A Management Planning Tool to Enhance Biodiversity Conservation and Ecosystem Resilience in the Sierra Nevada


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Anu Kramer, UW-Madison

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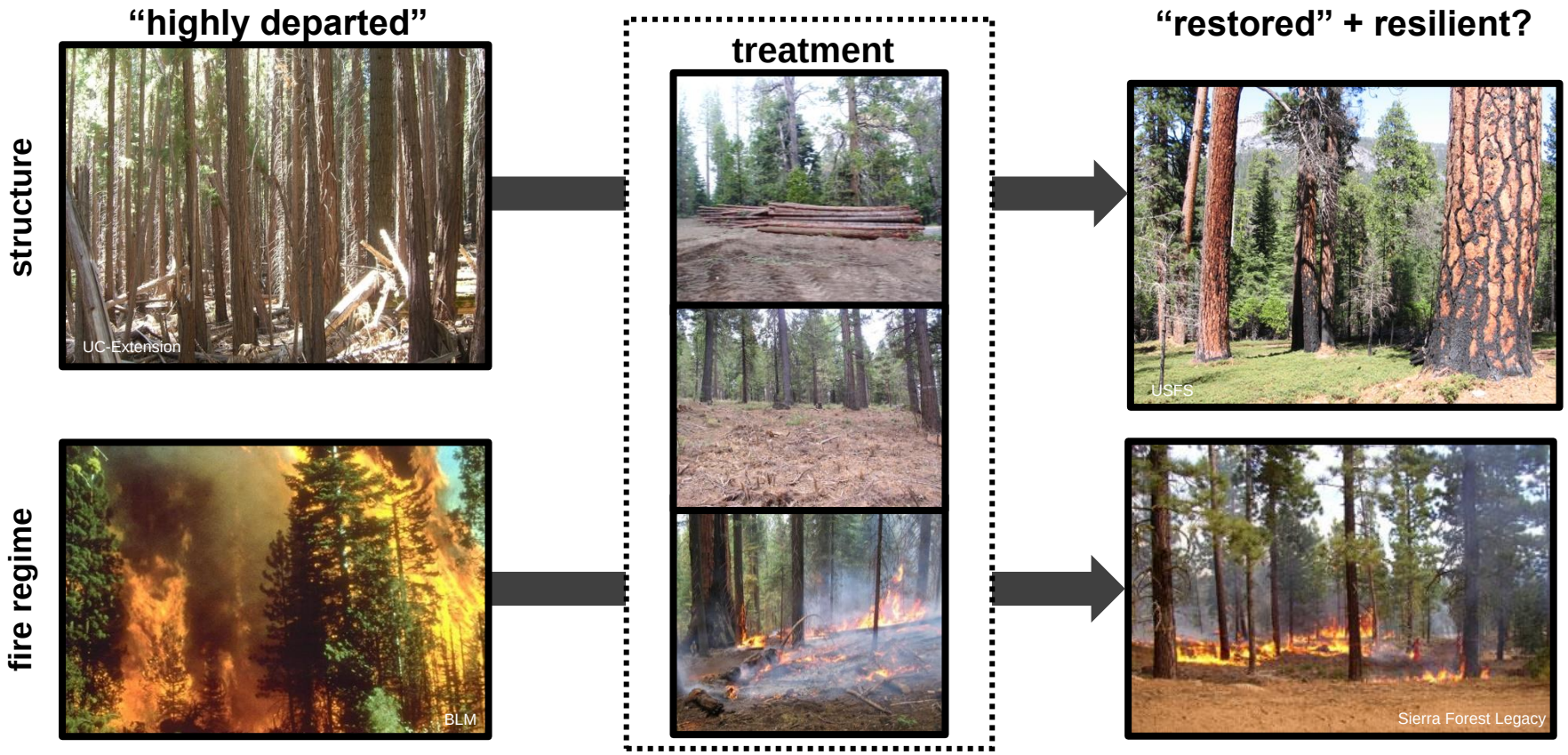
Alina Cansler, U Montana

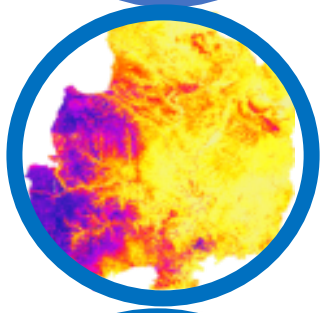
Promoting Ecosystem Resilience in the Sierra Nevada



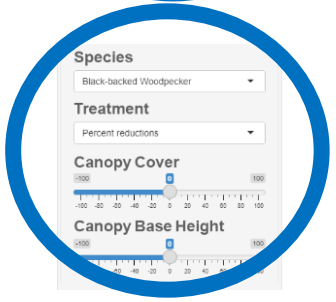
But, impacts to biodiversity?

Developing a Biodiversity & Ecosystem Resilience Decision Support Tool for the Sierra Nevada

