Overview of the Salinas River Watershed – Focus on Rangelands, Oak Woodlands and the Livestock Industry

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Paso Robles, CA

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Thanks to Landowners



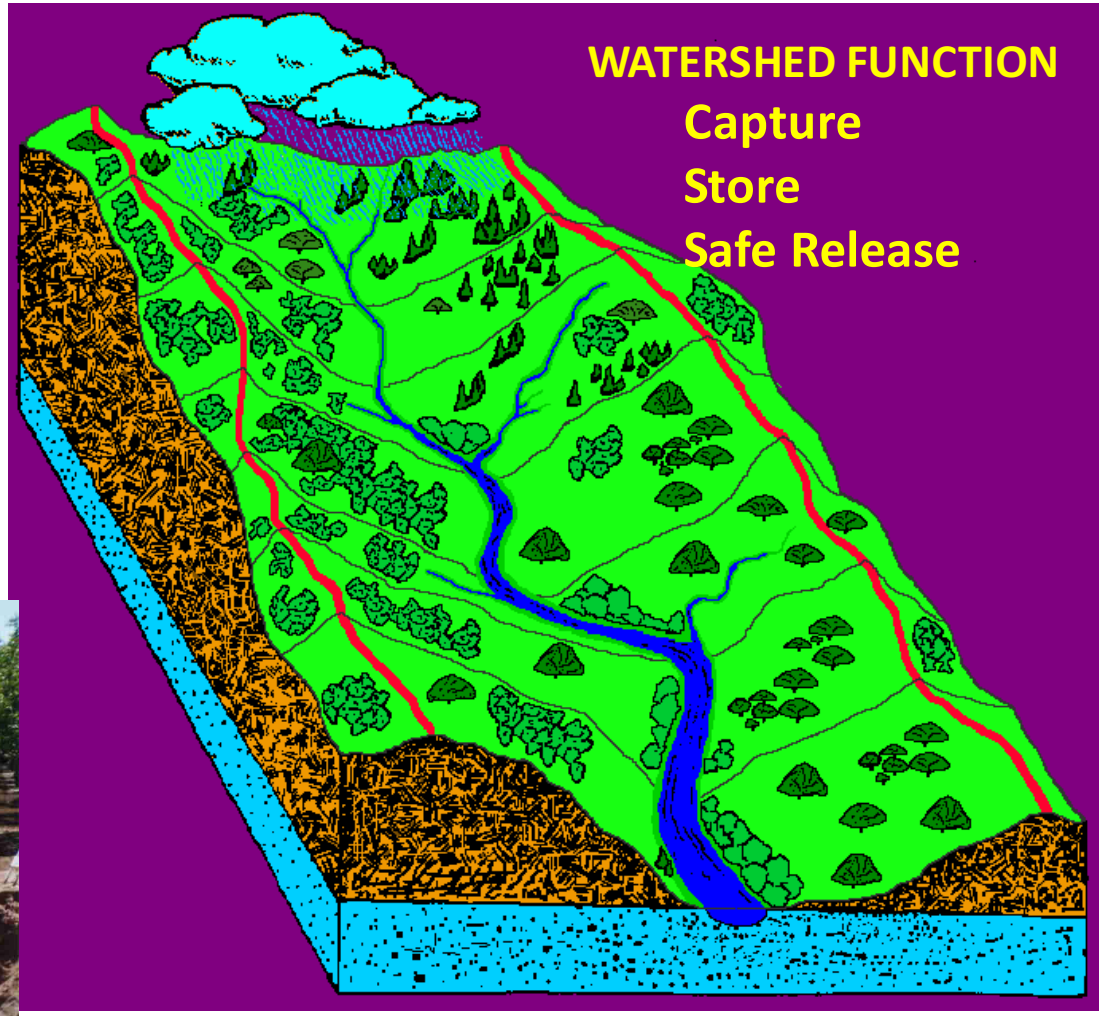








Overall Goal of Watershed Function



	Square Miles	Acres
Salinas River Watershed	3,286	2,103,040
Estrella River Watershed	954	610,560
Total Watershed	4,240	2,713,600

Rainfall varies

40 inch - 8 inch annual average

Elevation

Sea level – 2500 feet

Stream Characteristics

Perennial

Intermittent

Ephemeral

Nacimiento River, San Antonio River, Arroyo Seco (wet)
Estrella River, San Lorenzo Creek (dry)

Intermittent → Ephemeral

Some streams have not had water flowing for over 4 years.

