

# Utilizing Grazing as a Control Tool

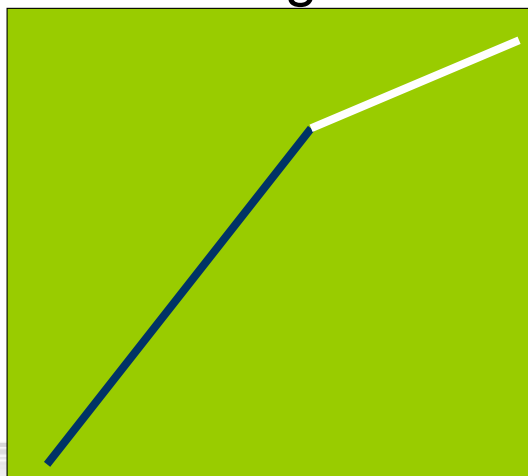
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Idaho Weed Conference  
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How many of you have  
experience with noxious weed  
grazing project?

1. Yes, manage a project
2. Very limited
3. None

## The Learning Curve



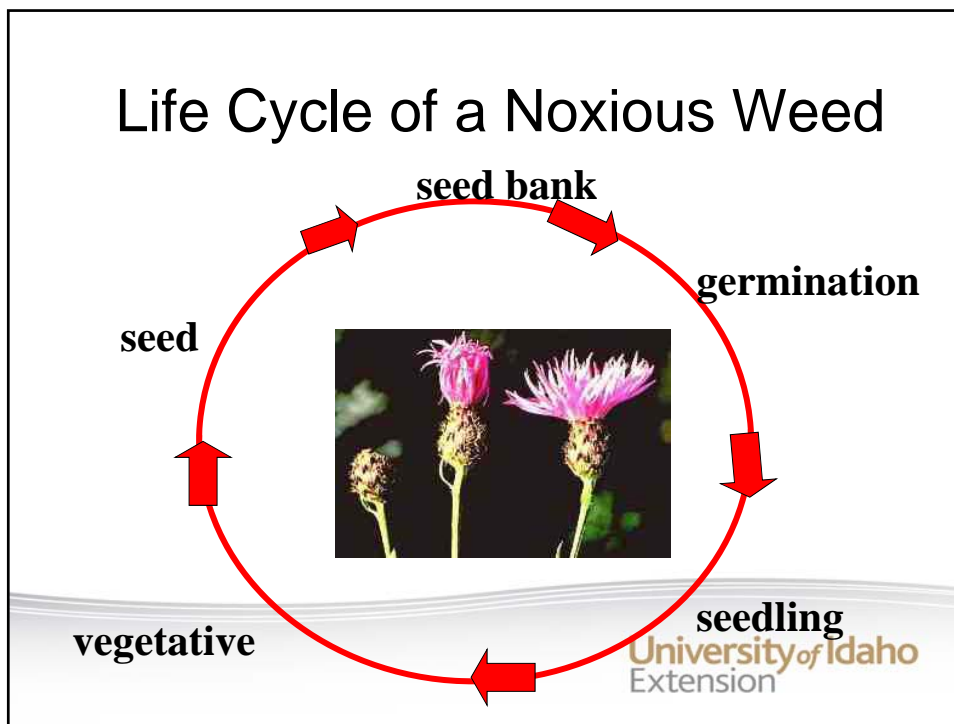
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## Goal for ANY Noxious Weed Control Effort

- Stop seed production
- Stop root reserves from being filled
- Stop any seed spread



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### Grazing by all Names

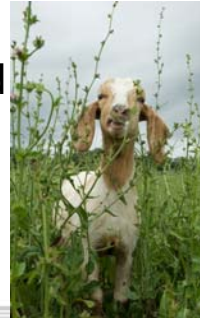
- Prescribed Grazing
- Targeted Grazing
- Prescription Grazing
- Controlled Grazing

**A TOOL FOR WEED MANAGEMENT!**

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## What is the difference?

- **Targeted grazing:** application of a specific kind of livestock at a determined season, duration and intensity to accomplish defined vegetation or landscape goals.



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## What is the difference?