1. Passive Acoustics Surveys



2. Habitat Suitability Models

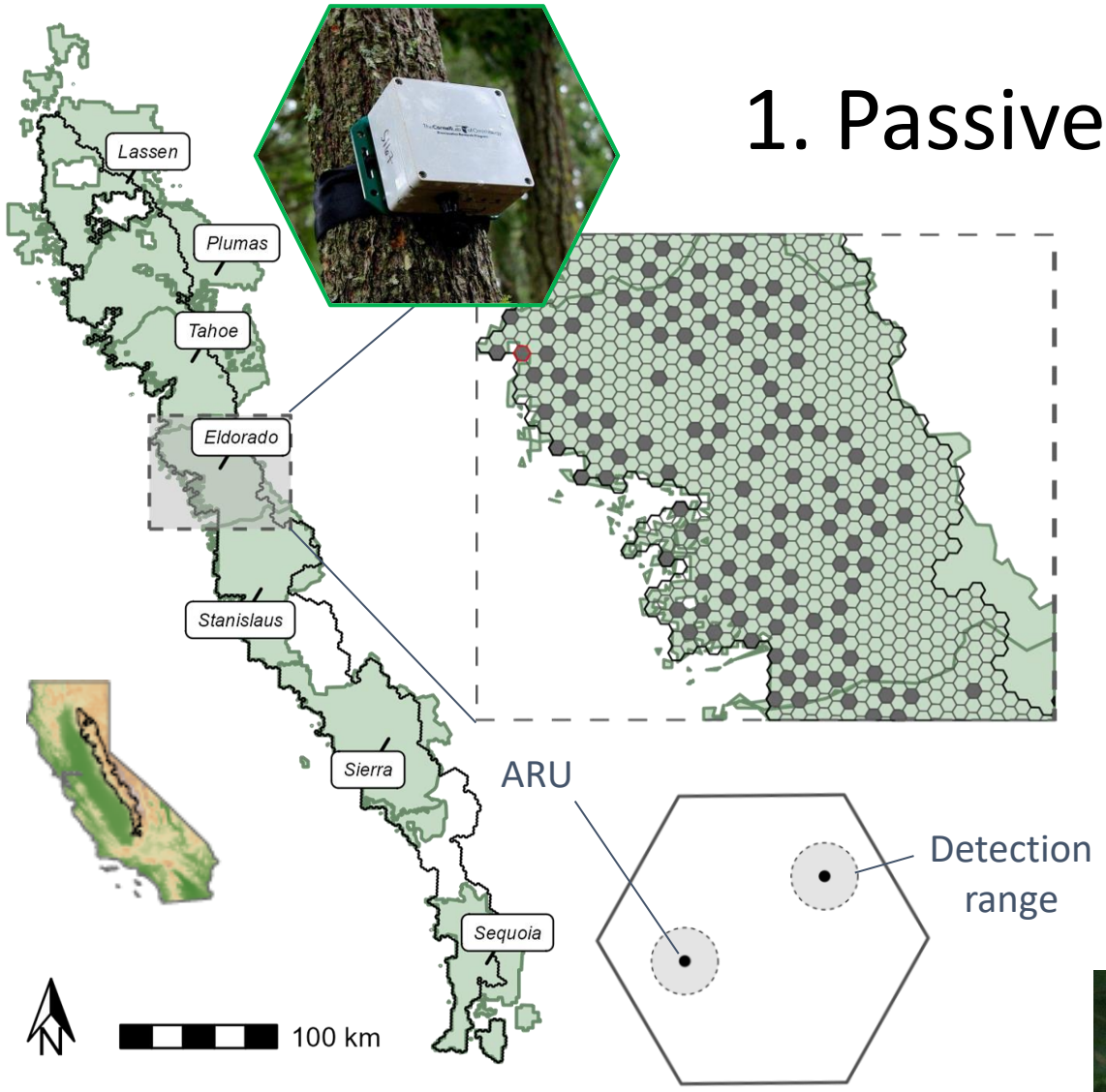


3. Web-based Software

End-user (USFS) Input

Facilitate “Biological Effects Analyses” required by NEPA

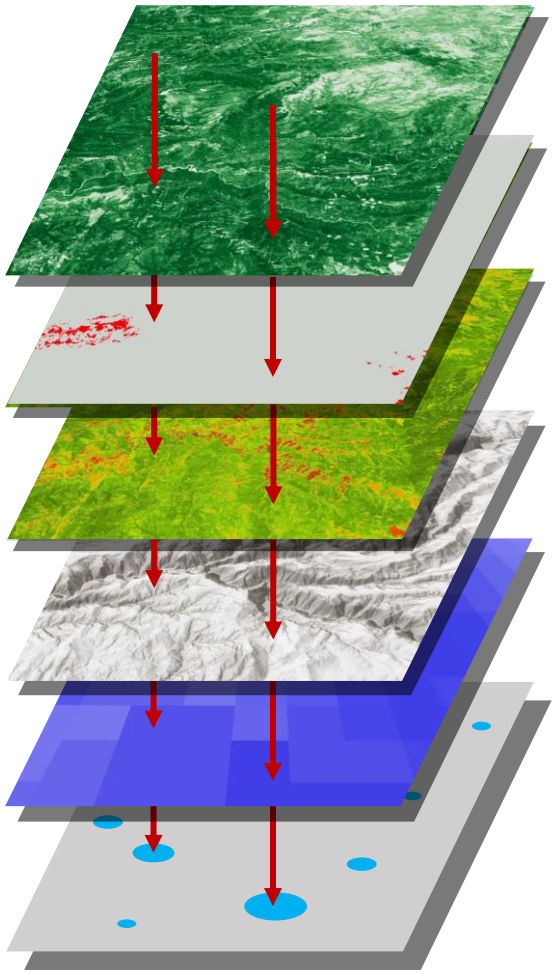
1. Passive Acoustic Surveys



- Annually sample 850 hexagonal, 400ha cells
- 2 ARUs/cell (1700 total/year)
- 5-week deployments
- 1 million hours (100 years) audio data/year

