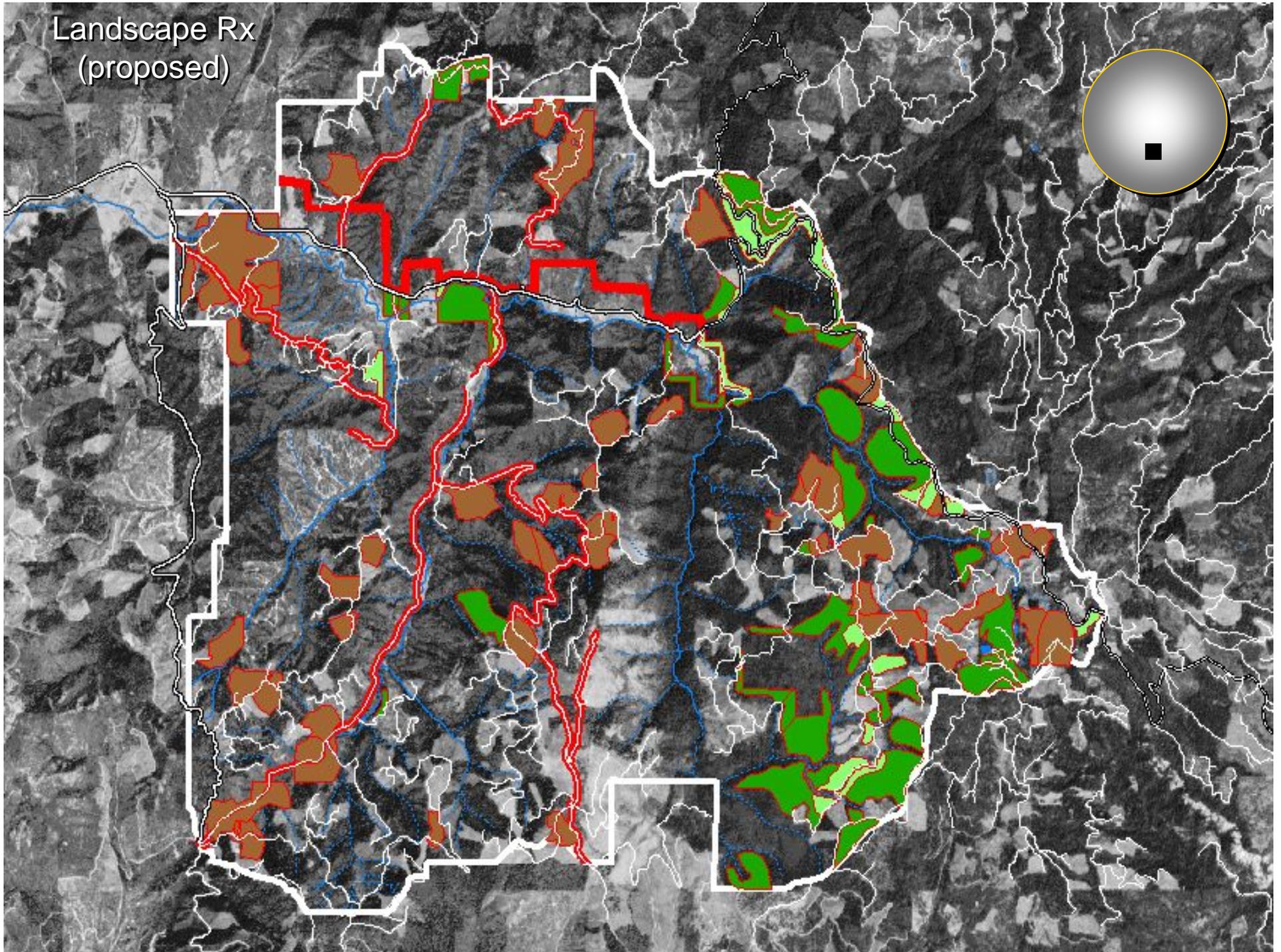
Fire modeling
(terrain)



