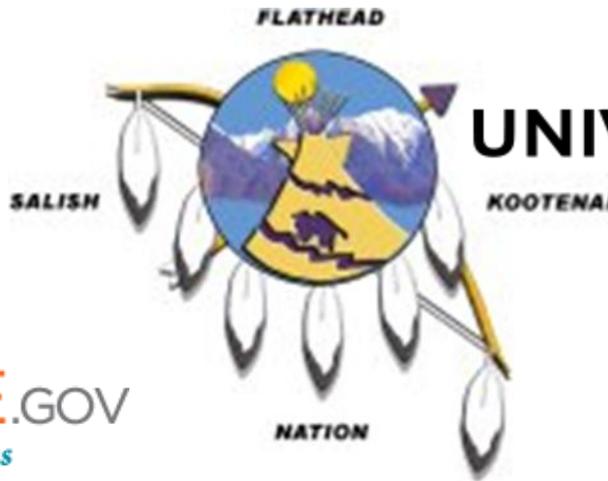
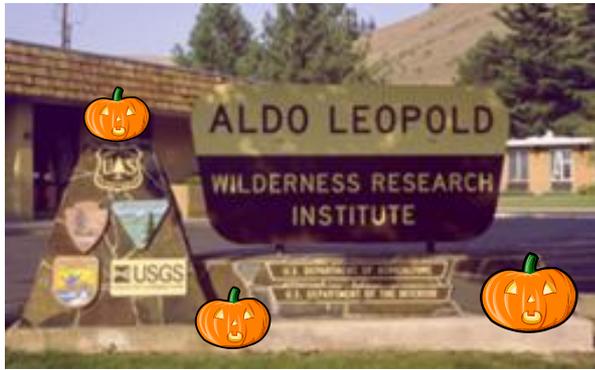




# Mountain Sitter sent Coyote

a search for wisdom in  
addressing vulnerability in  
changing fire-adapted  
cultural landscapes



UNIVERSITY OF LEEDS



**FIRESCIENCE**.GOV  
*Research Supporting Sound Decisions*

Wildland Fire and Fuels Research and  
Development Strategic Plan (to 2015).  
*Mapping/modeling values at risk*



the evergreen state college  
olympia, washington

# Traditional Knowledge, Traditional Wisdom and Fire

- **Traditional Phenological Knowledge: Literature review and case study descriptions of cultural resilience in fire adapted ecosystems**
- **How Reservation residents and tribal resource managers perceive forecasted climate change trends may interact with long-term dependence on natural resources in order to build adaptive capacity into a long-term forest plan**



## Traditional Wisdom and Climate Change Contribution of Wilderness Stories to Adaptation and Survival

BY ALAN WATSON, LINDA MOON STUMPF, and JENNIFER MEINDINGER

**O**n Wilderness Act in the United States, passed in 1964, provides a fairly diverse definition of wilderness for the part of society that was successful in securing their values, recreation, recreational, and political influence into an extremely effective, world-recognized conservation program. But relationships with our National Wilderness Preservation System extend well beyond the typical recreation visitor we might encounter in these areas. For example, due to growing recognition of the downstream importance of protected headwaters of important rivers, and the need for climate change adaptive planning to protect the flow of benefits to humans from protected areas, wilderness science also on new meaning to our society. In other words, not all relational aspects between wild places and some segments of U.S. society (particularly indigenous peoples) are described well in the 1964 Wilderness Act. To some degree, Alaska wilderness areas do take into account rural people's rights and way of life under ANILCA, the Alaska National Interest Lands Conservation Act of 1980. However, recent research efforts toward understanding past and future relationships between humans and wilderness (e.g., Watson 2011) have included efforts to articulate perspectives of American Indians (Watson et al. 2011) and Alaska Natives (Whiting 2004) people on their evolving relationships with large, relatively intact wild landscapes. This knowledge sheds light on an ancient cultural orientation toward North American wilderness, one different from that described in the 1964 Wilderness Act.



Knowledge is transferred to wisdom among traditional populations through interpreting storytelling into actions. Watson et al. (2005), Watson et al. (2011), and Turner and Clifton (2008) have emphasized the historical ecological principle described by Salton (2005) that suggest indigenous people have traditionally most likely experienced the environment as a whole, that all the parts of the system are interrelated. Traditional knowledge can be seen as the qualitative information about these interrelationships that has accumulated across generations of people. In describing this knowledge, however, Turner et al. (2006) suggested that it is not easily subject to fragmentation, as we most commonly do in Western science approaches, including descriptions of wilderness attributes. Turner et al. (2006) proposed that traditional wisdom is acquired and demonstrated through understanding and maintenance of relationships with complex natural systems, such as wilderness, and that these systems are dependent on traditional knowledge to fully understand forces of change and likely response of the system. The dominant American cultural perspective on wilderness does not provide a universal, cross-cultural concept of conservation (Beckler 2006).