- Scan with ML algorithm (BirdNET)
- 101 bird species ID’d with high precision

2. Habitat Suitability Models



Forest structure

Fire history

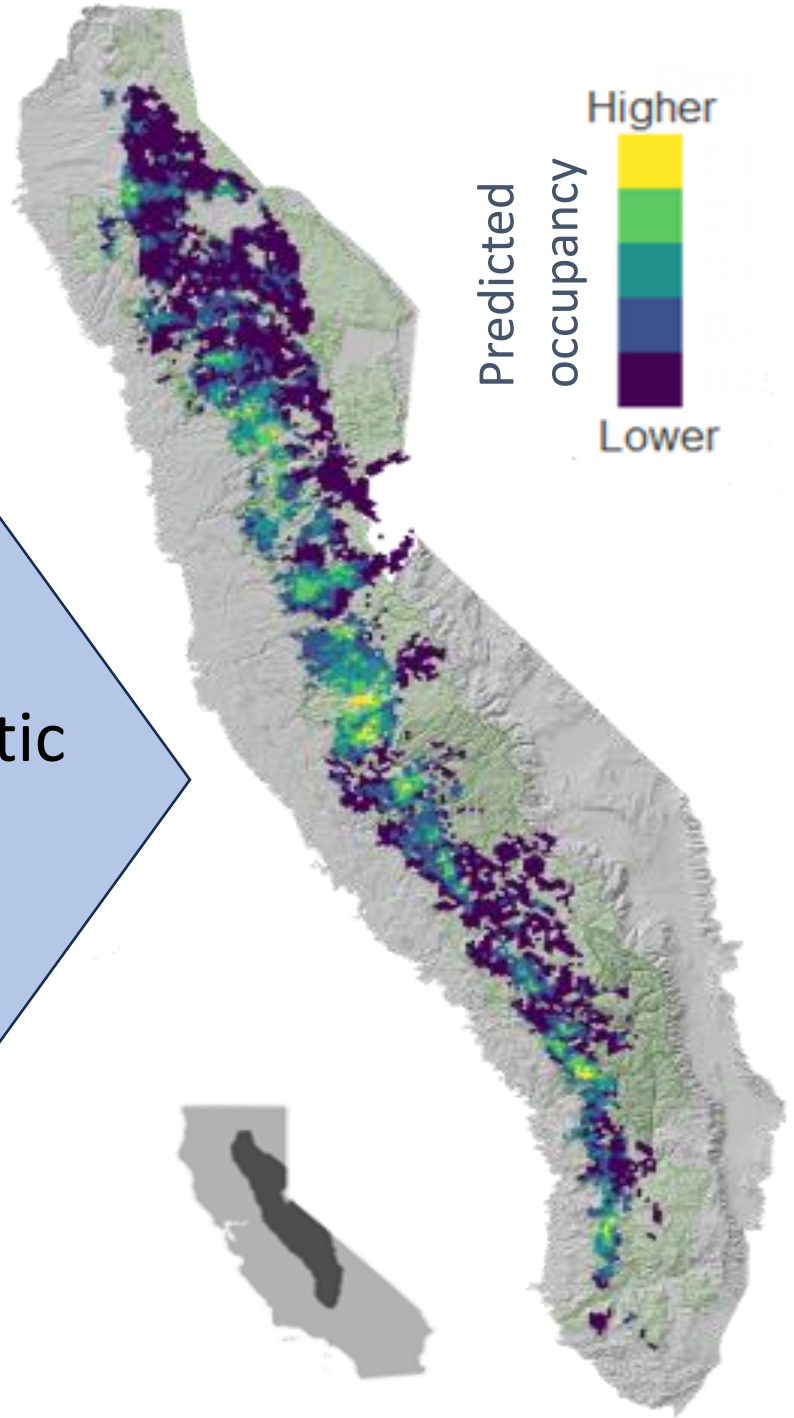
Forest composition

Topography

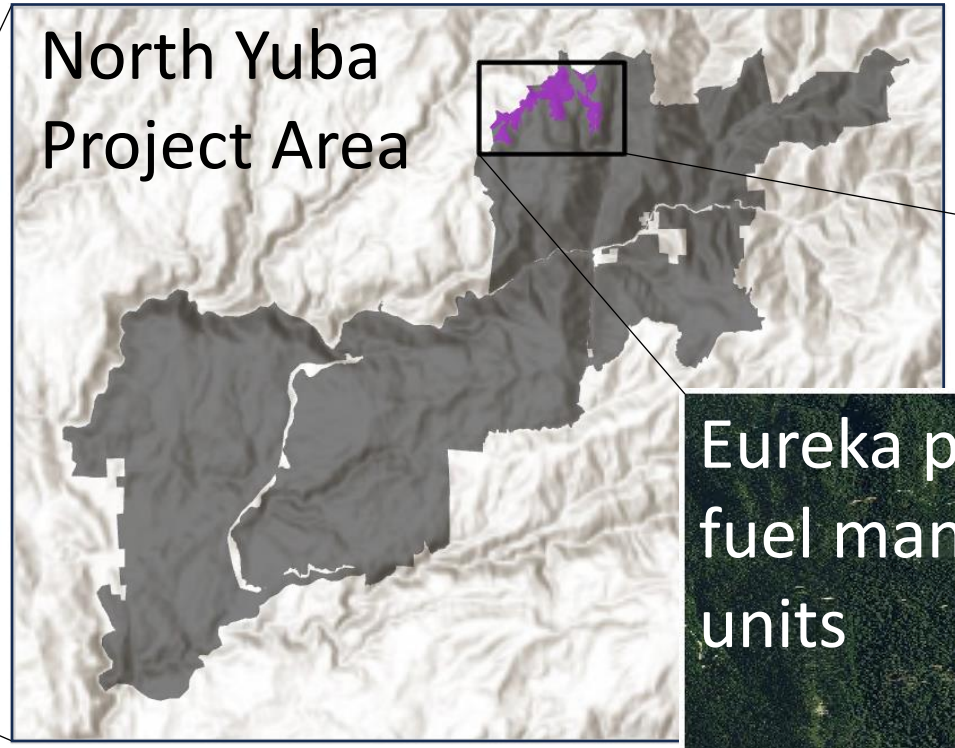
Climate

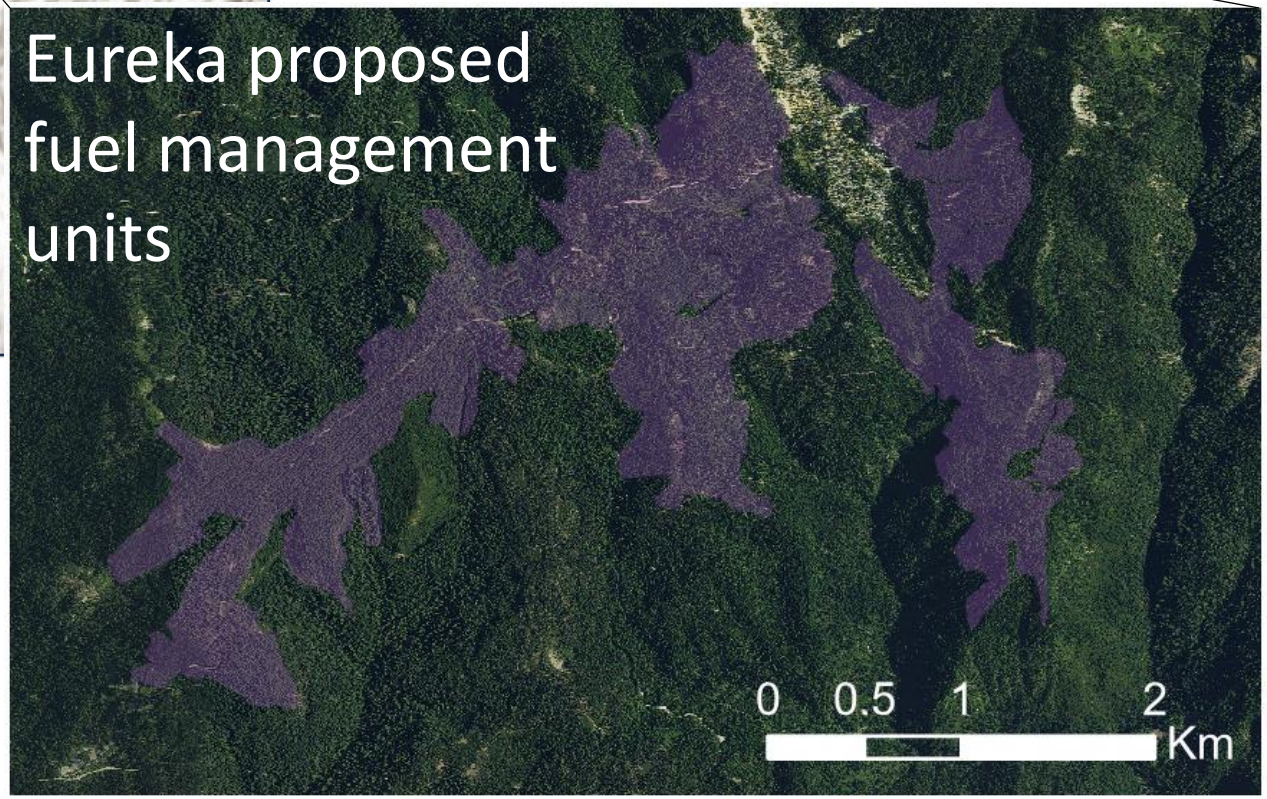
Acoustic detections

