

# Cultivating Partnerships:

# Indigenous Knowledge & Western Science

# in Land Stewardship



**Dr. Cristina Eisenberg**  
Oregon Natural Desert Association  
Bend, Oregon  
March 19, 2024  
Portland, Oregon  
March 20, 2024



# OSU College of Forestry

## *Beyond the Land Acknowledgement*

Associate Dean for Inclusive Excellence

Maybelle Clark Macdonald Director of Tribal  
Initiatives in Natural Resources



Position created in February 2022

Began work in September 2022

Scope of Work:

- DEI
- Student success
- Tribal Initiatives
- Indigenous Knowledge (IK)
- Tribal Co-Stewardship

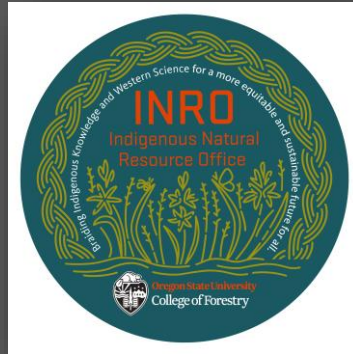


# OSU College of Forestry

## Indigenous Natural Resource Office

A safe, decolonized cultural space for Indigenous students

A gathering space to develop relationships and respectful, innovative partnerships with Tribal Nations



- INRO Program Manager
- Admin Assistant
- TEK Lab (4 grad students, 1 post doc, 1 FRA)

<https://www.forestry.oregonstate.edu/inr>



# **Federal Policy Context:** ***Tribal Self-Determination***

November 2021: White House Office of Science and Technology Policy (OSTP), Council on Environmental Quality (CEQ) Memorandum on ITEK and Federal Decision-making

November 2022: White House OSTP CEQ Memo: Guidance on IK

2022: Presidential Justice40 Initiative, 2022

November 2022: Joint Secretarial Order 3403 on the trust responsibility to Tribes in stewardship of Federal lands and waters

December 2023-2024: NWFP Old-Growth Amendment; National Old-Growth Amendment





Oregon State University  
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# Tribal Roundtables for National Old-Growth Amendment

- Address EO 14072
- 5 Tribal roundtables 2024
- Ecoregional, Indigenous-led
- Funded by USFS
- Complementary to Tribal consultation
- Listen to Tribal perspectives and concerns on co-stewardships of MOG and forests in general
- Discuss what active adaptive stewardship that incorporates IK could look like
- In the PNW, NWFP amendment and NOGA roundtables will be combined





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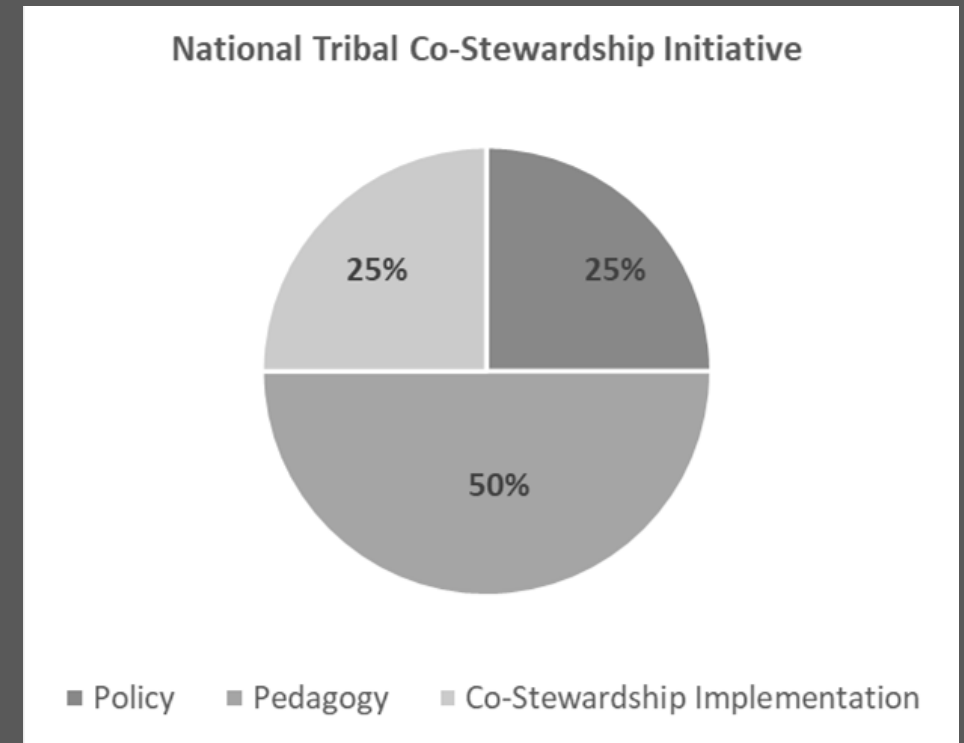


