

# Connecting Habitat for Washington's Wildlife

Developing the Washington Habitat Connectivity Action Plan



Washington  
Department of  
**FISH and  
WILDLIFE**



The Wildlife  
Connectivity  
Institute





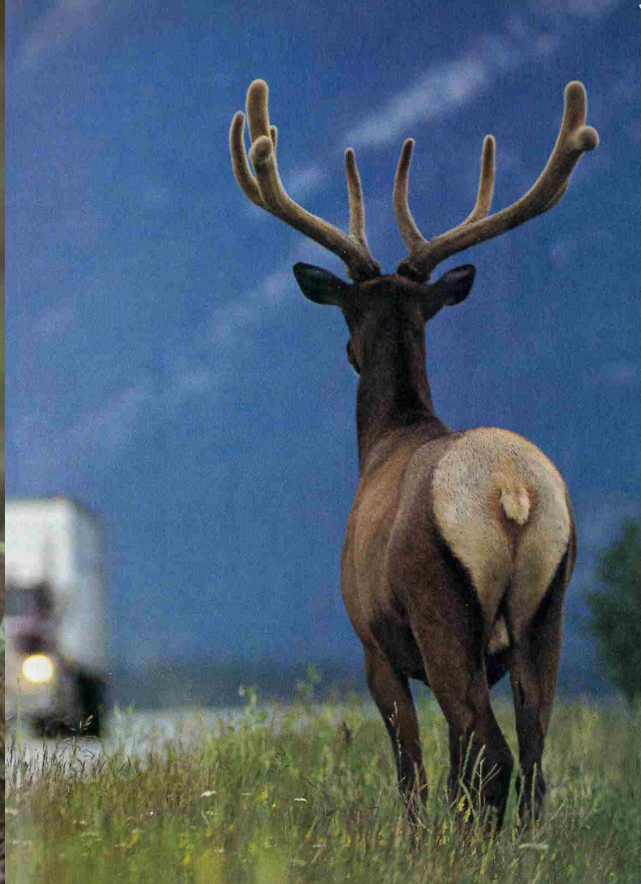
**Habitat connectivity is the degree to which the landscape facilitates or impedes wildlife movement**



Providing spatial data and technical assistance to help planners *designate* and *protect* critical fish and wildlife habitat including

Biodiversity Areas and Corridors





# Why do wildlife cross the road?





Daily travel to access resources





Migration

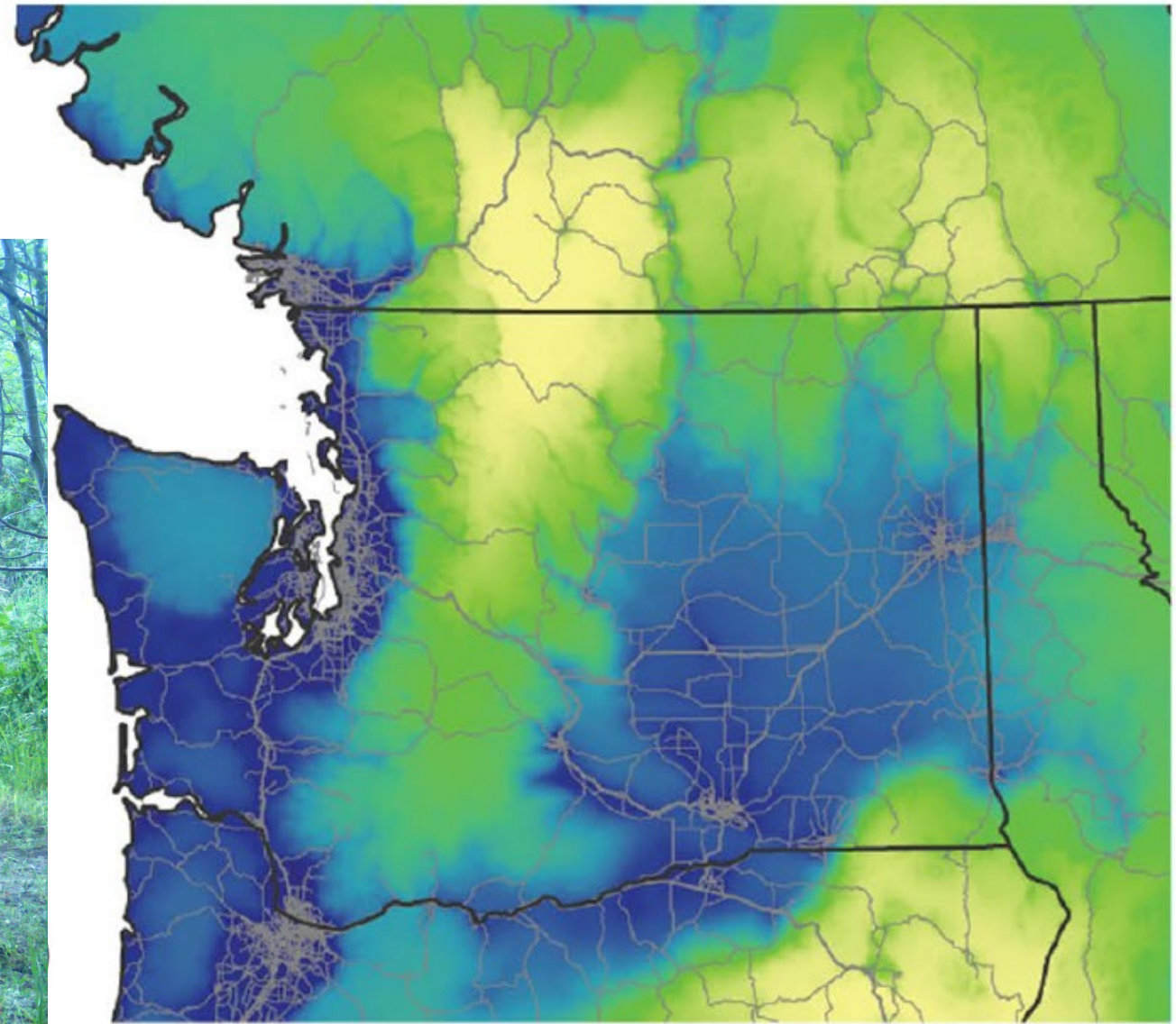


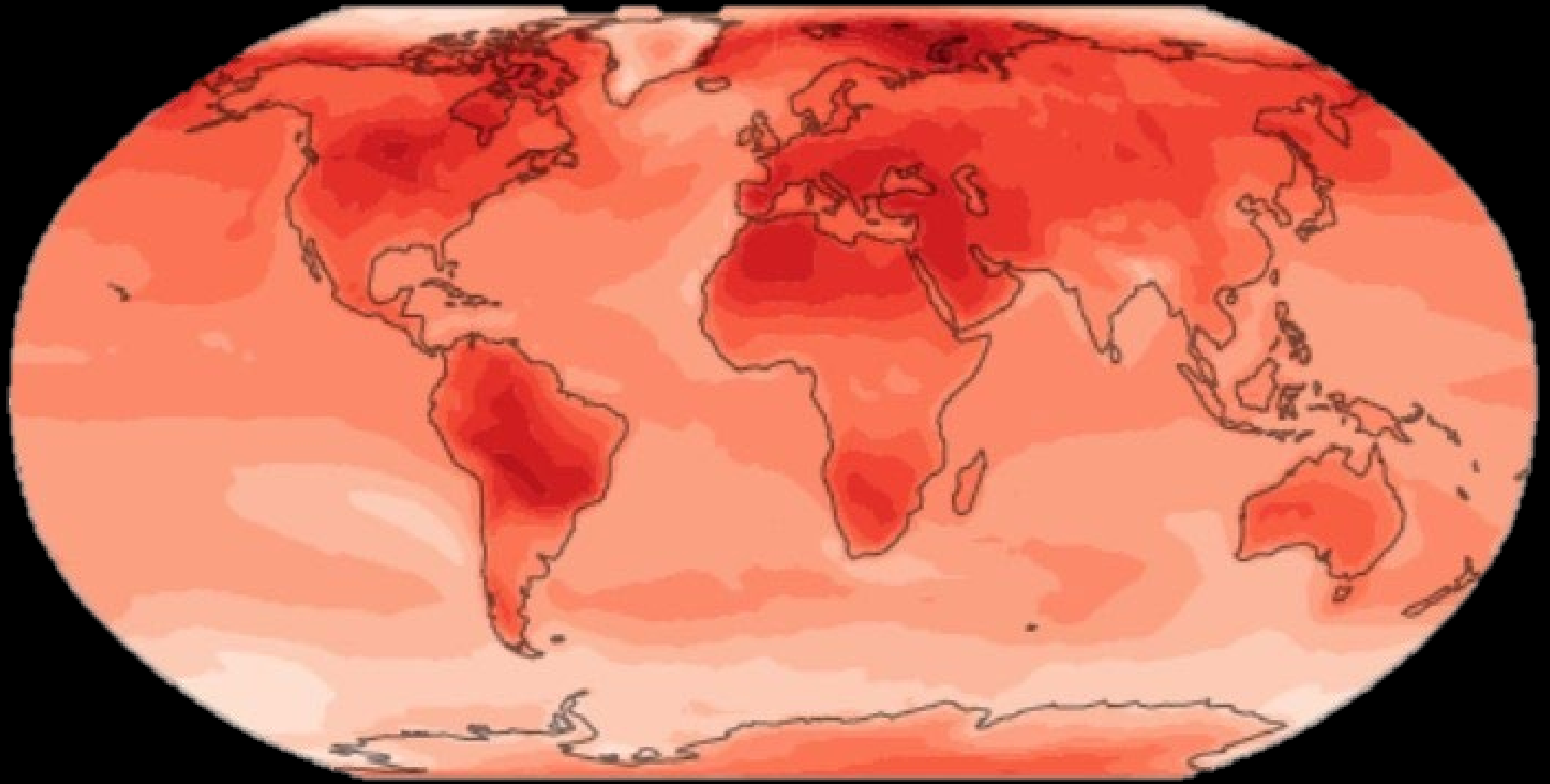
Dispersal

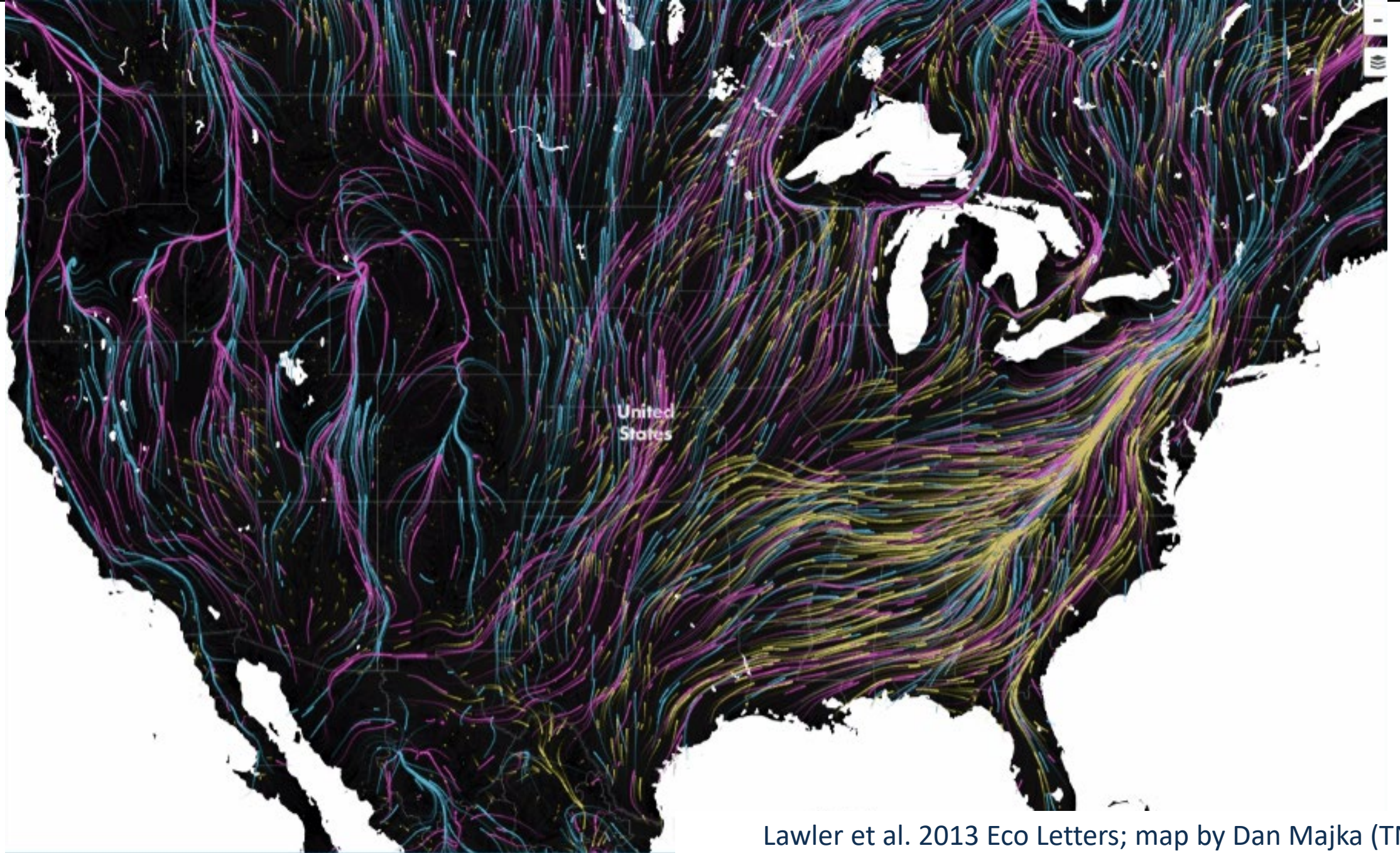




# Maintaining gene flow







Lawler et al. 2013 Eco Letters; map by Dan Majka (TNC)





# #1 CLIMATE ADAPTATION STRATEGY = INCREASE CONNECTIVITY

HELLER & ZAVALETA 2009 BIOL. CONS.

# Washington Habitat Connectivity Action Plan

Collaborative partnership to prioritize places and projects to protect and enhance habitat connectivity statewide.



# Today

10:00 – 10:15: Washington Habitat Connectivity Action Plan (WAHCAP) overview

10:15 – 11:00: WAHCAP mapping deep dive

-----Questions and Discussion-----

11:30-11:45: Next steps: prioritization and implementation

11:45-12:00: WAHCAP spatial data review





# Guiding principles

Build from what we have.

Support and amplify existing connectivity work.

Focus on action not analysis.

Both road crossings and landscape connectivity

Focus on terrestrial connectivity

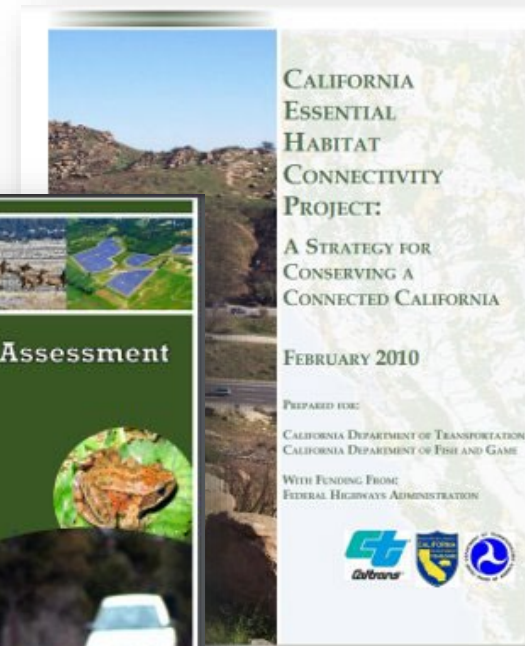
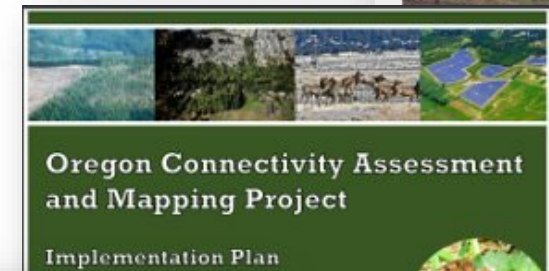


# State Connectivity Action Plans

Maps showing *where* connectivity is.

*Priorities* for taking action.

Strategies for coordinated *implementation*.



# Immediate implementation priorities

Successfully apply for grants for road crossing structures.

Inform periodic update for comprehensive plans and critical areas.



2024 Due December 31, 2024 2025 Due December 31, 2025 2026 Due June 30, 2026 2027 Due June 30, 2027

★ Starred counties are partially planning under the Growth Management Act

# Additional implementation avenues

- Land acquisition decisions.
- Landowner incentive programs.
- Inform restoration decisions.
- And...?