Fit occupancy models to acoustic detections and habitat metrics



3. Web-based Biodiversity Conservation/Resilience Tool: FACET





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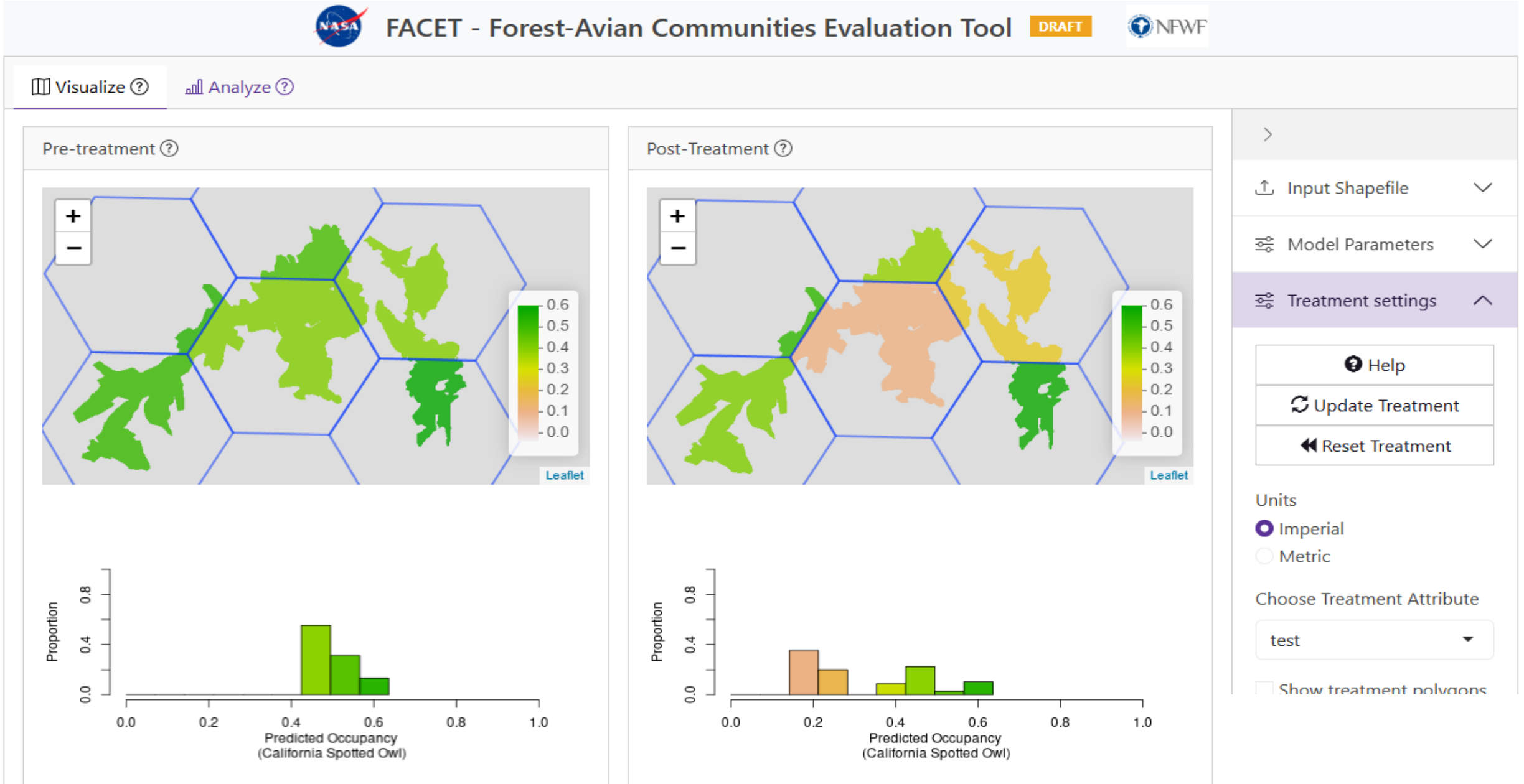

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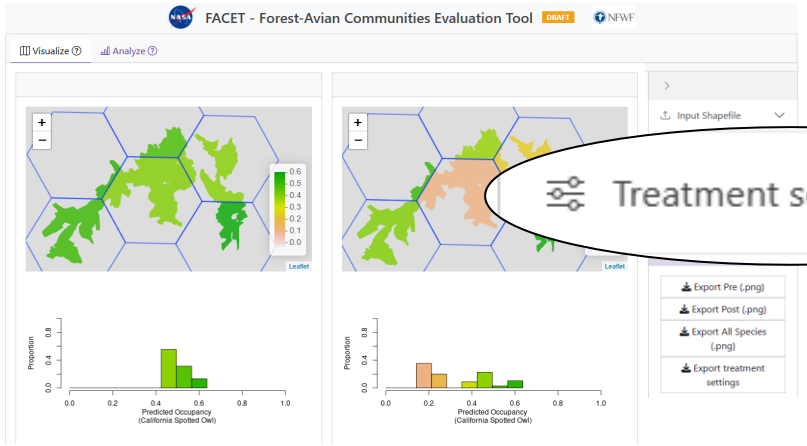

