



Big ideas, challenges & opportunities

2012 National LCC Workshop

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Outline

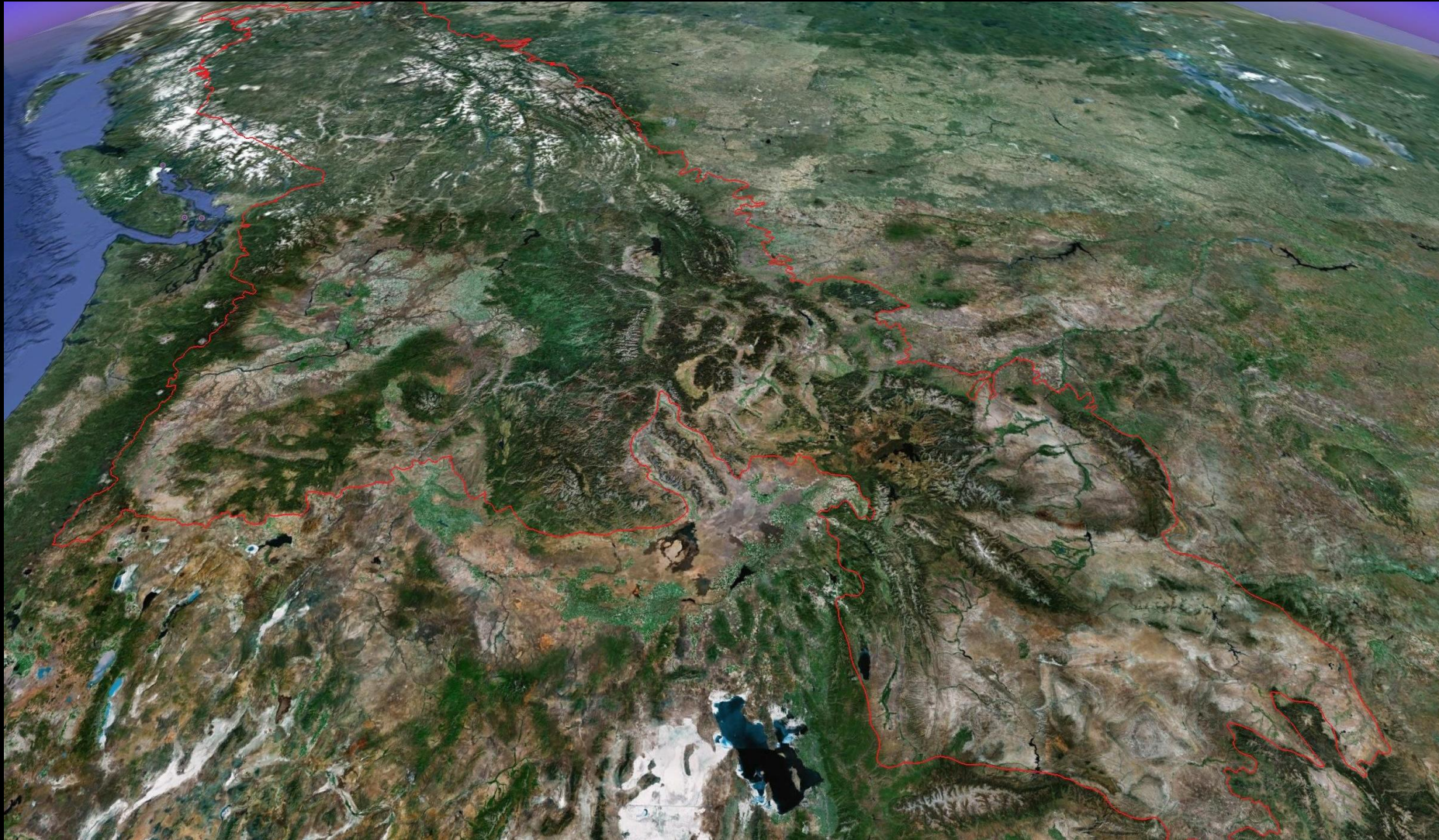
Conservation of biodiversity through landscape conservation cooperatives

1. What's the big idea?
2. Emerging approaches to address challenges
 - LCCV project
 - YSP framework
 - WGA landscape integrity & connectivity
3. Additional challenges

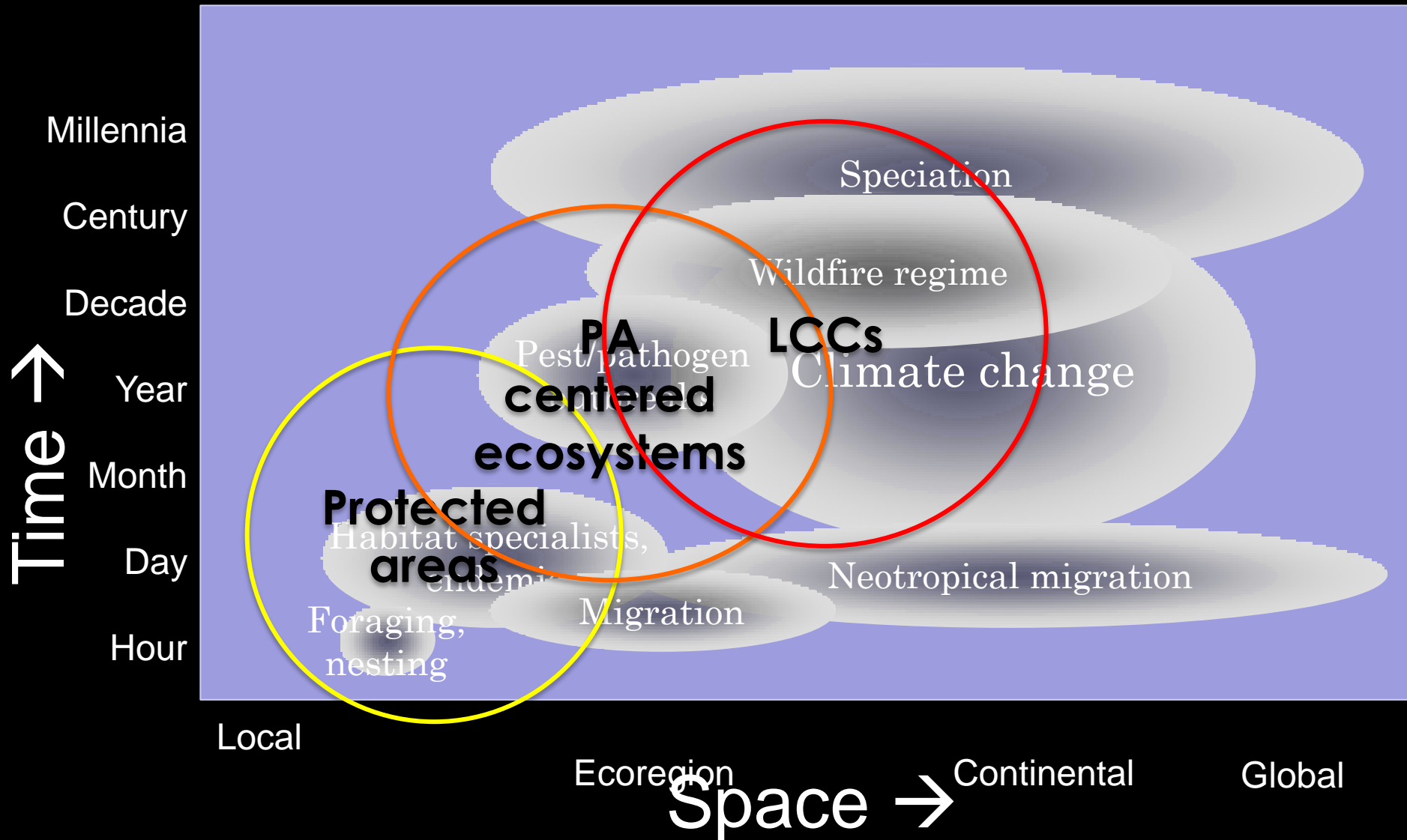
Broadening our perspective

- Where we work (landscapes)
- When we work/horizon (time, non-stationary)
- What we are conserving (targets)
- How we work (vulnerability, strategic)
- With whom we work (partners)
- How we coordinate (monitoring)