## National Tribal Co-Stewardship of Forest Ecosystems for Climate Resiliency and Sustainability Initiative

Key components of this 9-year initiative:

1. Policy development to more clearly define and build capacity for Tribal co-stewardship
2. A Co-Stewardship Skills Institute housed within the CoF
3. Active support for implementing co-stewardship partnerships between academic institutions, federal agencies, Tribal Nations, and non-governmental organizations (NGOs)
4. Follows Principles and Best Practices for Working with IK and Partnering with Tribal Nations, and CARE

<https://www.forestry.oregonstate.edu/sites/default/files/Principles%20and%20Best%20Practices%20Volume1%20Final.pdf> ; <https://www.gida-global.org/care>



# IK and the Ecology of Caring\*



White House Office of Science and Technology Policy (OSPT)  
Council on Environmental Quality (CEQ)

Memo On ITEK and Federal Decision-making November 2021

Issued to “recognize ITEK as one of the important bodies of knowledge that contributes to scientific, technical, and economic advancement in the US and to our collective understanding of the natural world.”

“We don’t want to continue hurting Mother Earth. We are protecting her so that she is not damaged any more than she already is. We are striving to get it right and find the best path forward. The federal colonialist system doesn’t work.”

Sec. Interior Deb Haaland  
White House Council on Native American Affairs & Tribal Engagement  
January, 2022

\*Moore, K. D. (2004) *The Pine Island paradox.*



Critically important that Federal department and agency consideration and inclusion of IK is guided by respect for the sovereignty and self-determination of Tribal Nations, Nation-to-Nation relationships, and consent and honest engagement with Tribal Nations and Indigenous peoples.



## Indigenous Knowledge (IK)

Knowledge and practices passed orally from generation to generation informed by strong cultural memories, sensitivity to change, and values that include reciprocity. Rooted in spiritual health, culture, and language, IK is a “way of life.”

Kimmerer 2000



Direct contrast to European colonialist economics-driven worldview

Indigenous people used cultural stewardship practices, such as cultural burning, over millennia to increase ecosystem productivity of food, medicine, and ceremonial items.



Pollard 1910, Alberta Provincial Archives



IK practices can increase biodiversity and ecological resiliency by creating fine-grained, patchy landscape mosaics.



# Doctrine of Discovery

A European papal doctrine that in 1493 established religious, political, and legal justification for colonization and seizure of land not inhabited by Christians. It supported Christopher Columbus' land claims.

In North America this policy was used by Euro-American settlers to forcibly take land from the Indigenous people who lived here. It inspired the 1804-1806 Lewis & Clark Expedition. With the 1823 Supreme Court case, [\*Johnson v. M'Intosh\*](#), the Doctrine of Discovery became part of US federal law.

The Doctrine of Discovery continues to be international law today.



