

# **Update from Humboldt County: prescribed burn objectives, project costs, burn windows, and bringing fire back to the people**

Jeff Stackhouse & Lenya Quinn-Davidson  
University of California Cooperative Extension





# 29 burns (1,198 acres) since June 2017









# Humboldt County Prescribed Burn Association



- Formed March 2018
- 80+ paying members; 300-person mailing list
- >10000 acres of projects identified on local ranches and timberlands
- Board of directors & by-laws
- No 501(c)3





# Humboldt County Prescribed Burn Association



- Neighbors helping neighbors—similar to range improvement associations
- Diverse membership
- VFD involvement
- CAL FIRE support
- Private contractors as needed
- UCCE: research, education, and outreach on burning



# VFD Involvement





# How about funding?

- California Deer Association donated \$39k in 2017/2019 for purchase of a burn trailer, 3 slip-in units, 42 radios, a radio frequency, 2 pumpkins, a transfer pump, and more.
- CAL FIRE Funds: Burn Planning, VFD Training, Equipment
- PBA Dues: Food/Drinks for annual meetings, equipment maintenance





# What and when are we burning?

- Late phenology species
- Forest/Wildland-urban interface fuels reduction
- Woody encroachment on rangelands
- Fir removal from oak woodlands
- Logging slash/piles
- Other/Training





And....what does it cost?



# HCPBA Participation Cost?

- HCPBA Membership: \$25
- Leather Gloves: \$0
- Cotton Pants/Shirt/Hat: \$0
- Tool: \$0
- Lighter: \$1

Total Participation Cost: \$26

But what about treatment cost?





# Chemical Treatment Cost Estimates

## Broadleaf-Herbaceous Plants

- Shark @ 1 and 2 oz/acre
  - ~\$6/oz = \$6 to \$12/acre
- Milestone @ 3 and 7 oz/acre
  - ~\$2.90/oz = \$8.5 to \$20/acre
- Transline @ 3 and 7 oz/acre
  - ~\$1.47/oz = \$4.5 to \$10.5/acre
- 2, 4-D @ 32 and 64 oz/acre
  - ~\$0.15/oz = \$4.5 to \$9/acre
- Triclopyr @ 32 and 64 oz/acre
  - ~\$0.50/oz = \$16 to \$32/acre
- Crossbow @ 64 and 128 oz/acre
  - ~\$0.48/oz = \$31 to \$62/acre

## Woody Plants

- 2,4-D @ \$16.67/gal
  - Spray (47 gal\*5%)= ~\$39.17/acre
- Triclopyr @ \$54.82/gal
  - Spray (47 gal\*5%)= ~\$128.83/acre
- Imazapyr @ \$49.10/gal
  - Spray (47 gal\*5%)= ~\$115.38/acre
- Glyphosate @ \$31.64/gal
  - Spray (47 gal\*5%)= ~\$74.35/acre

## Grass Only

- Poast @ 16 to 24 oz/acre
  - ~\$0.78/oz = \$13 to \$19/acre



# Mechanical Treatment Cost Estimates

- Cat: \$85/hr – \$150/hr (\$340-~~\$600~~/acre)
  - Hired Saw: \$15 - \$25/hr (\$487-\$812/acre)
  - Excavator: \$125 - \$200/hr (\$975- \$1560/acre)
- } Hired contractor prices

**Table 1:** LSD mean frequency and cover reduction of *Baccharis* and bare ground by treatment

Treatment	Plants/M <sup>2</sup>	<i>Baccharis</i> reduction, %	Bare ground, %
Exc	0.07 <sup>a1</sup>	68b	22b
Cat	0.45 <sup>a</sup>	65b	19b
Saw	1.32 <sup>b</sup>	53a	3a

<sup>1</sup>Within a column means with a similar letter do not differ





# CAL FIRE Permits

- LE-5 = \$0
  - Low complexity broadcast burn or large piles
- LE-7 & LE-8 = \$0
  - Higher complexity or larger broadcast burn



# Air Quality: San Francisco Bay Area vs North Coast

Prescribed Fire Permit Fees:	\$20/year for standard burn permit (4x4)
• \$138	\$40/year for less than 1 acre of material + SMP
SMP Fees (good for 12 months):	\$80/year for 1-10 acres + SMP
• <10 Acre/Piles: Not Required	\$250/year for 10-100 acres + SMP
• <50 Broadcast Acres: \$602	\$500/year for 100-300 acres + SMP
• 50-150 Broadcast Acres: \$816	\$1,250/year for greater than 300 acres + SMP
• >150 Broadcast Acres: \$1062	+\$65/Bi-annually for SMP for all non-standard permits



Project	Objective	Acres	Burn plan	Burn Boss	VFD stipend	Air quality	Crew size	Total cost	Cost/acre
Bridgeville Medusahead 2017	Medusahead control/training	18	\$500	\$1,500	\$600	\$100	30	\$2,700	\$152
Mazeppa 2017	Coyote brush control/training	140	\$500	\$1,000	\$600	\$200	25	\$2,300	\$17
Chalk Mountain	Oak woodland restoration/training	20	N/A	N/A	\$0	\$100	12	\$100	\$6
Ft. Baker 2017	Oak woodland restoration	15	N/A	N/A	N/A	\$100	3	\$100	\$7
Bridgeville Oak 2017	Oak woodland restoration	13	N/A	N/A	N/A	\$0*	6	\$0	\$0
Lone Star 2018	Blackberry control	5	\$500	\$1,500	N/A	\$145	10	\$2,145	\$431
Phelps Vineyard 2018	Grasshopper control/medusahead control/training	6	\$0	\$1,500	\$600	\$145	25	\$2,245	\$378
McBride #1 2018	Coyote brush control/training	215	\$500	\$1,000	\$750	\$565	35	\$2,815	\$13
Mazeppa 2018	Coyote brush control/training	145	\$0*	\$1,000	\$750	\$565	30	\$2,315	\$16
Evenson Seed Trial 2018	Native grass seeding trial	0.25	N/A	N/A	N/A	\$145	3	\$145	\$592
McBride #2 2018	Coyote brush control/training	130	\$0*	\$1,000	\$750	\$0*	30	\$1,750	\$14
Shelter Cove 2018	Understory fuels reduction/training	3	\$1,000	\$1,500	\$600	\$145	25	\$3,245	\$1,090
Ft. Baker 2019	Oak woodland restoration	163	N/A	N/A	N/A	\$565	2	\$565	\$3
Bridgeville Oak 2019	Oak woodland restoration	22	N/A	N/A	N/A	\$315	9	\$315	\$15
Malfunction Junction 2019	Blackberry control	2	N/A	N/A	N/A	\$145	3	\$145	\$74
Briceland Understory 2019	Understory fuels reduction/training	5	\$0	\$0	\$0	\$145	20	\$145	\$33
Briceland Medusahead 2019	Medusahead control/training	26	\$250	\$1,000	\$0	\$315	45	\$1,565	\$60
Honeydew Medusahead 2019	Medusahead control/training	20	\$500	\$1,000	\$750	\$315	45	\$2,565	\$128
Bridgeville	Medusahead control/	53	\$450	\$1,000	\$750	\$315	40	\$2,515	\$50



# Prescribed Fire Costs in Humboldt County

In-season burns:

- \$2481 ± \$446

Out-of-season burns:

