

Drought and Range Management on Alberta Rangelands

Improving Drought Resilience – Forest
to Valley Bottom

Montana, March 15, 2017

Alberta's Rangelands

- Rangeland is land supporting indigenous or introduced vegetation that is either grazed or has the potential to be grazed and is managed as a natural ecosystem.
 - Includes grassland, grazeable forestland, shrubland, pastureland, and riparian areas
- Much of Alberta's rangelands developed under a historic disturbance regime dominated by bison grazing and fire.



Drought

- **Drought is a normal part of the climate fluctuation cycle**
- **Affects all rangelands**
 - **Forests, parkland, native grasslands, tame pastures and riparian areas**
- **Occurs when precipitation is well below normal and low moisture conditions are sustained over a period of time**

Drought – Negative Impacts

- Lower forage production – impacts on wildlife habitat
- Reduced litter
- Water quality and quantity decreases
- Soil type – drought effects may be more pronounced on sandy vs. loamy or clay soils



Grazing During a Drought

- **Grazing removes plant cover and litter**
 - **Further increases drying effect and worsens drought conditions**
- **Individual plants in a weakened state may die**
- **Weeds will take advantage of reduced competition and spread**

Long-Term Effects of Overgrazing During Drought

- Range may experience long term loss of plant cover, productivity, and litter
- Plant species composition may shift and degrade
- Water supplies take longer to replenish
- Effects may be felt over a longer time frame
- Risk increases for more frequent or severe drought over time

