



*Cause or Symptom?*  
*Invasive species & EBIPM*

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**ebipm (acronym); 1. framework used to successfully manage invasive species, 2. also based in ecological principles. [See also ecologically-based invasive plant management ]**

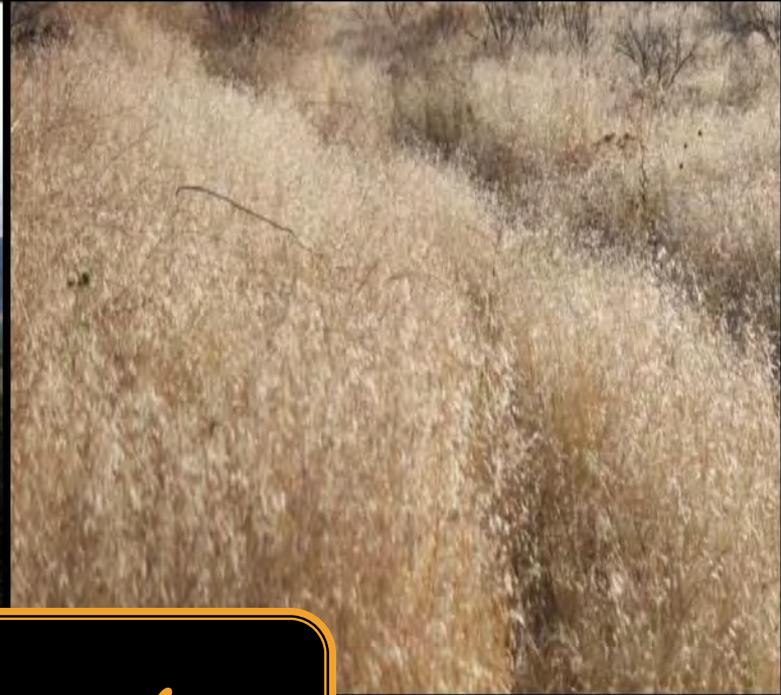


# Getting organized...

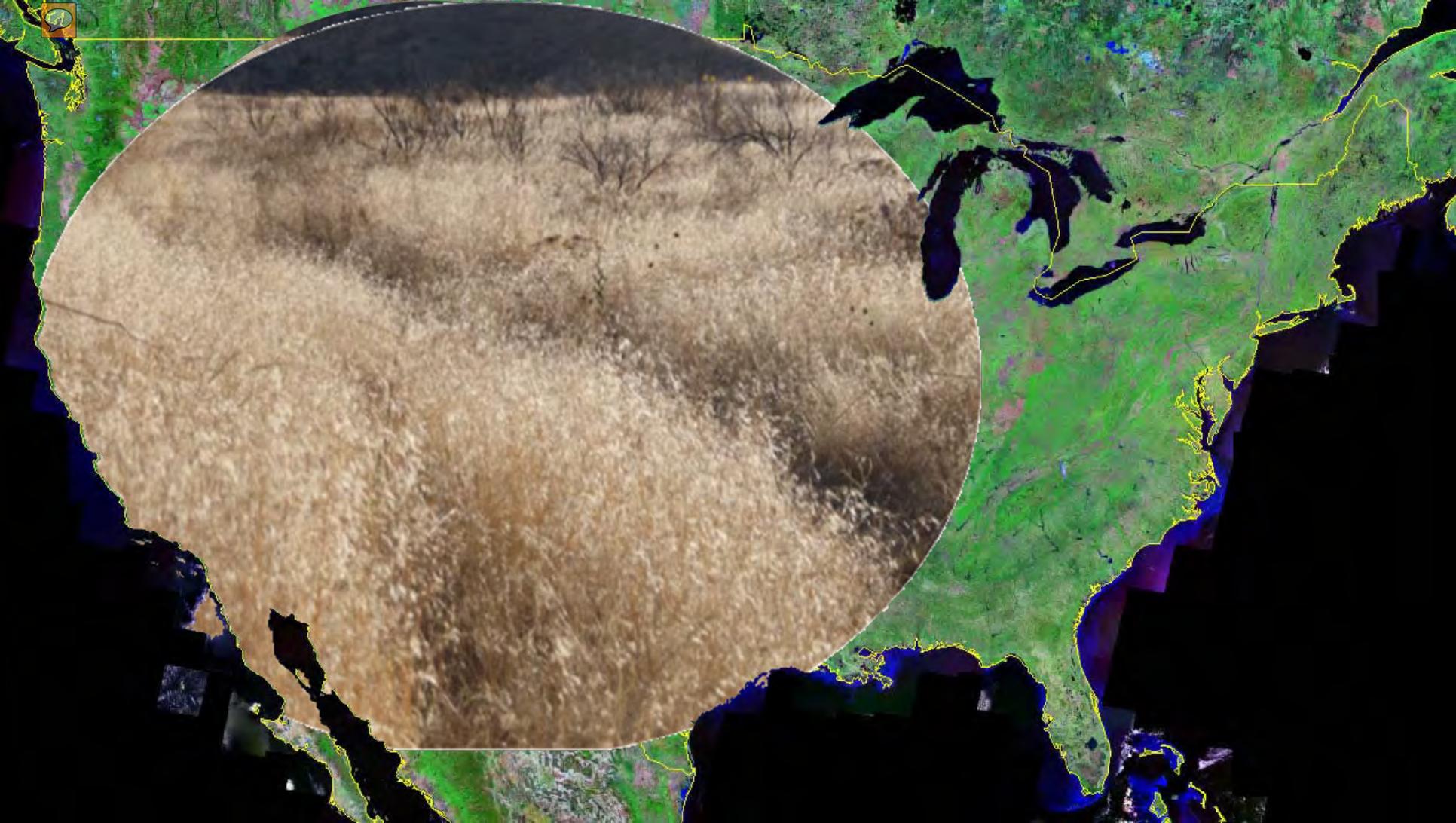
1. *background and rationale*
2. *how to use ebipm*
3. *working examples*