- \$439 ± \$665

Primary cost in North Coast is air quality permits... similar in Bay Area





# Air Quality: 2020 North Coast Fees

~~\$20/year for standard burn permit (4x4)~~

~~\$40/year for less than 1 acre of material + SMP~~

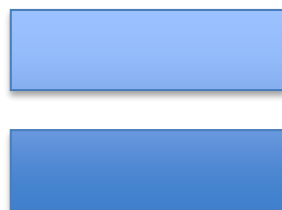
~~\$80/year for 1-10 acres + SMP~~

~~\$250/year for 10-100 acres + SMP~~

~~\$500/year for 100-300 acres + SMP~~

~~\$1,250/year for greater than 300 acres + SMP~~

~~+\$65/Bi-annually for SMP for all non-standard permits~~



\$0



Medusahead



Starthistle

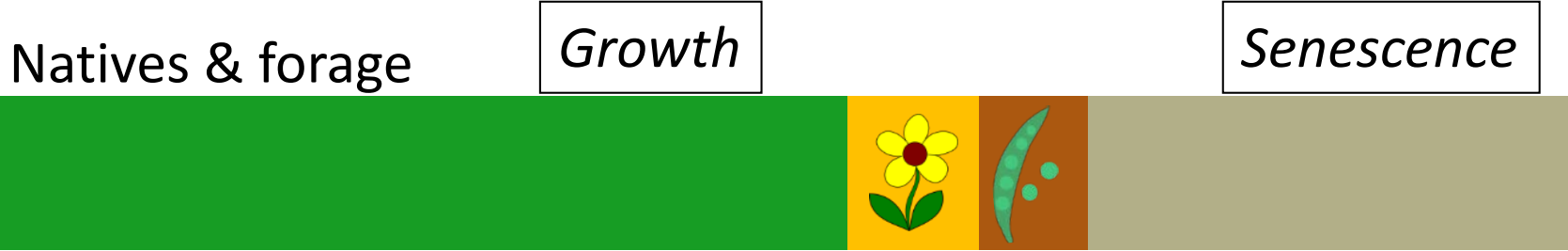


Barbed goatgrass



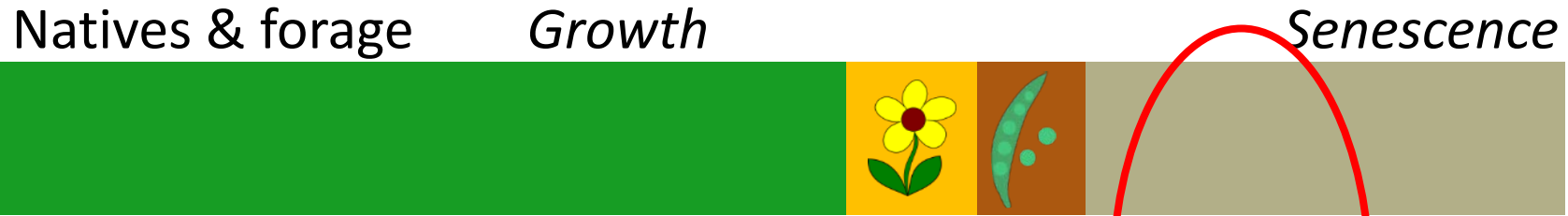


Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
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Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
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Late  
Phenology  
Invasive





- Hunt: June 29, 2017
  - 18 acres: Medusahead
  - \$500: Burn Plan
  - \$1500: Burn Boss
  - \$600: VFD Stipends
  - \$100: Air Quality + other
    - \$150/acre +~30 people

- Phelps Burn: June 26, 2018
  - 3 acres: Vineyard Edge
  - 3 acres: Medusahead
  - No Burn Plan
  - \$1500 Burn Boss
  - \$100: Air Quality + other
    - \$267/acre + ~25 people

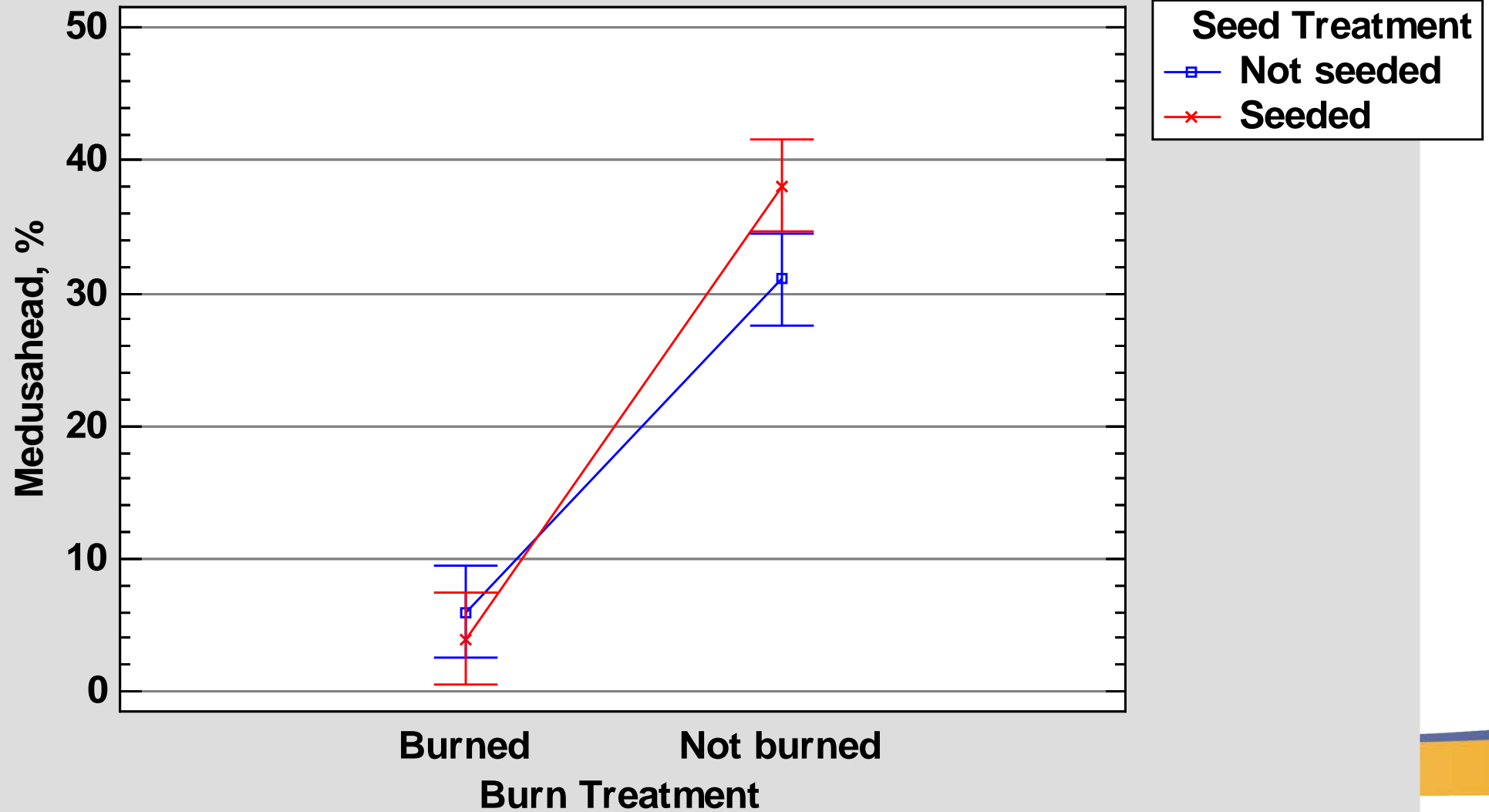


- Phelps: June 25, 2019
  - 26 acres: Medusahead
  - \$250: Burn Plan
  - \$1000: Burn Boss
  - \$0: VFD Stipends
  - \$315: Air Quality + other
    - \$60/acre +~45 people

- Stansberry: June 26, 2019
  - 20 acres: Medusahead
  - \$500: Burn Plan
  - \$1000: Burn Boss
  - \$750: VFD Stipends
  - \$315: Air Quality + other
    - \$128/acre +~45 people

- Hunt: June 27, 2019
  - 53 acres: Medusahead
  - \$450: Burn Plan
  - \$1000: Burn Boss
  - \$750: VFD Stipends
  - \$315: Air Quality + other
    - \$50/acre +~40 people