- Refocuses output from livestock production to vegetation and landscape enhancement
- Requires knowledge of vegetation and landscape dynamics
- Requires knowledge of animal husbandry and animal behavior

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## Targeted Grazing

- Effective technique
- “Environmentally friendly”
- Can be integrated



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## Benefits

- More effective than herbicides
- Improved pasture quality
- Less effect on non-target species
- Some natural fertility return
- Reduced pesticide residues
- “environmentally friendly” production systems

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## Benefits

- More sustainable control
- Lower direct costs
- Weeds converted to animal protein
- Gains in live weight of animals



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## Role of Grazing

- Problem Prevention
- Weed Control and Management
- Converting Weeds to Feeds
- Rehabilitation & Restoration



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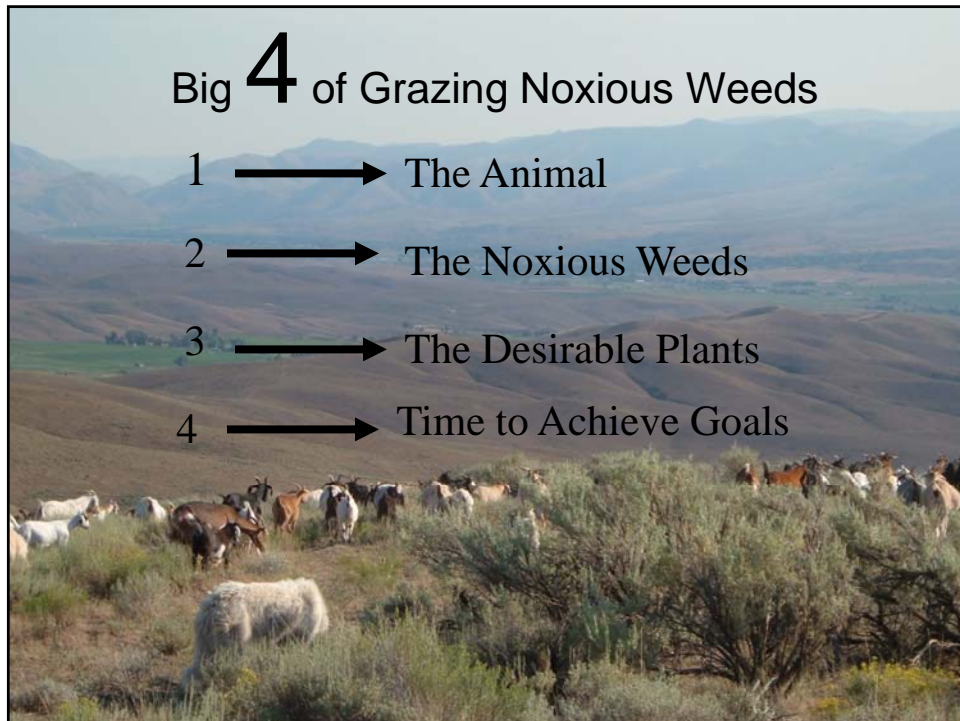
## Livestock Contribute to Weed Invasion

- Poor grazing management
- Transportation vector

Absence of grazing does not protect land from weeds

- Spotted knapweed: 22% viable (sheep & deer)
- Leafy spurge: 40% (sheep); 60% (goats)
  - 0% viability after 5 days
  - No seeds after 9 days

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## Define the Problem

- What weeds are present?
- Are they spreading and how?
- What is their biology?
- Where are the weeds located?
- How many weeds are there?



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## Getting Started

- Based sound land management goals
  - Collaborative and committed
- Takes place in a meeting room
  - Intended use of the land
  - Defines vegetation management objectives
  - Invasive plants to be managed
  - Desirables to be kept
  - Evaluation of progress



## Steps to Developing a Plan

- Solid understanding of plant ecology, animal behavior, plant/animal interactions
- Specific information
  - Season
  - Intensity of defoliation
  - Species, breed, sex, age class of animals
  - Stocking rate



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## How Much Impact Can Be Handled

- Which plants are the desirables?
- What can be sacrificed?
- Percentage loss of desirables
- Recovery time



## Successful Prescription

- Cause significant damage to target
- Limit irreparable damage to desirables
- Consistent with livestock production goals
- Integrated plan
- Plant response does not occur in isolation – complex plant community



