Regional Ecosystem Frameworks (REFs):

Illustrations on the Use of REFs at Multiple Scales

May 31, 2012
1:00-2:30 p.m. Eastern

Presenters

- *Karen Prentice,*
  Bureau of Land Management
- *Jimmy Kagan,*
  Oregon Biodiversity Information Center,
  Institute of Natural Resources – Portland
- *Amy Boyers,*
  Houston-Galveston Area Council

Moderated by Mike Ruth,
FHWA Office of Project Development and Environmental Review

Volpe The National Transportation Systems Center
Advancing transportation innovation for the public good

U.S. Department of Transportation
Federal Highway Administration

U.S. Department of Transportation
Research and Innovative Technology Administration
John A. Volpe National Transportation Systems Center

Regional Ecosystem Frameworks (REFs)

- Originally described in Eco-Logical
- A database of resources and scenarios with planning objectives and conservation criteria
- Require collaboration in ensuring data are compatible
- Engage a variety of stakeholders (representatives from local & State government, conservation, transportation, development, and planning organizations) to define, build, and maintain REF

Regional Ecosystem Frameworks (REFs)

- Existing conservation priority plans (scientifically robust, defensible, well reviewed and accepted)
- Individual priority resources not fully captured by existing priority areas
- Regional resource retention goals
- Resource viability requirements and responses to stressors
- Scenarios of current and future stressors, protected areas, management, etc.




BLM's Landscape Approach

and

ECO-LOGICAL

Karen Prentice, BLM, Healthy Landscapes Coordinator, kprentic@blm.gov, 202-912-7223

Vision for BLM's Landscape Approach

Develop business practices to manage resources and uses at multiple scales in the face of compounding stressors. **These practices will help the BLM and partners identify what to sustain, at what scale, and the associated trade-offs.**

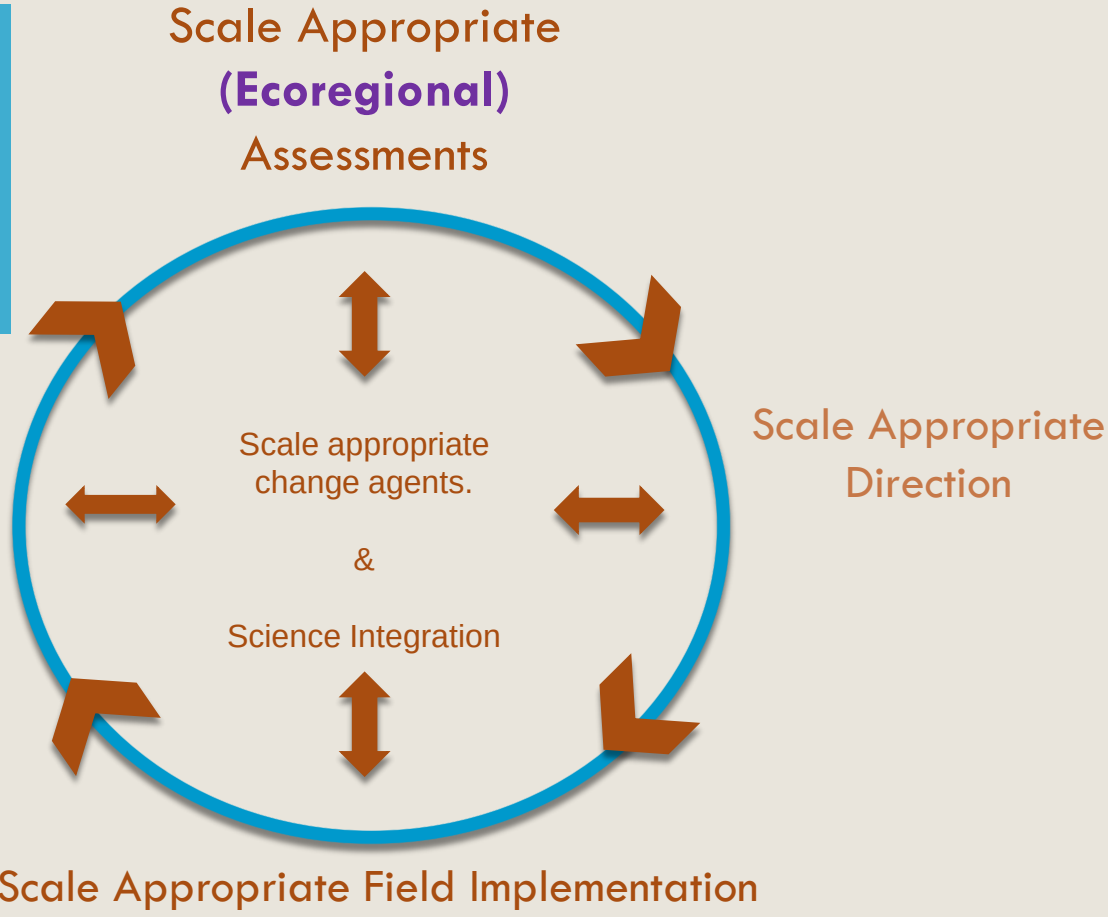
Traditional Practice		Landscape Approach
Project and Site Focused		Landscape Focus
Stove piped		Integrated
Tends to authorize uses and mitigate ecological values		Considers ecological values and use authorizations equally
Ecological Component (Individual Species)		Ecological Function and Service

Develop new business practices to support this transition

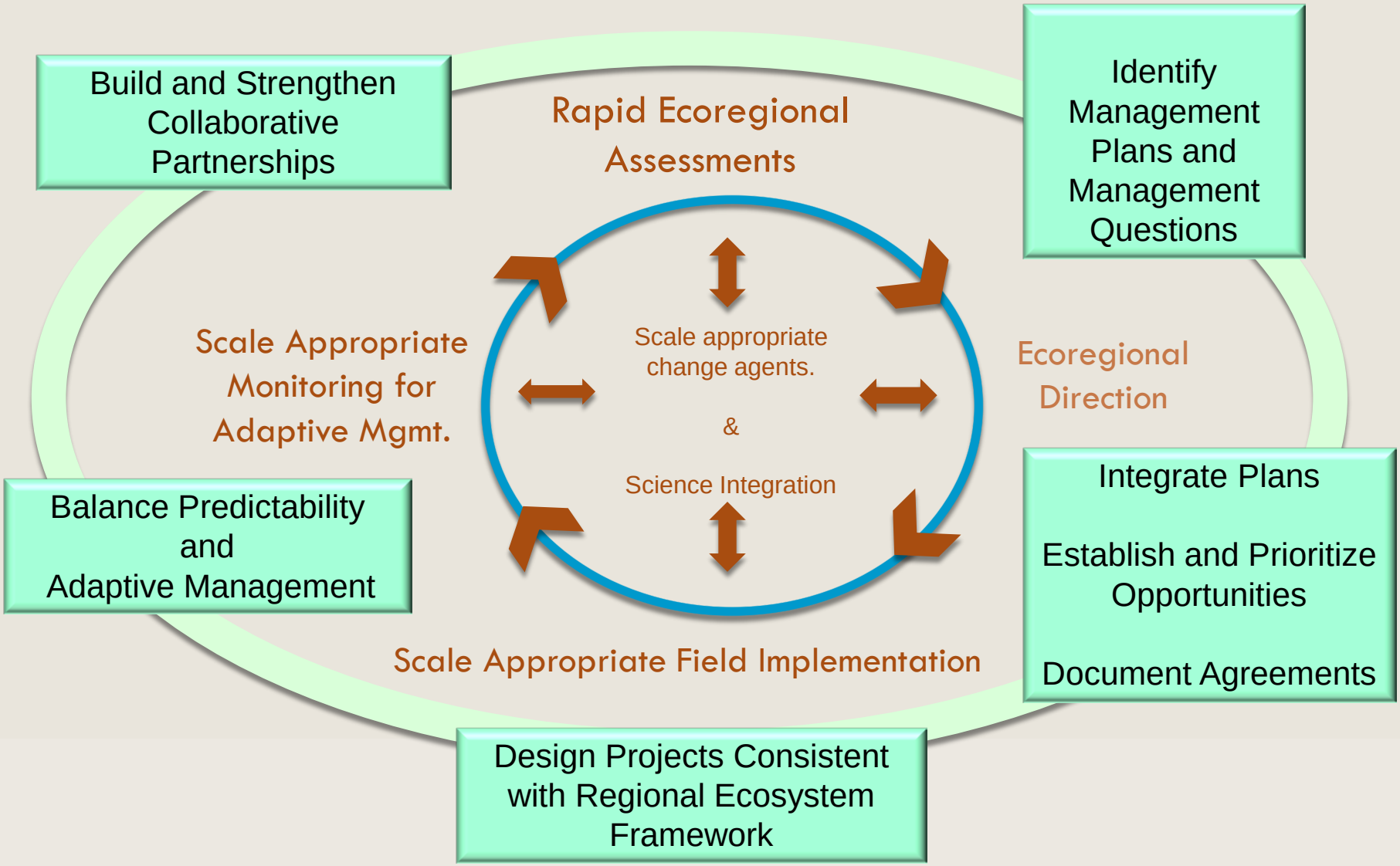
Frame the issue: Build conceptual models with conservation elements and change agents.

BLM's Landscape Approach

The Landscape Approach is based on management questions and an understanding of the system at each scale of interest. Here this understanding is represented by the blue circle and the scale is ecoregional.

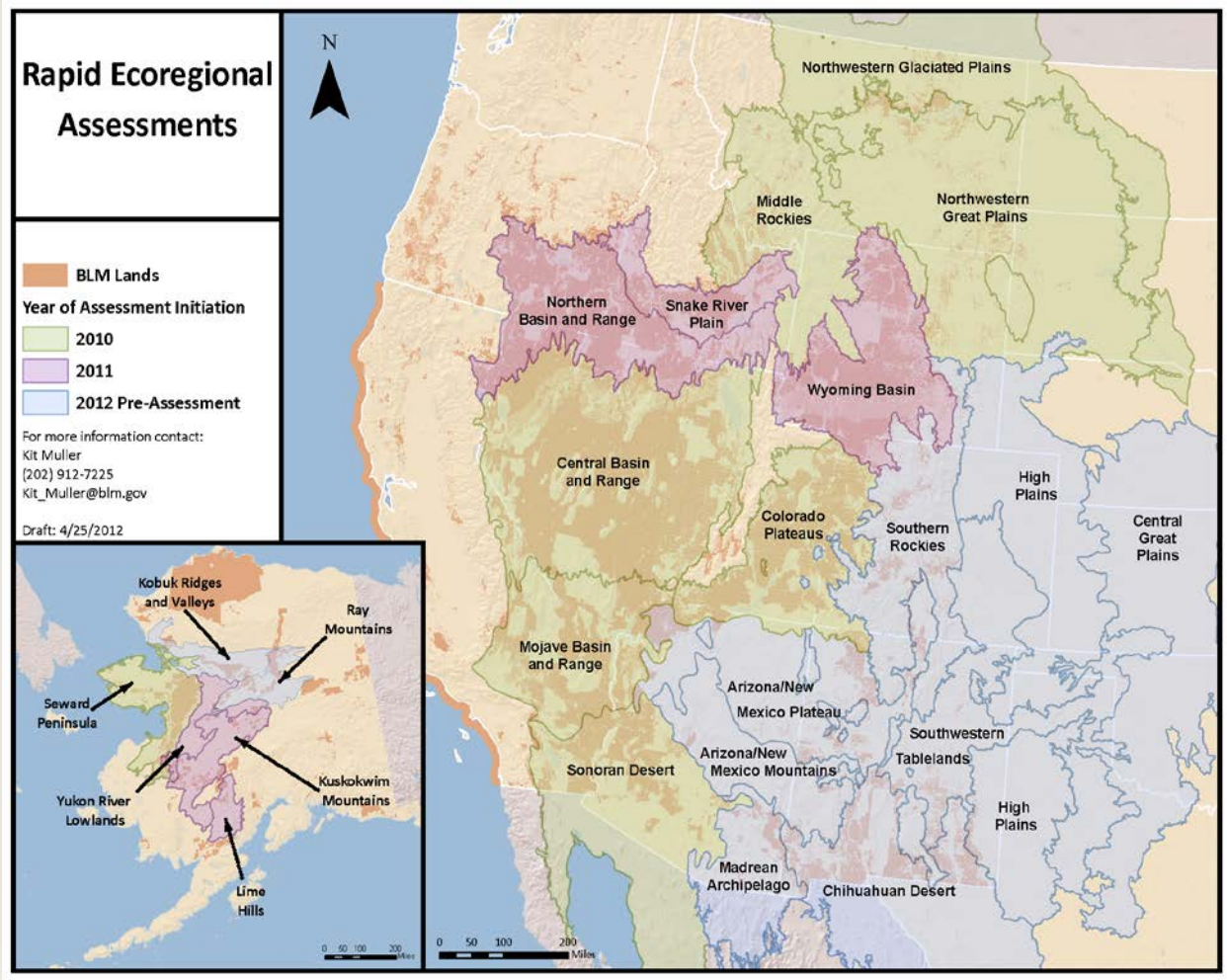


Landscape Approach & Eco-Logical



Rapid Ecoregional Assessments Underway

- 10 REAs initiated to date
- 7 REAs covering more than 370 million acres will be completed in 2012
- Negotiations in progress for additional REAs this year