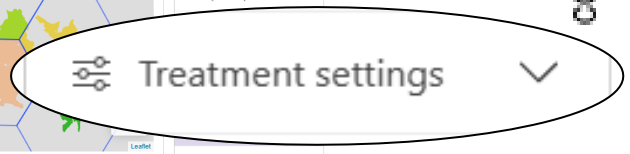

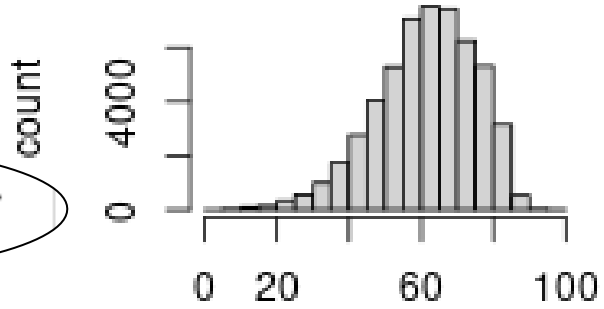

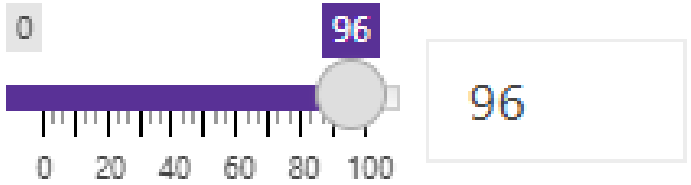

- Manipulate fuels metrics with sliders

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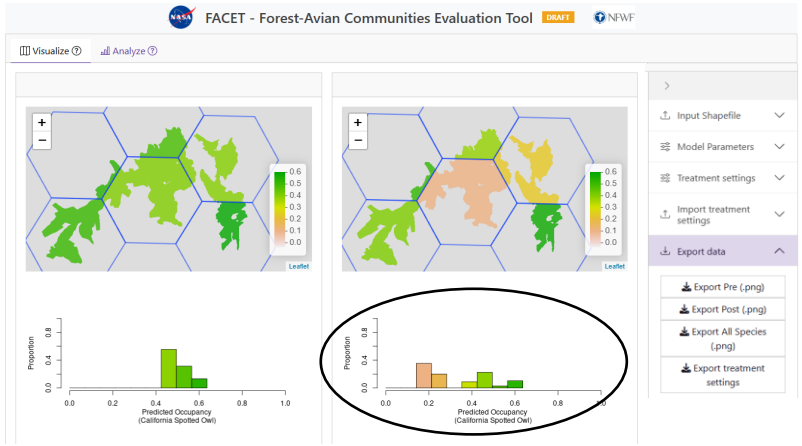
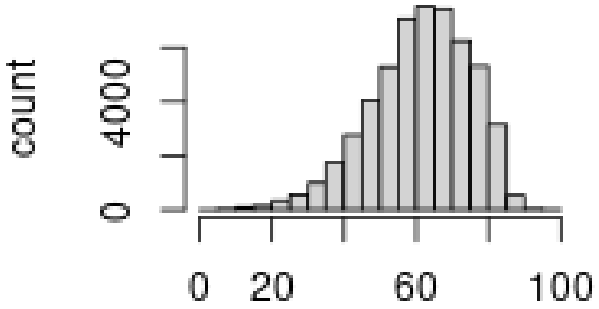
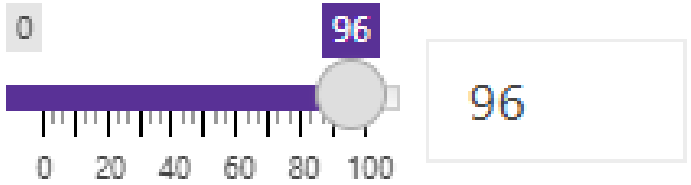
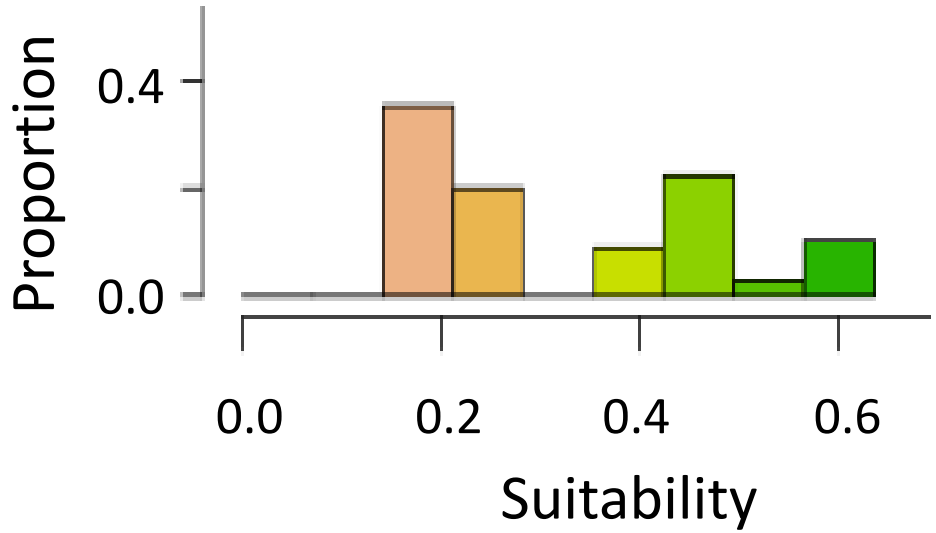


- Manipulate fuels metrics with sliders
- Compare expected suitability pre- vs post-treatment







