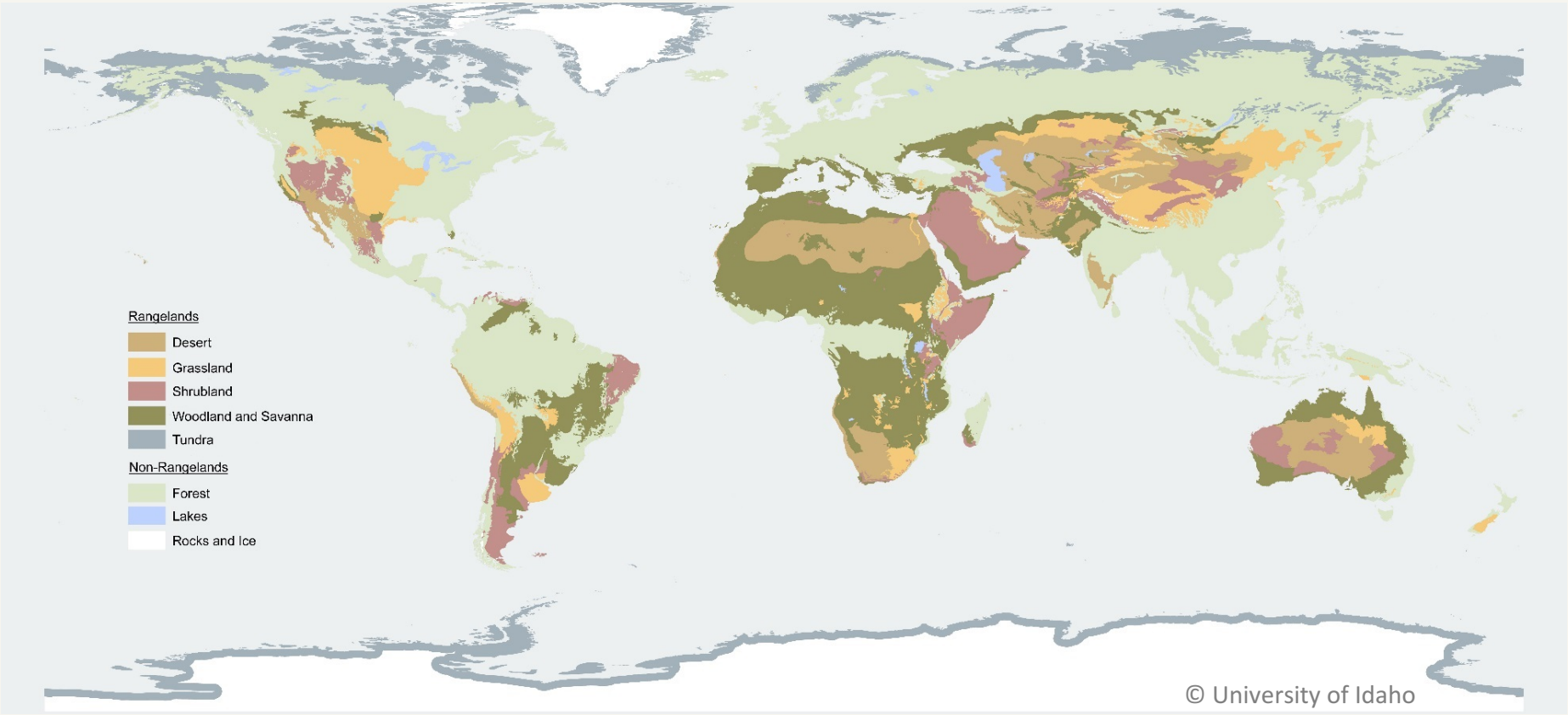
The Nature Conservancy
Protecting nature. Preserving life.

THERE'S GOLD IN THOSE HILLS!

Sasha Gennet
Senior Scientist, California

GLOBAL RANGELANDS EXTENT



- *30-50% land area*
- *1 billion people*

"…trees would naturally cover all surfaces of the earth except where land had been 'ruined.'"