Management Questions

Conservation Elements + Change Agents = Management Questions

EX: Species
Habitat
Soils

"what we want to conserve"

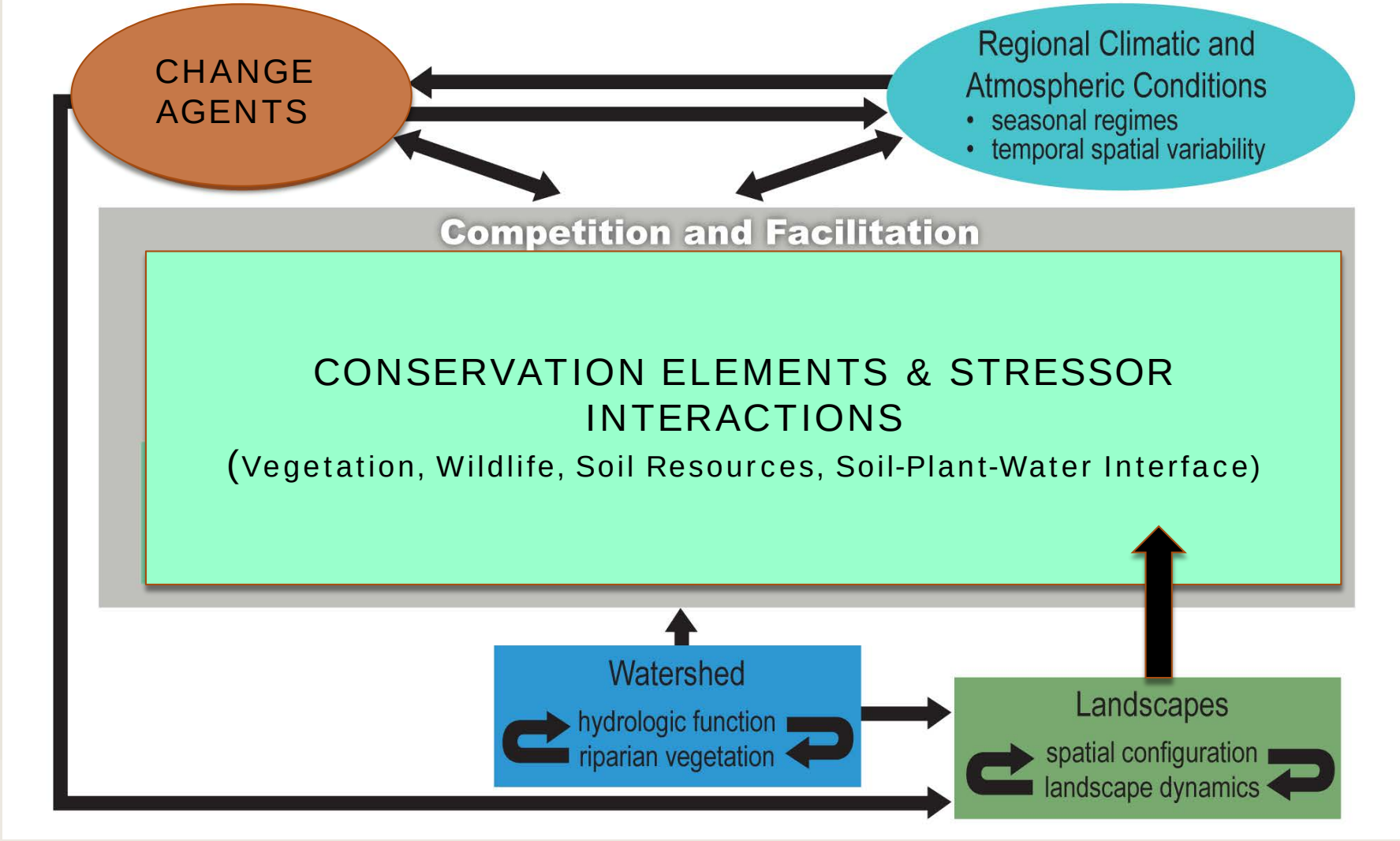
EX: Invasive Species
Fire
Climate Change
Human Development

"what is threatening our resources"

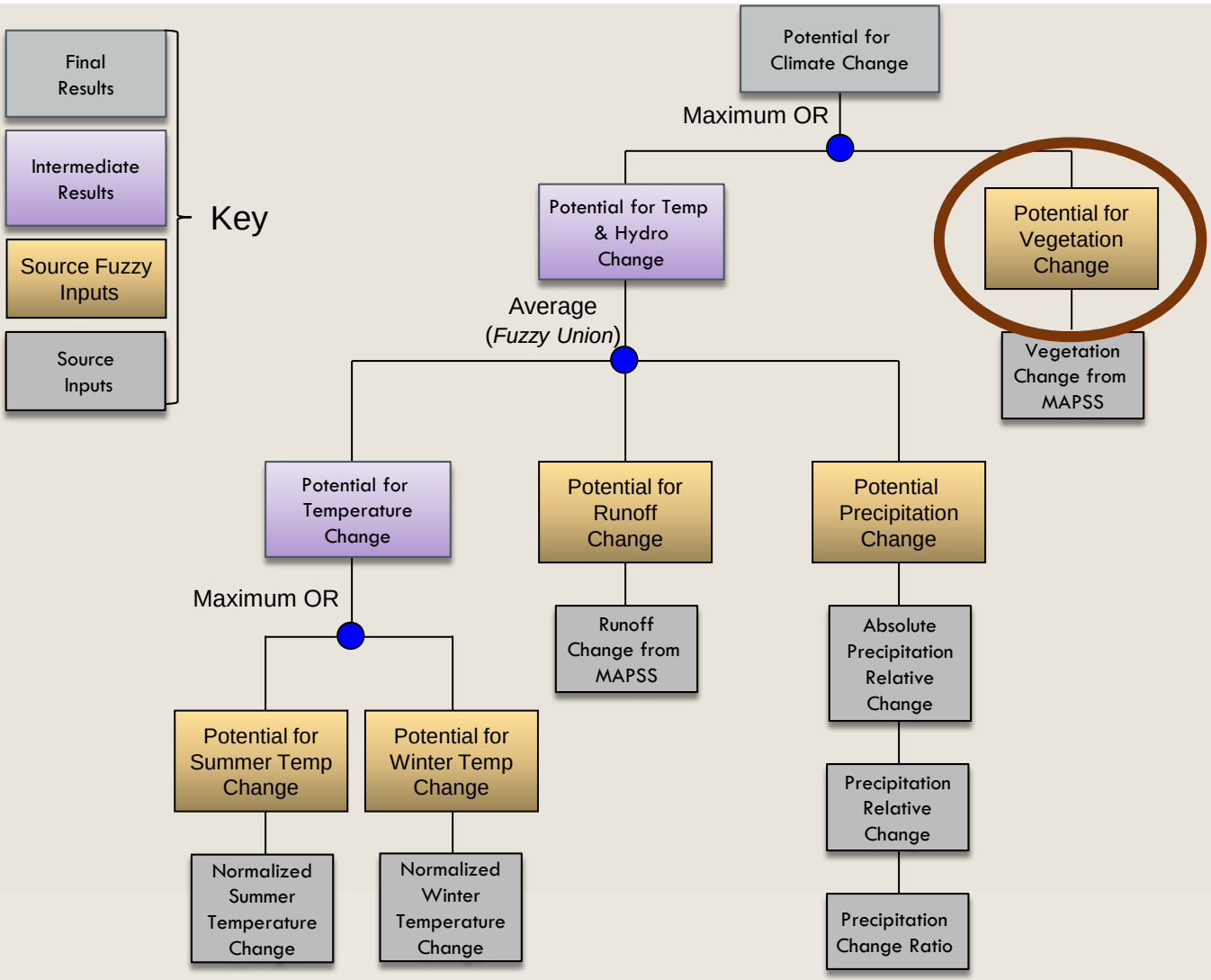
EX: Where is intact sage-grouse habitat threatened by climate change?

"what land managers need to know"

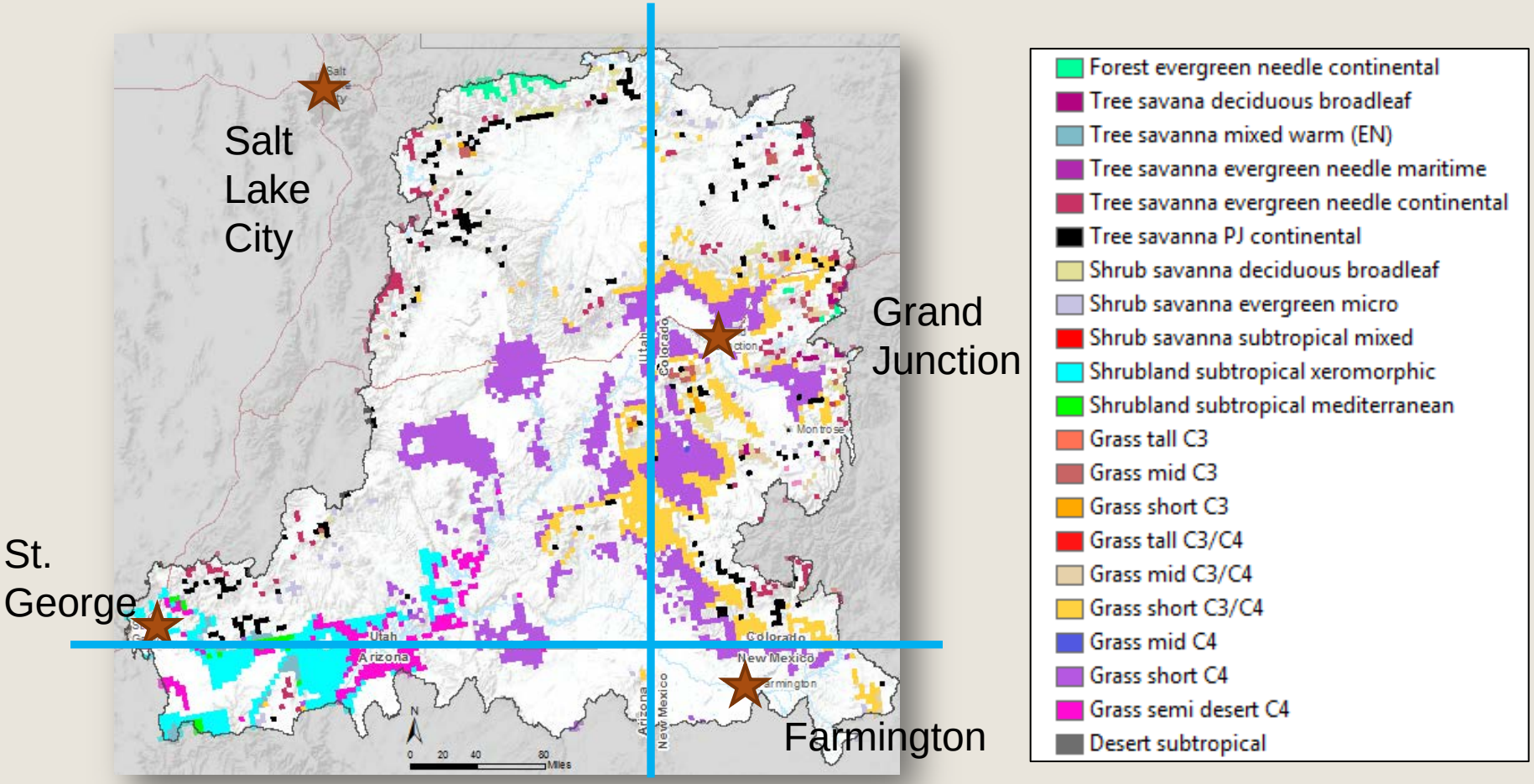
Understanding the System: Conceptual Models