Tribal Nations have unique relationships with federal wilderness management agencies. Due to status conferred through sovereignty, time-honored legal, cultural, and



*What and why, in general?*.....knowledge integration for (re)new(ed)  
ways of thinking

*Why, more specifically?*.....for resilience in the face of climate change

*How, empirically?*.....as measured by IPK and SPK

*How, methodologically?*..using GIS, specifically MapMe, and MapTiMe

*Where?*.....in the Intermountain West of North America

*Who?*..via tribal college faculty as  
intercultural knowledge-bridgers

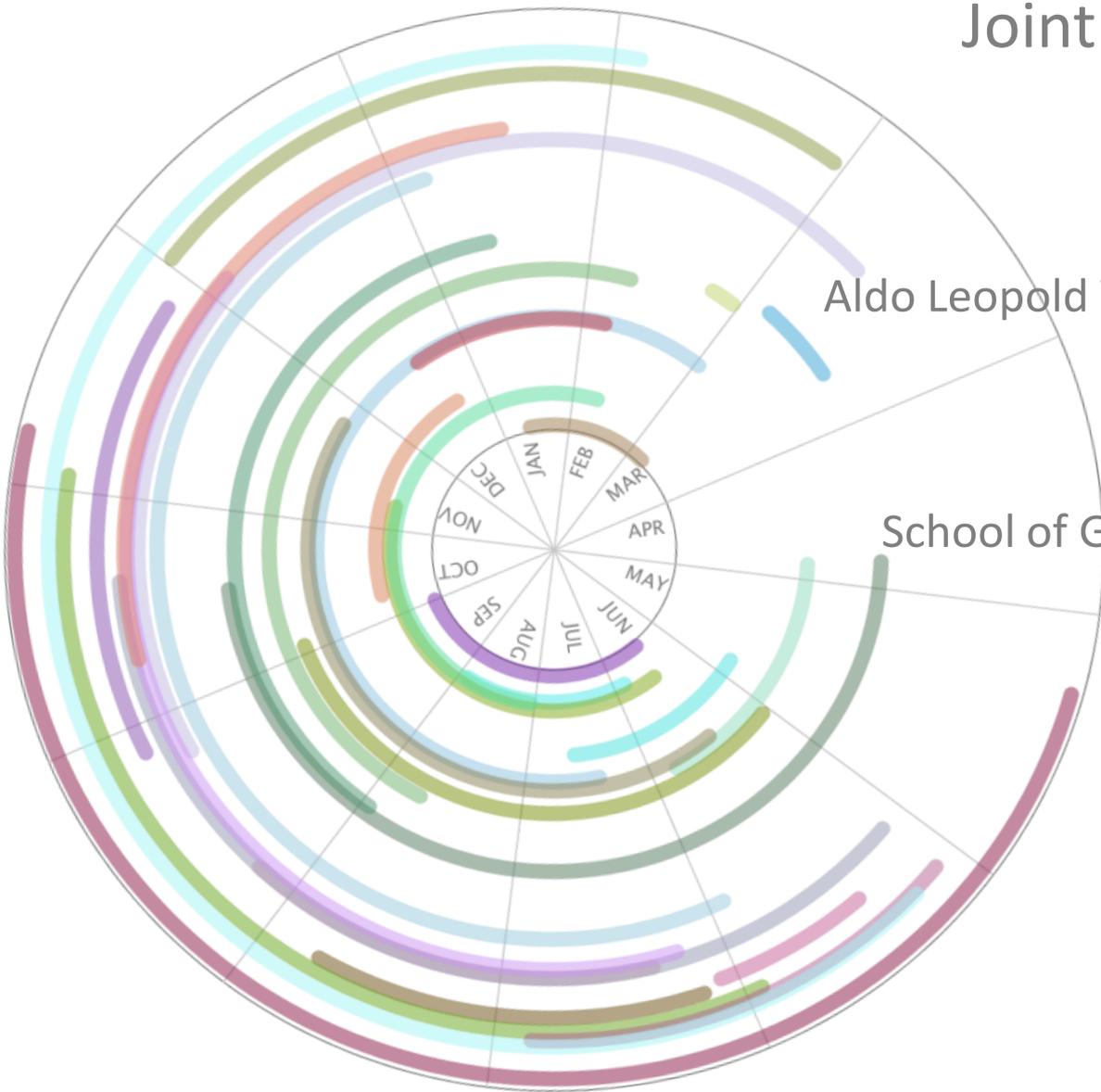
Cultural Adaptation  
to Changing Fire Regimes  
across Intermountain West of North America



