

---

# The Art and Science of Targeted Grazing

---

USING SHEEP AND GOATS TO CONTROL RANGELAND AND  
AGRICULTURAL WEEDS

PRESENTED BY:

DAN MACON AND ANDRÉE SOARES



# Overview

---

The Science: understanding plant growth and animal behavior

The Art: using targeted grazing to control weeds

Monitoring  
Case Studies





# The science...

## Grazing behavior and animal impacts

- ❖ Select the right species for the weed!
  - ❖ Goats and sheep have different, but overlapping, forage preferences
  - ❖ Cattle may be more appropriate in some settings
  - ❖ Not all animals are equal – animals should have experience with targeted weeds
- ❖ Manage all 3 animal impacts
  - ❖ Grazing (consumption)
  - ❖ Trampling (facilitates carbon breakdown)
  - ❖ Deposition of urine and excrement (targeted nutrient deposition)





# The science...



Using BEHAVE principles helps train our vegetation management specialists (aka the animals) – early exposure is critical!

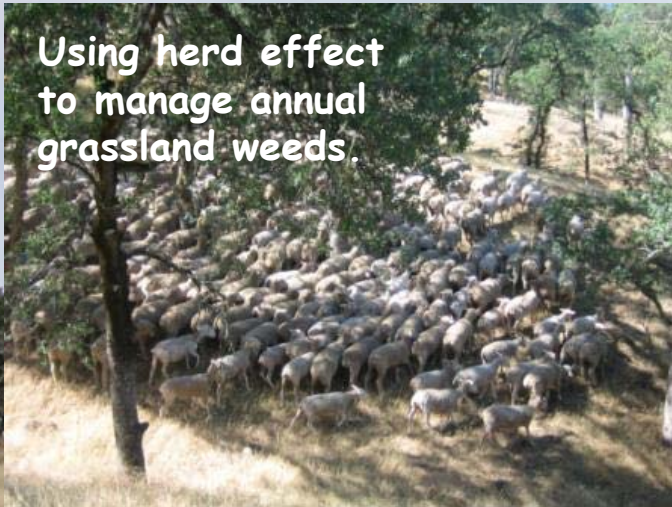
Spatial memory is important – the animals remember the landscape, making multi-year projects more successful than single treatments

Strategic water supplementation, and salt placement can draw animals to specific locations, concentrate animal impacts, and provide nutrients absent in the forage



# The science...

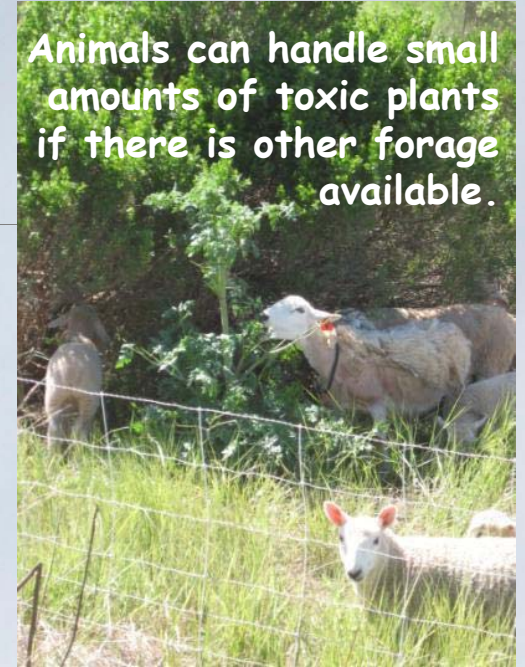
Using herd effect to manage annual grassland weeds.



Grazing behavior and preferences can be taught.



Animals can handle small amounts of toxic plants if there is other forage available.





# The art...

---



From a producer's perspective, what business are you in?