Perennial → Intermittent

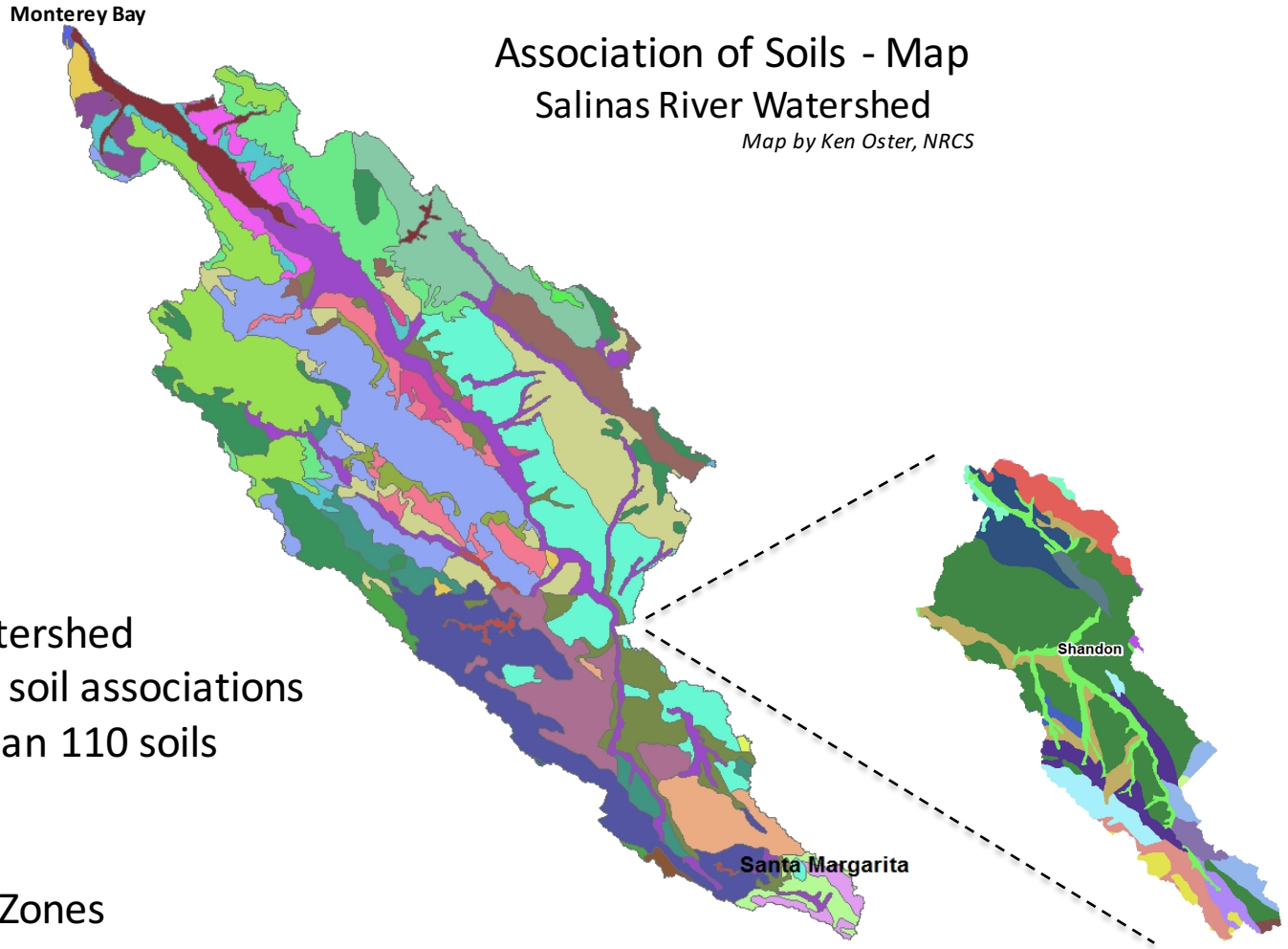
Rivers / Streams are Dynamic

San Ardo Oil Field, with the Salinas River in the foreground. P
May 2008. GFDL.
https://en.wikipedia.org/wiki/Salinas_River_(California)#/media

When you put your hand in a flowing stream, you touch the last that has gone before and the first of what is still to come.

Leonardo Da Vinci
(Arizona Highways, Sep 2015)

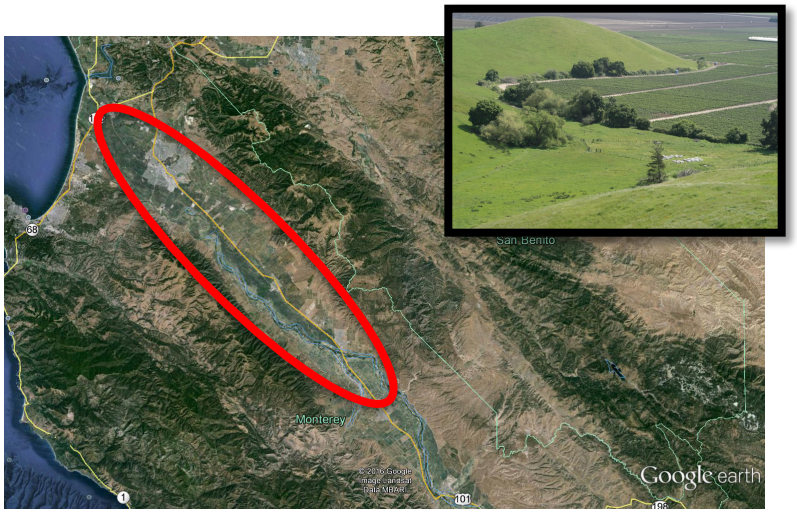
The whole watershed is dynamic and complex.

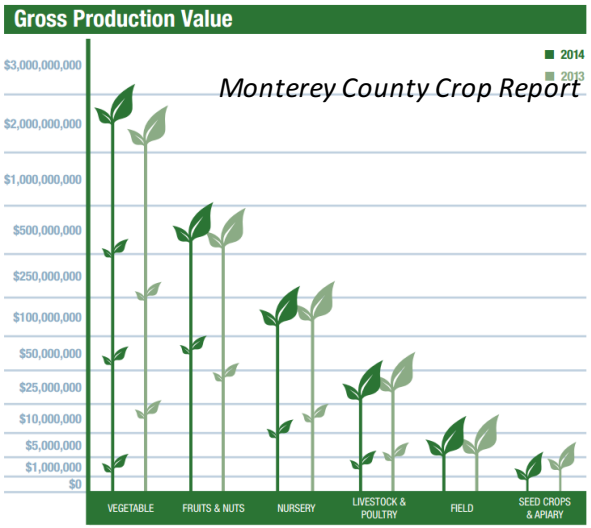


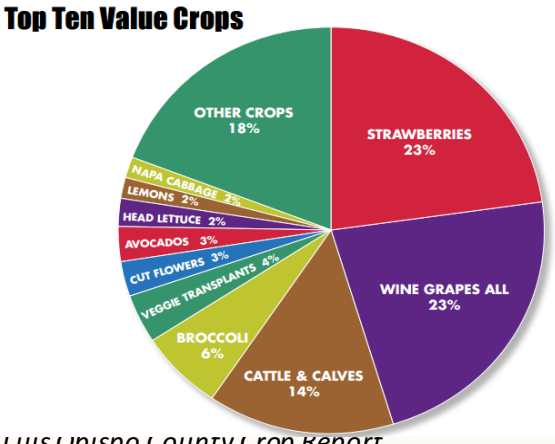
Complex Watershed

- Over 53 soil associations
- More than 110 soils
- Slopes
- Aspects
- Rainfall Zones

Agriculture is a Very Important Part of this Watershed







San Luis Obispo County Crop Report

Livestock are Important for Economic Reasons

In Addition, Rangelands Make Up the Majority of the Salinas River Watershed

Other values include: Ecosystem Services – clean water, wildlife habitat, clean air, food, raw materials, genetic resources, medicinal resources, energy, viewshed, etc.

