

Impacts from Wildfires on Livestock Health and Production: Producer Perspectives

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Introduction

During 2020, the National Interagency Fire Center reported 10,431 fires burning 1,656,034.6 ha in California, 2,215 fires burning 461,994.2 ha in Oregon, and 770 fires burning 104,924.9 ha in Nevada. Ongoing drought conditions, and drier climatic conditions, are predicted to contribute to intensifying wildfires. Across both human and animal research, additional data is needed on the effects of natural exposure to wildfire smoke. Literature on wildfire and smoke impacts in livestock on the other hand is very limited. Researchers at the University of California, Davis, recently published a study on cats hospitalized with burns and smoke inhalation following the 2017–2018 California wildfires; the cats were shown to have significant cardiovascular changes based on serial echocardiograms. Rhesus macaques housed at the California National Primate Research Center and naturally exposed to wildfire smoke were reported to have pregnancy losses following heavy smoke exposure. Additionally, early data suggests that immune suppression may be evident in macaques even 12 years following smoke exposure. These latest studies both document an association between smoke exposure and diverse pathologies, and highlight the lack of peer-reviewed research in this area, underscoring the need for additional information.



Methods

Semi-structured questionnaire in Qualtrics

Distributed to contacts and listservs in California, Oregon, and Nevada between May 18, 2021 and July 31, 2021.

Questions assessed:

- Direct impacts
 - Burned livestock, deaths and euthanasia associated with burns
 - Evacuations
 - Pasture losses
- Indirect impacts
 - Smoke inhalation
 - Stress from movements, evacuation, or confinement following fires



Low birthweight of calves observed by one beef producer after heavy smoke exposure of dams during pregnancy

Aim

To collect information from beef cattle, dairy cattle, sheep, and goat producers in California, Oregon, and Nevada, on their experiences and associated losses during the 2020 wildfire season, to better understand potential direct and indirect losses producers may be observing associated with wildfires.

Conclusions

While this work represents a convenience sampling of a small number of producers, the results support the need for ongoing research and funding in this area to better quantify losses for targeted mitigations and policy-backed aid and indemnity. The extensive reproduction-associated losses, in particular, should be highlighted for additional study.

Results

70 completed results:

- 61 from California
- 8 from Oregon
- 1 from Nevada

Livestock types owned by respondents:

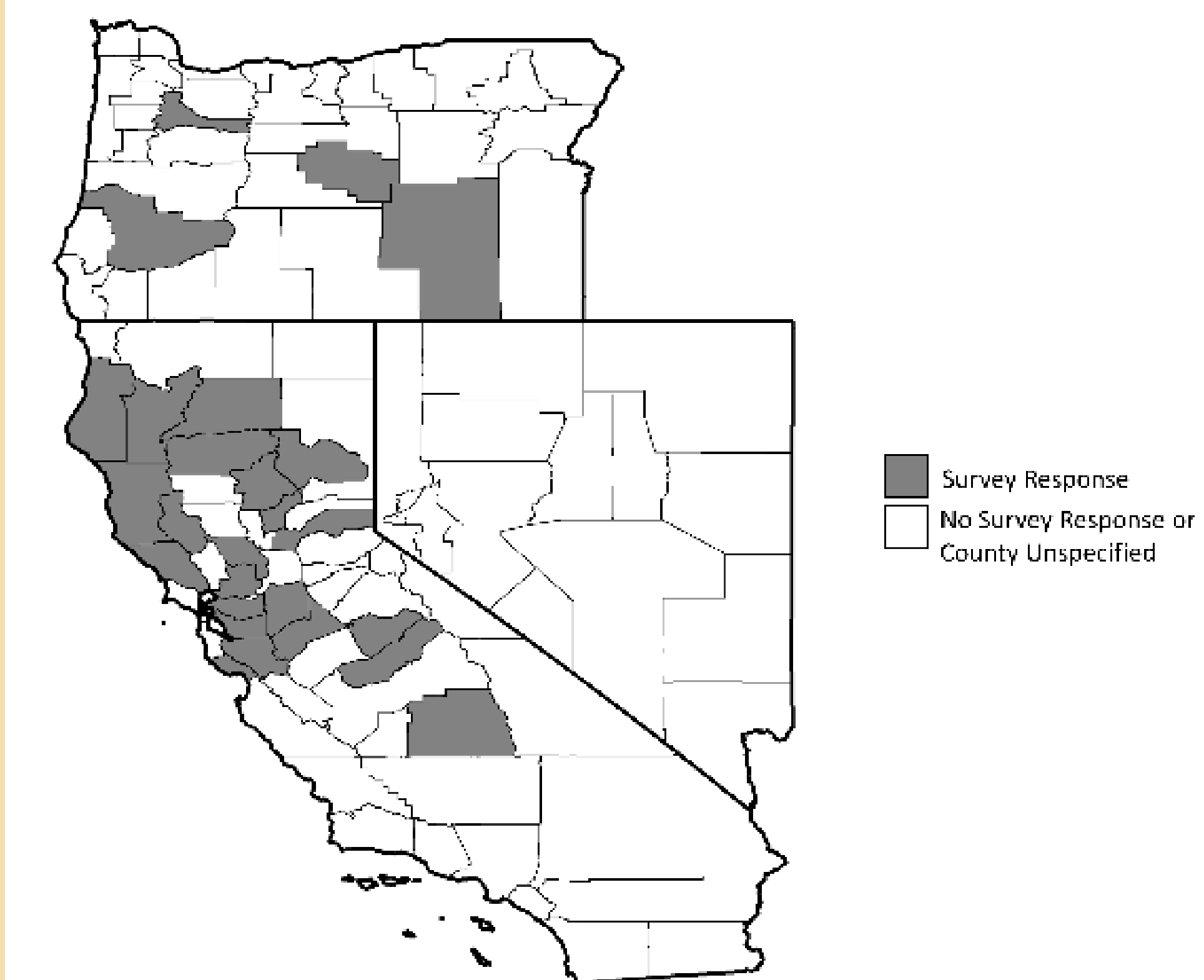
- 8 dairy cattle
- 46 beef cattle
- 17 sheep
- 11 goats

