



The Invasives Initiative Geographic Strategy to
“defend and grow the core”
Prioritizing ranch-scale restoration and management

Jessica Griffen and Andrew Olsen | November 3, 2021



Objectives & Scope





Process

adapted from Peterson et al. 2011

1. **Review** information on regional climate change projections, resource conditions, and threats
2. **Rank:** Prioritize areas for restoration/management
3. **Resolve:** Develop and implement adaptation strategies
4. **Observe:** Monitor and practice adaptive management



Climate Impacts

- Hotter temperatures
- Precipitation may slightly increase
- Moister soils in winter and spring, drier soils in summer
- More frequent, longer summer droughts
- Longer wildfire seasons, more extreme fire weather

Local Fire Danger Projections

Higher Emissions (RCP 8.5)

1990s

SUMMER(Jun -Aug)/
FALL(Sept -Nov)



FUEL MOISTURE(SUMMER) /(FALL)

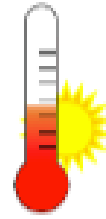
11.4% /16.3%

EXTREME DANGER(SUMMER) /(FALL)

9days /1.6days

2025s

SUMMER(Jun -Aug)/
FALL(Sept -Nov)



FUEL MOISTURE(SUMMER) /(FALL)

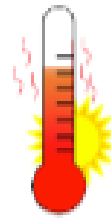
10.9% /16%

EXTREME DANGER(SUMMER) /(FALL)

11days /2days

2055s

SUMMER(Jun -Aug)/
FALL(Sept -Nov)



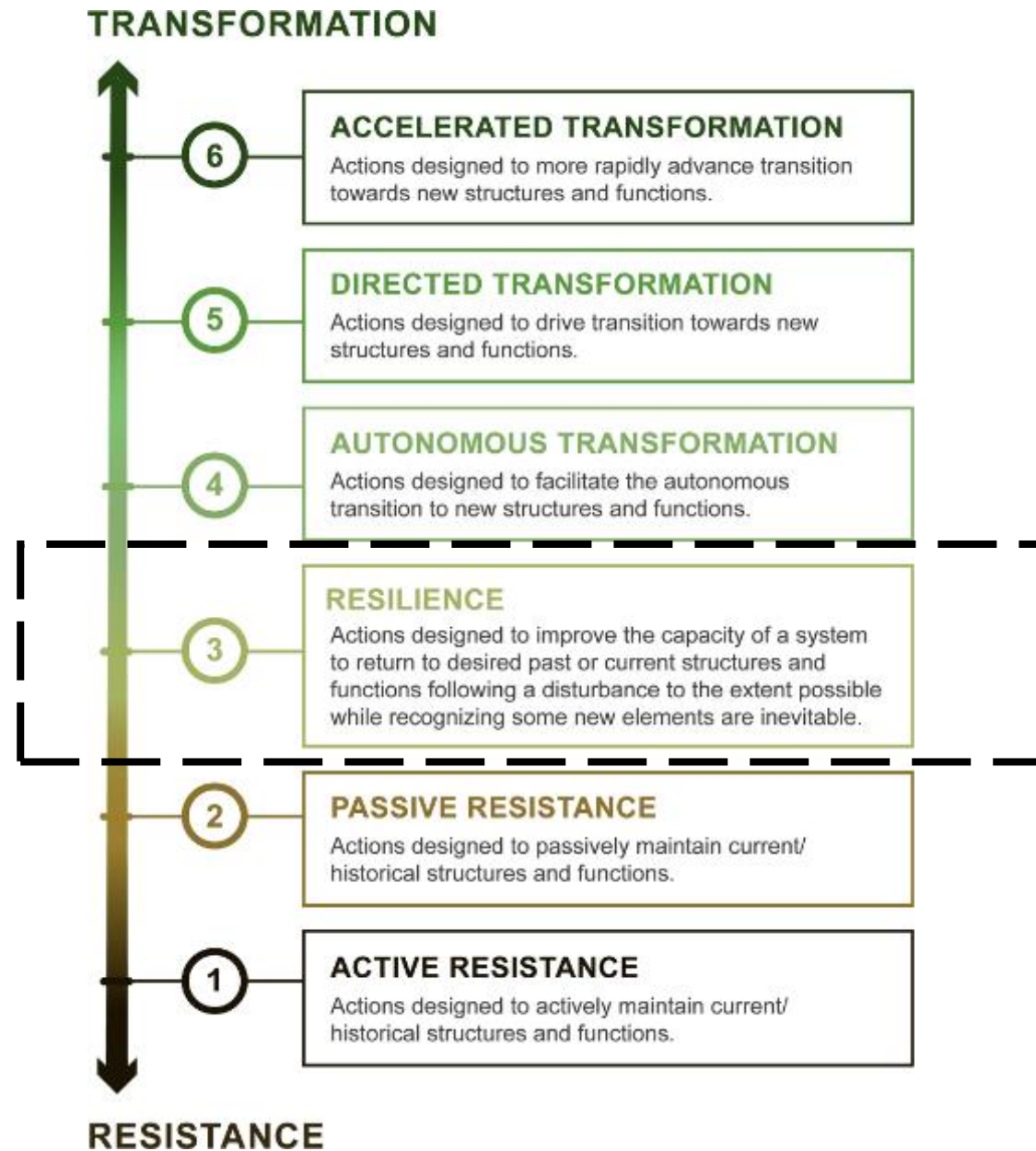
FUEL MOISTURE(SUMMER) /(FALL)

10.5% /15.7%

EXTREME DANGER(SUMMER) /(FALL)

16.1days /2.8days

Climate Adaptation Approaches



Climate Adaptation in the Sagebrush Biome

1. Reduce existing stressors



2. Maintain/enhance key structural & functional groups



3. Protect refugia and improve connectivity



4. Implement proactive management & restoration



An aerial photograph of a forest landscape. A river flows through the center, and a road is visible on the right side. The forest is dense and green, with some areas appearing more yellowish or brownish, possibly due to different tree species or land use. The text is overlaid on the center of the image.