Where we work – landscapes e.g., Great Northern LCC



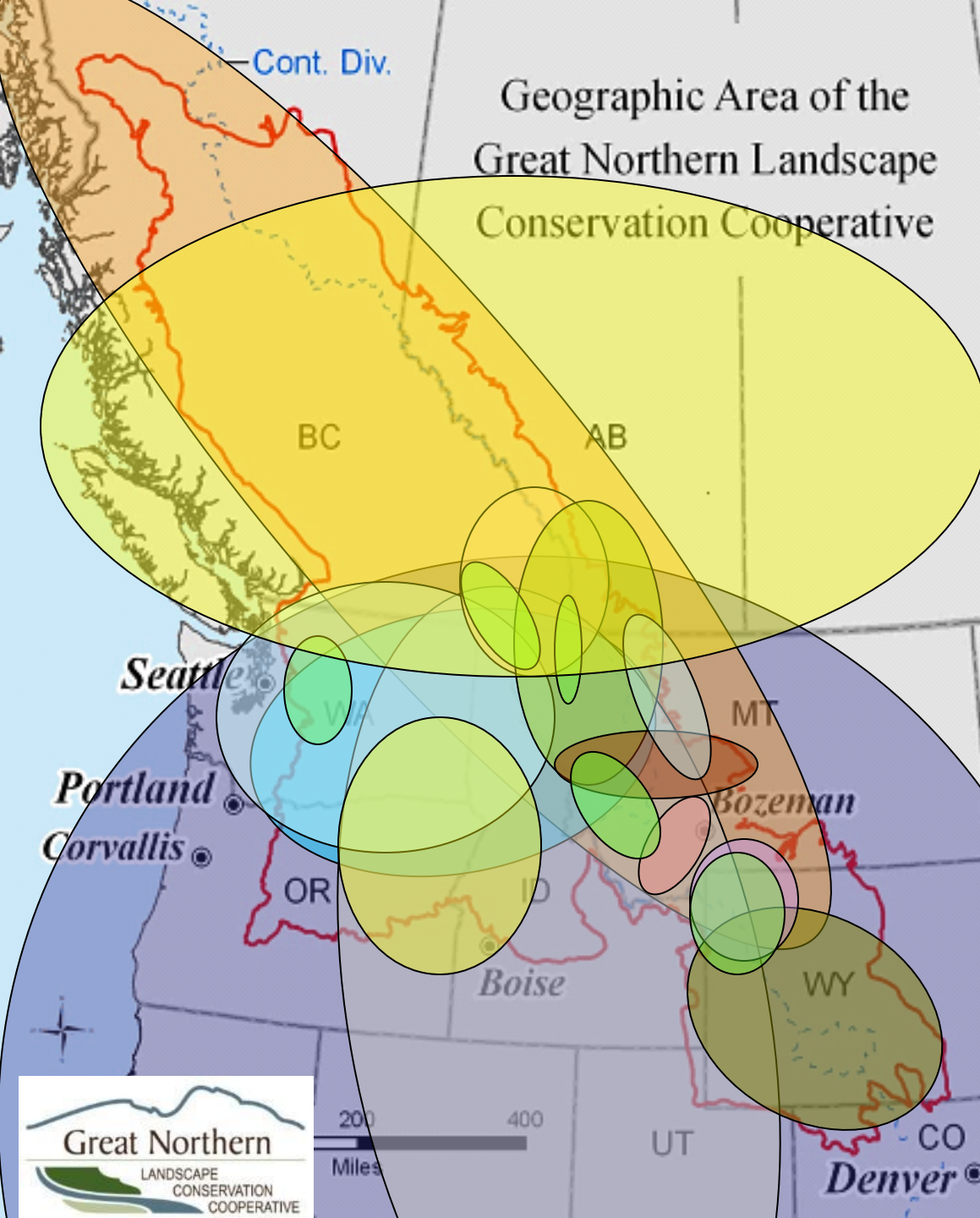
Over ecological scales



Complex mixture of many agencies, units, groups

Level	Number of agencies	Number of units	Total area (kac)	Average area (kac)
Federal	12	7,446	13,803,834	466
Native	71	254	911,272	709
State	340	21,302	18,560,352	467
Local/regional	3,274	31,577	15,577	0.3
Private cons.*	-	29,683	201,595	7

*Data from PAD-US, CBI



Greater Yellowstone Coord Comm
Wyoming Landscape Conservation Initiative
Arid Lands Initiative
Kootenay Conservation Program
Blackfoot Challenge
Rocky Mountain Front
Big Hole Conservation Alliance
Crown of the Continent
Interagency Grizzly Bear Comm
Washington Connected Lands
Columbia Basin Fed Caucus
Intermountain West JV
Yellowstone to Yukon
Western Governors
CAN Wildlife Directors Council
And others....

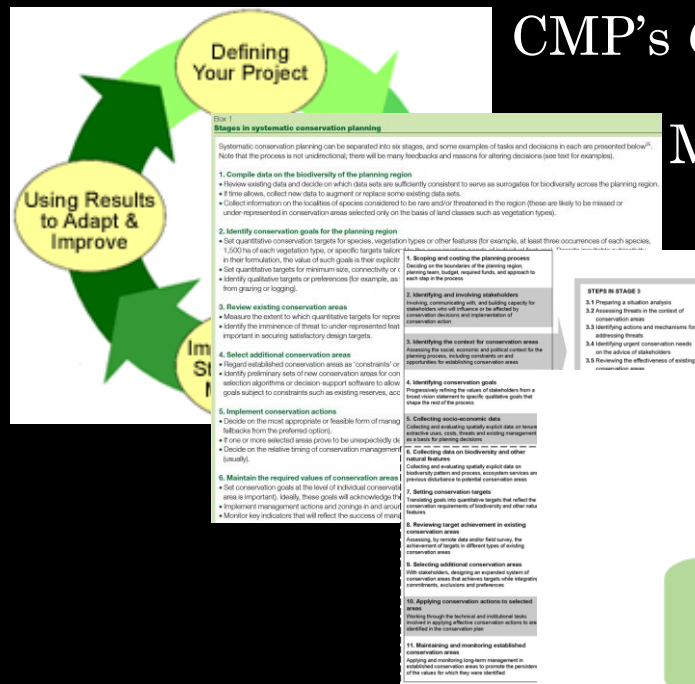
Courtesy of Yvette Converse

Emerging approaches to address challenges

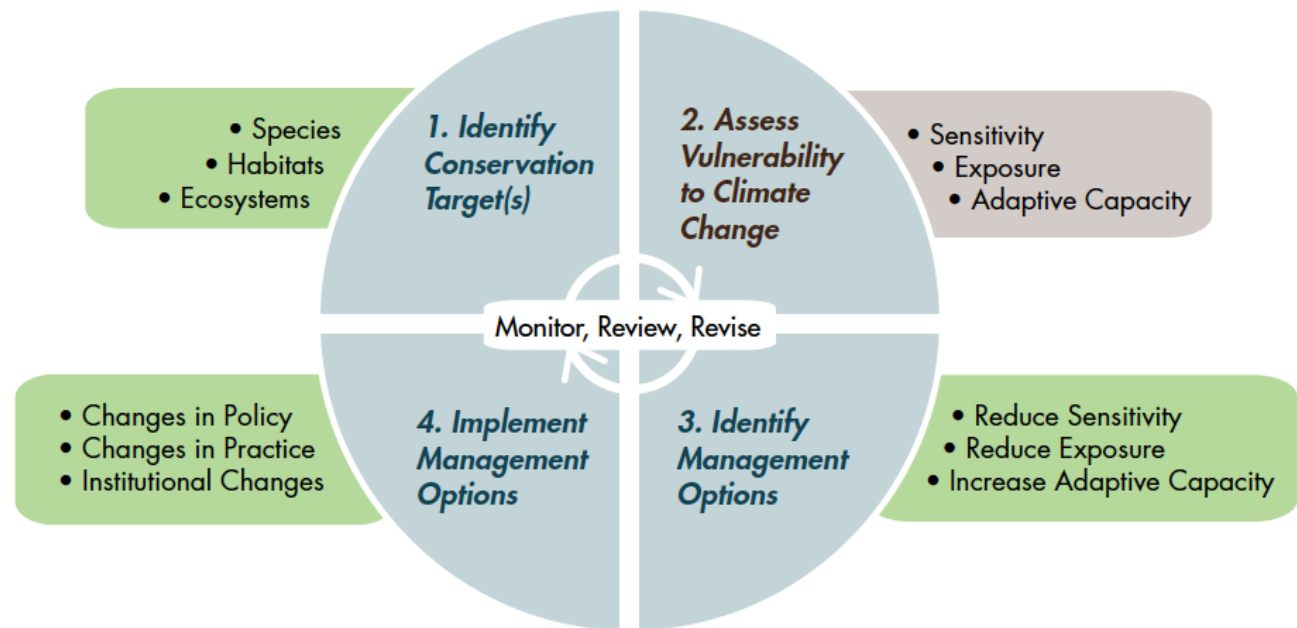
CMP's *Conservation Action Planning*

Margules & Pressey 2000.

Pressey & Bottrill 2008.