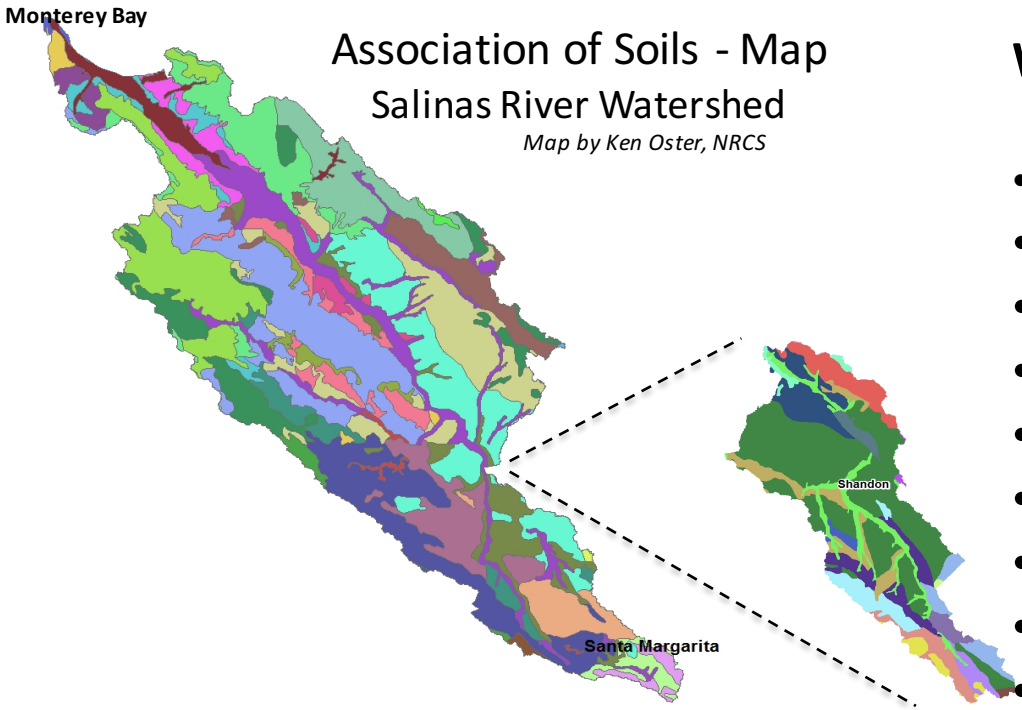
What is Rangeland?

Land supporting indigenous vegetation that either is grazed or that has the potential to be grazed, and is managed as a **natural ecosystem**. Range includes grassland, grazable forestland, shrubland and pastureland.

Oh, give me a home where the Buffalo roam
Where the Deer and the Antelope play;
Where seldom is heard a discouraging word, And the sky is not cloudy all day.

Brewster Higley 1876

Vegetation Classes on Rangelands



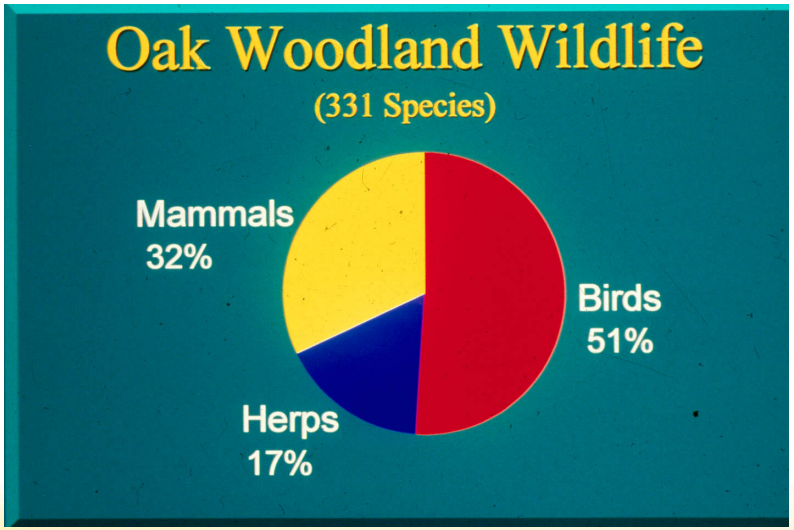
WHR Vegetation Classification

- Annual Grassland
- Blue Oak – Foothill Pine
- Blue Oak Woodland
- Valley Oak Woodland
- Chamise – Red Shank Chaparral
- Coastal Scrub
- Mixed Chaparral
- Valley Foothill Riparian
- Juniper
- Montane Riparian

This complex array of soils, aspects, slopes, rainfall zones there are many vegetation classes.