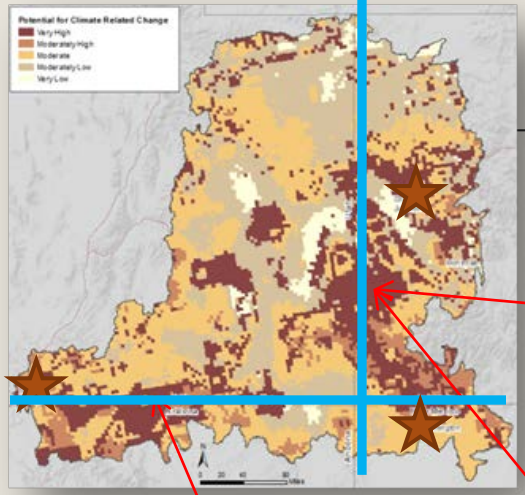
Modeling Change Agents: Predicting Future status of conservation elements

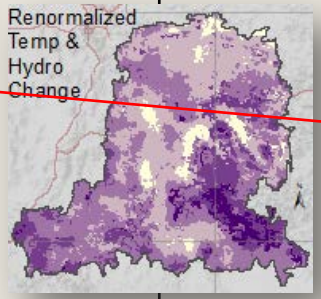


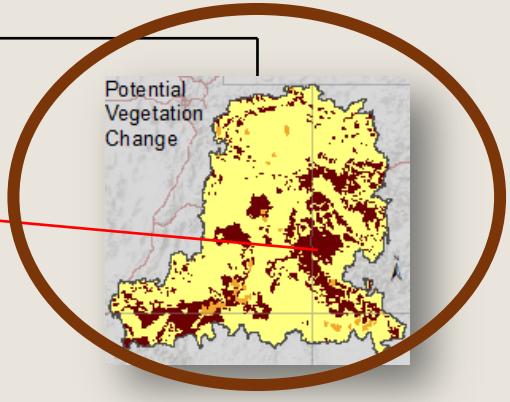
Colorado Plateau: Potential for Vegetation Change

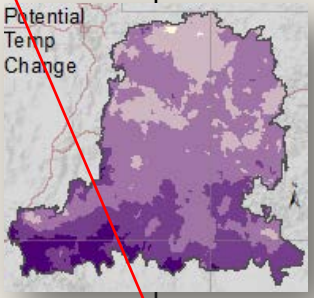


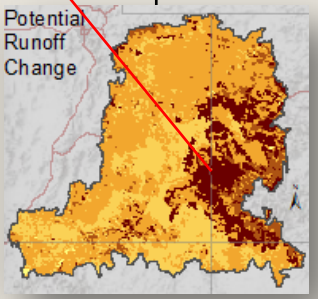
(L) MAPSS results showing just the pixels that changed to different vegetation types between historic baseline (1968–1999) and 2045–2060 based on MAPSS modeling for the Colorado Plateau ecoregion. (R) Digital elevation model of CP.

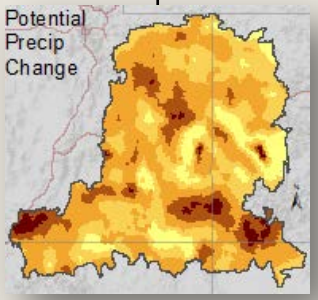


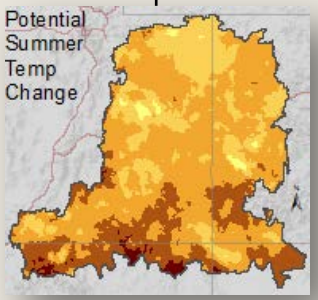


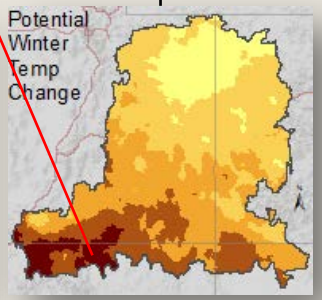








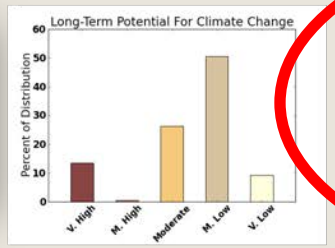




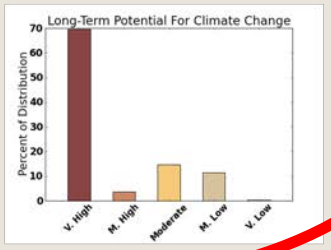
Colorado Plateau: Potential for Climate Related Change by 2060

Species Vulnerability to Climate Change

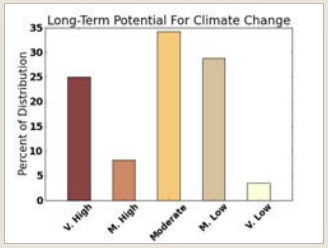
Greater Sage Grouse



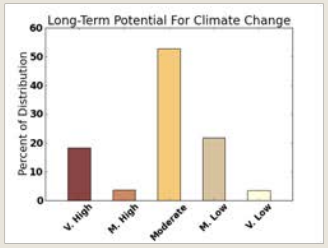
Gunnison Sage Grouse



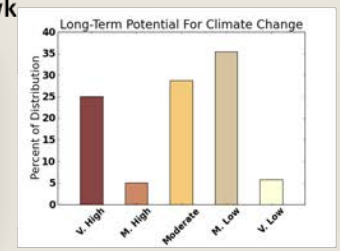
Golden Eagle



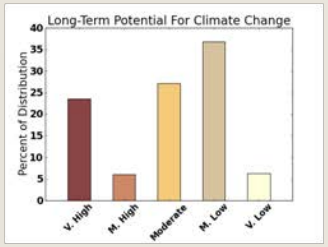
Mexican Spotted Owl



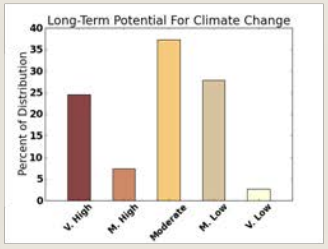
Ferruginous Hawk



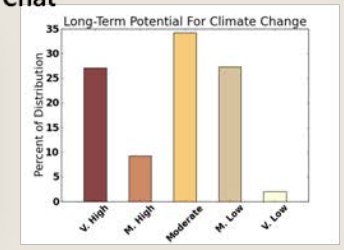
Burrowing Owl



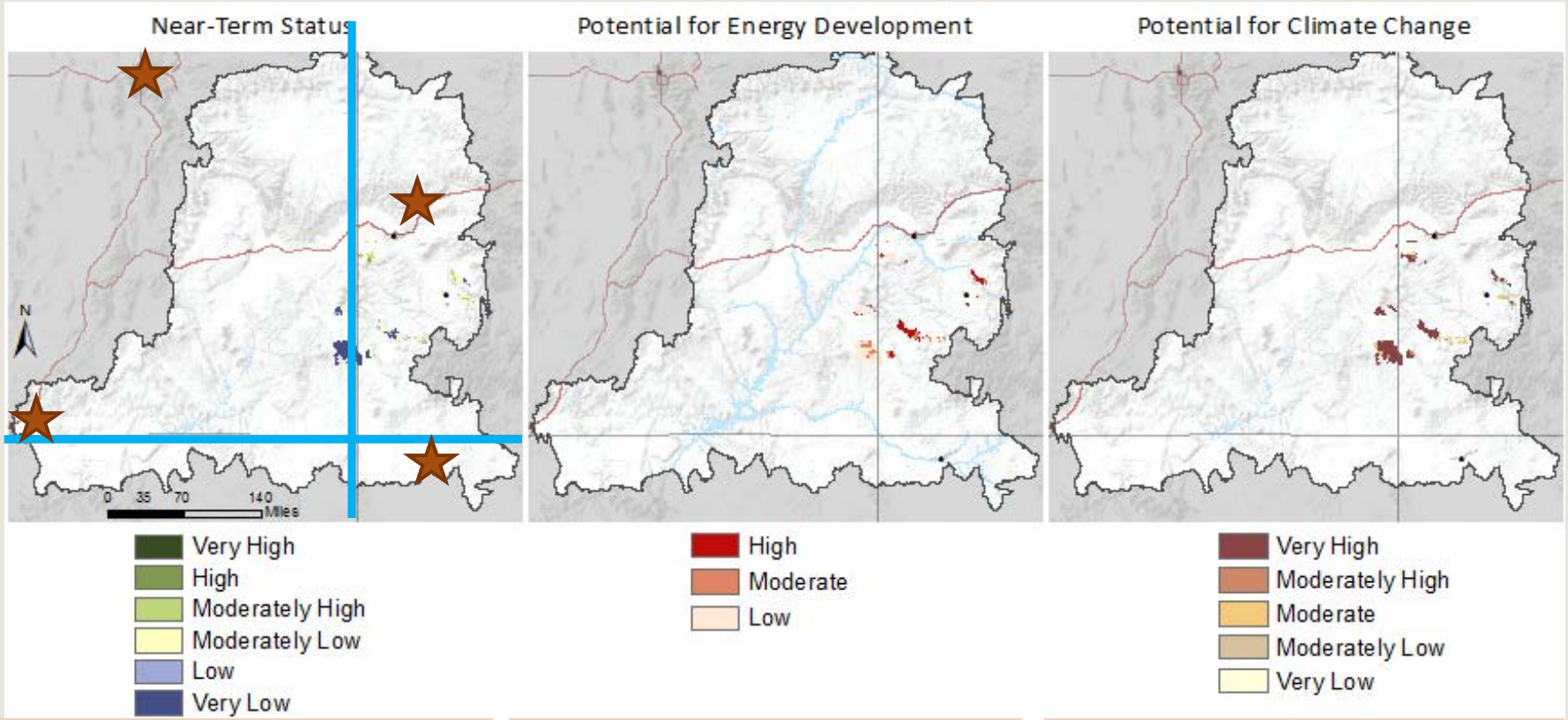
Peregrine Falcon



Yellow-breasted Chat



Gunnison Sage Grouse : Status and Future Vulnerability to Change Agents



This map shows terrestrial intactness "clipped" to currently occupied habitat of GUSG.

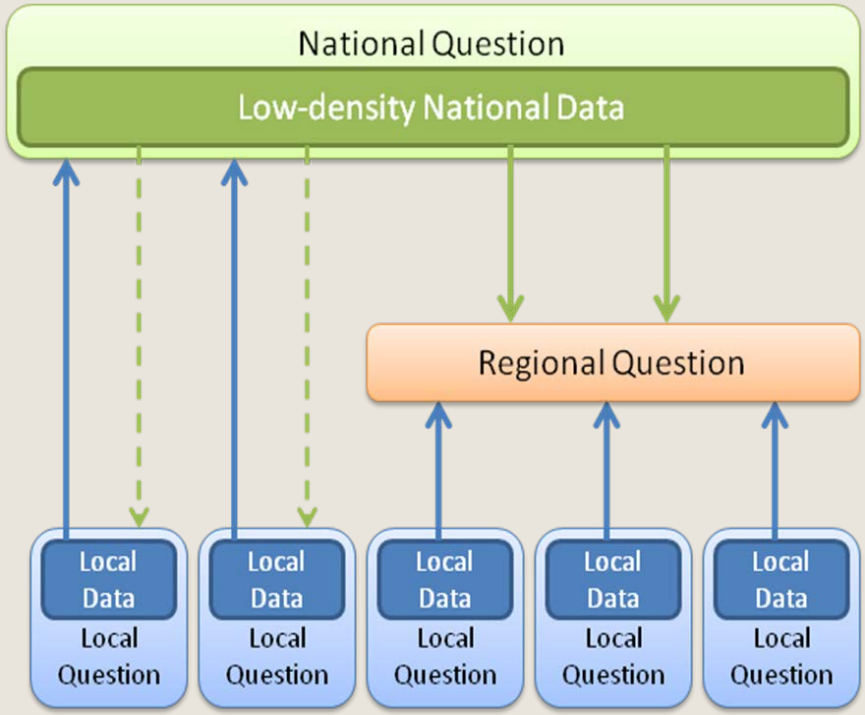
This map shows that some areas of currently occupied GUSG habitat have high potential for energy development.

This map shows that some areas of currently occupied GUSG habitat have high potential for climate change.