# Settler Colonialism

John Gast, 1872  
American Progress



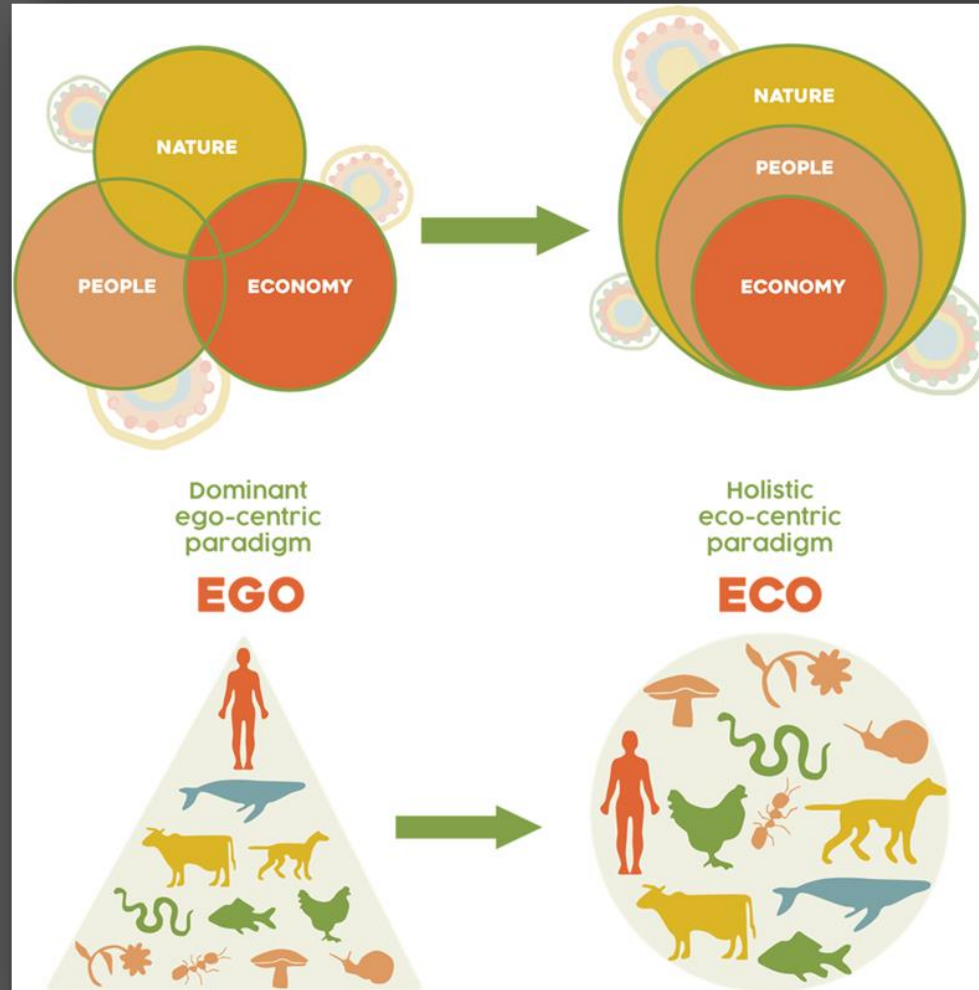
Policy of a foreign polity seeking to extend or retain its authority over other people or territories, to develop or exploit them to benefit the colonizing country and help the colonies modernize in terms defined by the colonizers

# Impacts of Settler Colonialism

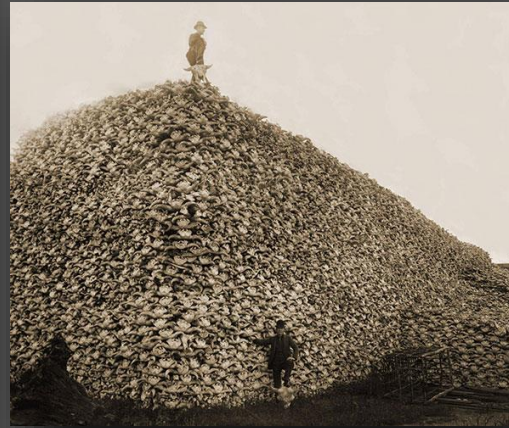
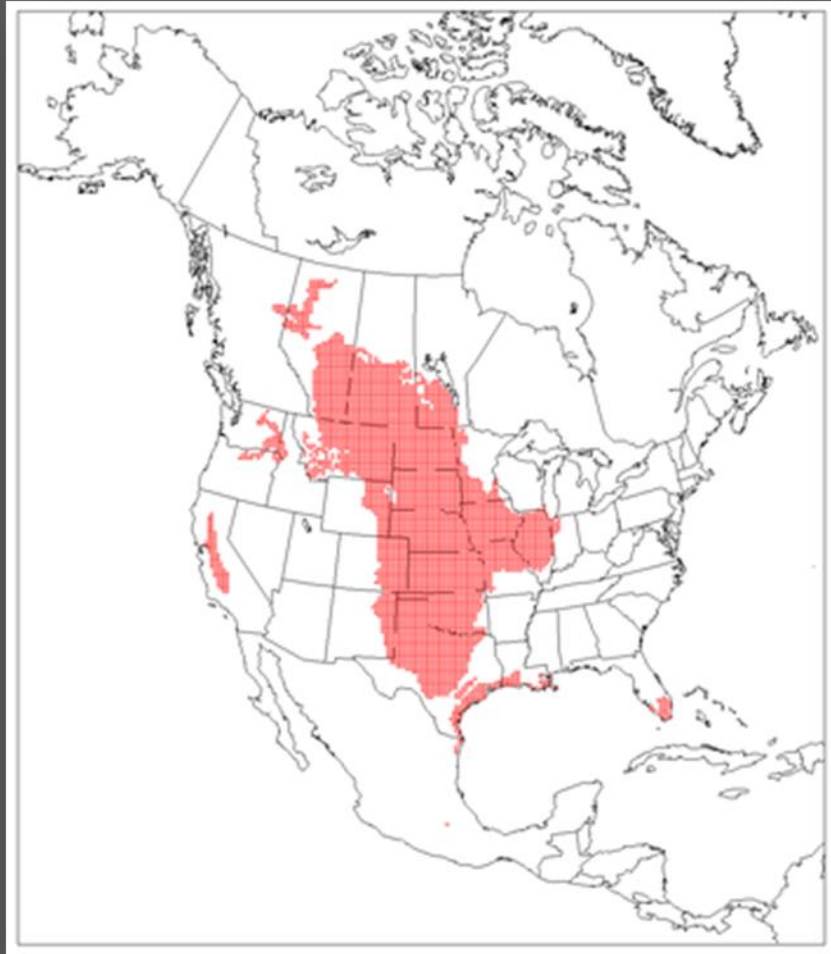