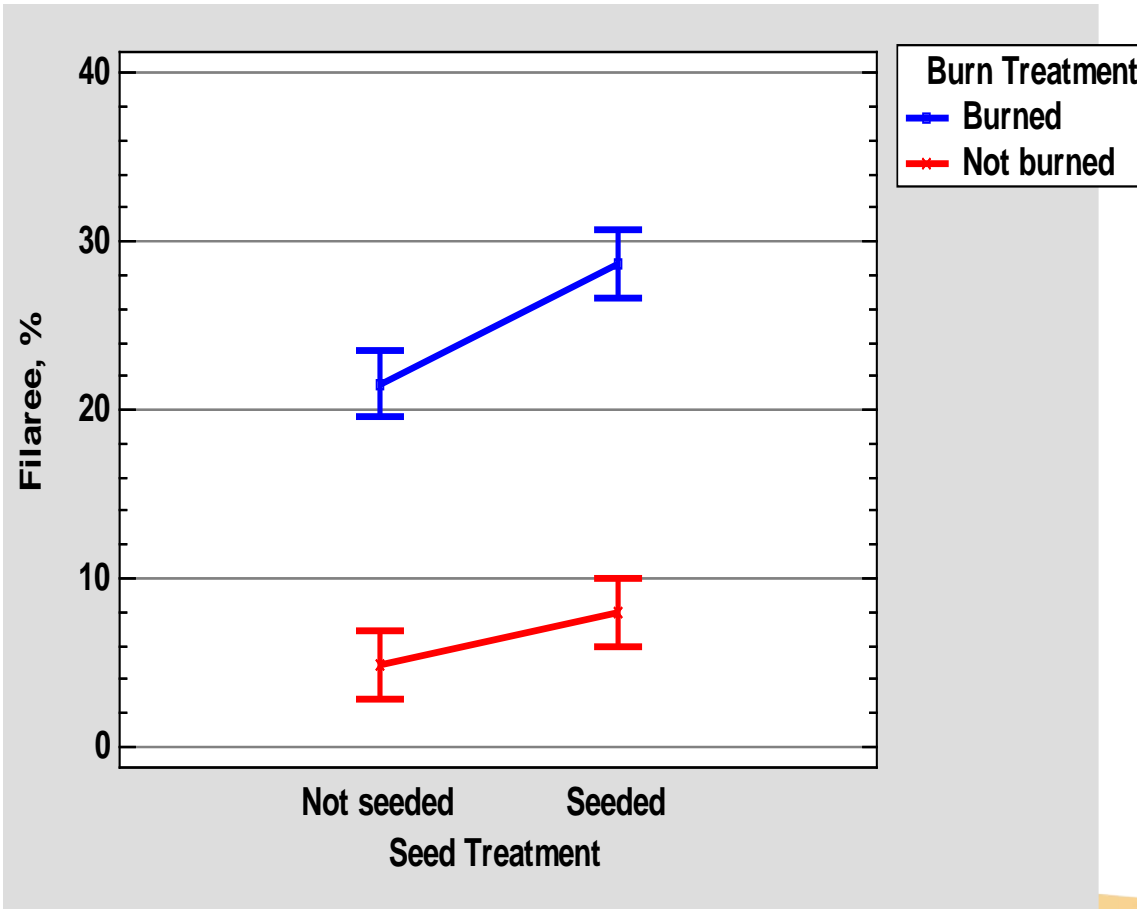
# Medusahead Cover 1 Year Post-Burn - Humboldt