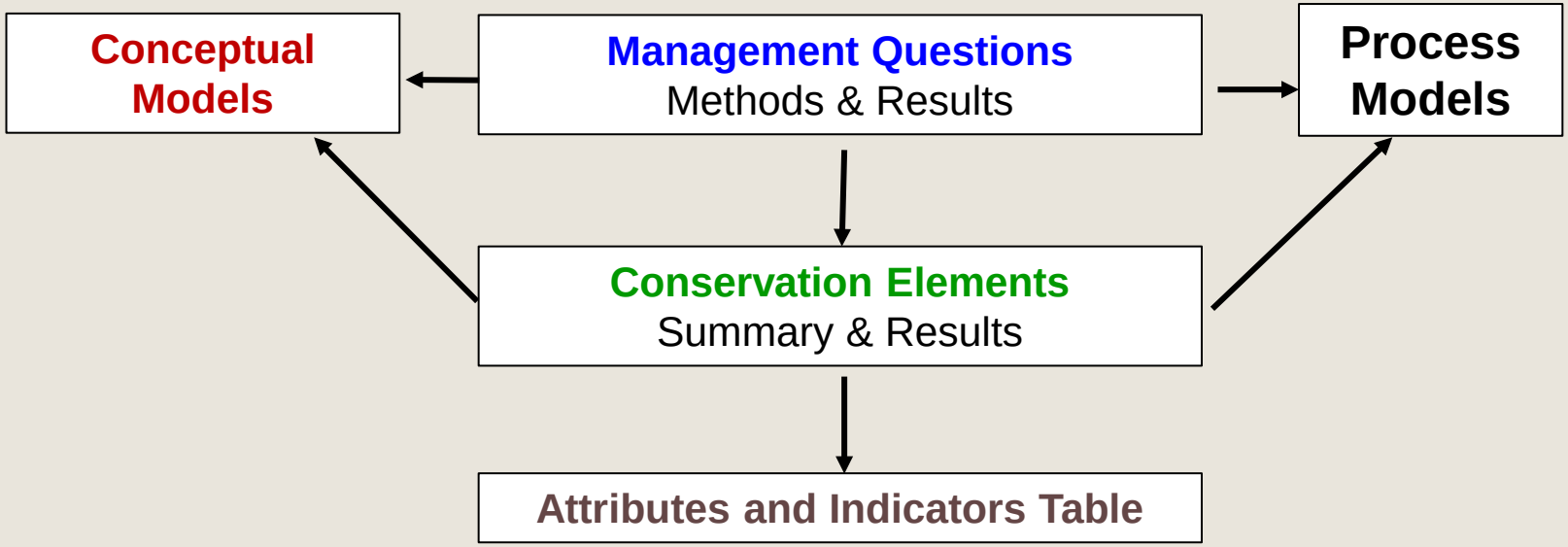
MQ D6. Where is Gunnison sage-grouse vulnerable to change agents in the near-term horizon, 2025 (development, fire, invasive species) and long-term change horizon, 2060 (climate change)?

Sample Design

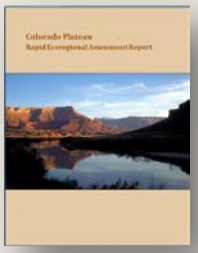
- Low-intensity, "extensive" national sampling effort
- Higher-intensity, "intensive" local sampling effort (driven by local management questions)



Web Hosting is expected this Fiscal Year and will include:



Main Report

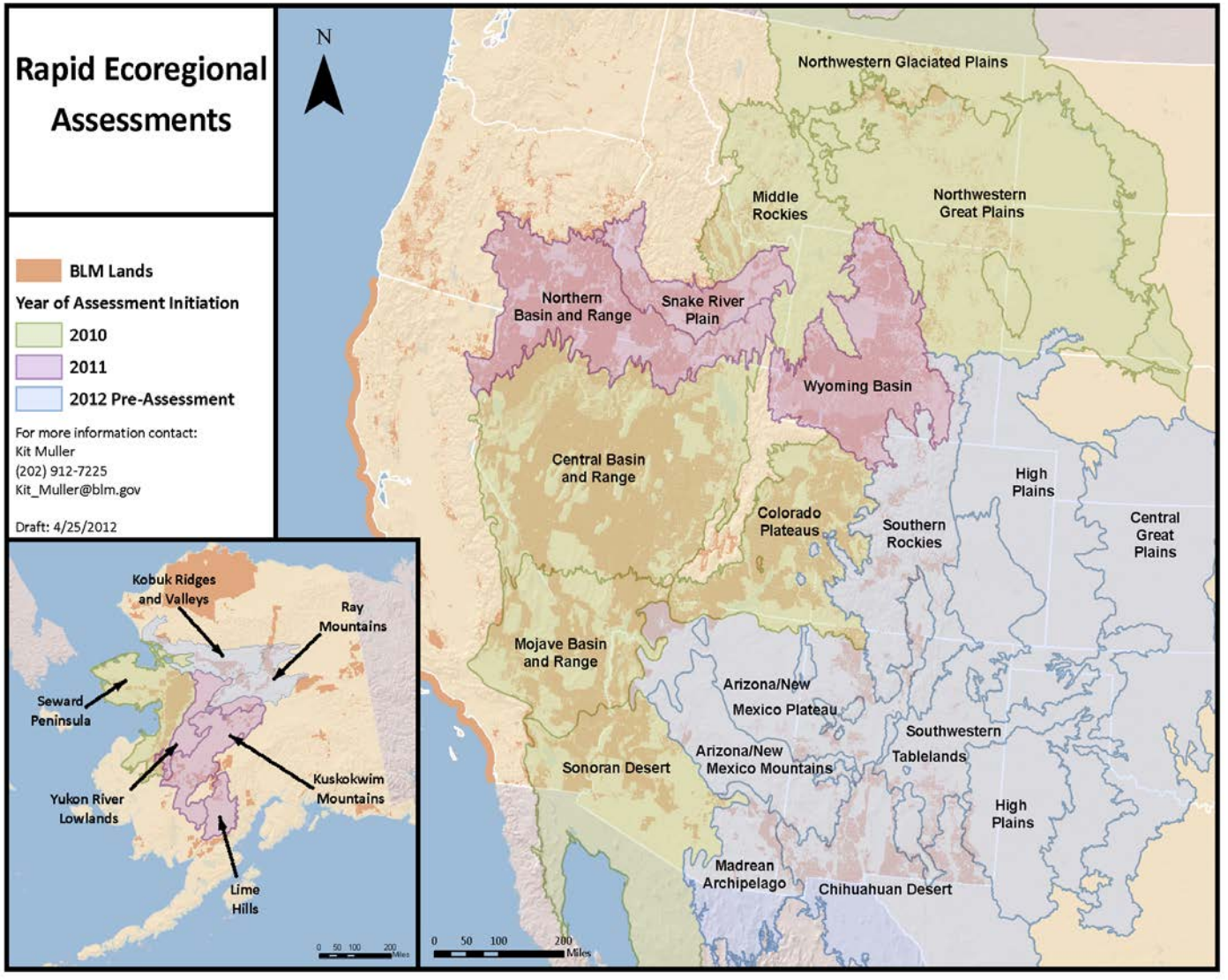


Inserts for Conservation Elements and Change Agents

Appendices

NATIONAL SYSTEM OF PUBLIC LANDS

THANK YOU



Institute for Natural Resources

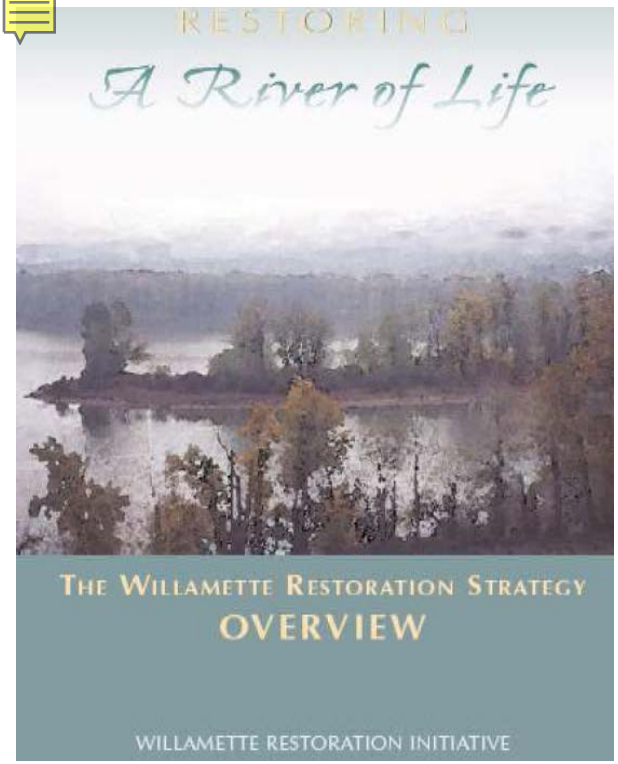
Oregon's Willamette Basin and Statewide Regional Ecoregional Framework

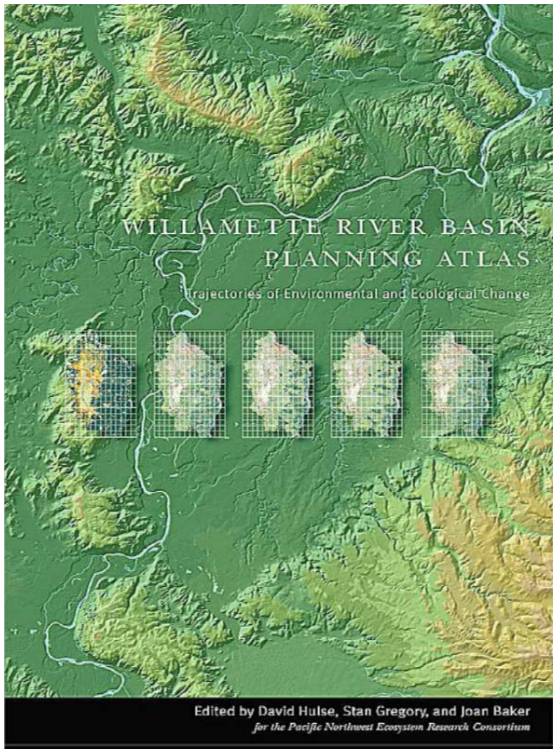
Jimmy Kagan

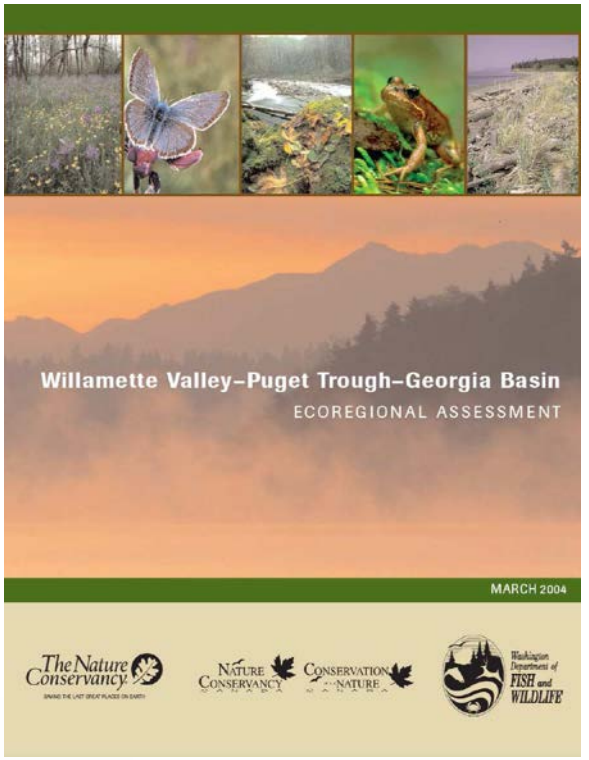
Director, Institute for Natural Resources – Portland and Oregon Biodiversity Information Center

Portland State UNIVERSITY

Oregon State UNIVERSITY OSU

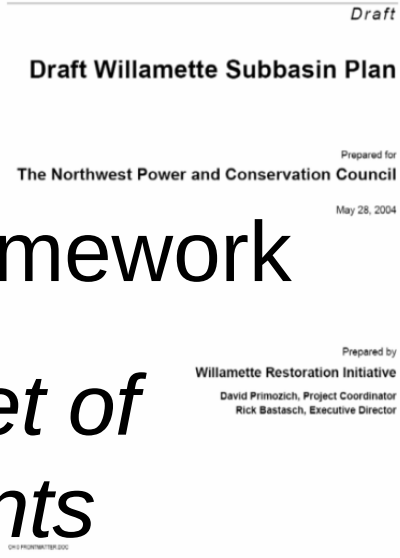






Willamette Basin Regional Ecosystem Framework

Integrating the diverse set of Conservation Assessments



Willamette Basin Synthesis Project

A Collaborative Approach to Conservation Planning, Natural Resource Data Development, and to building a Regional Ecosystem Framework

Oregon Department of Fish and Wildlife
Oregon Biodiversity Information Center
Oregon Parks & Recreation Department
Oregon Biodiversity Project
Oregon Department of Environmental Quality

The Nature Conservancy
Willamette Partnership
Defenders of Wildlife
Clean Water Services
Metro