Fire exclusion  
Unbridled deforestation  
Draining wetlands  
Killing all the bison and large  
predators

# Two Different Worldviews



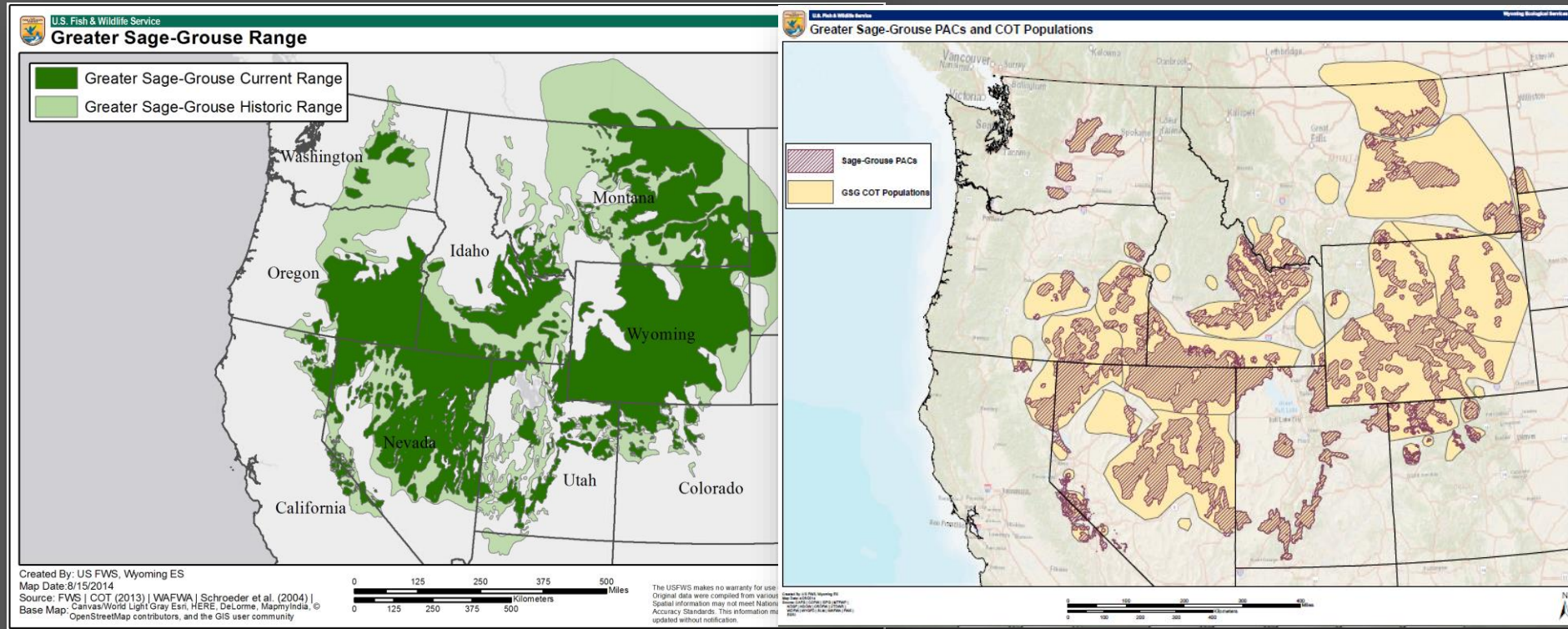
# Changes on the Land: Grasslands and Bison



[http://pubs.usgs.gov/pp/p1650-e/wwf\\_maps.html](http://pubs.usgs.gov/pp/p1650-e/wwf_maps.html)

1889, William Hornaday. Source: Library of Congress: <https://www.loc.gov/item/2002628195/>