Overarching Conservation Goal(s)



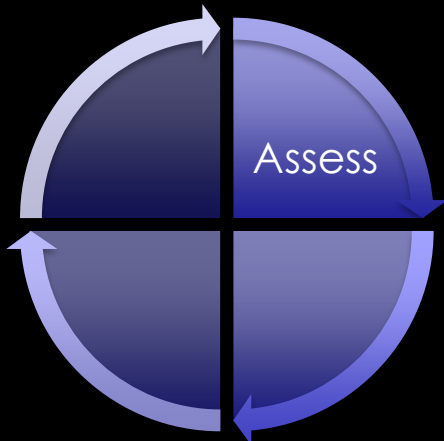
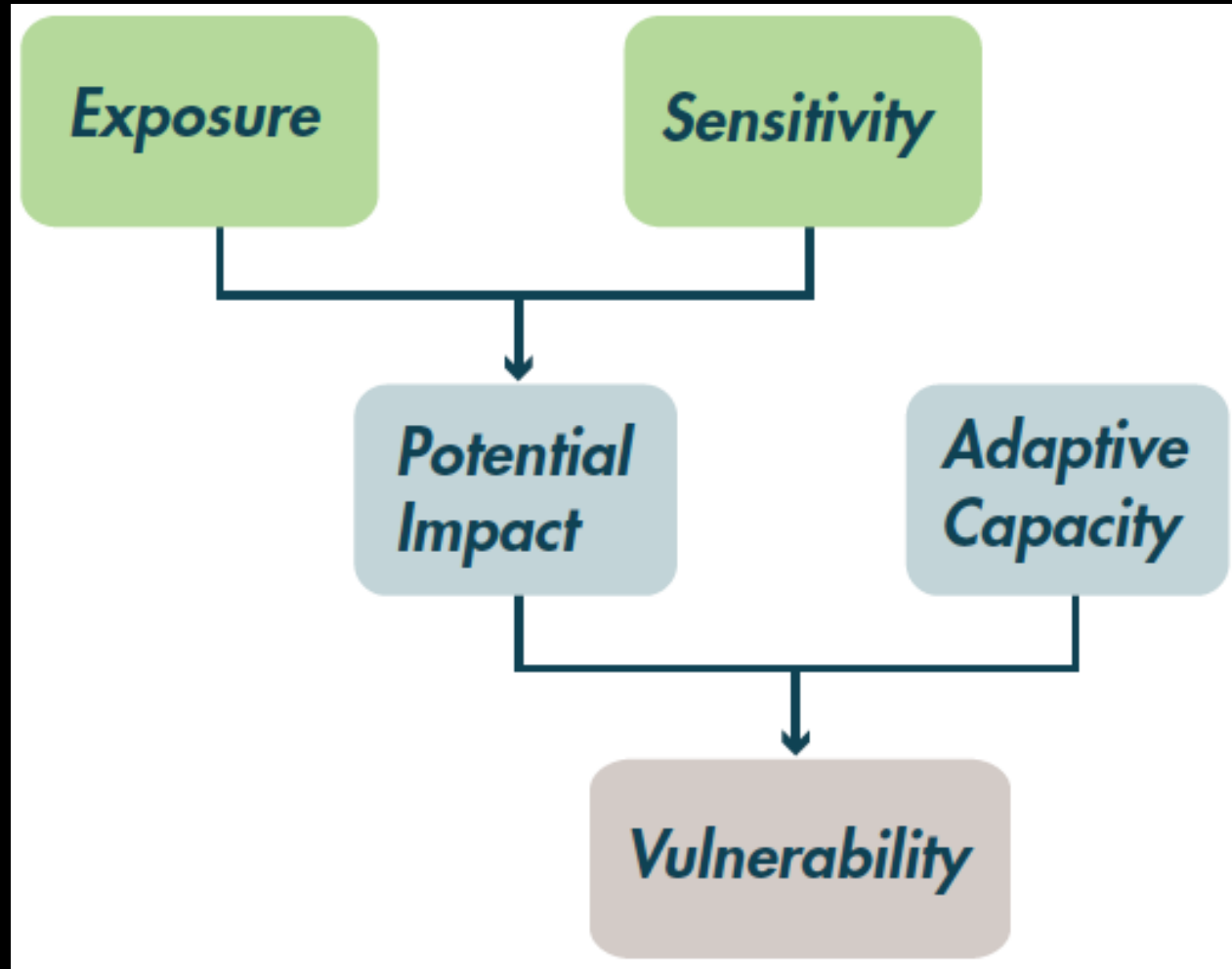
Glick et al. 2011.
Climate change vulnerability assessment

Figure 1.1. Framework for Developing Climate Change Adaptation Strategies



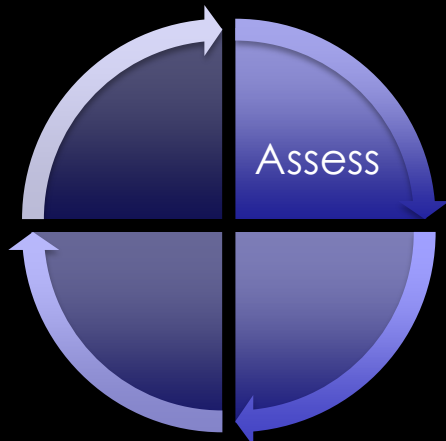




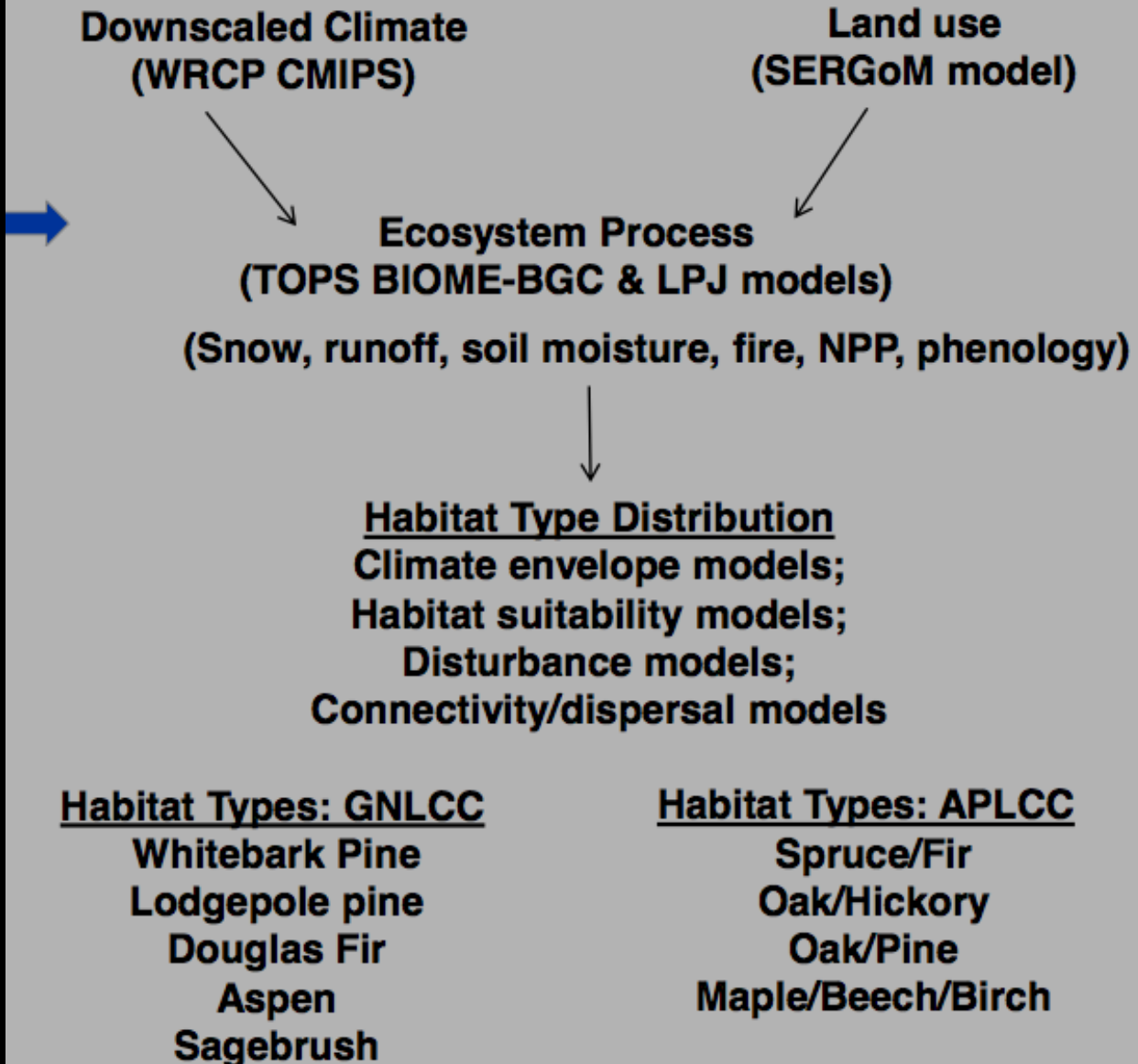


Exposure = magnitude & extent of change experienced
Sensitivity = degree to which fitness/process is affected
Adaptive capacity = coping responses of species/process

Landscape Climate Change Vulnerability Project (NASA)



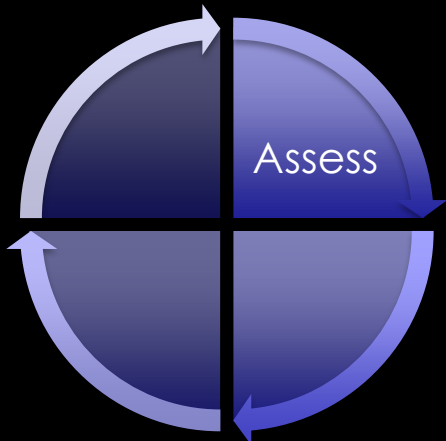
Hindcasting (1980-2010) and Forecasting (2010-2100)