Drought Impacts on Range

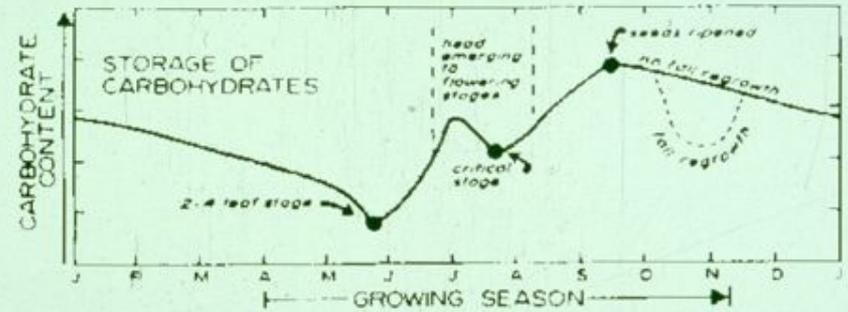


Cumulative and Long-term

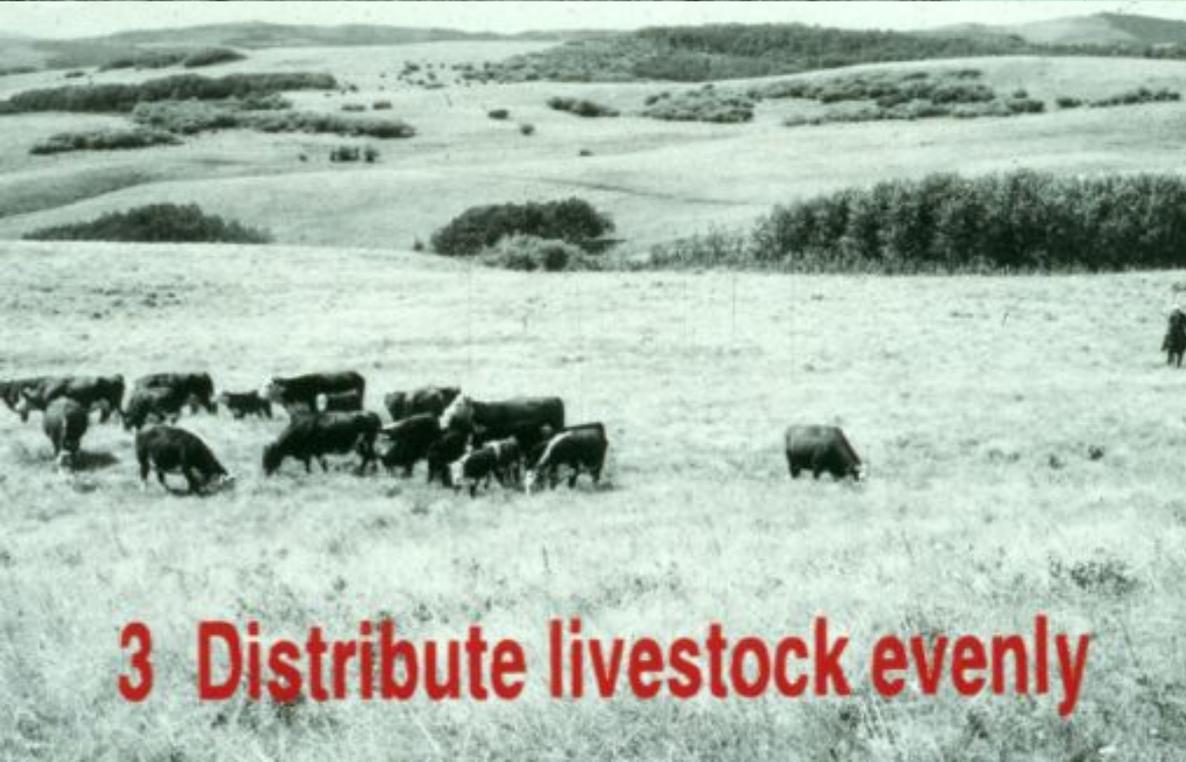


1 Balance livestock needs with the forage supply

2. Avoid grazing during vulnerable periods



4 Provide effective rest after grazing.



3 Distribute livestock evenly



Stocking Rates and Carryover

- Proper use levels are site specific
- Ecologically Sustainable Stocking Rates are the first step
 - *Take half - leave half* or 50% use is generally too heavy in most native grassland and forest plant communities

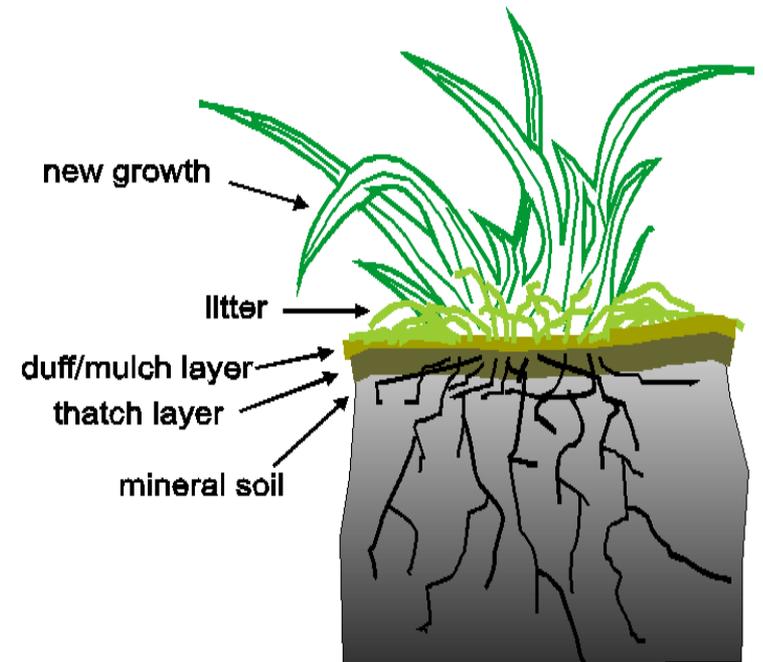
Management Priorities During Drought

- **Minimize impact to the range**
- **Maintain livestock performance**
- **Stay in business**



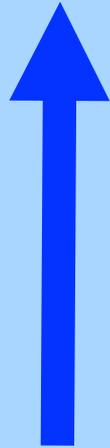
Litter - The Best Insurance Policy

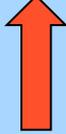
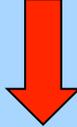
- **Functions of Litter**
 - **cools soil surface**
 - **enhances water infiltration**
 - **retains scarce moisture**