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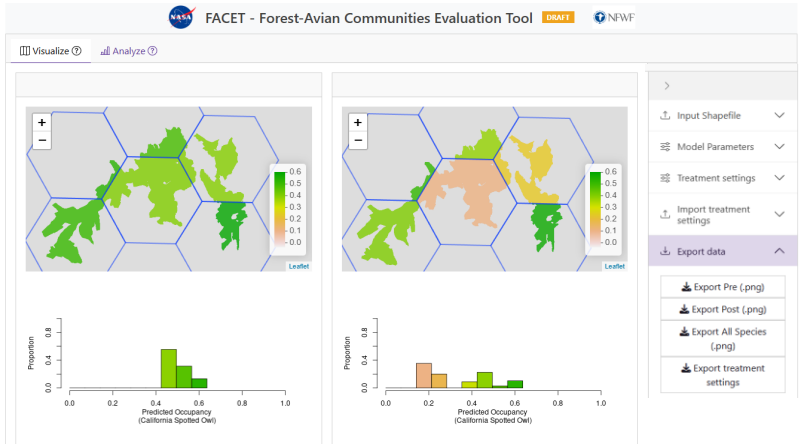
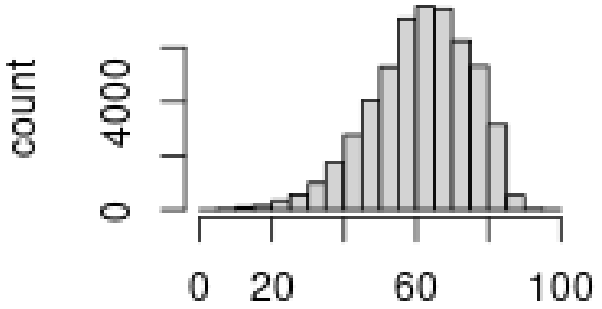
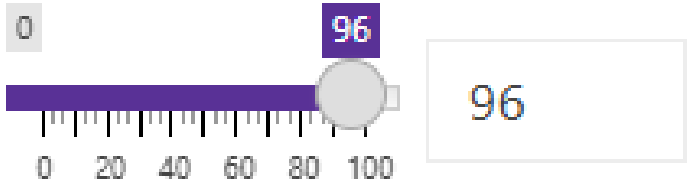
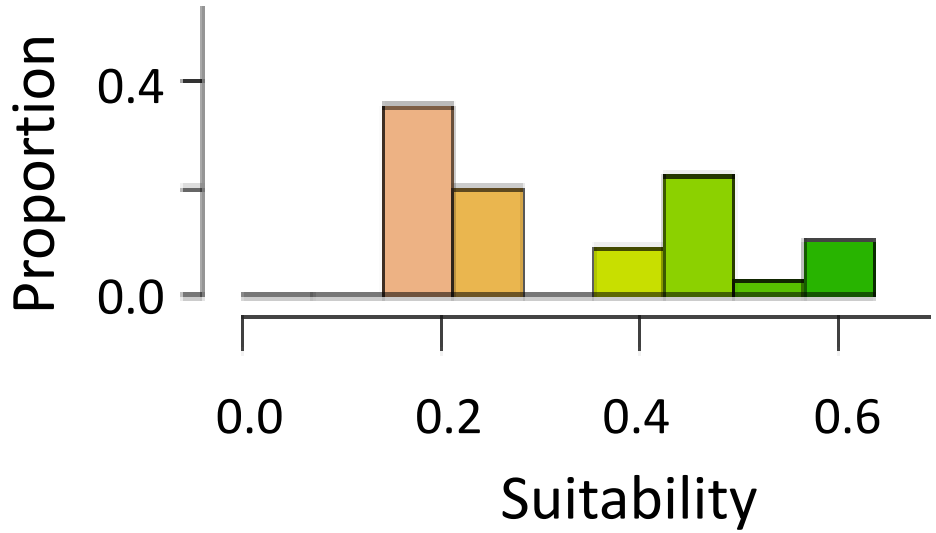


- Manipulate fuels metrics with sliders
- Compare expected suitability pre- vs post-treatment
- Test alternative treatments







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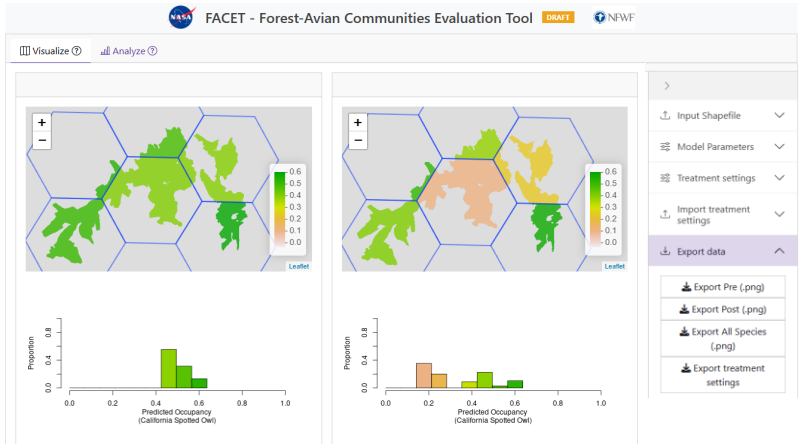
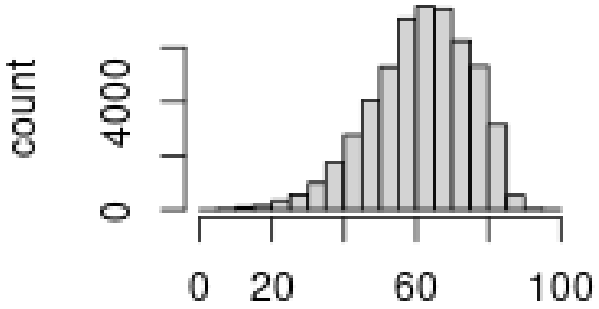
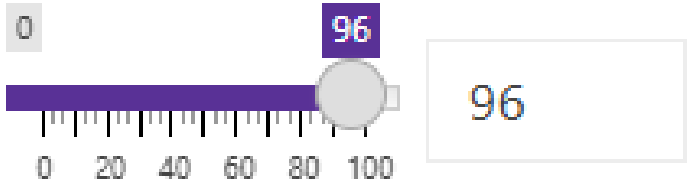
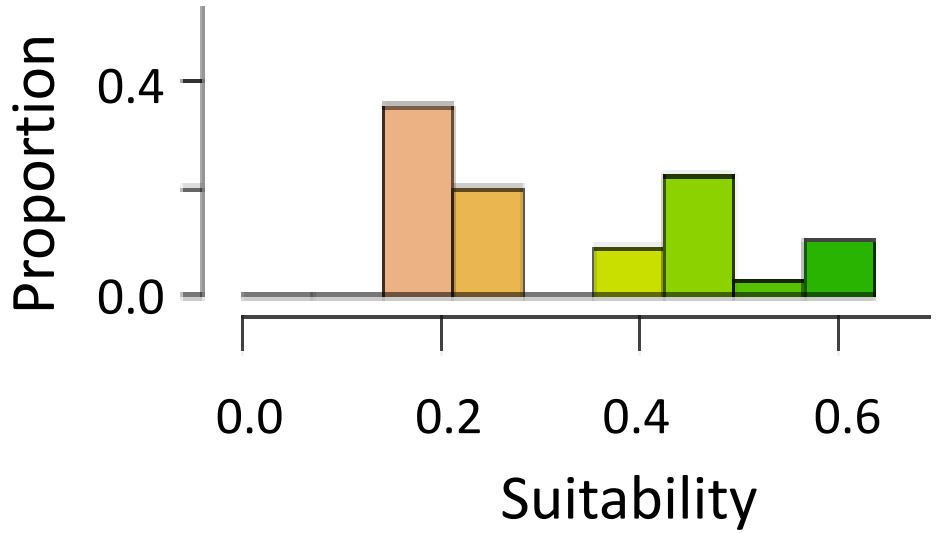