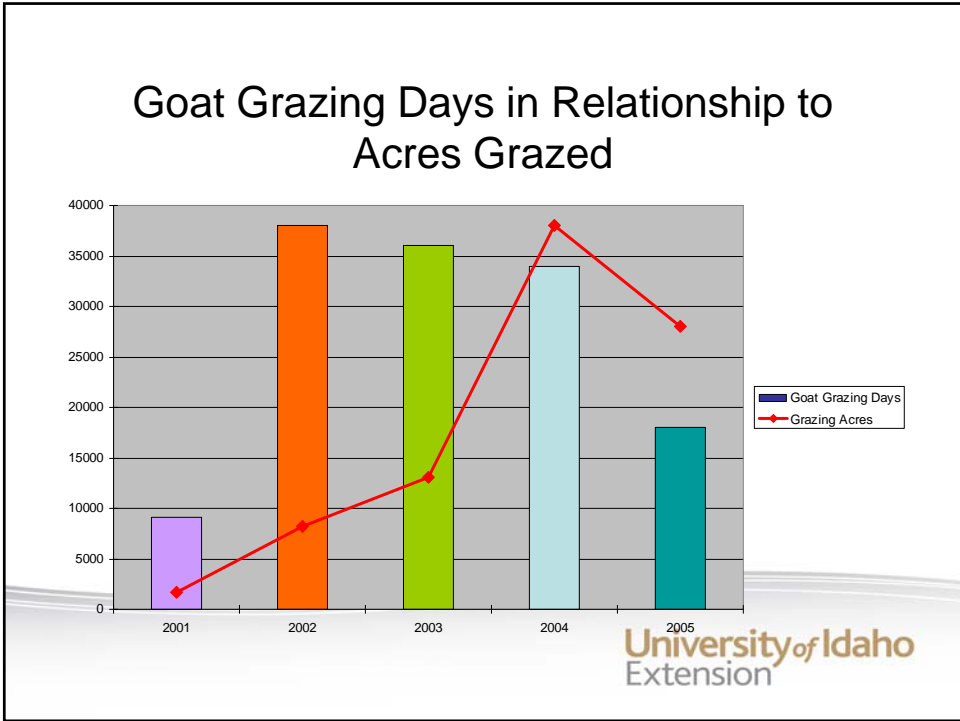
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## Basic Principles

- Patience & commitment
- Effects are slow & cumulative
- Minimum of 3 years



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### Scale of Project

- Acres
- Density
- Weed species

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## Costs Associated

- Capital costs of animals
- Fencing, water provisions & animal care
- Loss of animal condition or live weight
- Reduction in value of animal products
- Damage to non-target species
- Uneven fertility promoting localized weed growth

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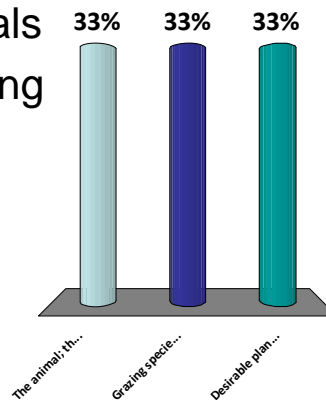
## Costs Associated

- Damage to soil structure
- Damage to forests, native plants, neighbor's property
- Spread of weed seeds in feces, wool, hair, hooves
- Treading damage

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## The big 4 when developing a targeted grazing plan

1. The animal; the noxious weed; the desirable plants; time to achieve goals
2. Grazing species; monitoring plan; plants; funding
3. Desirable plants; noxious weeds; time; fence lines



## Selecting the Right Animal



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## Animal section

- All herbivores are not created equal
  - Digestion
  - Ability to cope with toxins
  - Nutritional requirements
- 3 groups
  - Grazers
  - Browsers
  - Intermediate feeders



"Just exactly how committed are you to the whole 'herbivore' thing?"