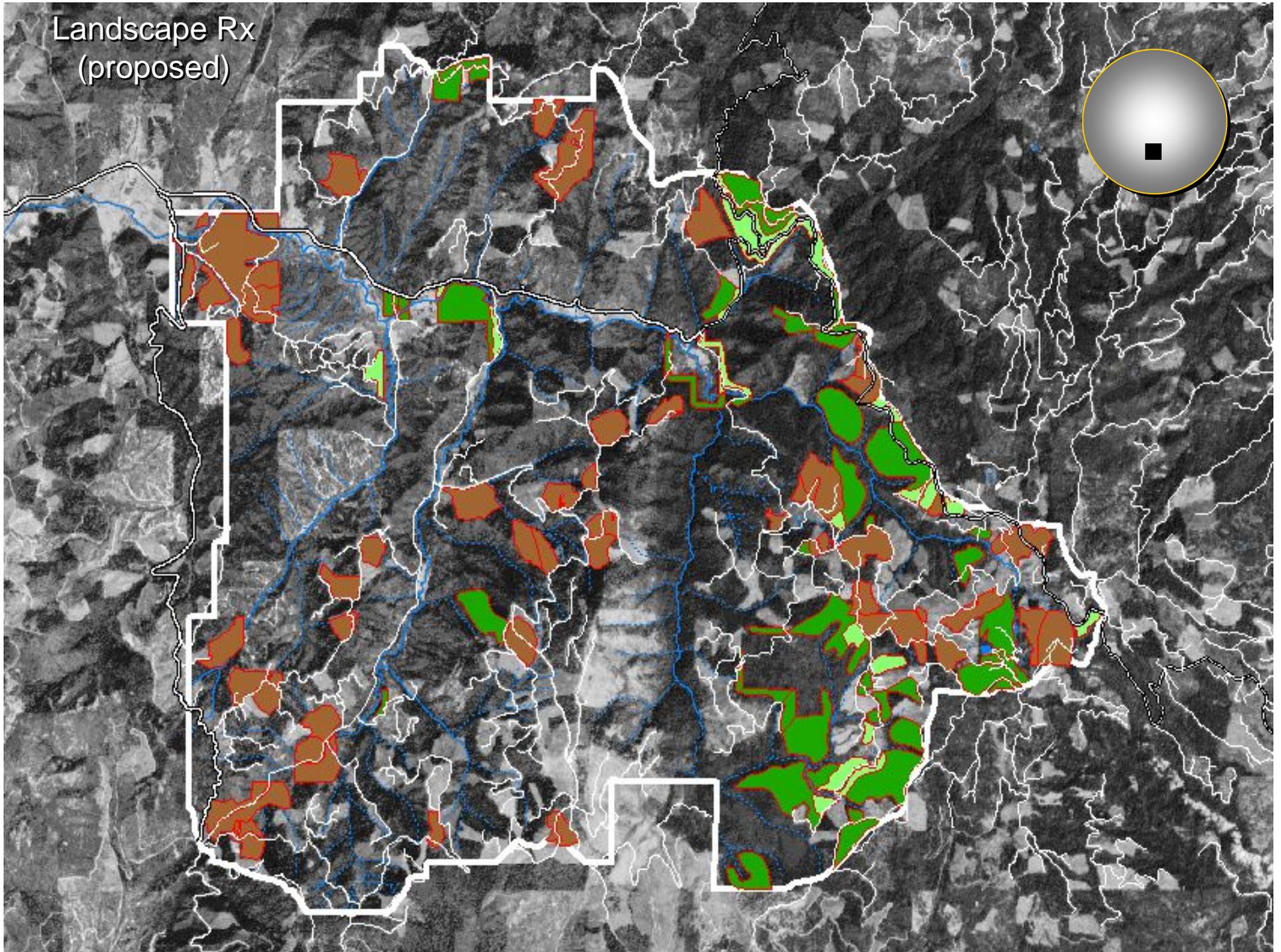
Fire modeling
(current situation)



