Habitat Strategies

Pine Creek
Northwest Power and Conservation Council

Habitat Strategies: Overview

Context of Habitat Protection

Drivers of Change

Habitat Effects

Strategies

John Day River
Northwest Power and Conservation Council

Context: The Fish and Wildlife Program

Operating Hypothesis

Protection and restoration of habitat will result in increased habitat capacity and productivity leading to increased fish and wildlife abundance.

Operating Assumption

Population and climate are stable.

Driver of Change: Climate

Timing and quantity of water will change

- Smaller snow packs at higher elevations
- Higher stream flows winter and spring
- Lower stream flows summer and fall

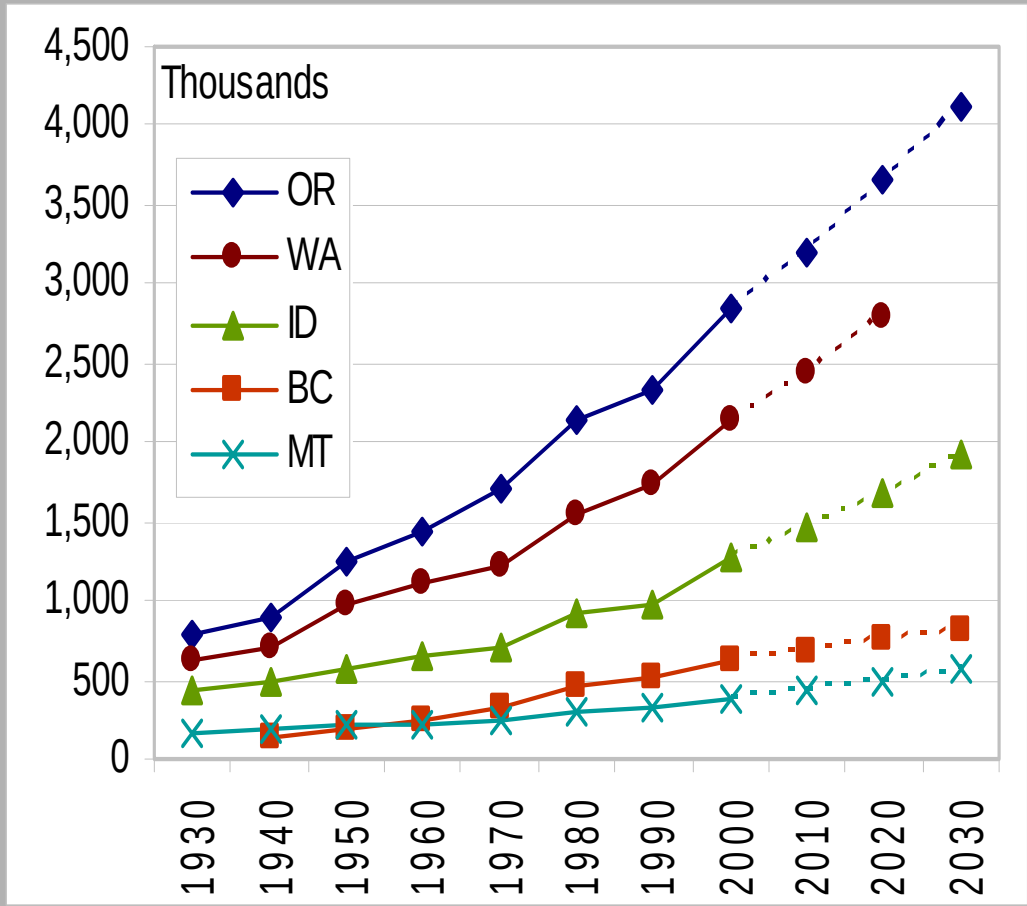
Hanna

Driver of Change: Population Growth

Population in the Columbia River Basin

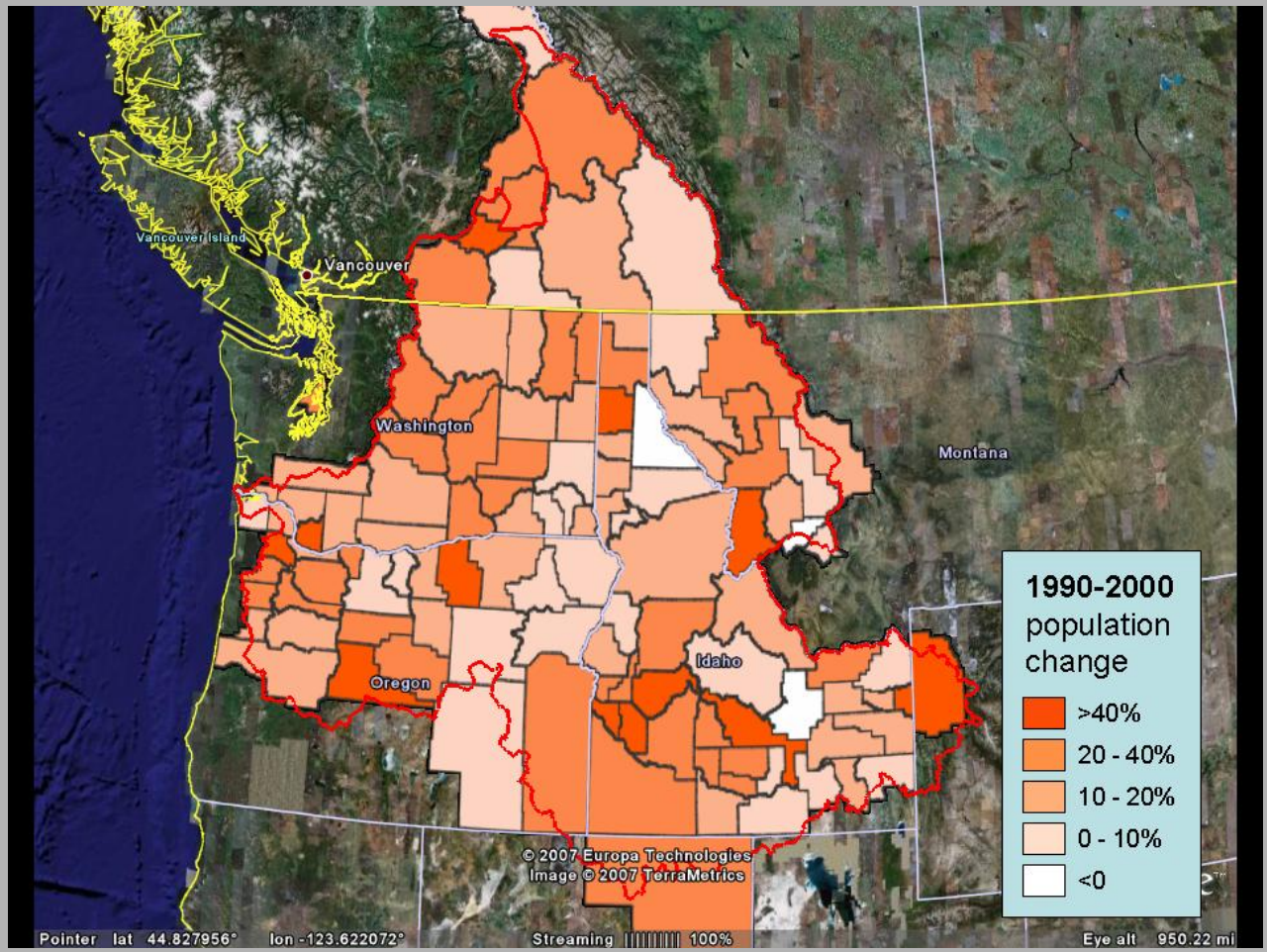
Population increase since 1930

Population increase projected to continue



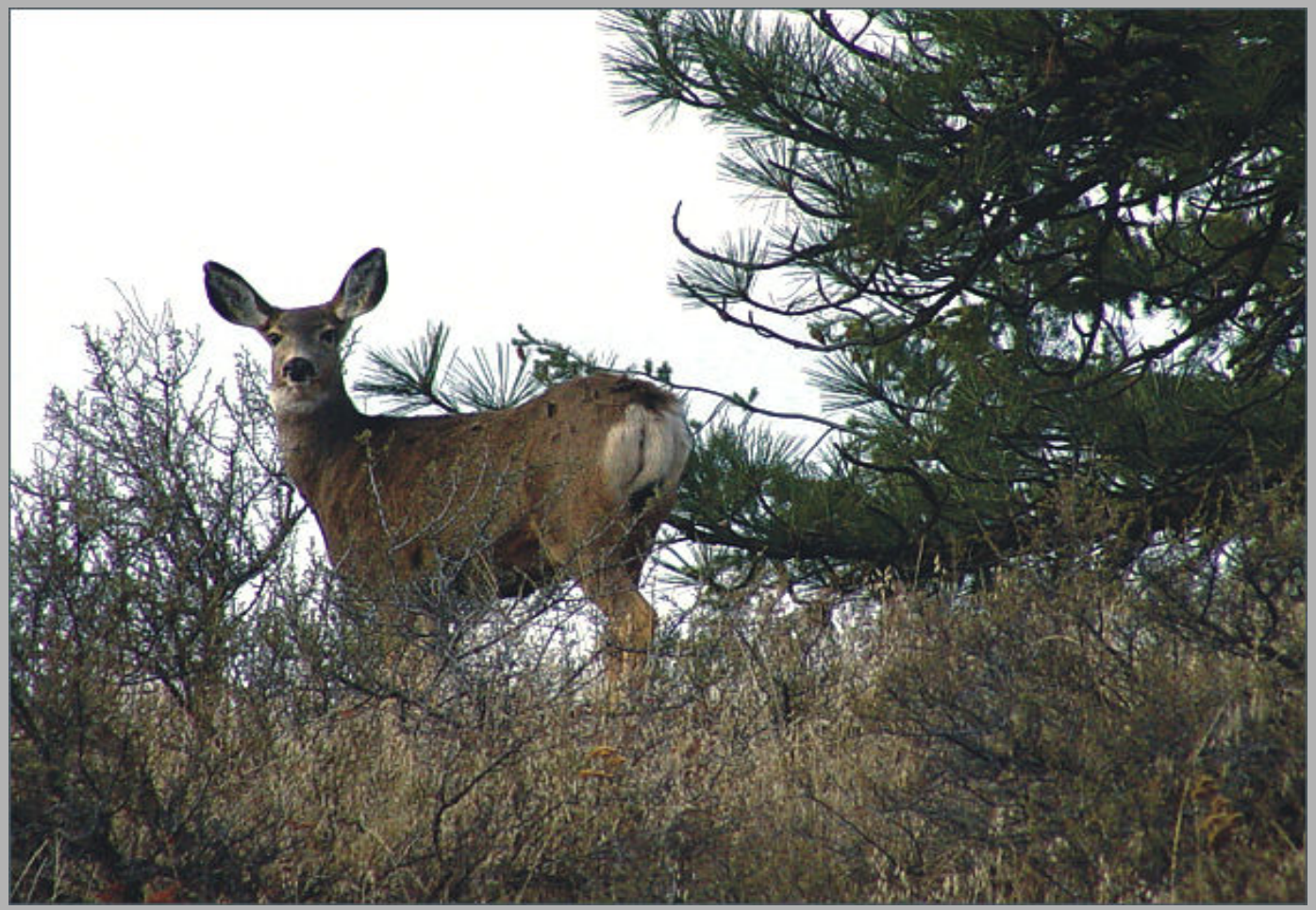
US and Canada censuses. State and regional district projections for 2010 and 2020