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## Grazers

- Cattle and horses
- Primarily consume grass
- Large quantities
- Large muzzle and mouth



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## Intermediate Feeders

- Sheep
- Narrow muzzle
- Large rumen
- Tolerate substantial fiber content
- Utilize specific plant parts
- Forbs and grasses



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## Browsers

- Goats
- Narrow, strong mouth
- Dexterous tongue
- High crude protein, low digestibility
- Large liver – higher tolerance to toxins



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## Cattle and horses are considered

1. Intermediate feeders
- ② Grazers
3. browsers

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## Animal Age

- Younger animals – high nutrient content
  - More willing to try new forages
- Producing females – high nutritional requirements
- Older males – more pounds of feed
  - Tolerate lower quality

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## Other Animal Differences to Consider

- Select different plants & plant parts
- Grazing patterns are different
- Grazing abilities are different

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## The Animal

Plant	Horse	Cattle	Sheep	Goat
Grass	90%	70%	60%	20%
Weeds	4%	20%	30%	20%
Browse	6%	10%	10%	60%

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## Livestock Behavior

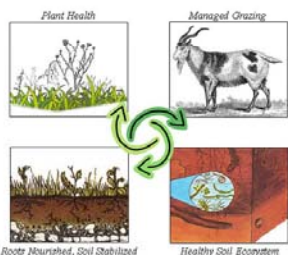
- Why won't they eat it????!!!!!!!
  - No experience with the plant
  - Plant is defended physically
  - Low in digestibility or nutrients
- Overcoming challenges
  - Experienced lead animals
  - High stock densities
  - Supplemental feeds
  - Training



## Grazing Animals

- Ability to move and control animals
- Use all classes of animals
- Integrated with other control measures

Managed Grazing and Nutrient Cycling



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## Grazing animals

- Primarily food or fiber
  - Weed control – 2<sup>nd</sup> concern
- Weed control – 1<sup>st</sup> concern
  - Some sacrifice of animal production



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## Management of Animals



- Pen or pasture
  - Allows animal to be selective
  - Lower or higher impact on desirables

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## Management of Animals

- Herding
  - Large herds
  - On foot or horseback
  - Animals can be very selective
  - Have animals in specific area
  - Low impact on desirables



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## The Plants

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## Goal of grazing a weed

- Manipulate pattern of defoliation to place a target plant at competitive disadvantage relative to other plants in the community
  - Graze at time and frequency when weed is most vulnerable
  - Modify animal behavior to concentrate grazing efforts

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## How Grazing Works

- Early spring: remove new growth
  - Limiting photosynthesis
  - Long period – plant may die
- Late spring: prevent flowering and seed set
- Growing season: stress plant and desirables outcompete
- Fall: disrupt flow of nutrients

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## Season & Intensity

- Weed is palatable
- Weed is susceptible
- Desirables high tolerance to grazing
- Considerations
  - Time to re-grow
  - Seed dispersal



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## Plant Response Grazing

- Every plant species is different
- Most plants are not killed in a single grazing



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## Plant Defenses

- Toxic compounds
  - Tannins, terpenes, alkaloids, oxalates, glycosides
- Low palatability



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## Plants Ability to Re-grow

- Heavy grazing – reduces root growth
  - Plants ability to compete for water and nutrients
- Actively growing plant – 50% to 60%
  - Immediately curtail root growth

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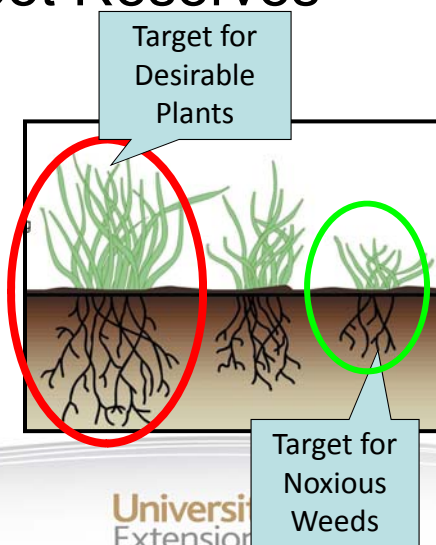
## Plants Ability to Re-grow

- Establish leaves & renew photosynthesis
- Viable meristems or buds
  - Remove apical meristem: highly damaging
    - Causes regrowth to come from axillary buds – SLOW!!! And lots of water and nutrients
- Grasses: base of the plant
  - Tolerant of grazing
- Forbs and Shrubs: tip of branches

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## Empty Root Reserves

- Graze weeds backwards of good pasture management
- Similar to emptying the refrigerator and not going to the store



## Monitoring

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## Management Goals

- Clearly describe desired end point
  - Reasonable expectations
  - Capability of land
- Written in terms of conditions and activities to be measured
- List time frame for expected results

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## Who should monitor?