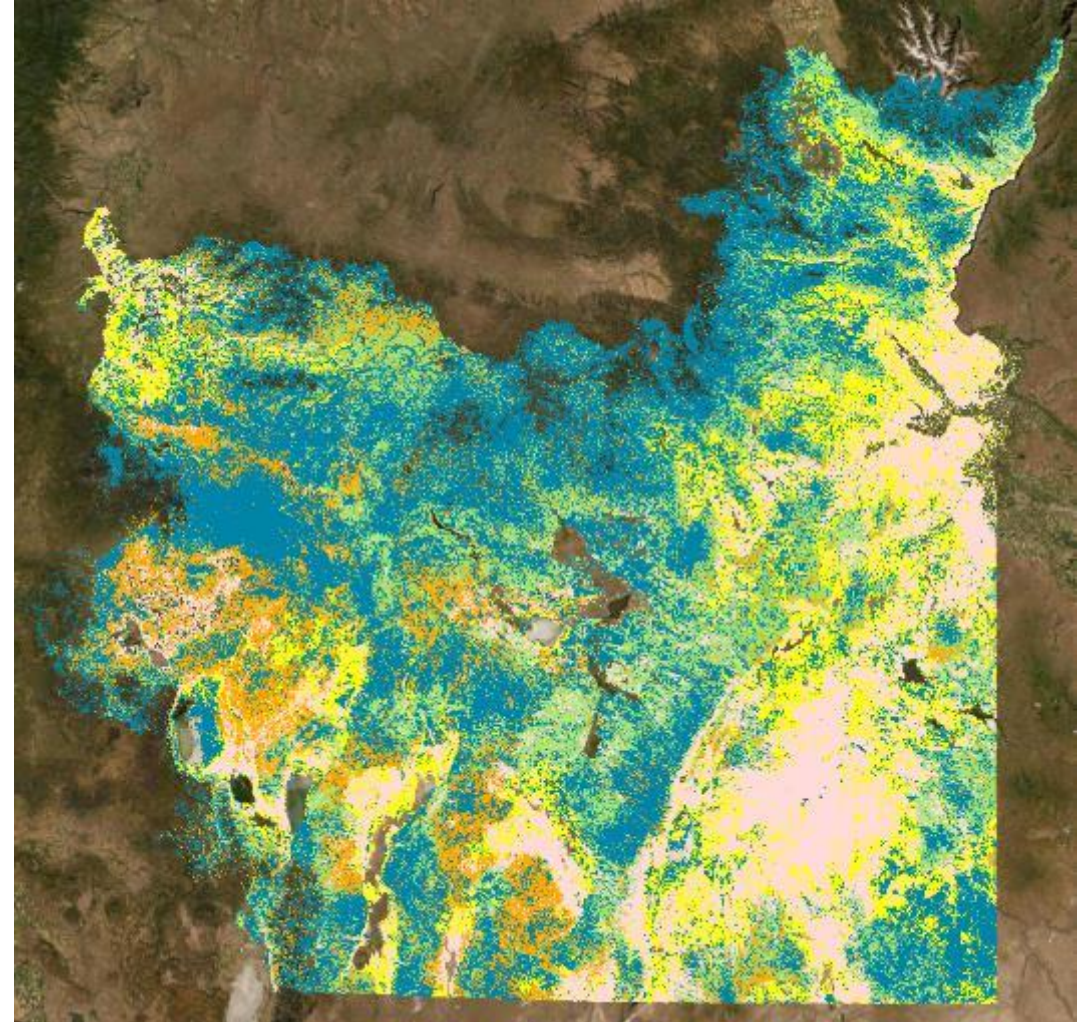
SageCon Invasives Initiative Geographic Strategy

The Geographic Strategy

The strategy maps combine

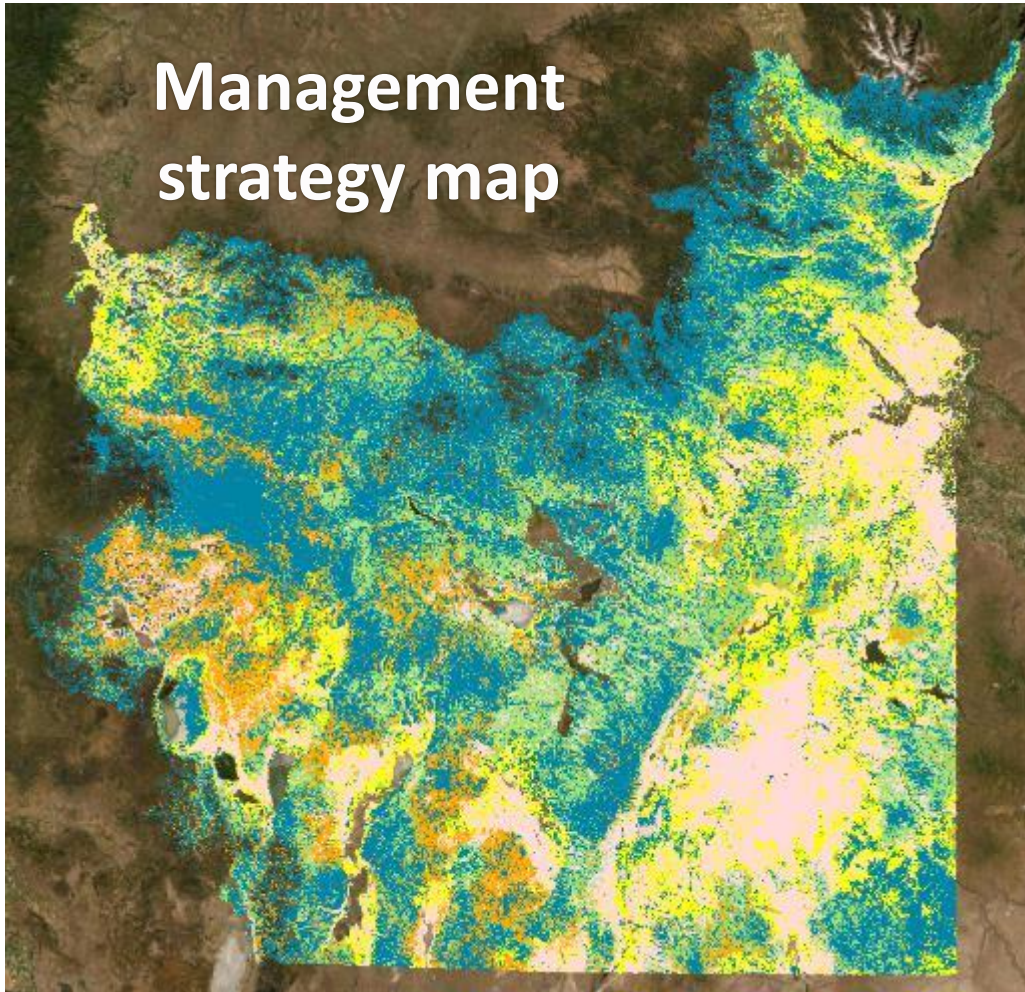
1. Annual herbaceous cover
2. Perennial herbaceous cover
3. Resistance and resilience

		Herbaceous Composition			
		High	Moderate	Fair	Low
Resistance and Resilience (R&R)	High	Blue	Light Green	Orange	Yellow-Orange
	Moderate	Blue	Light Green	Orange	Pink
	Low	Blue	Yellow	Yellow	Pink