# The compelling issue of invasive annual grasses



*a storm has been brewing*





*weigh expected benefits against expected costs*





The  
LEGEND  
OF THE  
LONE RANGER



*the EBIPM concept*



# cause or symptom?



Poison Ivy



Cold virus



Ecological processes

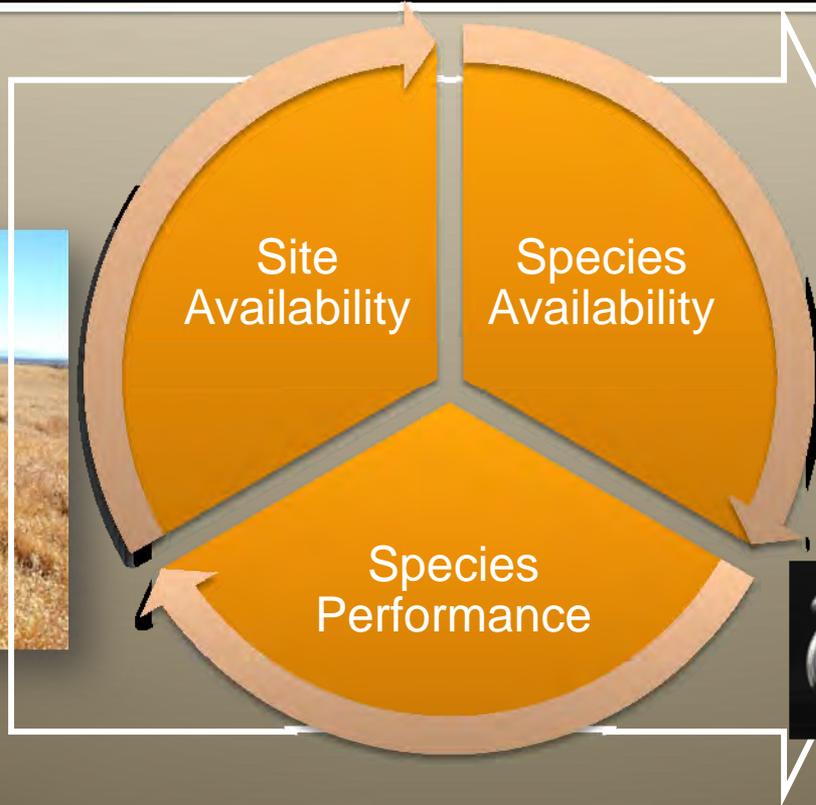


# Malheur wildlife refuge

*ecological causes*



# underlying basis for EBIPM





# Processes affecting site availability



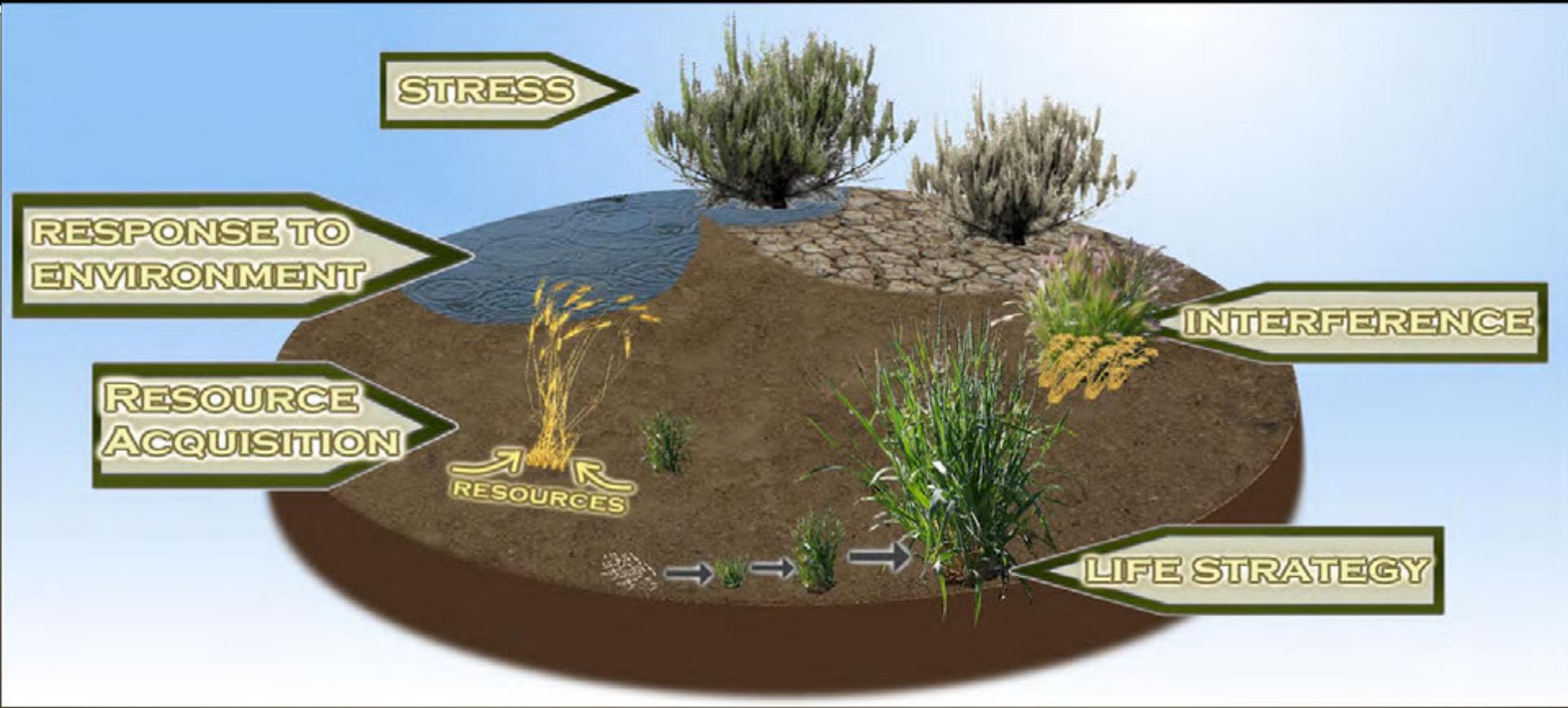
# Processes affecting species availability