Focus – Oak Woodlands -Importance to Wildlife

- 150 birds
- 80 mammals
- 40 amphibians & reptiles
- 2000 plants
- 4000 insects

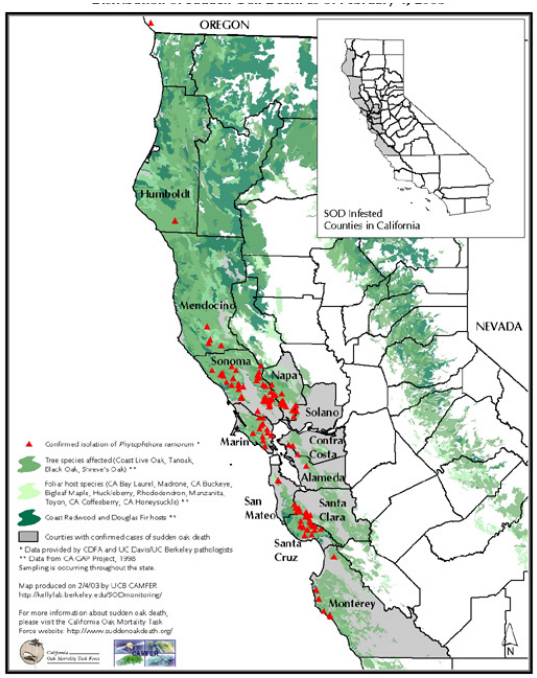


Potential Threats

Charcoal

Development

Firewood



Invasive Animals / Diseases

Pigs

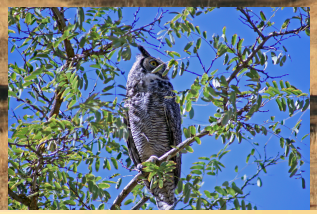
Potential Threats

Drought

Worst in last

- **500 year**
- **1,200 year**

Low precipitation
Warmer Temperatures

Focus – Annual Grasslands

Cool Moist Winters

Hot Dry Summers

Mediterranean Climate

October 20, 2005

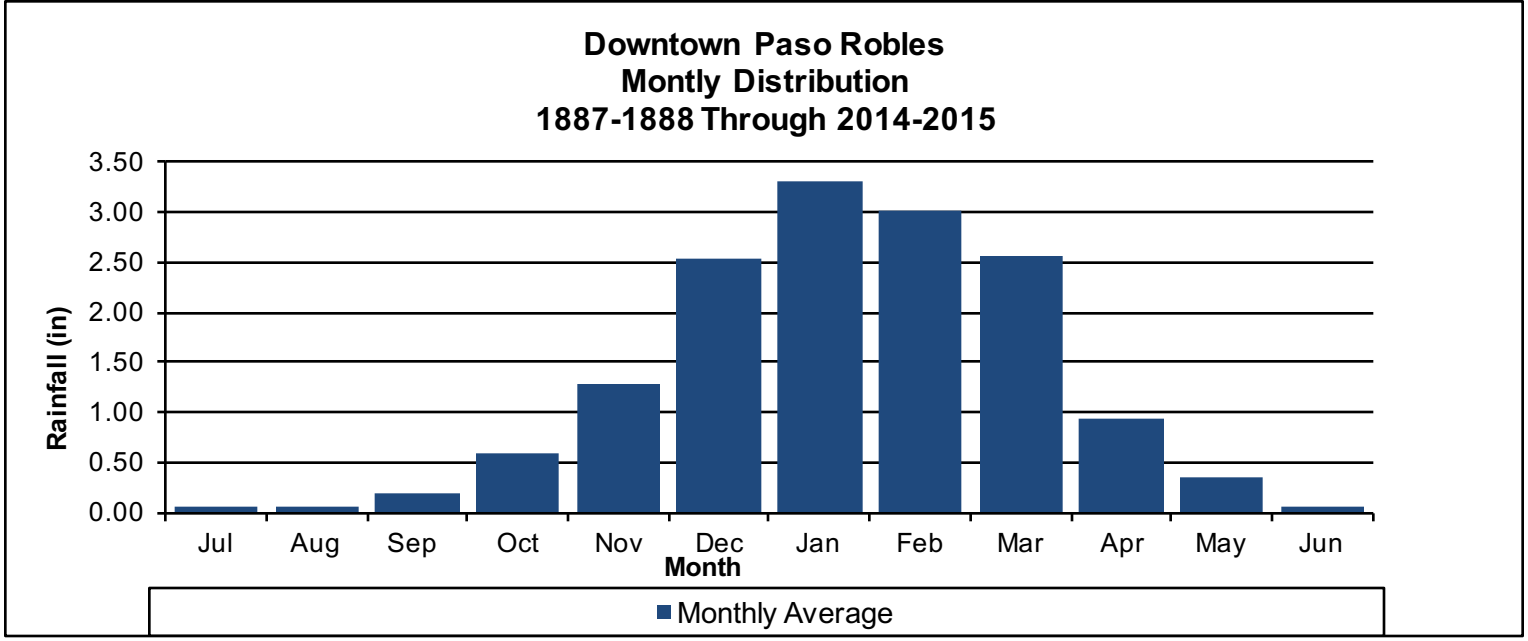
January 31, 2005

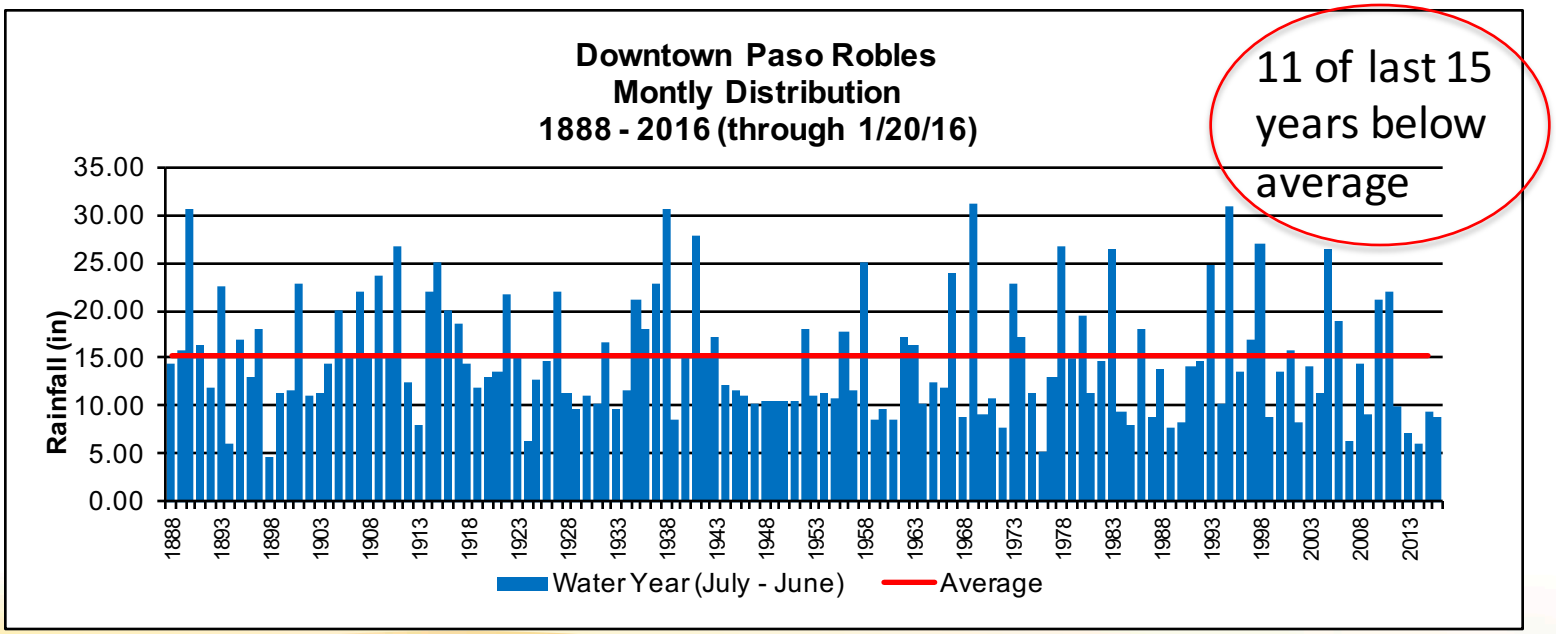
April 6, 2005

Annual Grasslands (has most acres in WS)

