

The Upland Fuels Study: Short-term Wildlife Response to Fuel Reduction Treatments

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Fuel Reduction Treatments

- Several tools available to predict fire behavior
- Can we meet multiple objectives?



Study Objectives

- Investigate how fuel reduction treatments impact fuel loads, forest structure and wildlife
- Little data on relative impacts of different prescriptions



Measuring the Impact on Wildlife

- Small mammal and avian focus
 - Important component of Tahoe biodiversity
 - Readily detected
 - Treatments at the stand-scale
 - Prey base for several sensitive species



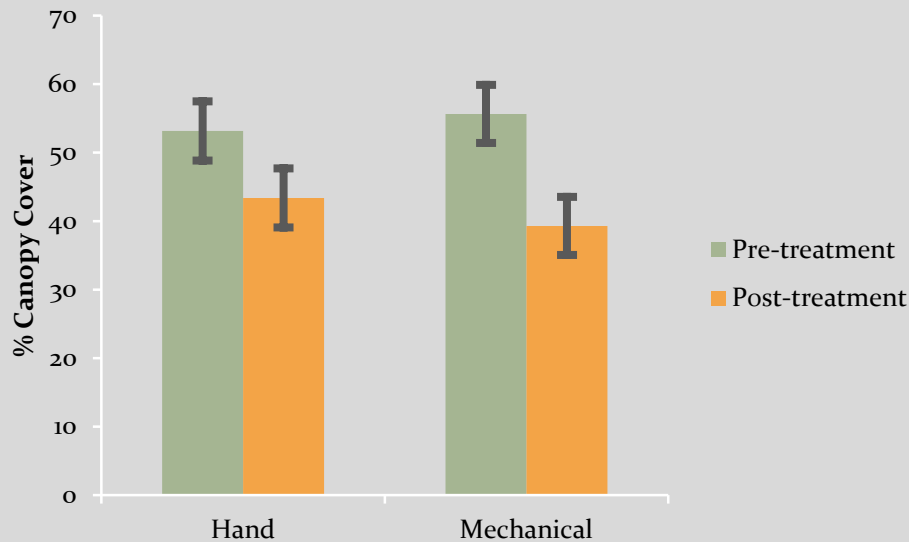