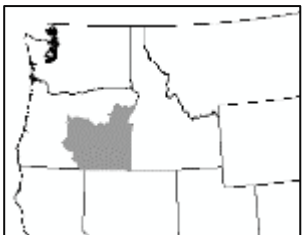
The Geographic Strategy

Management strategy map



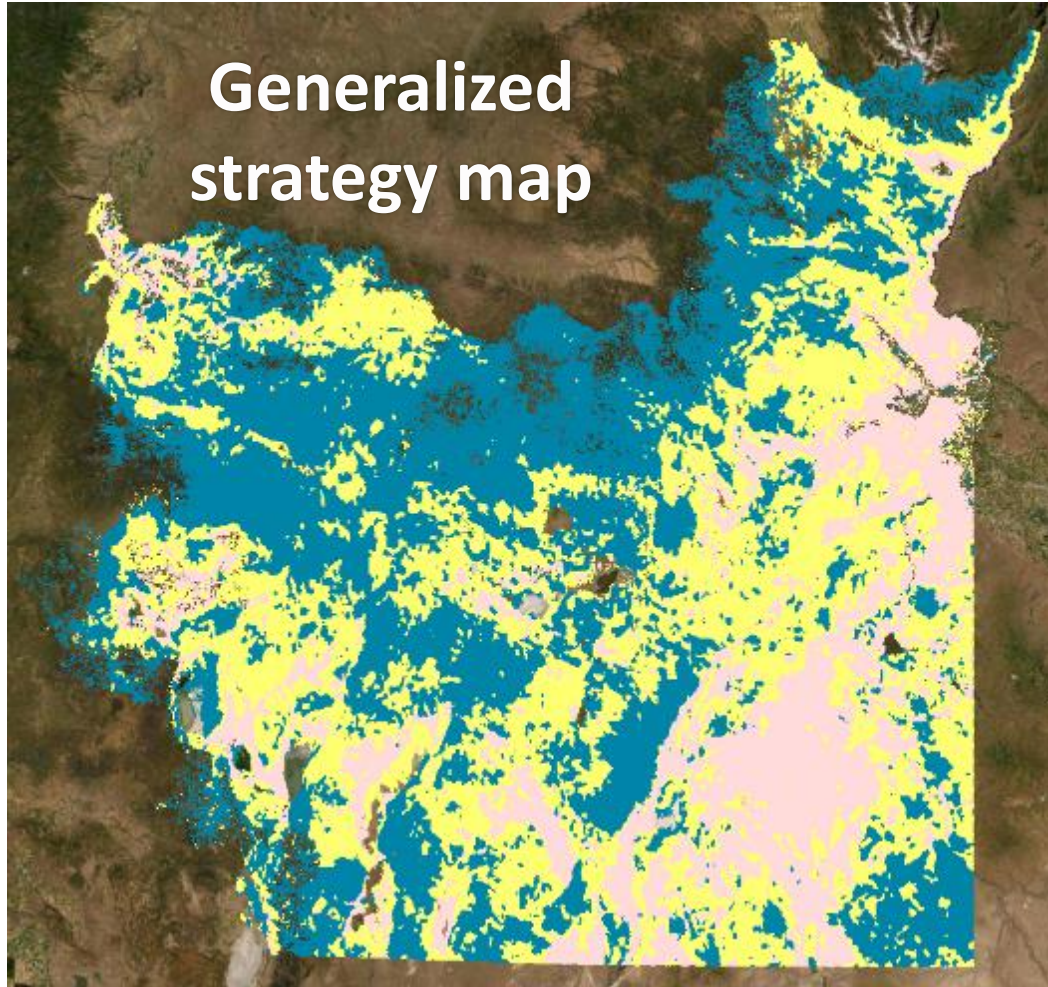
Management tool with finer-scale detail and information to support local planning

-  Intact core
-  Transitioning - high restoration potential
-  Transitioning - low resistance & resilience
-  Transitioning - low perennials
-  Degraded



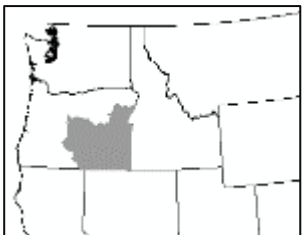
The Geographic Strategy

**Generalized
strategy map**



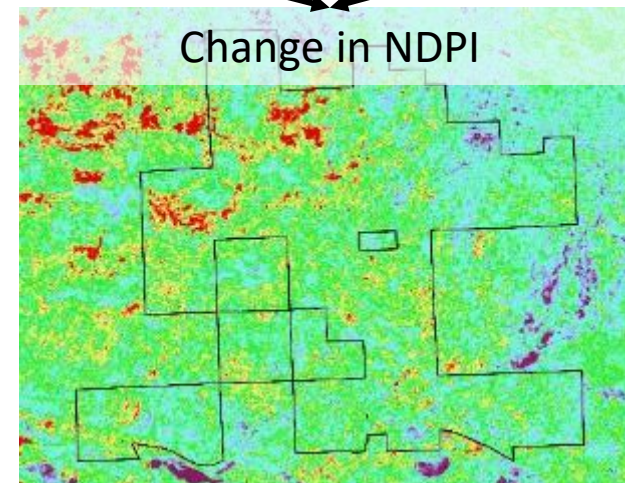
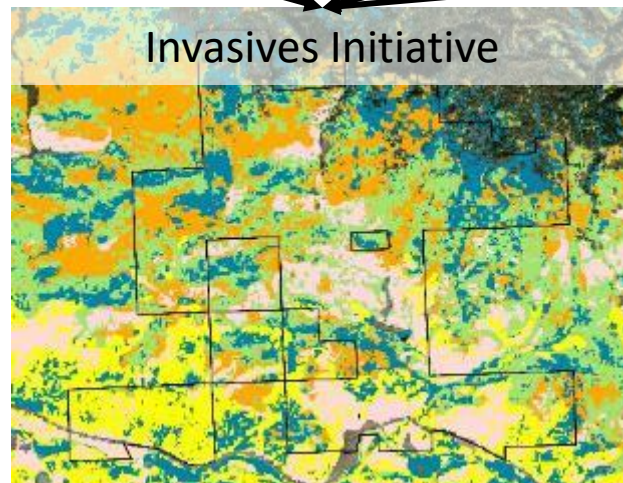
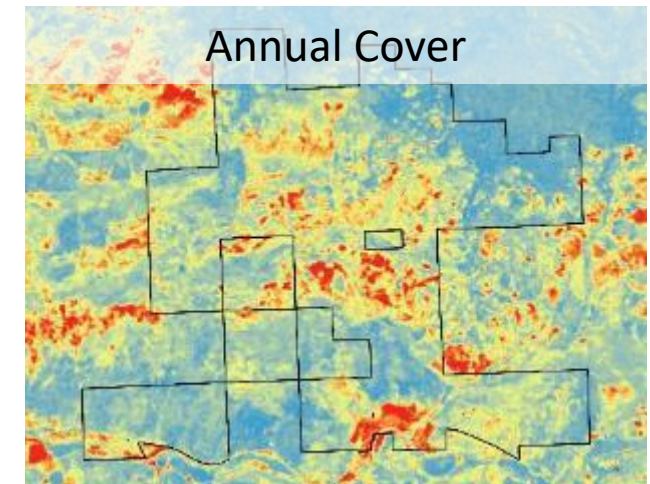
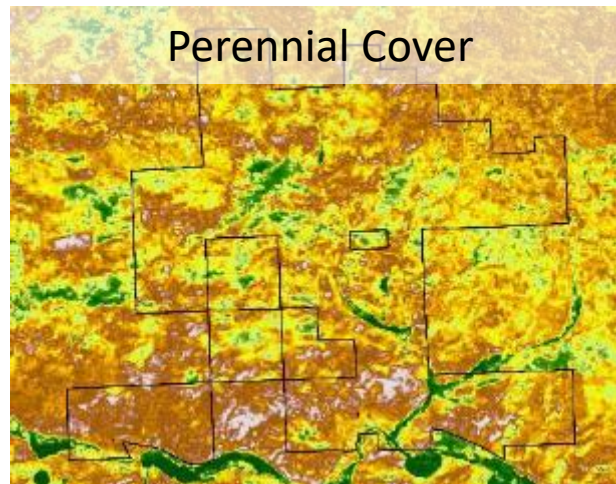
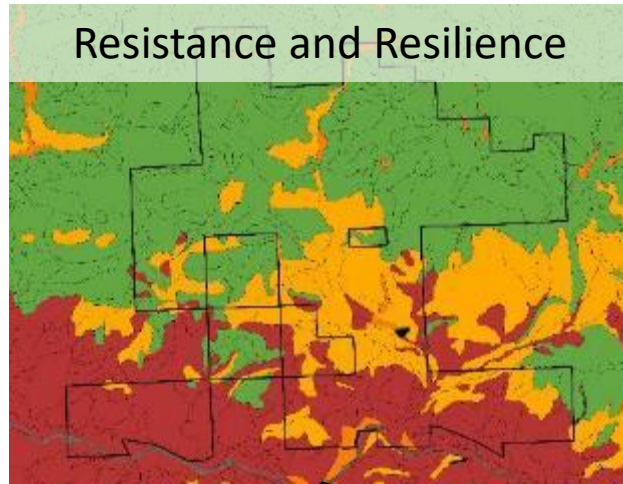
Communication tool to convey the strategy to a wide audience and identify broad-scale patterns