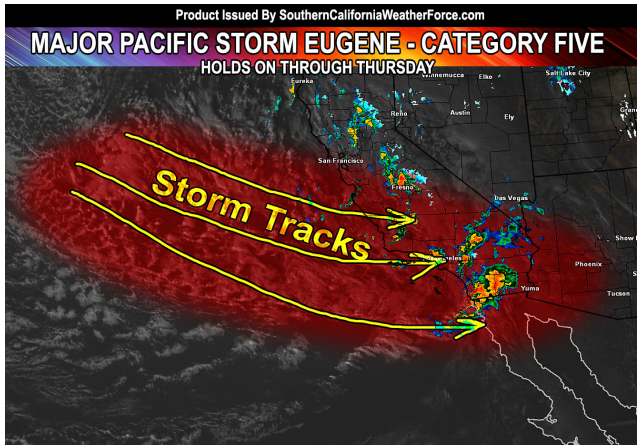
In general:

- 1 inch rain to germinate
- No growth, < 40º F
- Slow growth 40º F - 50º F
- Rapid growth 60º F - 80º F





Precipitation main driver of annul grasslands.

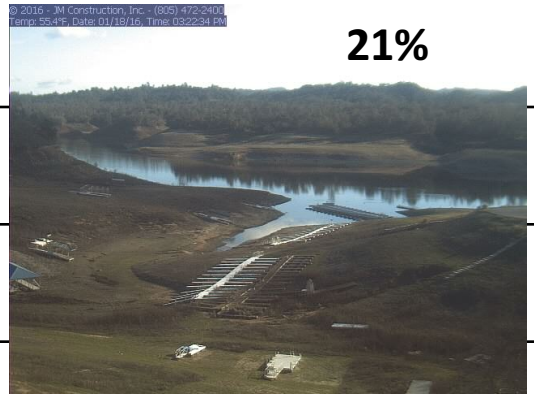


Thunder Rolls, Lightning Strikes, Heavy Rains Fall July, 2015. Hurricane Delores. *(From Paso Robles Daily News)*

January 5-7, 2016

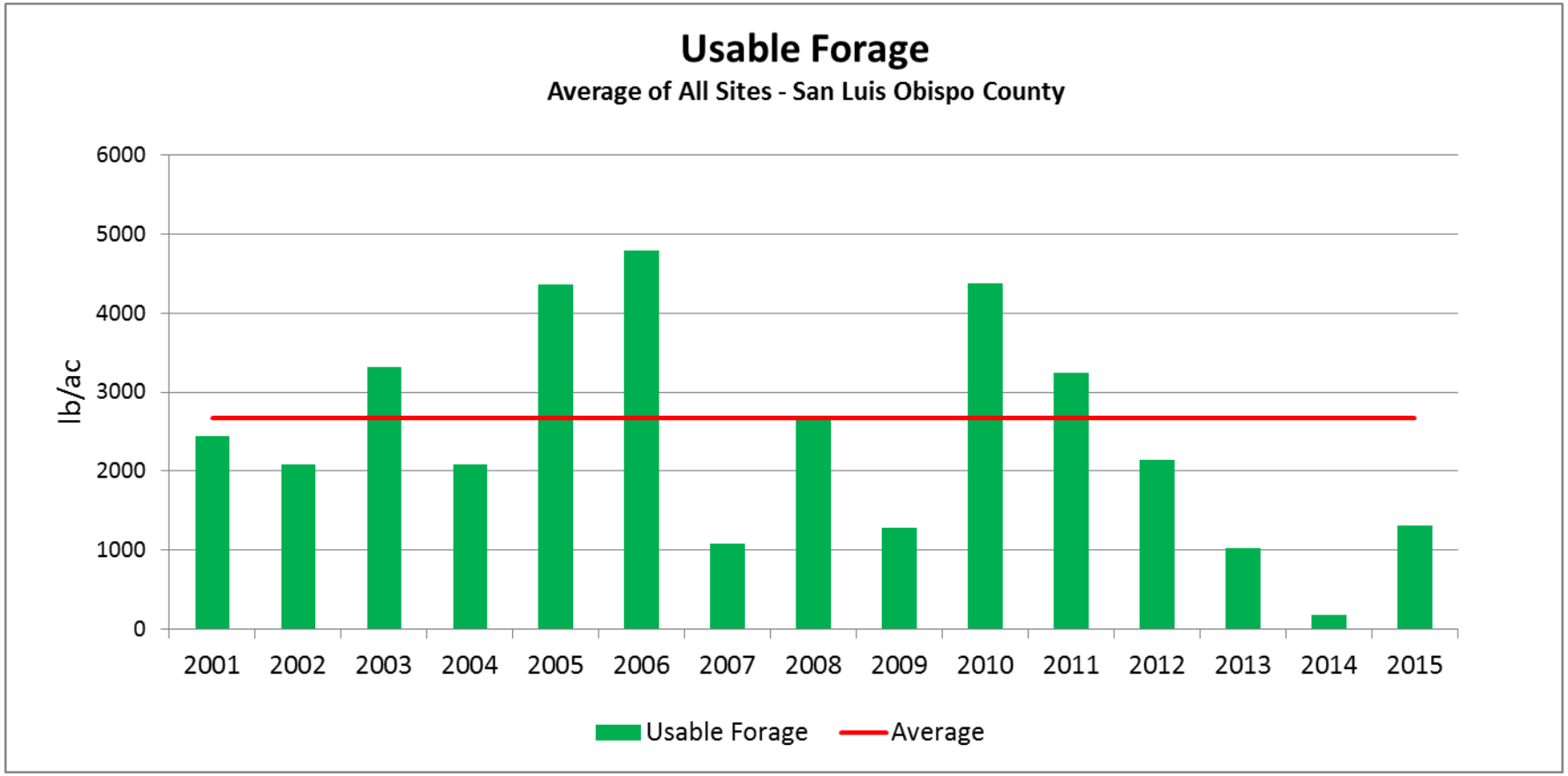
- Water spouts in Morro Bay, boats thrown around.
- Mobil Home in Paso Robles blown over.
- Lightning strikes SLO CO Regional Airport Tower Knocking out airports navigation aids, night flights canceled for two nights.