# Timeline

		2024												2025					
Contract	Task/Deliverable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Action Plan	Kick-off Meeting	*																	
Spatial data	Spatial data co-production						*			*									
	Feedback on products																		
	Revise products											*							
Action Plan	Prioritization criteria												*						
	Implementation planning												*						
	Drafting Action Plan													*					
	Final comment period																		
	Finalize report																		*

\*Draft deliverable due dates



**MAPPING DEEP DIVE**

# Technical Advisory Group

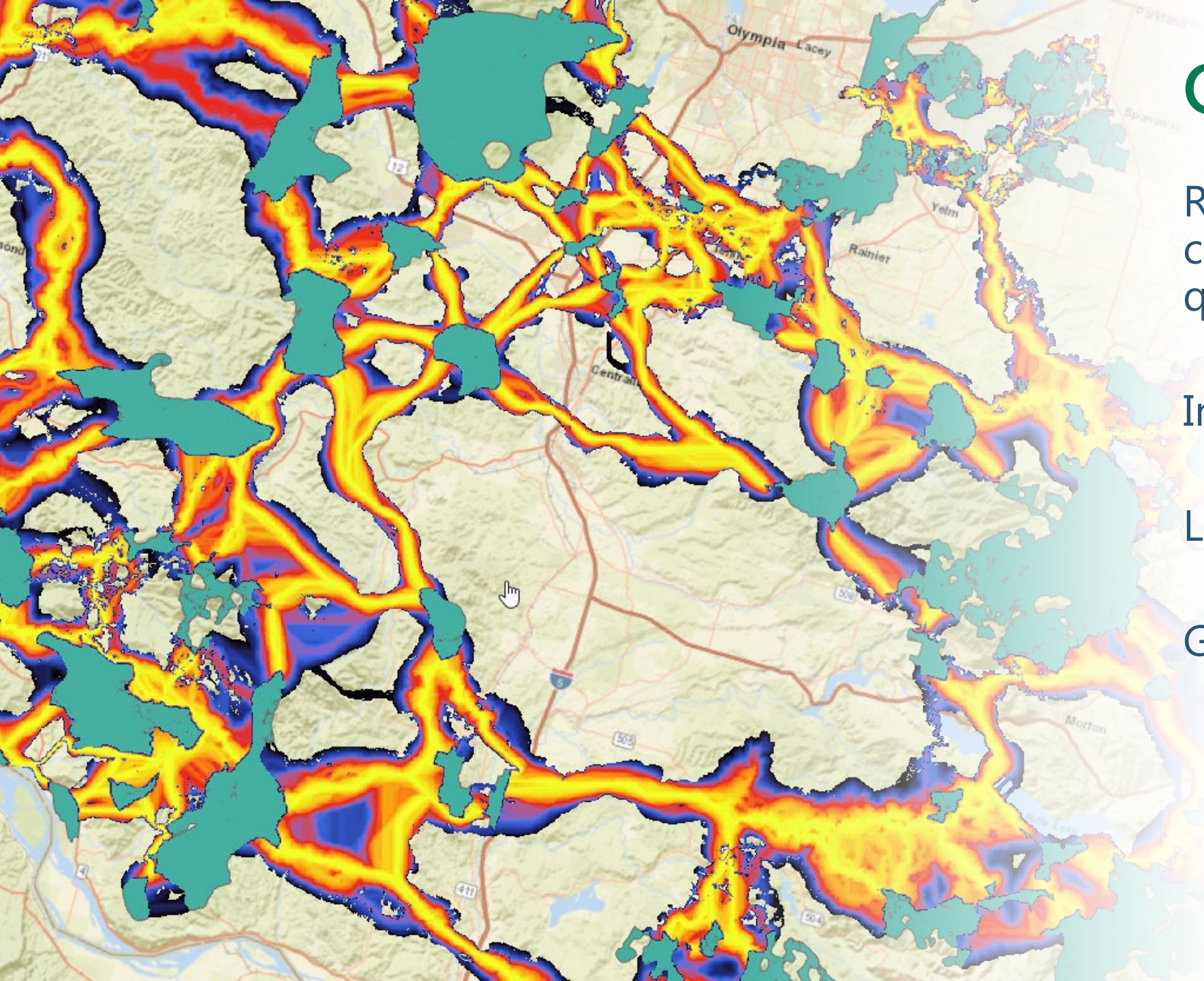


Washington  
Department of  
**FISH &  
WILDLIFE**



- TerrAdapt ecosystem models
  - Human footprint
  - Ecosystem definition
  - Core area definition
- Species data deep dive
- Synthesis approach
- How to combine/weight data
- Trouble shooting results





# Core areas

Relatively large, contiguous blocks of high-quality habitat.

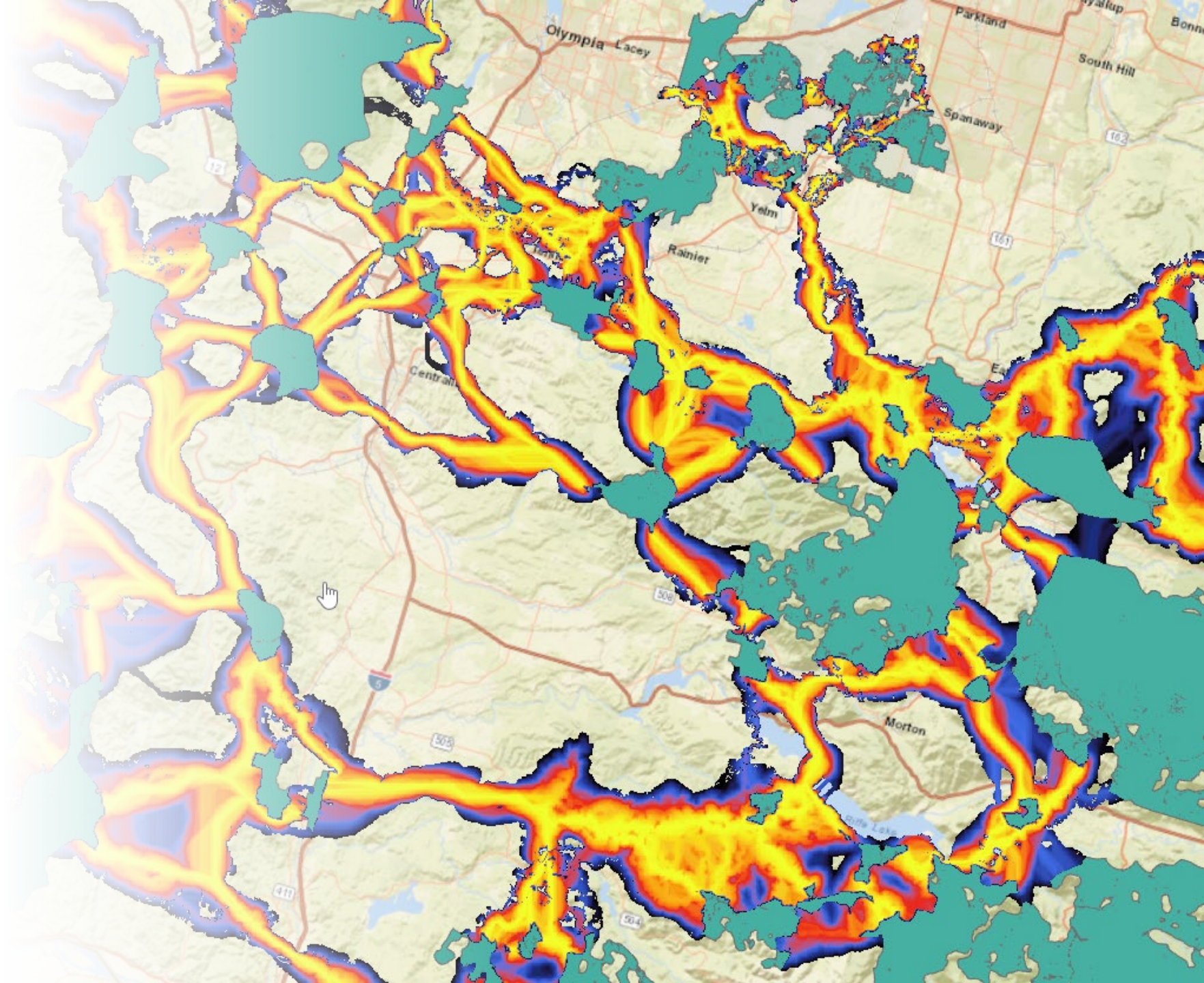
Internally well connected

Low human footprint

Good ecological condition

# Connectivity

Regions or locations that facilitate or are permeable to wildlife movement.

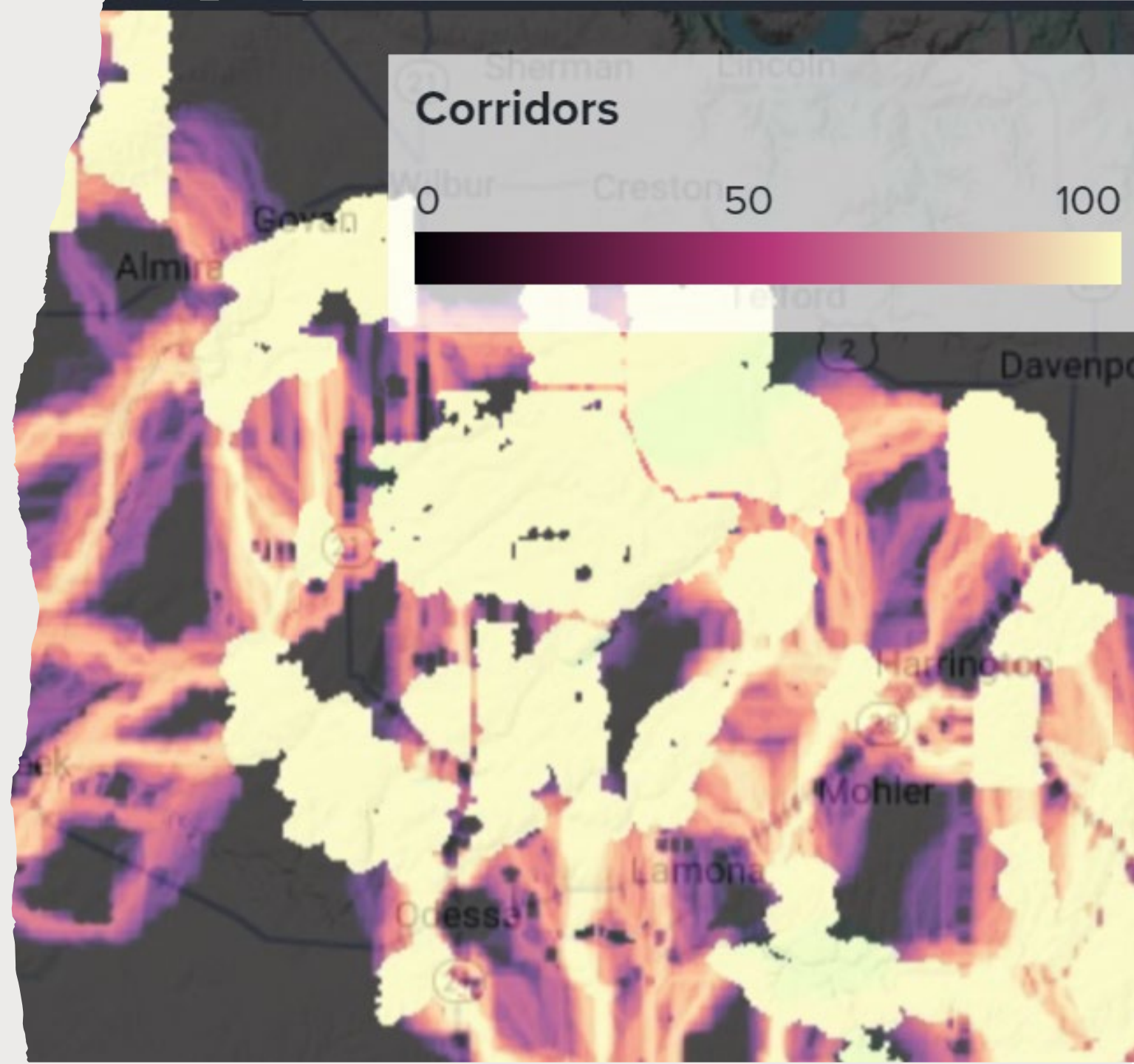




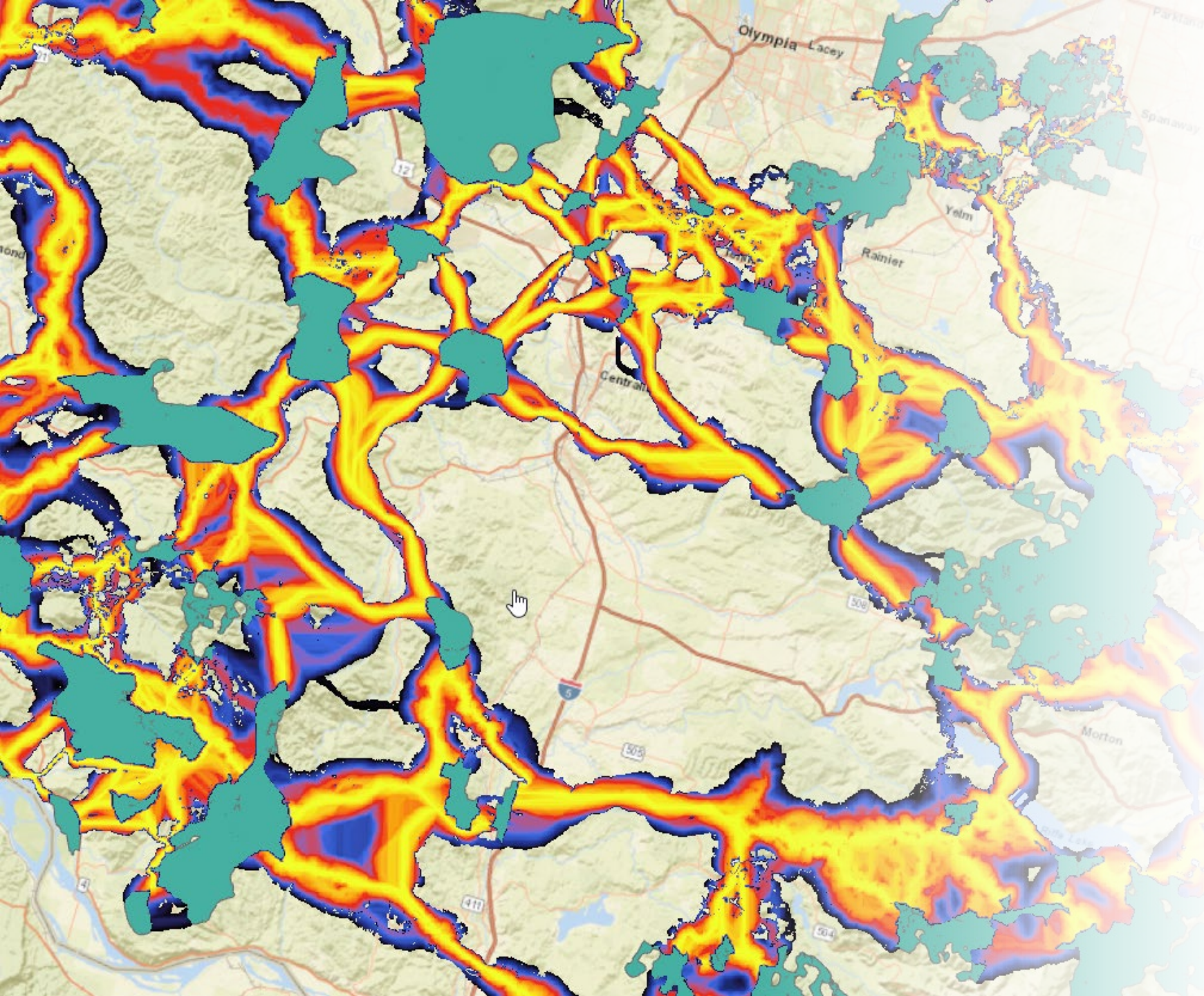
# Connectivity

Distinguished from cores because:

1. Not actually a clear line of distinction.
2. *Sometimes* shape
3. *Sometimes* condition



**CREATING THE CORES**



# WAHCAP core areas

Ecosystems

Focal species

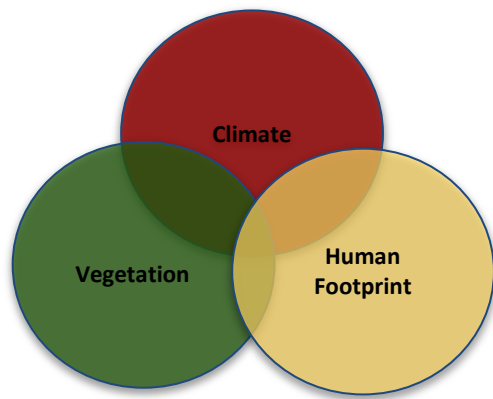
Protected areas managed to support biodiversity

Biodiversity areas

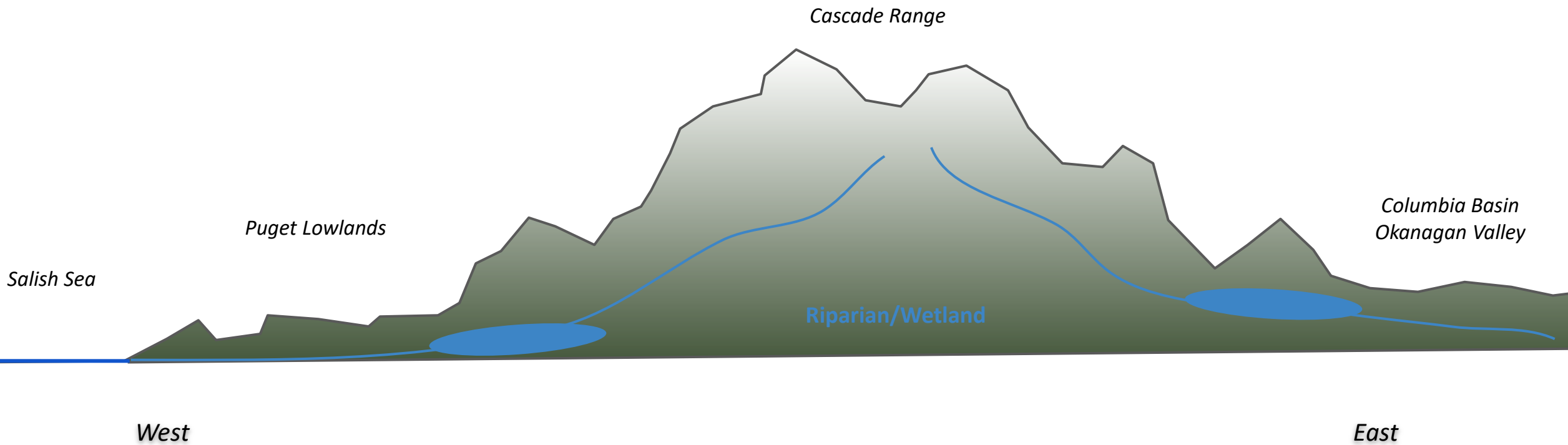
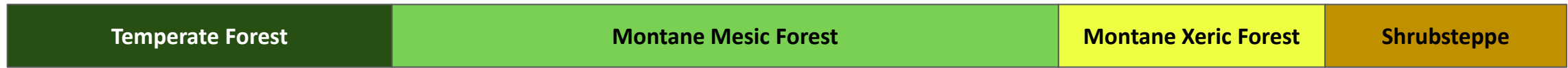