- Manipulate fuels metrics with sliders
- Compare expected suitability pre- vs post-treatment
- Test alternative treatments
- Predict # occupied territories







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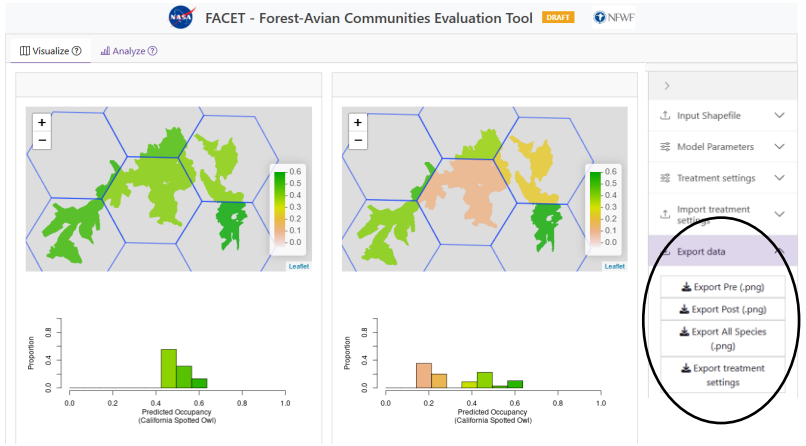
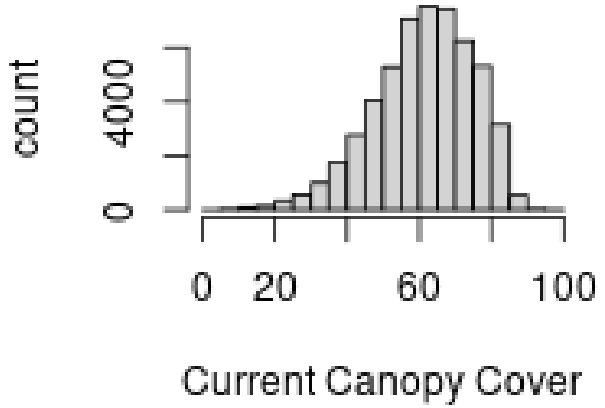
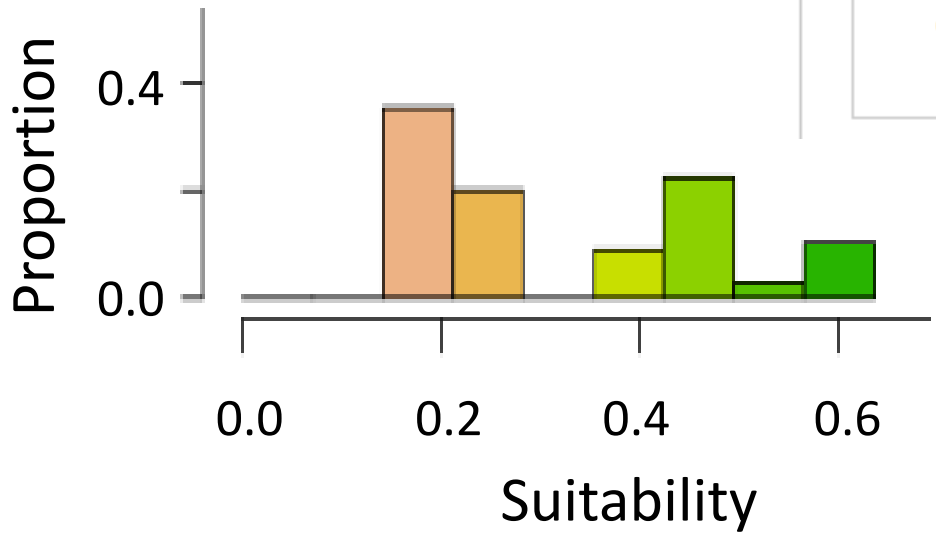
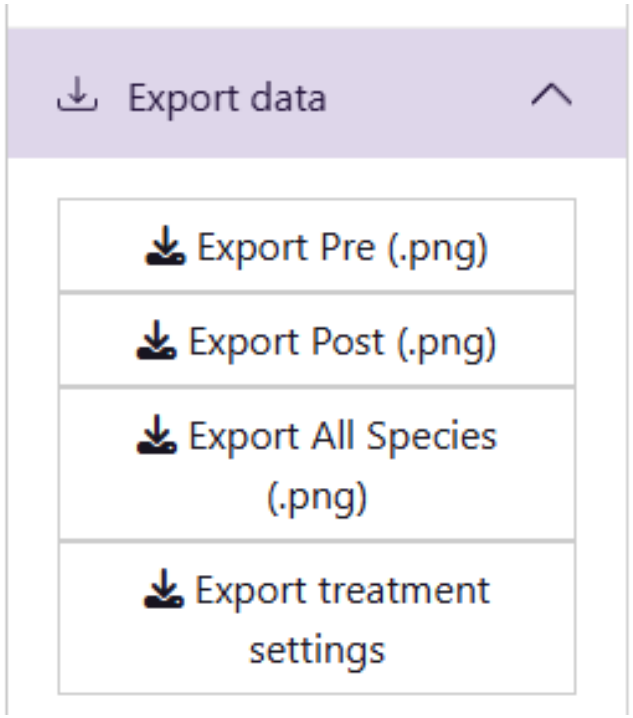