Herd sizes:

- Dairy: > 100
- Goat: <10 to 100
- Sheep and beef: 10 to > 250

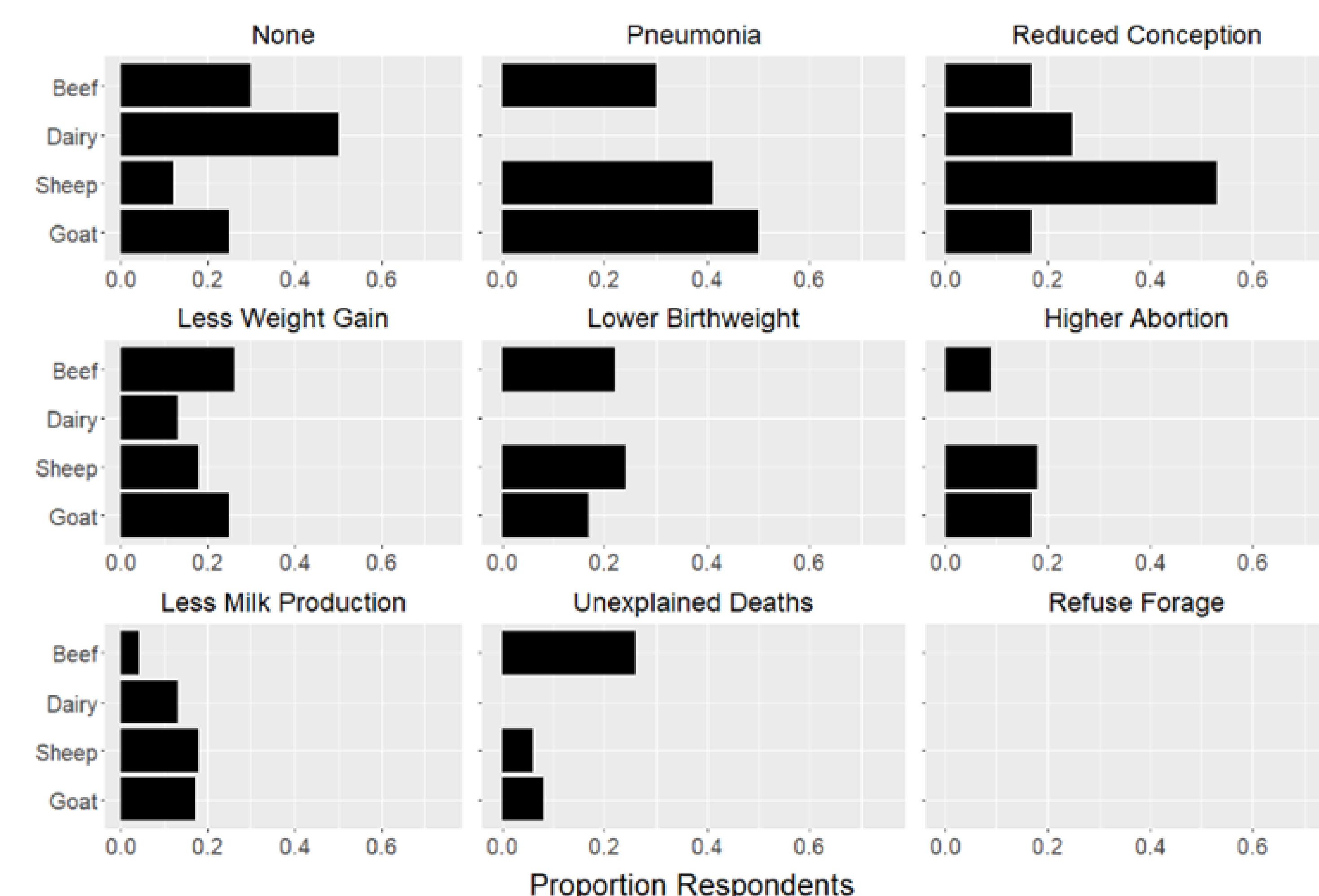
Direct effects observed by survey respondents:

Dairy: None	Beef	Sheep	Goats
Evacuations	30%	18%	17%
Lost pasture	20%	24%	8%
Skin burns	7%		
Euthanasia	2%		
Deaths	4%		



Livestock producers responding to a survey on 2020 wildfire impacts on livestock production and health mapped by county of origin (note: 25/70 respondents did not identify their county)

Indirect effects observed by survey respondents:



Proportion of survey respondents reporting they experienced or observed indirect effects of 2020 wildfires by livestock type.



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