Central Coast Rangeland Coalition

Workshop on
Rangeland Productivity

Swanton Pacific Ranch

October 18, 2018

Thanks to:

- Swanton Pacific Ranch, Cal Poly SLO
- Coastal Training Program, Elkhorn Slough

Central Coast Rangeland Coalition

Philosophy:

- ½ technical presentations; ½ hands-on field experience
- Frequent discussions in small groups
- Mix of ranchers, agency managers, advisors, and scientists

Research on Coastal Prairie

Data for variables related to grazing effects on coastal prairie productivity at SPR and other CA sites:

1. RDM—fall
2. Bare ground—spring
3. Herbaceous production—spring
4. Species Composition
5. Cattle production
6. Soil erosion (not for SPR)
7. Soil health indicators

Research on Coastal Prairie

Sources of Data:

1. Bartolome, Stroud, and Heady 1980 (RDM, composition, herbaceous production)
2. Jackson and Bartolome 2002 (RDM)
3. Bartolome et al. 2006 (RDM, composition, production, erosion)
4. Hayes 2000-2011+ (composition)
5. Ford et al. 2007-2010 (RDM, bare ground, composition, thatch)
6. Horney 2013-2017 (RDM, bare ground)
7. Barry 2018 (cattle production)
8. Claassen 2018 (cattle production)
9. Salls et al. 2018 (RDM, erosion)
10. Point Blue 2018 (soil health indicators)
11. Others--State Parks, PRNS, East Bay (RDM, composition, herbaceous production)

Research on Coastal Prairie

Bartolome, Stroud, and Heady 1980 (RDM, composition, herbaceous production)—California Coast Range

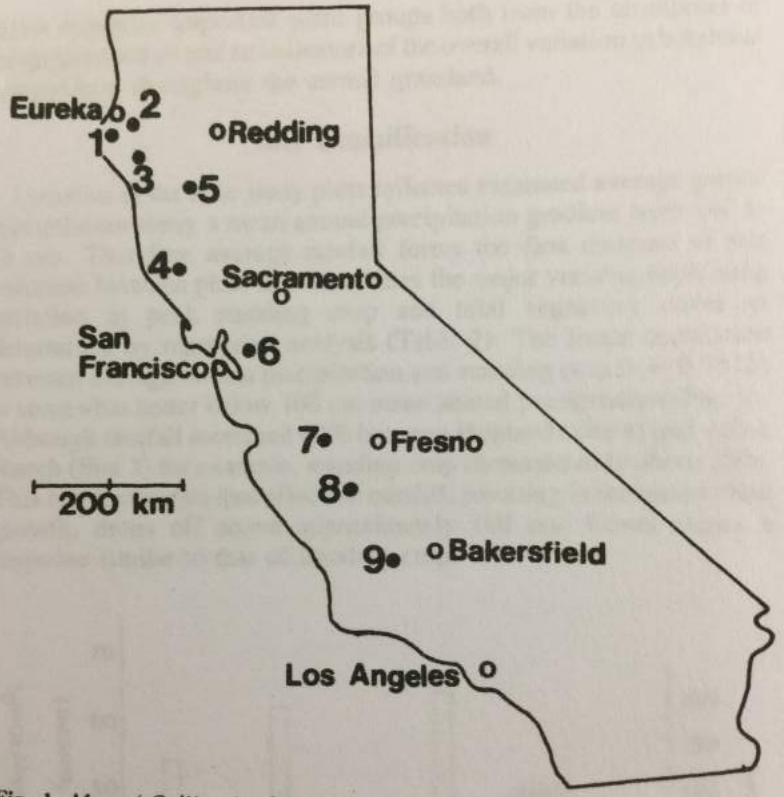

Fig. 1. *Map of California showing location of nine study plots.*

Several authors have ascribed the differences in botanical composition due to manipulation of mulch to the effect on plant establishment (Bartolome 1978; Evans and Young 1970. Fig.