# Ecosystem connectivity





## 4 Ecosystem-Based Models



# Fine filter and coarse filter

## Species



## Ecosystems



## Landscape Integrity



Specific



General

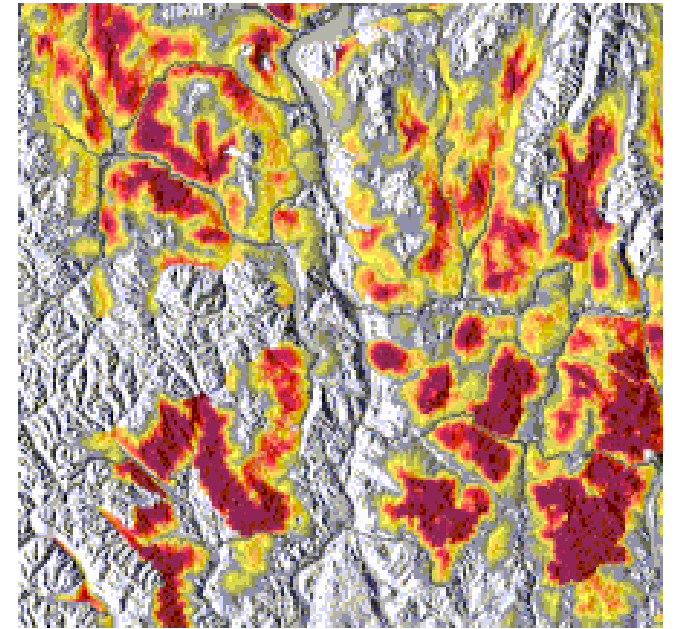
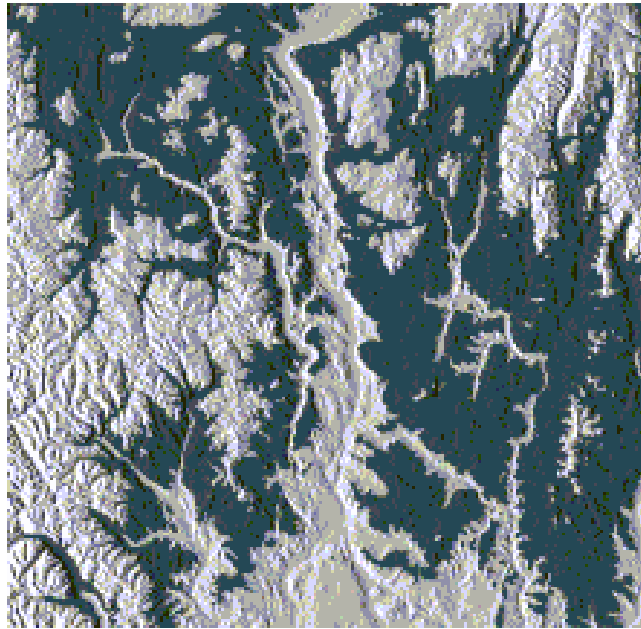
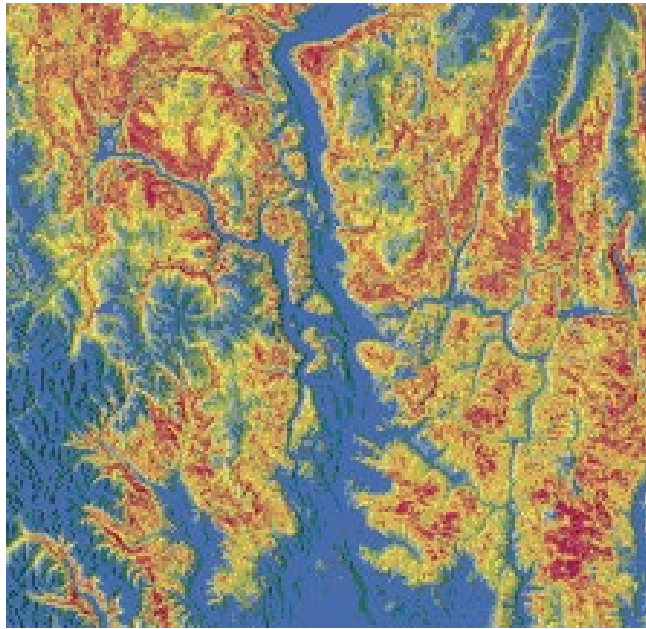


# TerrAdapt

Google earth engine

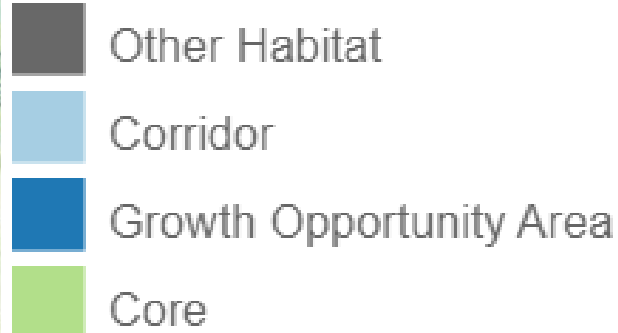
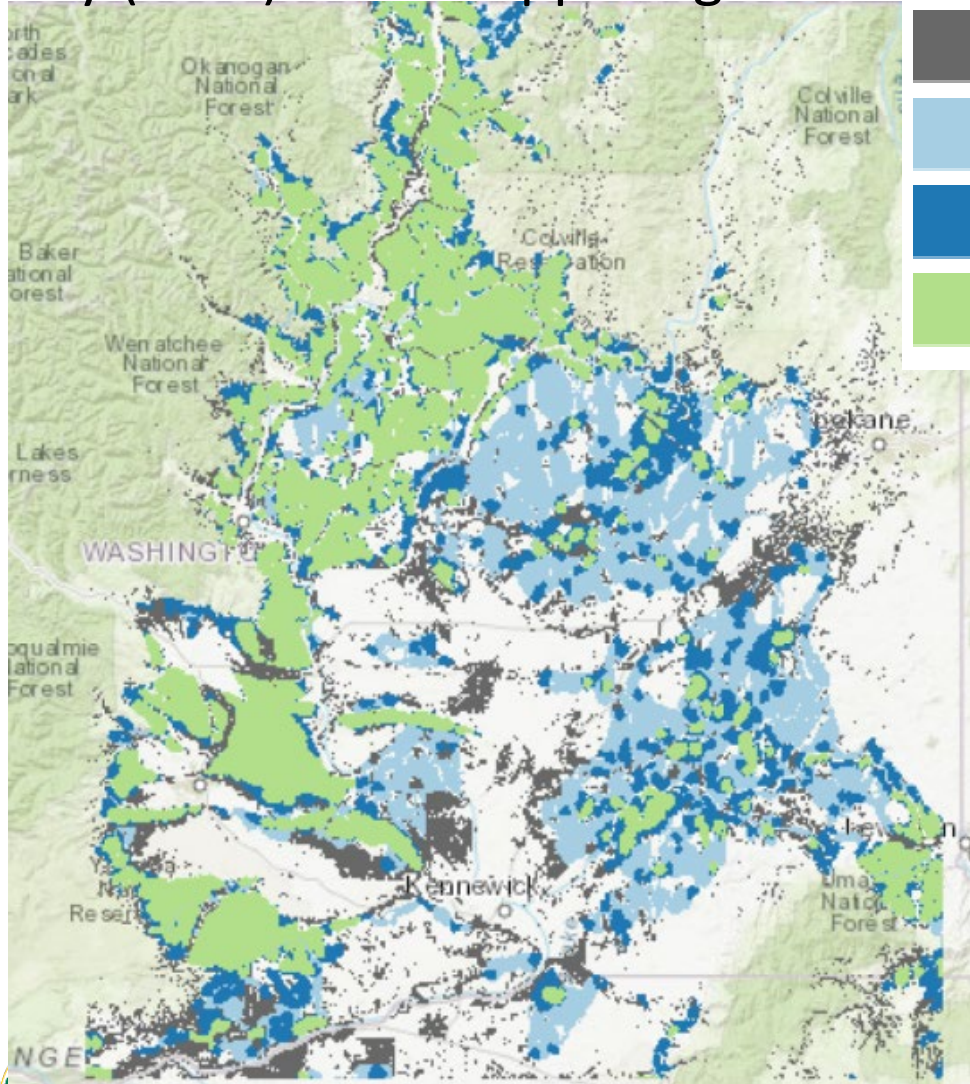
Dynamic modeling

