

# California ground squirrel impacts to livestock forage

*Research update from a project throughout Central California<sup>1</sup>*

## Ground squirrel damage described by ranchers



Ground squirrel burrow. Photo by Devii Rao.

- Ground squirrels eat forage.
- Livestock can break a leg if they step in a burrow.
- Networks of burrow systems can cause piping and erosion during winter storms.
- Burrowing can damage pond dams and ranch infrastructure.

## Historic damage estimates

- 200 ground squirrels eat approximately the same amount as 1 steer.<sup>2</sup>
- 6 male ground squirrels reduced forage availability by 529 lbs./half acre,<sup>3</sup> though authors thought this was high. Years later a different researcher estimated 21.1 lbs./acre was probably more accurate.<sup>4</sup>
- Heifers increased their weight gain by 33 lbs in a field where ground squirrels were eliminated compared to a field where they were not.<sup>5</sup>

## Our study



Ground squirrel in grass. Photo by Devii Rao.

- We estimated how much forage was eaten by ground squirrels, depending on the density of their populations.
- To do this, we sampled four, 1-acre plots at 16 sites in California's Central Coast and Central Valley, in May to early-June of 2019 and 2020.
- We visually estimated the number of ground squirrels for 3 days, both morning and afternoon.
- We also estimated the amount of remaining forage at the time of sampling.

## Results



Several trails leading to ground squirrel burrow. Photo by Devii Rao.

- Location, rainfall, and ground squirrel density all affected the amount of remaining forage in May/June.
- On average, each ground squirrel reduced the available forage by 24.3 lbs./acre.
- Variation in squirrel density substantially changes squirrel impact. For example, five squirrels in an acre can reduce forage by 122 lbs./acre, whereas 30 squirrels in an acre can reduce forage by 729 lbs./acre.
- For context, a cow/calf pair needs about 1,000 lbs of forage/month.
- Dry years did not have higher levels of forage loss due to squirrels, but having less available forage to begin with in dry years makes them even more challenging.

## Management Implications

- Ground squirrels are native to California and their burrows are used by other important native wildlife species. Therefore, the goal is not to eradicate them, but to find a balance between ranching goals and natural resources goals.

- It's important for ranchers to consider the cost of managing squirrels versus the cost of their damage, depending on their density.
- Controlling ground squirrels in dry years, when forage is low, may be most cost effective.



Ground squirrel. Photo by Devii Rao.

## References

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