-  Intact core
-  Transitioning
-  Degraded





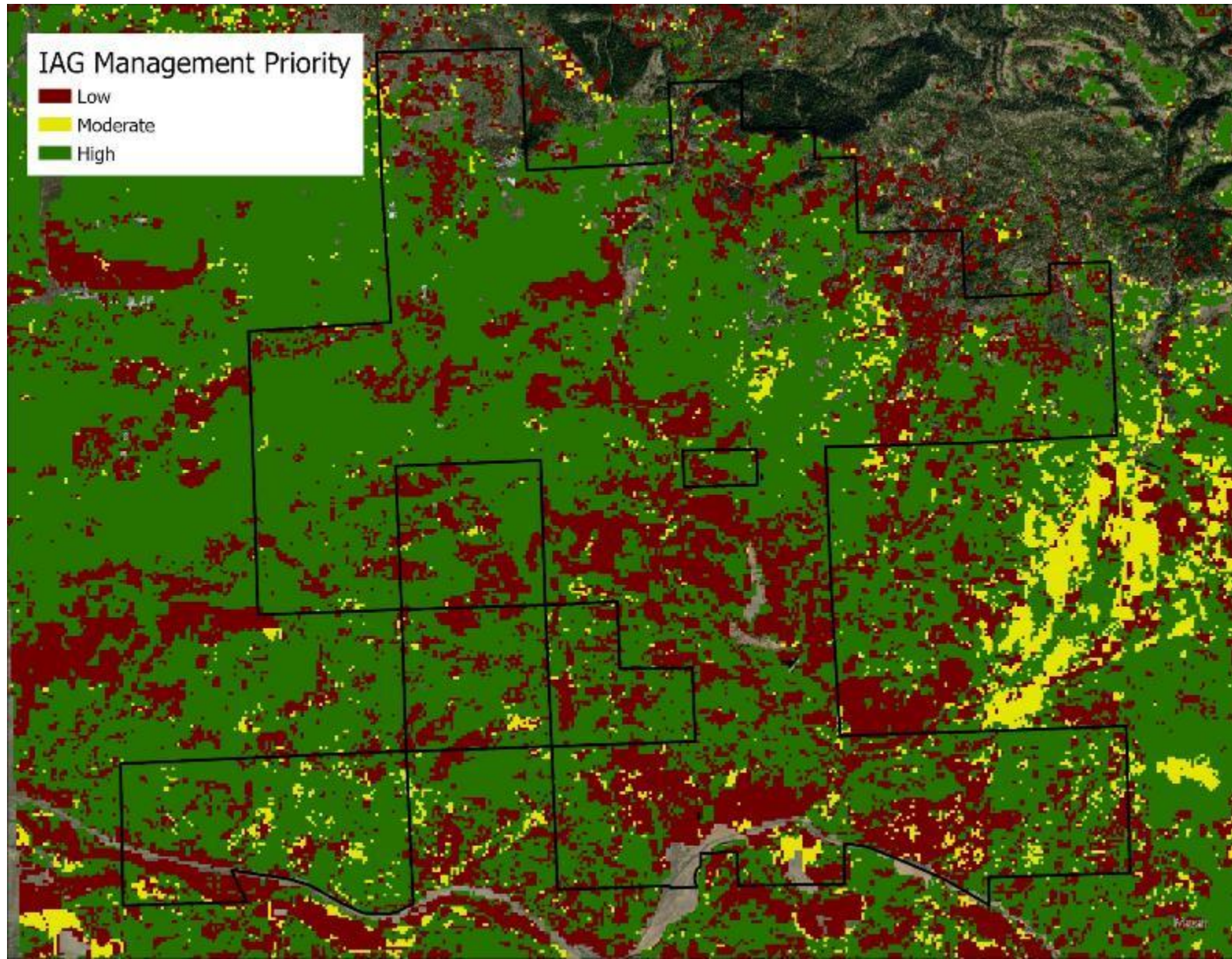
Prioritization Approach #1: Herbaceous understory management and restoration