Treatment Units

- Eight paired treatment sites
- Before-After Control-Impact Design

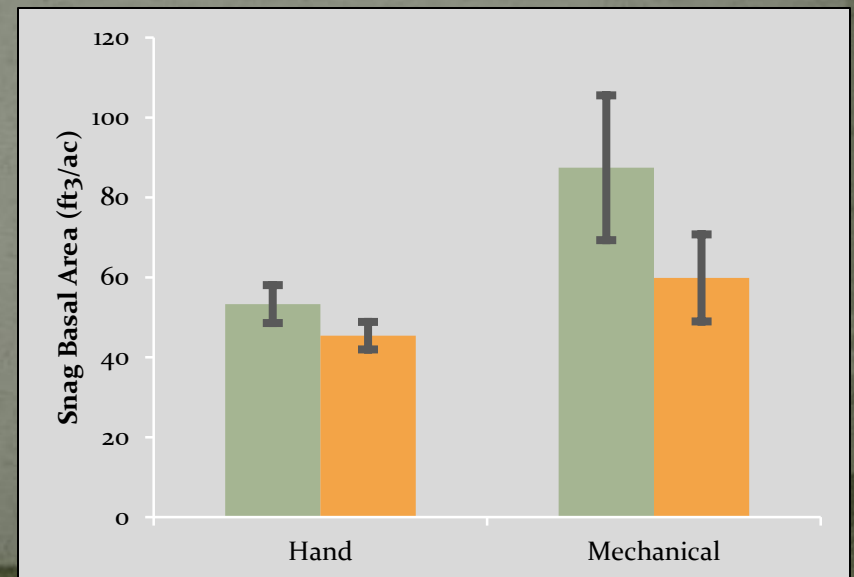
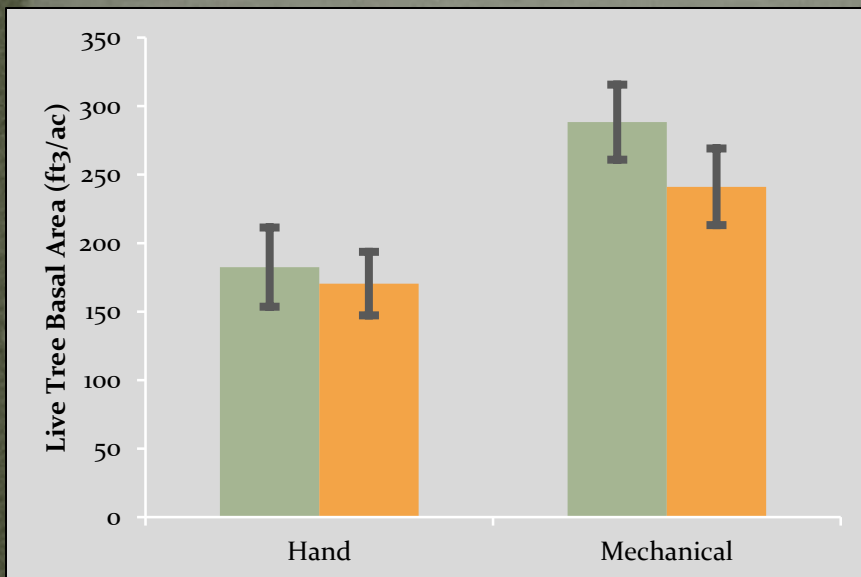
Unit	Ownership	Overstory Treatment	Residual Fuel Treatment
MCK 13-3	USFS	Mechanical thin to 30"	Masticate and surface spread slash
WRD 20-9	USFS	Mechanical thin to 24"	Masticate and surface spread slash
BLK 1-4	USFS	Mechanical thin to 24"	Masticate and surface spread slash
TWC 3	USFS	Mechanical thin to 24"	Masticate and surface spread slash
WRD 20-16	USFS	Hand thin to 10"	Pile/burn
MCK 13-1	USFS	Hand thin to 14"	Pile/burn
RED	NDSLVS	Hand thin to 24"	Pile/burn
WLD	NDSLVS	Hand thin to 24"	Pile/burn