- DISPERSAL
- REPRODUCTION



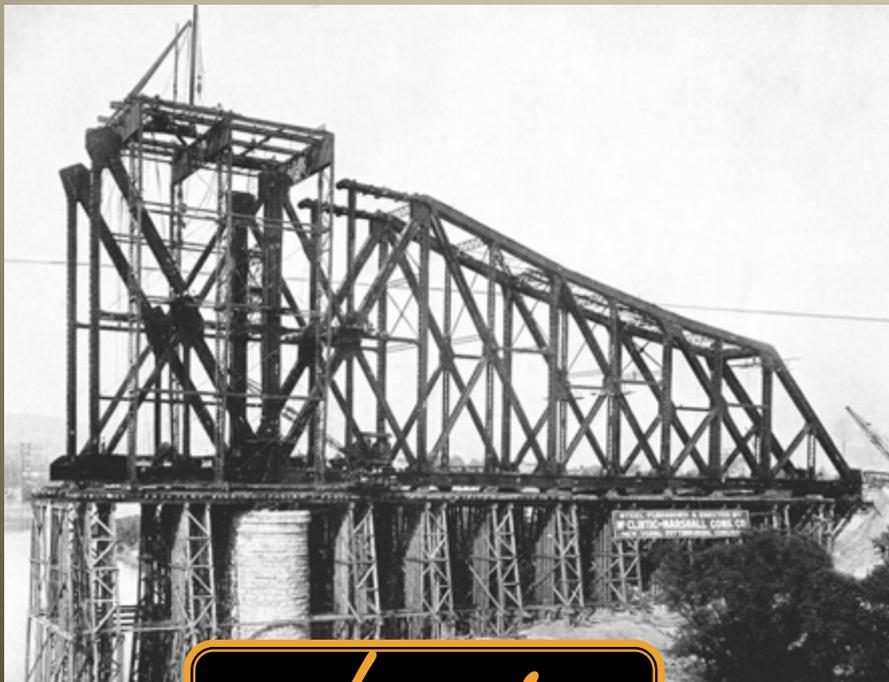


# Processes affecting species performance





# Principles = desired outcomes



*physics*



*ecology*



# step by step



**Step 1:**  
**Complete Rangeland Health Assessment**

**Step 2:**  
**Identify Cause of Invasion and Associated Problems that do not Function**

**Step 3:**  
**Use Principles to Guide Decision Making**

**Step 4:**  
**Choose Appropriate Tools and Strategies Based on Principles**

**Step 5:**  
**Set Up a Plan and Know Whether it's Working**



*for example...*

**Step 1:**  
**Complete Rangeland**  
**Health Assessment**





*for example...*

**Step 2:**  
**Identify Cause of Invasion**  
**and Associated Processes**  
**Not Functioning**

**Causes of Plant  
Community  
Change**

**Site  
Availability**

**Species  
Availability**

**Species  
Performance**

**Processes  
Affecting  
Change**

**Disturbance:**  
created by  
voles

**Reproduction:**  
insufficient  
propagules

**Resource  
Acquisition:**  
limited by dry soils



*for example...*

**Step 3:**

**Use Principles to Guide  
Decision Making**

## **Principles of Ecology**

**Lower disturbance  
frequency favors  
desired species**

**Seed desired species  
to shift plant  