Change in Columbia River Basin Population Growth 1990-2000



Data from federal US and Canada censuses

Habitat Effects of Changing Climate and Population



Northwest Power and Conservation Council
Colville Mule Deer

Changes in distribution, composition and productivity of species

drought

fire

infestation

invasives

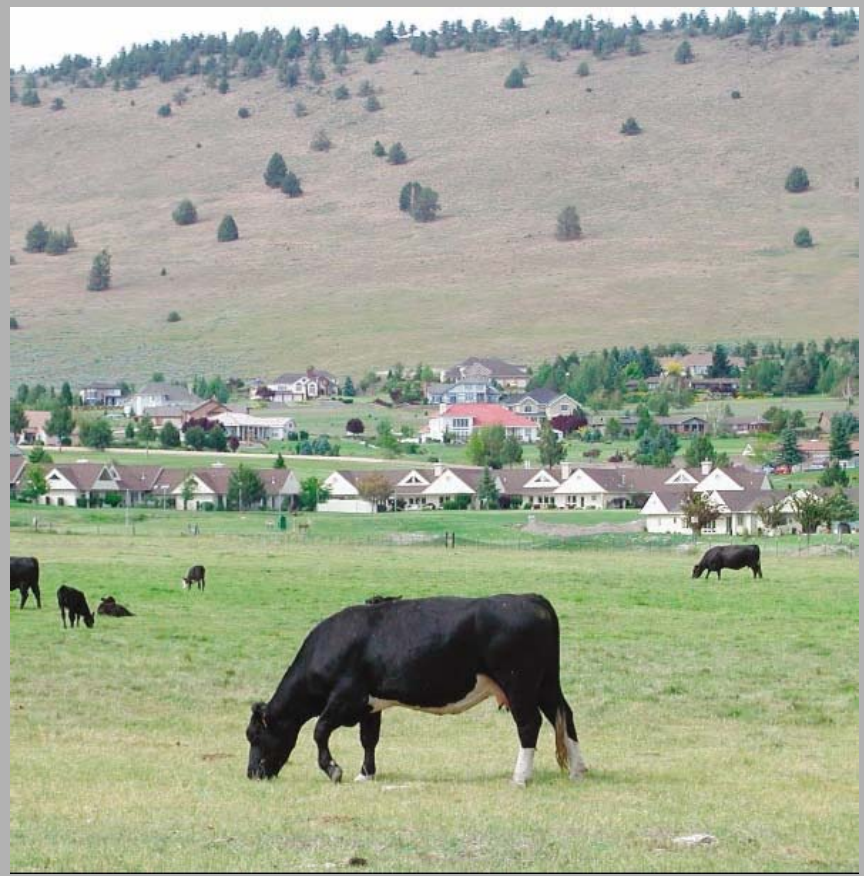
J. McColgan 2000
BLM: Alaska Fire Service
Bitterroot National Forest Montana

Loss of habitat through conversion of forestland, farmland and rangeland

Willamette Partnership

Fragmentation and degradation of habitat through urban and exurban development

Willamette River Portland



1000 Friends of Oregon

Degradation and loss of habitat through outside-basin effects

aquatic invasive species

airborne pollution

Columbia River/Columbia City, Oregon P. Gilston 2006

Impact on Habitat Strategies

Uncertainty

- physical and biological
- economic and social

Habitat strategies will need to anticipate both types of uncertainty

Northwest Power and Conservation Council
Dayton Creek

NPCC Advisory Body Reports

Climate Change Impacts on Columbia River Basin Fish and Wildlife
May 11, 2007 ISAB 2007-2

Human Population Impacts on Columbia River Basin Fish and Wildlife
June 8, 2007 document ISAB 2007-3