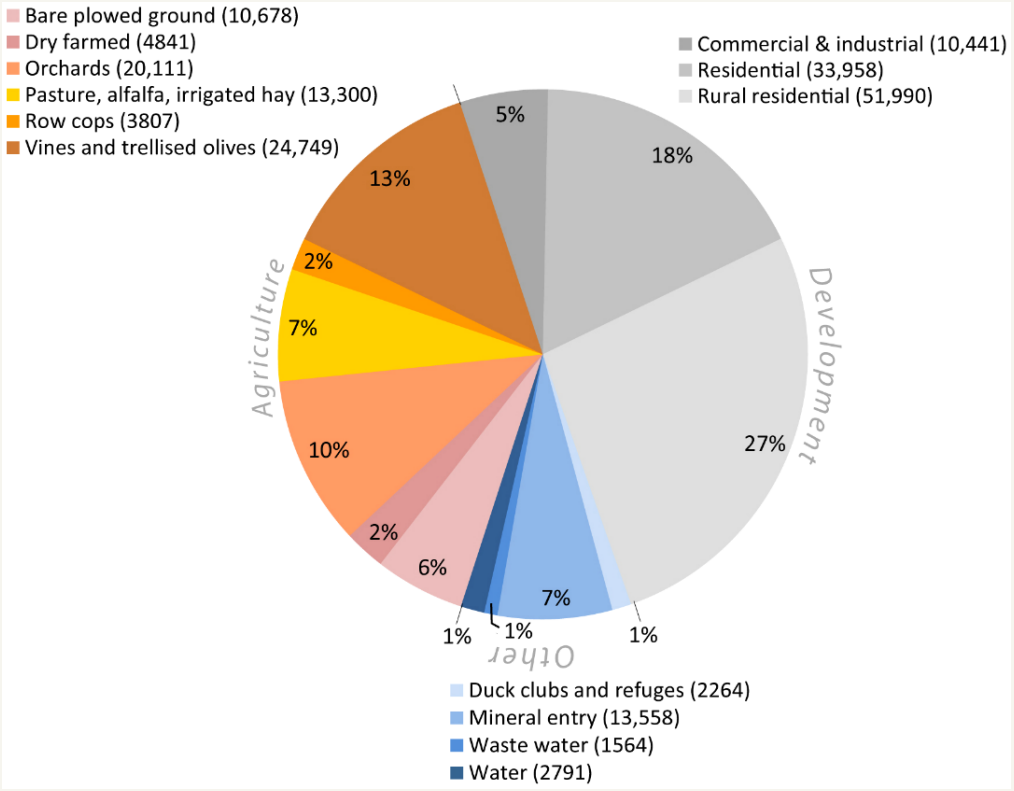
Diana Davis, 2016, *The Arid Lands: History, Power, and Knowledge*