(Re)new(ed)\* ways of sustaining the commons:  
the problems and potentials of  
integrating indigenous and scientific knowledge  
in environmental management

\* Evering (2012)

# Joint Fire Science Program USA

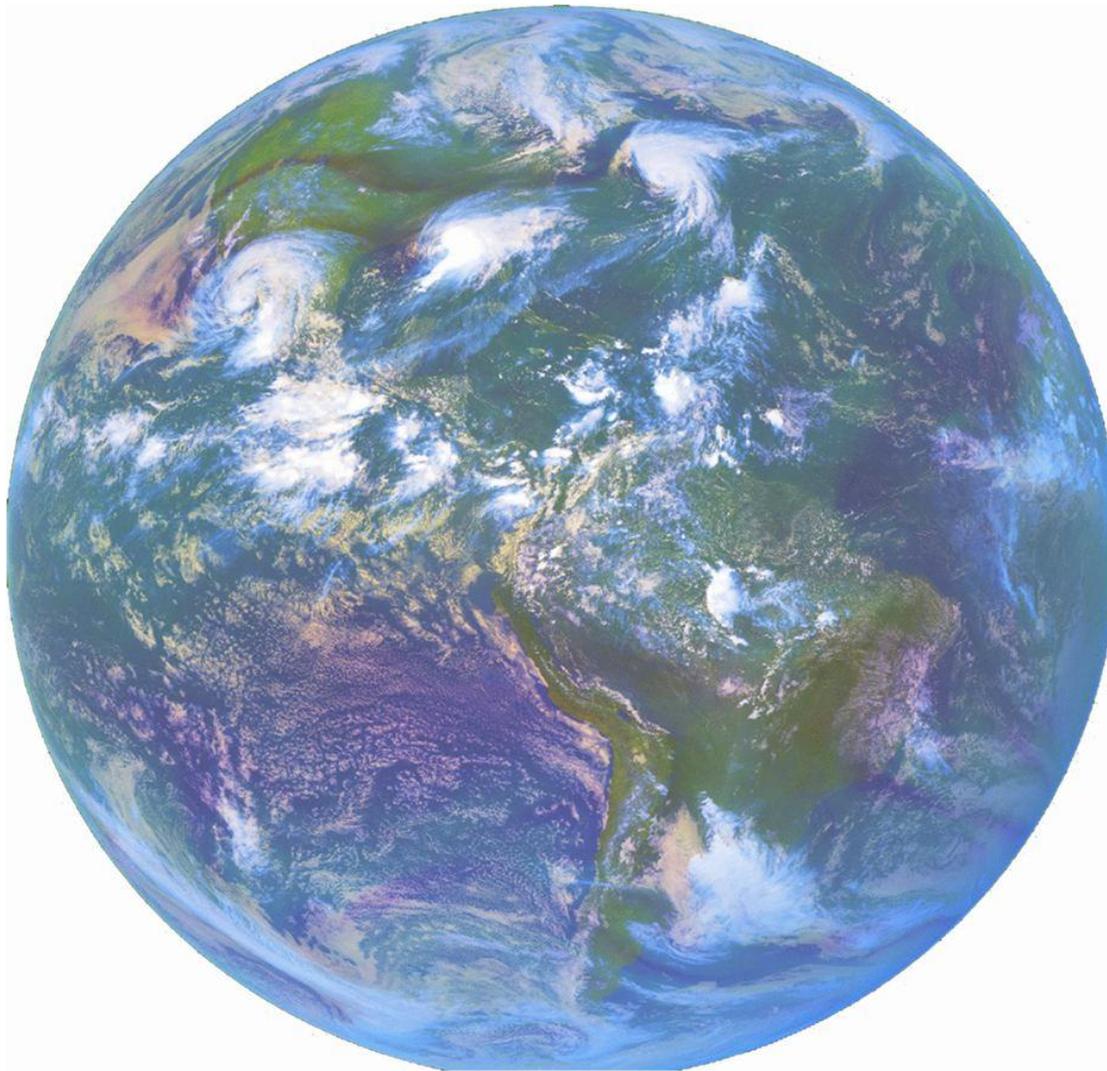


Alan Watson, Ph.D.  
Aldo Leopold Wilderness Research Institute  
Missoula, MT, USA