Litter conserves soil water and increases production

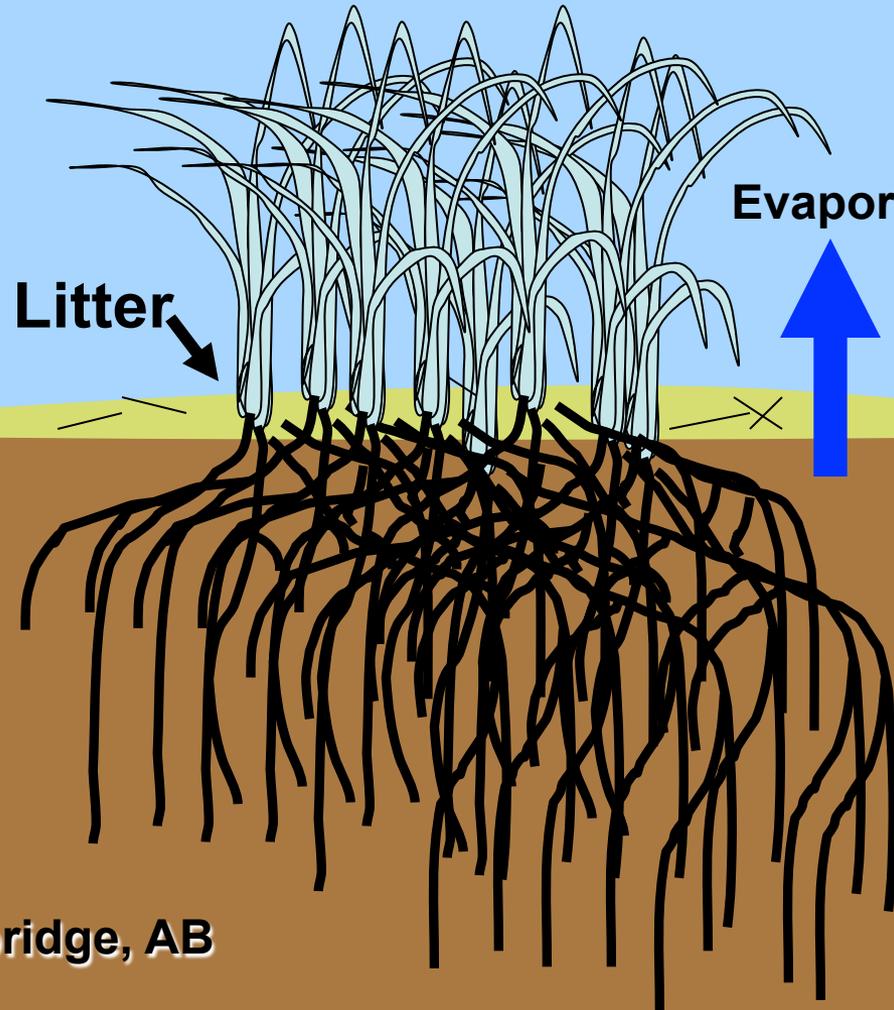
Evaporation



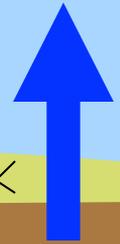
- Increased soil temperature 
- Reduced moisture retention 