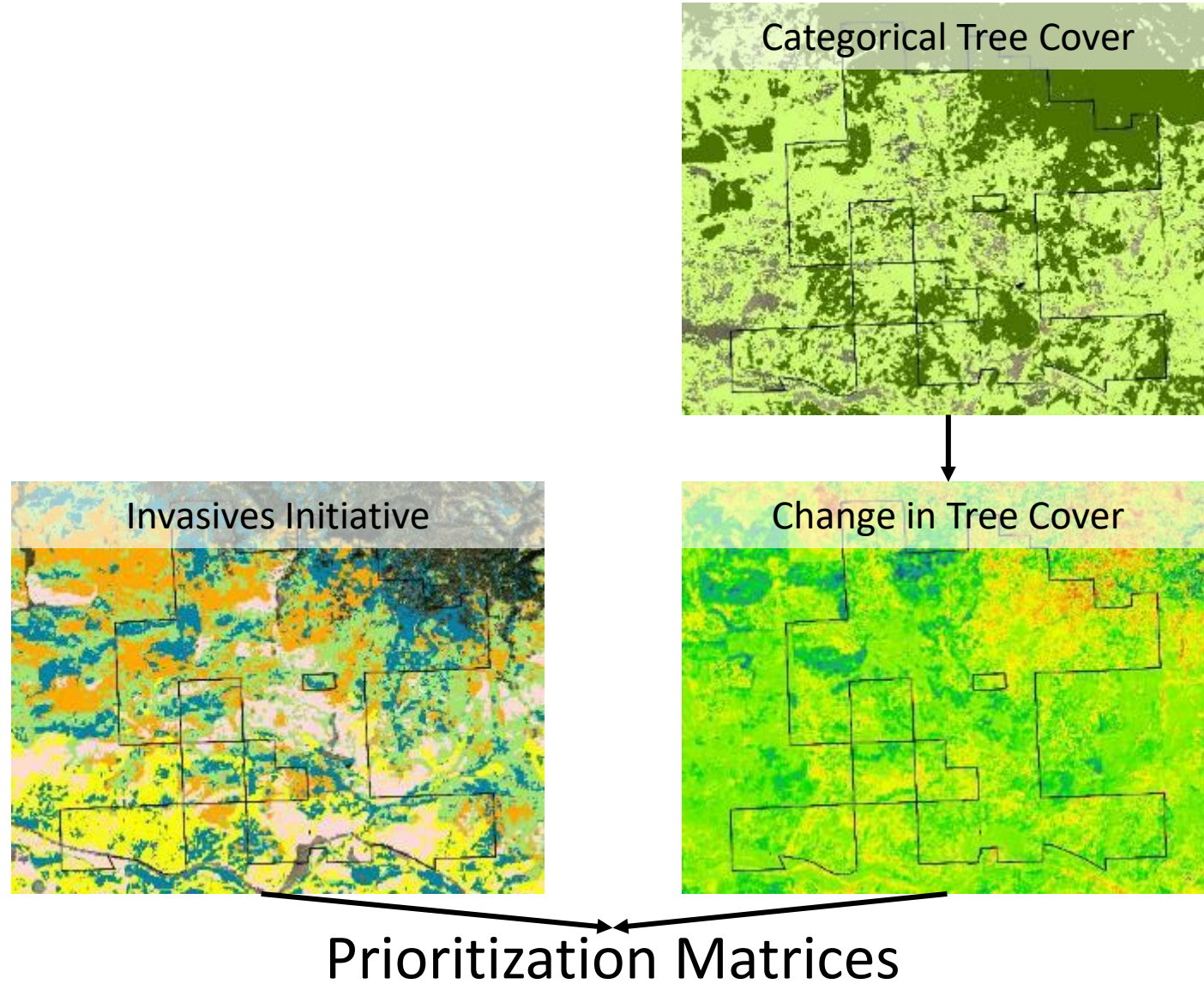
Prioritization Matrix

$$\frac{\text{Normalized Differenced Perennial Dominance Index (NDPI)}}{\text{perennial cover} + \text{annual cover}} + 1$$

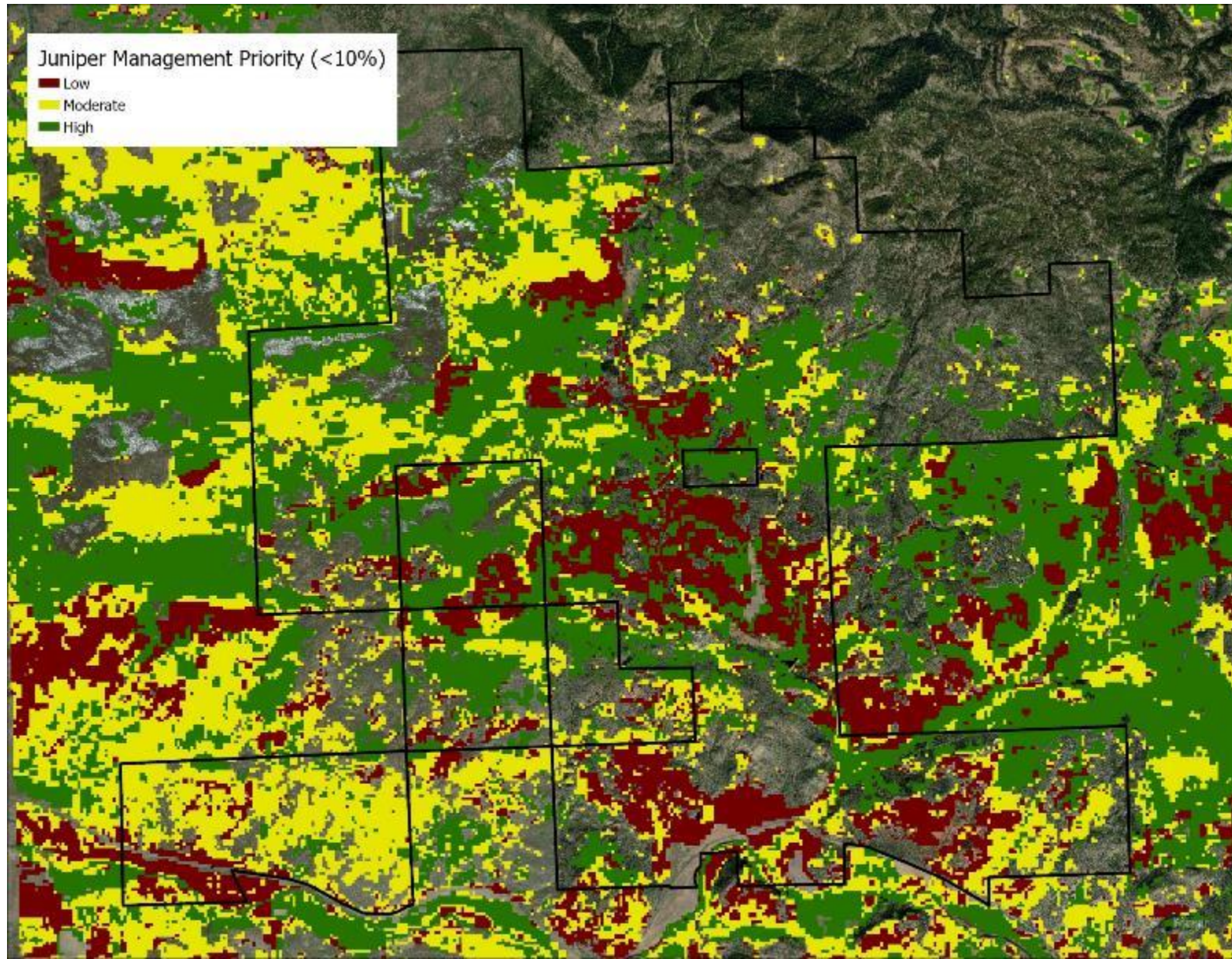
Prioritization Approach #1: Herbaceous understory management and restoration