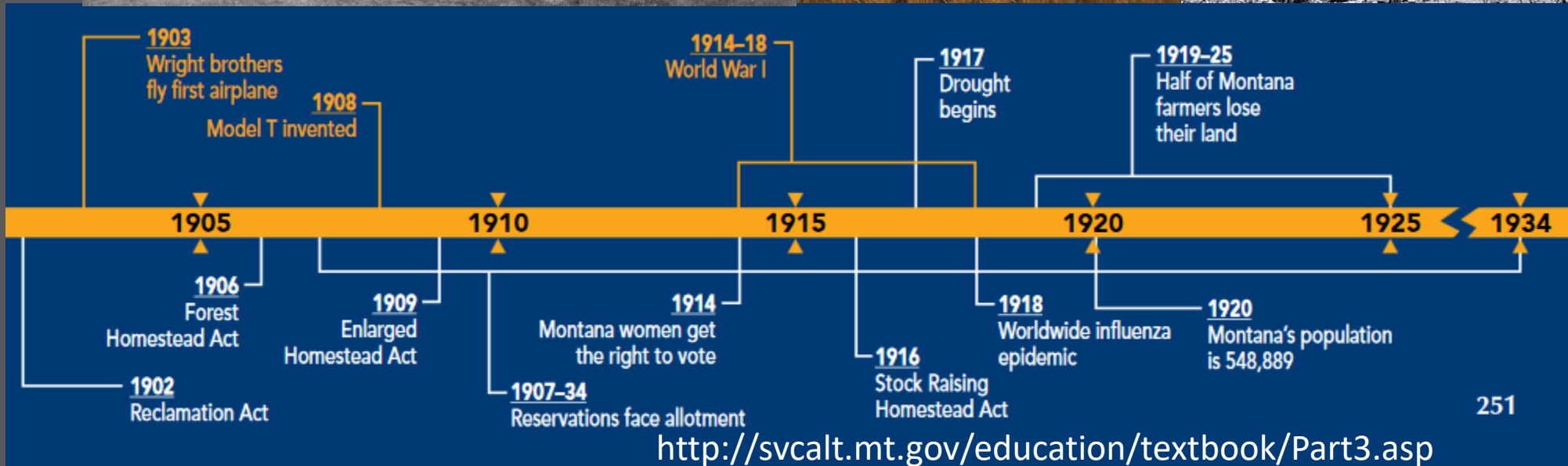
# Greater Sage-Grouse



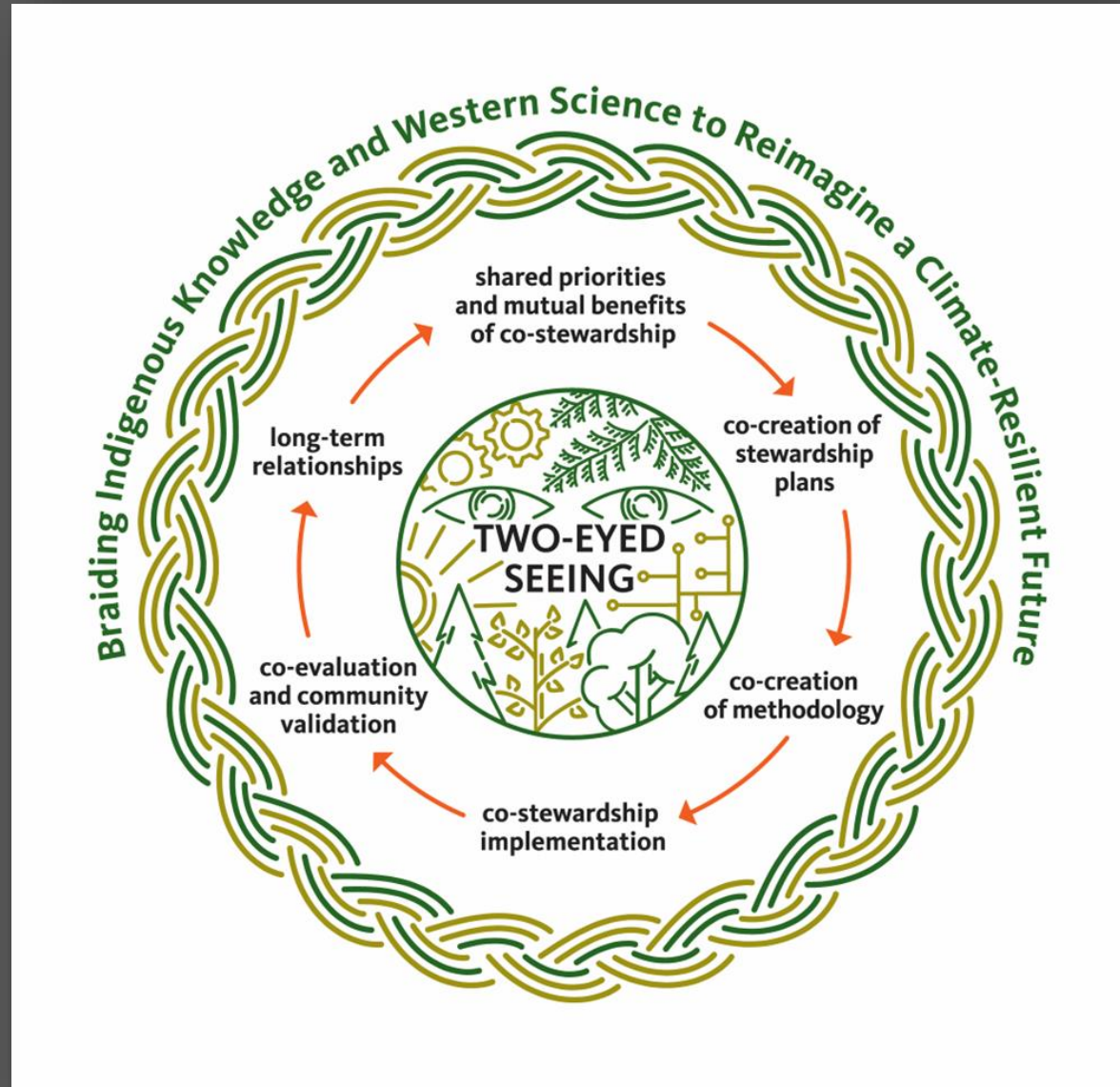
Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), basin big sagebrush (*A. tridentata* ssp. *tridentata*), silver sagebrush (*A. cana*), greasewood (*Sarcobatus vermiculatus*), saltbush (*Atriplex* spp), rubber rabbitbrush (*Ericameria nauseosa*), green rabbitbrush (*Chrysothamnus viscidiflorus*), and antelope bitterbrush (*Purshia tridentata*). western wheatgrass (*Pascopyrum smithii*), Indian ricegrass (*Achnatherum hymenoides*), blue grama (*Bouteloua gracilis*), Sandberg's bluegrass (*Poa secunda*), bluebunch wheatgrass (*Pseudoroegneria spicata*). threadleaf sedge (*Carex filifolia*) needleleaf sedge (*C. duriuscula*). Hood's phlox (*Phlox hoodii*), sandwort (*Arenaria* species), prickly pear (*Opuntia* species), scarlet globemallow (*Sphaeralcea coccinea*), purple prairie clover (*Dalea purpurea*), gayfeather (*Liatris punctata*), and milkvetch (*Astragalus* species).