Litter



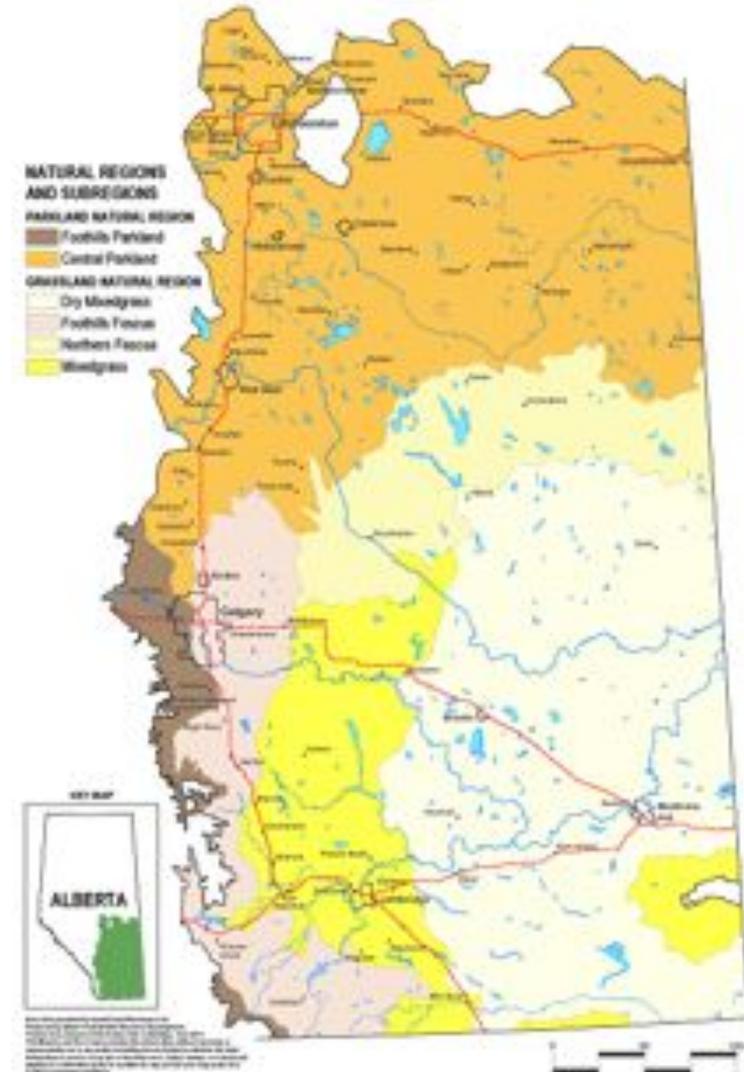
Evaporation



Source: W. Willms, AAFC, Lethbridge, AB

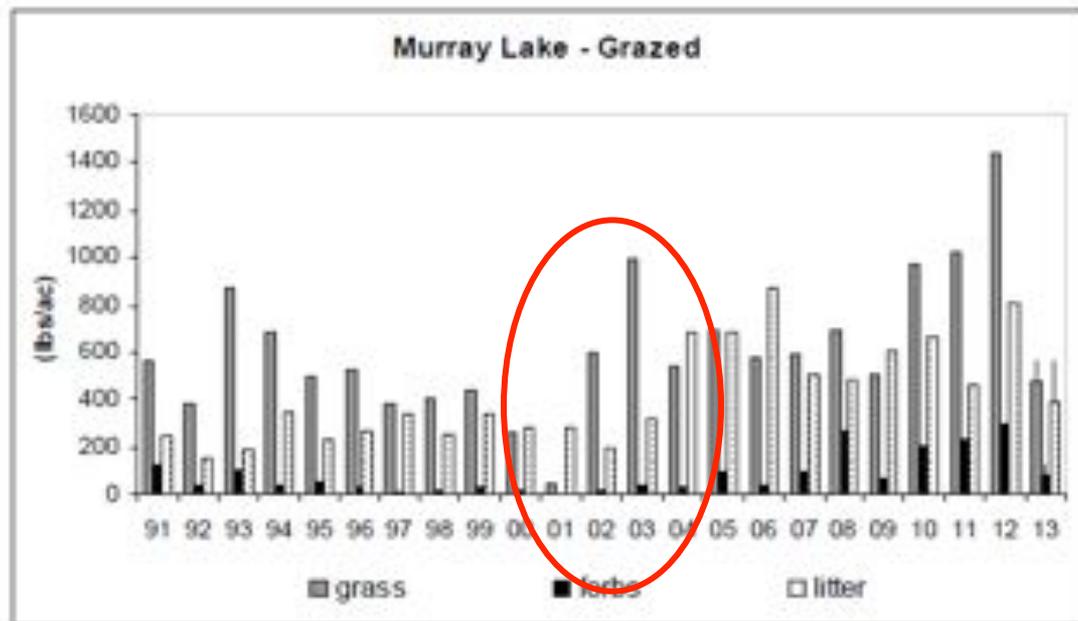
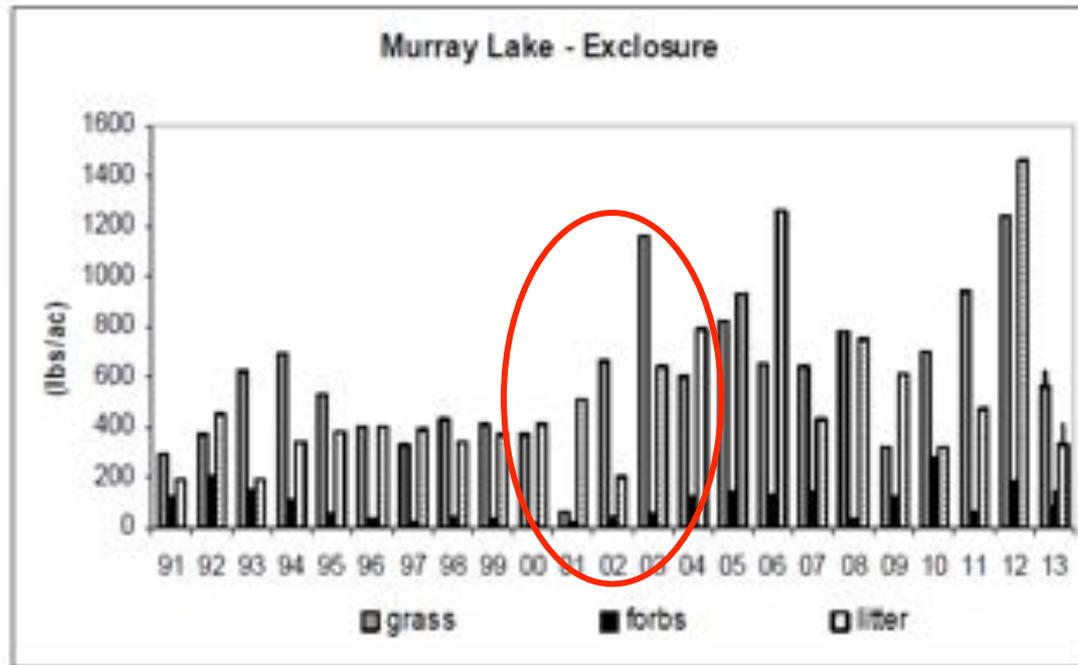
The Importance of Litter – Alberta Studies

- **Dry Mixedgrass (Onefour Studies)**
 - Reduction of **40-60%** of production
 - Repeated defoliations promote drought tolerant/less productive species
- **Mixed Grass (ADRI Studies)**
 - Litter had significant positive impacts in dry years
 - Less impact in moderate moisture years
- **Foothills Fescue (Stavelly Studies)**
 - Little response



Litter – The Best Insurance Policy

- If litter levels are low when drought occurs
 - Production will **decrease**
 - Recovery period will **increase**
- If litter levels are allowed to increase through reduced grazing or periods of rest
 - Production will increase
 - Recovery period will decrease



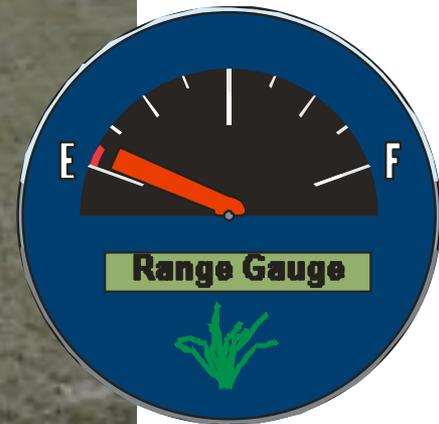
Drought Preparation

- **Minimizing the effects of drought to begins with a sound range management plan**
- **Effective range management before and during drought will have an impact on long-term grazing opportunities**
- **Range health assessment can be a useful tool to evaluate preparedness for drought as well as range recovery after drought**