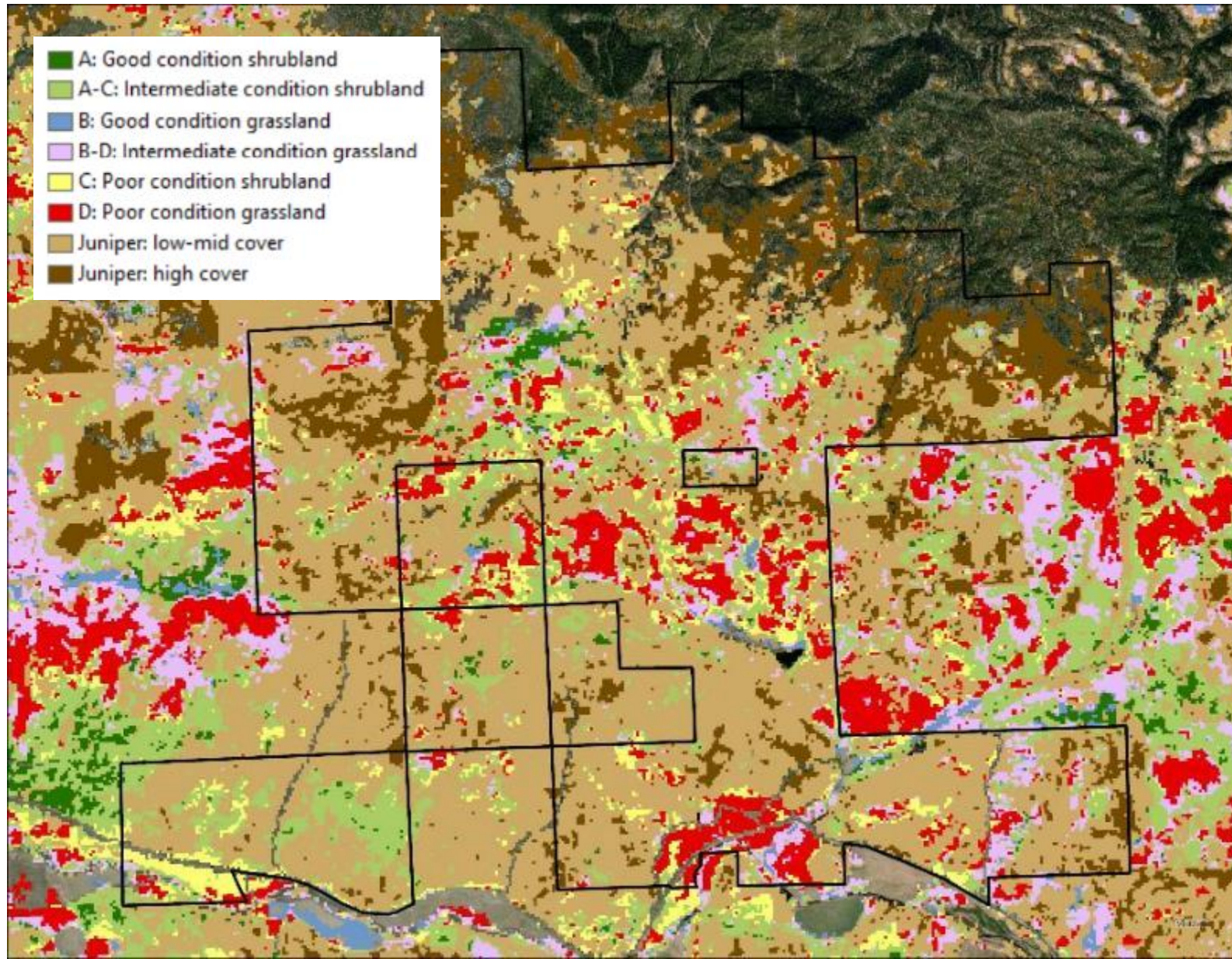
Prioritization Approach #1: Juniper reduction for fuels management, understory maintenance and restoration



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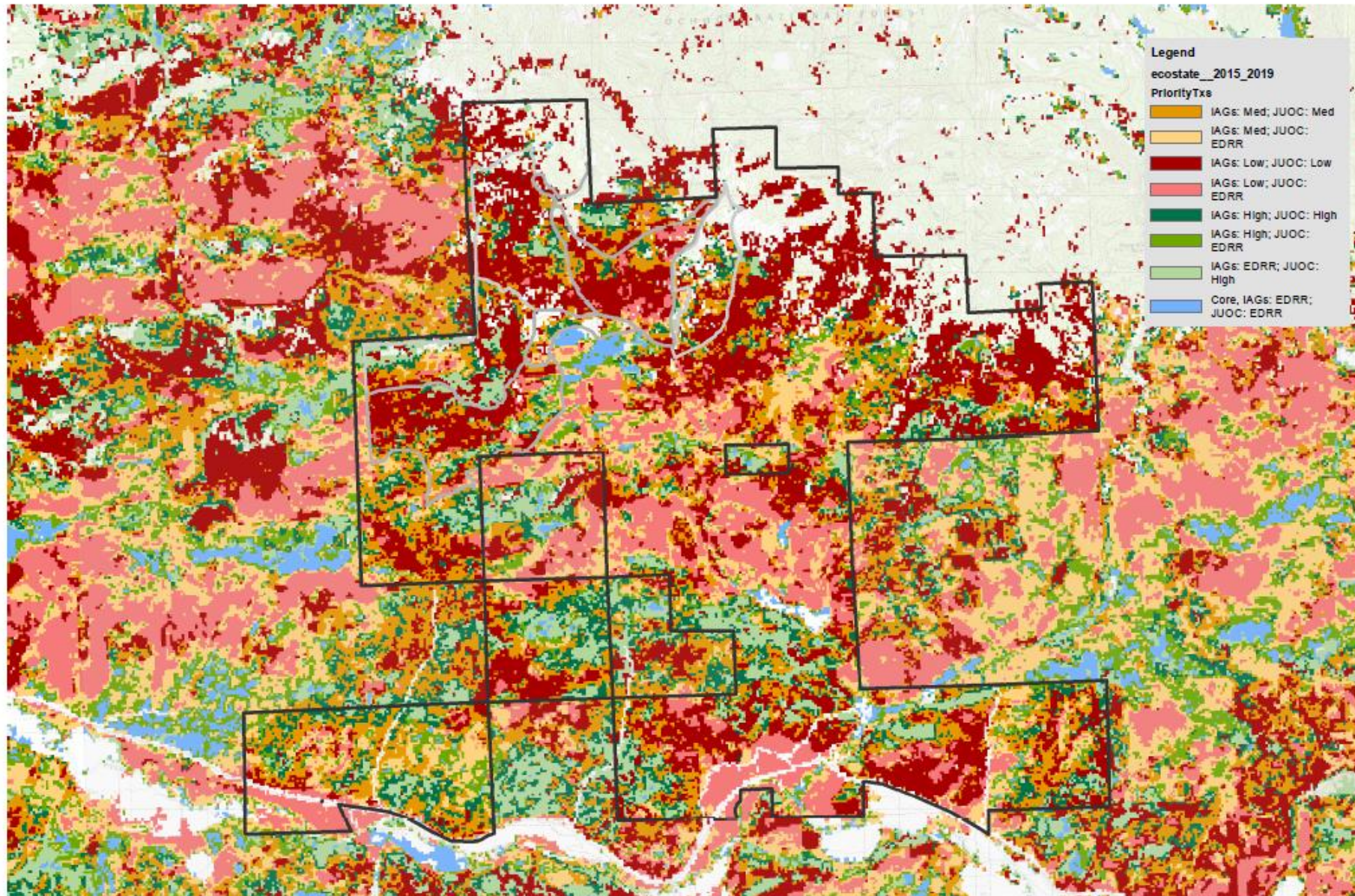