A Scoping Investigation of Approaches to Preserving Habitat
June 5, 2006 document IEAB 2006-1

Available at www.nwcouncil.org

Restoration Planning and Habitat Strategies

Northwest Power and Conservation Council

Pine Creek

Recommendations

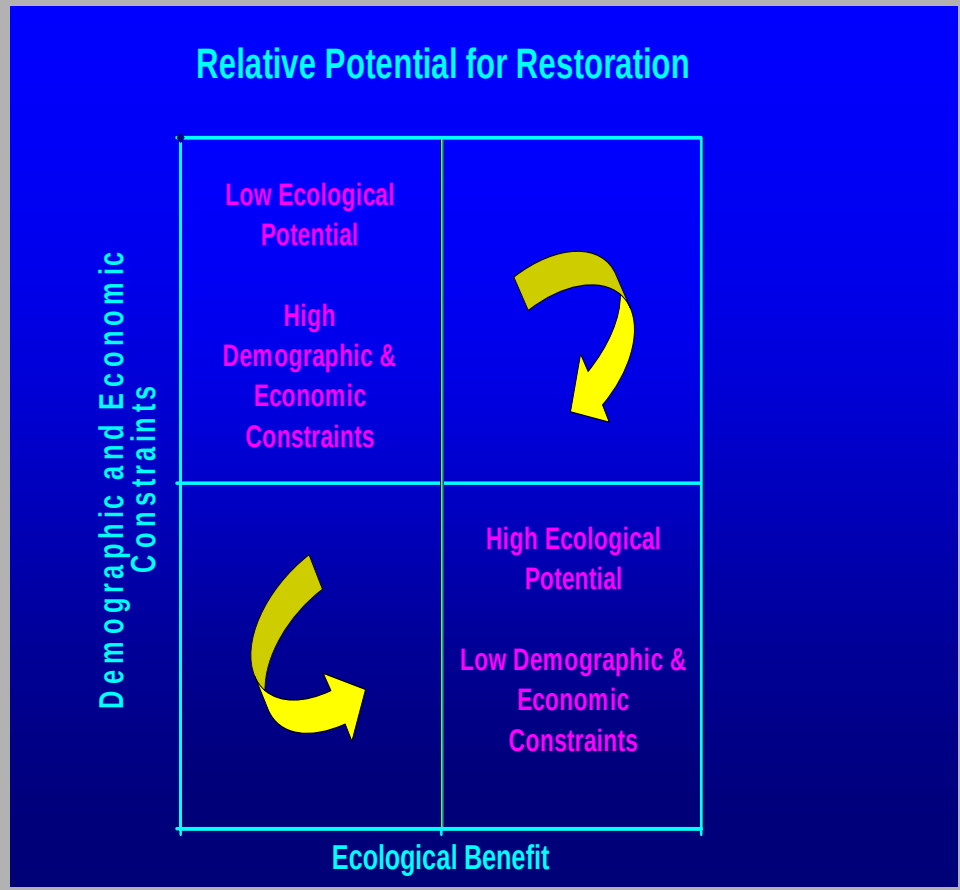
Climate change & population projections should be considered in prioritizing Habitat Protection and Restoration projects

- Subbasin and other regional plans generally do not consider climate or population impacts in assessments
- Planners may require some technical assistance in addressing climate change in Subbasin Plan updates
  - Climate change information at spatial scales relevant to subbasin planning is becoming more available
  - Tools for conducting a climate change assessment (e.g., models) also are becoming more available
  - Encourage subbasin plans to have explicit strategies for adapting to population growth
  - Focus attention on “protecting the best” -- Current or Projected

Recommendations

Planning Processes

- Require population growth assessment in subbasin plan updates
- Encourage subbasin plans to have explicit strategies for adapting to population growth
- Create dialogue among ranchers, forest owners, NGOs and policymakers re rural sprawl
- Focus attention on “protecting the best”