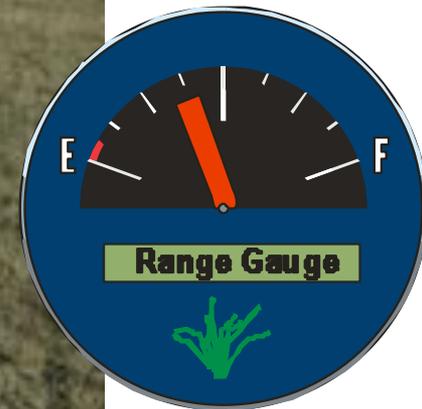
Drought Management in Alberta

- **“the best time to prepare for drought is after the current drought”**
- **Conservative allocation and management of native rangelands helps mitigate effects of drought and speed recovery**
- **Delayed entry or early removal in drought years will protect the range and speed recovery**
- **We educate producers on managing through drought and recovery from drought**

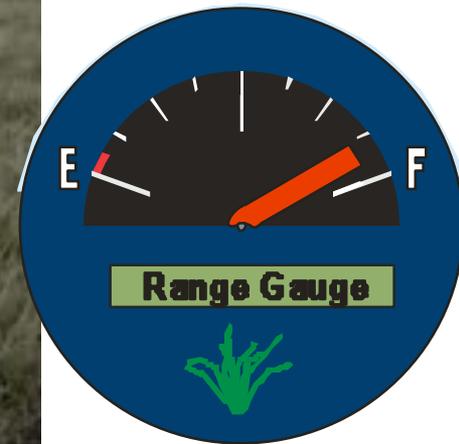
Running on EMPTY



Running on the **BOTTOM HALF**

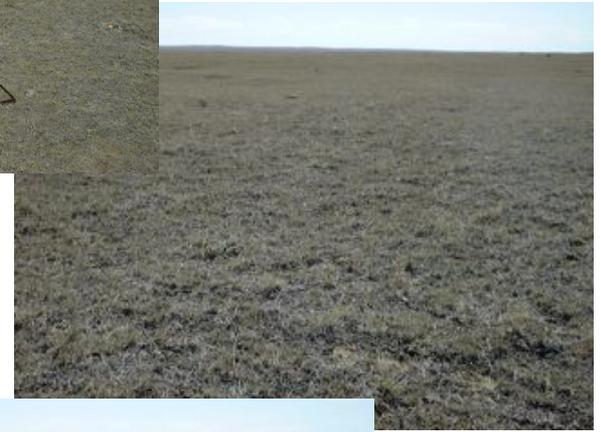


Running on the TOP HALF



Will you be ready for next drought?