Downtown Paso Robles
Cumulative For Water Year (July-June)
July 1, 1887 - January 20, 2016



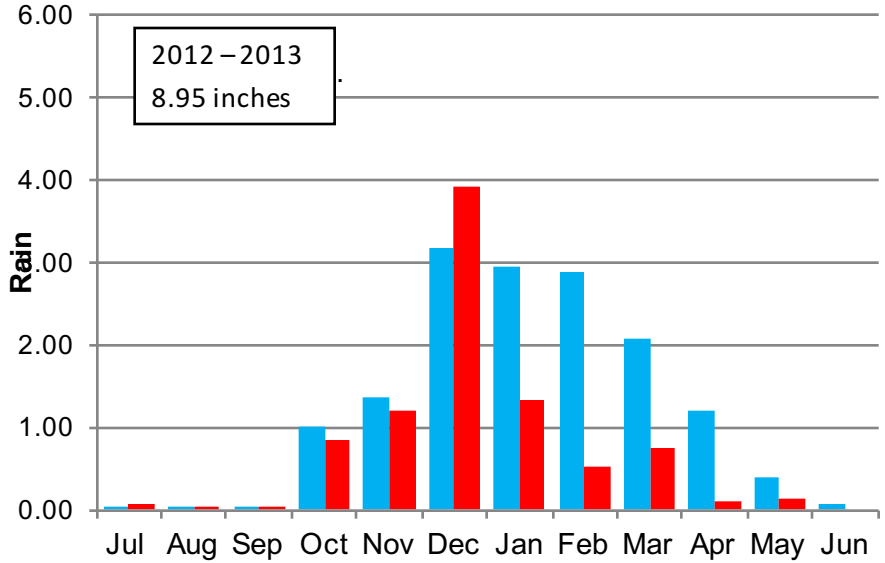
Potential Threats – Annual Grasslands

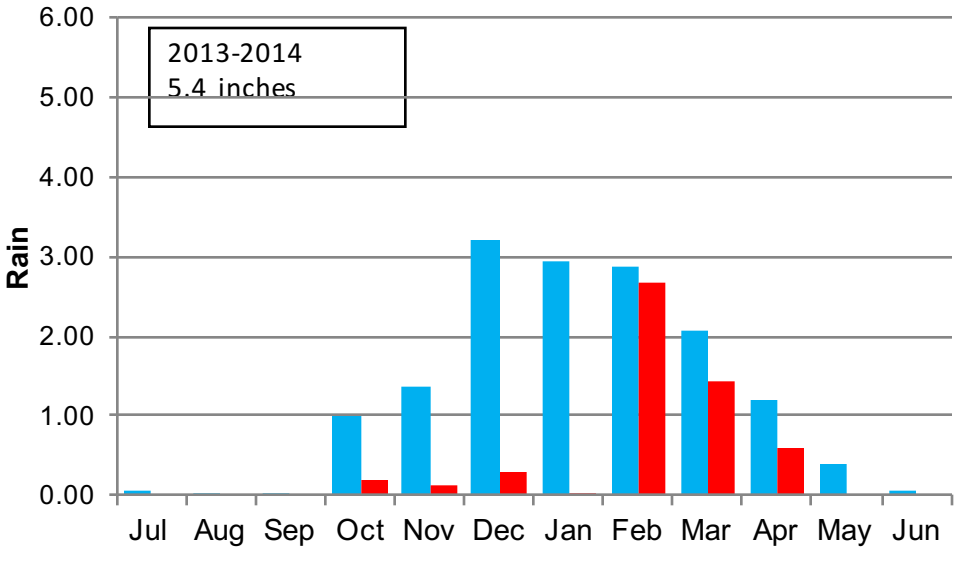
Drought



10 of last 15 years below average

Drought

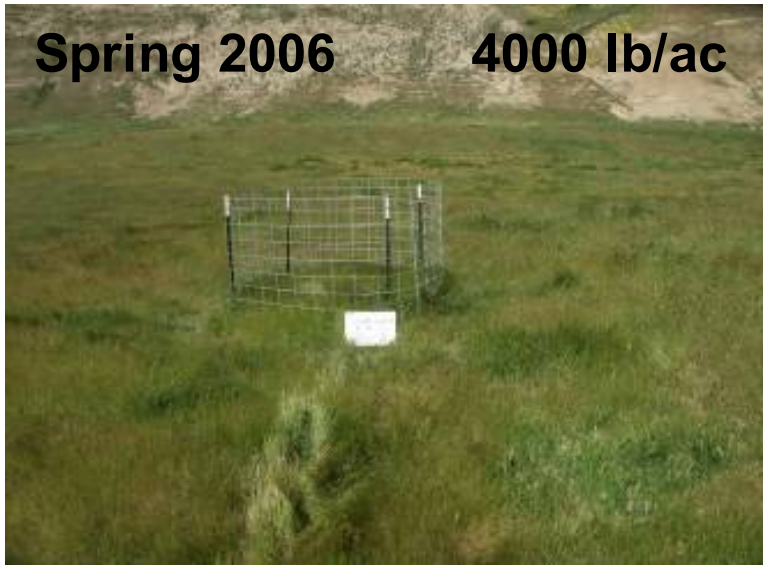




Average? every year is different, timing, amount.