- Manipulate fuels metrics with sliders
- Compare expected suitability pre- vs post-treatment
- Test alternative treatments
- Predict # occupied territories
- Export data







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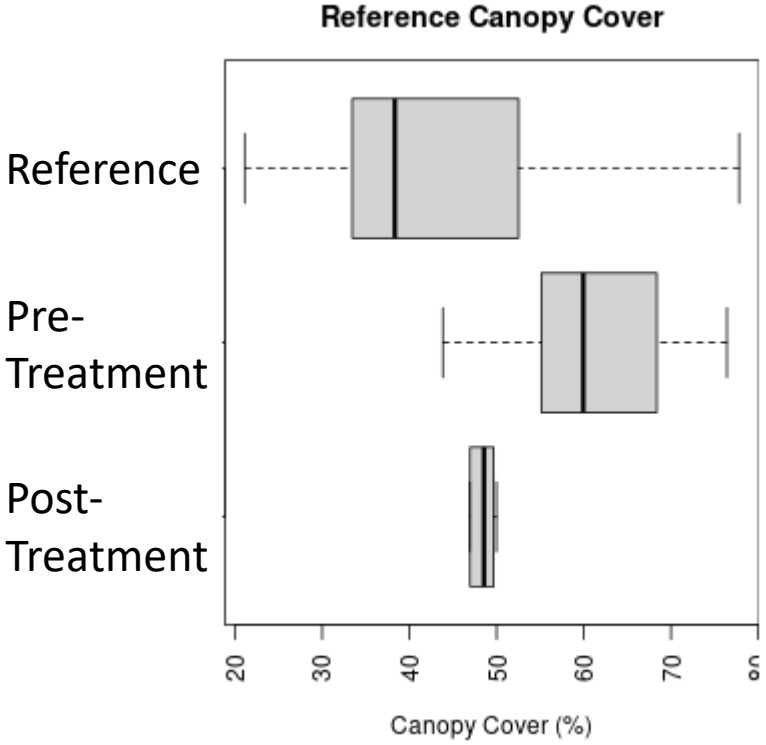
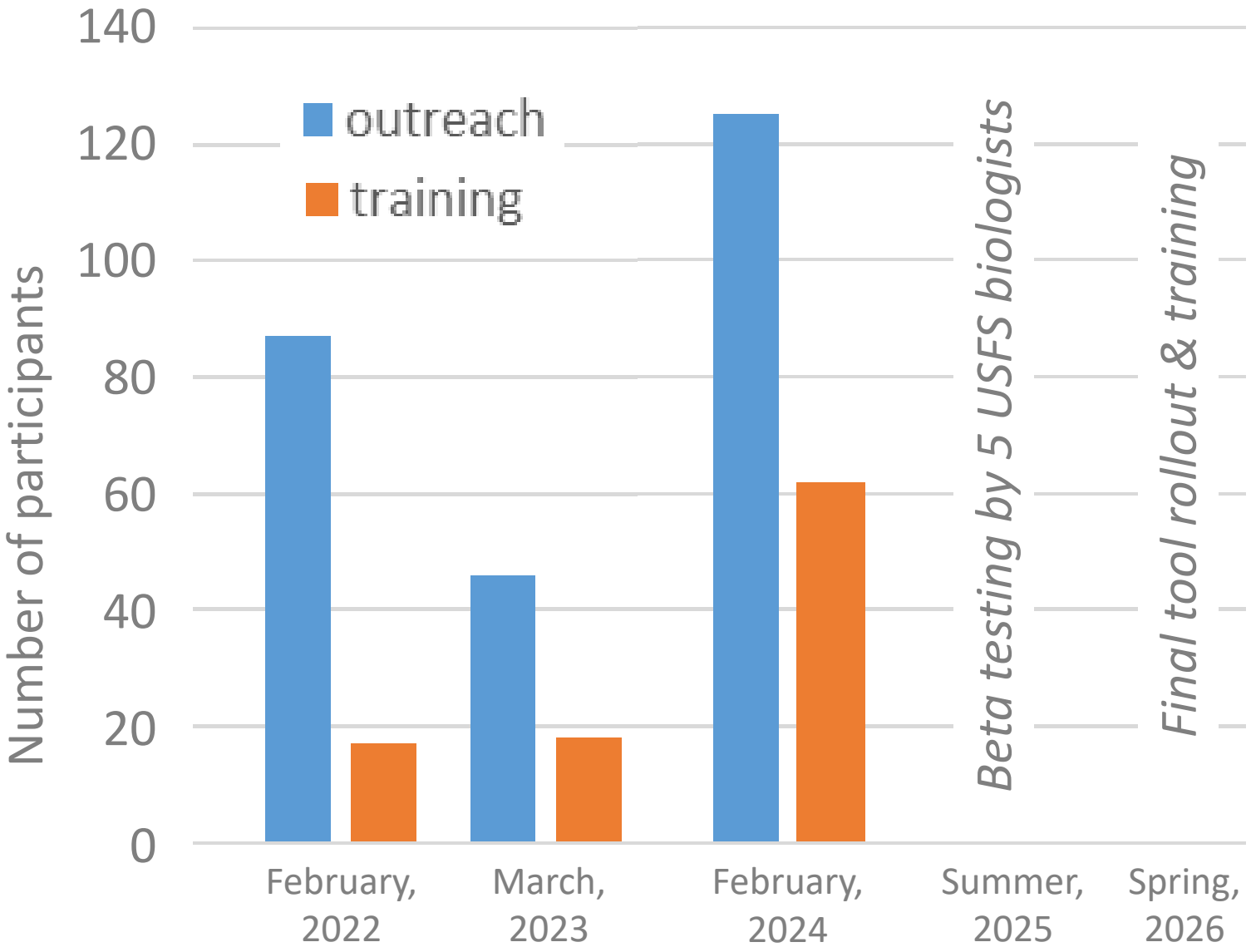
Achieving Ecosystem Resilience?

- Compare forest structure against Sierra Nevada “reference areas”
- Reference areas: ≥2 lower-severity fires and no logging in last 60 years



Project Status and End-user Engagement



Thanks!

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Project staff: Kevin Kelly, Sheila Whitmore, Brian Dye

Collaborators: Holger Klinck, Stefan Kahl

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