Monitor change

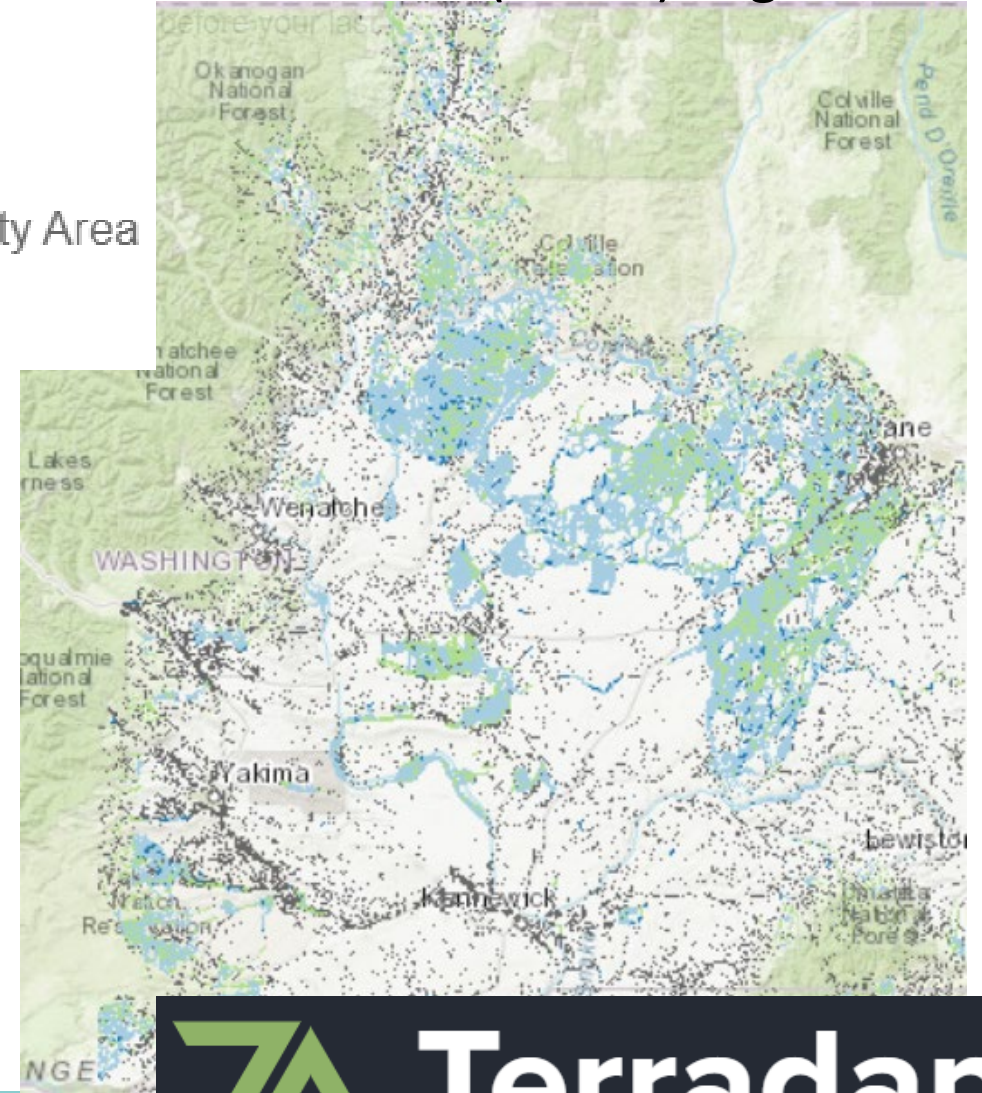


# Washington Shrubsteppe Restoration and Resilience Initiative (WSRRI)

Dry (xeric) shrubsteppe vegetation

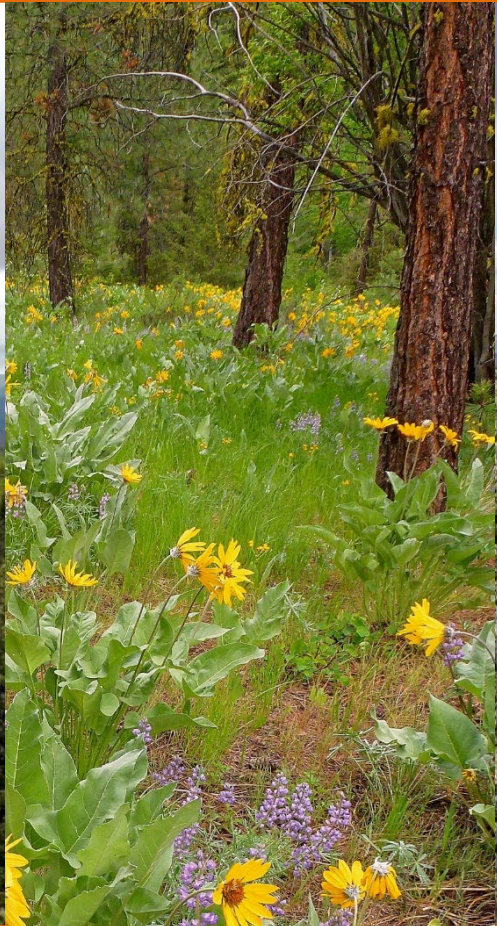


Wet (mesic) vegetation





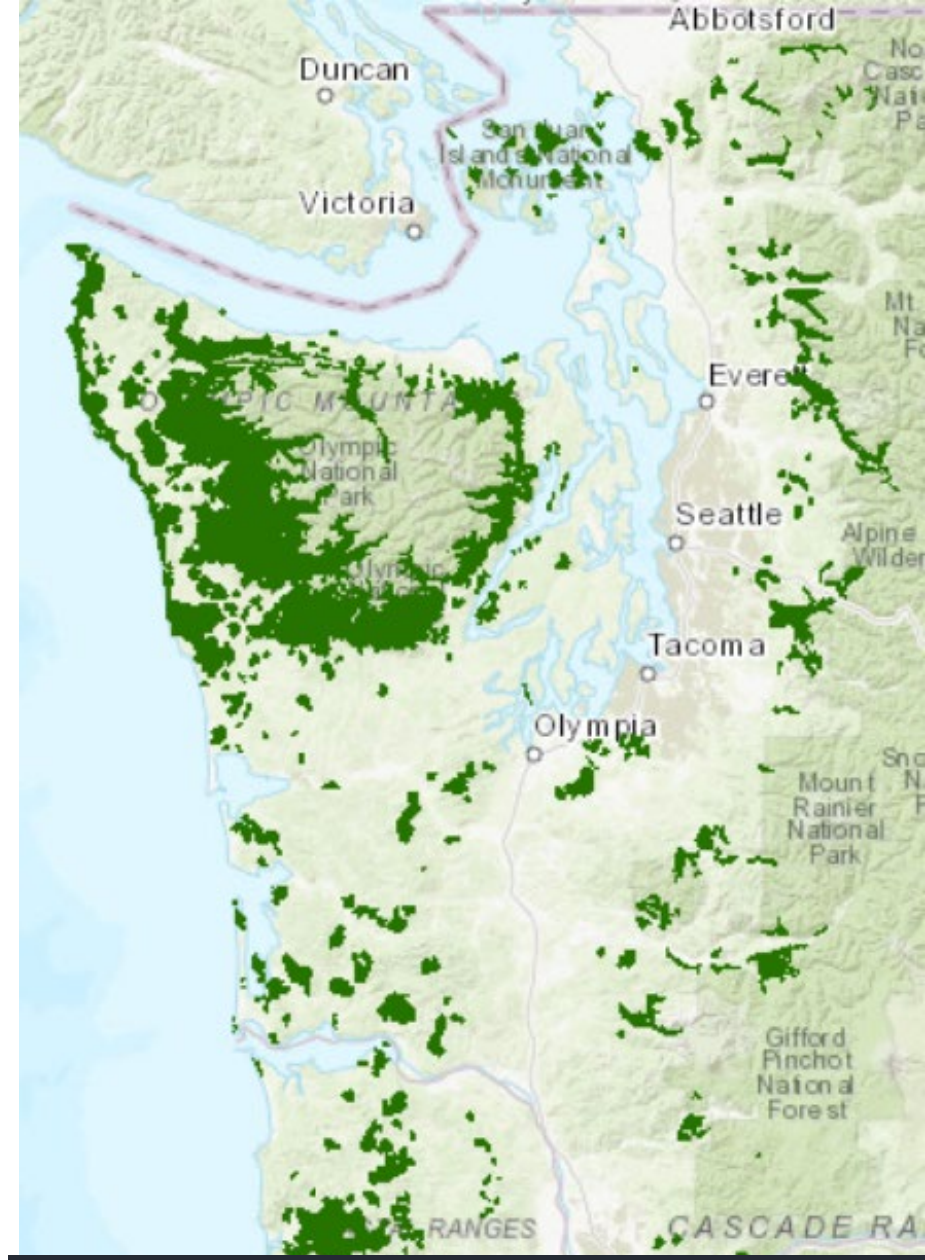
# Ecosystem connectivity



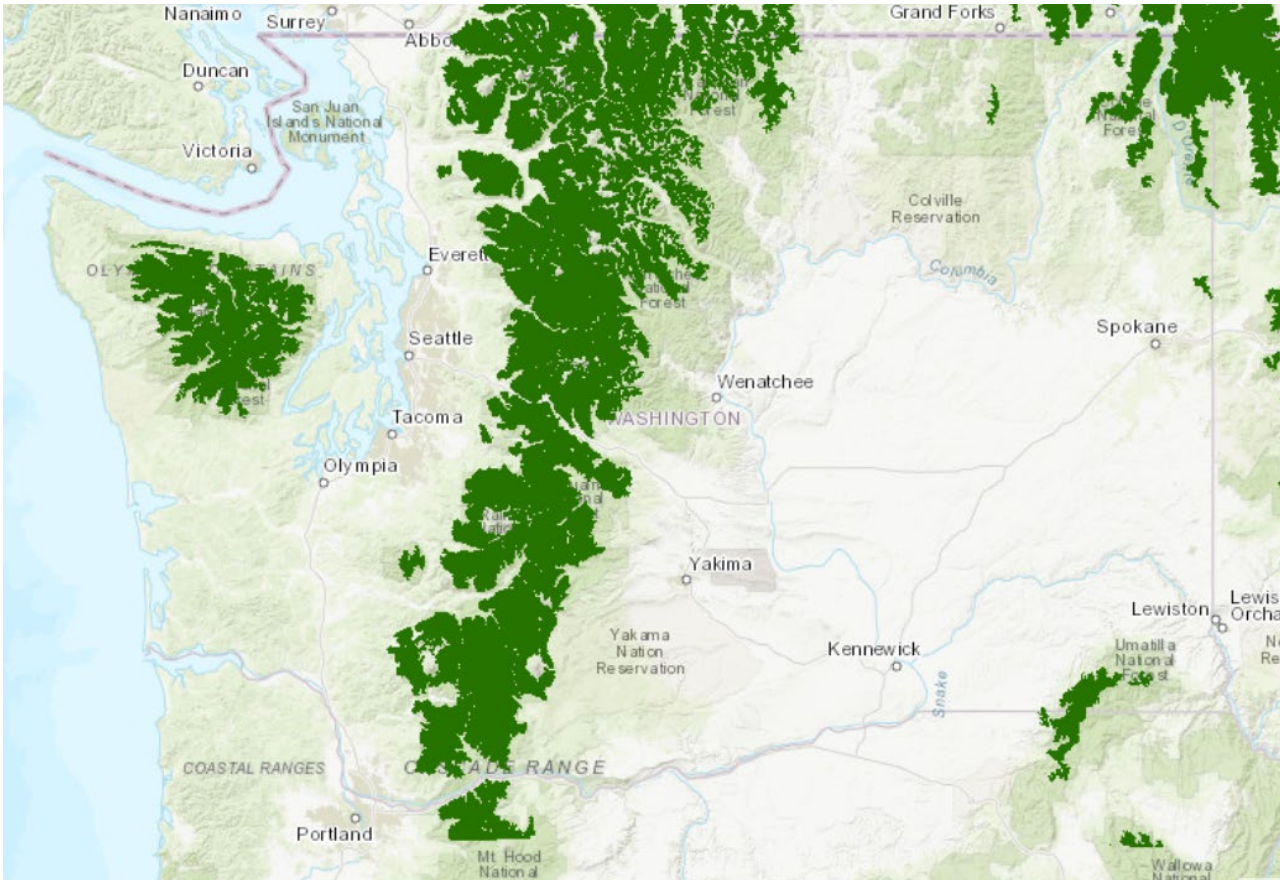
# Low disturbance cores

## Lowland temperate mesic forest

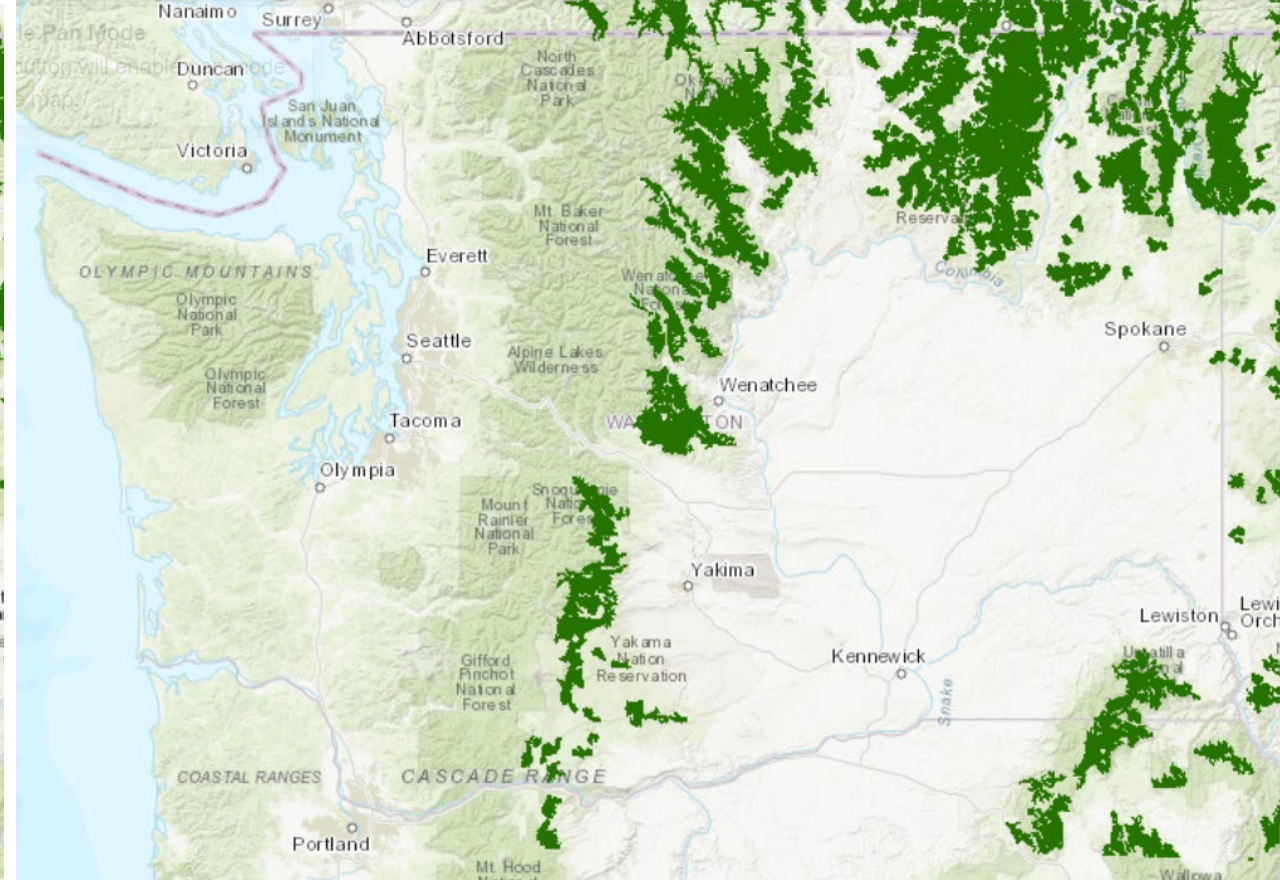
- Low human footprint
- Best for: species with very high sensitivity to human activity.



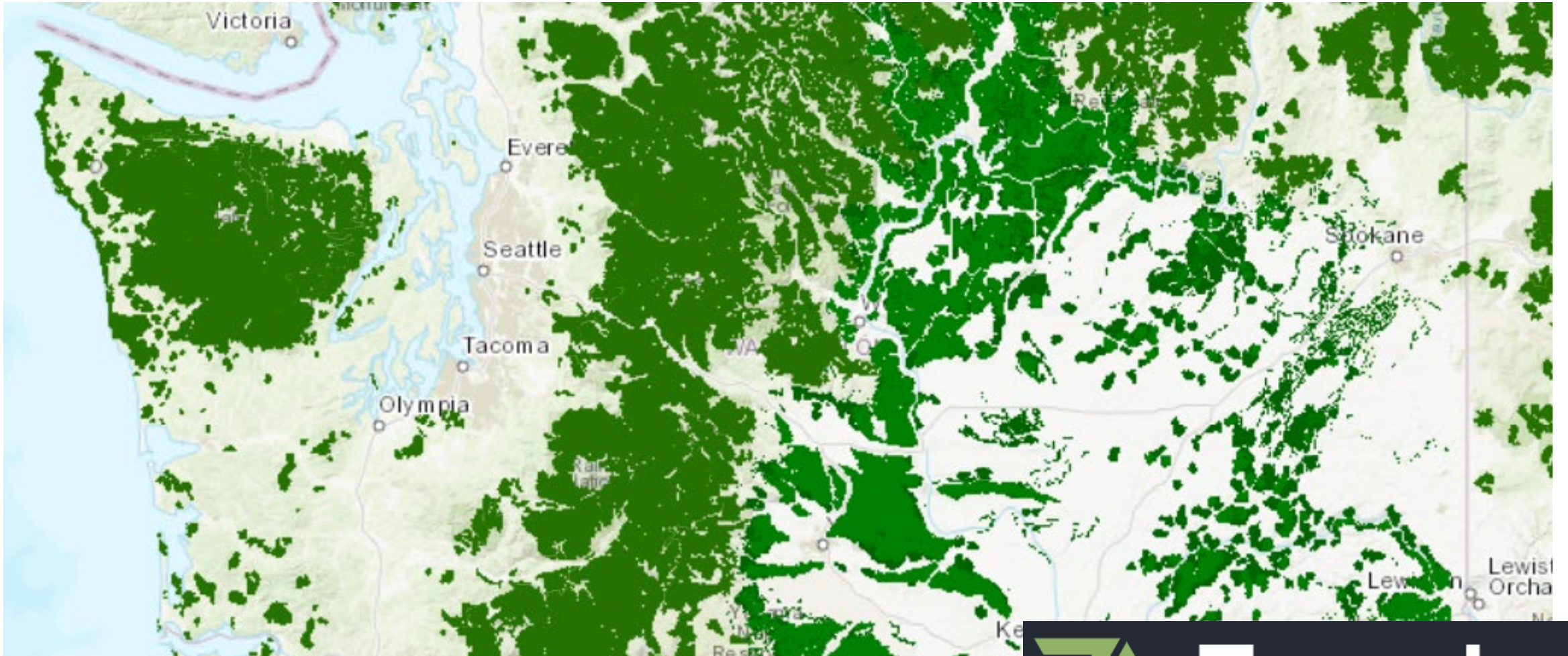
# Low disturbance cores Montane wet (mesic)

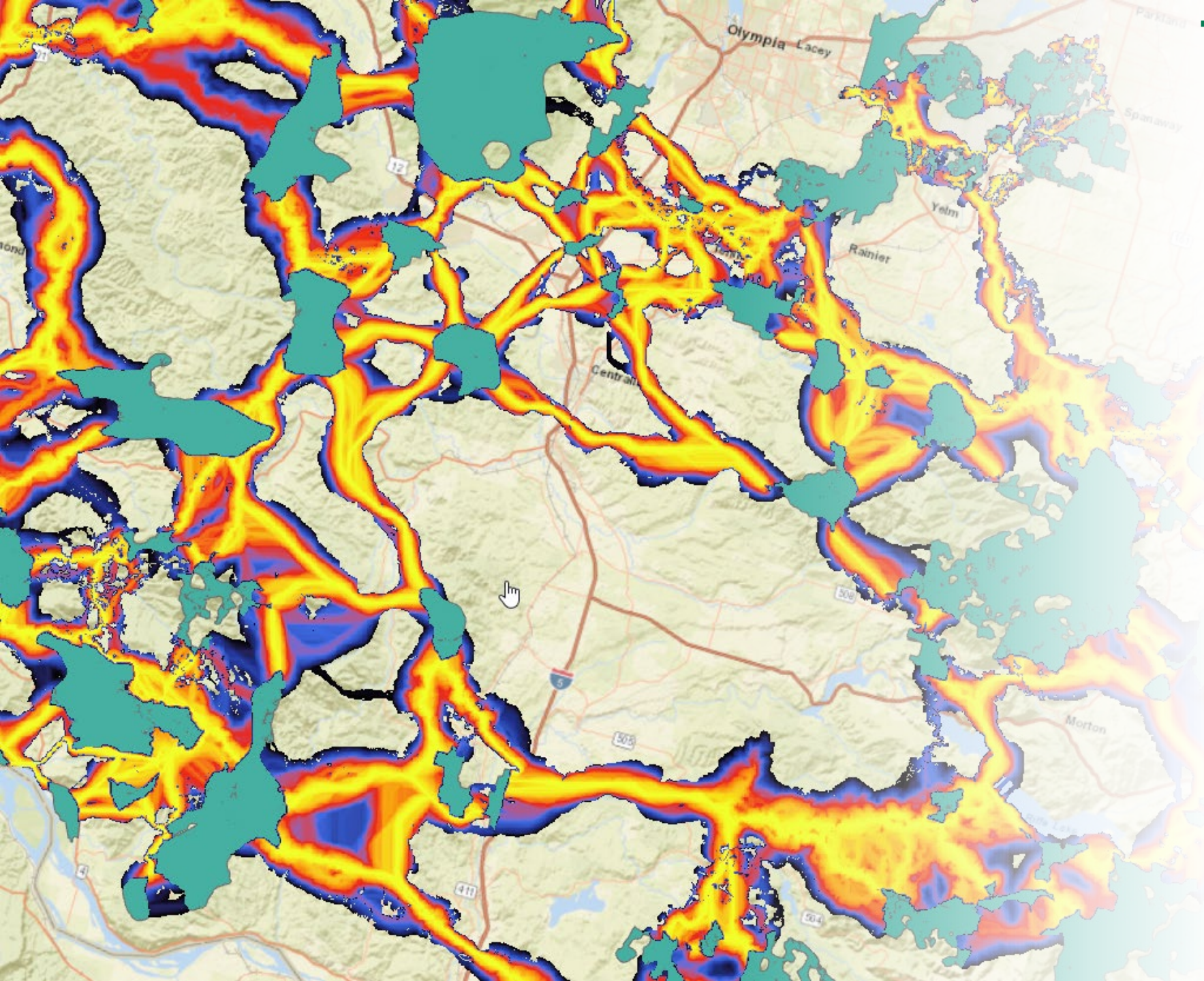


# Montane dry (xeric) forest



# Low disturbance ecosystem cores





# WAHCAP core areas

Ecosystems

- Focal species
- Protected areas managed to support biodiversity
- Biodiversity areas

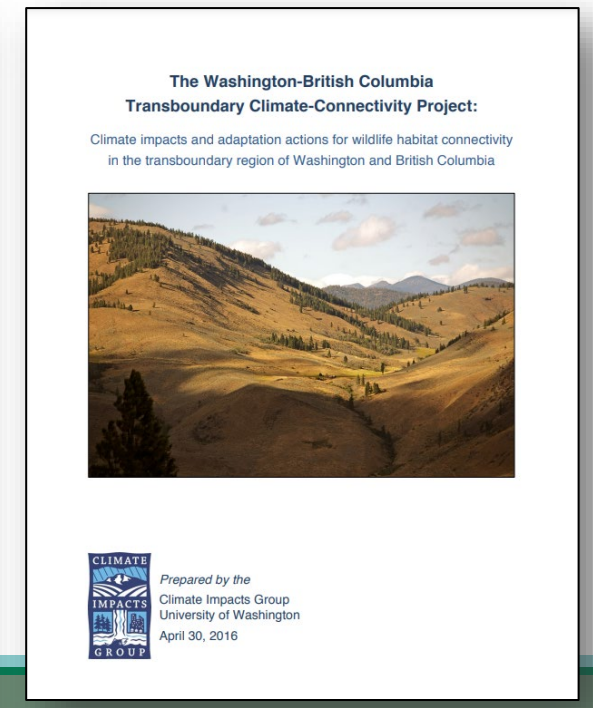
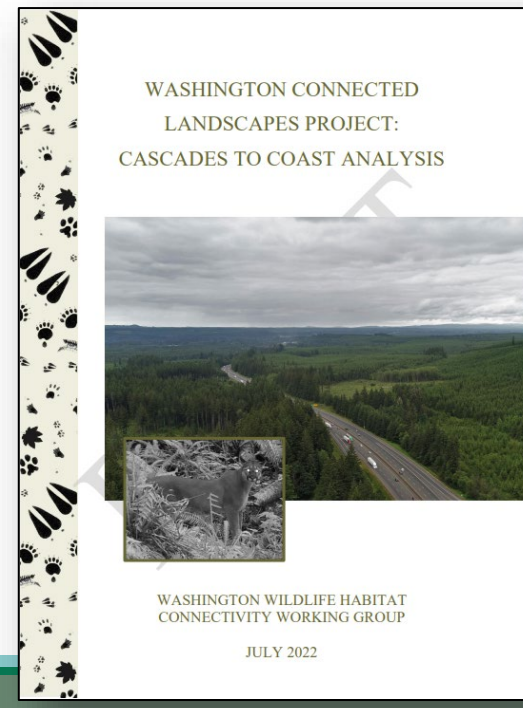
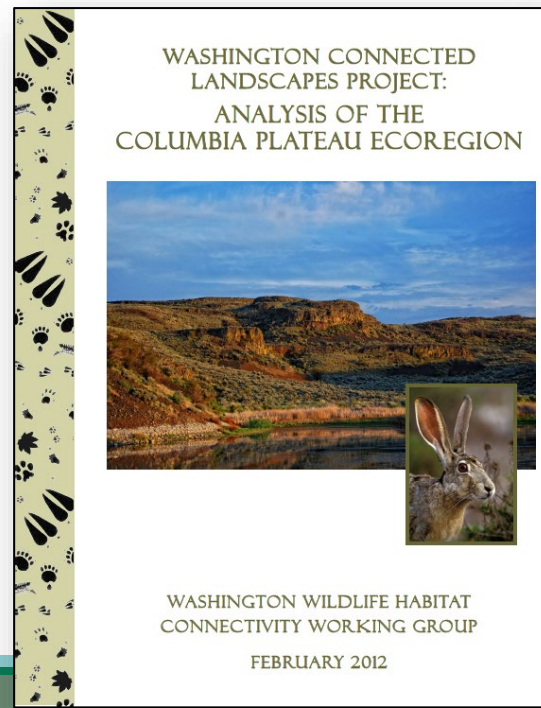
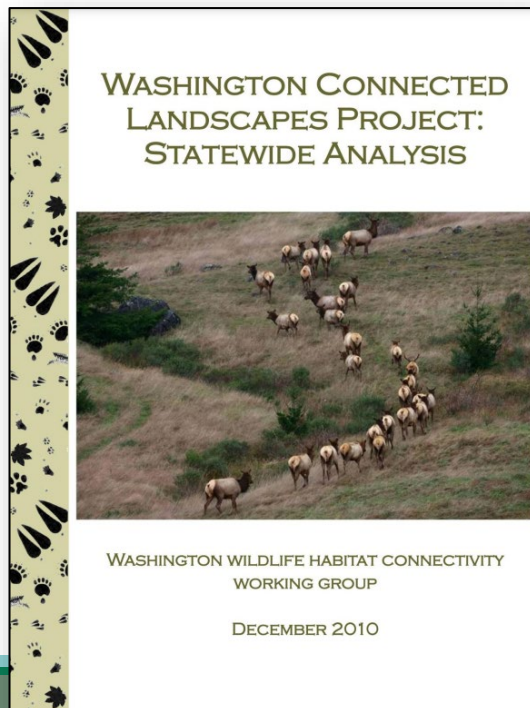
# Existing work...