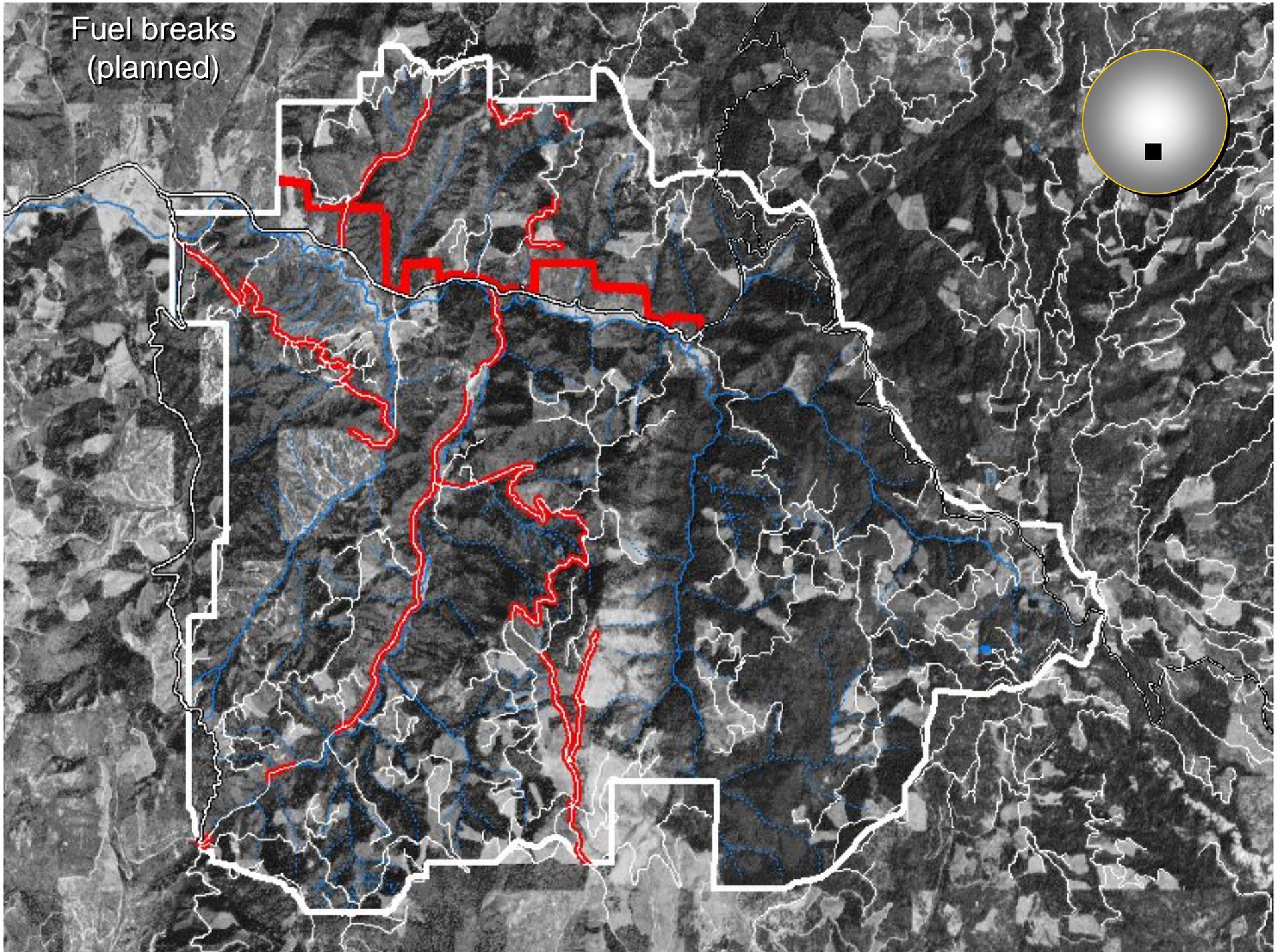
Landscape Rx
(proposed)



