

Estimating Water Tradeoffs of Beef Cattle on California Rangelands

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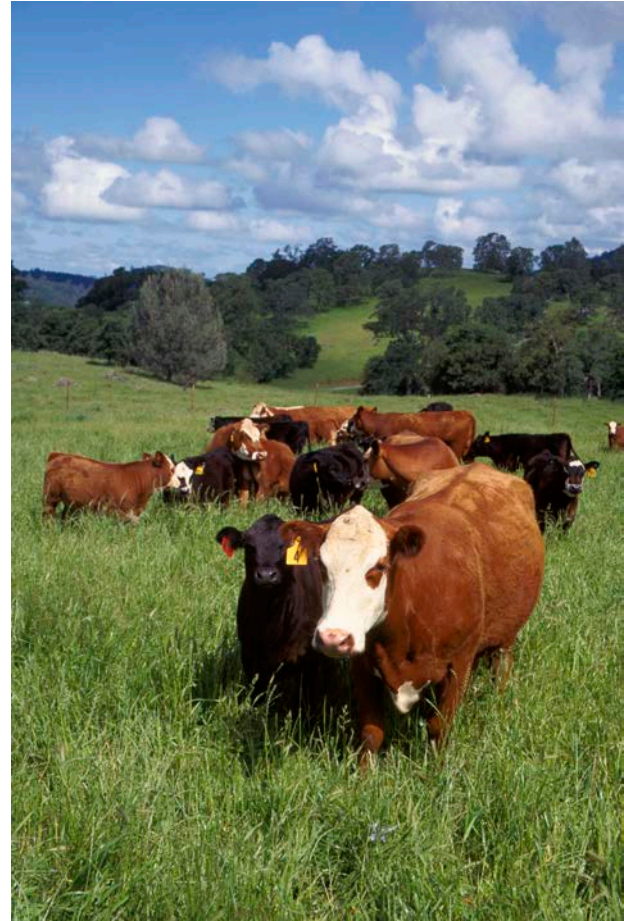
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Background

- Long-term drought in CA
- Criticism of Ag use of water
 - Beef
 - Almonds



Objectives

- To revisit the analysis of Beckett and Oltjen (1993)
- To quantify water requirements for rangeland beef production in California at three different locations
- To highlight and compare ecosystem benefits associated with grazing cattle on rangeland