Washington Connected Landscapes Project: Statewide Analysis

Columbia Plateau Eco regional Analysis

Cascades To Coast Analysis

The Washington-British Columbia Transboundary Climate-connectivity Project



Reviewed 30 focal species

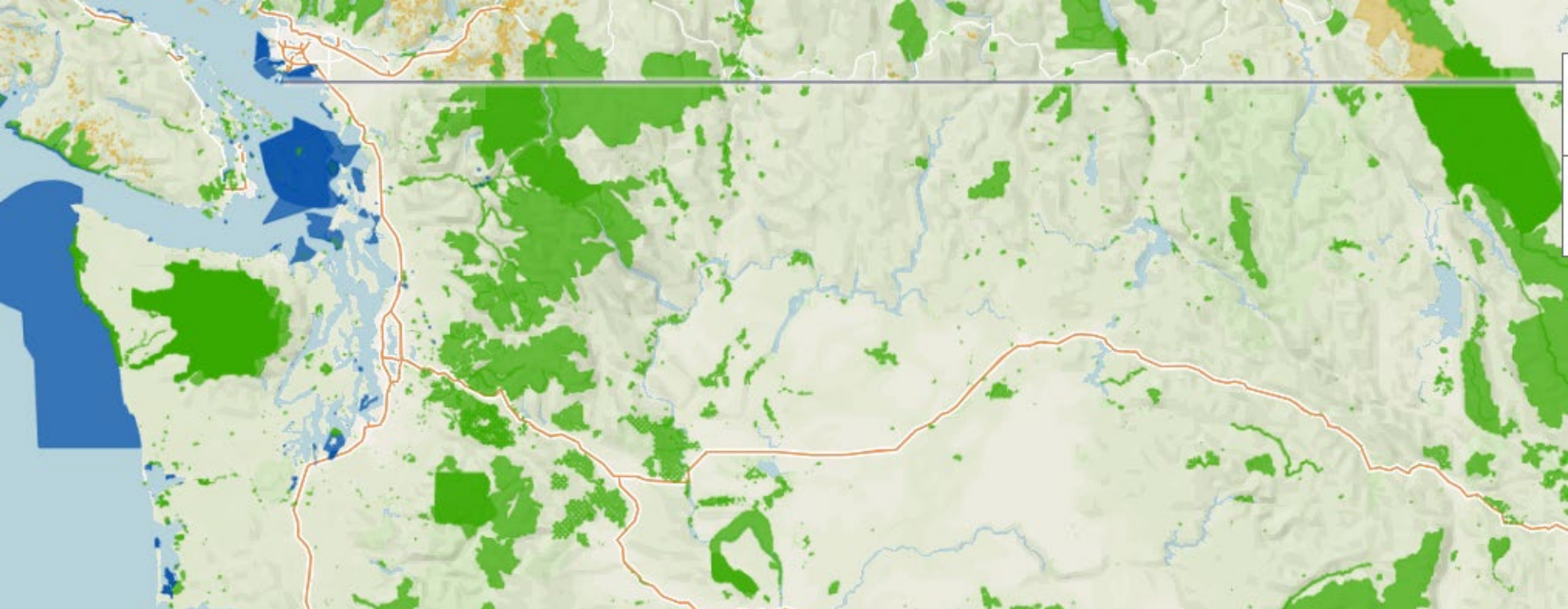
Identified 11 focal species with strong data



# 6 Specialist species used to map low disturbance core areas







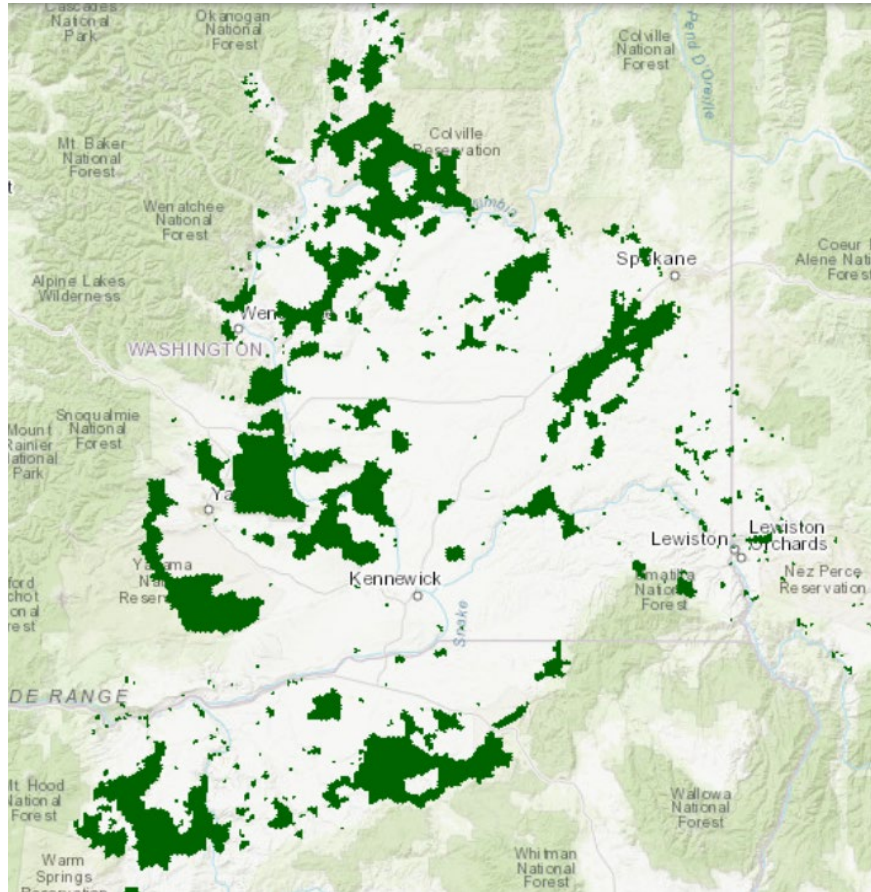
Protected areas managed for biodiversity

Leverages and connects the existing network.

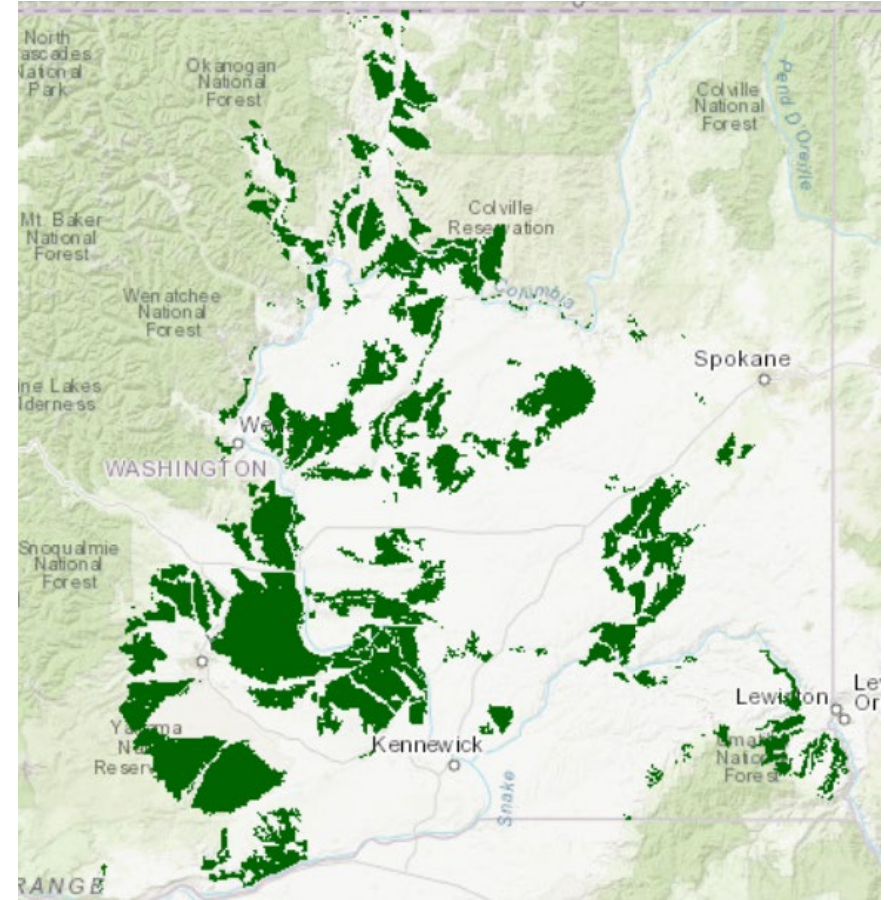
Ensure that existing protected areas are not isolated.



# Columbia Plateau Biodiversity Areas



Arid Lands Initiative Core Areas



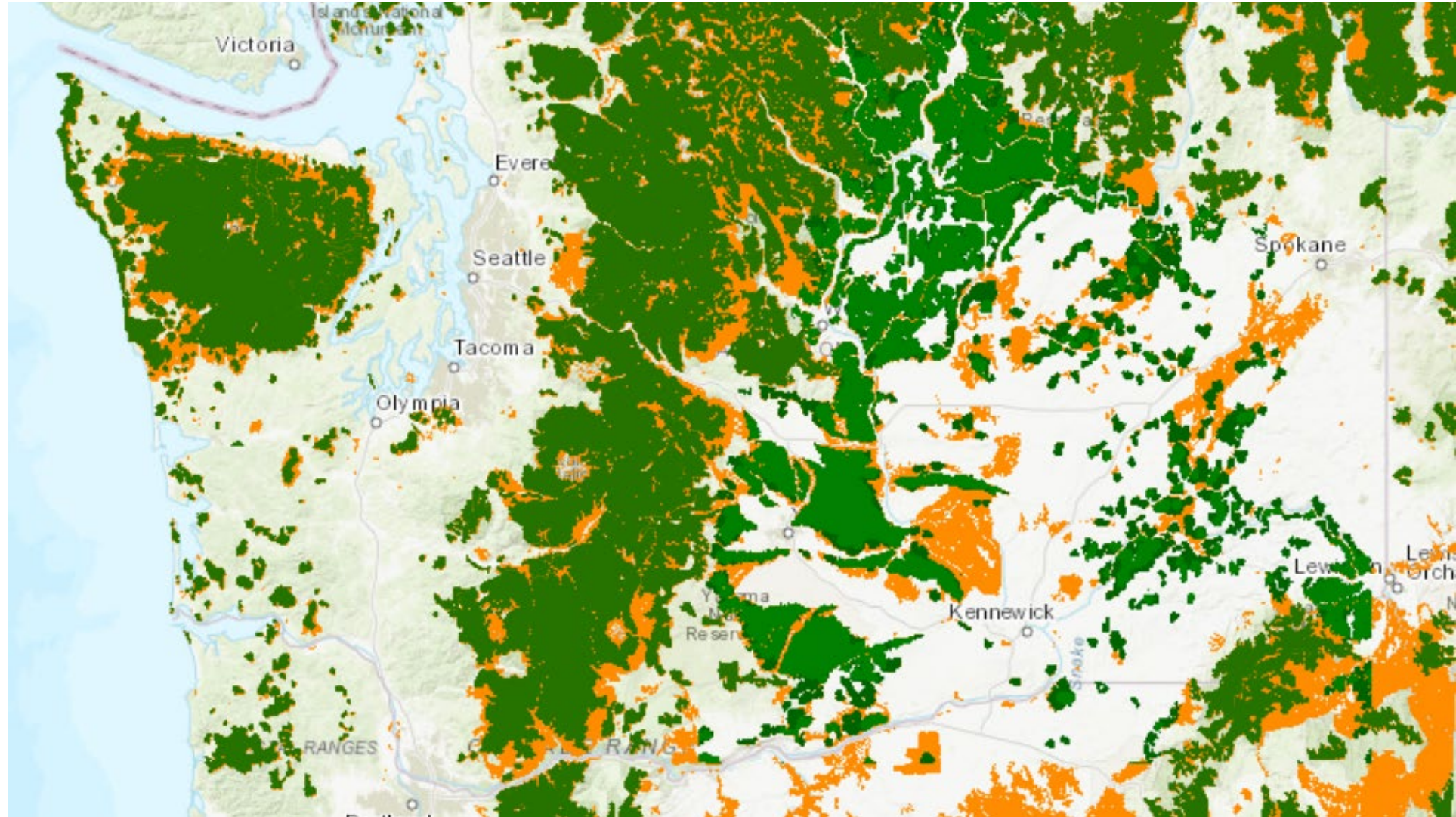
WDFW Biodiversity Areas



# Core additions

Green = low disturbance  
TerrAdapt  
ecosystem cores

Orange =  
protected area,  
species additions



Low disturbance  
ecosystem cores

Sensitive focal  
species cores

Protected areas

Biodiversity areas

Filter out  
human  
footprint

Ensemble  
low  
disturbance  
cores



# Final ensemble low disturbance cores

Low disturbance ecosystem  
cores

+

Specialist focal species cores

+

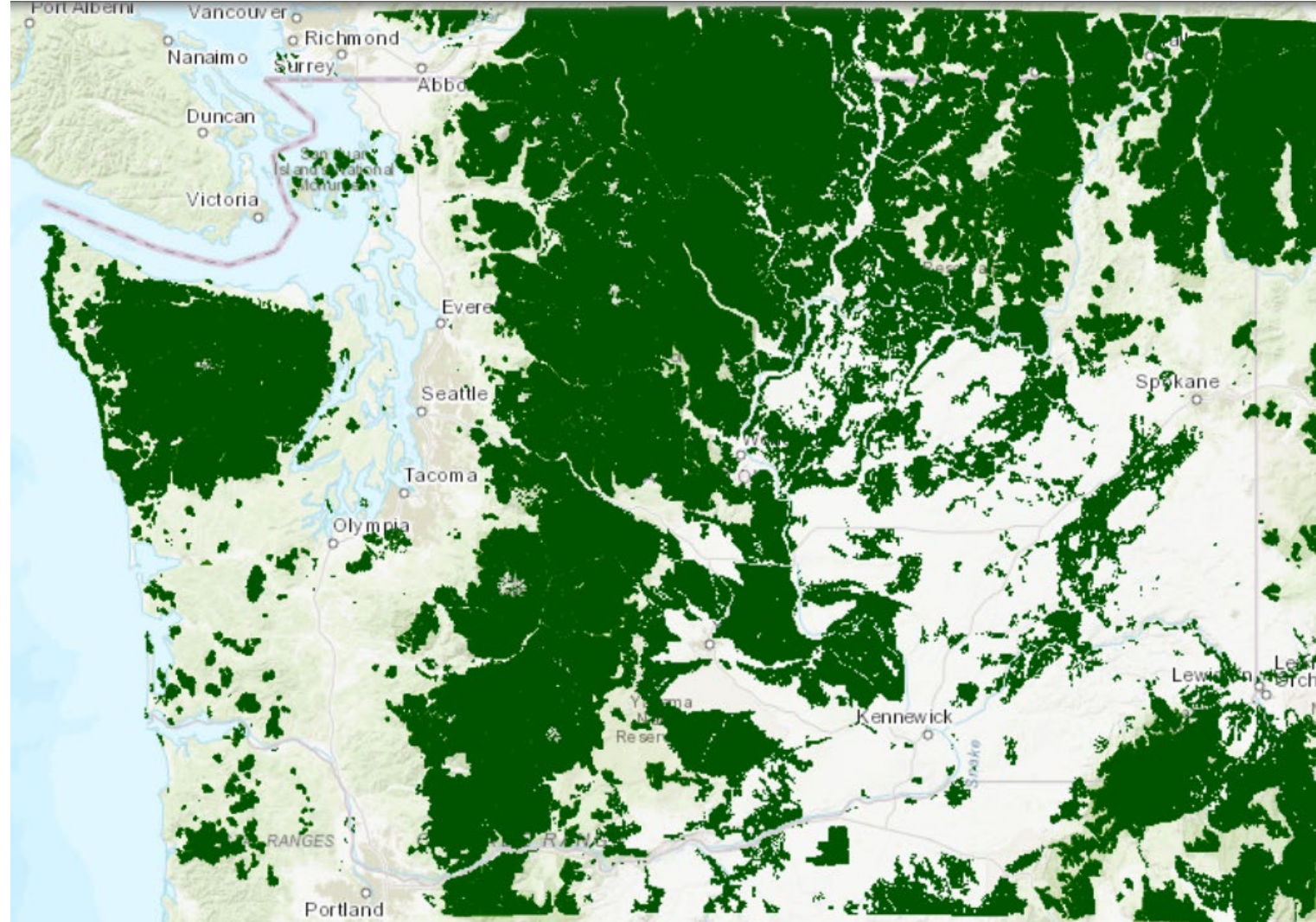
Protected areas

+

Biodiversity areas

-

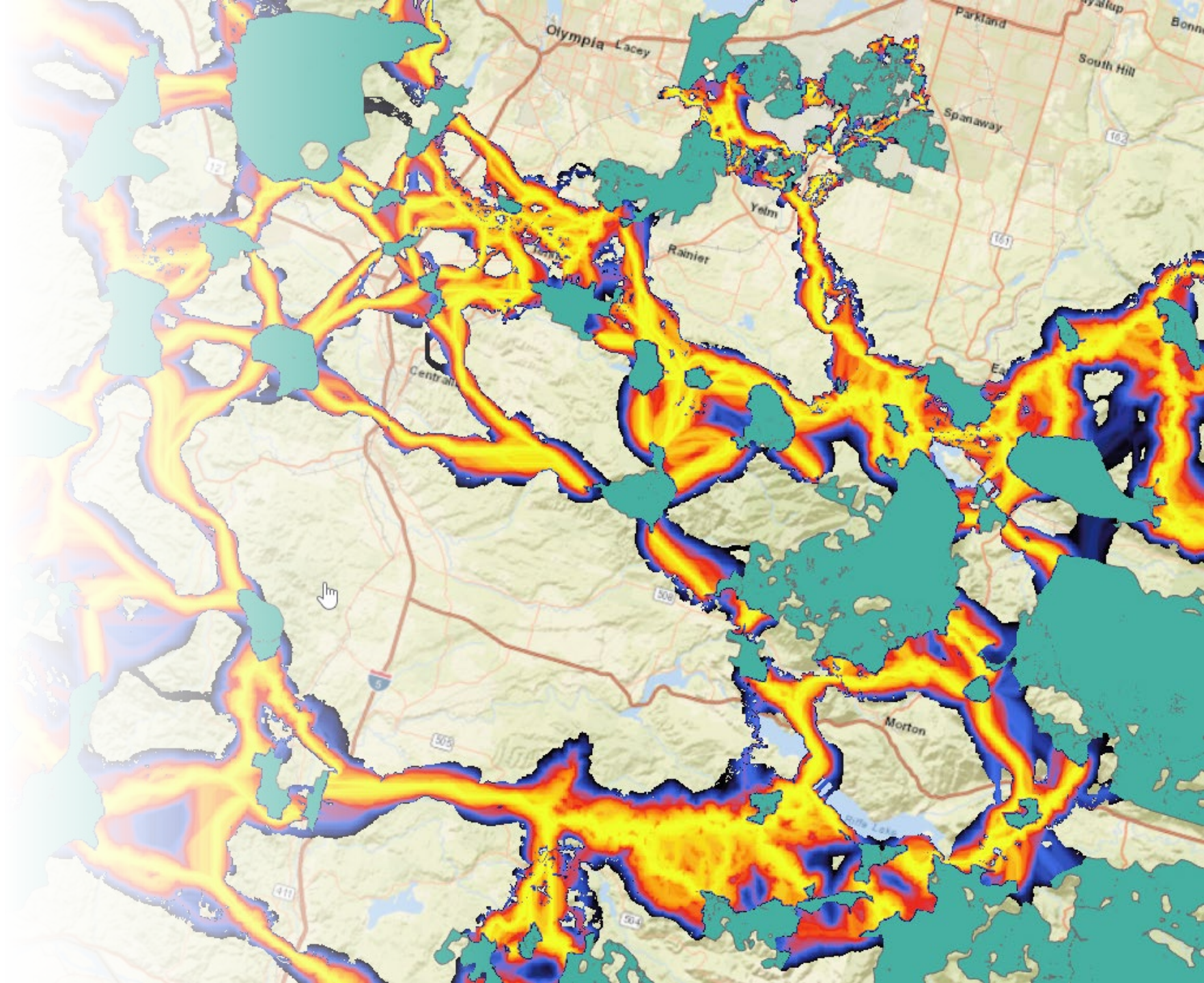
High human footprint



# **CREATING THE CORRIDORS**

# Connectivity

Regions or locations that facilitate or are permeable to wildlife movement.