Willamette Synthesis Project
Developing a Regional Ecosystem Framework

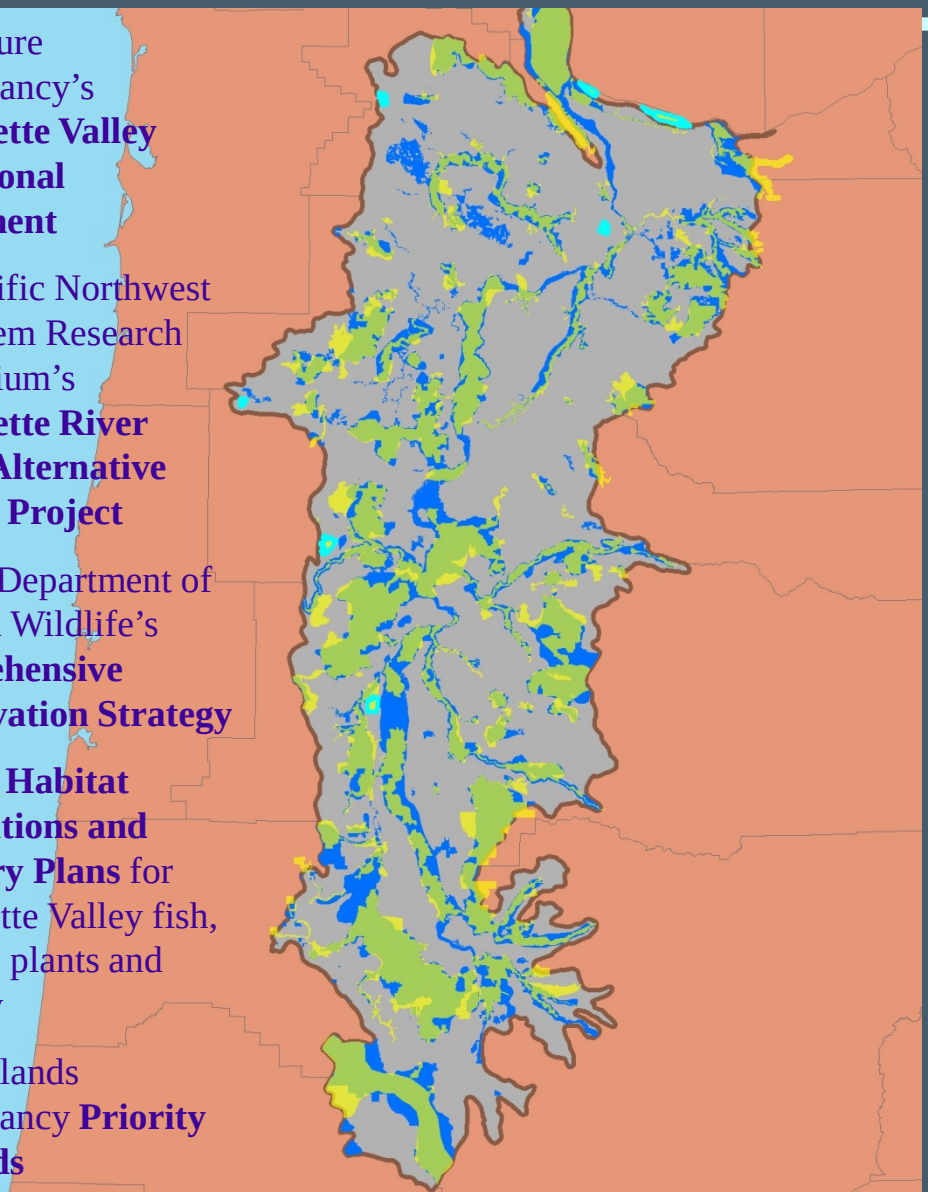
The Nature Conservancy's **Willamette Valley Ecoregional Assessment**

The Pacific Northwest Ecosystem Research Consortium's **Willamette River Basins Alternative Futures Project**

Oregon Department of Fish and Wildlife's **Comprehensive Conservation Strategy**

Critical Habitat Designations and Recovery Plans for Willamette Valley fish, endemic plants and butterfly

The Wetlands Conservancy **Priority Wetlands**



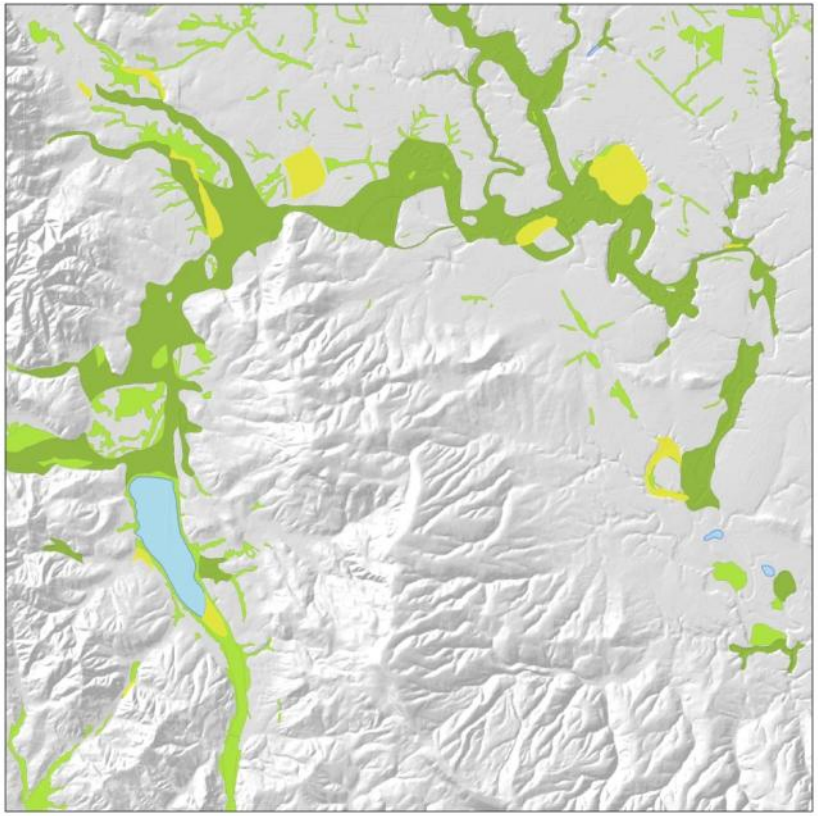
Features from 5 major Willamette conservation assessments were combined into a "Union Portfolio"

- **Site boundaries were refined using 2005 imagery and current spatial data for rare species, soils, vegetation, wetlands, land management, land use and zoning.**
- **A few additional sites were added to incorporate good remnants of native habitats and species.**
- **Initial project was completed in May of 2009. Regular review and updates are critical to keep this plan relevant. The first of those reviews is was completed in 2011, leading to an update to be completed in 2012.**

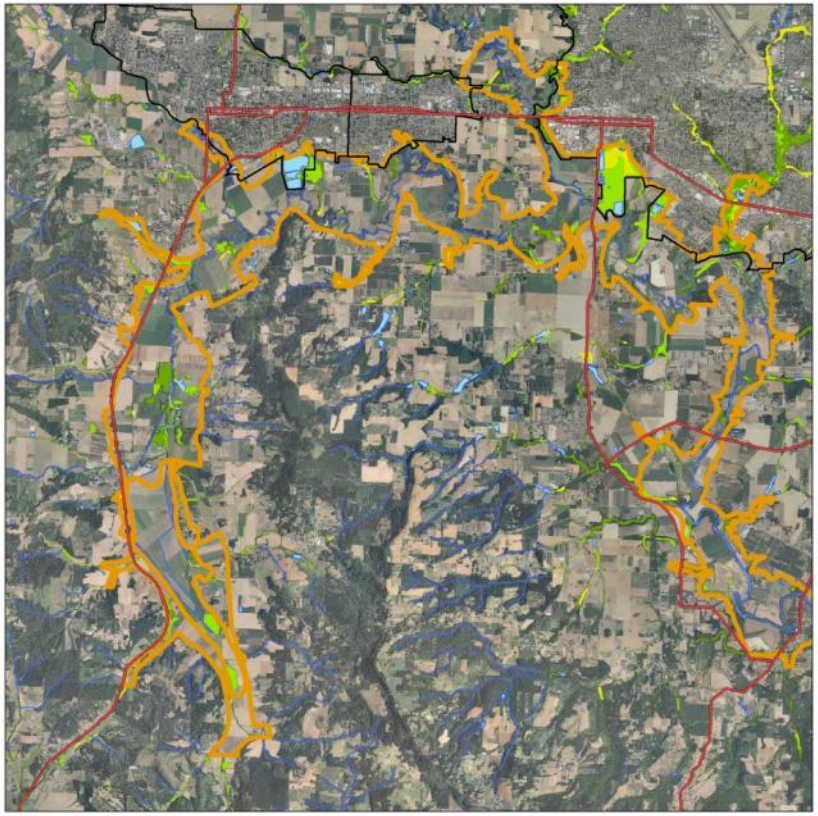
Willamette Valley Wetlands:

Historical Reconstruction and Current Mapping

Upper Tualatin River Example

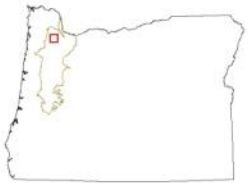


Historic (Reconstruction)



Current
(NWI + Hillsboro, Cornelius, Forest Grove LWI)

0 1 2 4 Miles



LWI Survey Boundaries
Oregon State Highways

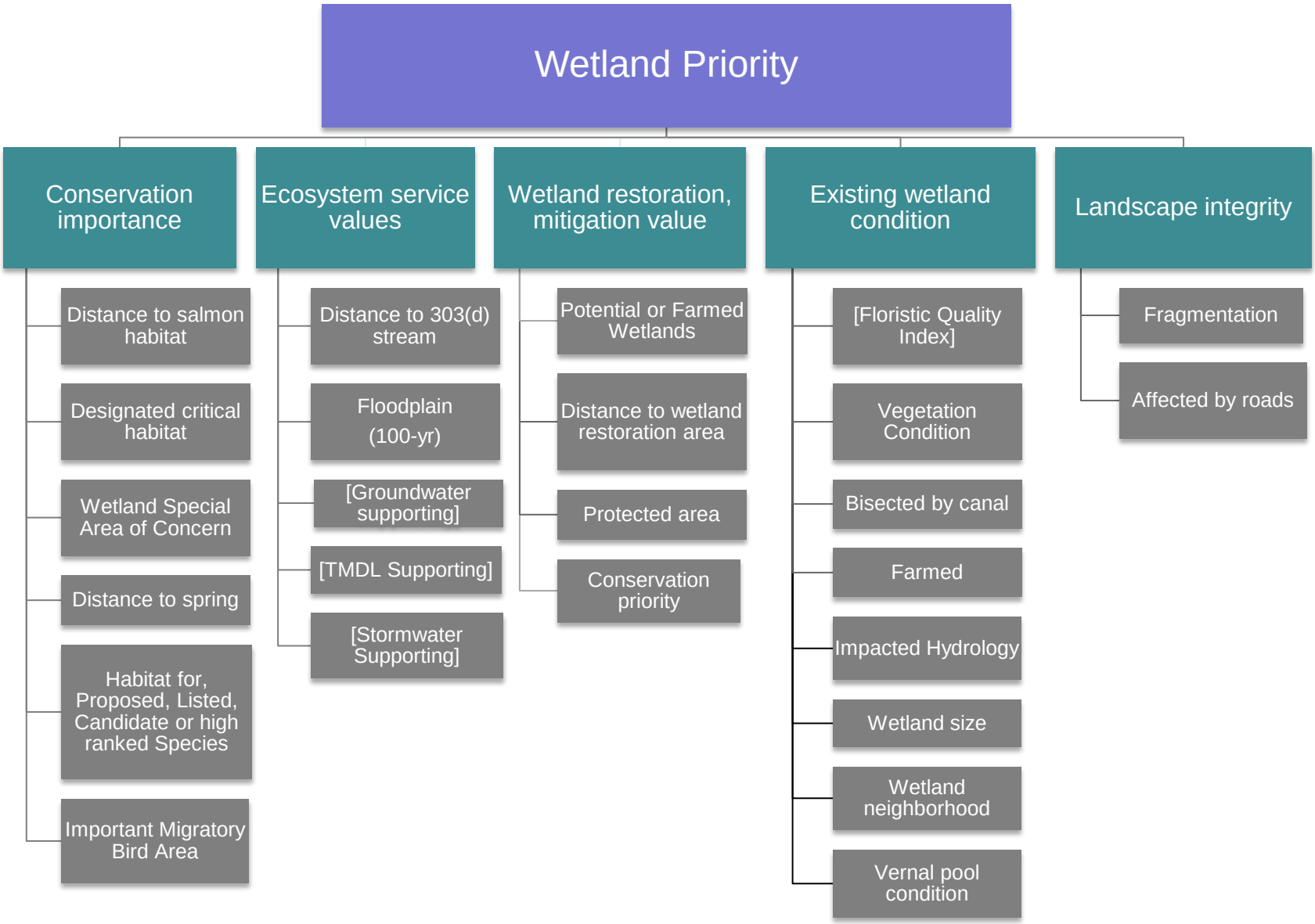
Wetland Classification
- Palustrine - Emergent
- Palustrine - Forested
- Palustrine - Shrub/Scrub
- Water (Riverine, Lacustrine, Ponds)
- Wetland Priority Area (Current Condition map only)