Stephen Carver, Ph.D.  
School of Geography, University of Leeds  
Leeds, UK

Linda Moon Stumpff, Ph.D.  
Evergreen State College  
Olympia, WA, USA

Tribal College Faculty across  
Intermountain West, USA



## Knowledge Integration

The commons:  
complex adaptive systems

Resilience from diversity,  
feedback,  
capacity to change

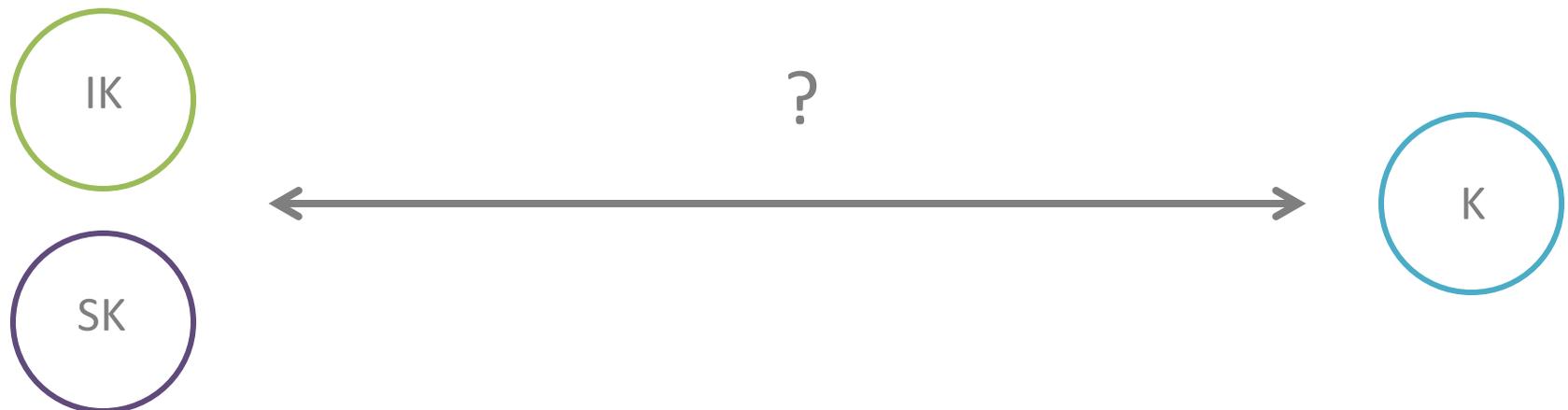
Intellectual diversity =  
combining of different  
knowledges