**Estimation of the Water Requirement for Beef
Production in the United States^{1,2}**

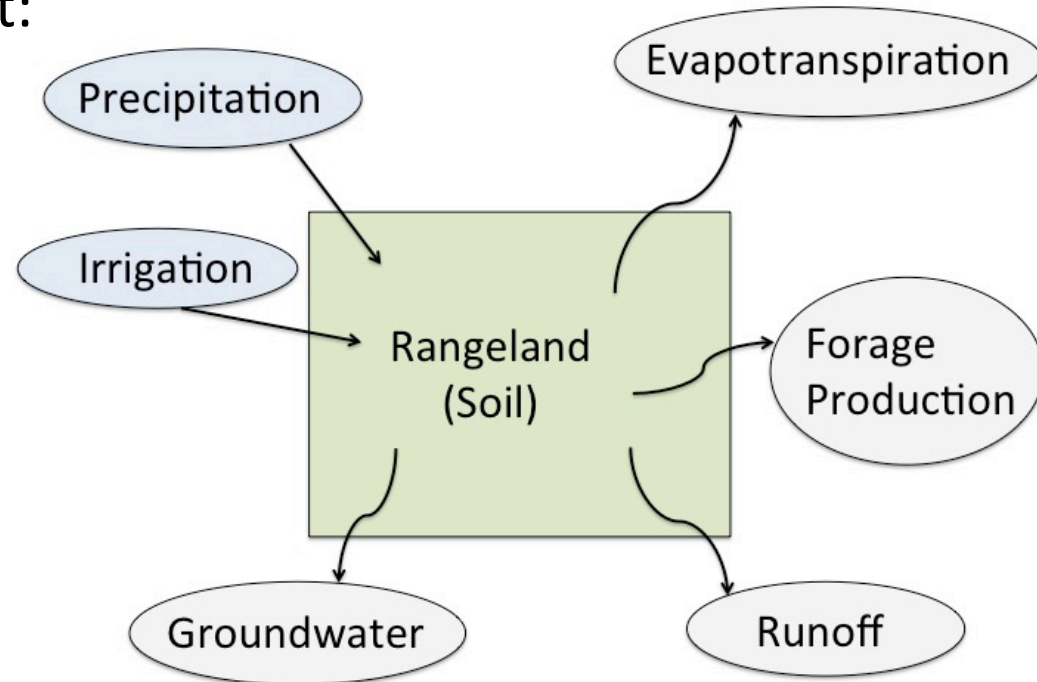
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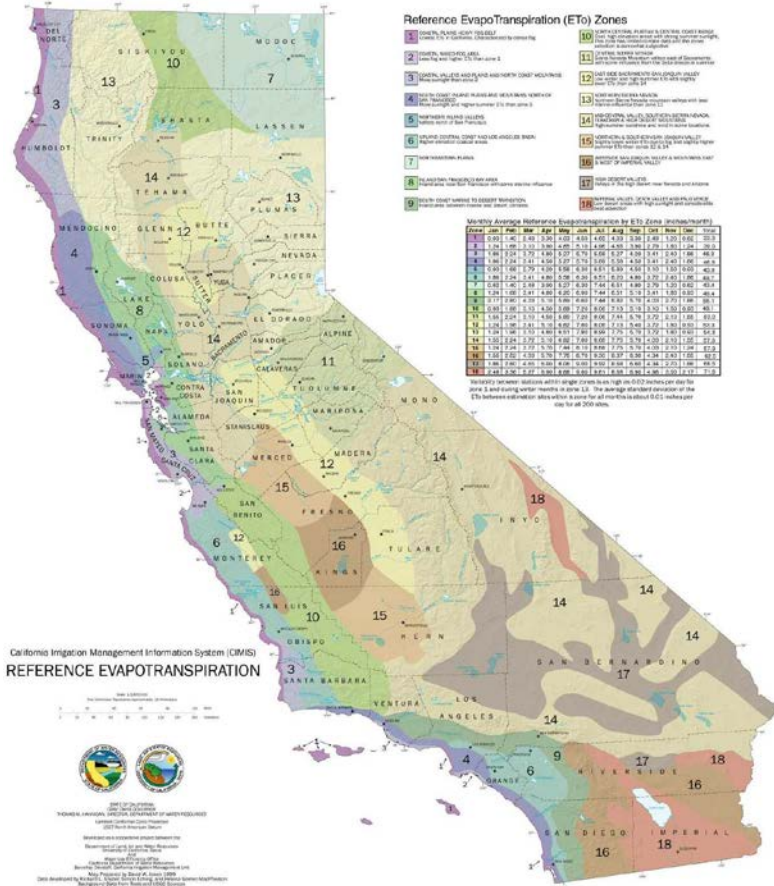
J. Anim. Sci. 1993. 71:818–826

Materials and Methods

- Range water use modeled at:
 - Hopland Research and Extension Center (HREC)
 - Sierra Foothill Research and Extension Center (SFREC)
 - USDA Forest Service San Joaquin Experimental Range (SJER)