<http://www.montana.edu/lccvp/>

Landscape Climate Change Vulnerability Project (NASA)

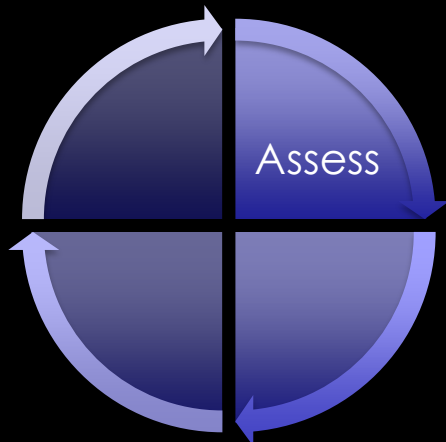
Sensitivity/
adaptive capacity →



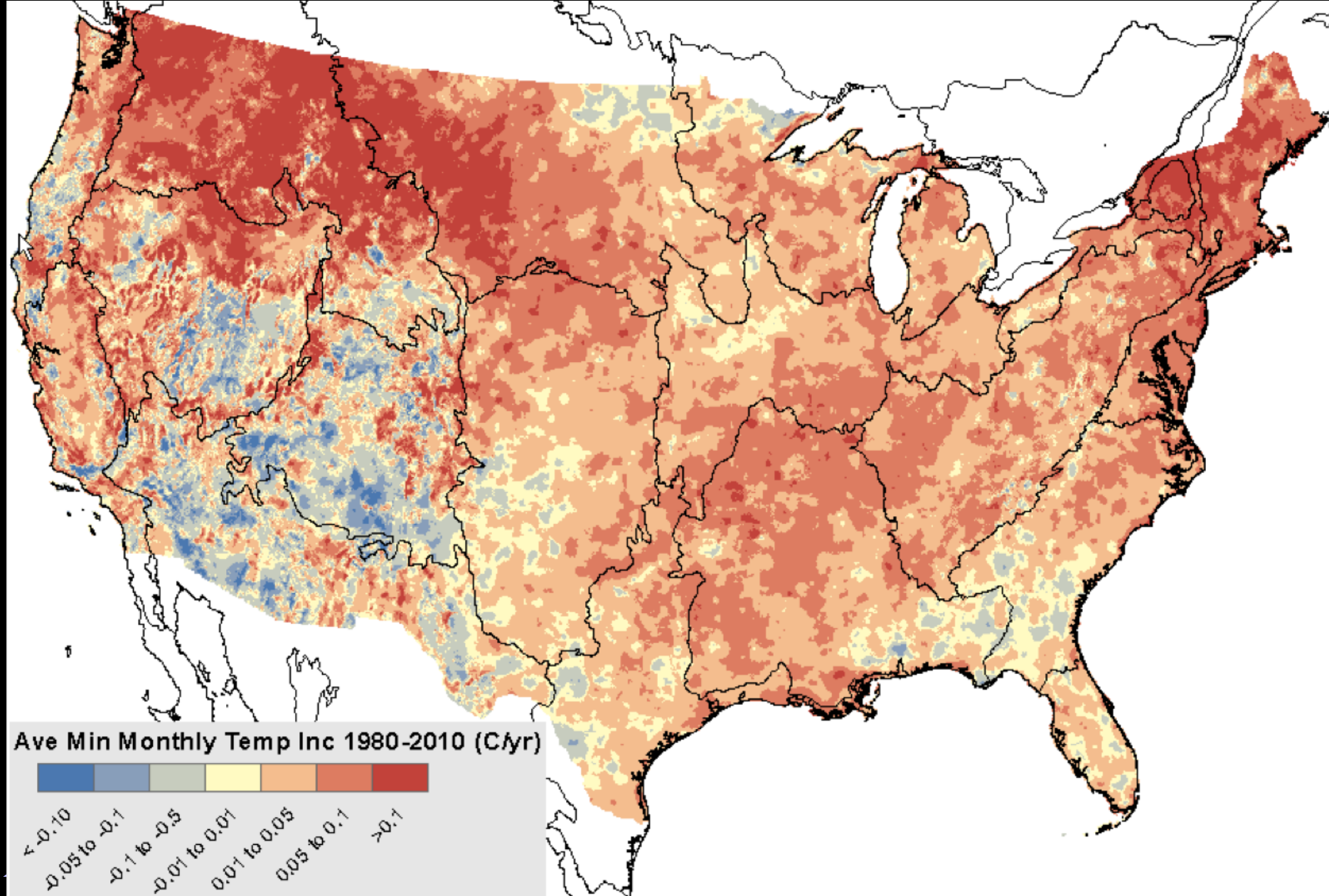
<http://www.montana.edu/lccvp/>

Landscape Climate Change Vulnerability Project (NASA)

	Exposure	Sensitivity	Adaptive capacity
Landscapes	Temperature & precipitation change Extent of human modification	Ecoregional edge Land facet diversity & pattern	Protection/status level Degree of coordination of efforts
Ecological systems	T & P change Extent of human modification	Area w/in current climate space projected to be lost Percent of historical range	Important ecological processes allowed to occur, operating?
Species-communities	T & P change Degree of human modification	Area weighted proportion of conservation targets	Species life history traits