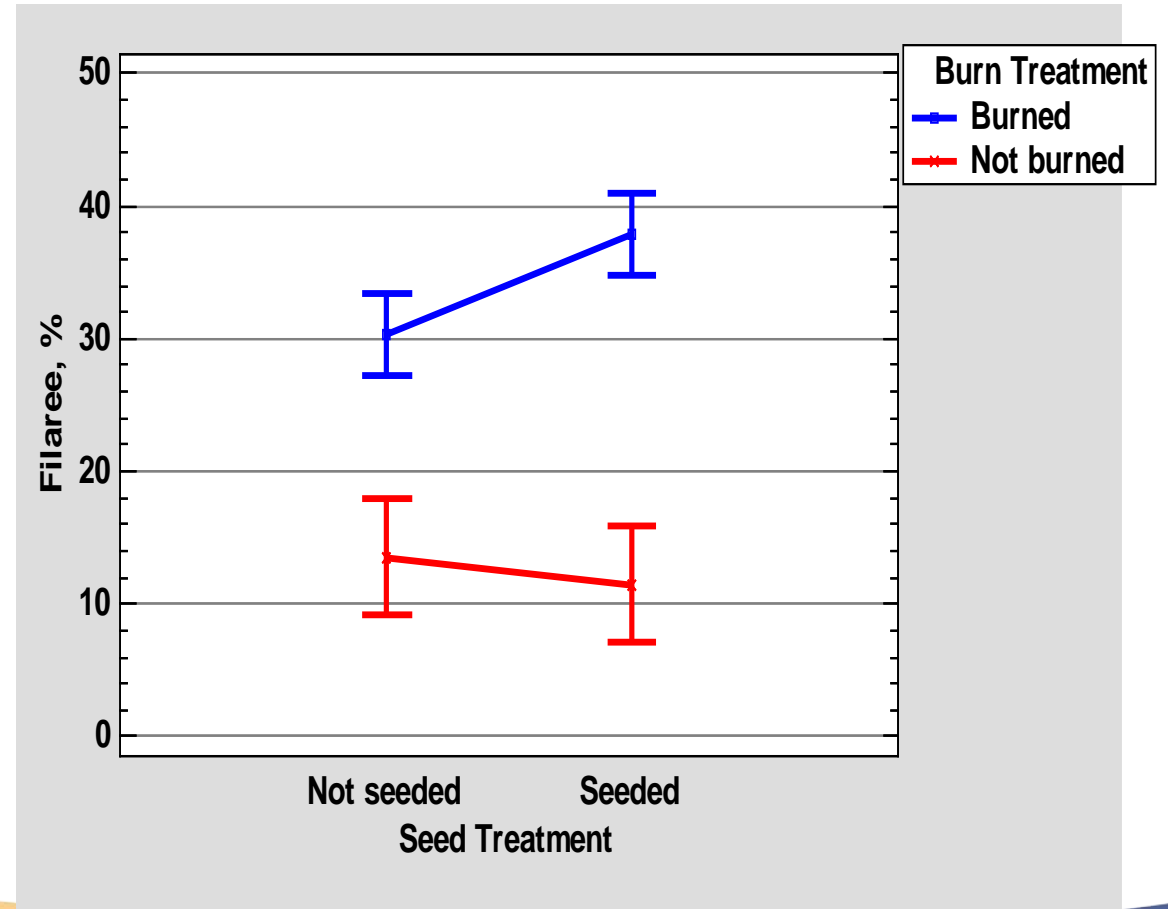


# Filaree 1 Year Post-Burn – Both Counties

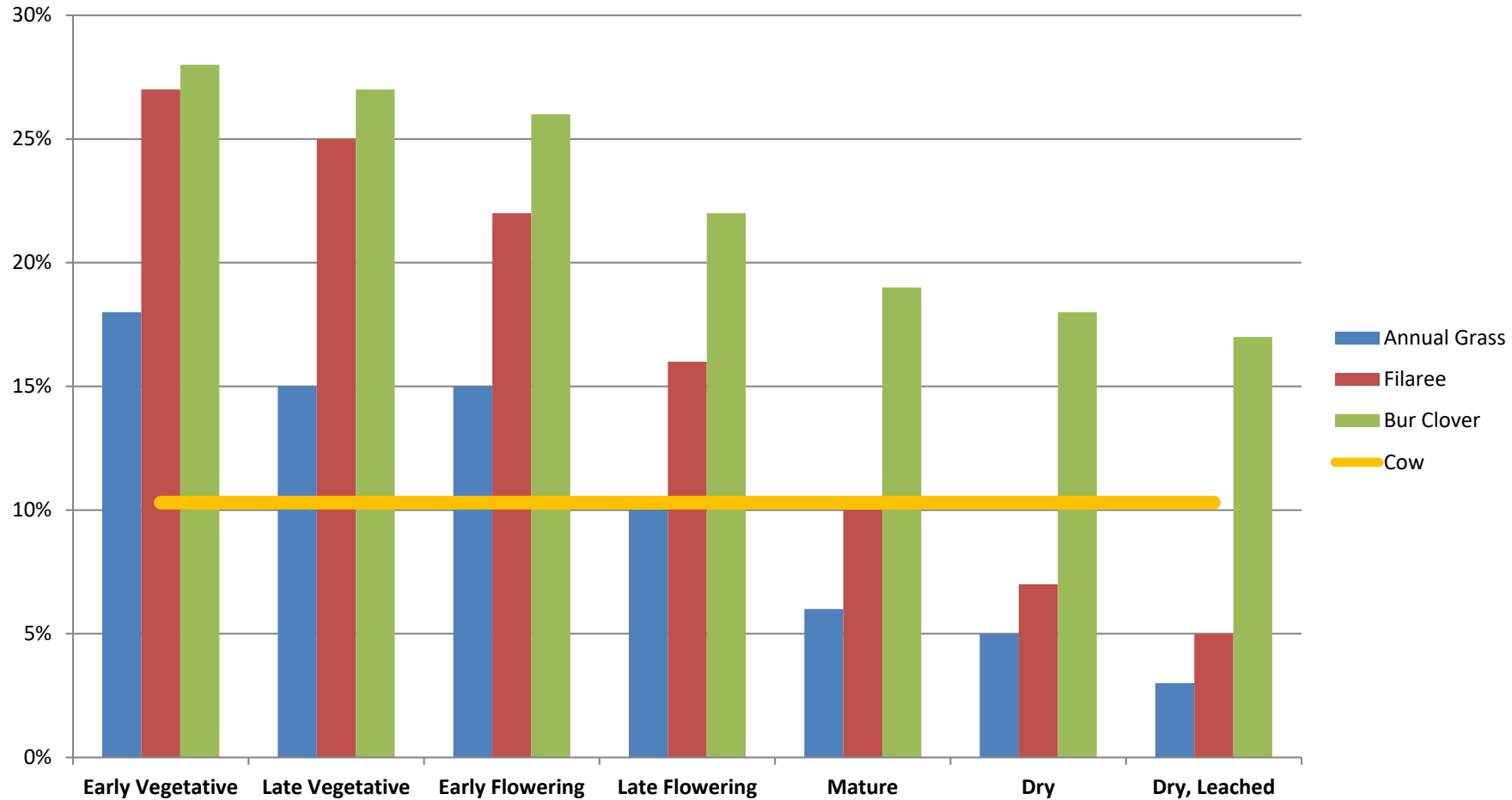
## Humboldt



## Tehama

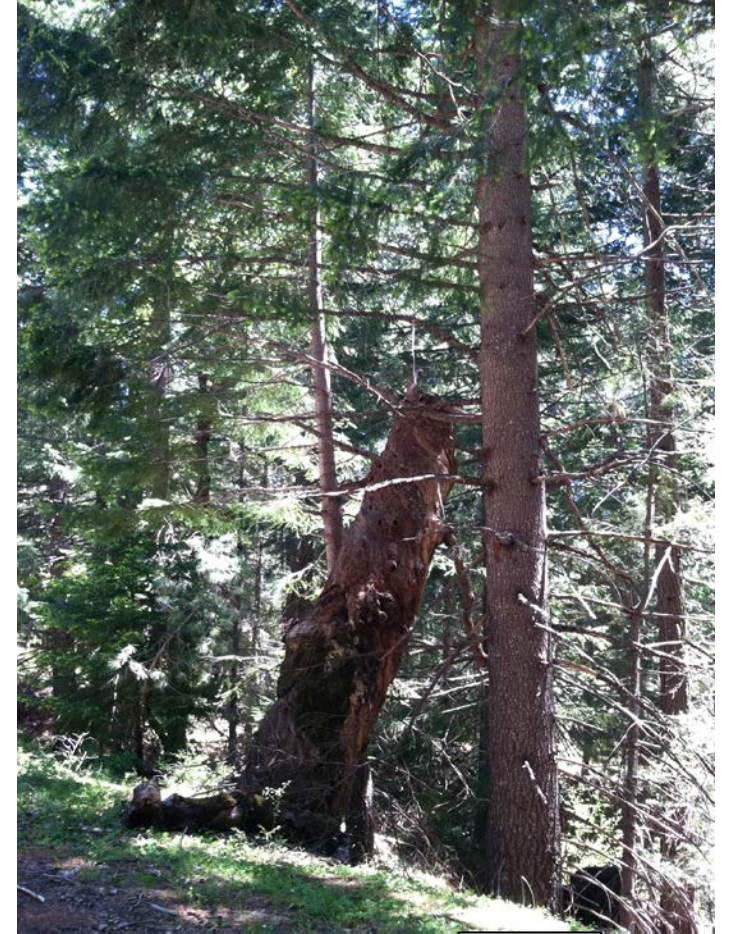


# Cow Lactating 1st 90 days – % CP





# Evergreen encroachment into oak woodlands













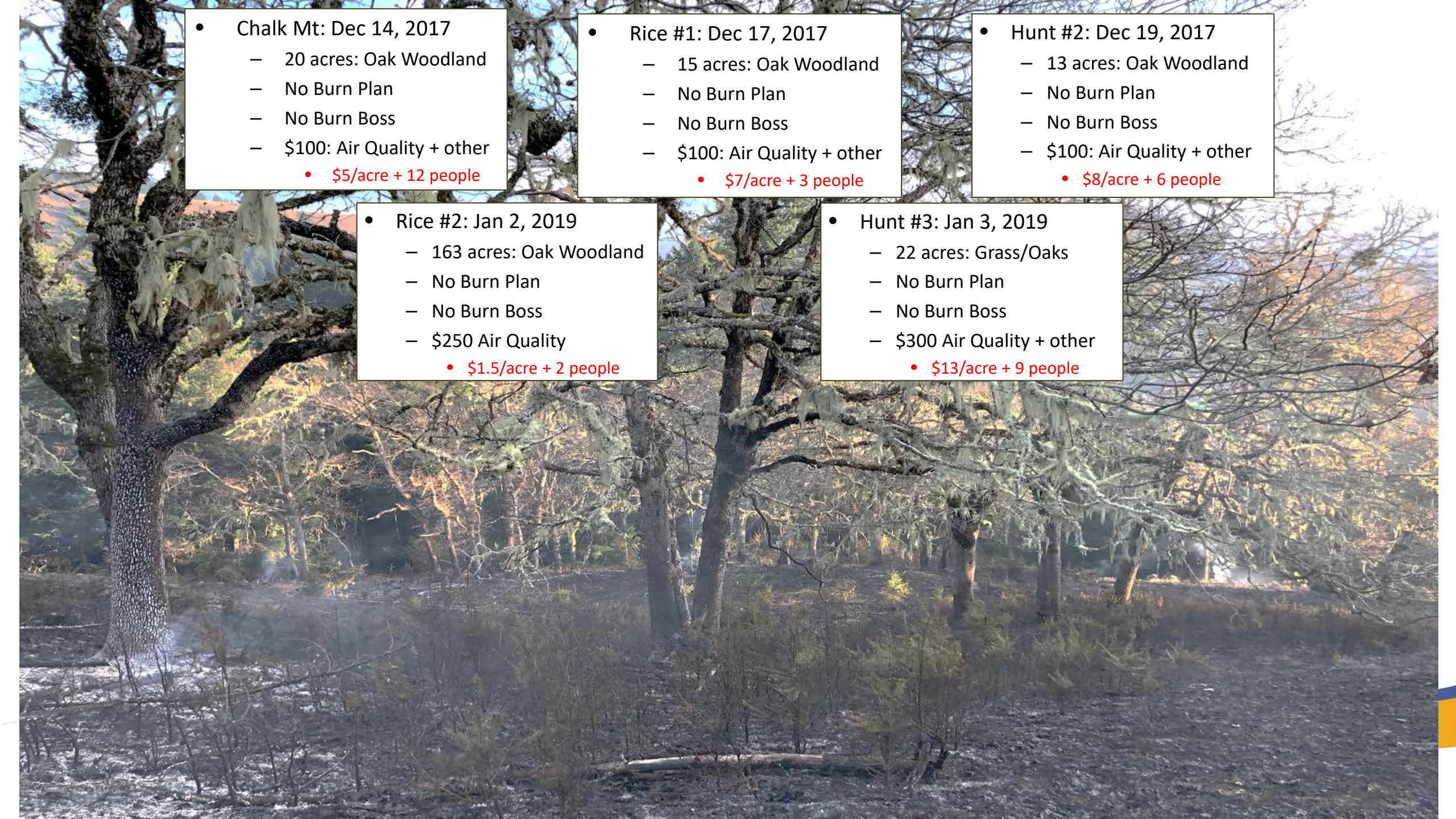
- Chalk Mt: Dec 14, 2017
  - 20 acres: Oak Woodland
  - No Burn Plan
  - No Burn Boss
  - \$100: Air Quality + other
    - \$5/acre + 12 people