CALIFORNIA RANGELANDS

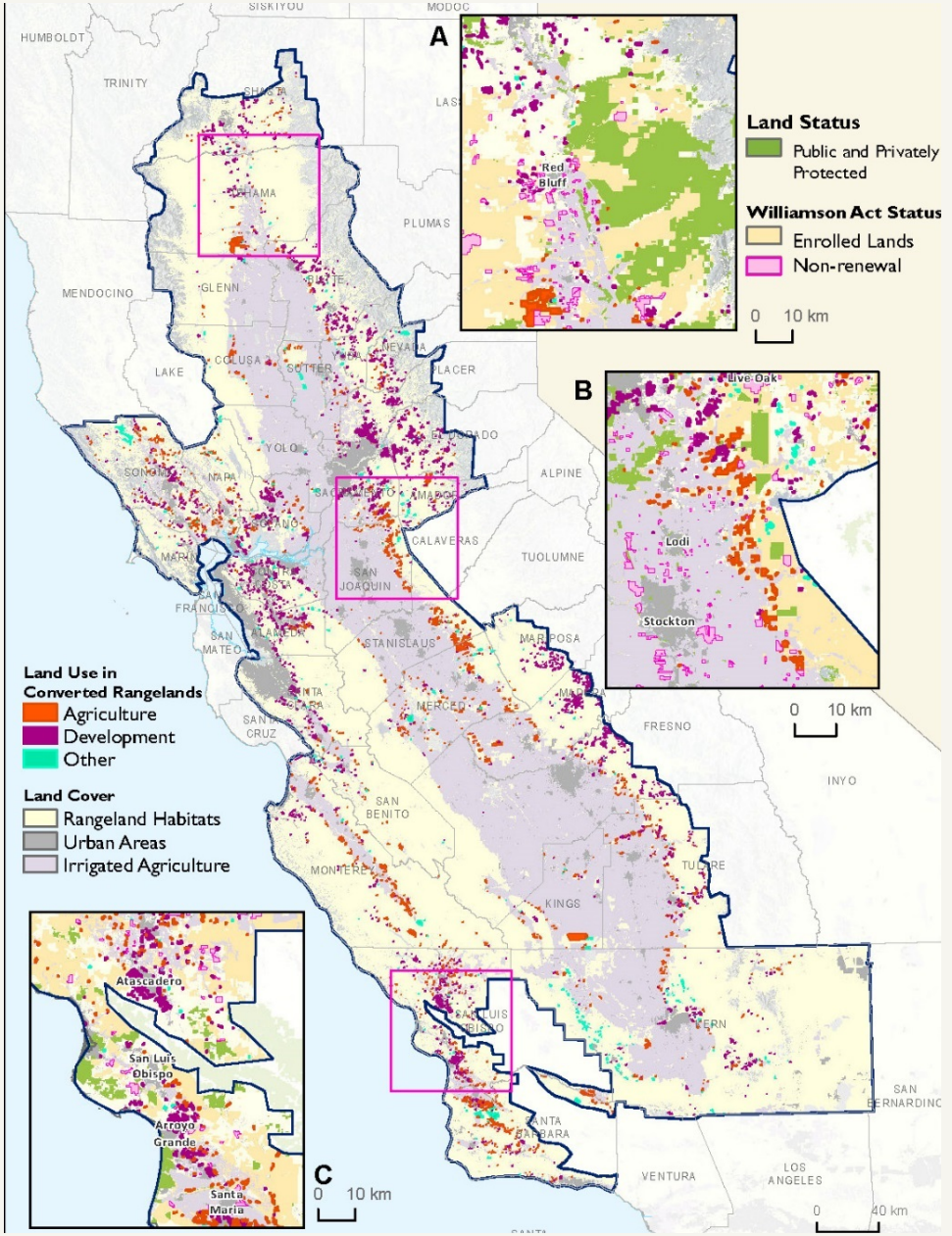
- *30-60% land area*
- *~16,700 ranches*
- *4th largest beef producing state, with 5.3M head in 2013*
- *>85% grasslands privately owned*

RANGELAND CONVERSION

RANGELAND CONVERSION



Cameron DR, Marty J, Holland RF (2014) *PLoS One*.



SOILS

- Produce **forage**
- Hold and purify **water**
- **Nutrient cycling**
- Store **carbon** (30% total global soil stocks)
- Influence biological communities, diversity

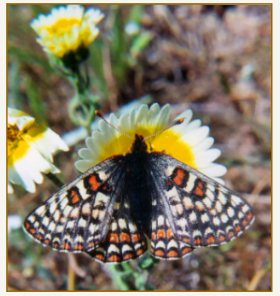
PLANTS

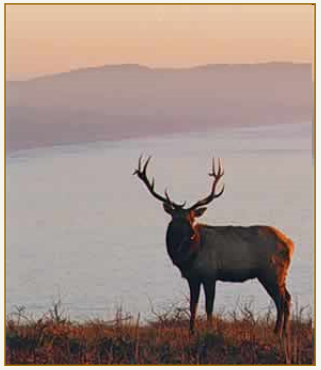
- Mediterranean regions contain 2% land area, 20% flora
- 1348 native grassland species
- 300 species of native grasses
- Grasslands = 40% CA native plants, 82% of listed plants

"Here it is not … flowers sprinkled in the grass, but grass in the flowers. This is the True Florida, the true land of flowers."