- ❖ Critical to balance animal performance with weed control goals
- ❖ There are classes of animals even in our small operation better suited to targeted grazing projects
- ❖ For example, we've used yearling ewes, yearling goat kids and dry does and ewes



# The art...

Understanding landowner / manager goals, objectives and expectations

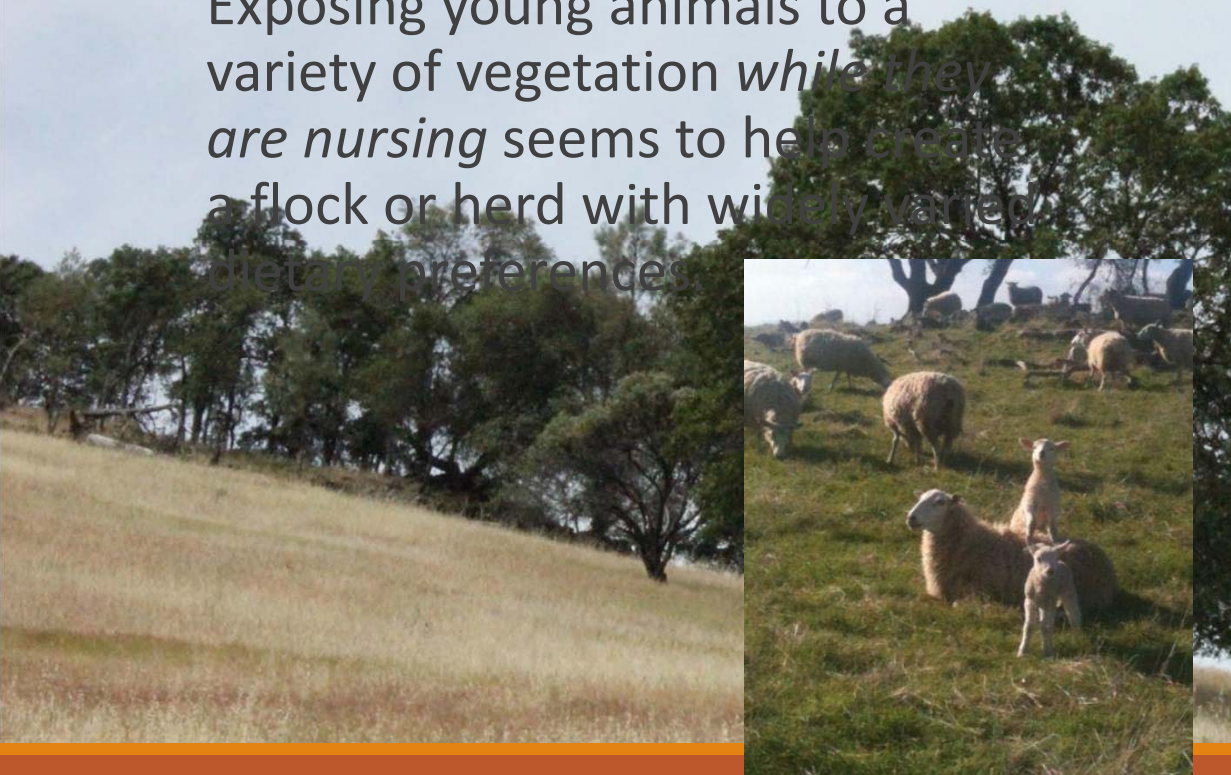
- ❖ Is the client looking for long term suppression or immediate eradication?
- ❖ Is aesthetic appearance a motivating factor?
- ❖ Does the client answer to external forces (like a homeowner's association for example)?
- ❖ Are there external factors that may limit the use of livestock (e.g., food safety concerns)?
- ❖ These aren't always clear!





# The art...

Exposing young animals to a variety of vegetation *while they are nursing* seems to help create a flock or herd with widely varied dietary preferences.