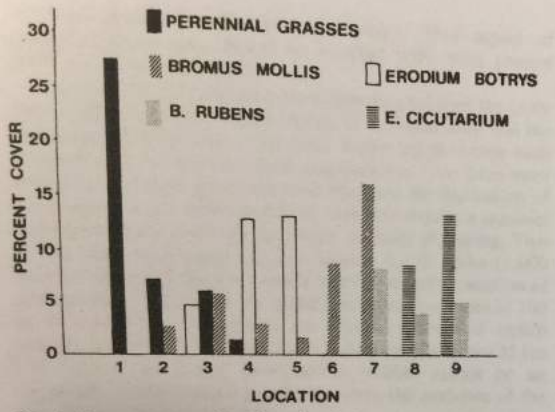

Fig. 4. *Percent cover contributed by selected plant groups at nine locations.*

precipitation, all contained broadleaved filaree or soft chess. Other annual grassland species also segregate out along the broad environmental gradient represented by the nine sites. For example, the perennial California oatgrass (*Danthonia californica*) and the annual crested dogtail (*Cynosurus echinatus*) were found only on the three wettest sites.

The discussion above illustrates a further division of site based on botanical composition, which reflects historical use of a given site and may be manipulated by grazing management. Yet each site has a limited set of potential species. Rangeland dominated by red brome and red-stem filaree could be a suitable management goal on a site with less than 25 cm average annual rainfall, yet reflect past abuses and poor quality rangeland on wetter sites. Perennial grasses may be a realistic management goal in the North Coastal region (plots 1-3) but not at other locations.

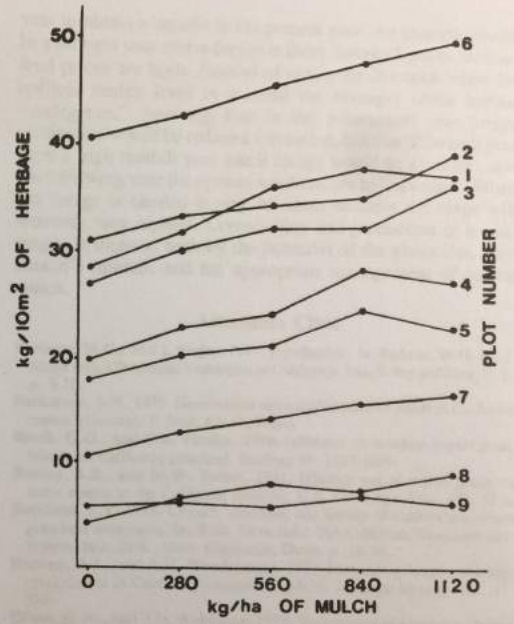

Fig. 5. *Effect of differing levels of natural mulch on peak standing crop at nine locations. Results average 5 years on plots 1-6, 3 years on plots 7-9. Least significant differences between means (P< .05) are 4.27 g/ft² for plots 1-6, 5.51 g/ft² for plots 7-9.*