# Homestead Era, Conversion to Agriculture, Dustbowl



Degraded lands dominated by invasive species



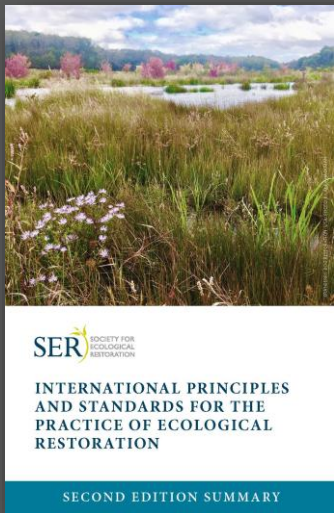
Robinson et al. 2021;  
Reid et al. 2020

**IK + WS = Two-Eyed Seeing**

## Definitions

**Ecological restoration:** the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed.

**Ecocultural restoration:** the process of restoring key historic pre-contact, pre-industrial ecosystem structures, processes, and functions, and the Indigenous cultural practices that helped shape ecosystems.



### Principle 2 Draws on all types of knowledge

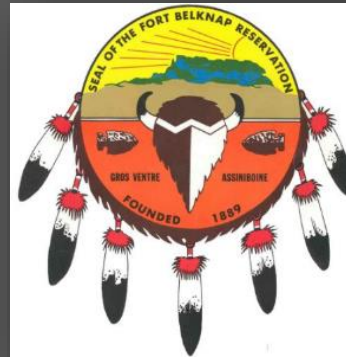
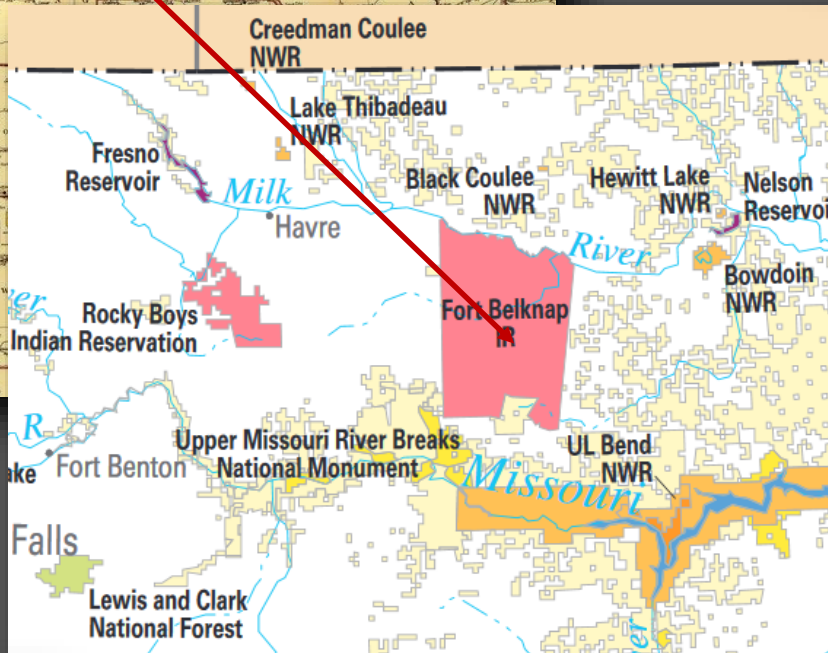
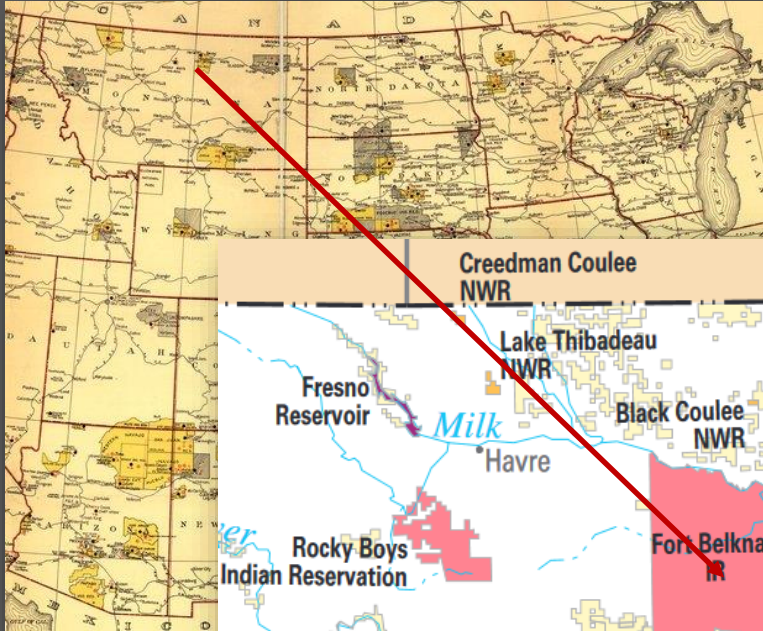
The practice of ecological restoration requires acquired ecological knowledge derived from practitioner experience, local and IK and Western science.



(Kimmerer 2011)

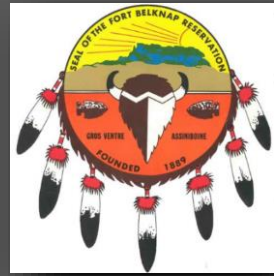
# BLM/OSU/FBIC Grassland Restoration Project 2018 – 2027

Cristina Eisenberg, Lead PI, Tom DeLuca Co-PI



FBIC lands are surrounded by BLM lands, with overlapping priorities and co-stewardship opportunities to increase climate resiliency and sustain human communities.

# BLM/OSU/FBIC Grassland Restoration Project Overview



**Who:** Fort Belknap Indian Community (FBIC), BLM Montana/Dakotas, Oregon State University, Society for Ecological Restoration

**Goal:** To ensure a stable supply of native plant materials for public land restoration using IK in partnership with FBIC.

**Where:** Malta Field Office BLM lands in and near to FBIC

**What:** Implementation of AIM, SOS, pollinator eDNA, soil science, informed by IK

**When:** 2018-2027

**Community Impacts:** *Nakoda* and *Aaniiih* Community Fellows Program, tribal jobs

**Partnerships:  
BLM Director  
Tracy Stone-  
Manning FBIC  
Project Visit  
Summer 2024**



## Synthesis of:

IK, working collaboratively with Native American ecologists, technicians, and students

BLM best science, such as Seeds of Success (SOS), Assessment, Inventory, and Monitoring (AIM)

SER standards for ecological restoration.