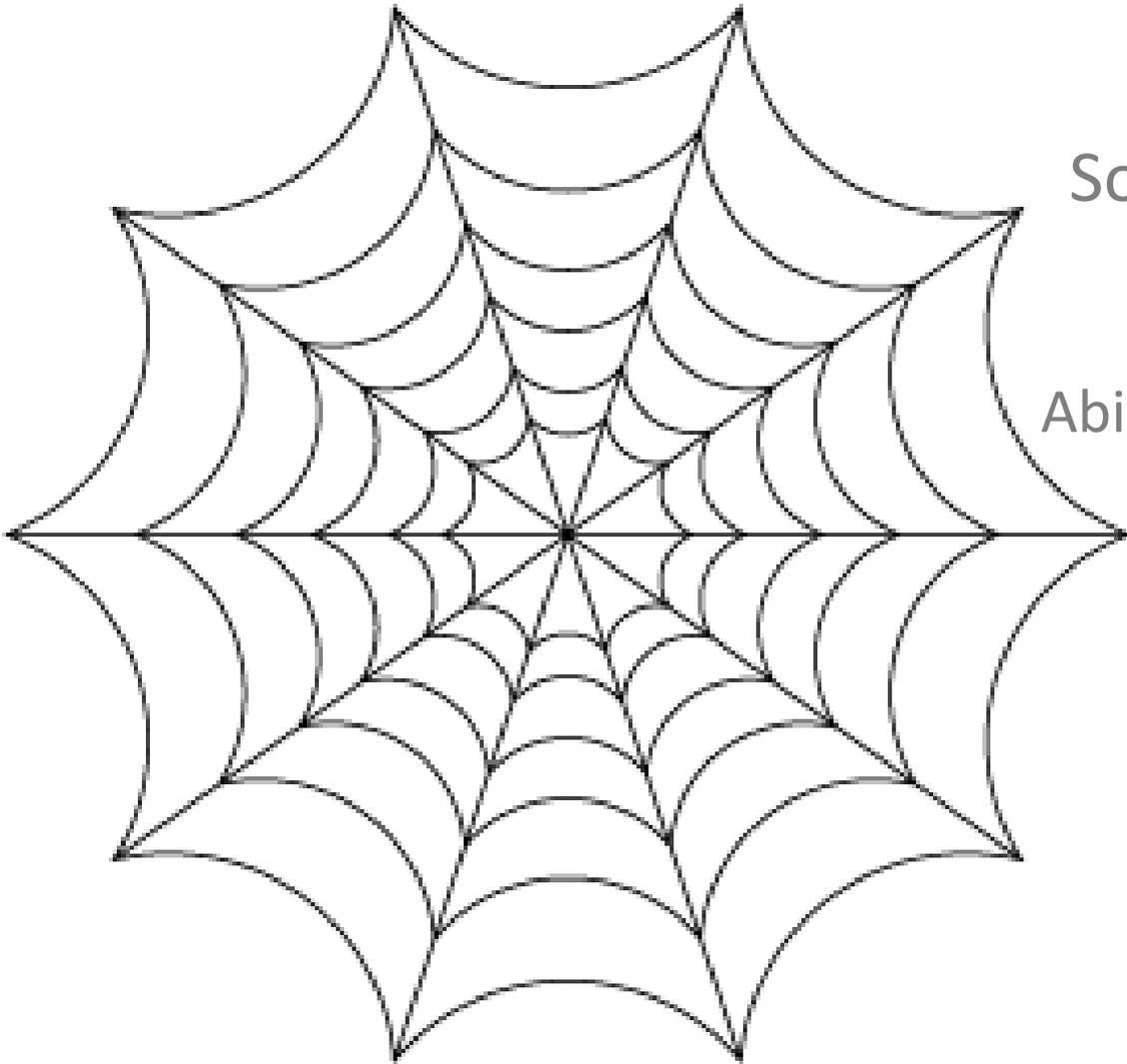
# Knowledge Integration: Terms

Indigenous, traditional, local, ecological

Indigenous knowledges (plural)

Indigenous knowledges (IK) and scientific knowledge (SK)





## Social-Ecological Resilience

Ability to withstand disturbance,  
remain flexible

Opportunity in complexity

(Re)new(ed) ways of thinking  
for new insights  
and solutions

# Challenges



Indigenous Knowledge  
(IK)

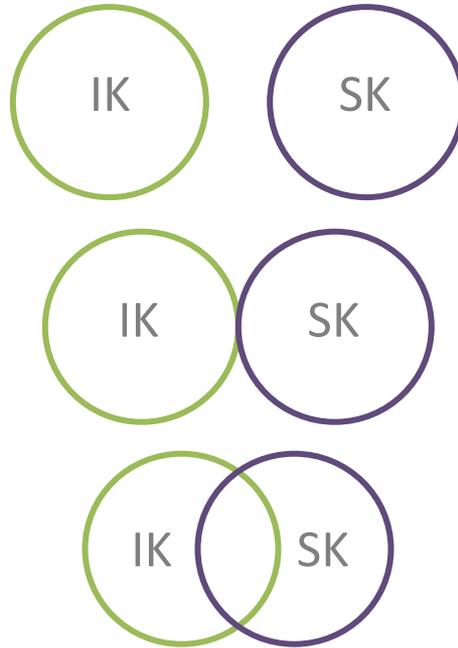


Scientific Knowledge  
(SK)