The middle-rainfall sites 4 and 5 dominated by annual

Research on Coastal Prairie

Hayes and Holl 2003 (composition)—Swanton Pacific Ranch

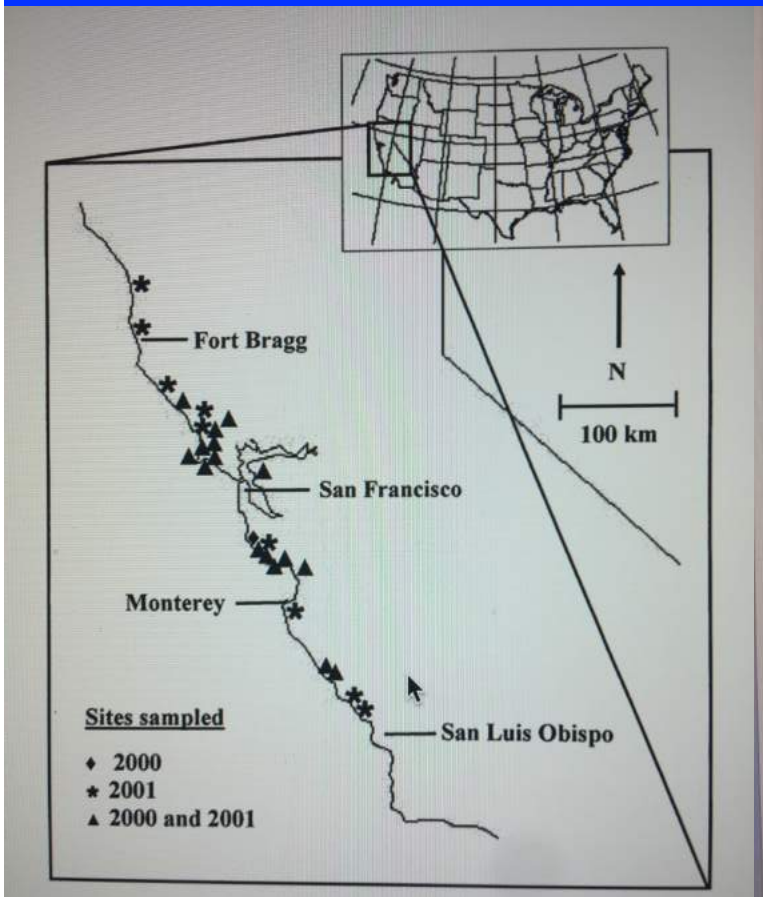

Figure 1. Map of survey sites in eight counties along the California coast.

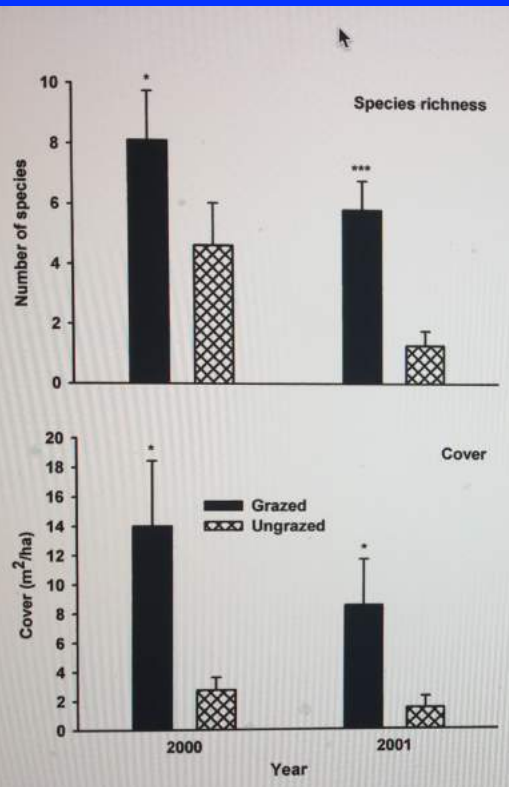

*Figure 2. Species richness and cover of native annual forbs in grazed and ungrazed sites in 2000 (n = 17) and 2001 (n = 25). Error bars indicate 1 SE. Paired t test used: *p < 0.05, ***p < 0.001.*

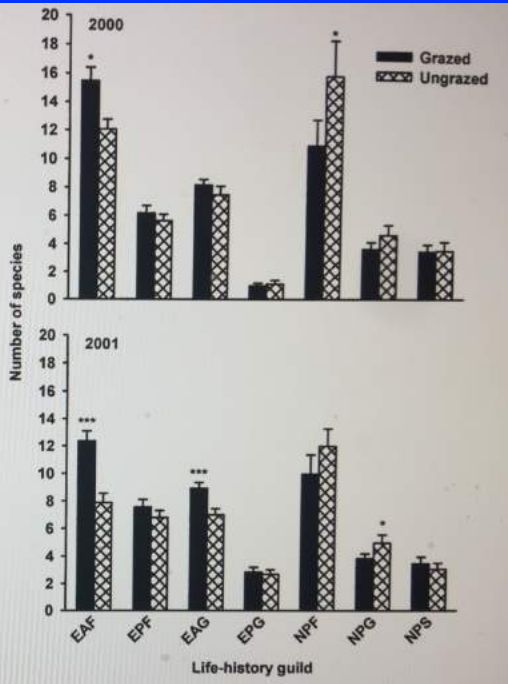

*Figure 3. Species richness of common life-history guilds in grazed and ungrazed sites in 2000 (n = 17) and 2001 (n = 25). Abbreviations: EAF, exotic annual forb; EPF, exotic perennial forb; EAG, exotic annual grass; EPG, exotic perennial grass; NPF, native perennial forb; NPG, native perennial grass; NPS, native perennial sedge or rush. Error bars indicate 1 SE. Paired t test used: *p < 0.05, **p < 0.01.*

Research on Coastal Prairie

Ford, Rao, and Warner 2007-2010 (RDM, bare ground, composition, thatch)—Swanton Pacific Ranch