community**

**Successfully manage  
initial establishment  
of desired species**



*for example...*

**Step 4:**

**Choose Appropriate  
Tools and Strategies  
Based on Principles**

## **Tools & Strategies**

**Disturbance  
created  
naturally**

**Seeded with  
desirable species**

**Drill seed and  
provide temporary  
irrigation**



*for example...*

**Step 5:**

**Set Up a Plan and**  
**Know Whether**  
**It's Working**

**Integrated  
Planning and  
actions to be  
taken**

**Adaptive  
Management  
Applied**



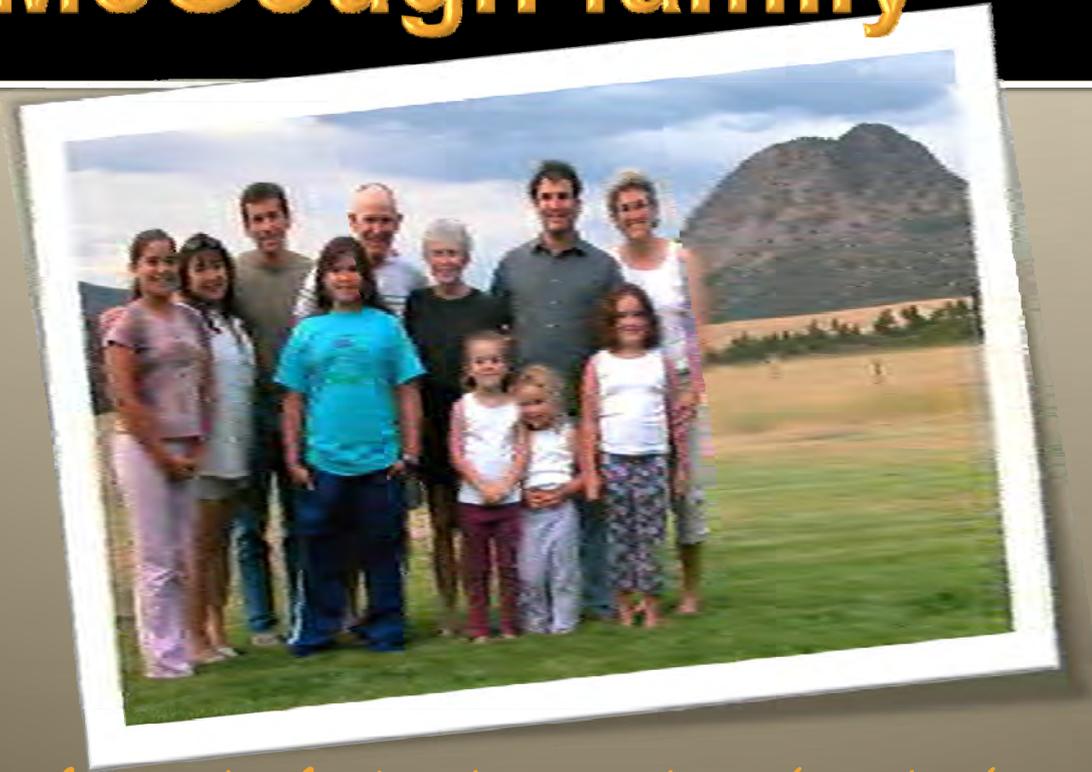
# EBIPM on a ranch scale



Mitchell, OR



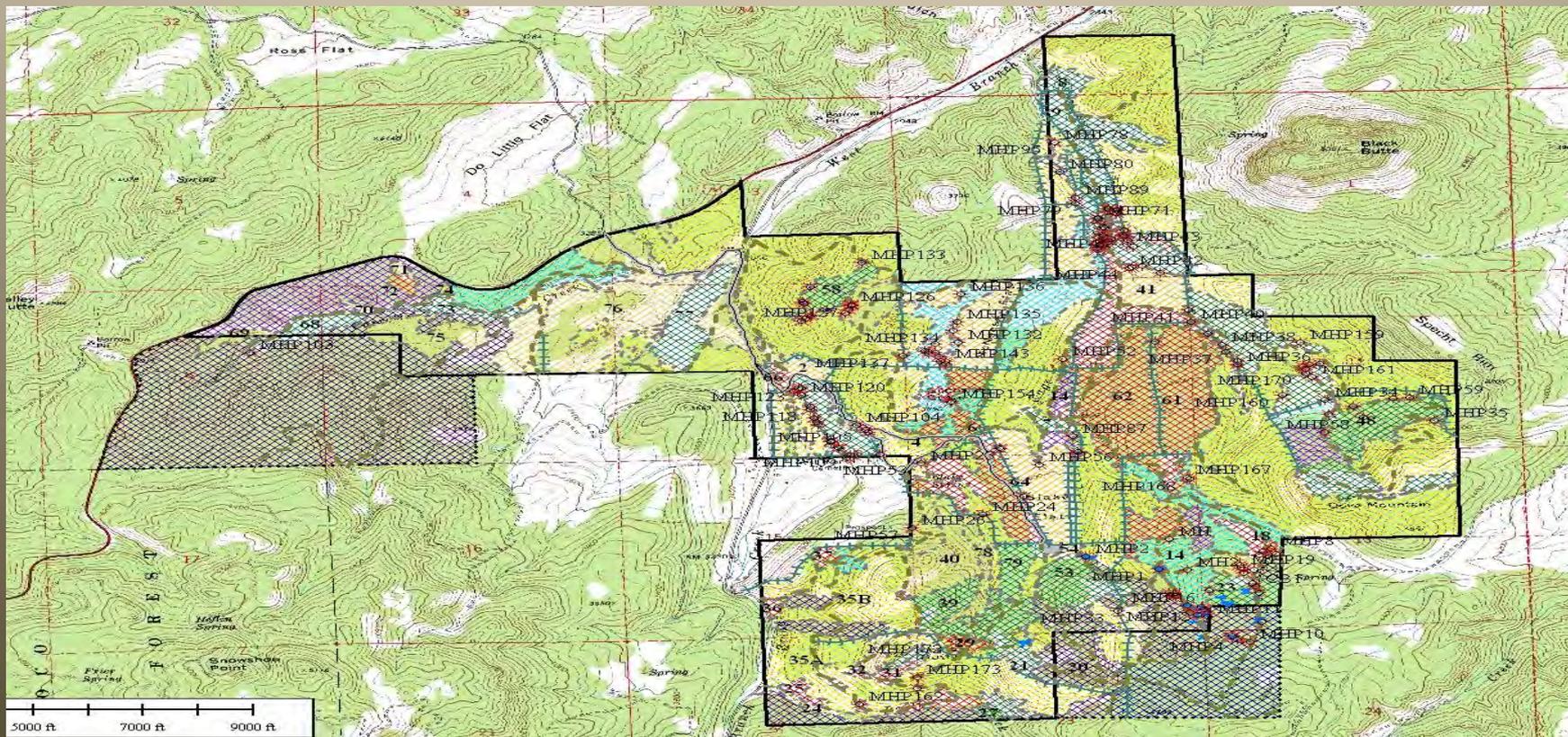
# The McGough family



*"...we want to leave the land in better shape for the future generations..."*



# getting started





# Processes in Disrepair

Site  
Availability:

- Historical disturbances

Species  
Availability:

- Heavy seed production and dispersal of medusahead

Species  
Performance:

- Few remaining desired species

- Poor competition of desired species

- Remaining desired species stressed – limited moisture, grazing pressures

# Ecological Principles

Disturbance



Desired species favored by less intense disturbances

Seed Dispersal & Production



Prevent dispersal & decrease seed production to shift to desirable plants



Stress



Stress medusahead to favor desired species

Herbicide Treatments

# herbicide treatments

- Imazapic for selectivity at 6-8 oz/acre
- Summer through fall, keeps seed production down, limits dispersal
- Sites marked for seeding in the fall



# Ecological Principles

Disturbance



Desired species favored with less intense disturbance

Seed Dispersal & Production



- Match desired species seed numbers with available safe sites
- Early arrival of desired species can increase establishment

Life Strategy Interference



- Plant species with diverse growth patterns
- Plant species with similar traits for greater competition



Seeding Treatments



# restoration

- No till drill minimize disturbances
- 2009 Seed mix to increase competition/ diverse growth patterns:
- Hycrest wheatgrass, Bluebunch wheatgrass, Intermediate wheatgrass, Ladac Alfalfa Sherman big bluegrass, Various forbs
- 15 lbs-30 lbs/ acre
- Seeded again & split seedings between fall and spring



# Ecological Principles

Disturbance



Desired species favored by infrequent disturbances

Seed Dispersal & Production



- Control seed production of medusahead
- Don't damage desired species to enhance seed production