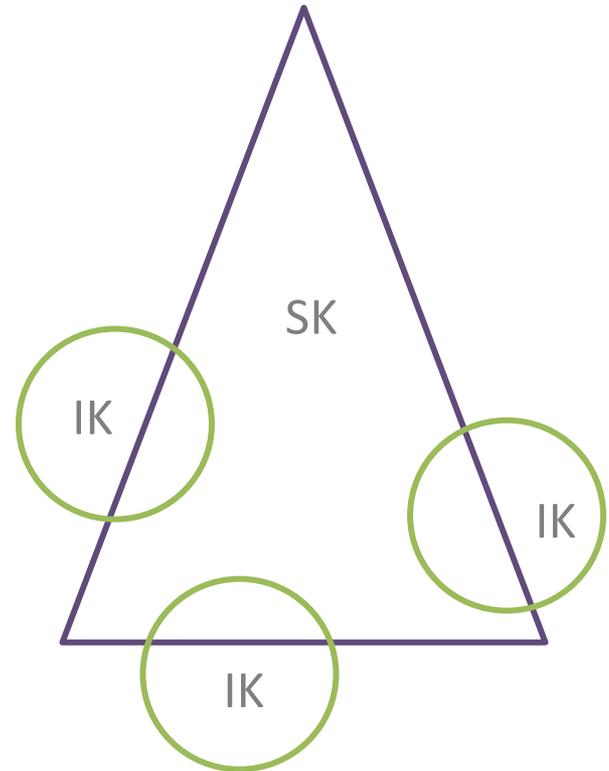
# Relationships between Knowledges



Just one not others\*



Degrees of separation\*



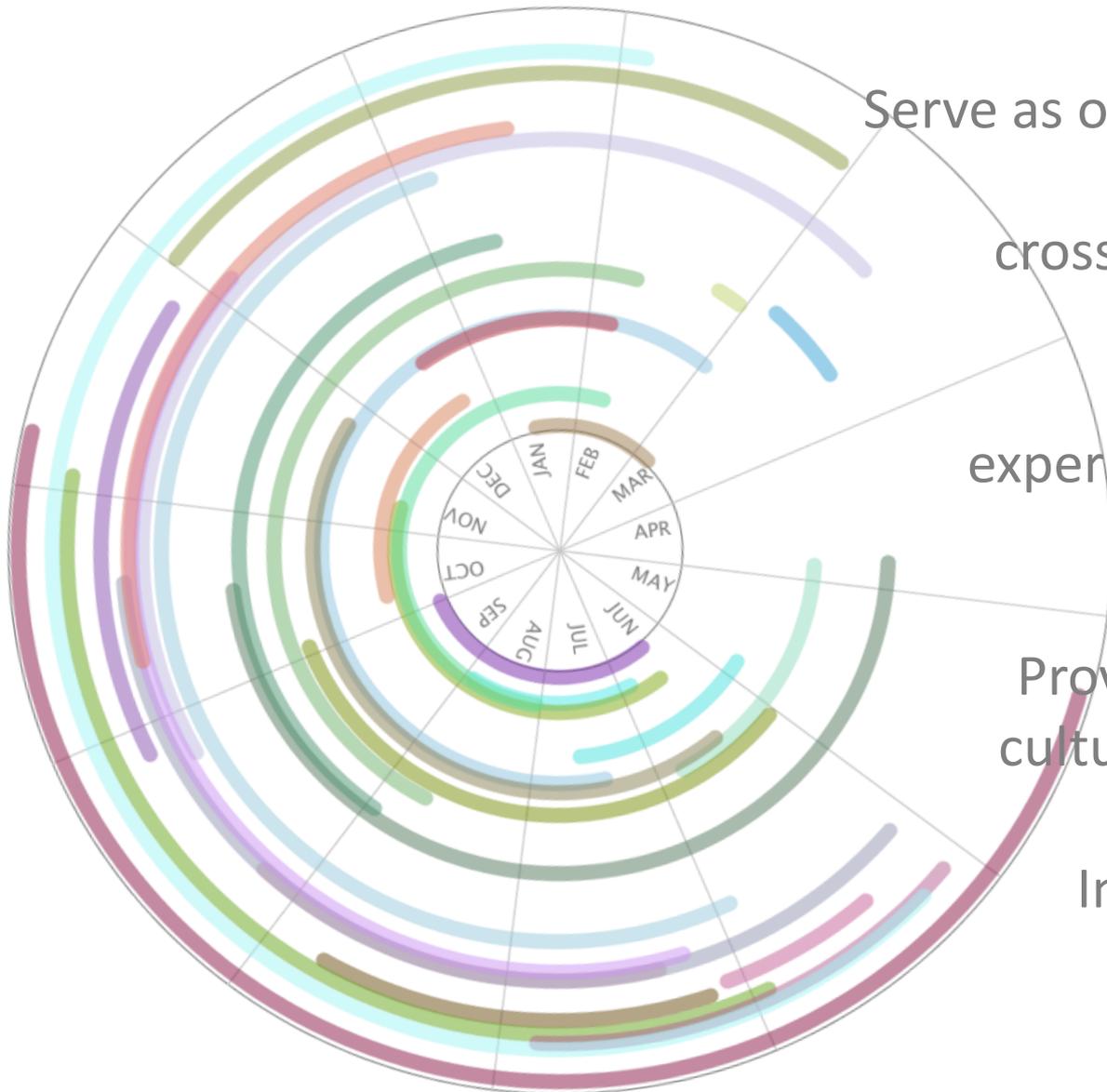
Hierarchy\*

\*Evering (2012).