–John Muir at Pacheco Pass, ~1868

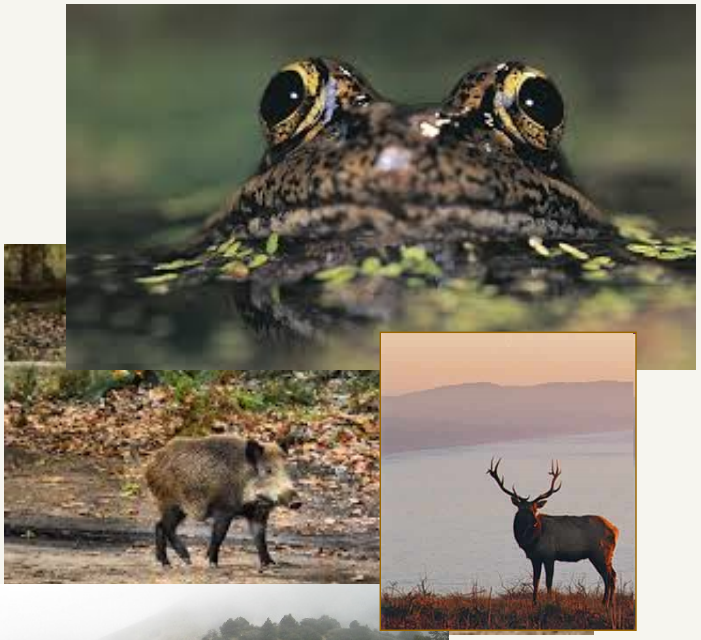
WILDLIFE



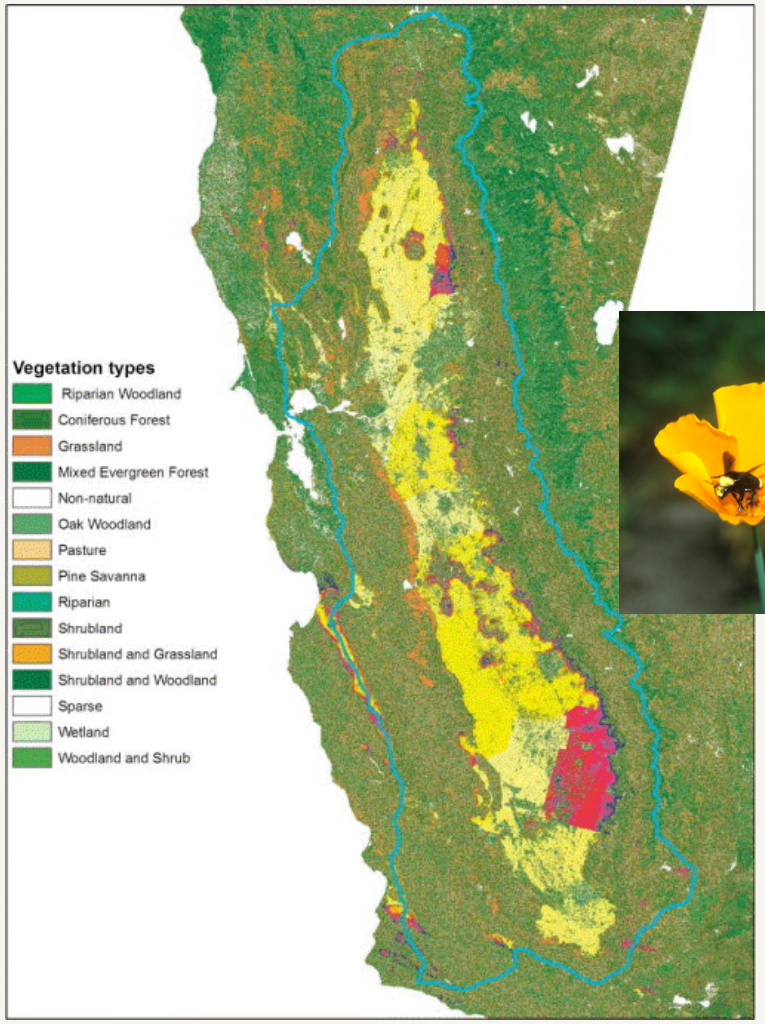


WILDLIFE

- Mitigation for T and E species
- Public lands grazing leases
- Hunting
- Ecotourism opportunities



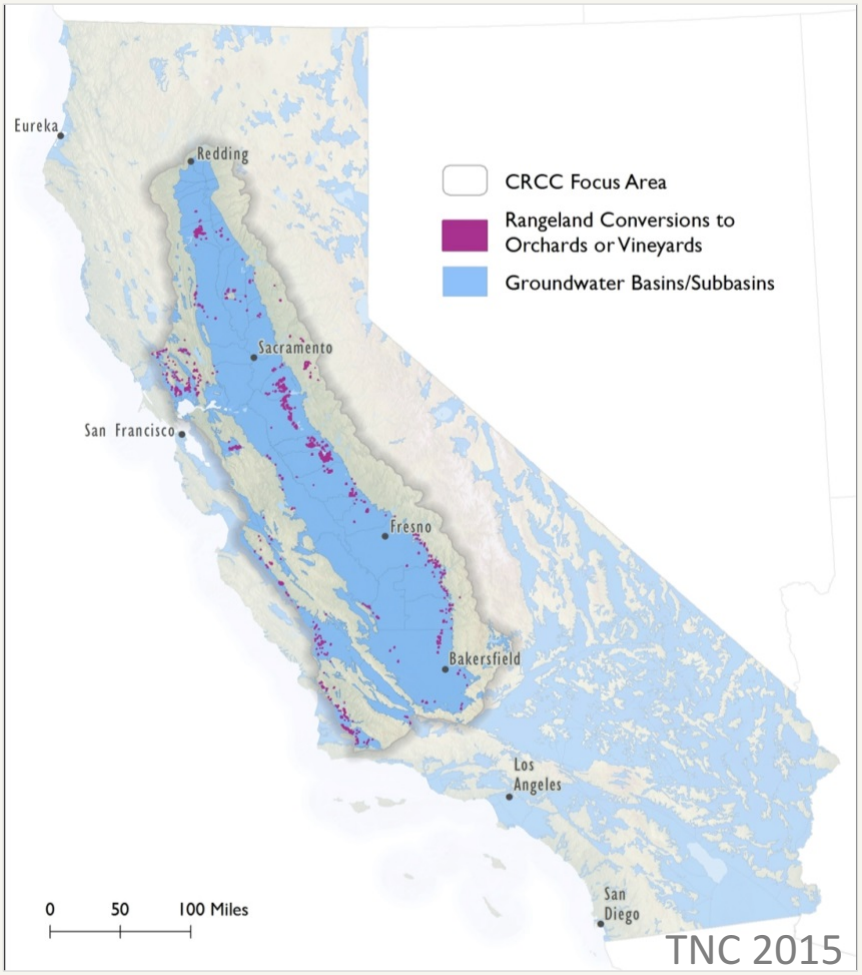
PEST CONTROL AND POLLINATION BENEFITS



- 1600 native bee species
- Wild pollinators needed for fruit set
- Between ~$1 - $2.5B service
- Rangelands primary land cover
- Natural enemies of crop pests enhanced by herbaceous habitat

Chaplin-Kramer R, Tuxin-Bettman K, Kremen C (2011) *Rangelands*

WATER: QUANTITY



- Groundwater overdrafts due to ag and urban use
- Avoided rangeland conversion *may be cost competitive* with other procurement options
- Possible PES opportunity- Water fund