Stress



Apply stress to medusahead  
Remove stress for desired species

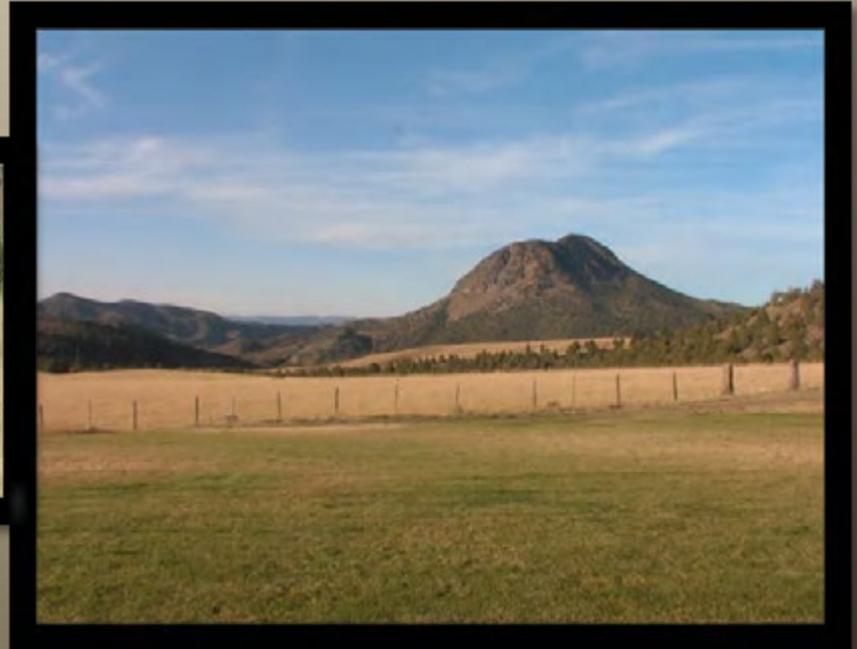


Grazing Treatment



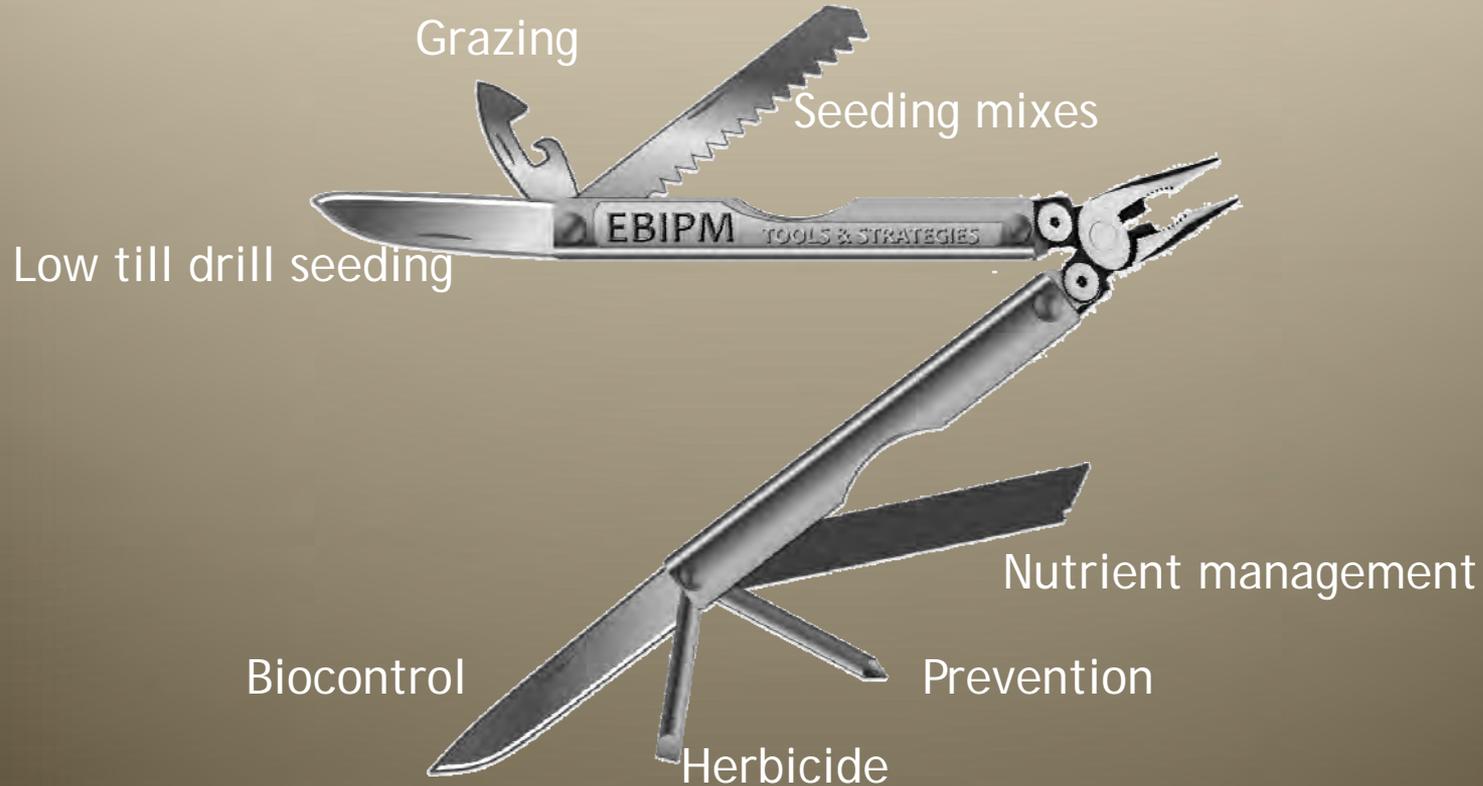
# grazing treatments

## Early & Intensive





# a link to Tools & Strategies





Or?

*what will be here when we are gone?*

*take home message*

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*Intermountain Native Plant Summit*  
*Boise, ID*



*take home message*

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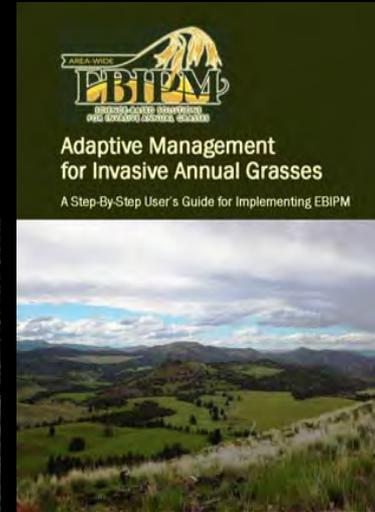