## Values:

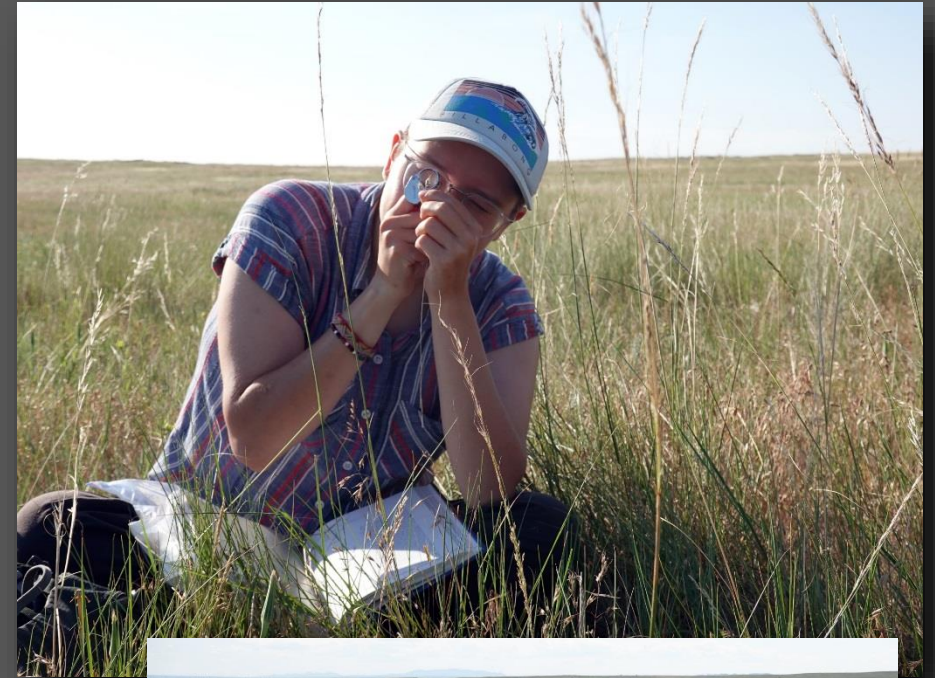
- Reciprocity
- Cultural humility
- 7<sup>th</sup> generation perspective



Best Western Science + IK + Social Justice = Healing the Earth

# Methods:

- AIM Plots
- SOS collection
- Soil sampling
- Pollinator eDNA







## Outcomes

60 jobs

50 jobs for Tribal youth

93% for Native Americans

\$3,000 in-kind contributions and ext. funding

20 FBIC Community Fellows

10 Fellows hired as techs

5 Fellows enrolled in college in natural resources

**Total:**

**40 lbs of seed collected**

**30,000 hours of employment**



# Tribal Conservation Youth Corps

Community Fellows  
Paid internship program for at-risk youth



Field Technician jobs



STEM education opportunities



Future Native American natural resource leaders



Create healthier public lands

IK and cultural traditions embedded in all

Sovereignty rights and data sovereignty honored

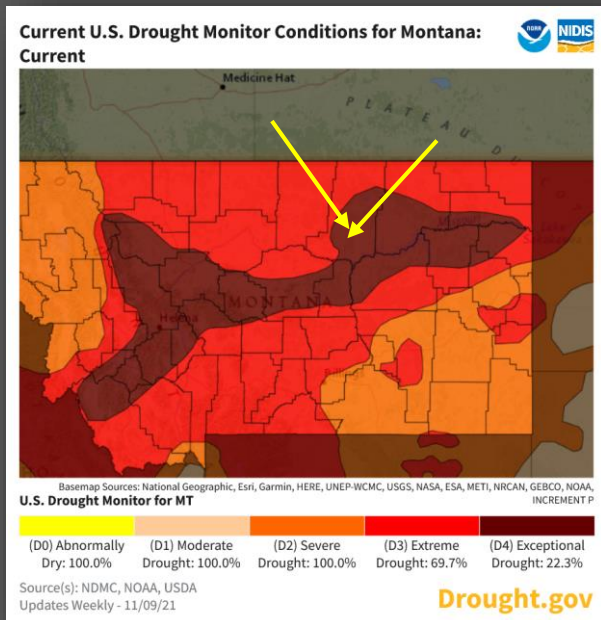
Elders consulted

THPO guidance

<https://www.hcn.org/issues/53.10/north-prairies-collecting-seeds-to-restore-prairie-grasslands>



Both mixed-use  
Both grazed by cattle



## Principles and Best Practices for working with IK and Partnering with Tribal Nations

- Acknowledge historical context of past injustices.
- Practice early and sustained engagement.
- Earn and maintain trust by being transparent, open about ideas and agendas, and honest at all times.
- Respect different processes and worldviews.
- Recognize, respond to, and adapt to challenges with cultural humility.
- Consider supporting co-stewardship and co-management partnerships.
- Support co-production of knowledge.
- Provide ample funding to Tribal Nations at each step of partnership and knowledge co-creation.
- Share power and decision-making authority with Tribal partners.



# Acknowledgements and Questions



Thanks to:  
Oregon Natural Desert Association  
FBIC, BLM, all of our field crews

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<https://www.forestry.oregonstate.edu/intro>

<https://onda.org/>