Short recovery period

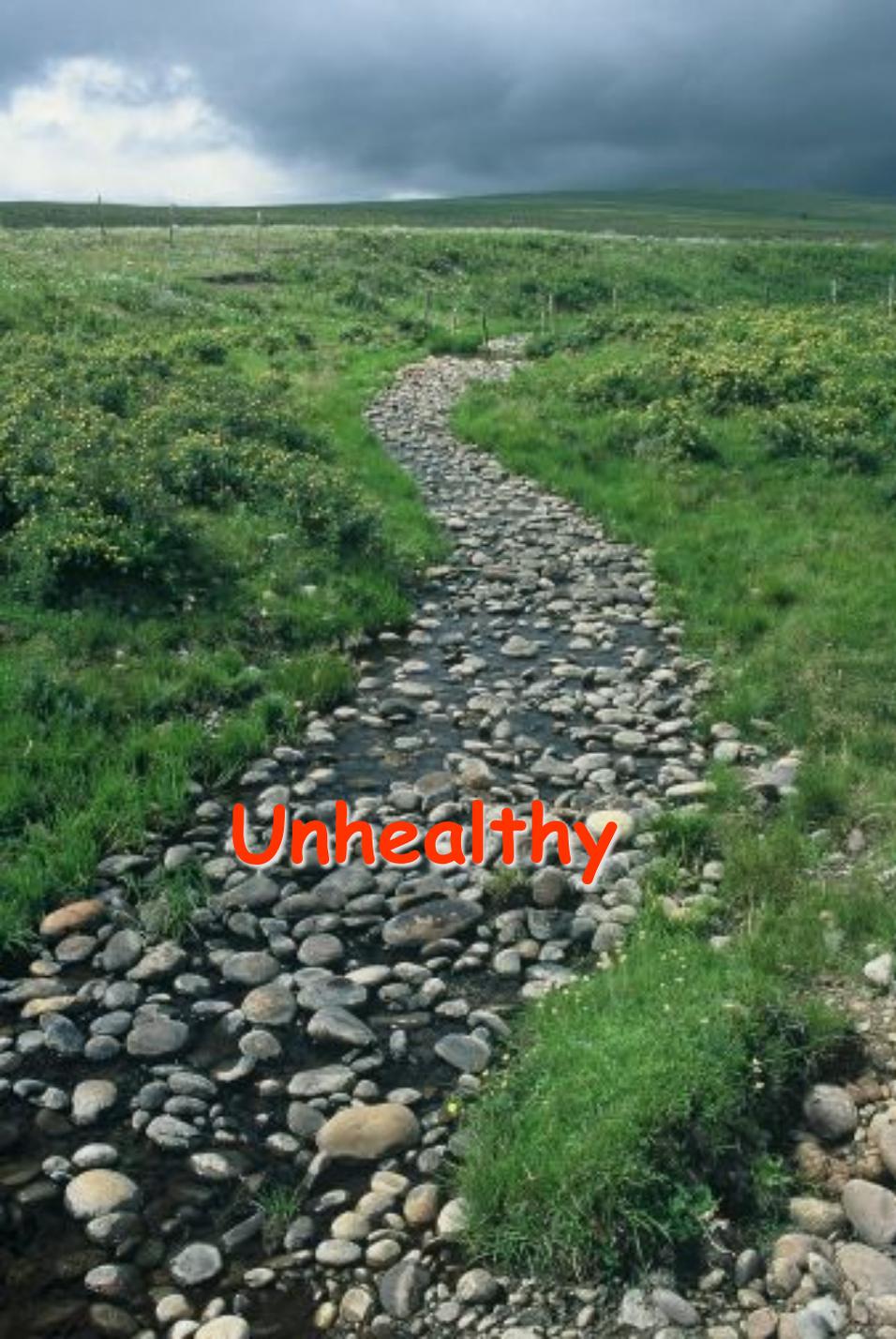
Long recovery period

Additional Management Strategies

- **Evaluate and adjust herd composition and numbers so stocking rates match forage production**
- **Secure sources of supplemental feed – additional pasture, hay, or failed crops**
- **Where appropriate seed a drought tolerant, quick growing cereal such as fall rye for emergency grazing**
- **Provide rest or defer grazing on lands in an unhealthy condition**
- **Use herding, fencing, salt placement, and water sources to improve distribution to prevent overgrazing in certain areas**

Riparian Areas

- **Provide forage and water resources during drought**
- **Preferred grazing areas**
 - **Need to be carefully managed to prevent overgrazing, maintain native cover, prevent trampling, soil erosion, and conserve water quality**
- **Offsite watering or point access watering can help mitigate impacts**



Unhealthy



Healthy

Summary

- **Drought is a normal occurrence**
- **Integrate drought planning into operational decision making and develop management plans to reduce the negative impacts of drought**
- **Proper stocking rates, healthy plants, and sufficient carryover/litter can all mitigate the impacts of drought**