Materials and Methods

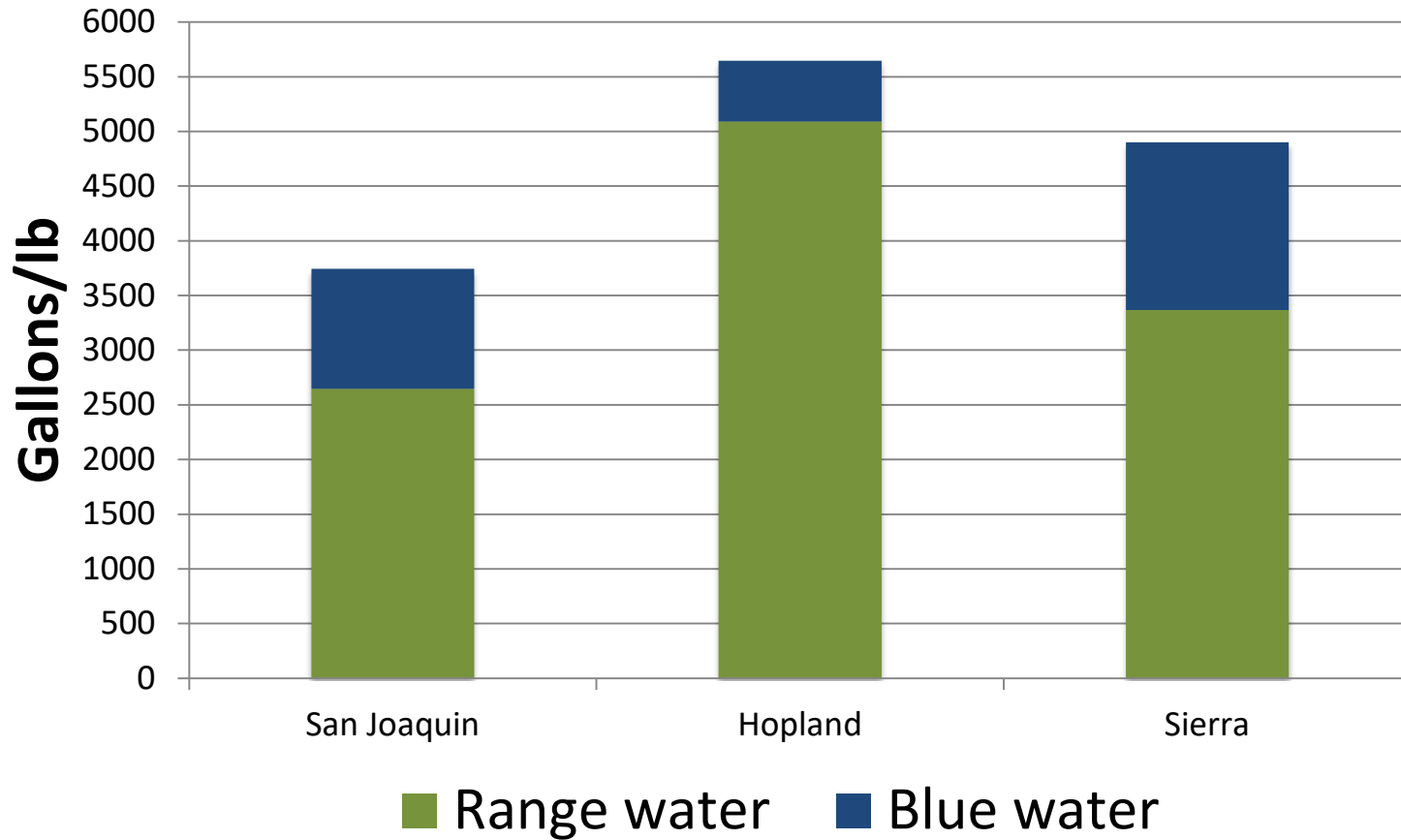


- Evapotranspiration (ET) zones used to determine water use by rangeland plants
- DMI of range = total DMI of cattle – DMI alfalfa – DMI irrigated pasture
- Range water consumed by cattle