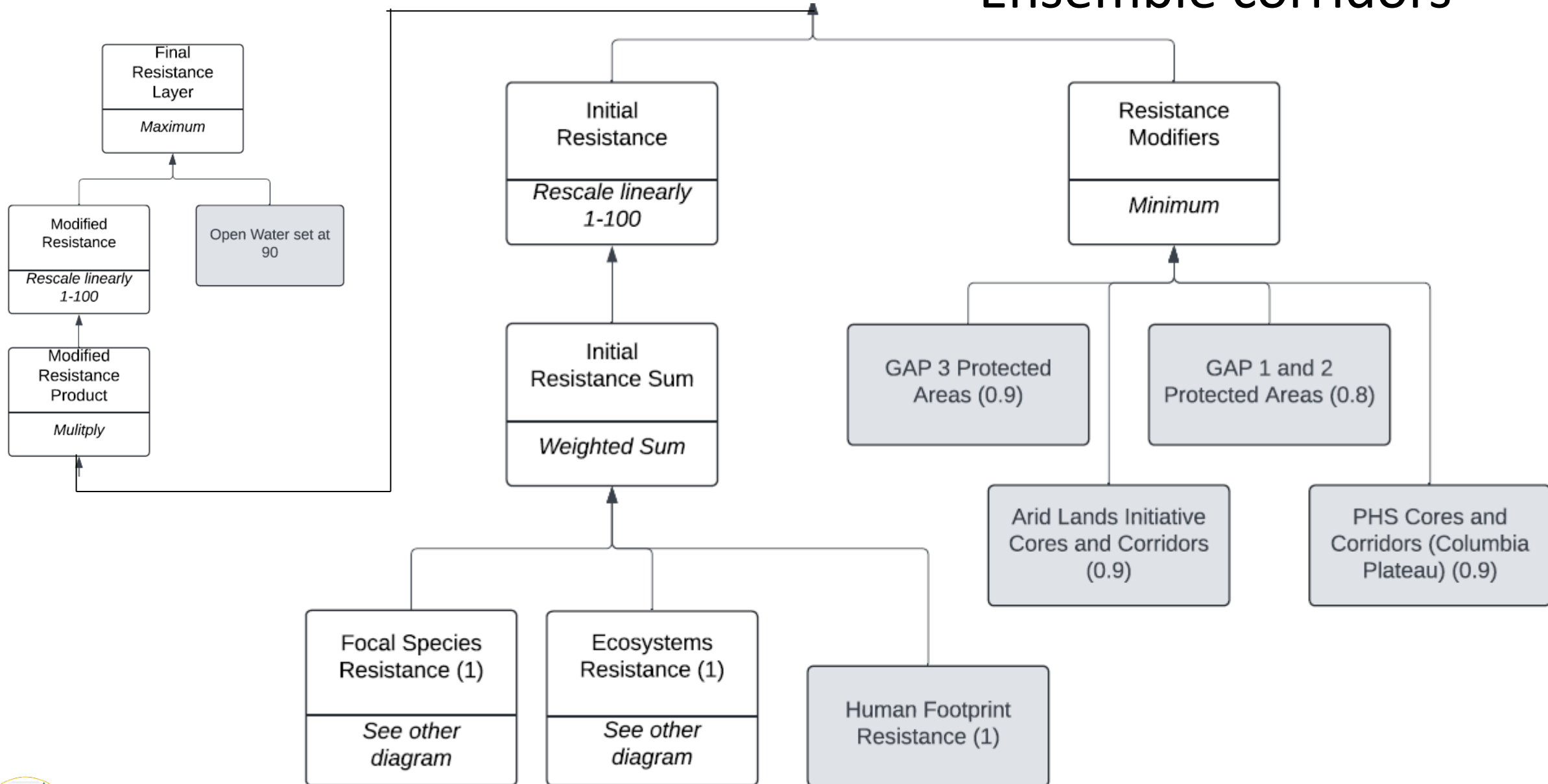
# Connectivity values

- Human footprint
- Ecological condition
- Habitat condition for focal species
- Protected areas
- Riparian corridors
- Existing priority corridors