- Land manager
- Service provider
- Third party consultant



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## What to measure?

- *“What would make me change my decision?”*
- Relevant to the goals of project or enterprise
- *Measurements only become information when their meaning is understood.”*
- Precipitation data

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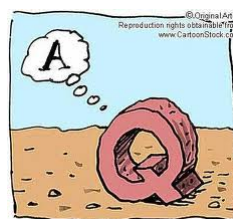
## Common Measurements

- Livestock performance or weight gain
- Consumption of vegetation
  - Utilization: amount consumed
  - Residue: amount remaining
- Changes in vegetation structure
  - Type, size, amount of plant
  - Density: annual or biennial weeds

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## Monitoring needs to

1. Reflect the goals of the project
2. Be measurable
3. Have a time frame
4. Be concisely written
5. All the above



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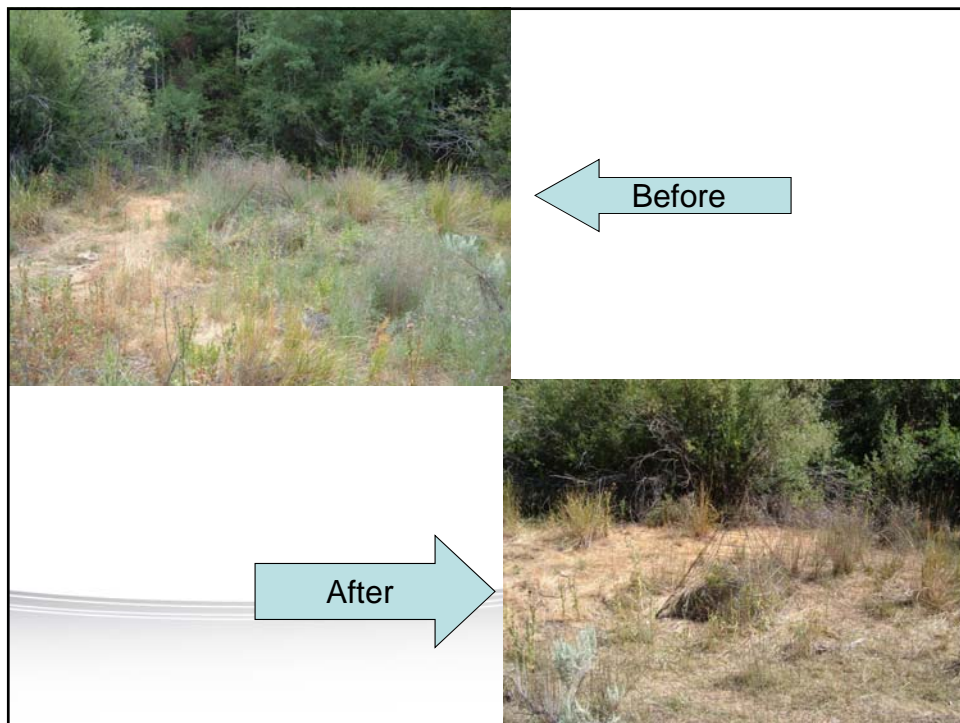
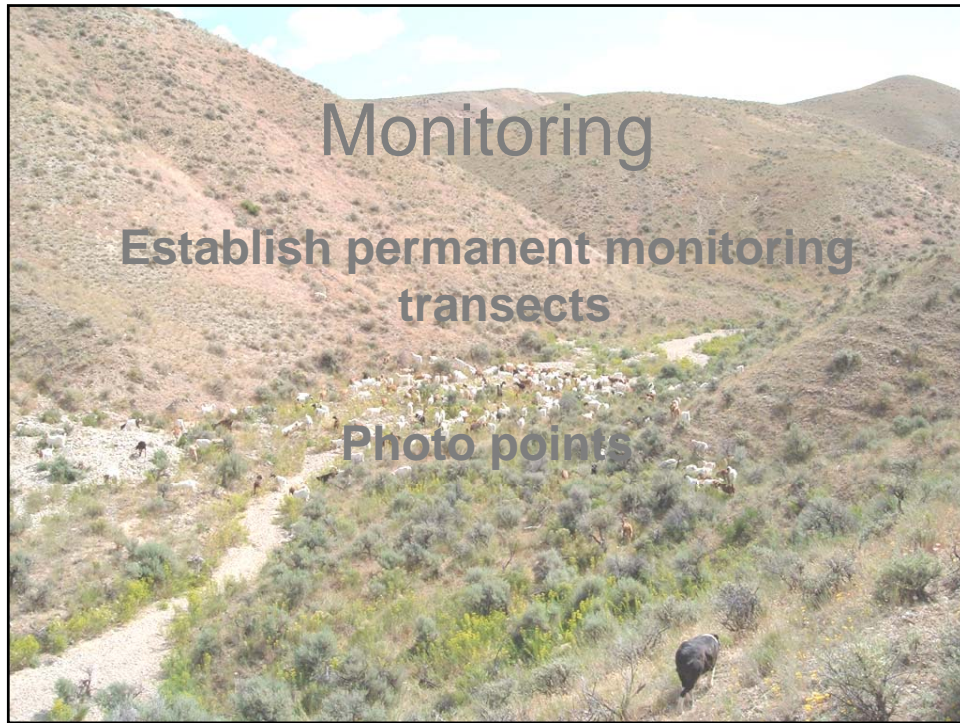
## Commonly measured plant characteristics