Prioritization Approach #2: Dual threat reduction and prioritization

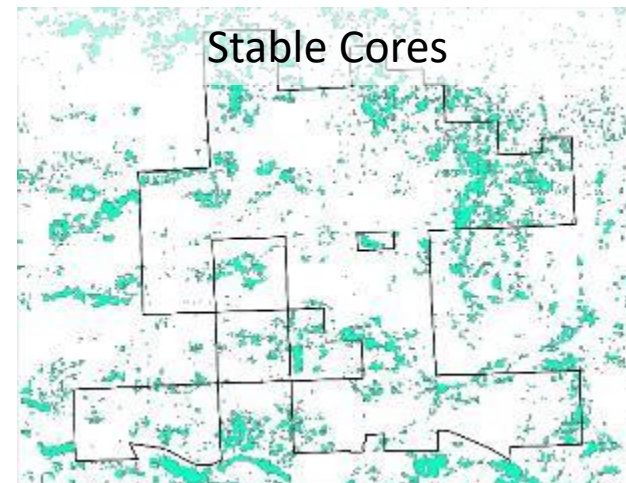
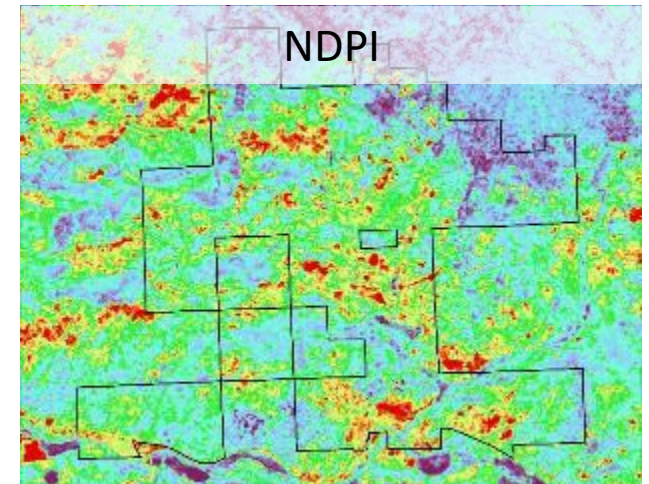
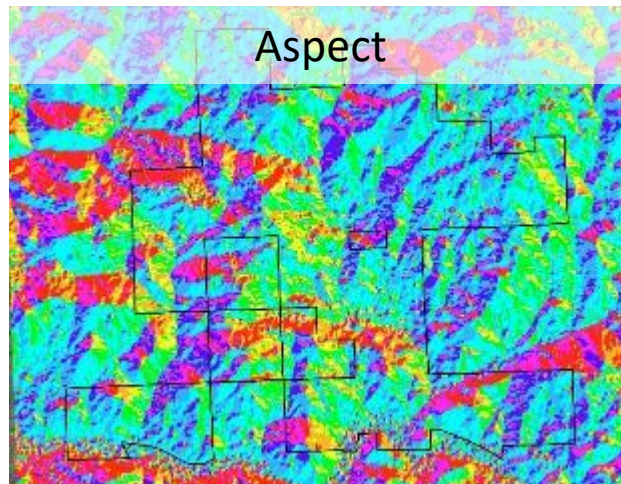
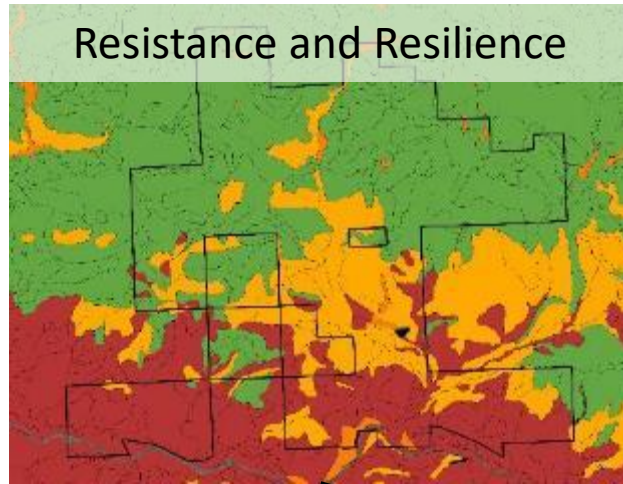


Juniper Hills Preserve - Ecostates 2015-2019 (Threat Models)

Restoration Priorities; Mgmt Objective to Maintain or increase perennial understory, address IAG and JUOC threats strategically