The Wetlands Conservancy
March 2009



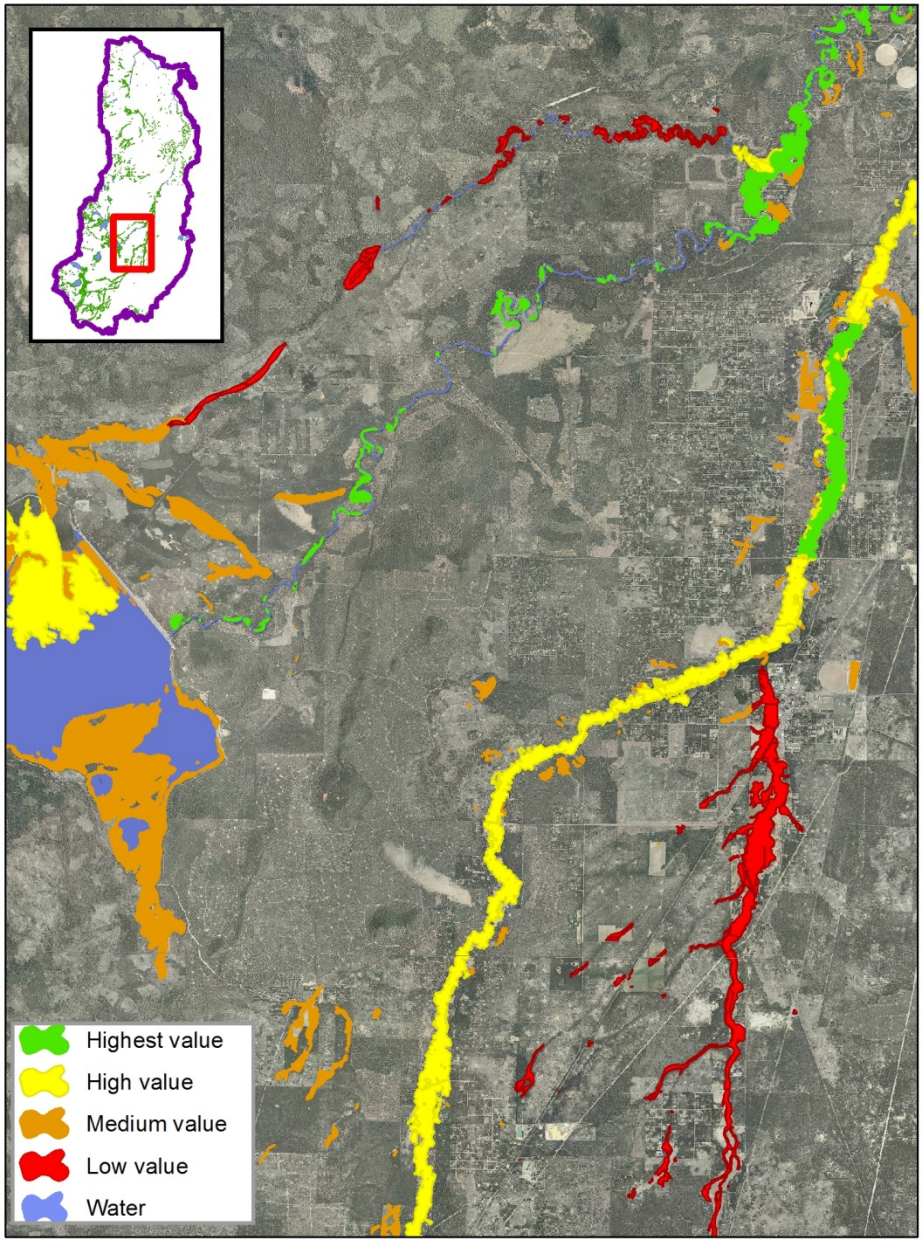


Complete a Statewide Wetland Mitigation and Restoration Priority Coverage

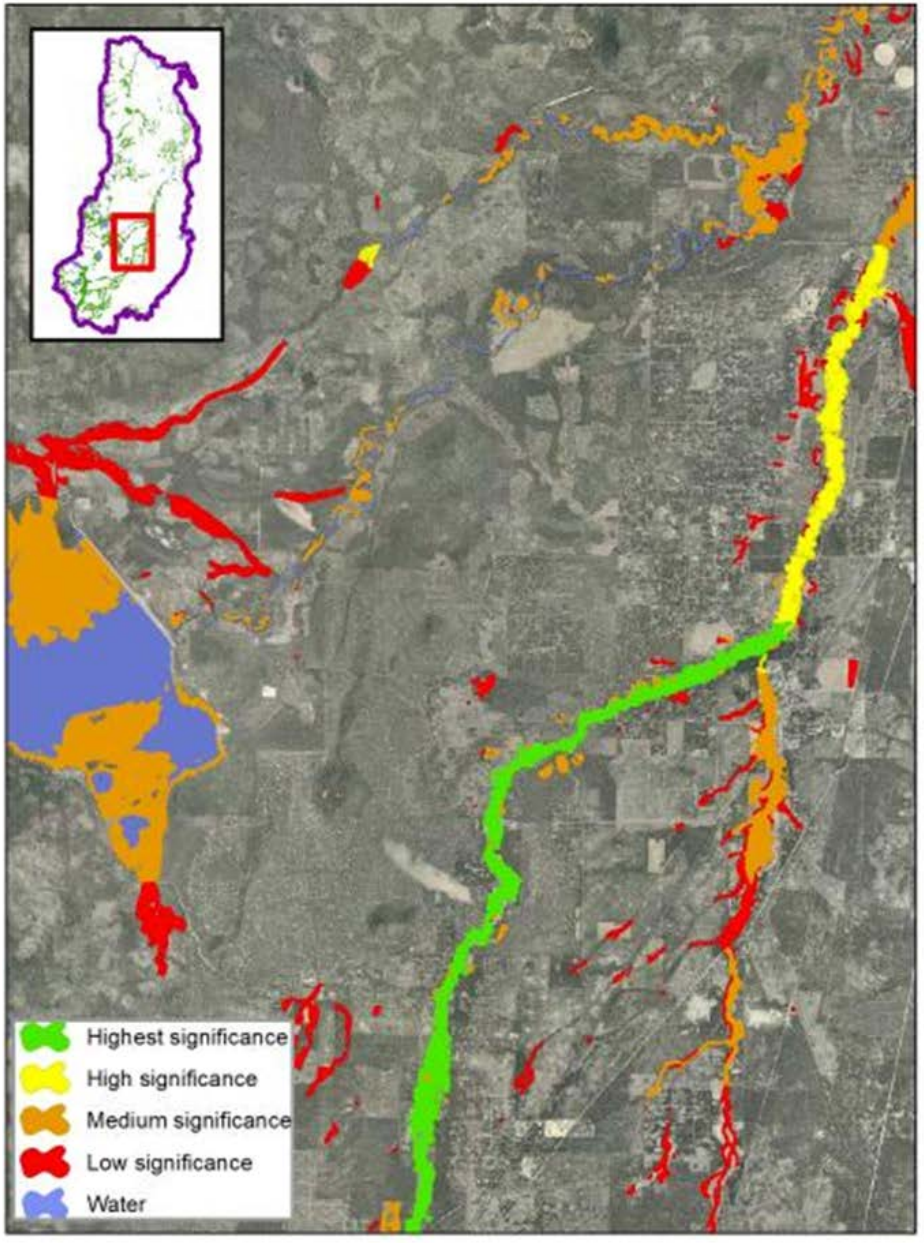


Upper Deschutes River Basin Priorities for Two Themes

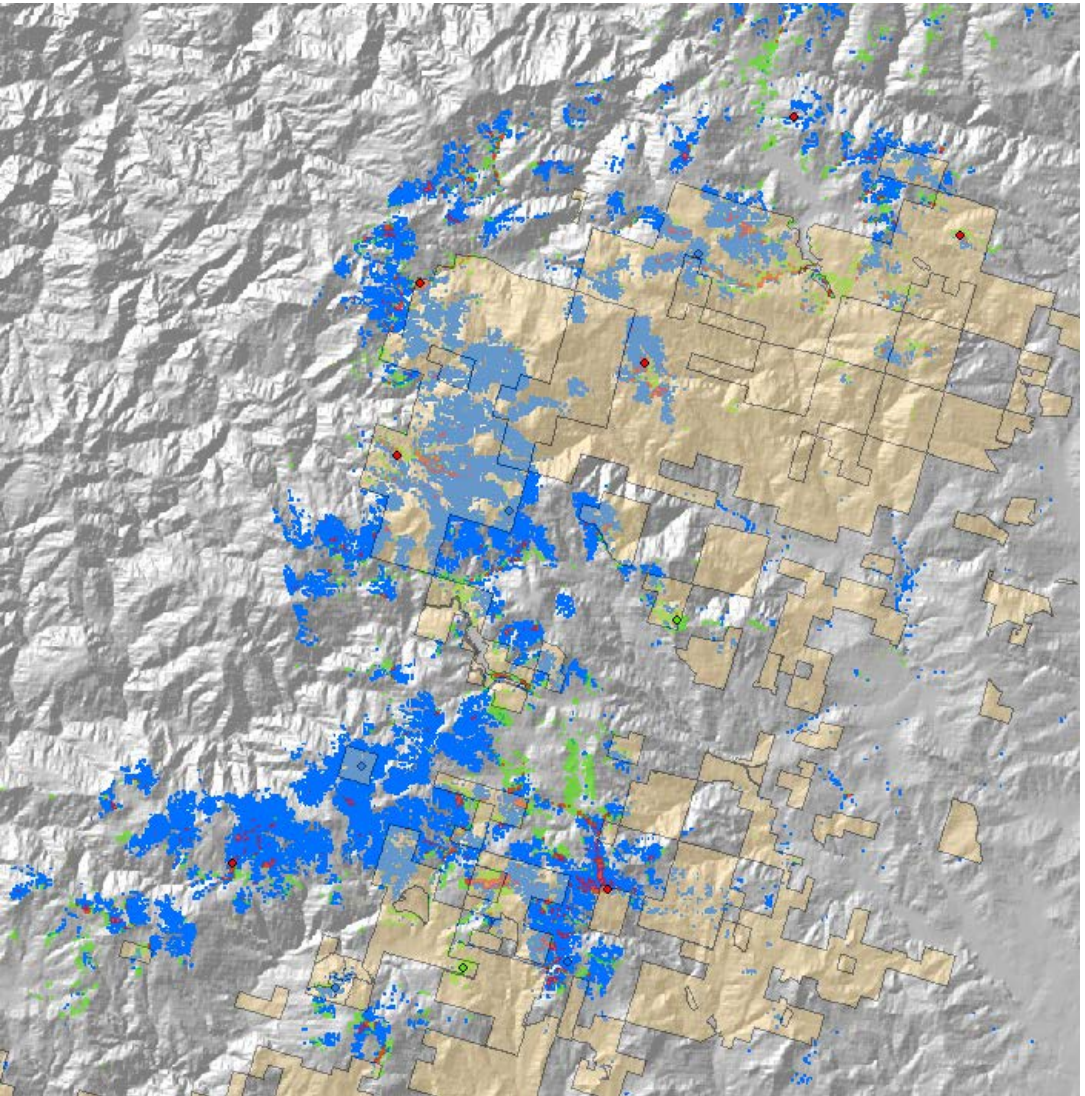
Ecosystem Services



Conservation Significance



Create statewide Section 7 review – Critical Habitat Maps; and statewide High Probability Distribution Maps for all Federally Listed Species



Sidalcea nelsoniana
(Nelson's checkermallow)

Random Forest model based on USFWS recovery rules, LiDAR DEM and updated data for a threatened species