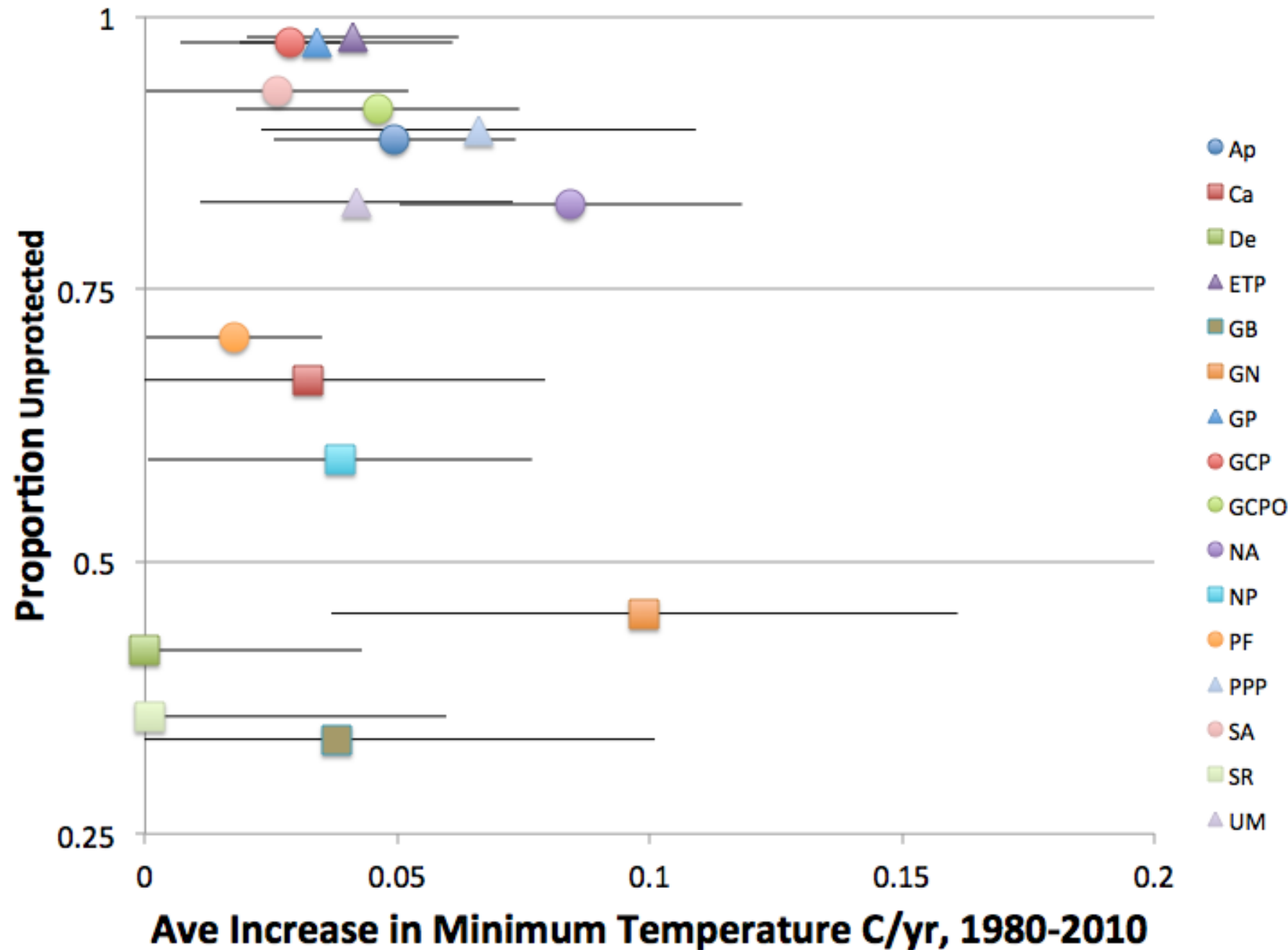


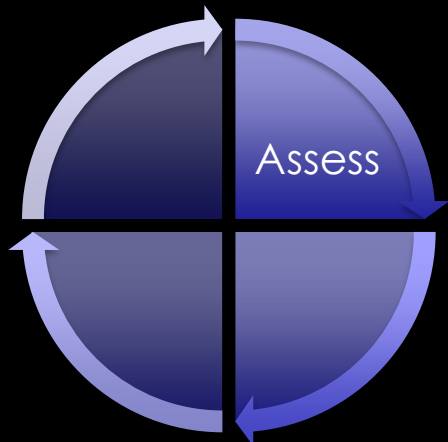
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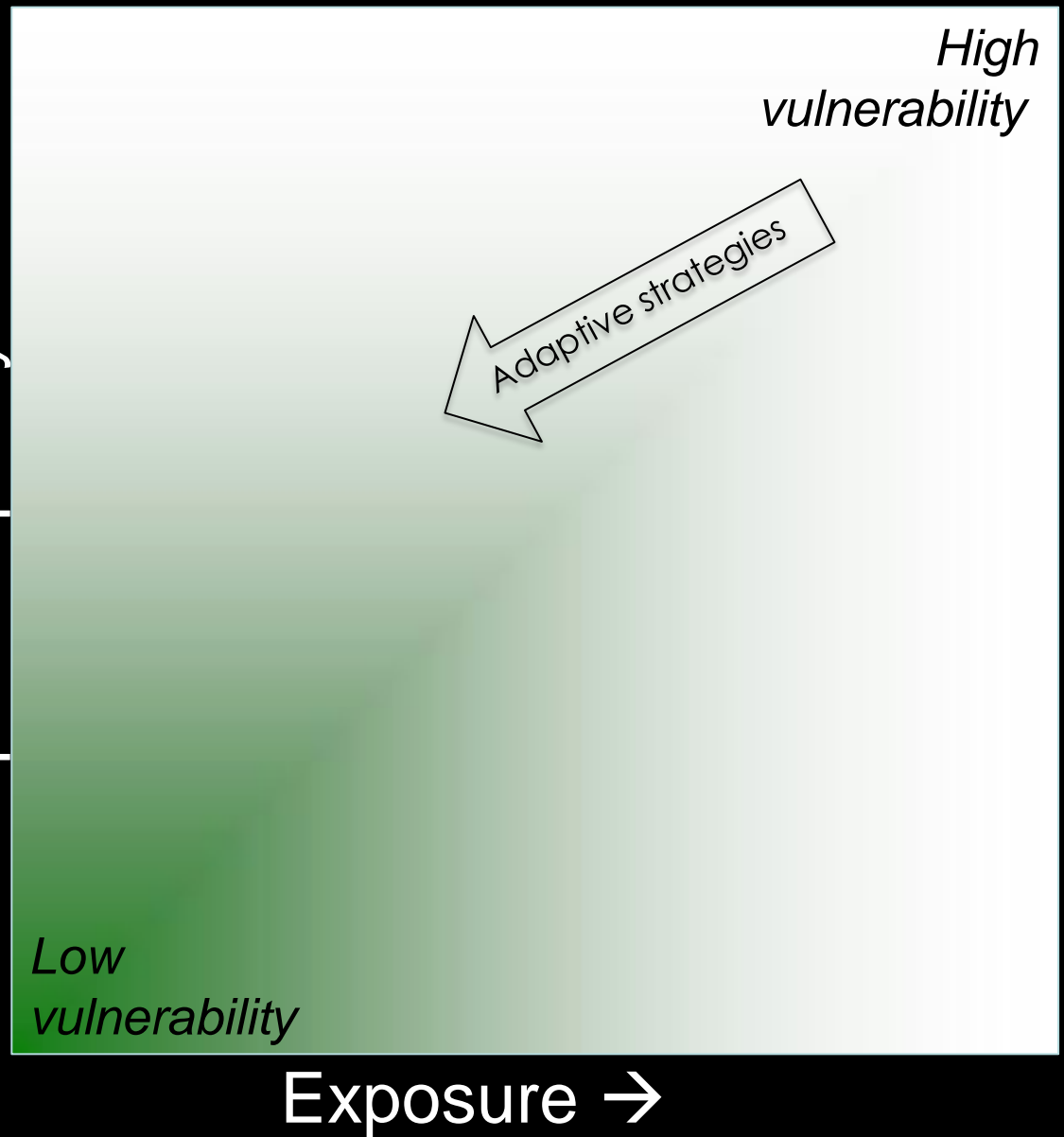
Courtesy of Bill Monahan

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Sensitivity/
adaptive capacity →



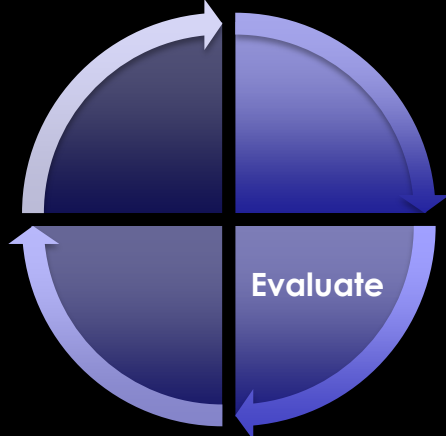
Yale Science Panel framework

Goal – provide guidance and clarity to practitioners, increasingly used to coordinate and communicate among/between organizations

Panel – diverse group of experts from federal land management, state wildlife agencies, NGOs and academia

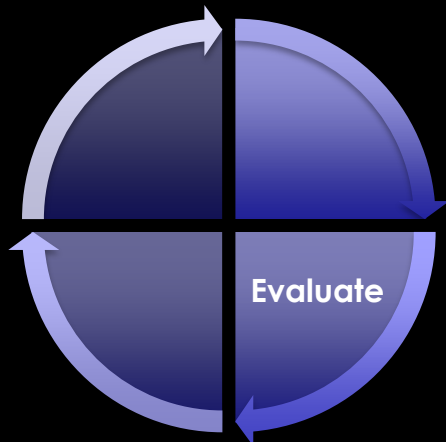
Framework – a menu of options with relevant adaptation strategies, models, and datasets

Refinements – pilot projects are testing the framework

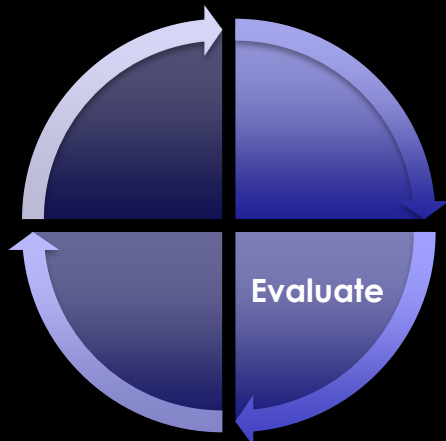


www.databasin.org/yale

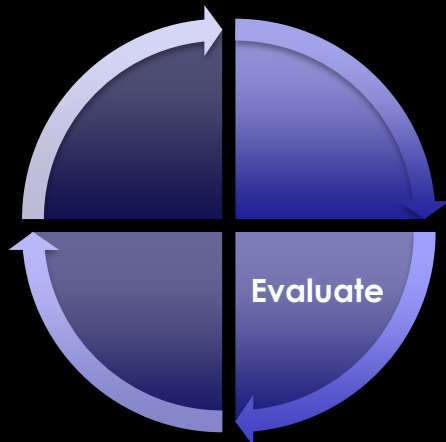
Adaptation strategies	Species & populations	Ecological systems	Landscapes
Protect current patterns of biodiversity (baseline)	1		
Project future patterns of biodiversity			
Maintain ecological processes			
Maintain and restore ecological connectivity			
Protect climate refugia			
Protect the ecological stage (enduring features)			