Changes in Forest Structure

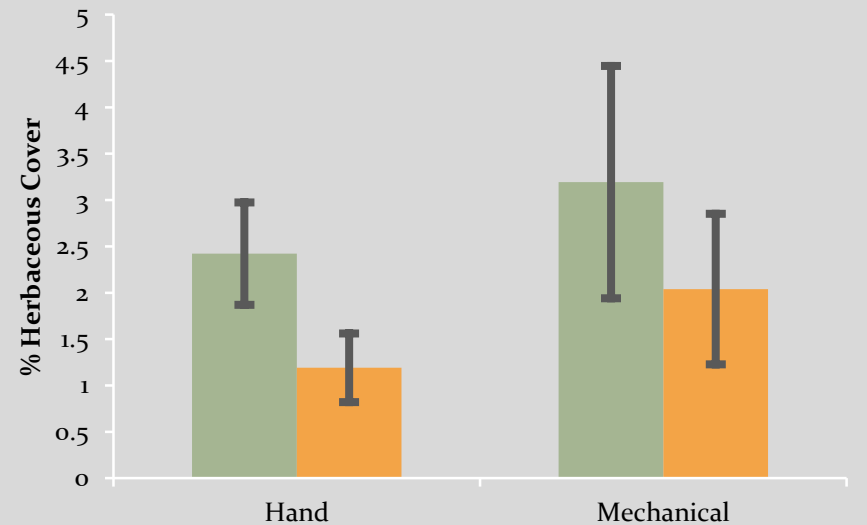
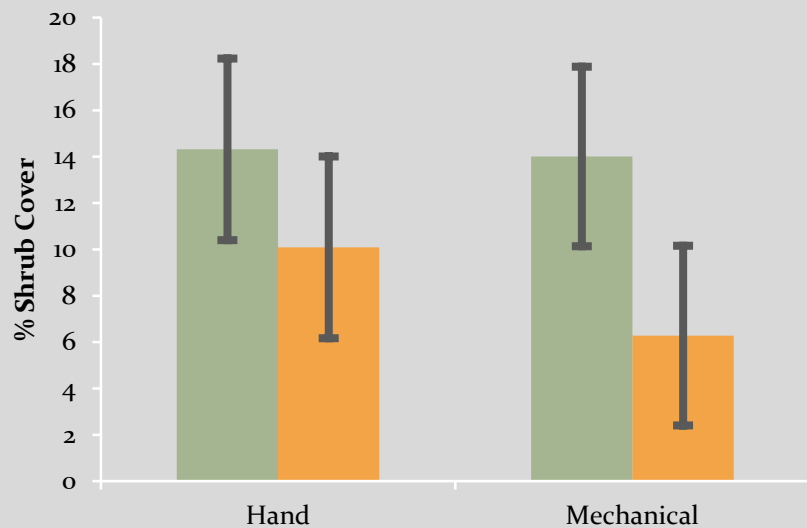
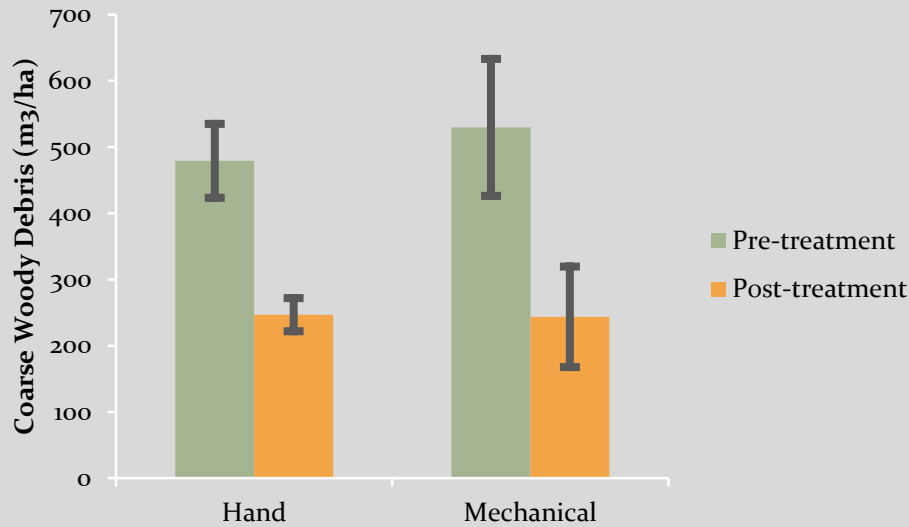


- Mechanical treatments removed greater proportion of tree cover




Changes in Forest Structure

- Important habitat components for small mammals and birds



Community Response – Birds


- Detected 63 total species

	Pre-treatment	Post-treatment
Species Richness	53	57
Shannon Diversity	3.27	3.28
Shannon Evenness	0.82	0.81