The Willamette Partnership

Recommendations

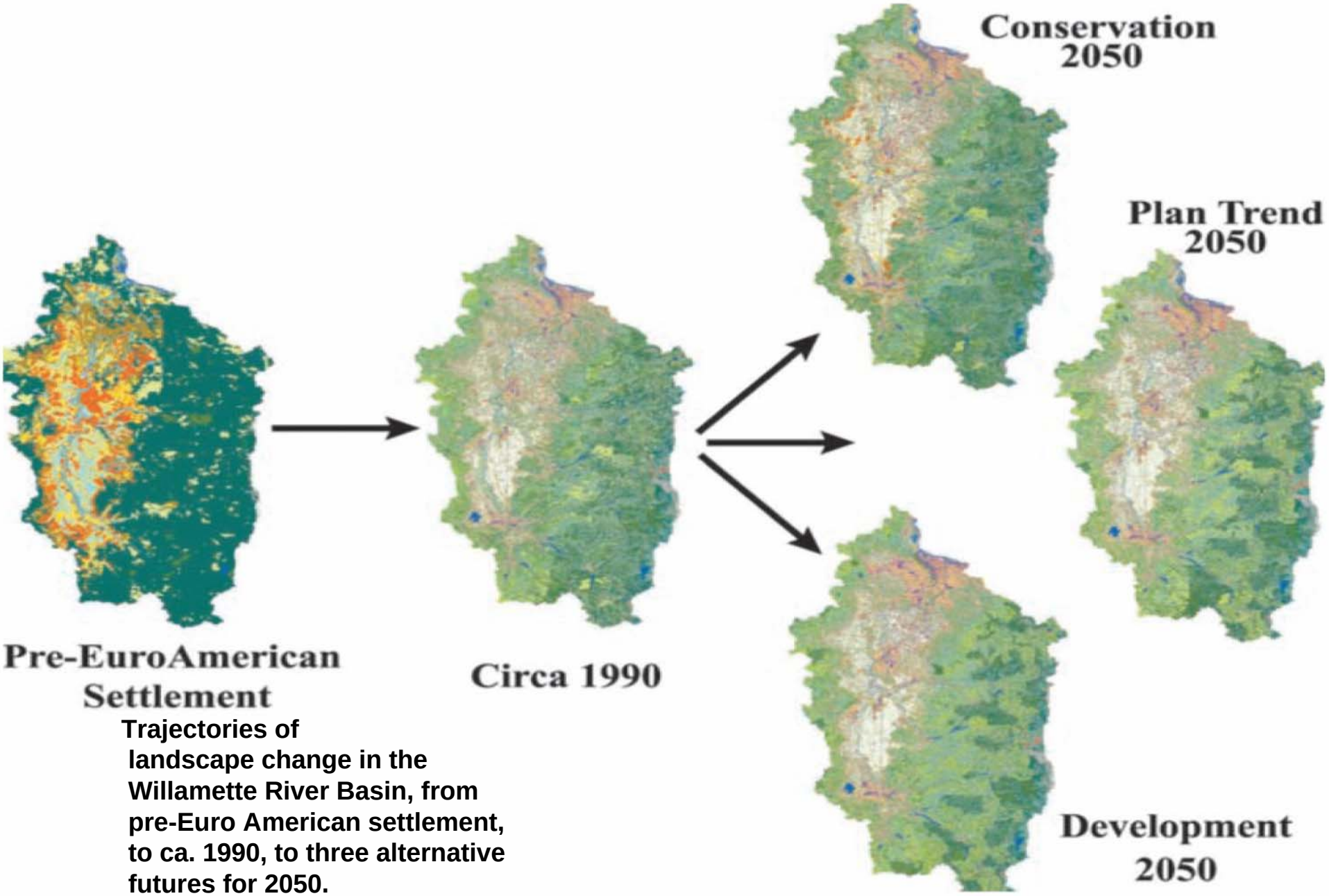
Some changes can be partially mitigated

- Effective application of protection, mitigation & enhancement measures will require identification of those locations where these actions will have the greatest benefit
- Locations especially sensitive to climate change and/or population increase & with high ecological value are prime locations to consider land protection and enhancement
- Measures that help maintain or enhance water temperature & late summer flow may be effective in addressing some tributary habitat impacts
  - Identify and protect areas with cool water (thermal refugia)
  - Protection/restoration of riparian vegetation
  - Minimize land use activities in riparian areas that would reduce canopy cover
  - Buy or lease water rights in sensitive locations
  - Increase efficiency of diversions and irrigation systems
  - Restore wetlands, floodplains of other landscape features that store water