# Partnerships



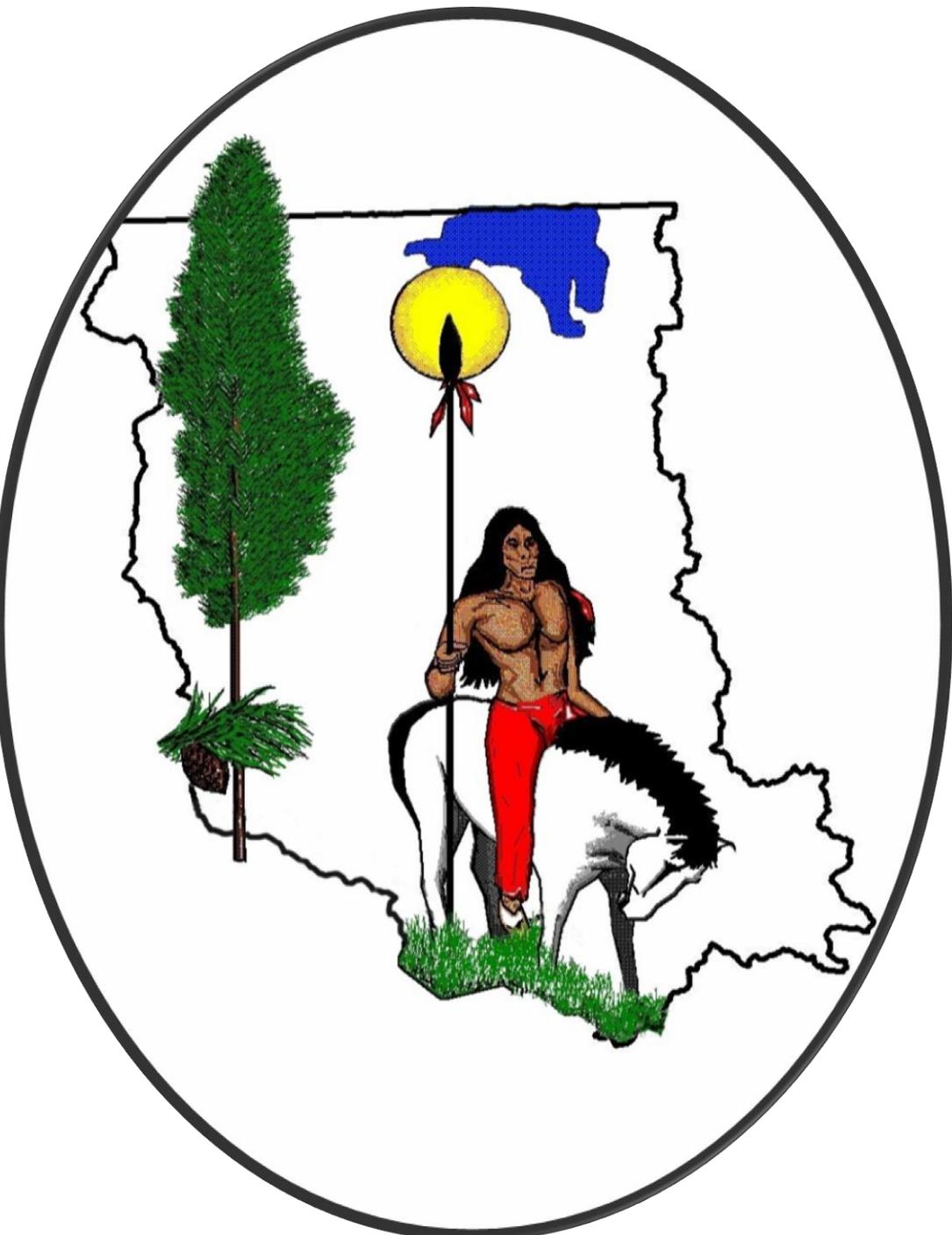


Serve as organizing frameworks for recovery, retention, cross-cultural communication