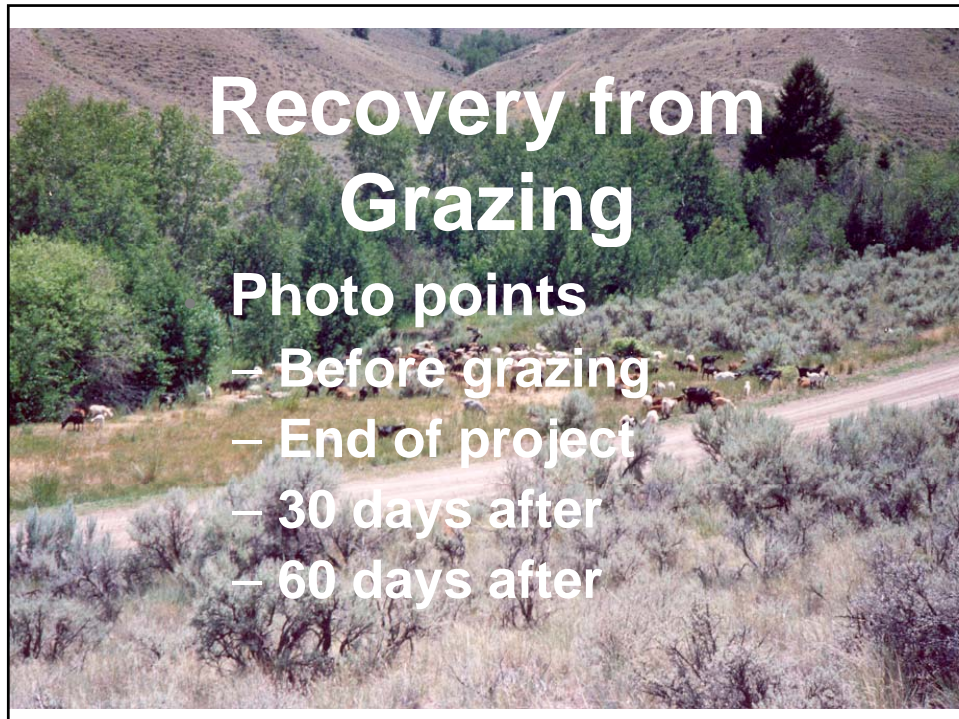
Plant Type	Characteristic to Measure
Grasses	Canopy cover, basal area, plant height, biomass, or utilization
Forbs	Canopy cover, density or plant height
Shrubs	Canopy cover, density or plant height
Canada thistle	Rosette or stem density
Knapweeds	Rosette or flower density
Leafy spurge	stem density, canopy cover, or biomass
Downy brome	Plant density or biomass