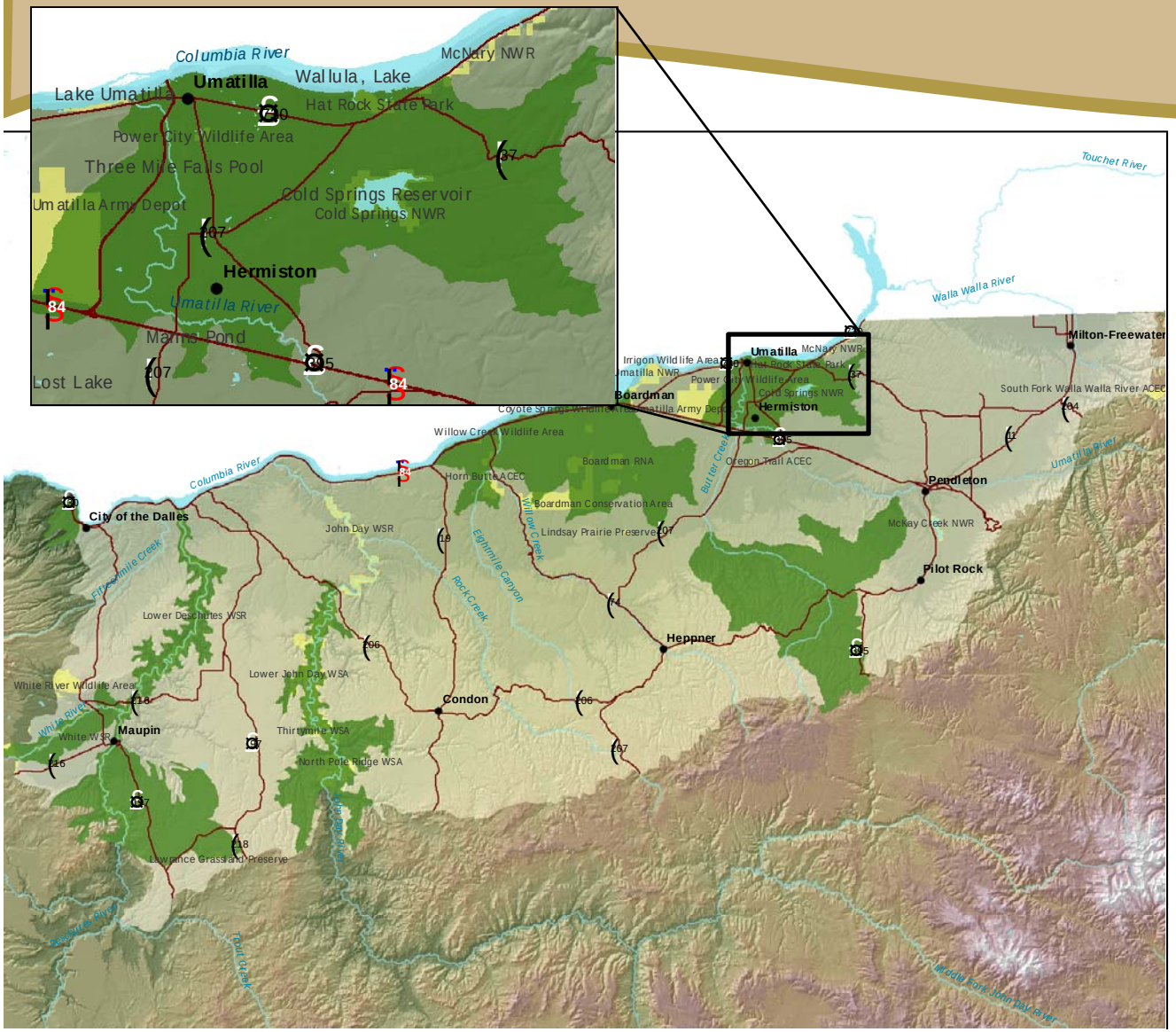
the Oregon Conservation Strategy -

healthy habitats for wildlife and people

OREGON

Fish & Wildlife

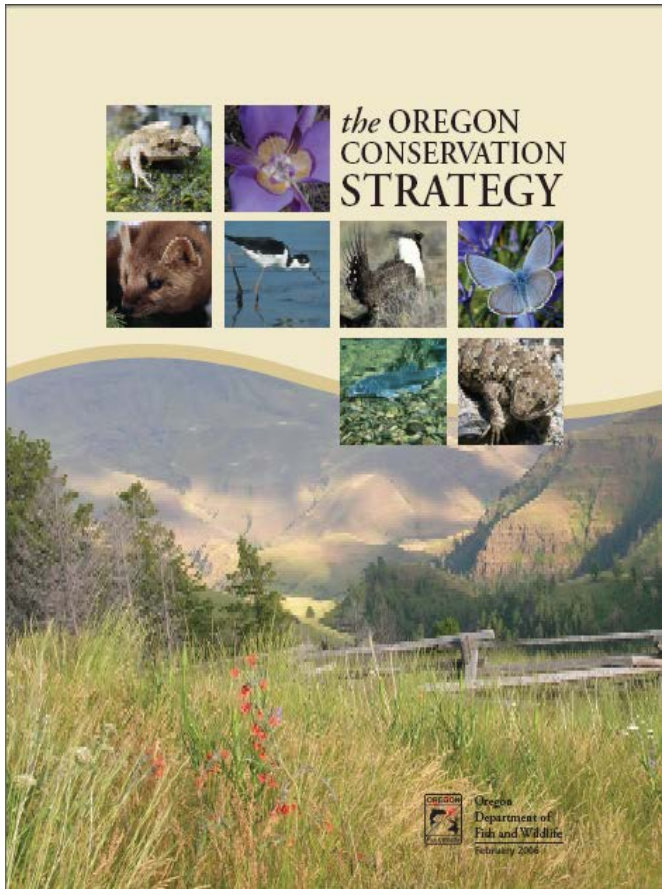
Columbia Plateau Ecoregion Example



Important Attributes

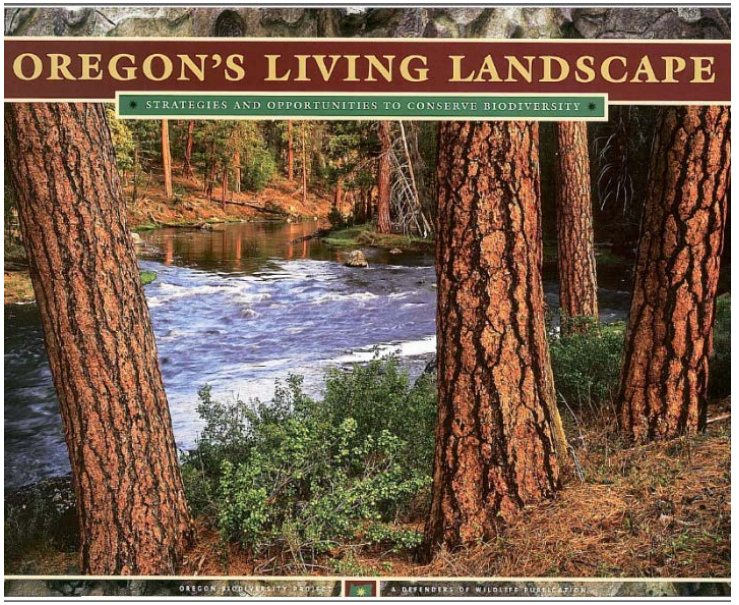
- Habitats: grasslands; sagebrush; large tract of riparian
- Species: sage sparrow (23% of habitat in ecoregion); grasshopper sparrow; burrowing owl; sagebrush lizard; WA ground squirrel
- Important Bird Area

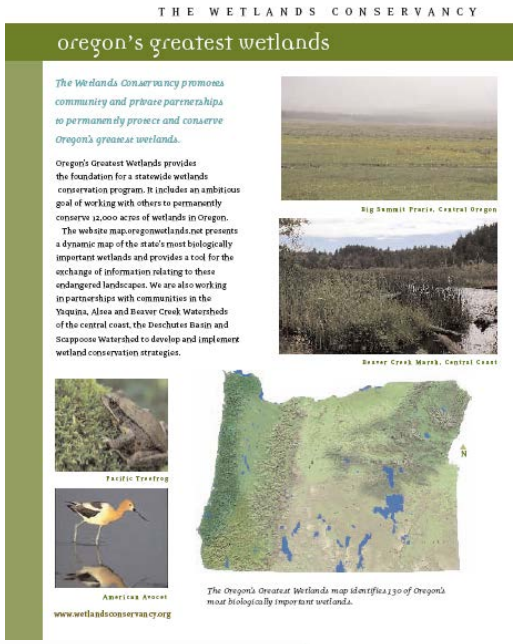
Statewide Conservation Assessments

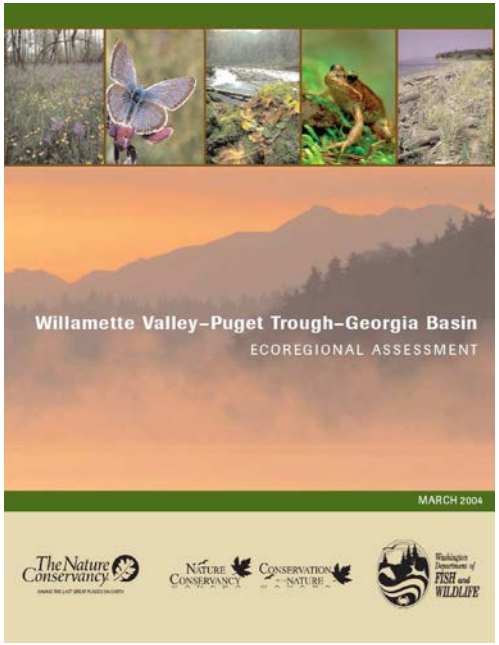


OREGON WATERSHED ENHANCEMENT BOARD

OWEB

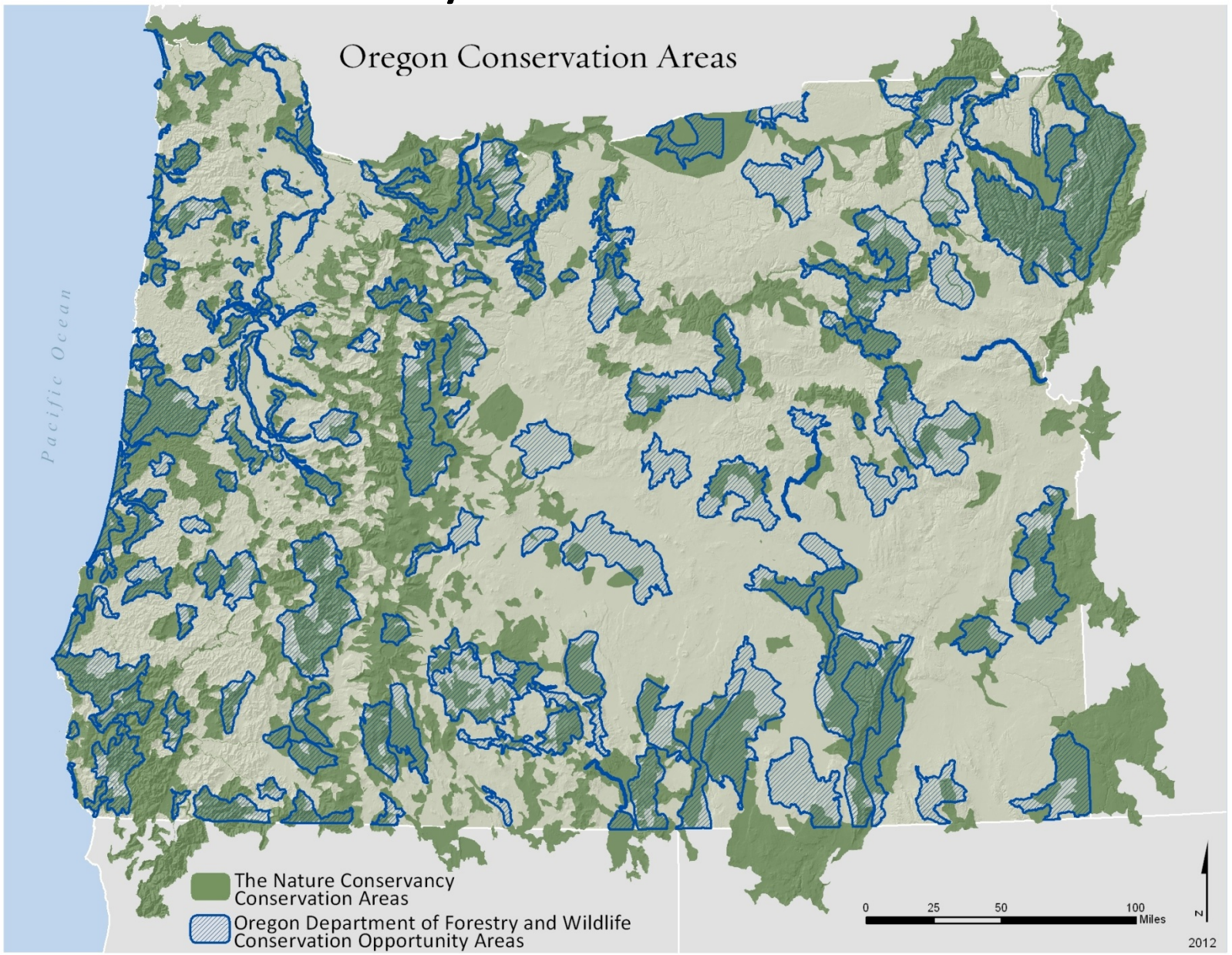






The Oregon Plan for Salmon and Watersheds

Integrate into a First Iteration Statewide Regional Ecosystem Framework



Institute for Natural Resources

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Portland State UNIVERSITY

Oregon State UNIVERSITY OSU

Amy Boyers
Community and Environmental Planning
05-31-2012

Houston-Galveston Area Council

What is H-GAC?