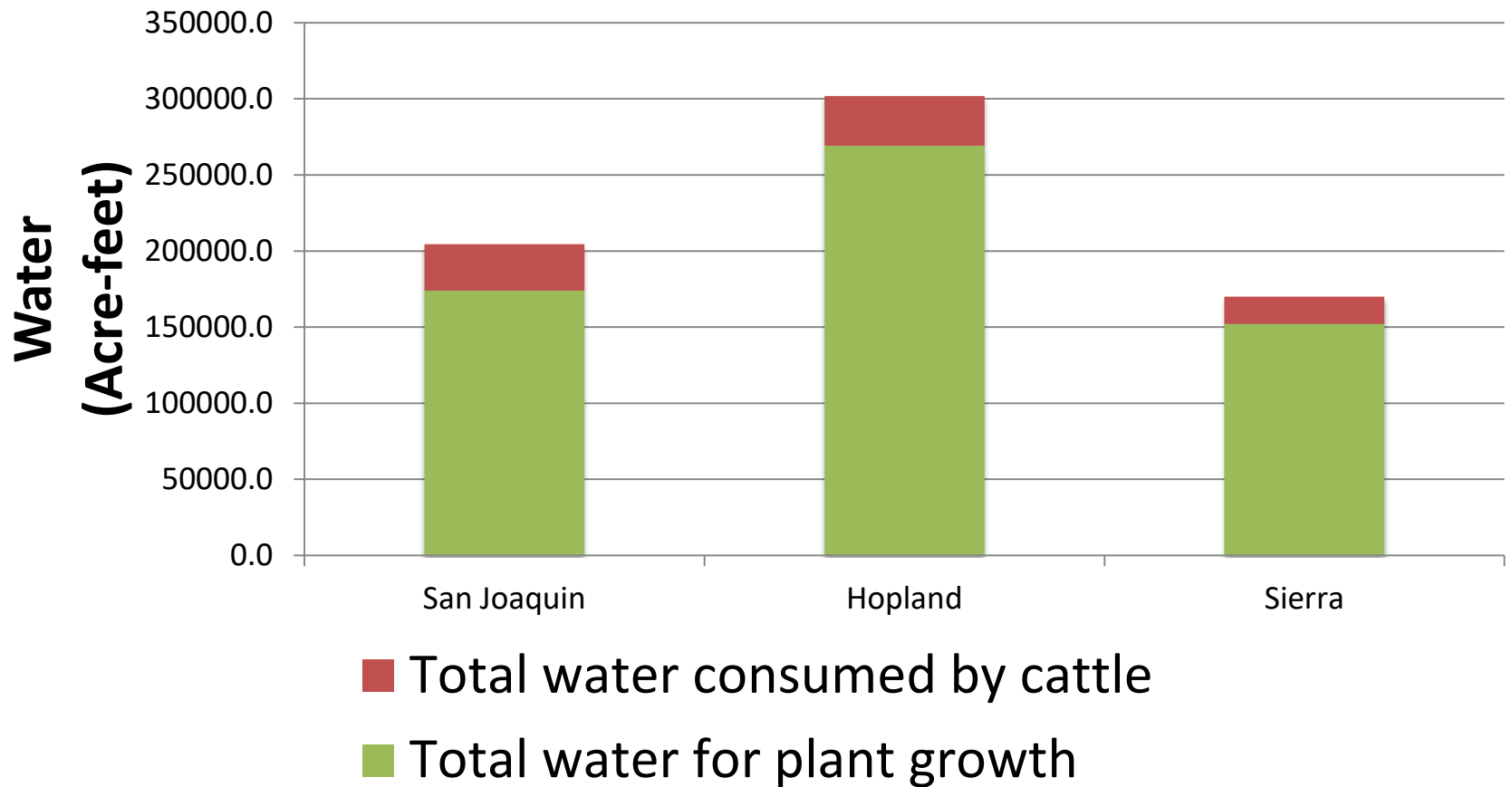
Assumptions

- 85% calving rate
- 18% of heifers kept as replacements
- 1 bull for every 20 cows
- Average weight of animals
 - Cows: 1200 lbs
 - Calves: 540 lbs
 - Replacement heifers: 720 lbs
 - Bulls: 1800 lbs
- Dry matter intake: 2% of BW

Water to Produce Beef



Range Water Use



Model Sensitivity

- Highest sensitivity to parameter changes in model (Beckett and Oltjen, 1993)
 - dressing percentage
 - boneless yield of beef carcasses
 - water applied to and hectares of irrigated pasture (leading cost of water)
 - Lbs/acre of range production

Alternative Uses of Rangeland

- Often not suitable for cultivation
- Conversion to nut crops and vines
- Housing developments
- No grazing

Residual Dry Matter

- What is RDM?
- Benefits of adequate RDM

How Does Grazing Benefit Rangelands?

- Improved forage quality for wildlife
- Maintains endangered species habitat
- Reduced fire hazard
- Maintains water cycle
- Reduced invasive species
- Maintains grassland habitat

Conclusion