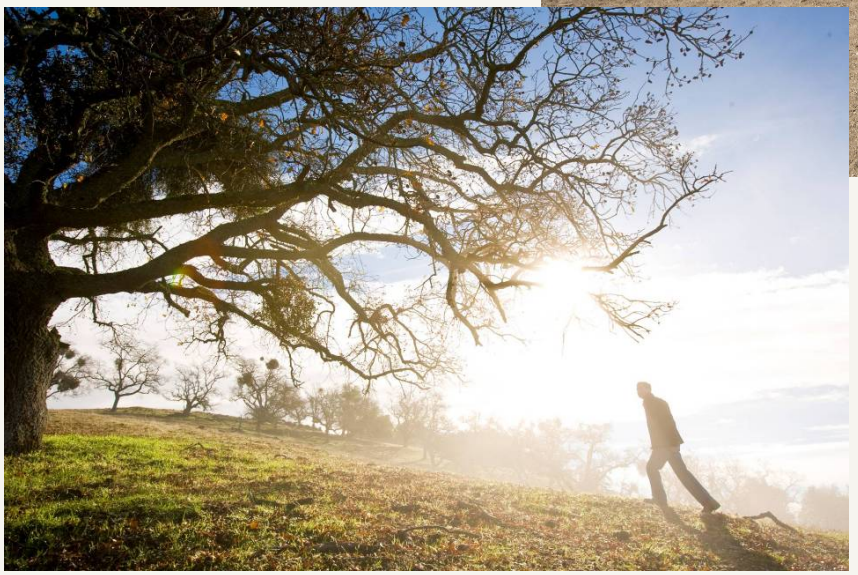
WATER: QUALITY

- Range management improves water quality
- 87% reduction in listed waterbodies
- Benefits compared to ag and urban uses

GREENHOUSE GAS MITIGATION

- Enteric fermentation and manure management are GHG emission sources
- Rangeland plants and soils store carbon, mitigate emissions
- Variable between years
- Net sink CH4 (methane)

LIVELIHOODS



- Deep commitment to ranching
- Off-ranch income
- Increase production preferred to PES
- Resilient community

THANK YOU, CRCC!

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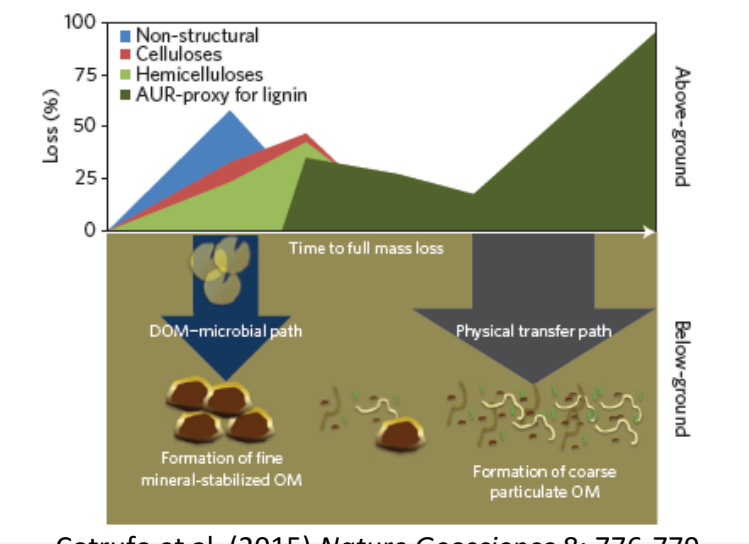
Why don't we have the science we need?

- Understanding of how C is sequestered in soil has changed dramatically in past 5 years
- Some proposed practices are novel



Cotrufo et al. (2015) *Nature Geoscience* 8: 776-779

PERSPECTIVE

doi:10.1038/nature16069

The contentious nature of soil organic matter

Johannes Lehmann[1,2*] & Markus Kleber[3,4*]

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