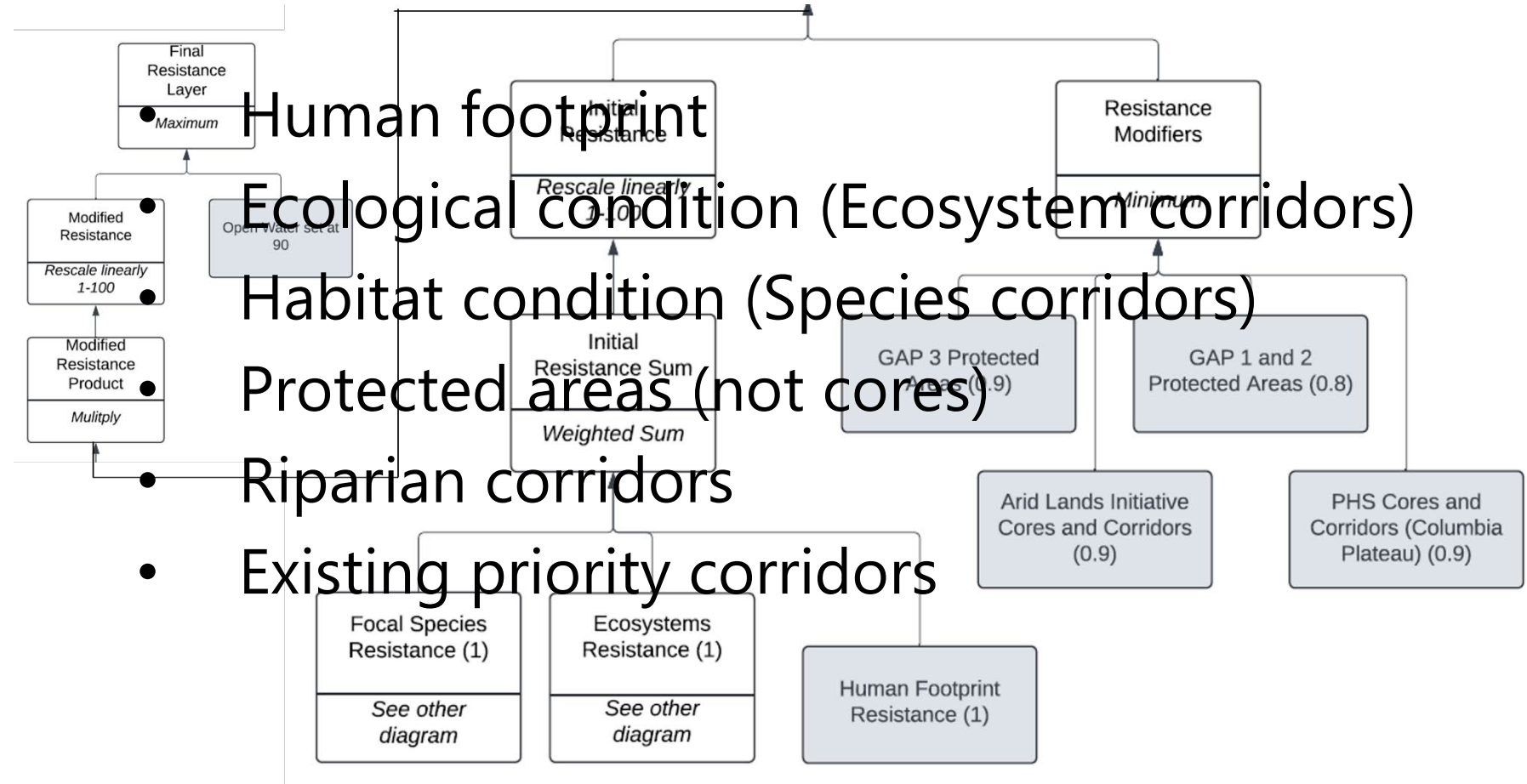
# Ensemble corridors



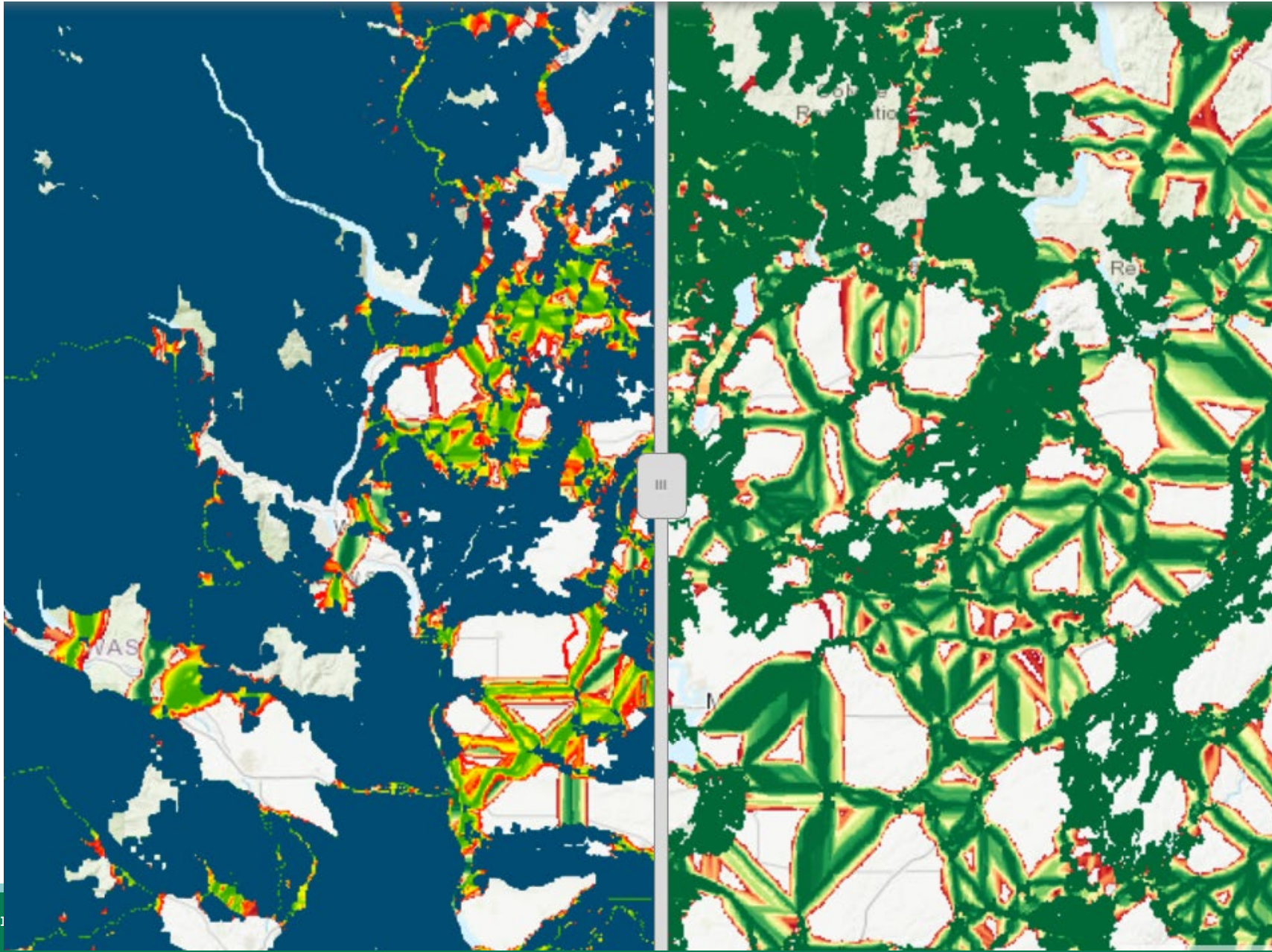
# Landscape integrity corridors

# Ensemble corridors

Human footprint



# Landscape integrity    Ensemble corridors

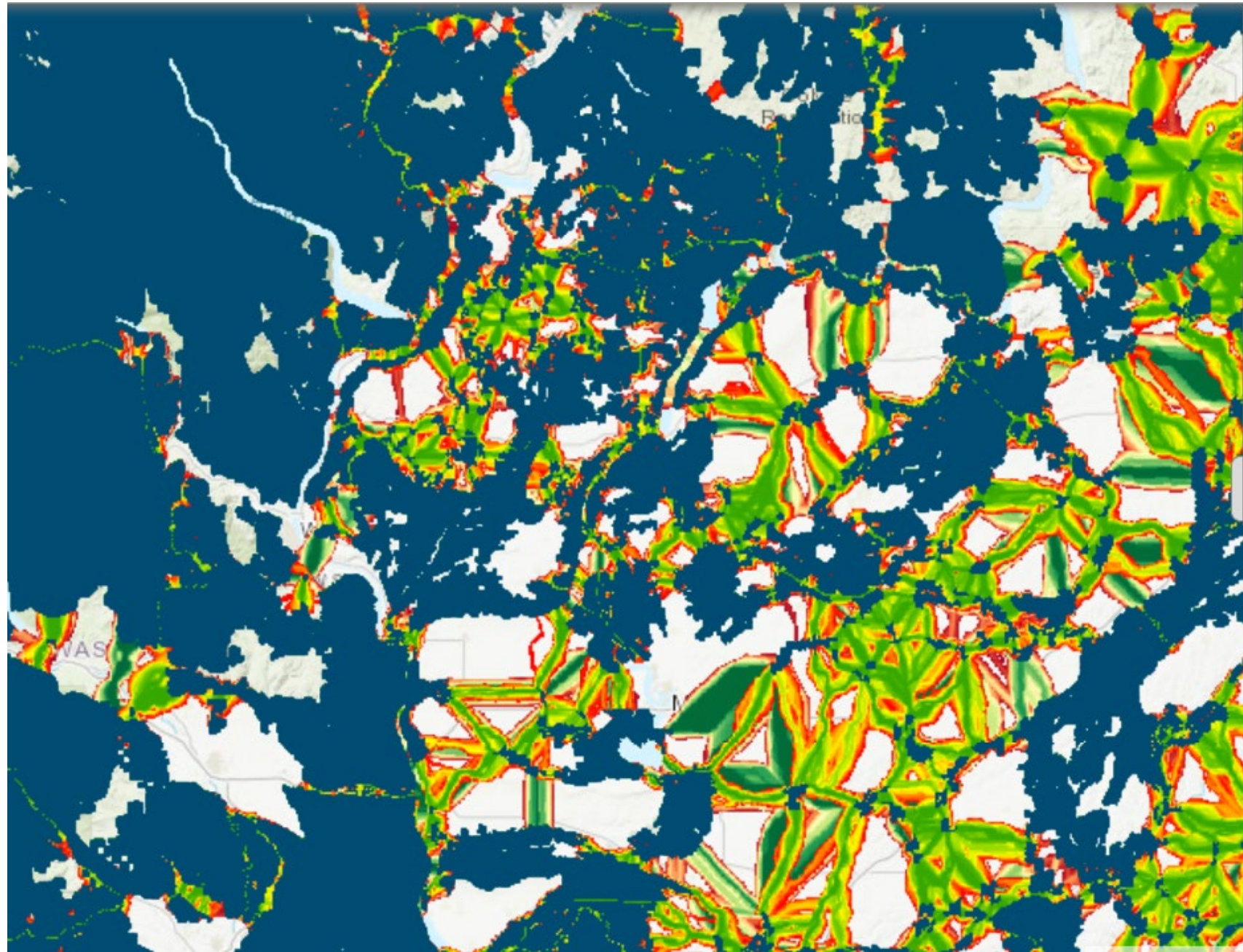


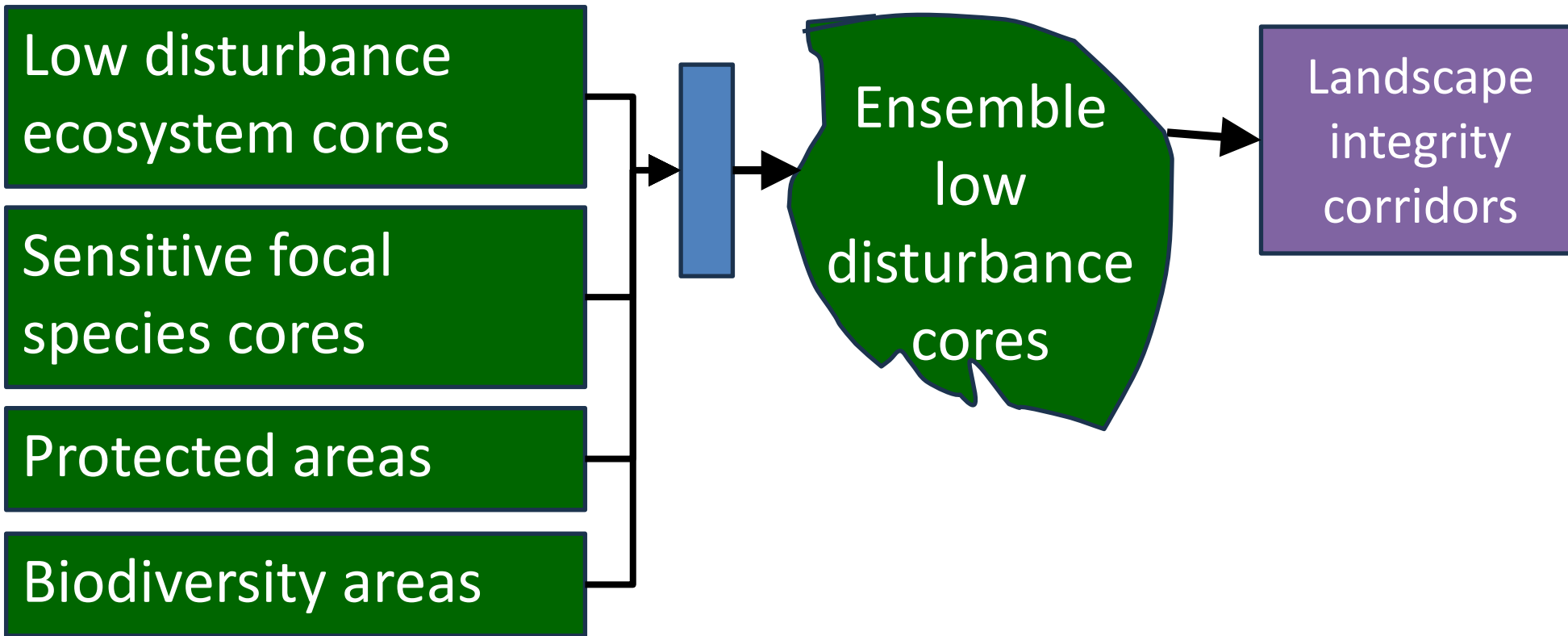
Nearly  
identical



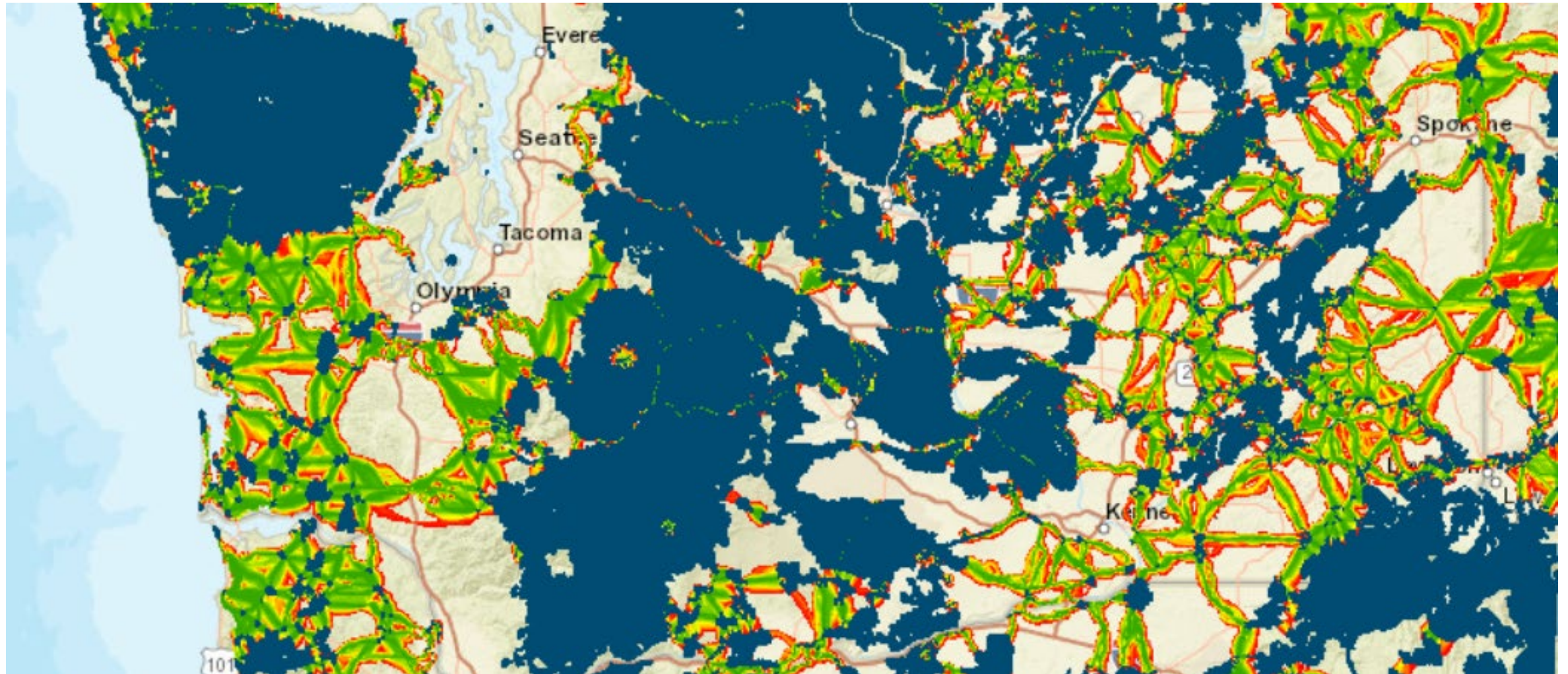
# Landscape integrity corridors

Human footprint





# Ensemble low disturbance cores Landscape integrity corridors





**There's a bit more....**

# Low disturbance ecosystem cores







# Moderate disturbance cores and corridors

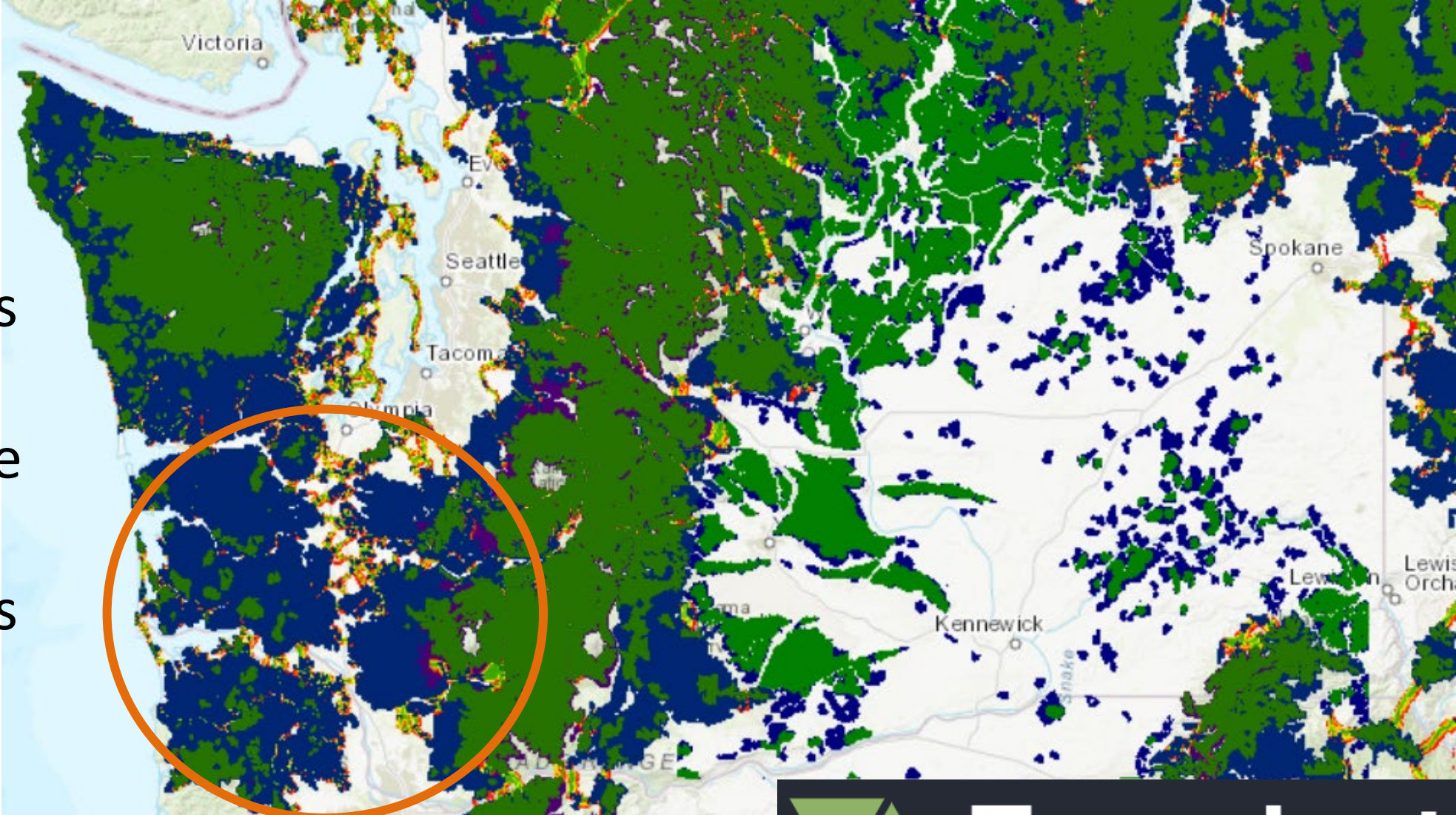
- “Relax” the human footprint threshold
- History of disturbance
  - Timber harvest
  - Low density development
  - Clearings
  - Cheatgrass invasion



# Moderate disturbance cores and corridors

Green = low disturbance ecosystem cores

Blue = moderate disturbance ecosystem cores



# Southwest Washington

Green = low disturbance cores

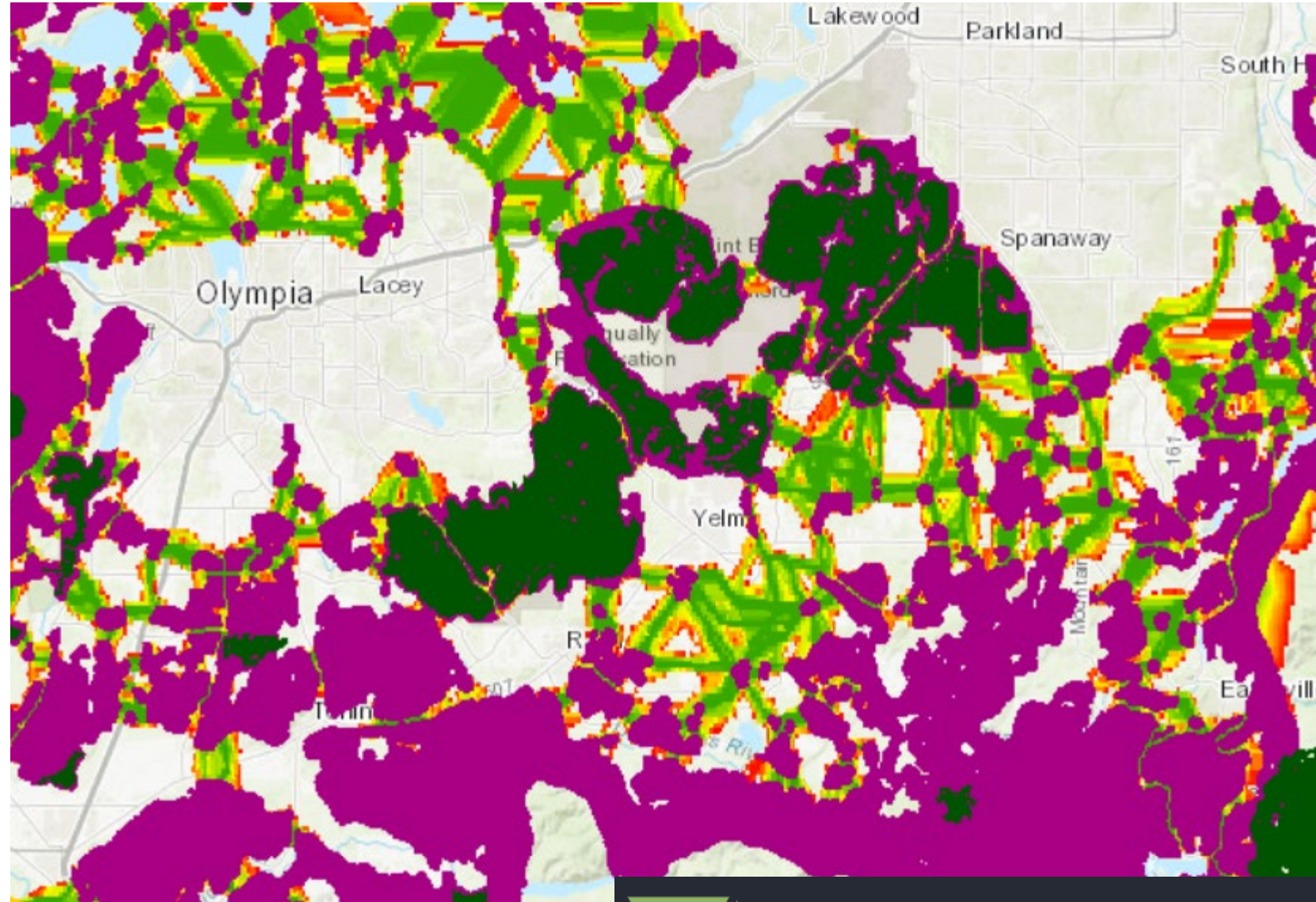
Blue = moderate disturbance ecosystem cores