Central Coast Rangeland Coalition
Indicators of Sustainable Rangeland Stewardship Project
Testing--Data 2007-2010
Summary: October 14, 2018

Transect	Aspect	Slope	Field Name	Site History	Grazed	Avg Ann Precip	Sampling Strata	2007 Apr 30 Bare Ground (%)	2007 Apr 30 Herb Biomass (mean lbs/ac)	2008 Jun 5 Bare Ground (%)	2008 Jun 5 Herb Biomass (mean lbs/ac)	2009 Apr 21 Bare Ground (%)	2009 Apr 21 Herb Biomass (mean lbs/ac)	2010 Sep 21 Herb Biomass (mean lbs/ac)	2010 Sep 21 Grazing Use
1	West	0-10%	Strawberry Pasture	farmed	Grazed	33"	Open Grassland	1%	2540	8%	660	0%	3420	250	heavy
2	West	0-10%	Shipping Corral	?	x	29"	Riparian	x	x	x	x	x	x	x	x
3	West	0-10%	Receiving Pasture	farmed	Grazed	29"	Open Grassland	5%	3700	3%	2268	0%	4023	560	heavy
4	West	0-10%	North Lockheed	farmed	Grazed	31"	Open Grassland	2%	3980	4%	828	3%	1980	270	heavy
5	North	0-10%	East Lockhead	?	Grazed	?	Open Grassland	x	x	5%	660	0%	2709	0	heavy
6	West	11-20%	Upper Strawberry	?	Grazed	?	Open Grassland	x	x	3%	1030	4%	7035	170	heavy
7	West	0-10%	Ocean	?	Grazed	?	Open Grassland	x	x	1%	2068	0%	2826	1071	moderate

Research on Coastal Prairie

Horney 2013-2017 (RDM, bare ground)—Swanton Pacific Ranch

Minimum RDM Management Objective: 800 lbs/ac

Rank	Pasture	Acres
1.4	Artichoke West	32
1.8	Horse East	16
1.8	Lockheed North	40
2.1	Cook's Peak	57
2.1	Artichoke North	20
2.2	Artichoke East	17
2.2	Horse South	7
2.3	Horse North	10
2.3	T3 South	48
2.5	T3 North	32
2.5	Catalyst	49
2.5	Lockheed East	47
2.5	T2 Upper	57
2.7	China Ladder West	65
2.8	T2 Lower	66
2.9	Ocean	109
3.0	Artichoke South	18
3.2	China Ladder East	36
3.3	Pond	62
3.8	Hayfield	14
3.8	T1	119
3.9	NorthWest	92
4.1	Belvedere	32

Red indicates biomass levels were less than 30% of the minimum RDM objective.
Recommend complete grazing deferrment for at least one full season under good growing conditions.
Recommend managing for more than 1,000 lbs RDM/ac for next three years.
Additional seasons of deferrment may be warranted if drought continues

88 **total acres** 8% 29 **acres, avg pasture size**

Orange indicates biomass levels were 40-70% of the minimum RDM objective.
Recommend not more than light use for at least one season, and leaving at least 1,000 lbs RDM for two years.
Recommend managing for more than 1,000 lbs RDM/ac for for at least one year, then managing for at least 800 lbs/

583 **total acres** 56% 45 **acres, avg pasture size**

Note: The 2017 Cal Poly RDM survey was co
highest. Unfortunately, the reference weigh
confidently associate them with a particular
associations

Yellow indicates biomass levels were 70-99% of the minimum RDM objective.
Manage for RDM levels above 800 lbs/ac.

341 **total acres** 33% 57 **acres, avg pasture size**

Green indicates pastures were fully meeting the minimum RDM objective at the time of the survey.
Maintain RDM levels above 800 lbs/ac.

32 **total acres** 3% 8 **acres, avg pasture size**

1,044 **acres surveyed**

Research on Coastal Prairie

You'll be hearing today from these sources:

1. Horney 2013-2017 (RDM, bare ground)
2. Barry 2018 (cattle production)
3. Claassen 2018 (cattle production)
4. Carey, Point Blue 2018 (soil health indicators)
5. O'Geen

Central Coast Rangeland Coalition

Next Workshop : April 18, 2019

- How conservation requires profitable ranches-- diversification within the ranch operation and ecosystem services payments
- Current Forum Scholar, Reid Johnsen