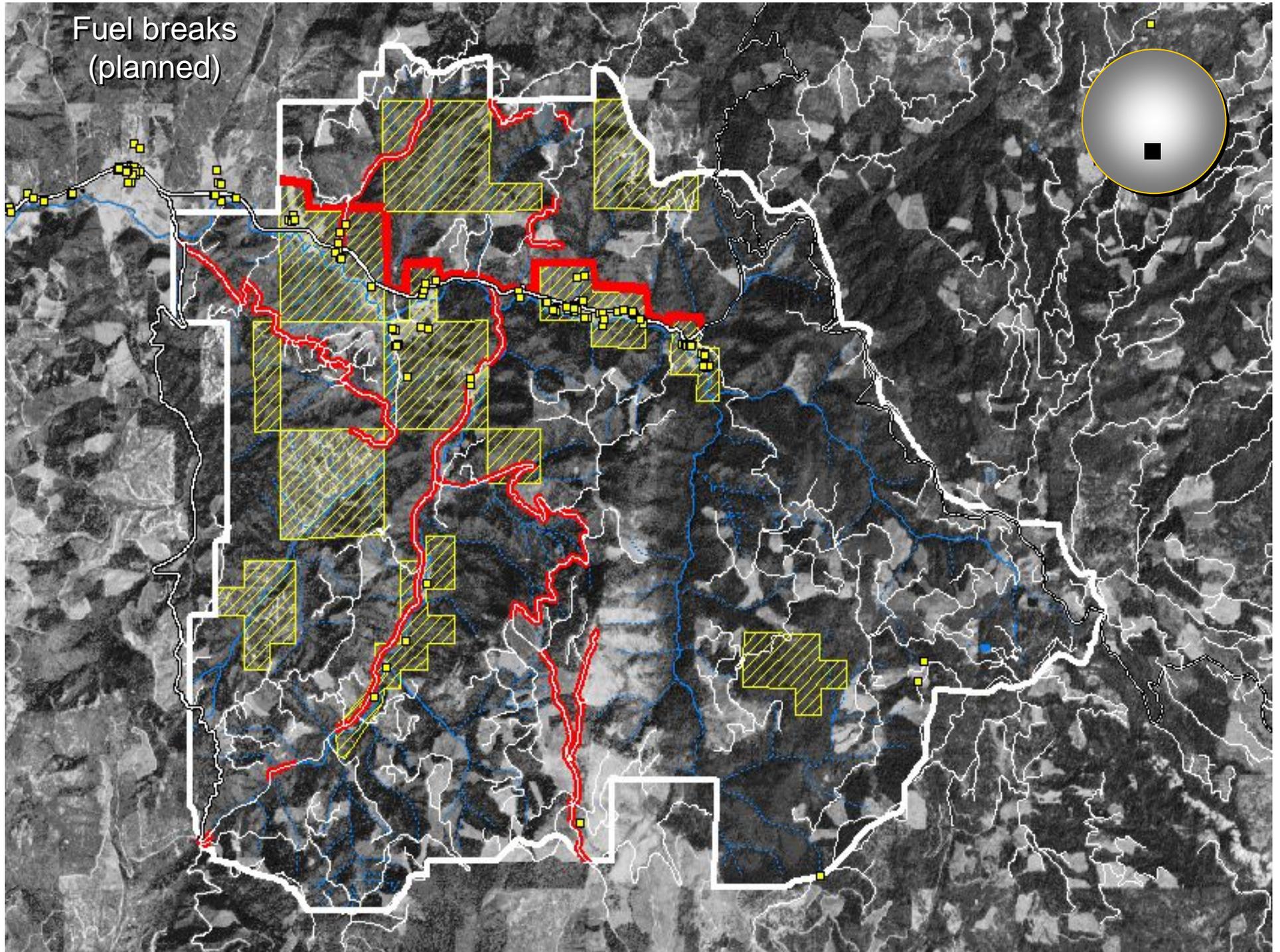
Landscape Rx
(proposed)