**Sheep will eat blackberries!**



**Fenceline shot – 100 ewes on starthistle.**



# The art...

## Infrastructure needs

- ❖ Fencing
- ❖ Stockwater equipment
- ❖ Transportation equipment
- ❖ Predator control
- ❖ SKILLS
  - ❖ Herding and stockmanship
  - ❖ Business management
  - ❖ Range management
  - ❖ Public relations (more on this later)



copyright © 2010 Wayne Carroll  
Placer County Agriculture



# The art...

---

## Economics and Logistics

- ❖ Not necessarily the low cost option
- ❖ Works best where spraying, mechanical treatment or prescribed fire are too costly and/or difficult to use
- ❖ Generally charged on a per acre basis (which means graders must know rate of consumption)
- ❖ Effects can be more subtle than other treatments like spraying, for example
- ❖ Operators must know where animals will be before and after the project (you don't put them in storage!)





# The art...

Image Name: allender-2014-Jul-19 point  
GPS co-ordinates: 38.937439,-121.130363  
Date: Jul 19, 2014, 3:41:48 PM PDT  
Direction: 131 N



Image Name: allender-2014-Jul-16 point  
GPS co-ordinates: 38.937440,-121.130360  
Date: Jul 16, 2014, 8:57:28 AM PDT  
Direction: 131 N



## Control versus suppression

- ❖ Grazing, in most cases, will suppress (rather than eliminate) invasive weeds.
- ❖ some annual weeds require multi-year treatment before the seedbank is depleted.

Some targeted grazing projects require "over grazing on purpose" – time and timing are critical!



# The art...

## Business Management

- ❖ Targeted Grazing as a Service
- ❖ Business client relationships
  - ❖ Partnerships build trust, long term
- ❖ Communication is critical
- ❖ Team member training
- ❖ Culture of the organization
- ❖ SKILLS
  - ❖ Business acumen
  - ❖ Risk mitigation
  - ❖ Community relations





# Risks

---



The risks depend on the type and location of project, but may include:

- ❖ Vandalism
- ❖ Toxic plants and other toxicity issues (the Cornell poisonous plants website is outstanding!)
- ❖ Wildfire
- ❖ Predation
- ❖ Loss of animal condition/performance
- ❖ Property damage
- ❖ Spread of weed seeds



# Public Relations



PEDESTRIANS ONLY  
NO DOGS  
NO BICYCLES

Most people are very supportive, but misperceptions about grazing and livestock persist! Education is extremely helpful.

The need for public relations depends on where the project is – urban and suburban projects require more PR work.

The use of electric fencing and livestock guardian dogs are key areas for outreach and education.



# Public Relations Information Solves Problems



GOATS & SHEEP AT WORK  
DO NOT TOUCH ELECTRIC FENCE, OUCH!



PLEASE KEEP DOGS ON LEASH WHILE IN  
VICINITY OF THE LIVESTOCK.





# Case Study: Shaver Lake 350 goats in < 4 hrs

---





# Case Study: Los Banos, CA, 85 goats in 6 hours





# Case Study:

Aromas, CA: Fence line at 1 year post grazing with goats

---





# Conclusion

---



Targeted grazing can be a useful tool for suppressing rangeland weeds and for reducing fuel loading

Successful targeted grazing projects require knowledge about grazing systems and impacts, animal behavior, client partnerships

Time, timing, and class/type of livestock are critical considerations for these types of projects.



# References

---

Brown, D. 2014. Plants poisonous to livestock and other animals. Cornell University, Department of Animal Science. Available at [www.ansci.cornell.edu/plants/](http://www.ansci.cornell.edu/plants/)

George, M., B. Frost, and N. McDougald. 2014. *Annual Rangeland Handbook*. Chapter 8. Grazing management.

Hovory, L.D., F.D. Provenza, and B. Bunting. 2010. Herbivores learn to forage in a world where the only constant is change. University of Arizona Cooperative Extension Publication A21518.

Launchbaugh, K., and J. Walker. 2006. *Targeted Grazing Handbook*. Chapter 1. Targeted Grazing – a new paradigm for livestock management.