- Rice #1: Dec 17, 2017
  - 15 acres: Oak Woodland
  - No Burn Plan
  - No Burn Boss
  - \$100: Air Quality + other
    - \$7/acre + 3 people

- Hunt #2: Dec 19, 2017
  - 13 acres: Oak Woodland
  - No Burn Plan
  - No Burn Boss
  - \$100: Air Quality + other
    - \$8/acre + 6 people

- Rice #2: Jan 2, 2019
  - 163 acres: Oak Woodland
  - No Burn Plan
  - No Burn Boss
  - \$250 Air Quality
    - \$1.5/acre + 2 people

- Hunt #3: Jan 3, 2019
  - 22 acres: Grass/Oaks
  - No Burn Plan
  - No Burn Boss
  - \$300 Air Quality + other
    - \$13/acre + 9 people





# California's largest NRCS-funded burn





# Coyote brush in coastal grasslands

- Mazeppa #1: October 31, 2017
  - 140 acres: Coyote Brush
  - \$500: Burn Plan
  - \$1000: Burn Boss
  - \$200: Air Quality + other
    - \$12/acre + ~25 people

- McBride #1: Sept 26, 2018
  - 215 acres: Coyote Brush
  - \$500: Burn Plan
  - \$1000: Burn Boss
  - \$1000: Air Quality + other
    - \$5/acre + ~35 people



- Mazeppa #2: Sept 27, 2018
  - 145 acres: Coyote Brush
  - Reused Burn Plan
  - \$1000 Burn Boss
  - \$800: Air Quality + other
    - \$12/acre + ~30 people

- McBride #2: Oct 17, 2018
  - 130 acres: Coastal shrub
  - Reused Burn Plan
  - \$1000 Burn Boss
  - \$200: Reused Air Quality + other
    - \$9/acre + ~30 people



# Fuels reduction projects

- Cocking: October 20, 2018

- 3 acres: Forest/Urban
- \$1000 Burn Plan
- \$1500 Burn Boss
- \$830 Air Quality + other
  - \$1110/acre + 25 people



- Ostrow: April 29, 2019

- 4 acres: Understory
- No Official Burn Plan
- No Official Burn Boss
- \$145 Air Quality + other
  - \$36/acre + 20 people



# Blackberry control

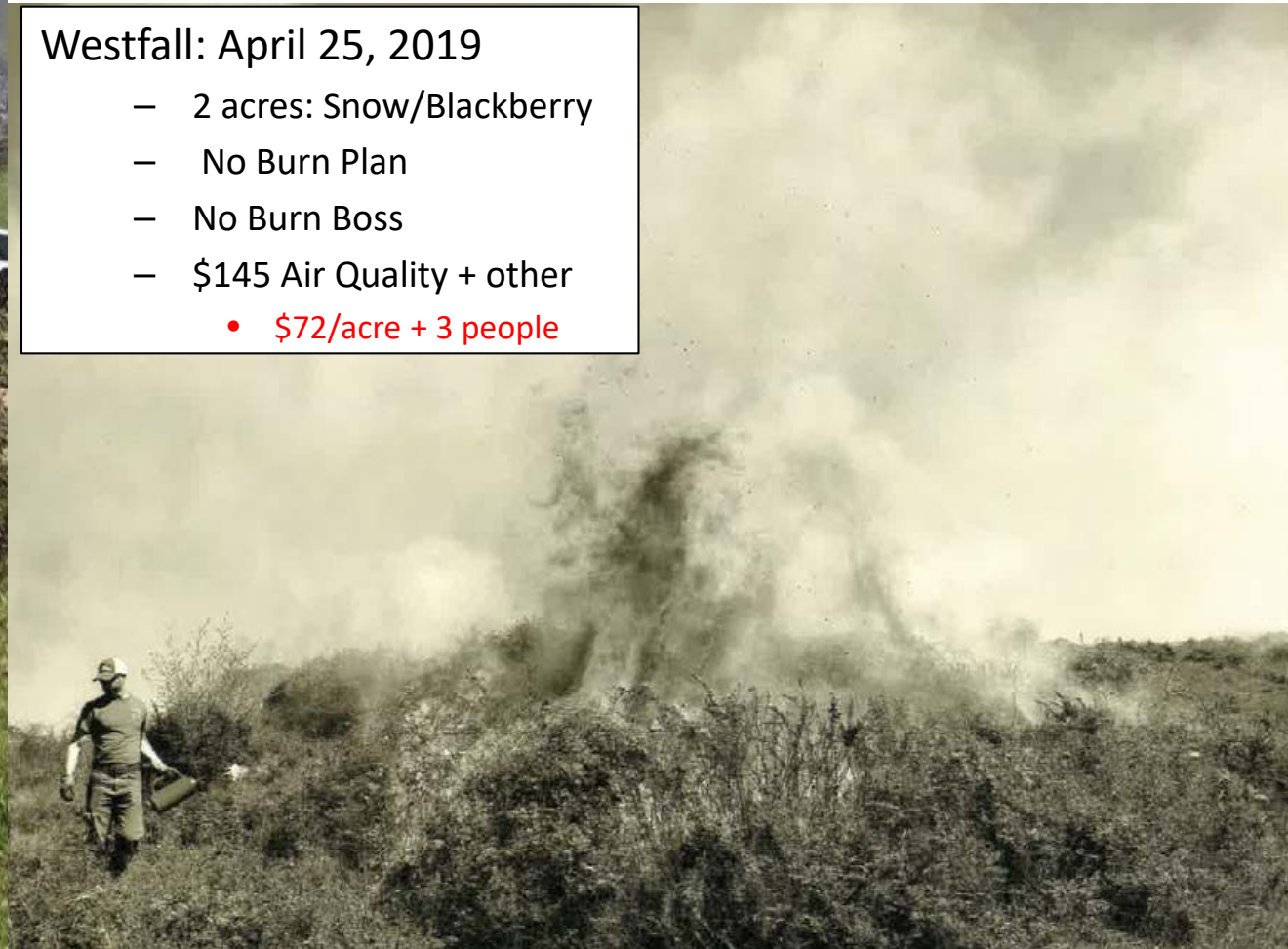
- Any burnt blackberry is good blackberry.