Tools

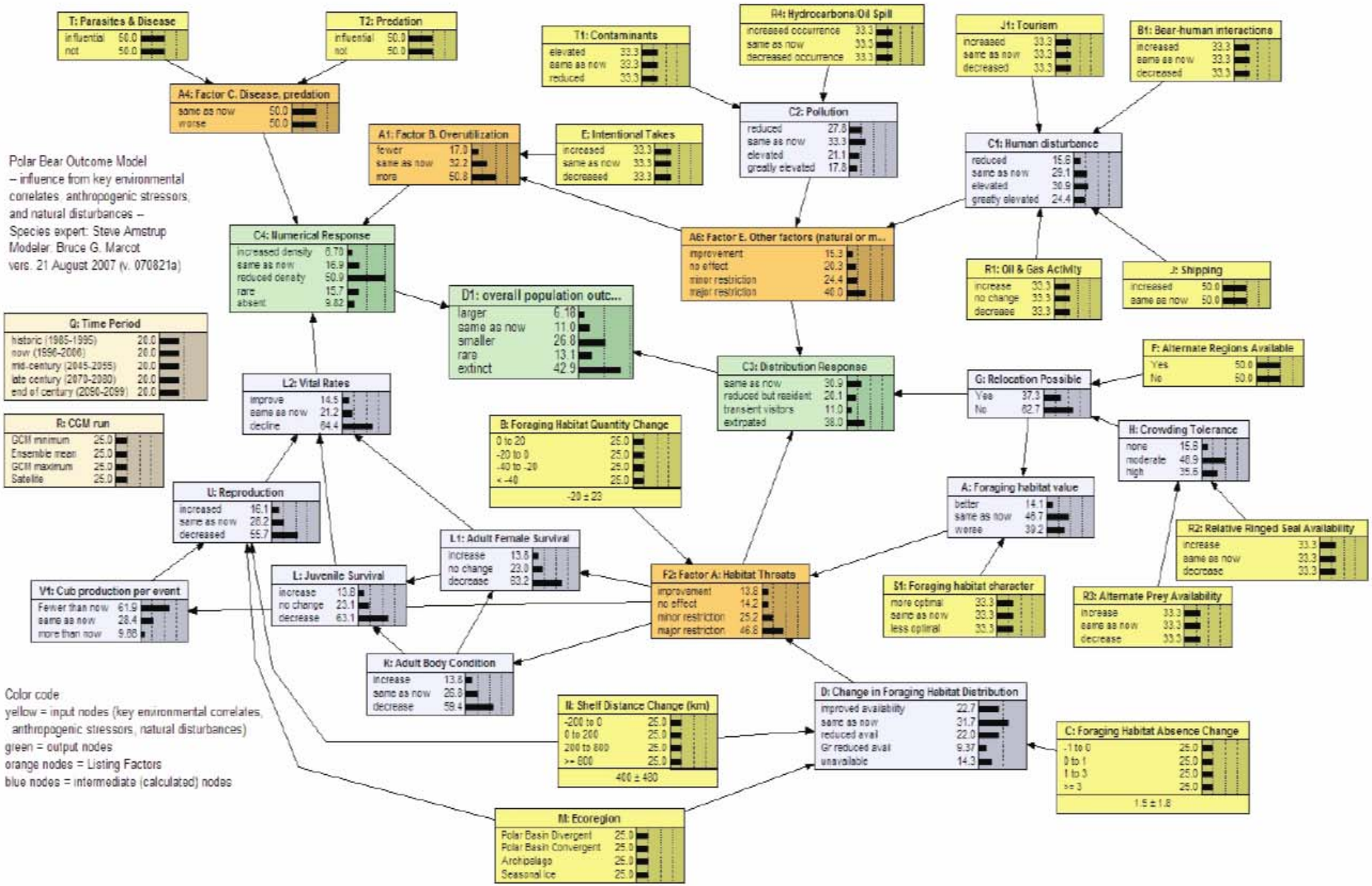
- Alternative Futures Analysis
- Bayesian Belief Networks
- Ecosystem Diagnosis & Treatment
- Interactive Biological Information System