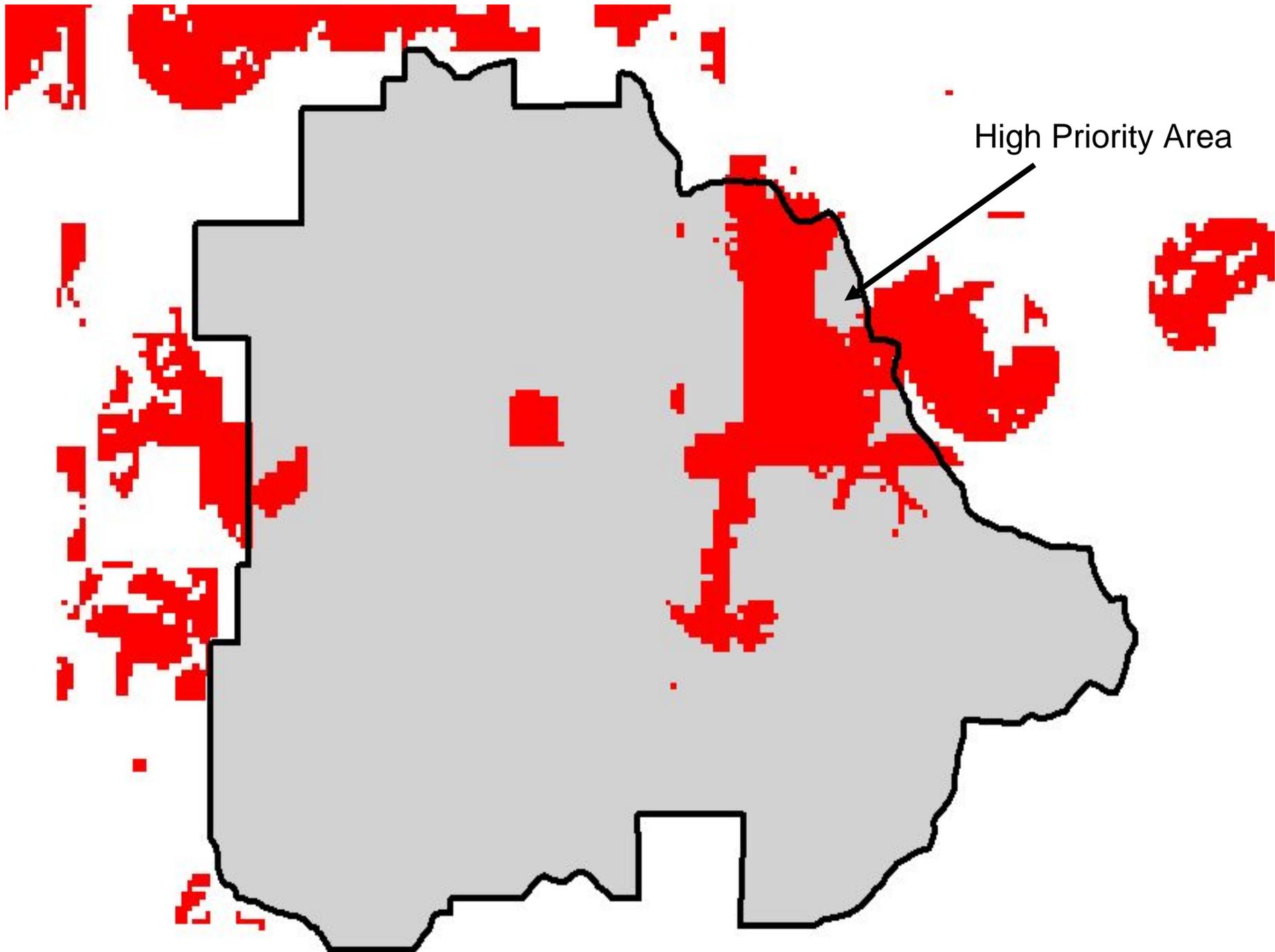