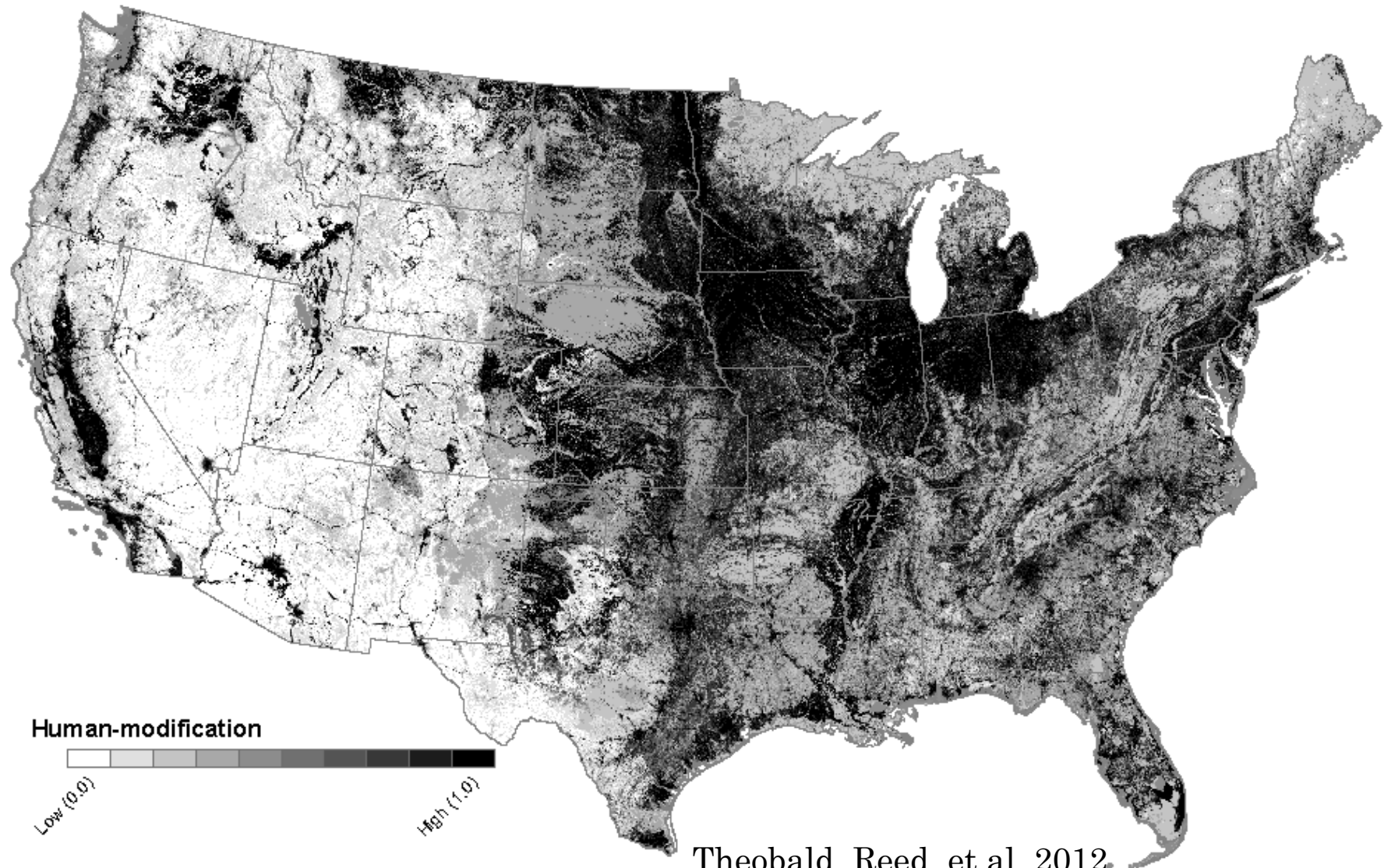
Adaptation strategies	Species & populations	Ecological systems	Land-scapes
Protect current patterns of biodiversity (baseline)			
Project future patterns of biodiversity			
Maintain ecological processes		2	
Maintain and restore ecological connectivity			
Protect climate refugia			
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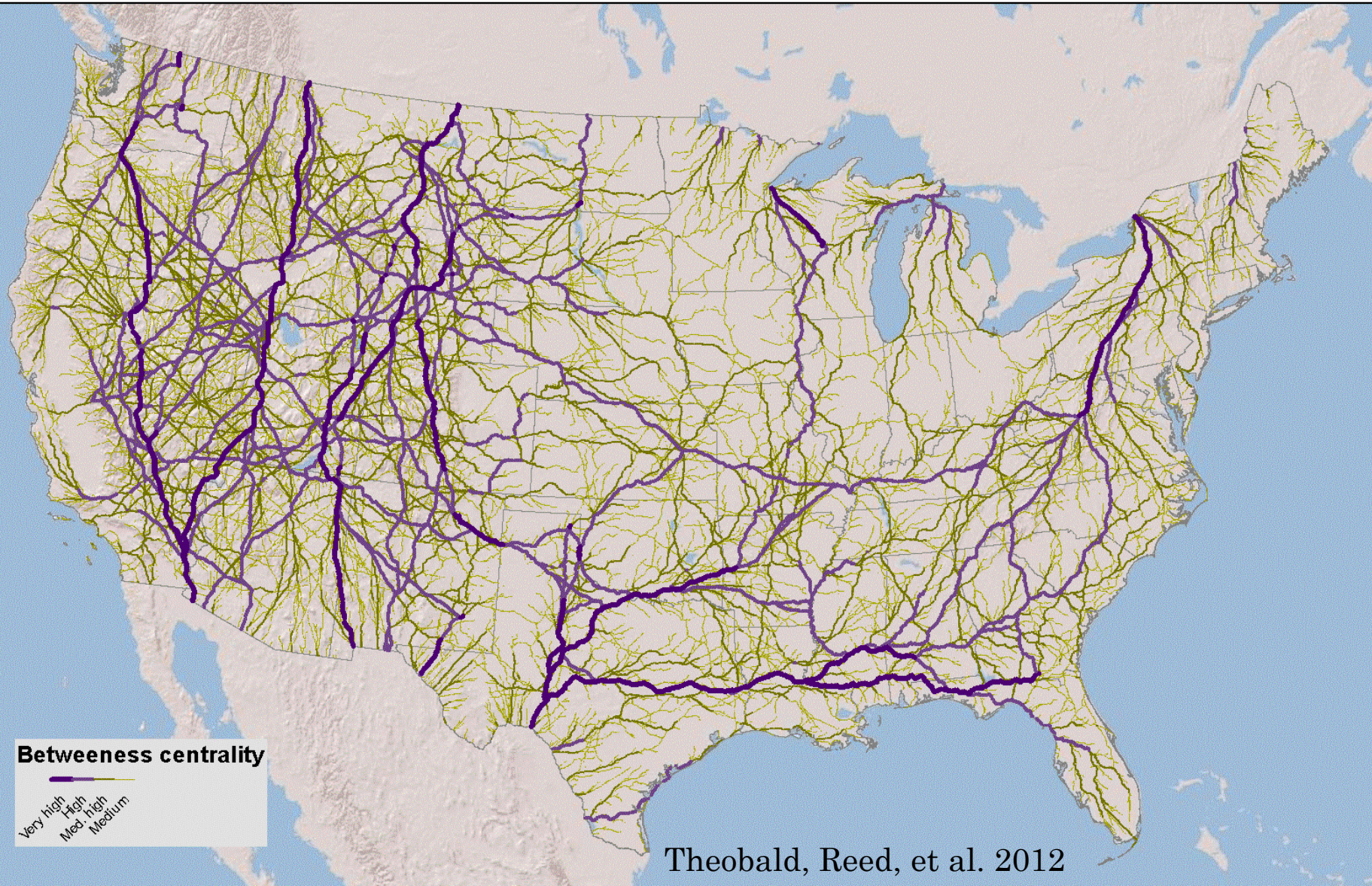
Adaptation strategies	Species & populations	Ecological systems	Landscapes
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Landscape Integrity & Connectivity

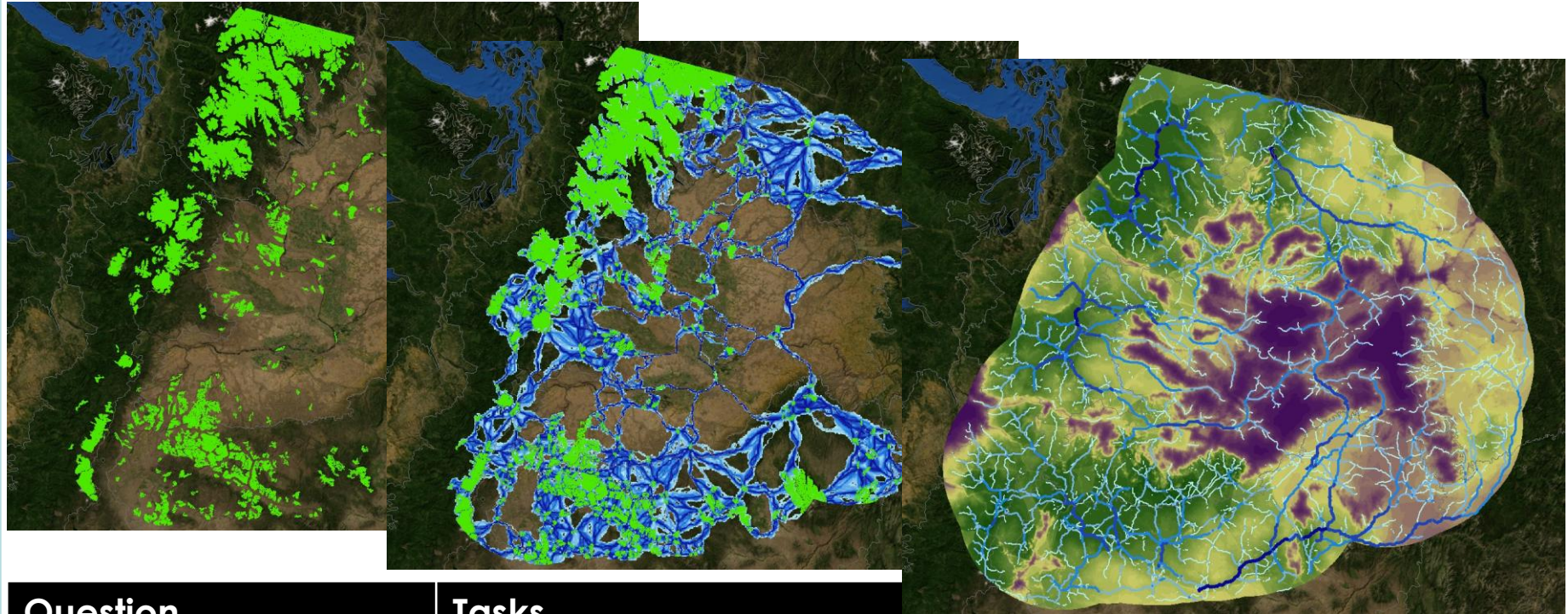


Landscape Integrity & Connectivity



Landscape Integrity & Connectivity

Workgroup – Western Governors Wildlife Council



Question

Tasks

Where are large intact blocks?