Westfall: April 25, 2019

- 2 acres: Snow/Blackberry
- No Burn Plan
- No Burn Boss
- \$145 Air Quality + other
  - \$72/acre + 3 people

Moore Burns: April 25, 2018

- 5 acres (over 2k acres):  
Scattered Blackberry
- \$500: Burn Plan
- \$1500: Burn Boss
  - (NRCS Requirement)
- \$100: Air Quality + other
  - \$420/acre + 10 people





# Finally: Developing *Search Images*

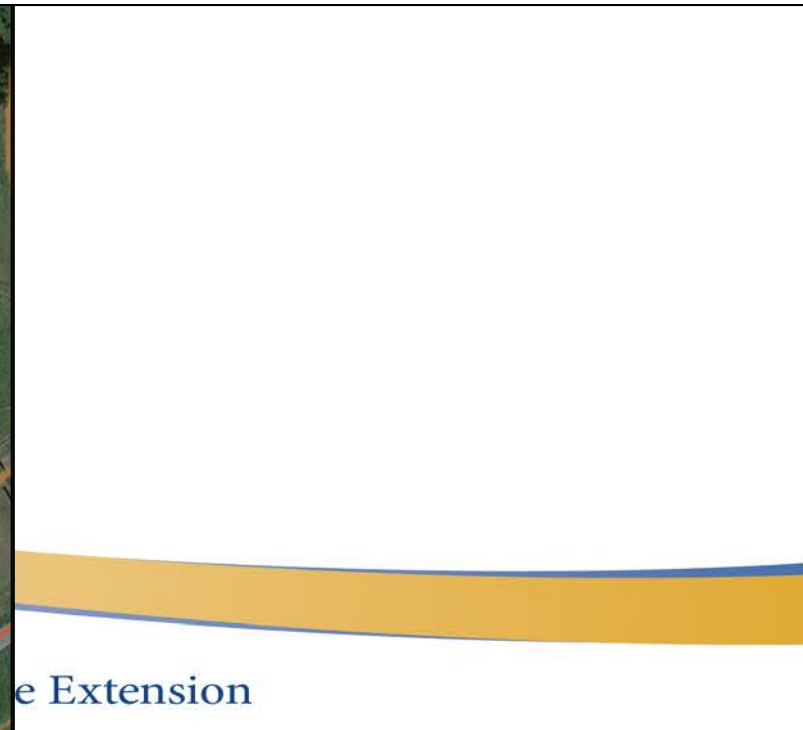
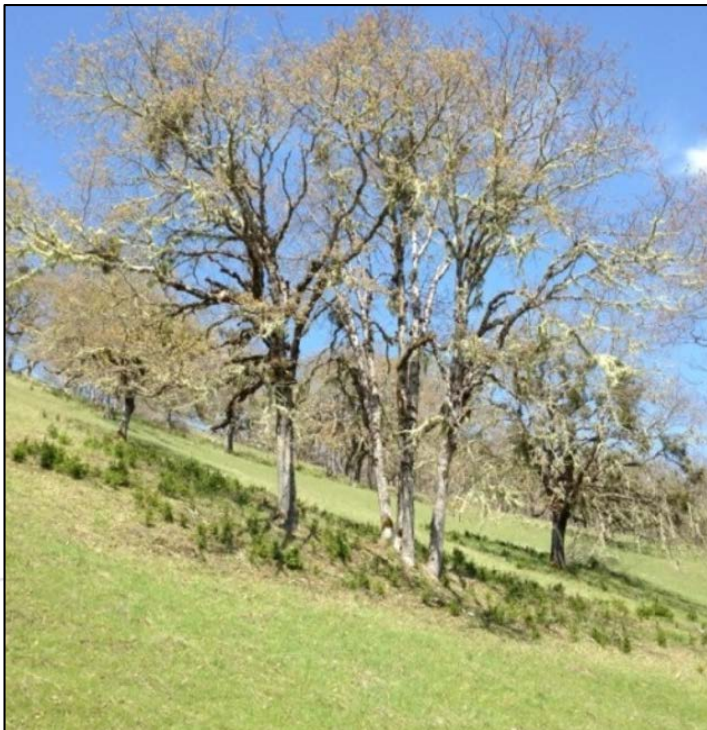
- What is a search image?
  - Predator/Prey
  - Selecting seed trees
  - Selecting real estate





# Rx Fire Search Images:

- See the problem
- See the burn unit
- See the opportunity



e Extension



Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July
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### Herbaceous Plants



### Deciduous Oaks



### Conifers/Brush/Blackberries



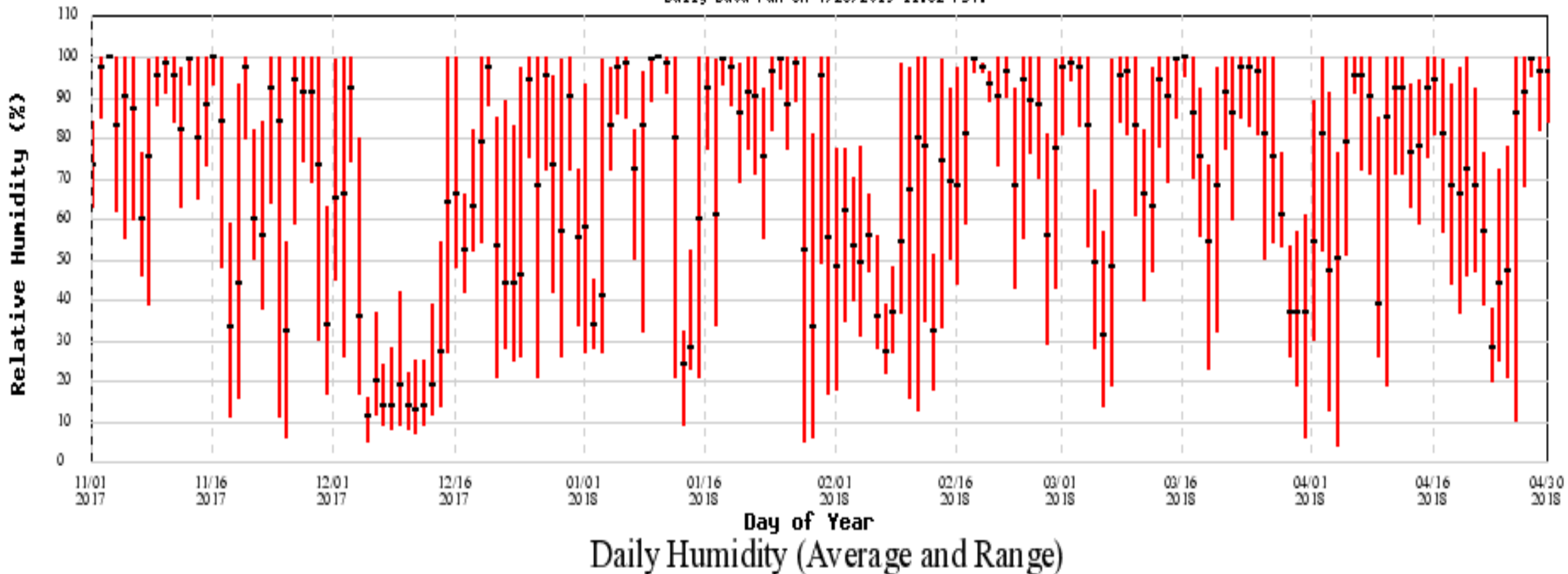
We need to rethink burn windows: drive by objective not just by expert knowledge... remember, CA's fire experts are wildfire experts.



# 17/18 HumCo Windows

## Kneeland California

Daily Data run on 4/26/2019 11:32 PST.