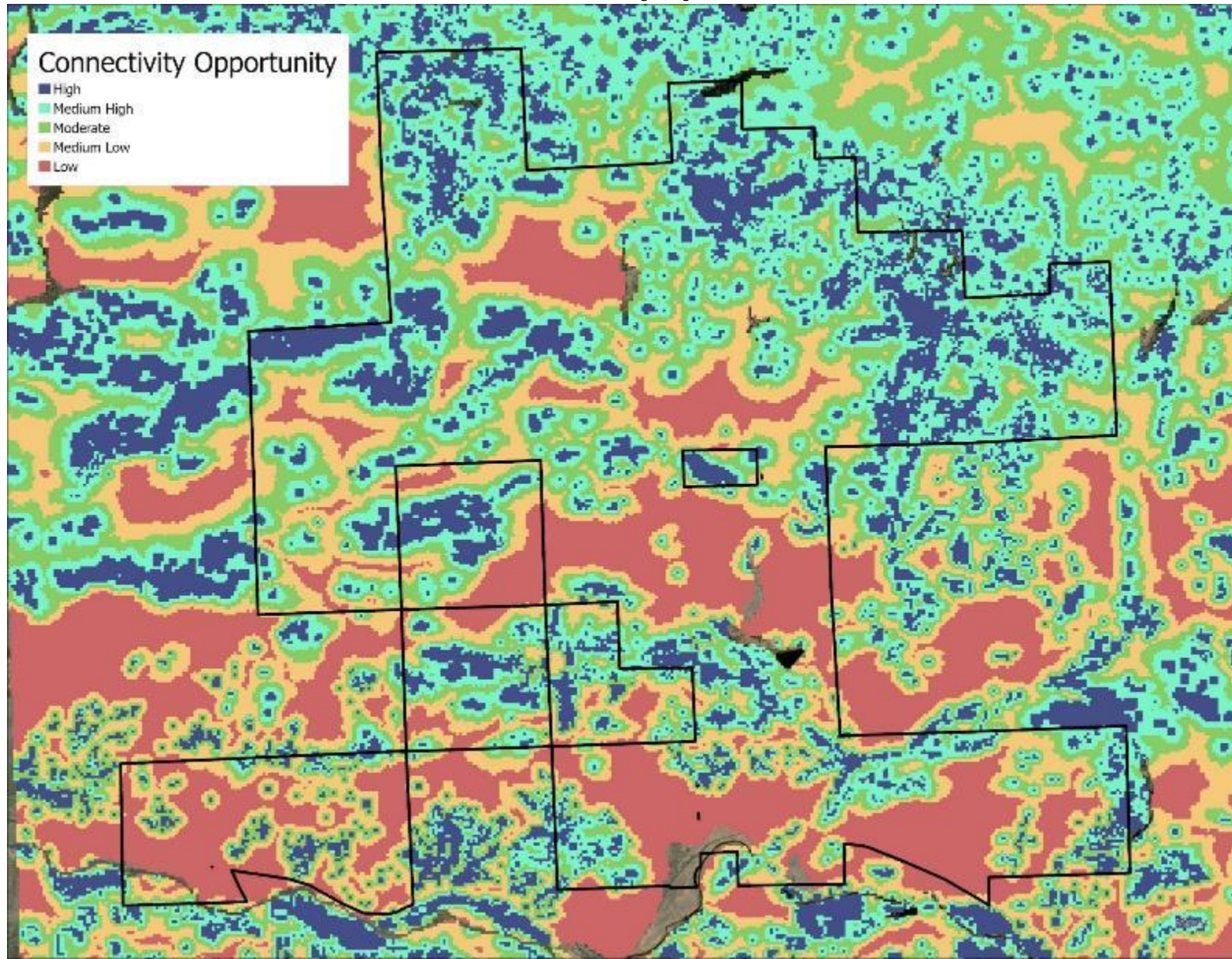


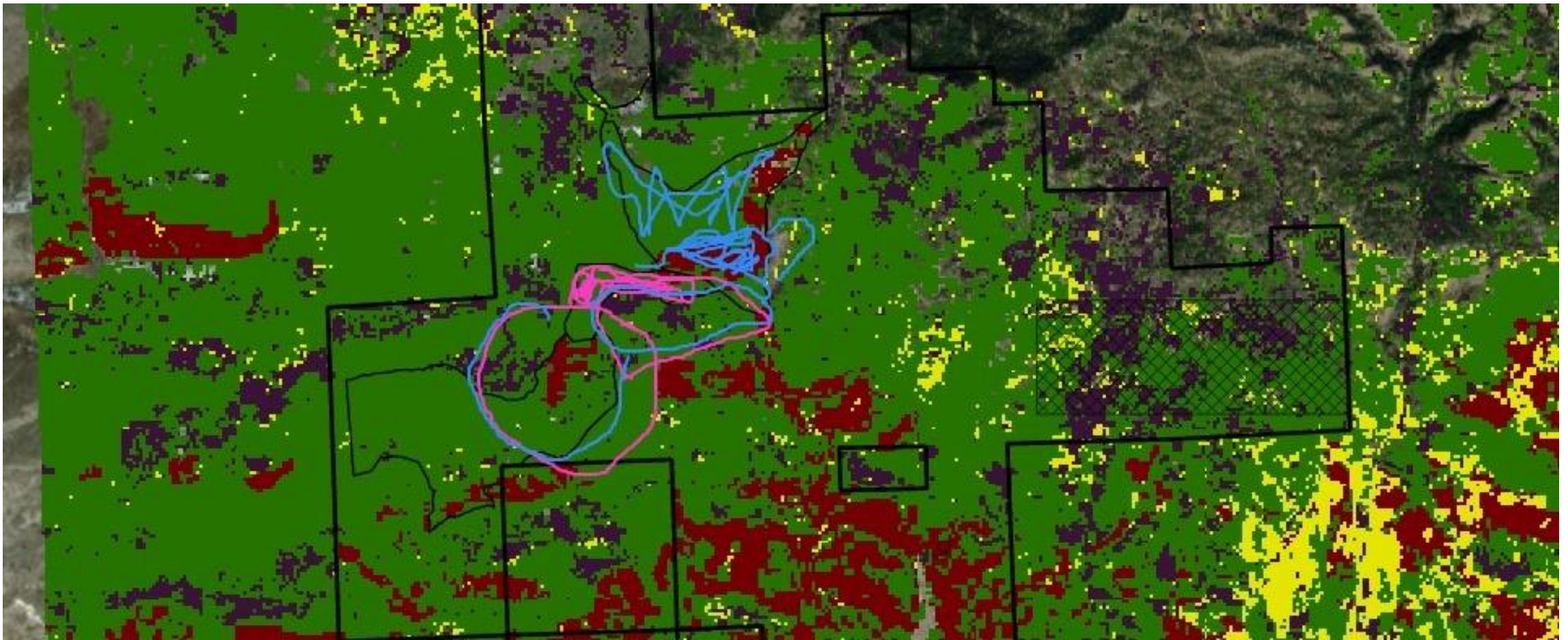
Climate Adaptation Approach: Defend, grow and connect resilient and stable 'cores' of functional understory plant communities



Connectivity Opportunity

Climate Adaptation Approach: Defend, grow and connect resilient and stable 'cores' of functional understory plant communities





Next Steps

- Peer Review on approach
- Continue to use approach to plan restoration at Juniper Hills
- Export to additional landscapes



Thank you!

- To access the base maps: search for Oregon Explorer: SageCon Landscape Planning Tool
- Contact us with your feedback on our approach and for more info on climate adaptation
 - Andrew.Olsen@tnc.org
 - Jessie.Griffen@tnc.org