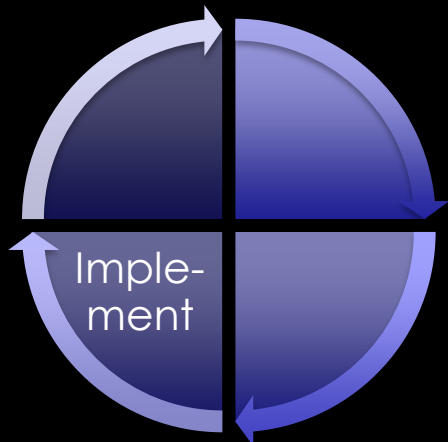
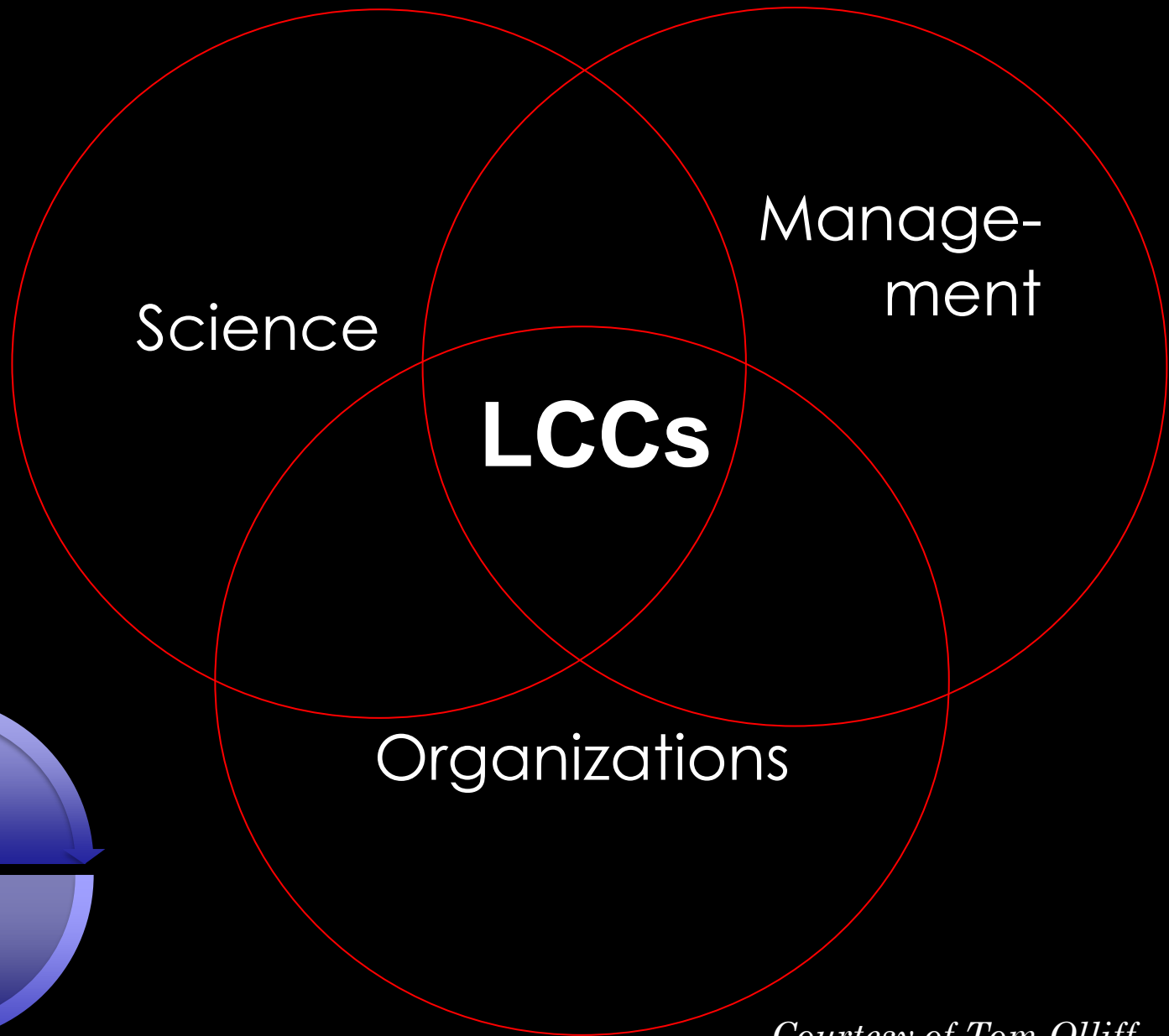
Compare landscape integrity datasets

Validate LI models thru **expert survey**

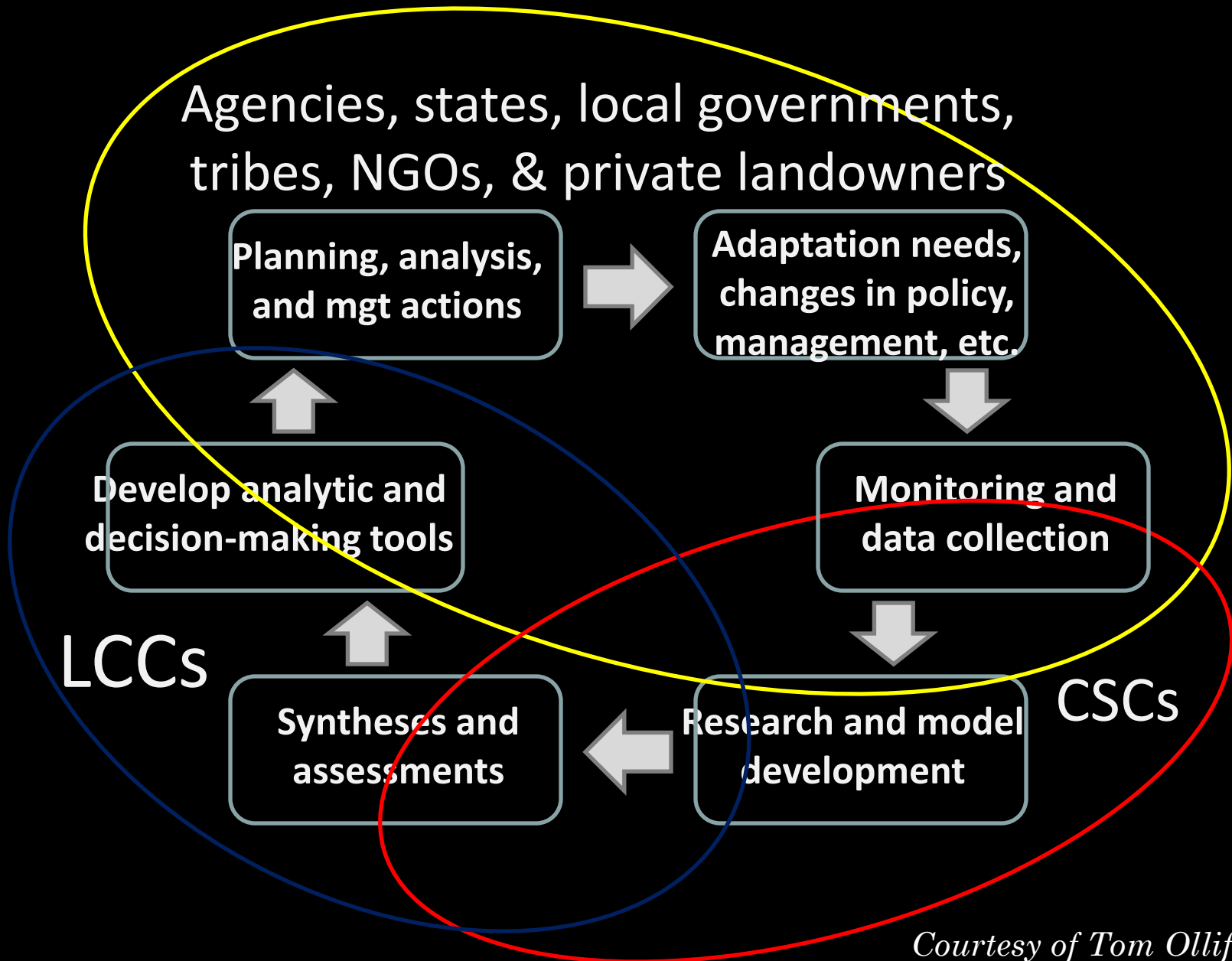
Where are important areas to connect LIBs?