- Metropolitan Planning Organization for 8-county area
- Occupies 9,020 square miles, larger than state of New Jersey (8,722 square miles)
- Forecasted population of more than 9 million by 2035

Purpose of Eco-Logical

- Decision support system for long-range regional transportation planning
- Inventory of high value environmental resources
- Data clearinghouse for organizations and the public



Project Process

- Committee
- Mapping
- Metrics
- GIS Integration
- Outreach



Partners


U.S. Department of Transportation
Federal Highway Administration


HARC


TEXAS
FOREST SERVICE
The Texas A&M University System


H-GAC
Houston-Galveston
Area Council

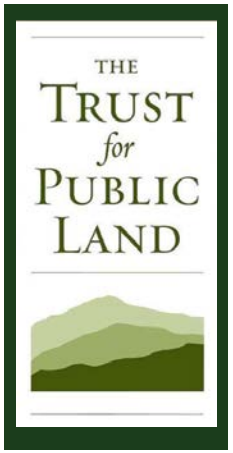

Sea Grant
Texas


The Nature Conservancy
Protecting nature. Preserving life.™


GALVESTON BAY
ESTUARY PROGRAM
A PROGRAM OF THE TCEQ

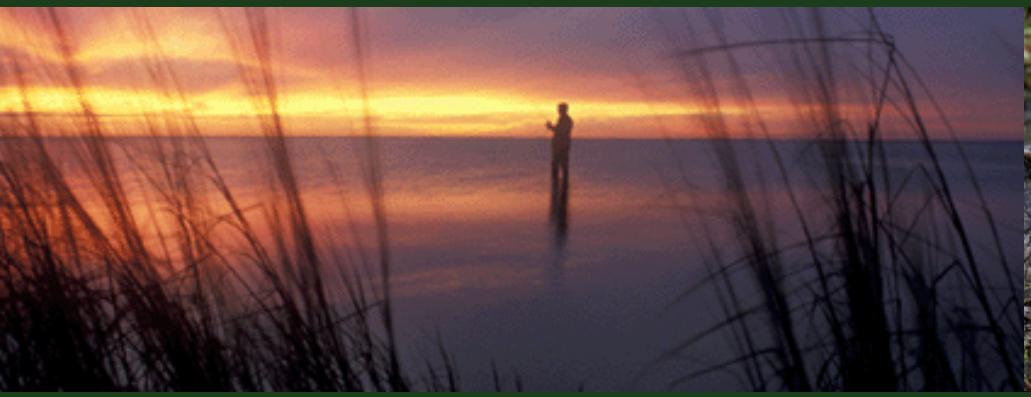

TEXAS
PARKS &
WILDLIFE

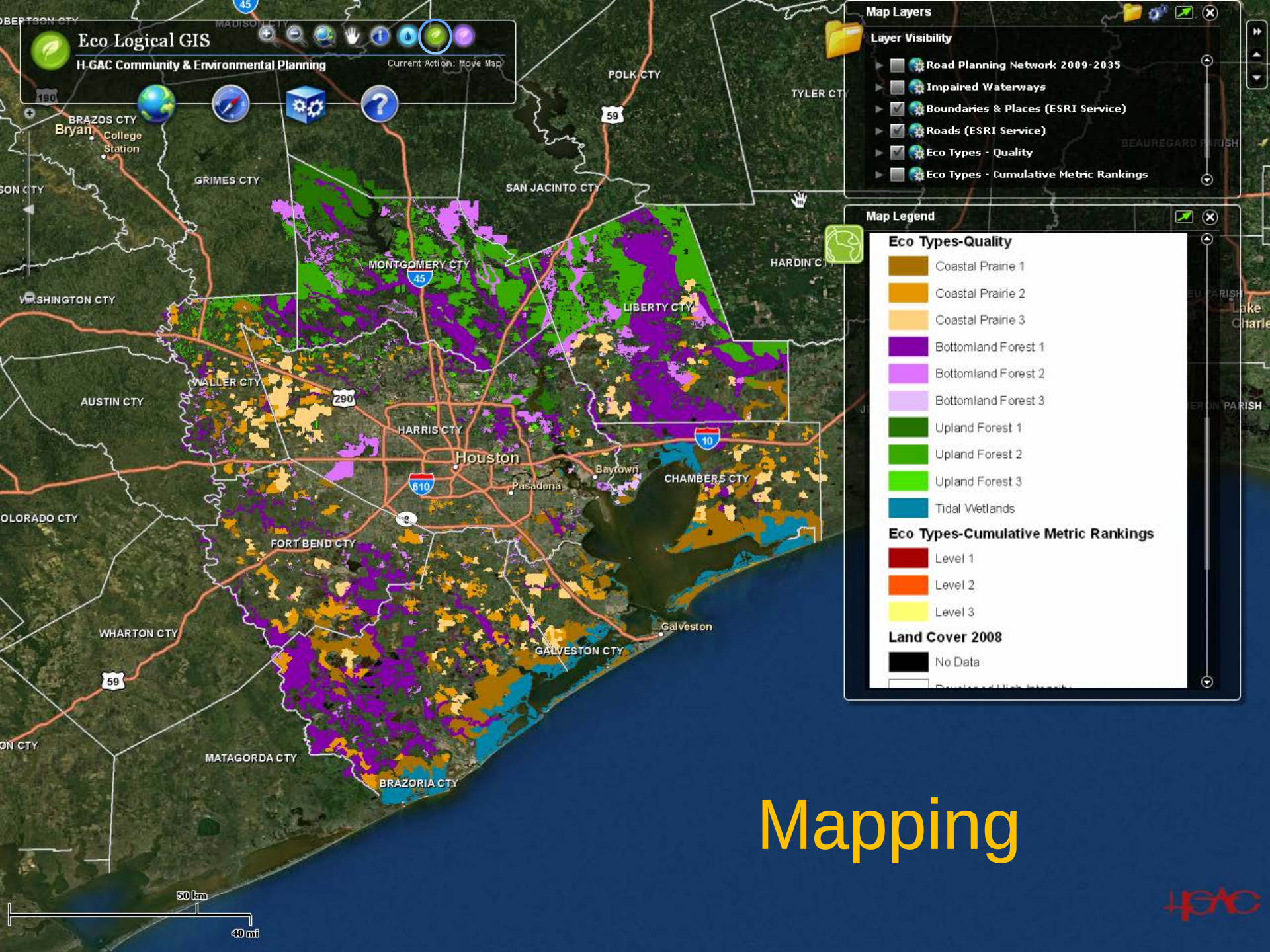

U.S.
FISH & WILDLIFE
SERVICE
DEPARTMENT OF THE INTERIOR


THE
TRUST
for
PUBLIC
LAND

Ecotypes

- Tidal Wetlands
- Bottomland Forests
- Upland Forests
- Coastal Prairies
- Water Bodies

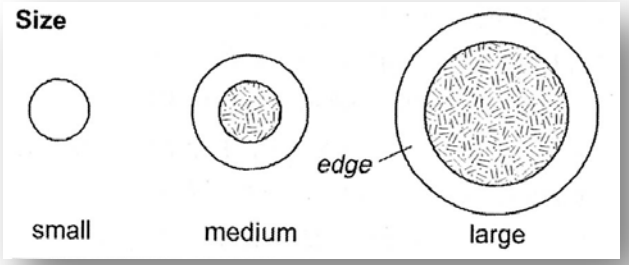


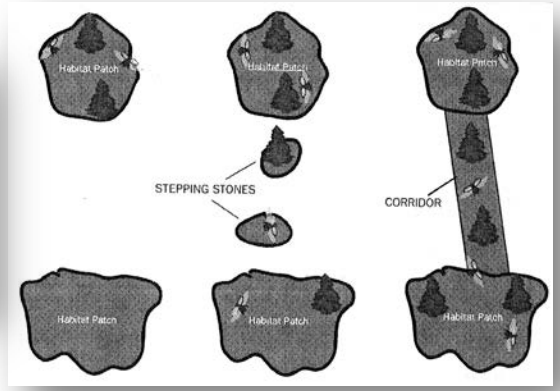

Eco Logical GIS
H-GAC Community & Environmental Planning
Current Action: Move Map
Map Layers
Layer Visibility
Road Planning Network 2009-2035
Impaired Waterways
Boundaries & Places (ESRI Service)
Roads (ESRI Service)
Eco Types - Quality
Eco Types - Cumulative Metric Rankings
Map Legend
Eco Types-Quality
Coastal Prairie 1
Coastal Prairie 2
Coastal Prairie 3
Bottomland Forest 1
Bottomland Forest 2
Bottomland Forest 3
Upland Forest 1
Upland Forest 2
Upland Forest 3
Tidal Wetlands
Eco Types-Cumulative Metric Rankings
Level 1
Level 2
Level 3
Land Cover 2008
No Data
BRAZOS CTY
Bryan
College Station
GRIMES CTY
SAN JACINTO CTY
POLK CTY
TYLER CTY
MONTGOMERY CTY
LIBERTY CTY
HARDIN CTY
WALLER CTY
AUSTIN CTY
HARRIS CTY
Houston
Baytown
Pasadena
CHAMBERS CTY
FORT BEND CTY
WHARTON CTY
GALVESTON CTY
Galveston
MATAGORDA CTY
BRAZORIA CTY
50 km
40 mi

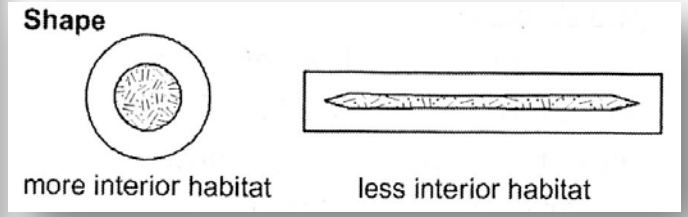
Mapping

Metrics

- Adjacency
- Size
- Shape
- Isolation
- Scarcity
- Diversity of Habitat
- Quality
- Threatened & Endangered Species







Intended uses

- Long-range transportation
- Identifying conservation priorities
- Scenario analysis
- Public awareness

Project limitations

- Scale
- Generalized ecotype classifications
- Metrics, data limitations
- Subjective quality rating
- Not appropriate for site-specific evaluation

Project Challenges

- Having the right representatives on your committee
- Determining appropriate scale of project
- Time, staff and technical resources
- Creating a workplan for the project
- Having flexible methodology

Houston-Galveston Area Council

Questions?

www.h-gac.com/go/eco-logical

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Questions?

Transportation Liaison Community of Practice Website

www.environment.fhwa.dot.gov/liaisonCOP

Transportation Liaison Community of Practice Website

www.environment.fhwa.dot.gov/liaisonCOP

Purpose:

- Increase understanding of the roles and benefits of transportation liaisons
- Provide greater access to and sharing of expertise, resources, and opportunities for innovation and professional development

Users:

- Liaisons and liaison managers
- Resource and regulatory agencies
  - Networking
  - Knowledge/resource exchange
  - Share events
- State DOTs
  - Find information about Liaison programs
  - Example MOUs
  - Contacts and connections

Transportation Liaison Community of Practice Website

www.environment.fhwa.dot.gov/liaisonCOP

Join the Community of Practice!

- Register on the CoP website if you are a liaison or liaison manager
- Tell others who may be interested
- Submit calendar events
- Submit resources to the resource library including sample agreements, work plan examples, and technical resources
- Participate in the discussion board – coming soon!

Questions? Contact Michael Lamprecht Michael.Lamprecht@dot.gov or 202-366-6454.

Upcoming Eco-Logical Webinar Topics

June 2012: Green Infrastructure: Eco-Logical Concepts in Infrastructure Planning

Future topics:

- ❑ Wetland Planning and Assessments: Applications for Transportation Siting and Mitigation
- ❑ Linking Transportation and Ecosystems in an Urban Environment: Stormwater Developments and Case Studies
- ❑ Technical Assistance to Connect Eco-Logical Knowledge with Transportation Plans and Projects
- ❑ Land Trusts as Mitigation Partnership Opportunities

Eco-Logical Webinar Series:
http://www.environment.fhwa.dot.gov/ecological/eco_webinar_series.asp