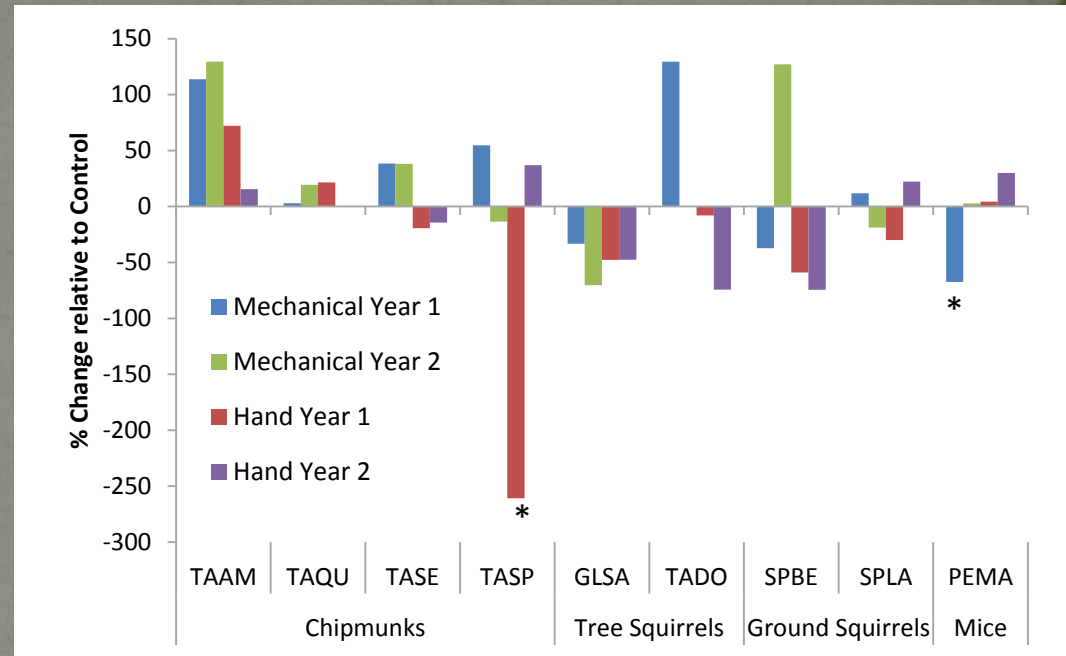
Community Response – Small Mammals

- Detected 16 total species

	Pre-treatment	Post-treatment
Species Richness	14	14
Shannon Diversity	1.87	1.93
Shannon Evenness	0.71	0.73

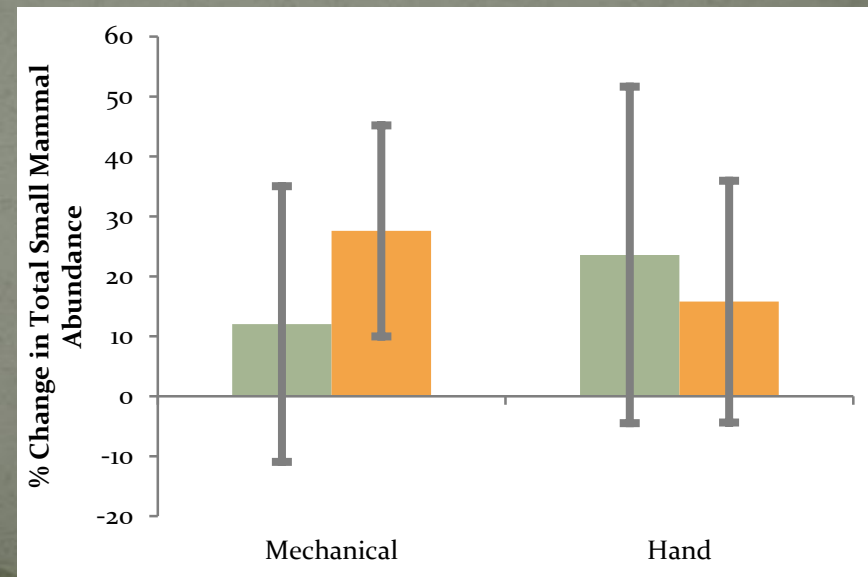
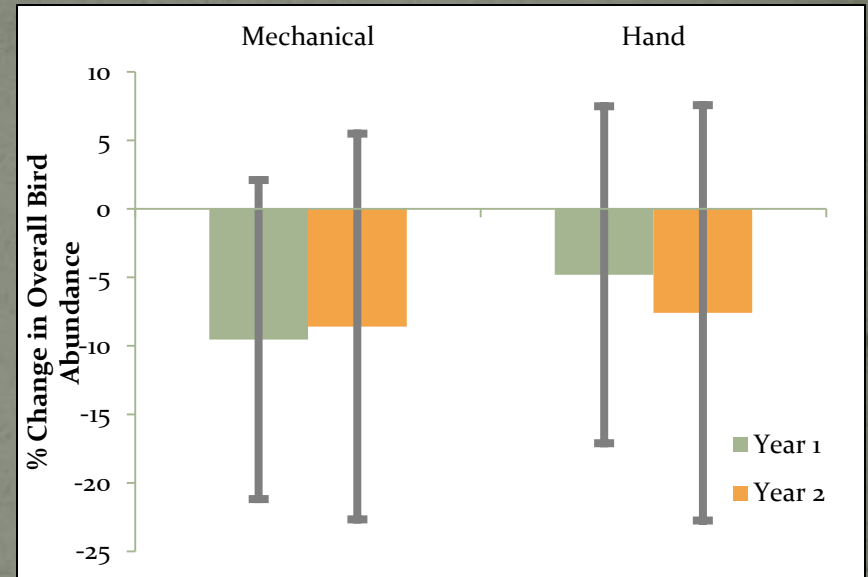
Species-level Responses – Small Mammals