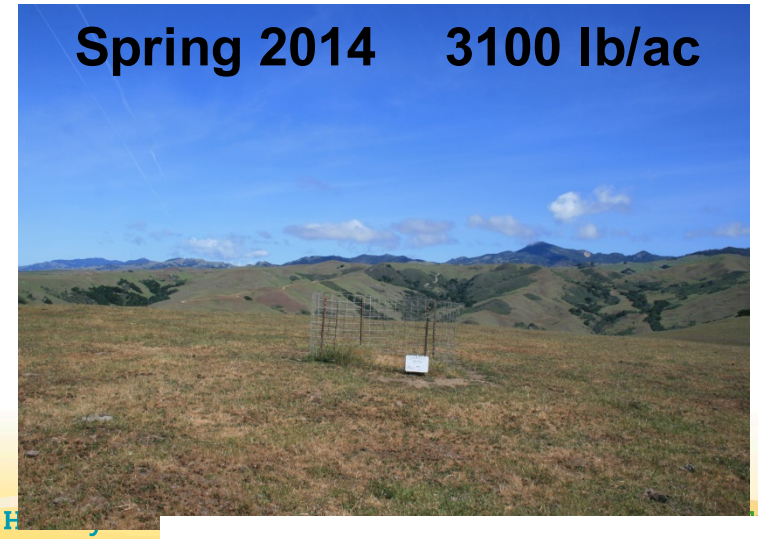
Total Plant (Forage) Production Variation