Compare core-corridor and gradient connectivity models

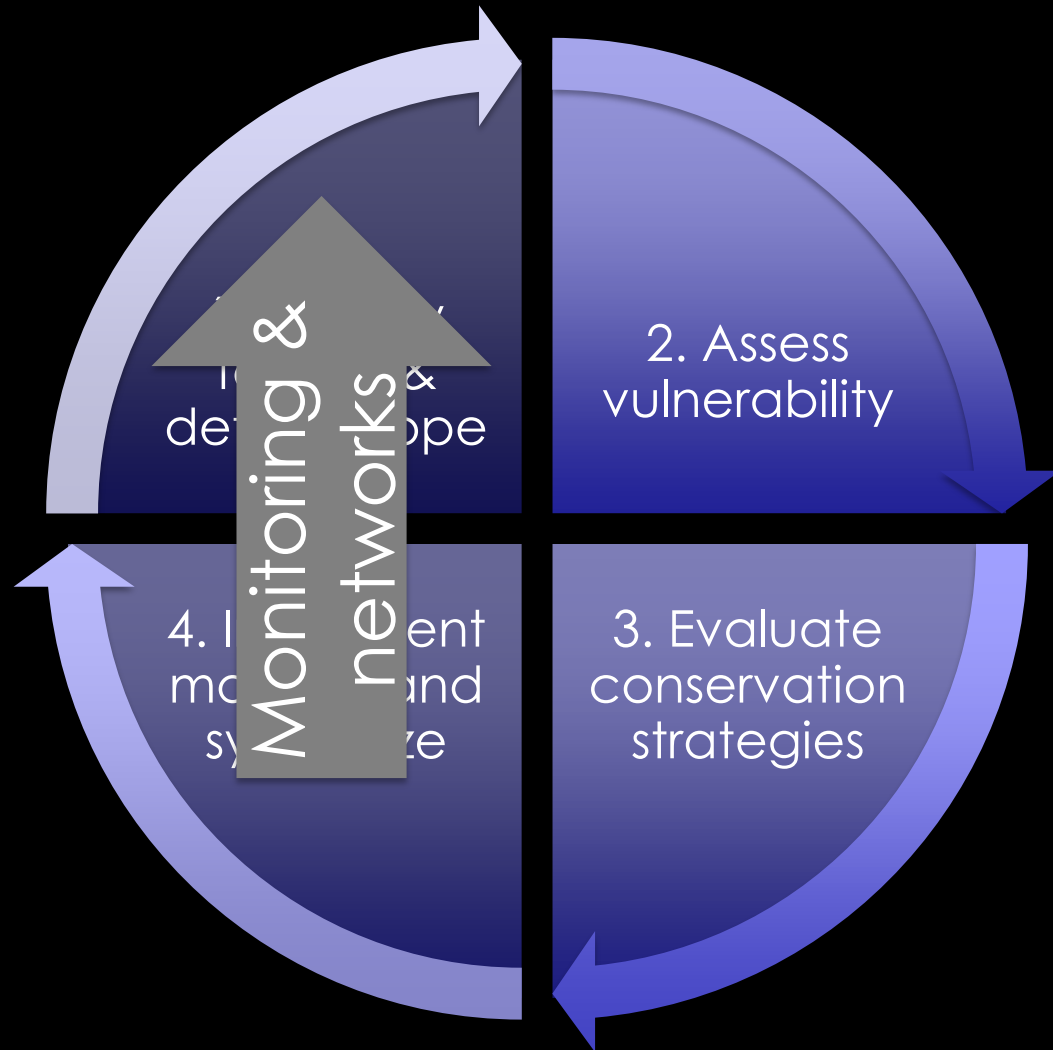
Evaluate connectivity results

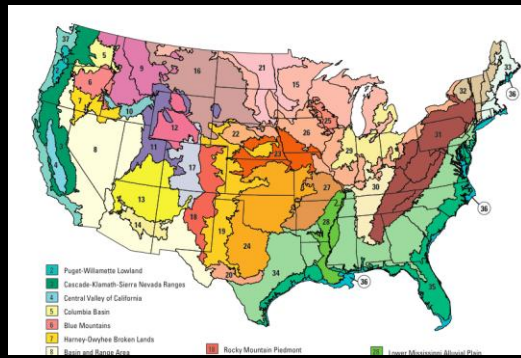


How we work



Courtesy of Tom Olliff





From inventory of resources to monitoring landscapes

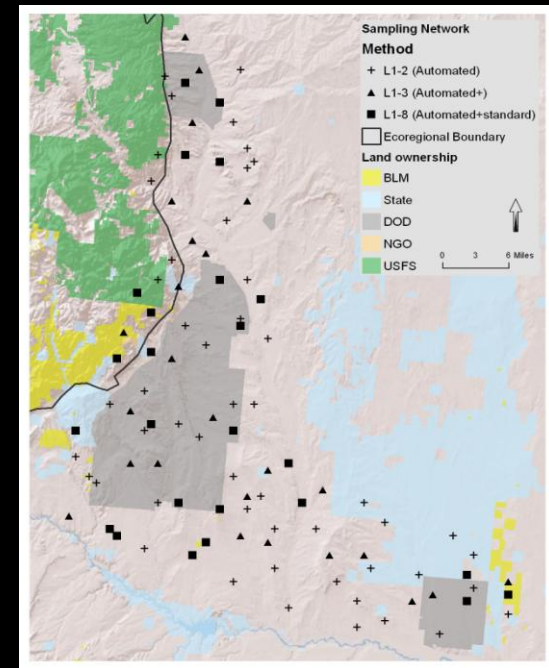
Traditionally we have inventoried resources separately:

- Forests , soils, wetlands, land cover, water quality

Need to move toward monitoring landscapes:

1. Dynamics
2. Leveraging
3. Open source, voluntary science

→ Use hierarchical, tessellation of sampling units



Additional challenges

- Public-domain, known locations, standardized monitoring network
- More strongly integrate terrestrial, freshwater, riparian, marine

1. Address multiple levels – species, ecological systems, landscapes:

- From the *here and now* to the *there and soon*

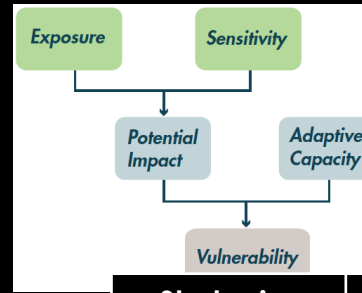
2. Emerging vulnerability frameworks and assessment methodologies

- Help to organize & communicate

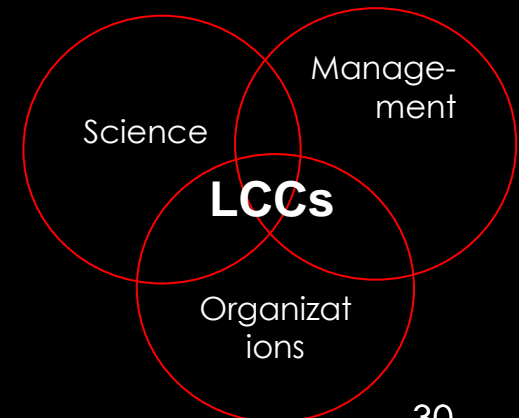
3. Adaptation strategies and examine role scenarios

4. Key role for LCCs to facilitate monitoring and networking to feedback local data & actions to coordinate regionally

Closing thoughts...



Strategies	S & P	ES	LS
Protect current			
Project future			
Maintain processes			
Maintain connectivity			
Protect refugia			
Protect stage			



Think globally...



collaborate regionally...

act locally.

Data, info, knowledge to close the loop!

Thanks!

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Yale Science Panel: www.databasin.org/yale

- O Schmitz, P Beier, D Boyce, J Bullock, C Groves, K Johnston, M Klein, G Knight, J Lawler, K Muller, J Pierce, J Strittholt, D Theobald, S Trombulak, W Singleton

Landscape Climate Change Vulnerability Project
www.montana.edu/lccvp/

- A Hansen, S Goetz, J Gross, F Melton, B Monahan, T Olliff, S Reed, D Theobald

WGA Landscape Integrity & Connectivity Workgroup

- P Comer, J Pierce, R Baldwin, C Carroll, B Dickson, T Grovenburg, J Hak, M Houts, K McKelvey, B McRae, A Messer, J Mikolajczyk, S Reed, J. Schneider, R Schneider, G Servheen, L Svancara, D Theobald, T Wyckoff

CSU Conservation GIS Lab

- D Harrison-Atlas, D Mueller, J Salo