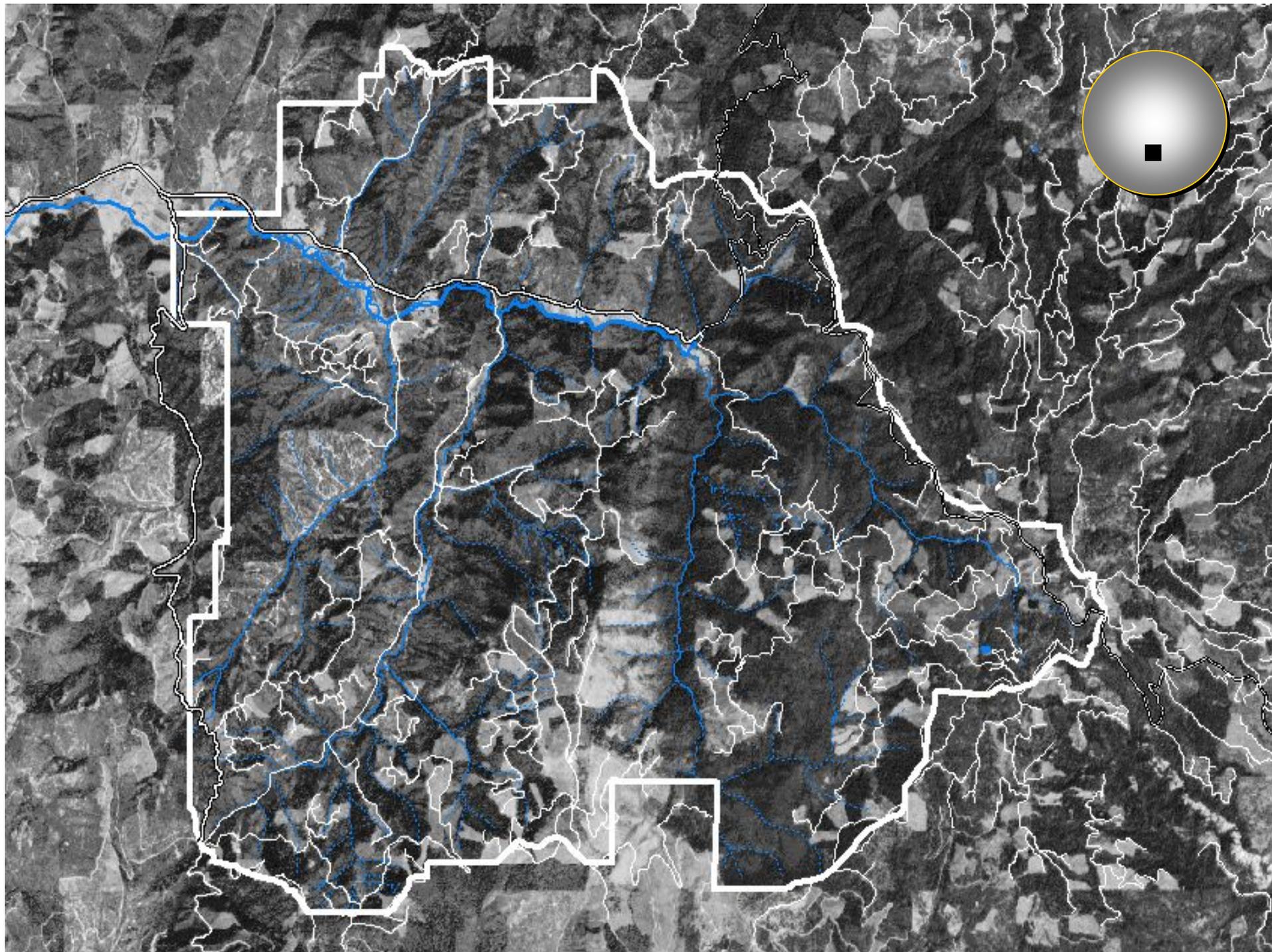
Fuel breaks
(planned)