- Analyzed response of 9 species
- 2 species showed significant decline in first year following treatment



Response to Treatments – Overall Abundance

- Abundance of birds decreased following treatment
- Abundance of small mammals increased following treatment
- Neither pattern statistically significant



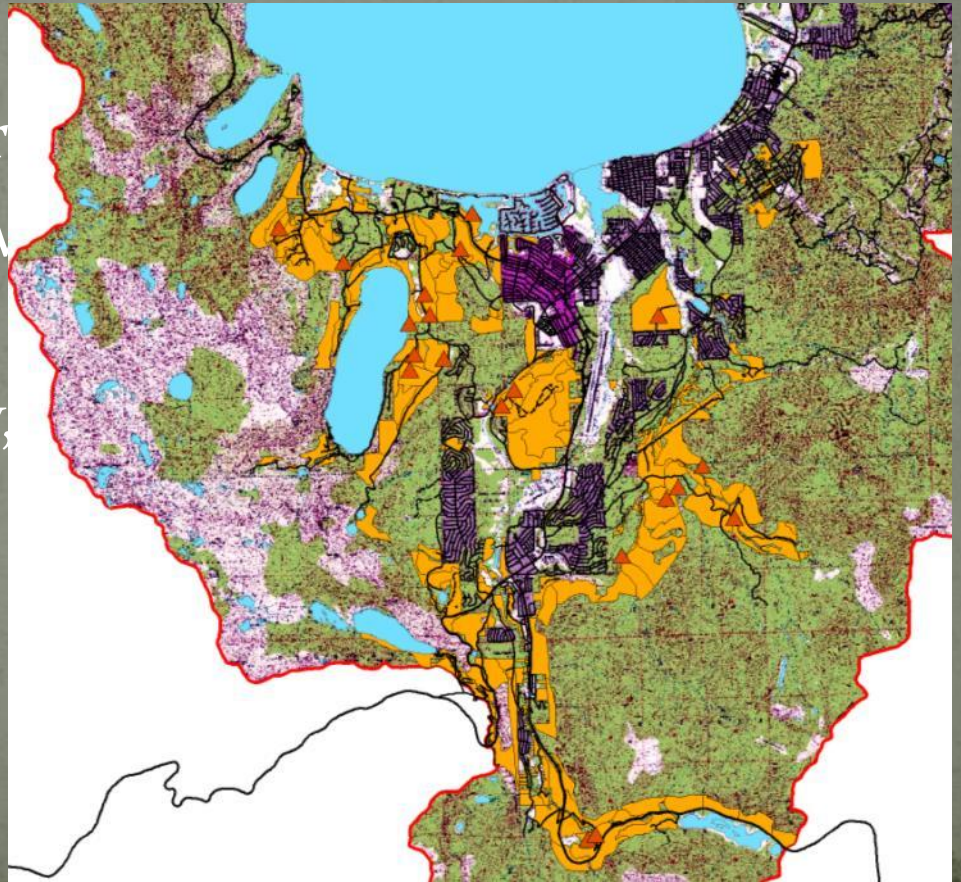
Management Implications

- Hand and mechanical treatments consistent with maintenance of community evenness & richness
- Bird abundance may decline slightly after treatment
- Treatments may increase small mammal abundance – mechanism unclear
- Mixed response for carnivore prey base – species-dependent



Future Needs

- Limited by treatment variation, large population fluctuations, short-term response
- Expand sample size
- Examine longer-term response
- Research response to water quality prescriptions
- Use of complementary data



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