Western  
Regional  
Climate  
Center

UC  
CE

University of California

Agriculture and Natural Resources

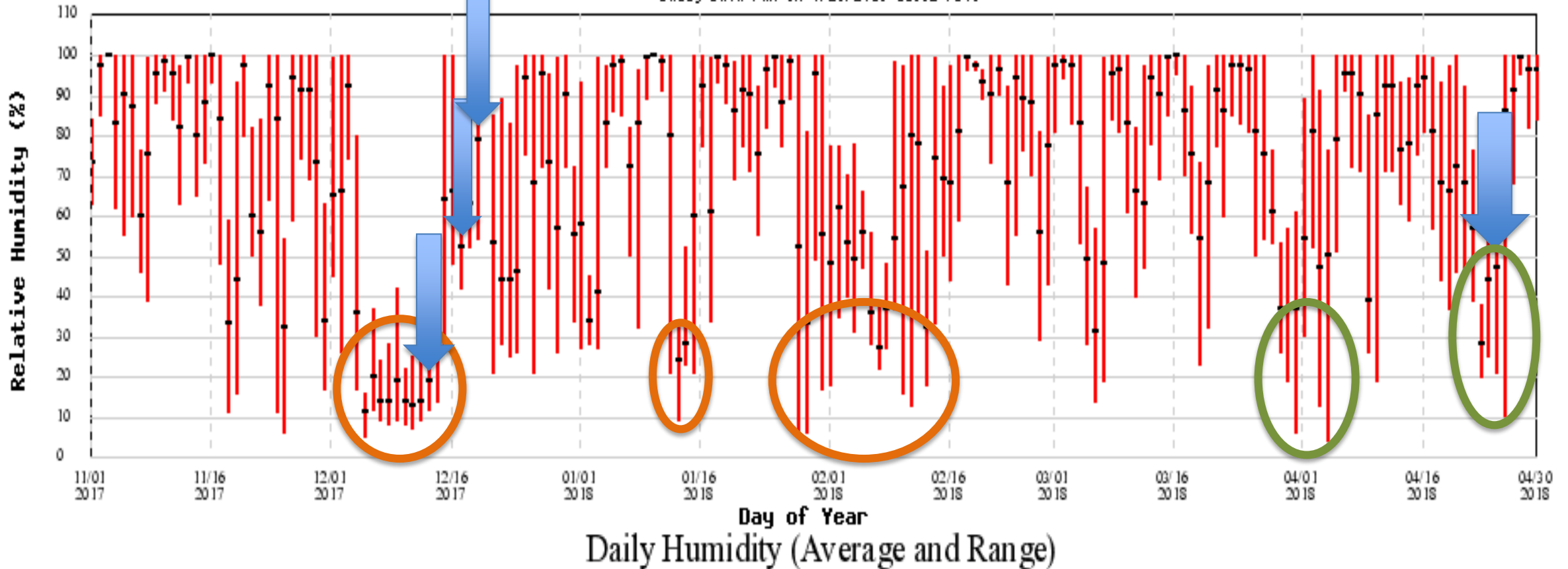
Cooperative Extension



# 17/18 HumCo Windows

## Kneeland California

Daily Data run on 4/26/2019 11:32 PST.

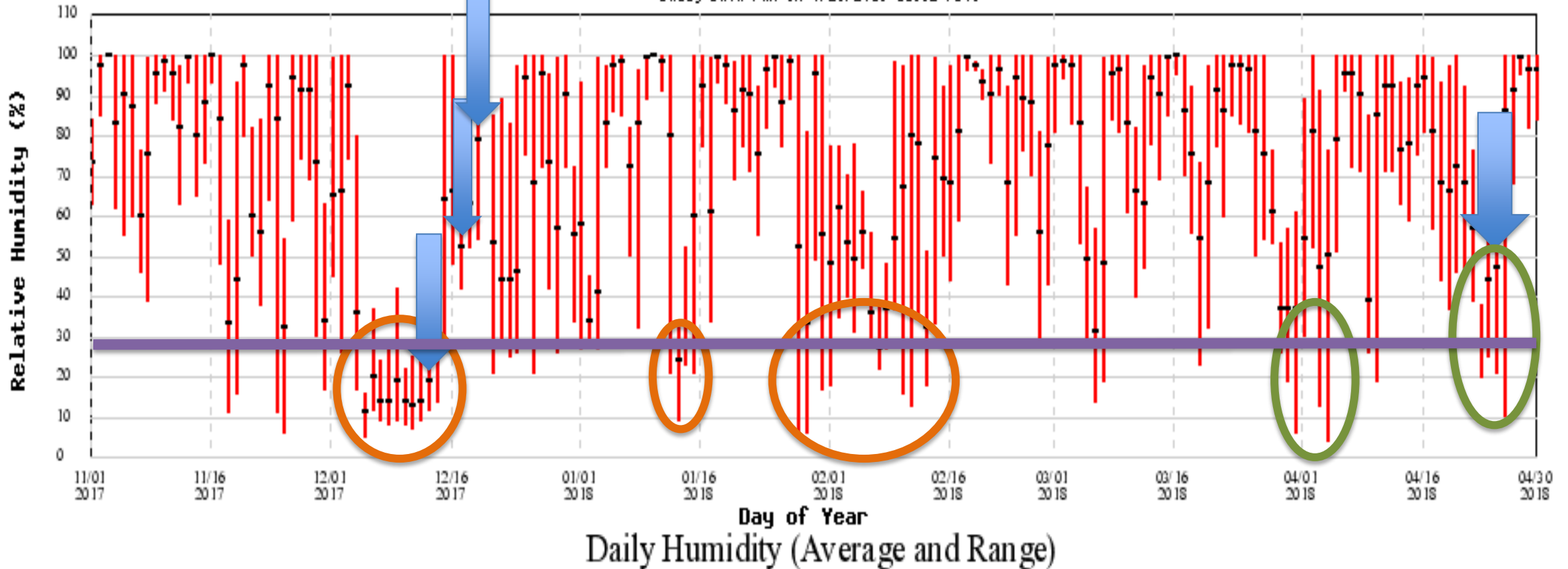




# 17/18 HumCo Windows

## Kneeland California

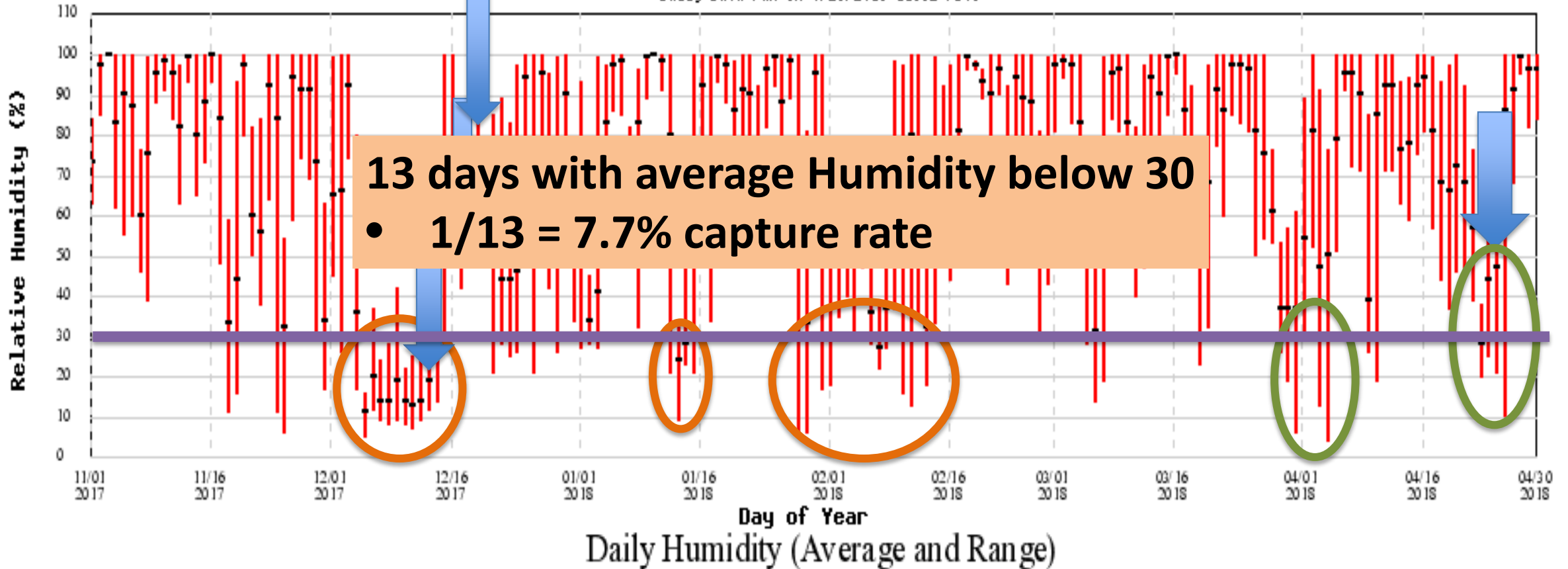
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# 17/18 HumCo Windows