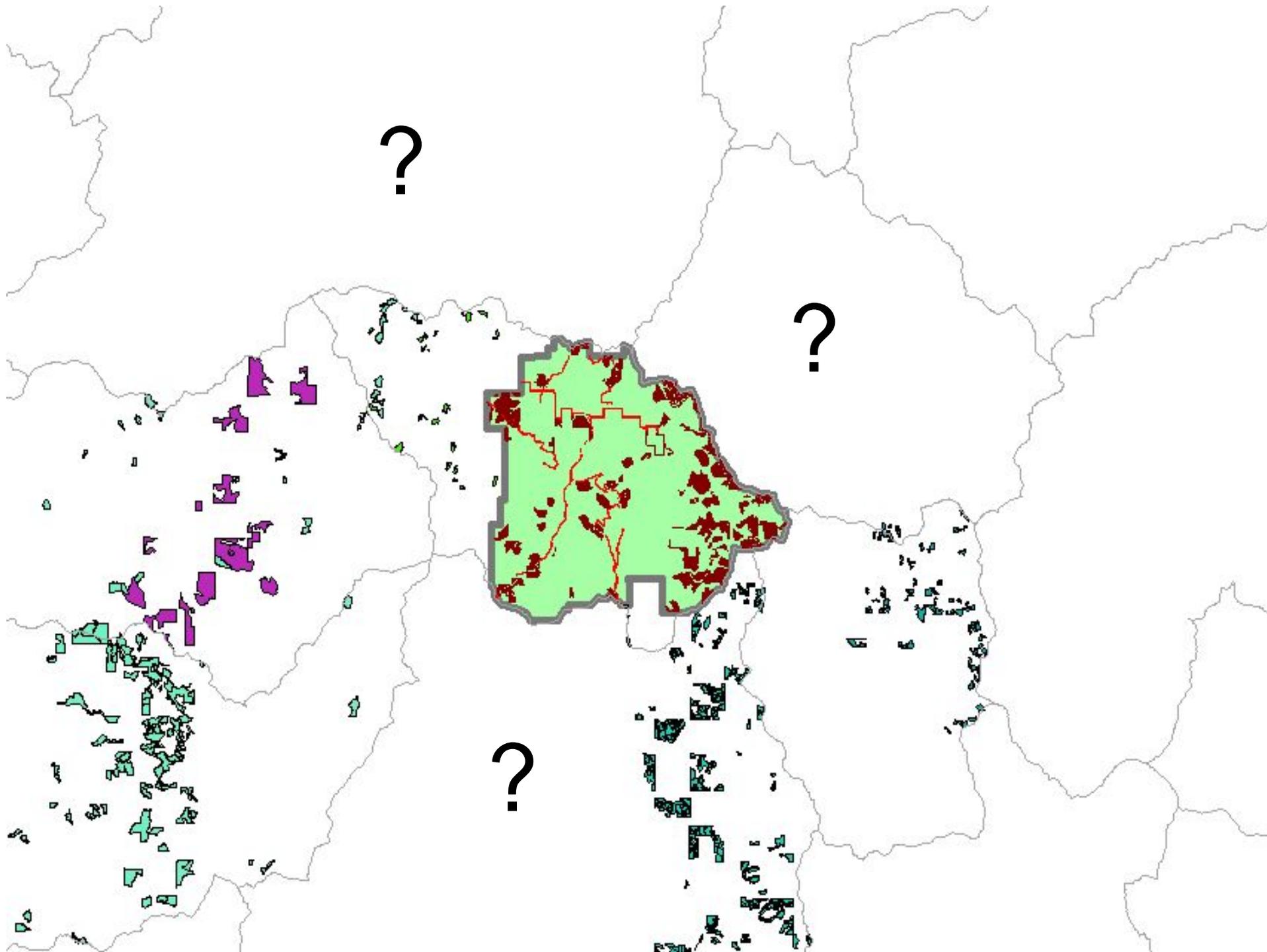


Fuel breaks
(planned)









Take home messages

- Large-scale landscape analysis can focus land managers to key locations, given limited resources and staffing
- Possible mechanism for regulatory agency guidance and interagency collaboration
- Provides a purpose and need for the action agencies and aids in project planning

Caveats

- This was only a conceptual example
- But...we did use real data and models...

A photograph of a forest fire. A large, bright orange and red fire is visible on a hillside, with a thick plume of white and grey smoke rising into the sky. The surrounding forest is dark green. The text "Thank you!" is overlaid in the center in a bold, orange font.

Thank you!