Alternative Futures Analysis

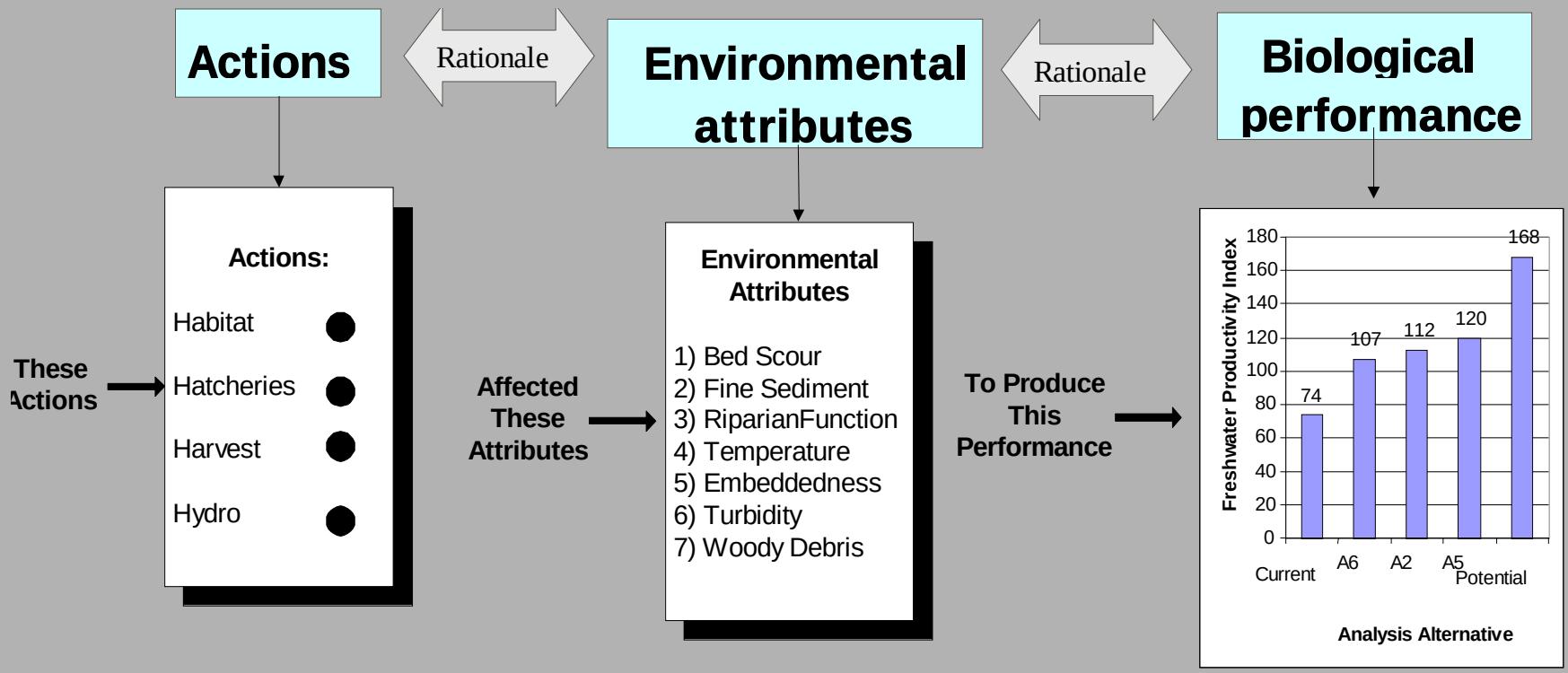


Trajectories of landscape change in the Willamette River Basin, from pre-Euro American settlement, to ca. 1990, to three alternative futures for 2050.