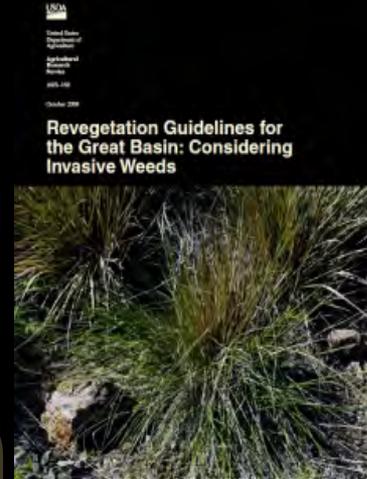
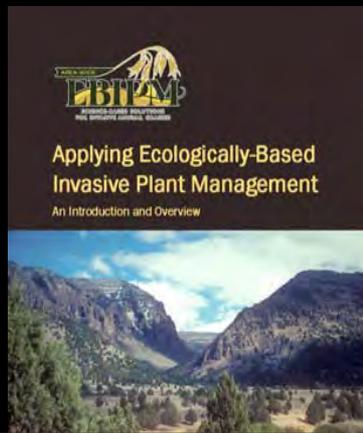
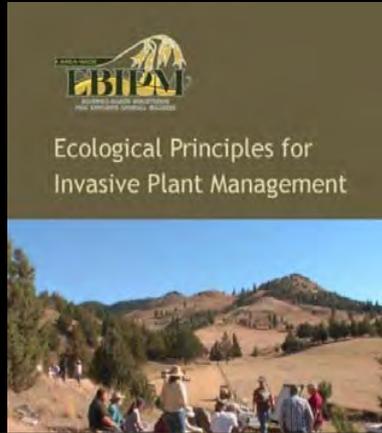
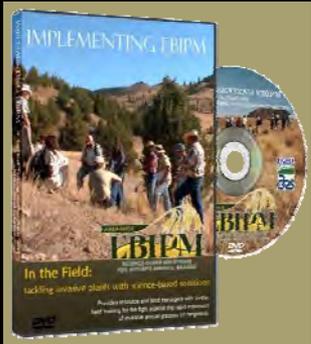
*Managing processes is central to  
EBIPM:*



*And by using ecological  
principles to guide decision-  
making for holistic planning  
we have the opportunity to  
improve the land for the long  
term*

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[www.ebipm.org](http://www.ebipm.org)

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