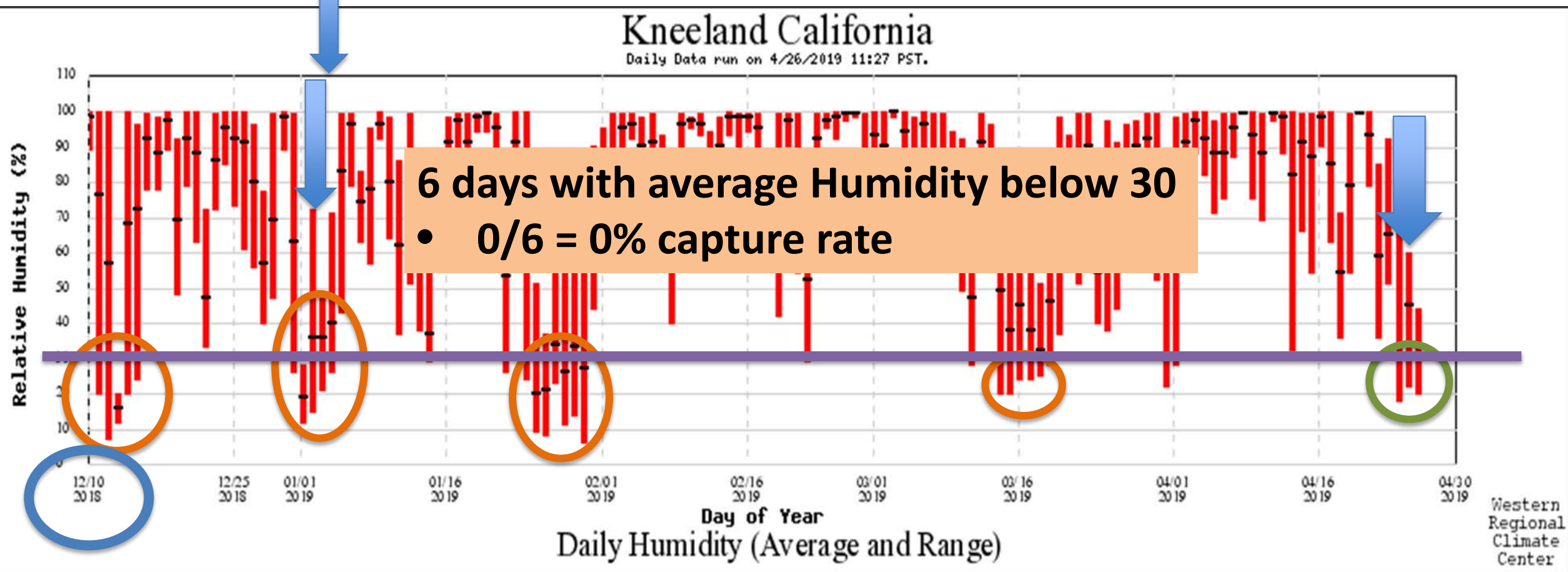
## Kneeland California

Daily Data run on 4/26/2019 11:32 PST.





# 18/19 HumCo Windows



# Core philosophies of our PBA

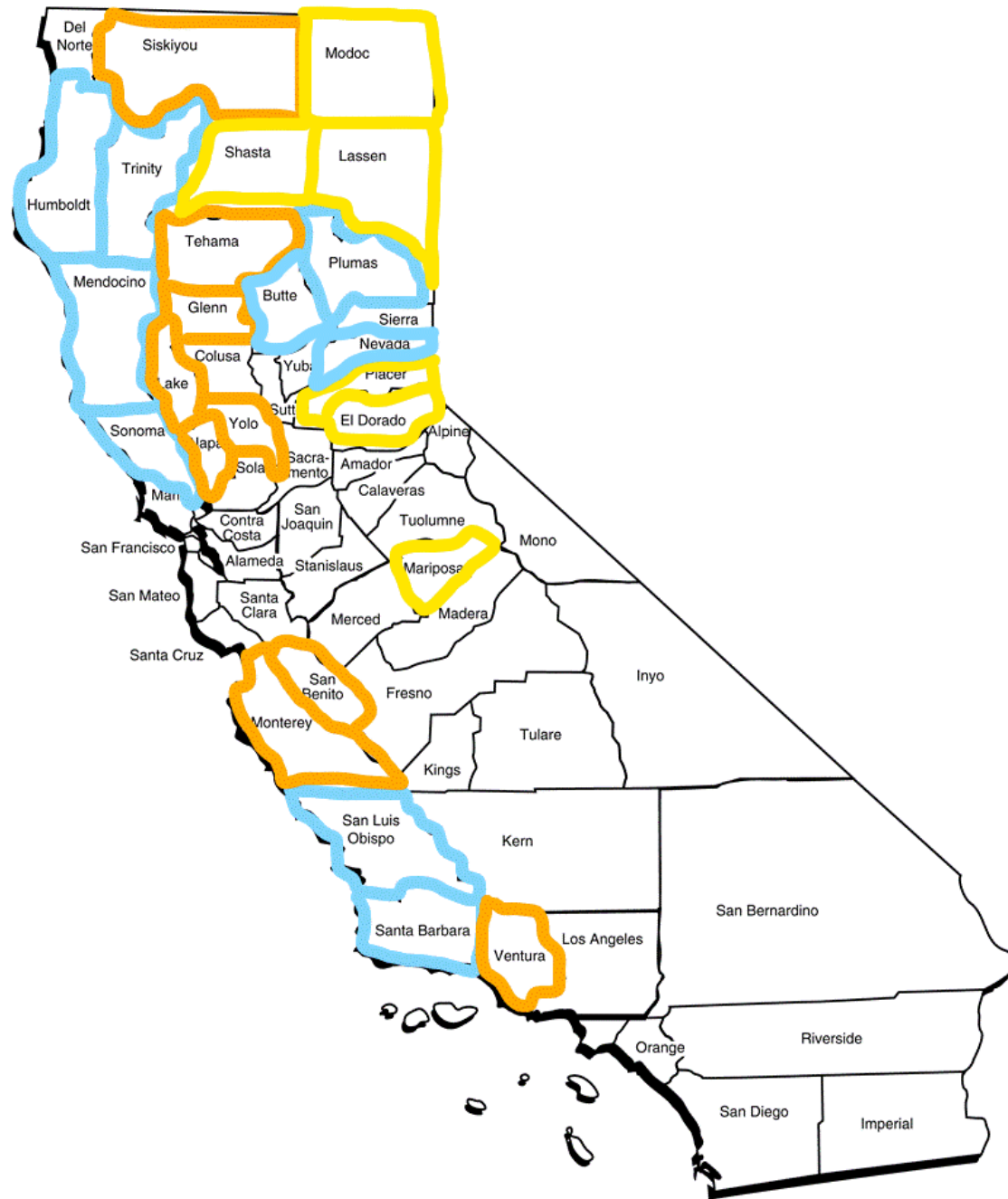
- Everyone is welcome and has something to contribute
  - Inclusiveness really changes the fire attitude
- Every burn is a training burn—we're always learning
- Every day is a burn day
- Get comfortable and make it fun!













# Questions?

**Jeff Stackhouse**

Livestock and Natural Resources Advisor

[jwstackhouse@ucanr.edu](mailto:jwstackhouse@ucanr.edu)

(707) 445-7351

**Lenya Quinn-Davidson**

Area Fire Advisor

[lquinndavidson@ucanr.edu](mailto:lquinndavidson@ucanr.edu)

(707) 445-7351

