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

Watershed Function
- Capture
- Store
- Safe Release

Diagram showing the process of water management in a watershed with different functions.
<table>
<thead>
<tr>
<th>Watershed</th>
<th>Square Miles</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salinas River Watershed</td>
<td>3,286</td>
<td>2,103,040</td>
</tr>
<tr>
<td>Estrella River Watershed</td>
<td>954</td>
<td>610,560</td>
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<tr>
<td><strong>Total Watershed</strong></td>
<td><strong>4,240</strong></td>
<td><strong>2,713,600</strong></td>
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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)
Some streams have not had water flowing for over 4 years.
Perennial  →  Intermittent
Rivers / Streams are Dynamic

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

Monterey County Crop Report

Top Ten Value Crops

Strawberries 23%
Wine Grapes All 23%
Cattle & Calves 14%
Broccoli 6%
Capers 3%
Lemons 3%
Mint 3%
Saffron 2%
Tomatoes 2%
Other Crops 18%

Gross Production Value

2014
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?

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

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.
Vegetation Classes on Rangelands

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

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
Focus – Oak Woodlands - Importance to Wildlife

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

Charcoal

Development

Invasive Animals / Diseases

Firewood

Pigs

SOD Threat
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
In general:
- 1 inch rain to germinate
- No growth, < 40º F
- Slow growth 40º F - 50º F
- Rapid growth 60º F - 80º F

Annual Grasslands (has most acres in WS)
Precipitation main driver of annual 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

Average 1887-2016: 82-83
97-98
14-15
15-16

21%
Potential Threats – Annual Grasslands

Drought

Usable Forage
Average of All Sites - San Luis Obispo County

10 of last 15 years below average
Drought

2012–2013
8.95 inches

Average? every year is different, timing, amount.

12/15/12

2013-2014
5.4 inches

2/02/14
Total Plant (Forage) Production Variation

Spring 2006  10,200 lb/ac

Spring 2006  4000 lb/ac

Spring 2014  3100 lb/ac

Spring 2014  31 lb/ac

Coastal

Eastern

50% -75% of all cattle have been sold or moved.
Species Composition
Average of Eastern SLO CO Forage Production Sites

Year

Grass and Forbs


Grass
Forbs

Healthy Communities  Healthy Food Systems  Healthy Environments
Healthy Californians  University of California
Agriculture and Natural Resources

Usable Forage
Average of All Sites - San Luis Obispo County

Grass  and  Forbs
Species Composition
Average of Eastern SLO CO Forage Production Sites

Future?
Dry years drier and more frequent (droughts)
Wet years wetter (floods)
Potential Threats-Invasive Weeds

- Artichoke Thistle – *Cynara cardunculus*
- Arundo or Giant Reed – *Arundo donax*
- Barb Goatgrass – *Aegilops triuncialis*
- 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?
The only constant in life is change