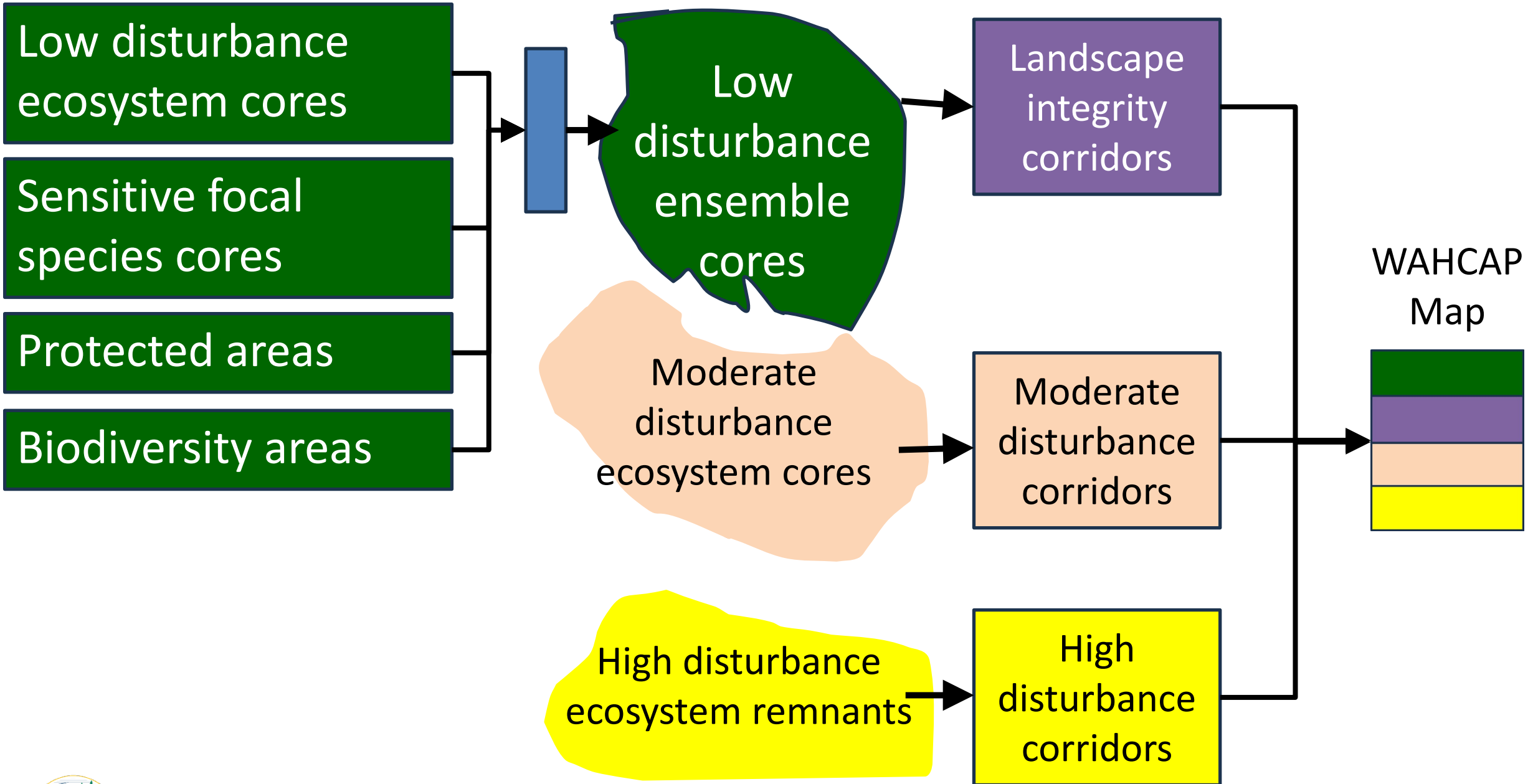


# High disturbance forest remnants (purple)

“Relax” the human footprint threshold a little more


Captures remnants in highly fragmented landscapes





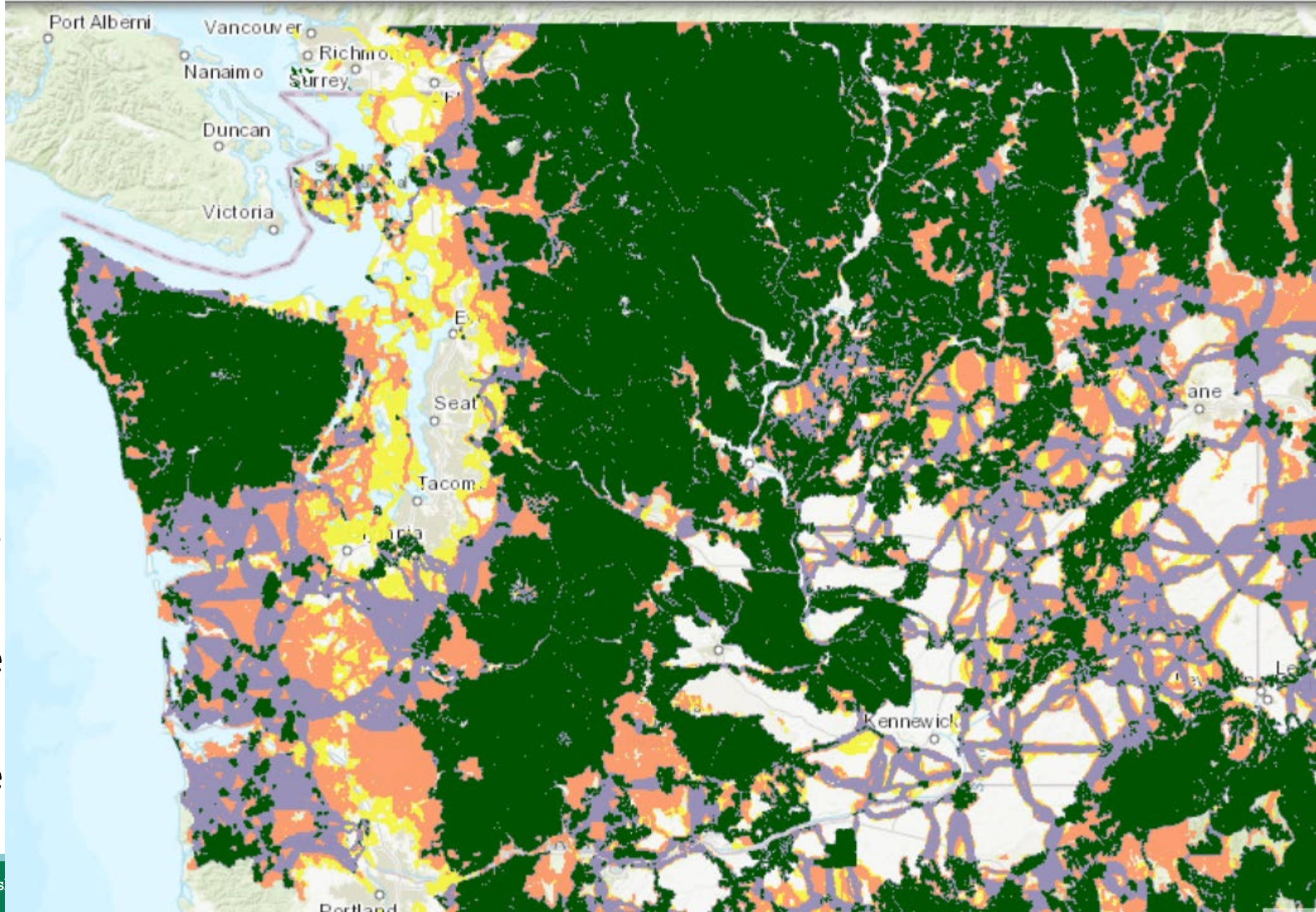
# WAHCAP Map

 WAHCAP  
Cores

 Low  
disturbance


 Moderate  
disturbance

 High  
disturbance



# WAHCAP Map

 WAHCAP  
Cores

 Low  
disturbance

 Moderate  
disturbance

 High  
disturbance

**Questions?**




Next Steps

**PRIORITIZATION**  
**IMPLEMENTATION**



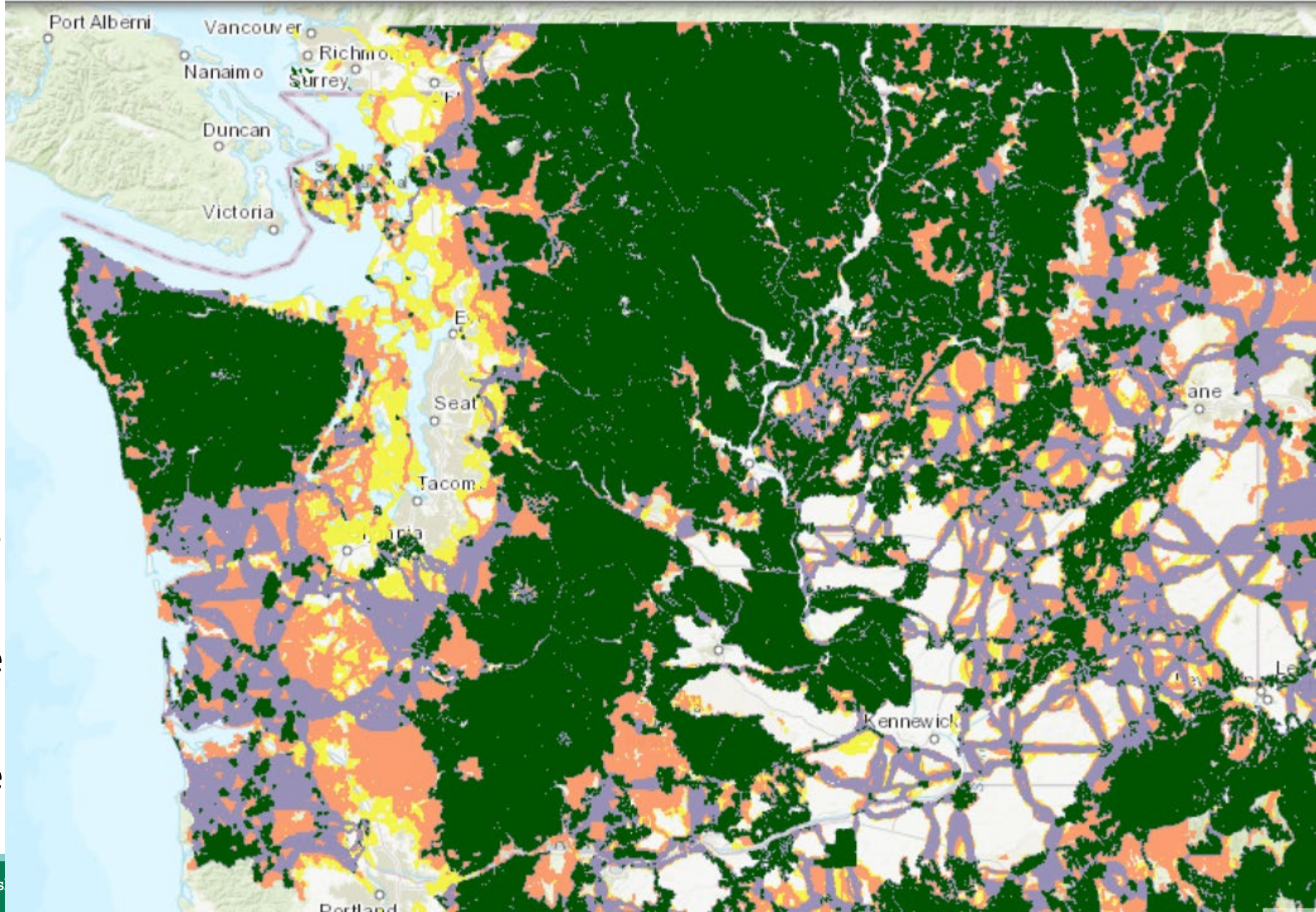
# WAHCAP Map

 WAHCAP  
Cores

 Low  
disturbance

 Moderate  
disturbance

 High  
disturbance



# Timeline

		2024												2025					
Contract	Task/Deliverable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Action Plan	Kick-off Meeting	*																	
Spatial data	Spatial data co-production						*			*									
	Feedback on products Revise products											*							
Action Plan	Prioritization criteria Implementation planning											*	*						
	Drafting Action Plan												*						
	Final comment period													*					
	Finalize report																		*

\*Draft deliverable due dates

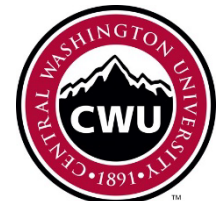


# Collaborative Process

## Implementation Advisory Group – Practitioners

- What connectivity work do you do?
- What are limitations of existing data we can improve on?
- How do we prioritize locations?
- What data format or displays do you need?

1:1 Meetings with Tribes



# Next steps: within-core ecological value

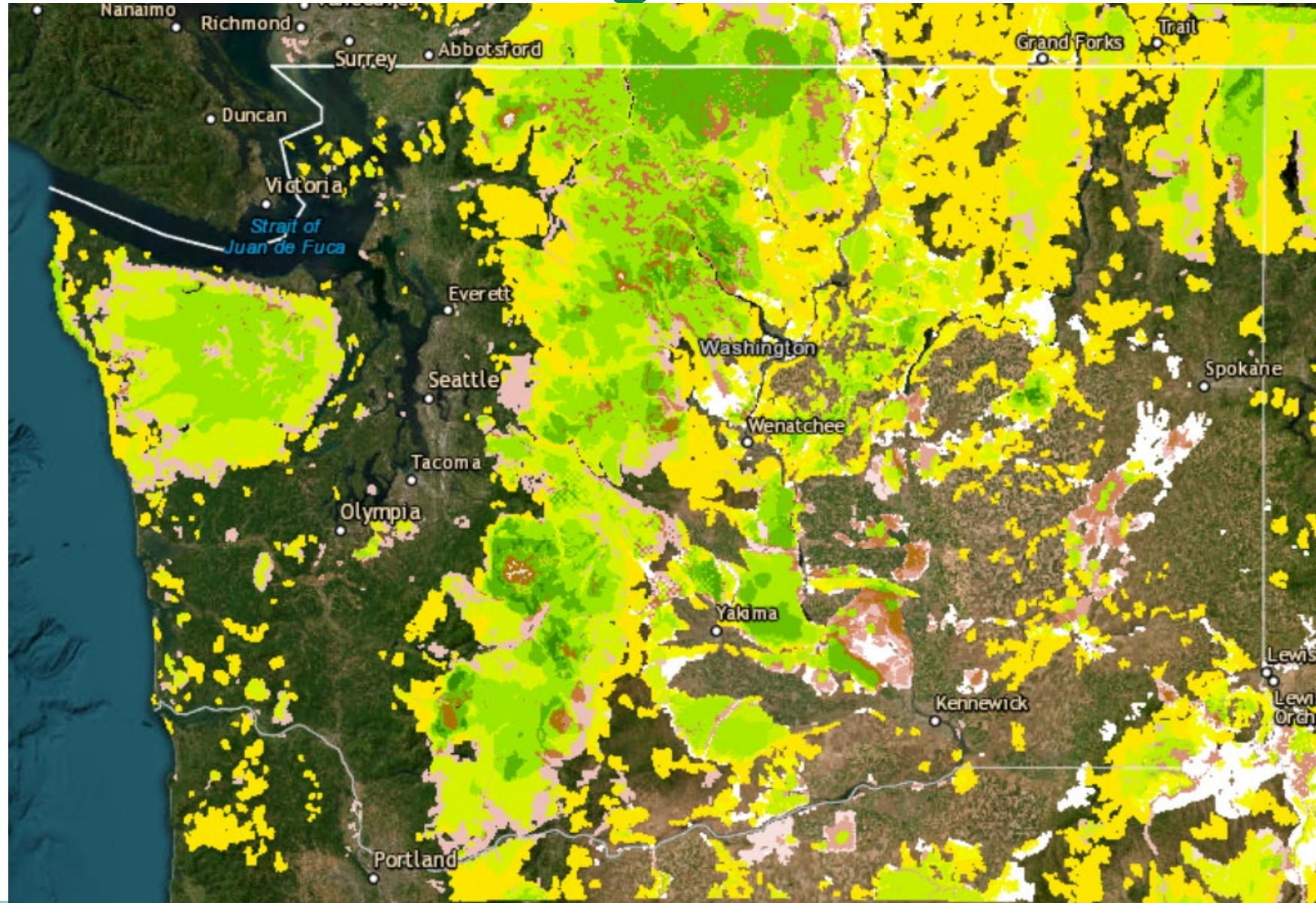
Habitat condition

Species richness

Presence of rare, threatened, endangered species

Climate resilience based on geophysical diversity

And...?

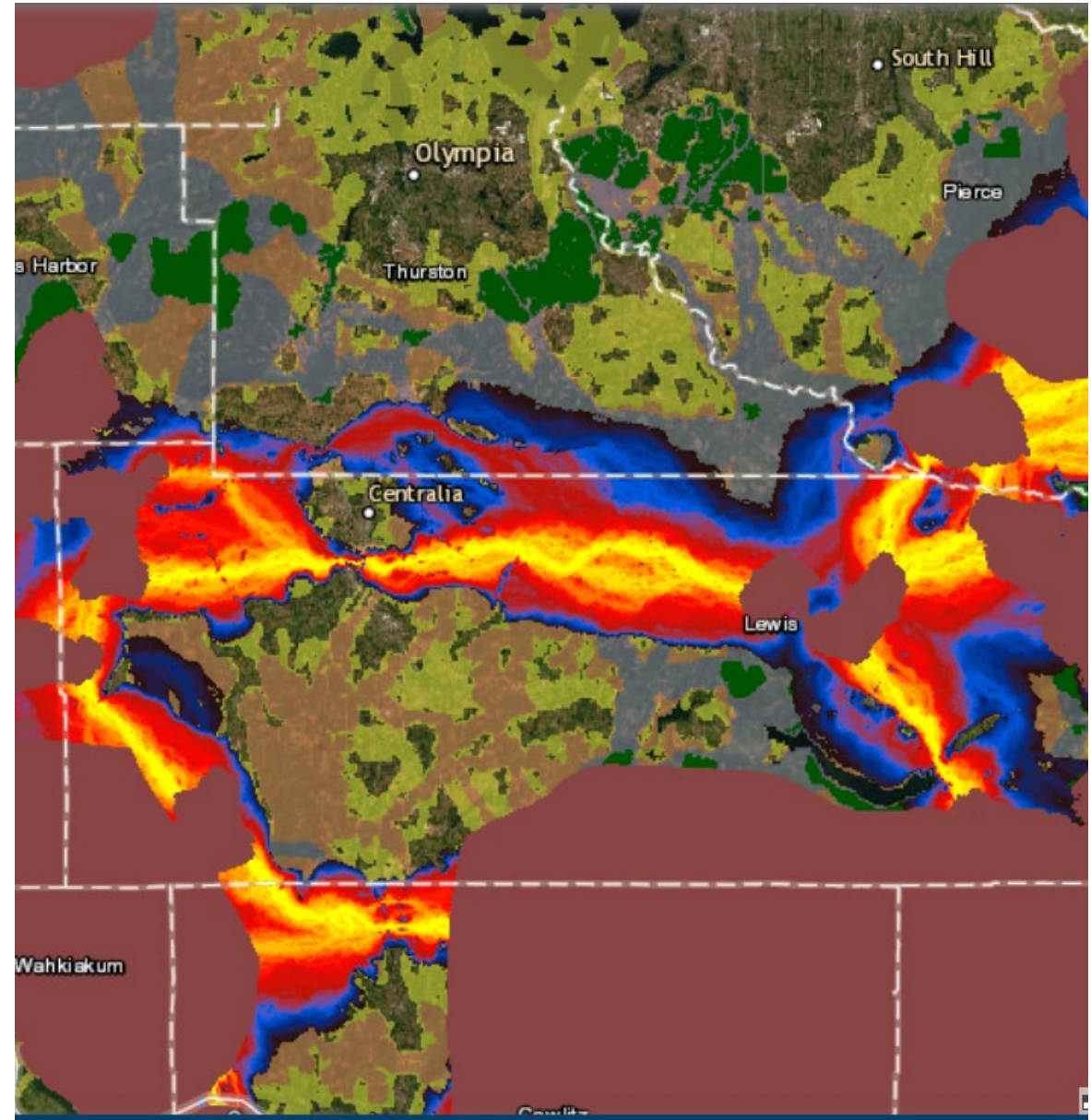


# Next steps: overlay species and identify multi-species corridors



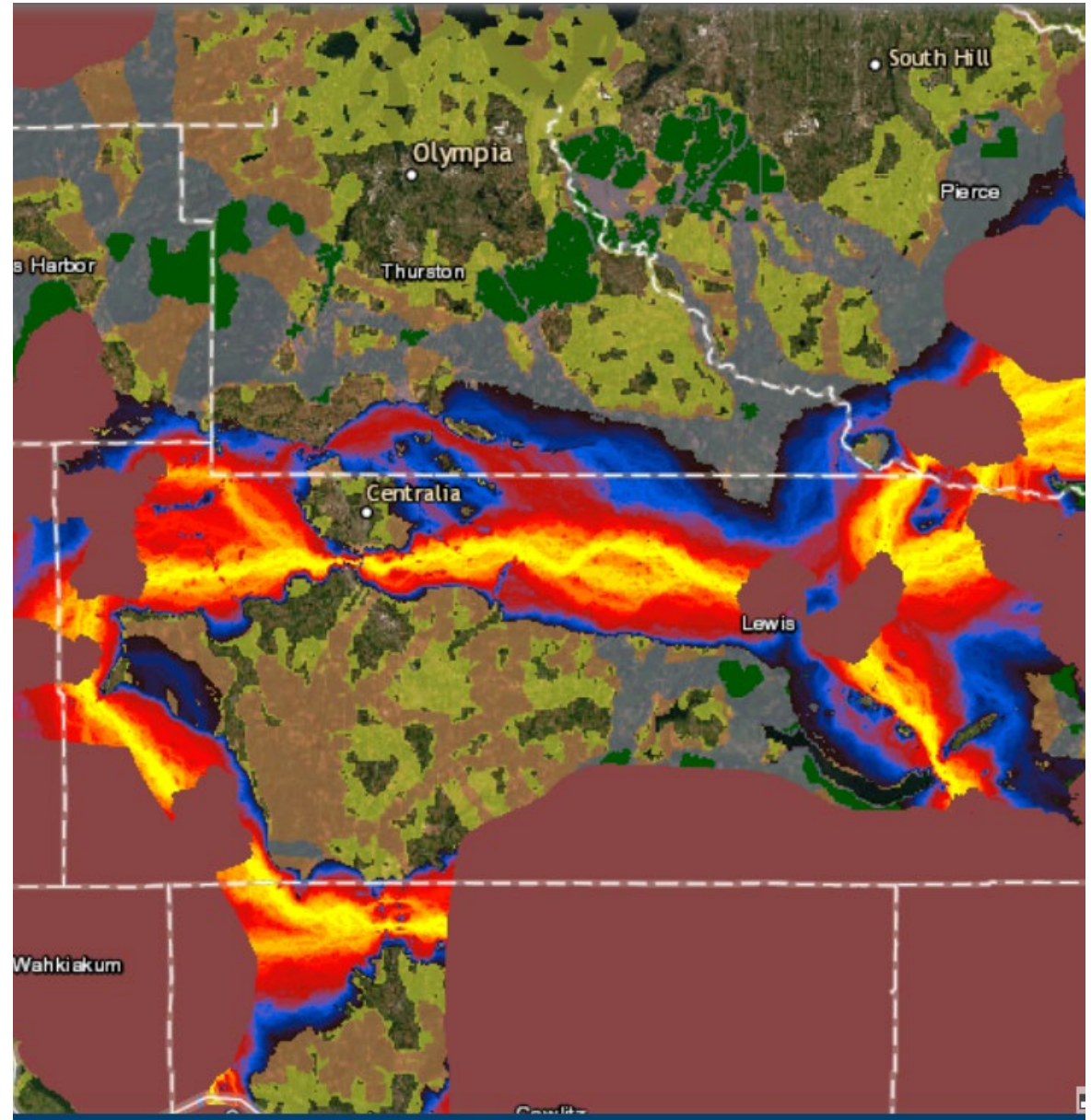
# Next steps: prioritization criteria and implementation

- Centrality
- Corridor condition
- Species connectivity
- Riparian corridors
- What else...?



# Next steps: prioritization criteria and implementation

- Feasibility
- Cost
- Protected areas
- Political support
- Regional priorities
- What else...?



# Next steps: prioritization criteria and implementation

November 8 Implementation Advisory Group workshop

Regional virtual workshops


1:1 meetings with Tribes





# WAHCAP Map

 WAHCAP  
Cores

 Low  
disturbance

 Moderate  
disturbance

 High  
disturbance

**Questions?**



Next Steps

## **WAHCAP MAP REVIEW ACTIONS**

# Due October 10: survey link to instructions

[Survey link](#)

## WAHCAP Map Review & Feedback Survey | Fall 2024

Thank you for your interest in evaluating the draft WAHCAP spatial products. Your feedback is critical as we strive to produce maps that represent Washington's landscape and connectivity needs well. Comments are **due Thursday, October 10, 2024.**

The draft WAHCAP map combines habitat **cores** and **corridors**.

- **Cores** represent relatively large, contiguous blocks of high-quality habitat.
- **Corridors** represent areas that facilitate or are permeable to wildlife movement. The corridors were mapped by finding the least resistant path between sets of cores based on avoiding the human footprint.



# Due October 10: review maps

[DataBasin link](#)



The screenshot shows the DataBasin website interface. At the top left is the DataBasin logo. To the right is a search bar with the text "Search in this gallery". Below the logo is a navigation bar with five tabs: "Get Started", "Explore", "Create", "Community", and "Workspace". The main content area has a breadcrumb trail: "DATA BASIN | GALLERIES | WAHCAP REVIEW MAPS - PRODUCTS AND INPUT DATA - REVIEW DUE 10/10/2024". The main title is "WAHCAP Review Maps - Products and Input Data - Review Due 10/10/2024", created by Stephanie DeMay, with a last modified date of Sep 26, 2024. There is an "Add to..." button. A map thumbnail shows a geographic area with a data overlay. The "About" section explains the purpose of the maps and provides instructions on how to use them. The "Usage" section indicates that the gallery is visible to everyone, contains 6 maps, and is bookmarked by 1 group.

DATA BASIN

Search in this gallery

Get Started Explore Create Community Workspace

DATA BASIN | GALLERIES | WAHCAP REVIEW MAPS - PRODUCTS AND INPUT DATA - REVIEW DUE 10/10/2024

## WAHCAP Review Maps - Products and Input Data - Review Due 10/10/2024

Created by Stephanie DeMay Sep 24, 2024 (Last modified Sep 26, 2024)

Add to...



**About**  
Use these maps to review the draft WAHCAP map and compare it to input datasets.

Select different layers on and off and use the slider bar to compare the WAHCAP products to relevant ecosystem and species data.

Use the comments tools to leave spatially explicit comments on the maps.

This gallery is visible to everyone

**Gallery contains**  
6 Maps

**Usage**  
bookmarked by 1 group




# Due October 10: think about

- Are areas important for connectivity missing from the WAHCAP map?
- Are there areas that the WAHCAP map identifies as important, but should not be?
- Does the WAHCAP map do a good job representing your species or area of interest?



# WAHCAP Map

 WAHCAP  
Cores

 Low  
disturbance

 Moderate  
disturbance

 High  
disturbance

**Questions?**



# Thank you!

[Julia.Michalak@dfw.wa.gov](mailto:Julia.Michalak@dfw.wa.gov)

[Stephanie.DeMay@dfw.wa.gov](mailto:Stephanie.DeMay@dfw.wa.gov)

## Washington Habitat Connectivity Action Plan Mailing List