## Where to Monitor

- Most important decision!
- Selecting site or species to be monitored
- Criteria: represent a larger vegetation type or management unit
  - Special interest relative to goals
  - Sensitive to change

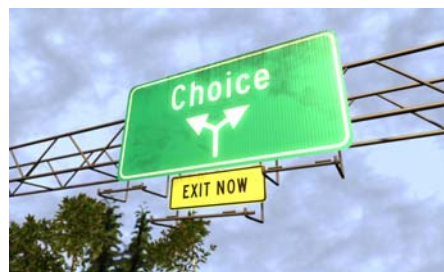






## Type of monitoring

1. Transects
2. Photo points
3. A & b



## Broadleaf Weeds

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### Why have broadleaf weeds on range

- Imbalance of plant community
- Selective grazing pattern of dominate livestock
- Multiple use activities
- Limited soil, water and nutrients

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## Grazing strategy

- Careful attention
- Alternate season so don't have graze desirables same time each year
- Involves SEVERAL consecutive years
- Fewer animals or less frequent for maintenance

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## Nutritional Value

	% Protein			
	Rosette	Bolting	Flowering	Seedset
Dalmatian Toadflax	12-18	9-12	5-7	5-7
Hawkweed	13-14	9-10	4-7	4-6
Houndstongue	26-29	13-16	8-10	6-9
Rush Skeletonweed	22-25	13-16	8-9	7-8
Spotted Knapweed	10-16	10-14	7-8	3-5
Sulfur Cinquefoil	14-16	9-11	6-7	4-5
Tansy Ragwort	15-16	12-14	8-9	
Whitetop	27-30	27-30	18-20	
Yellowstar Thistle	14-17	11-14	4-6	4-6

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## Grazing Forbs

- Most susceptible at bolting stage
- Time when water & nutrients are limiting
- Removal of flowerhead
- New shoots at base- but won't flower



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## Annual Grasses

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## Annual Grasses

- Limit seedstalk production
- Boot stage

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## Animal Selection

- Sheep
- Goats
- Cattle
- Horses
- Hungry livestock are less selective



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## Meeting objectives

- Identify best time to graze
- Repeated grazing during spring
  - Cheatgrass – 2 or 3 grazings every 3 to 4 weeks
  - Crash after no seed set for 2 or more years

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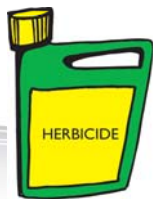
## Monoculture vs Mixed Stands

- Monoculture – easy
- Mixed stands:
  - Carefully observe what livestock are consuming
  - Cool season can handle defoliation in spring down to 3 inches
    - Just not 2 years in a row
  - Timing is critical

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## Integrating Grazing

- Utilize with prescribed fire, herbicides, mechanical treatments
- Apply the spring after fire
- Apply before reseeding



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## Public Relations ☺



# Educate



# Educate



# Educate



**The Public**

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# Educate



**The Kids** University of Idaho  
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# Ways to Educate

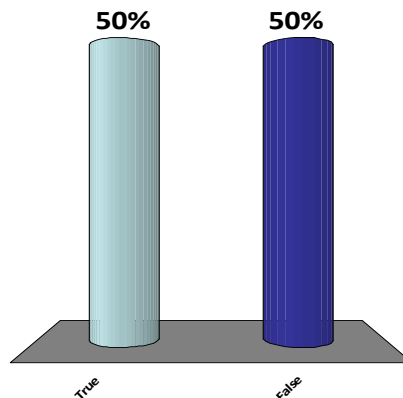
- News Releases
- Field Days
- Cattlemen's Winter School
- Web sites
- Television
- Radio
- Signs



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Education is not an important part of targeted grazing.

- 1. True
- ☺ False





## Visitor to the Home Place

## Wildlife Issues

- Big Horn Sheep
- Tailor it to the project
- Bring Fish and Game and other wildlife biologist on board from very first



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## Recap

- Grazing is a viable noxious weed control tool
- Beginning begins in a meeting room
- Big 4:
  - Grazing animal
  - Noxious weed
  - Desirable plants
  - Time to achieve goals

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## Recap

- Develop a monitoring plan
- Educate everyone
- Develop a risk management plan

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