Facilitate combination of experiential and experimental; complementarity

Provide means for depicting cultural adaptation to change

Insights into new adaptive management strategies

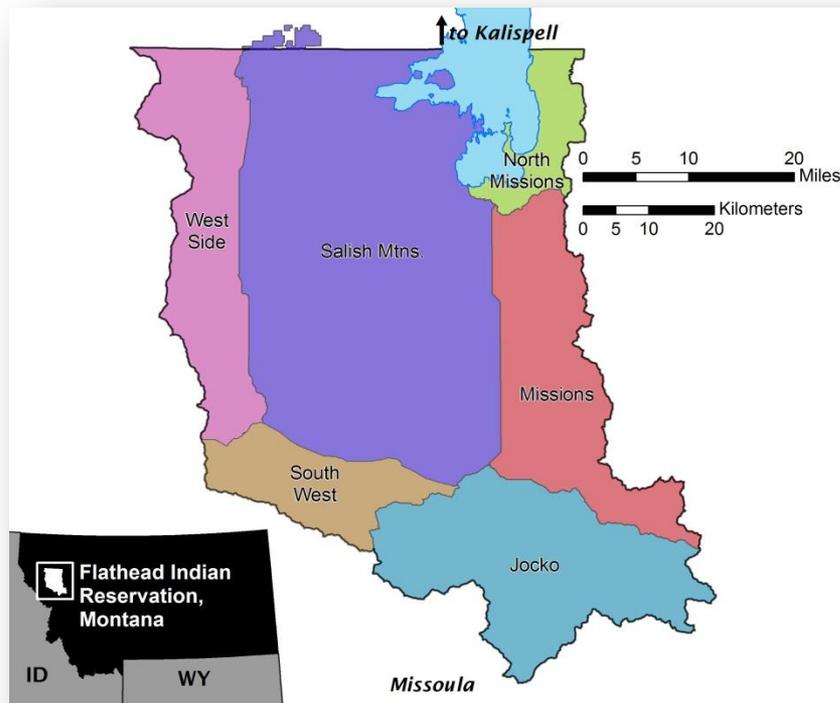


## OBJECTIVE

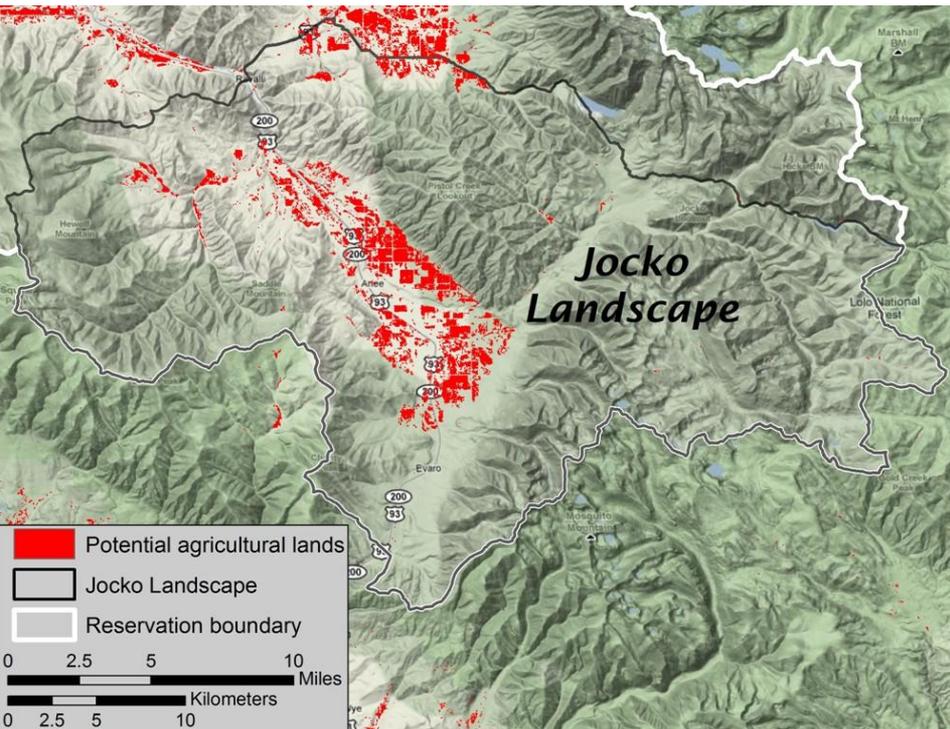
Develop understanding to support forest planning to address climate change uncertainty on the Flathead Indian Reservation.

# Methods

- Incorporate knowledge and opinions of current Reservation residents and Tribal natural resource managers about how the Jocko landscape has changed over time, the causes of those changes, and challenges to achieving desired future conditions.



# Map-Me



- Employ the Map-me (Mapping Meanings) tool developed by CSKT, RMRS, and University of Leeds to describe past, current, and desired future attributes in the Jocko Landscape Unit.

# Observations



- Is it Climate Change or Resource Management?
- What is the timeframe for this to occur?

# Grazing in the Woods



- Around 2006, the Tribes implemented an action to remove cattle from the upper Jocko. They were moved to an area we now call Schall Flats.

# Firestone Flats

# Traditional Knowledge

- *“How do you feel, if at all, that traditional knowledge can help solve these impacts or problems for this area. Please give an example.”*



# Forest Planning on Fire Issues in a Cultural Landscape