Bayesian Network

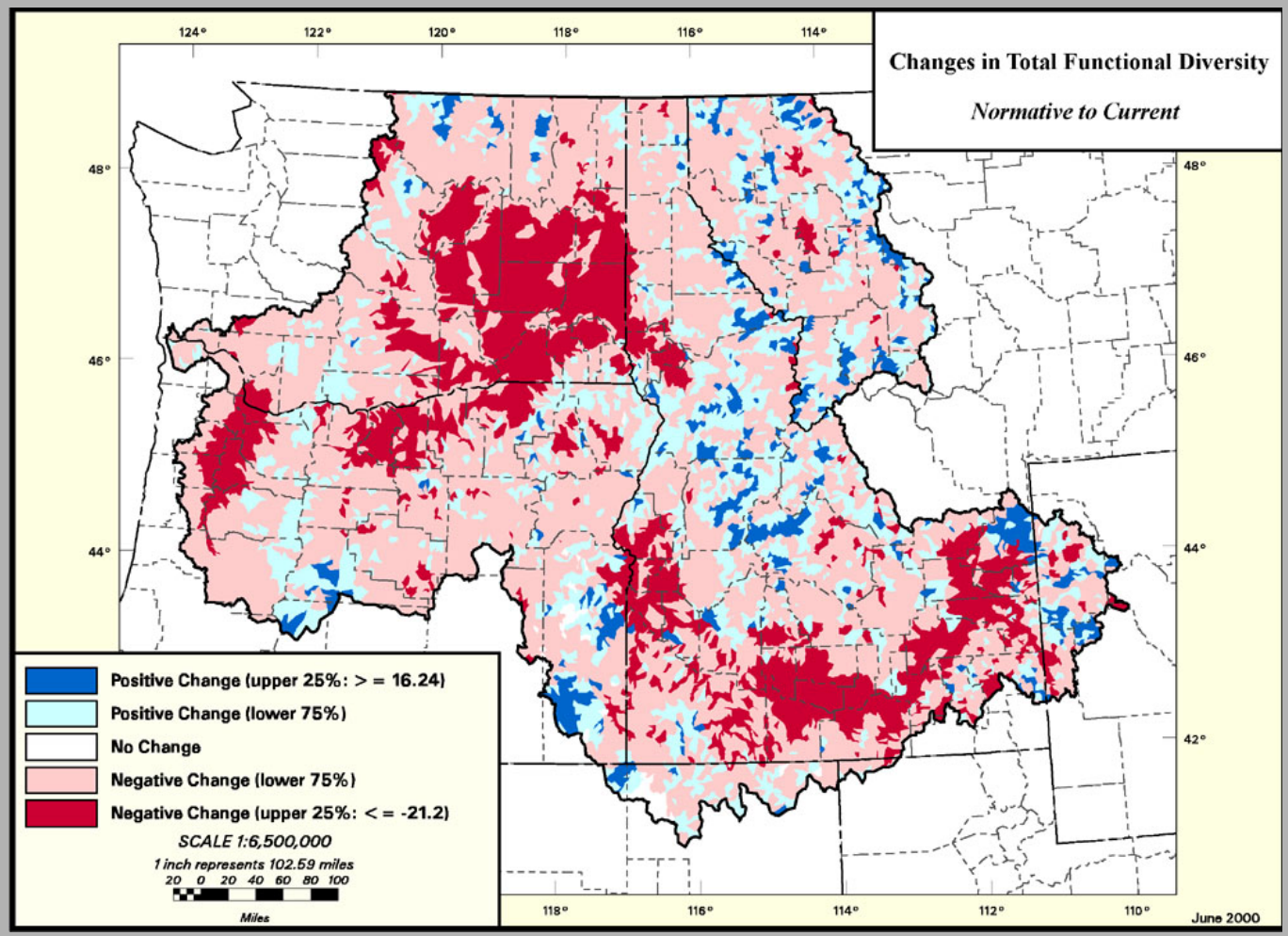


EDT Analysis of alternative futures



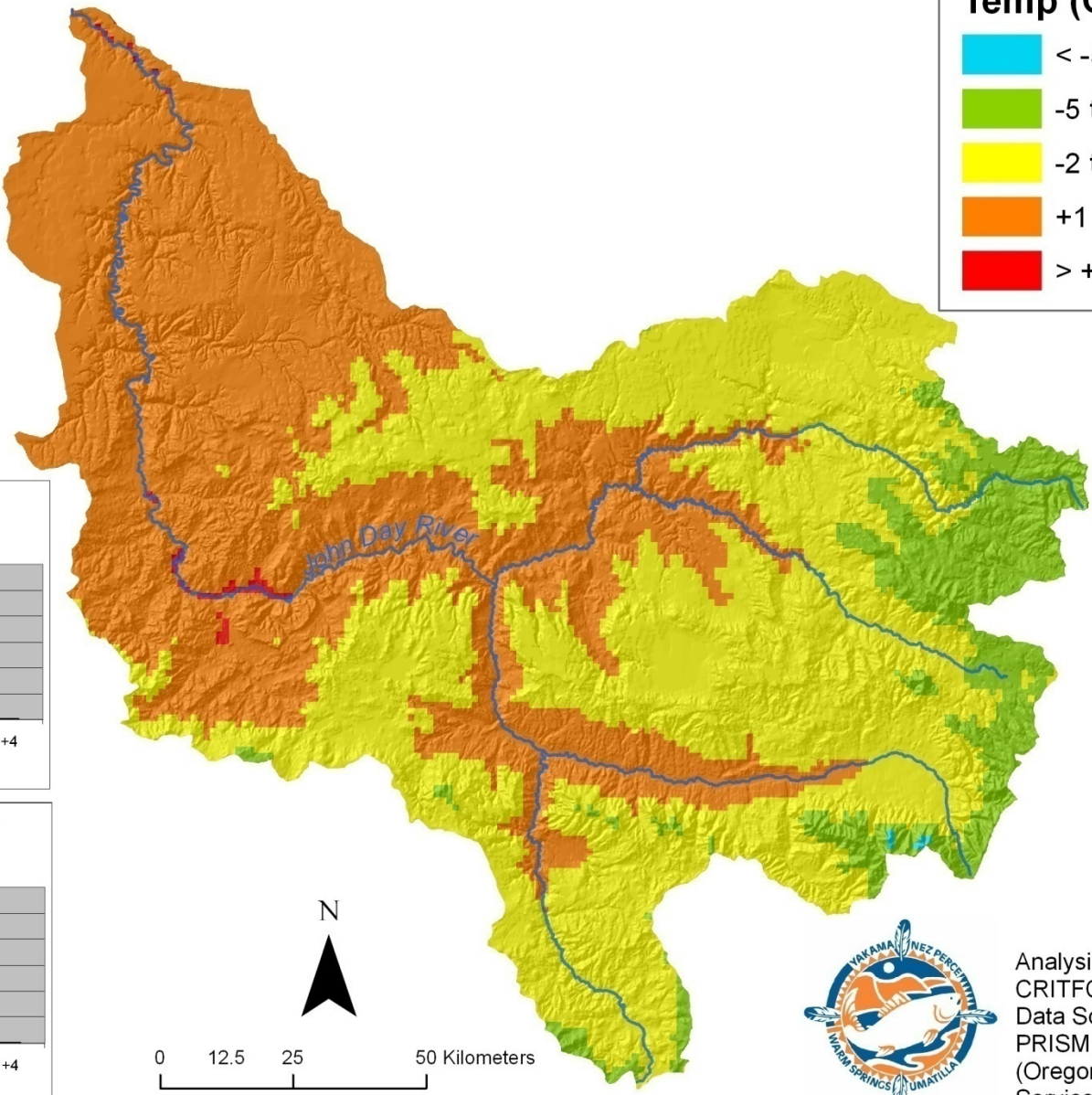
Changes in Terrestrial Ecological Functional Diversity

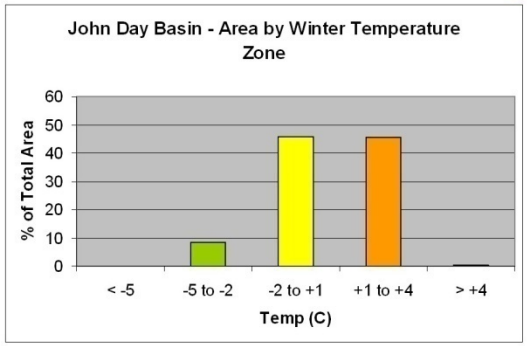
Current relative to historical condition

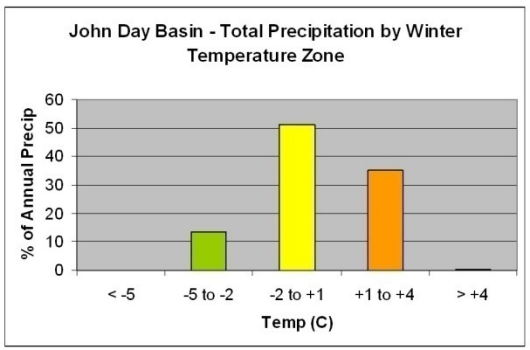


John Day River Basin
Mean Winter (Nov-Mar) Temperatures (1971-2000)

Areas shown in yellow are likely most at risk for loss of snowpack from near-term climate change.







Analysis by CRITFC
Data Source: PRISM, 2007 (Oregon Climate Service Group)