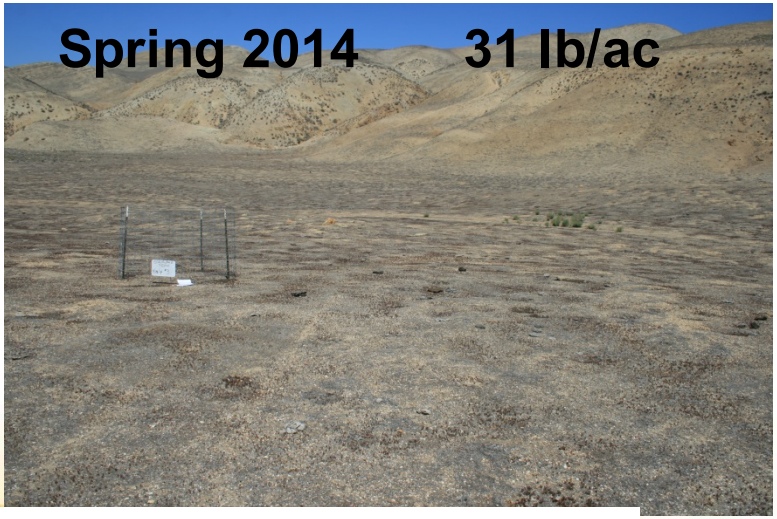
Wet Year



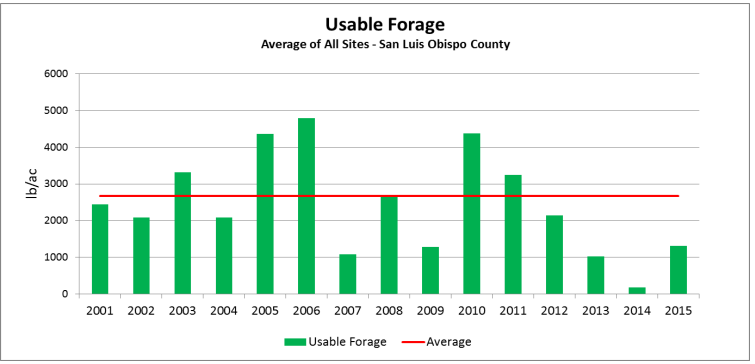
Coastal → Eastern

Dry Year



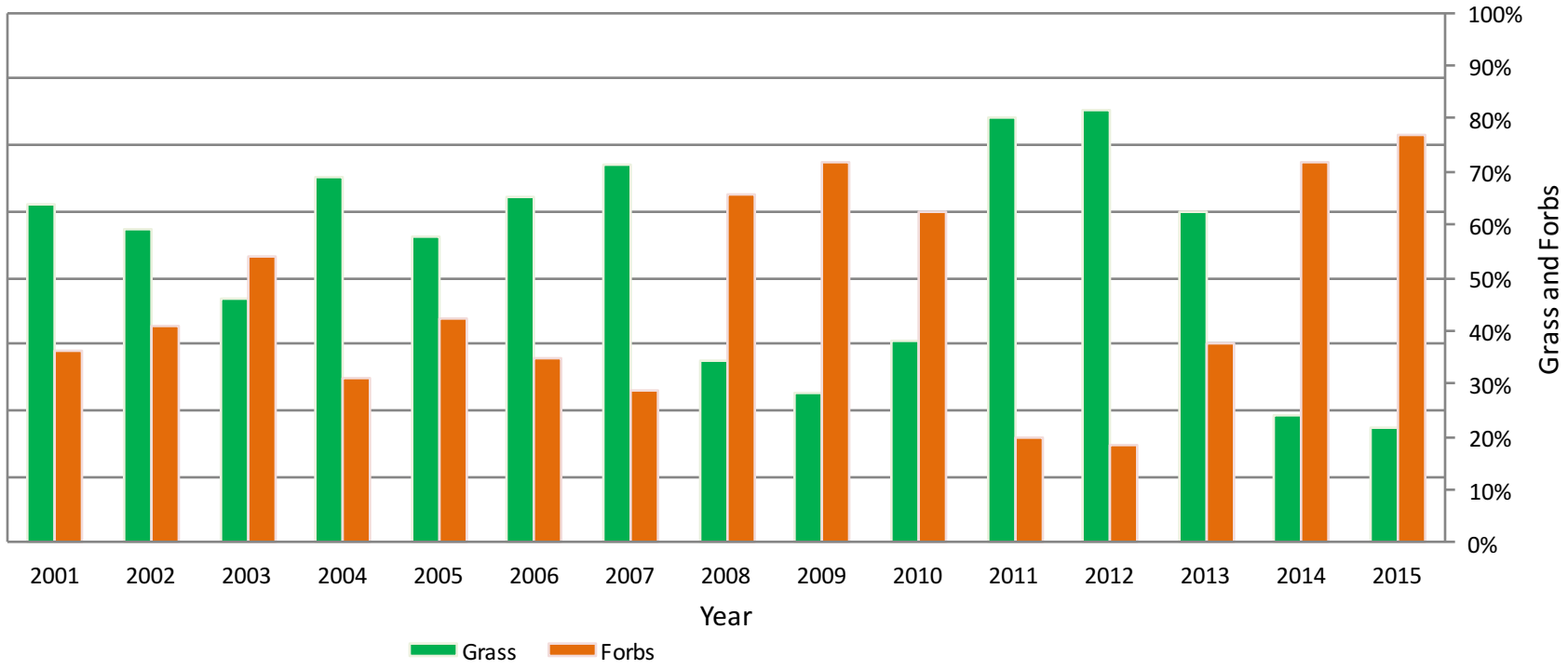


50% -75% of all cattle have been sold or moved.



Species Composition

Average of Eastern SLO CO Forage Production Sites



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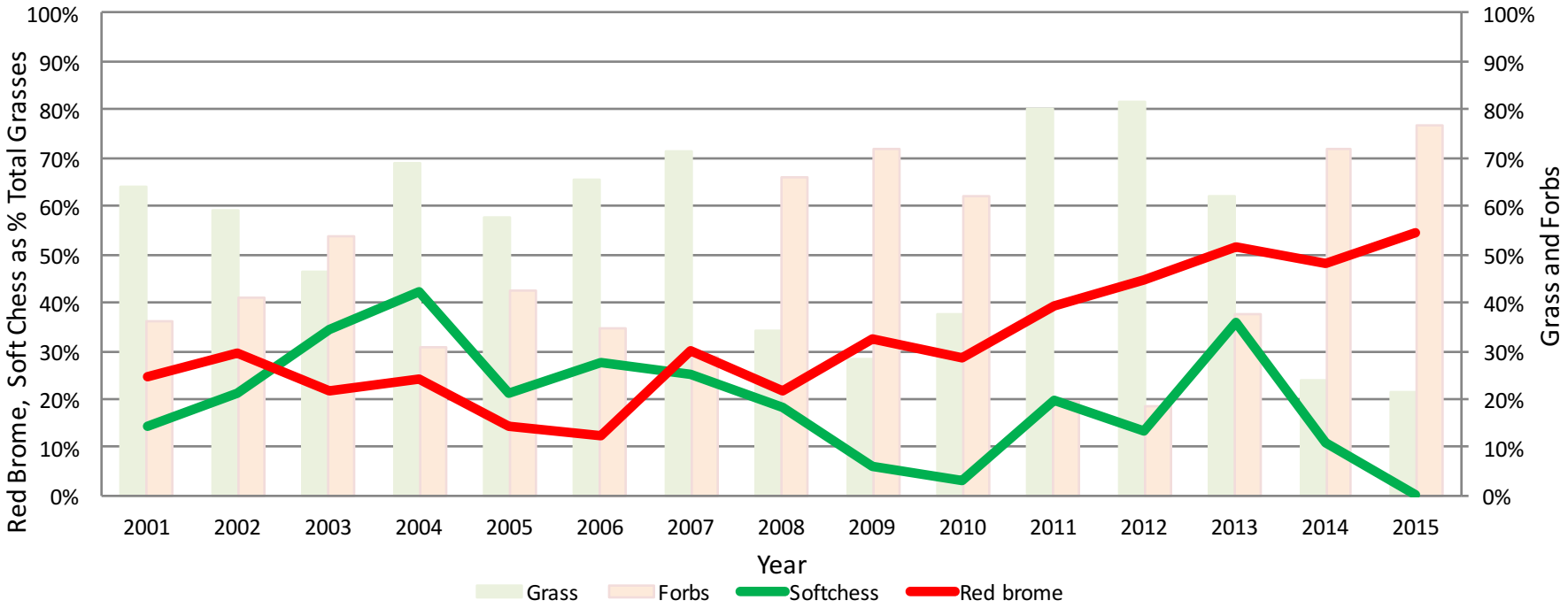


Future?

Dry years drier and more frequent (droughts)

Wet years wetter (floods)

Potential Threats-Invasive Weeds

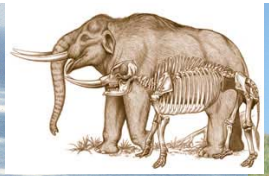
1930's

1995+-

- Artichoke Thistle – Cynara cardunculus
- Arundo or Giant Reed – Arundo donax
- Barb Goatgrass – Aegilops triuncial
- Cape Ivy – Delairea odorata
- French Broom – Genista monspessulana
- Hoary Cress – Cardaria spp.
- Jubatagrass – Cortaderia jubata
- Medusahead – Taeniatherum caput-medusae
- Oblong Spurge – Euphorbia oblongata
- Pampasgrass – Cortaderia selloana
- Perennial Pepperweed – Lepidium latifolium
- Purple Starthistle – Centaurea calcitrapa
- Spanish Broom – Spartium junceum
- Tree of Heaven – Ailanthus altissima
- Veldt Grass – Ehrharta calycina
- Wooly Distaff Thistle – Carthamus lanatus
- Yellow Starthistle – Centaurea solstitialis
- Salt Cedar / Tamarisk

http://www.slocounty.ca.gov/agcomm/Weed_Control/SLO_County_s_Weed_Management_Area/Invasive_Weeds_of_SLO_County.htm

Ecosystems evolved with grazing.



Most Important BMP: RDM Management

Healthy Plants

- Plant Vigor
- Plant Diversity
- Production

Healthy Soil (Nutrient Cycling)

- RDM 18 months in grazed areas
- RDM 24 months in ungrazed areas

RDM Guidelines, Bartolome et. al.

What are Ranchers Doing to Protect Watersheds

Education

Ranch Water Quality Short Course

Improvements:

Water

Development

RANCHING SUSTAINABILITY SELF-ASSESSMENT (RSA)

Energy on Rangelands?

Questions

The only constant in life is change

Healthy Communities Healthy Food Systems Healthy Environments

Healthy Californians

University of California
Agriculture and Natural Resources

The End