

Factors influencing reforestation outcomes in post-fire landscapes

Andrew Latimer
Derek Young
Kevin Welch

UC DAVIS
UNIVERSITY OF CALIFORNIA



Why study post-fire tree planting?

- Greater areas burned severely and far from seed source
- Resource constraints: can't manage intensively everywhere all the time
- Tree planting sometimes fails



Natural tree regeneration: What we know

Strongest factors:

- Distance to nearest live adult tree or seed source
- Resprouting from plants present before fire
- Substantial “inertia” of forest composition

Also can matter:

- Aridity gradients
- Density and stature of shrubs
- Post-fire weather

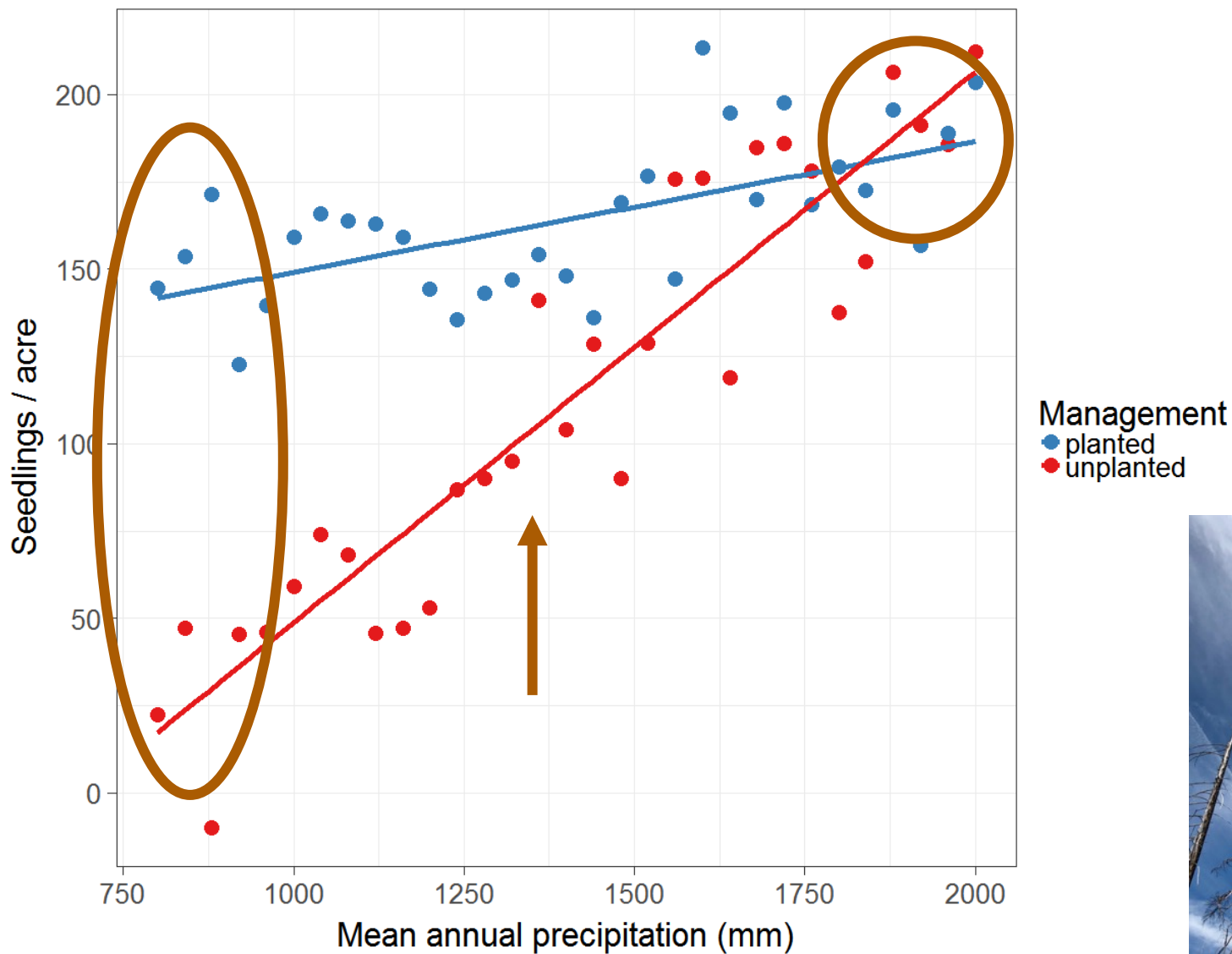


To optimize planting, also need to predict performance of planted trees

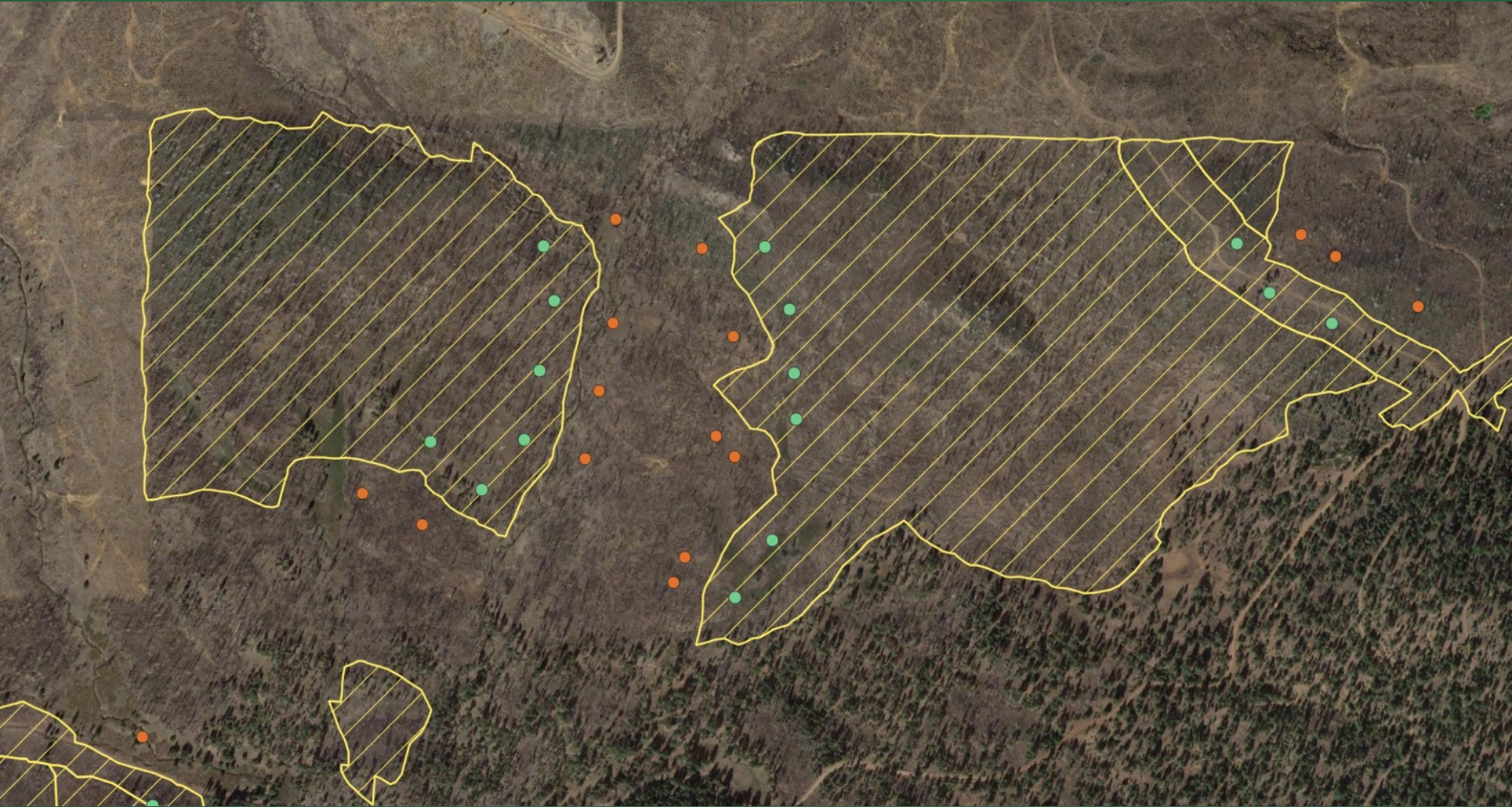
- Why?
 - Optimal planting strategy should concentrate effort in places where natural regeneration is low AND planting will succeed.
- The information we need:
 - What proportion of planted trees survive and establish, and how fast do they grow?
 - How does post-fire tree planting influence composition and structure of regenerating vegetation?



Potential results: scenario of strongly water-limited regeneration



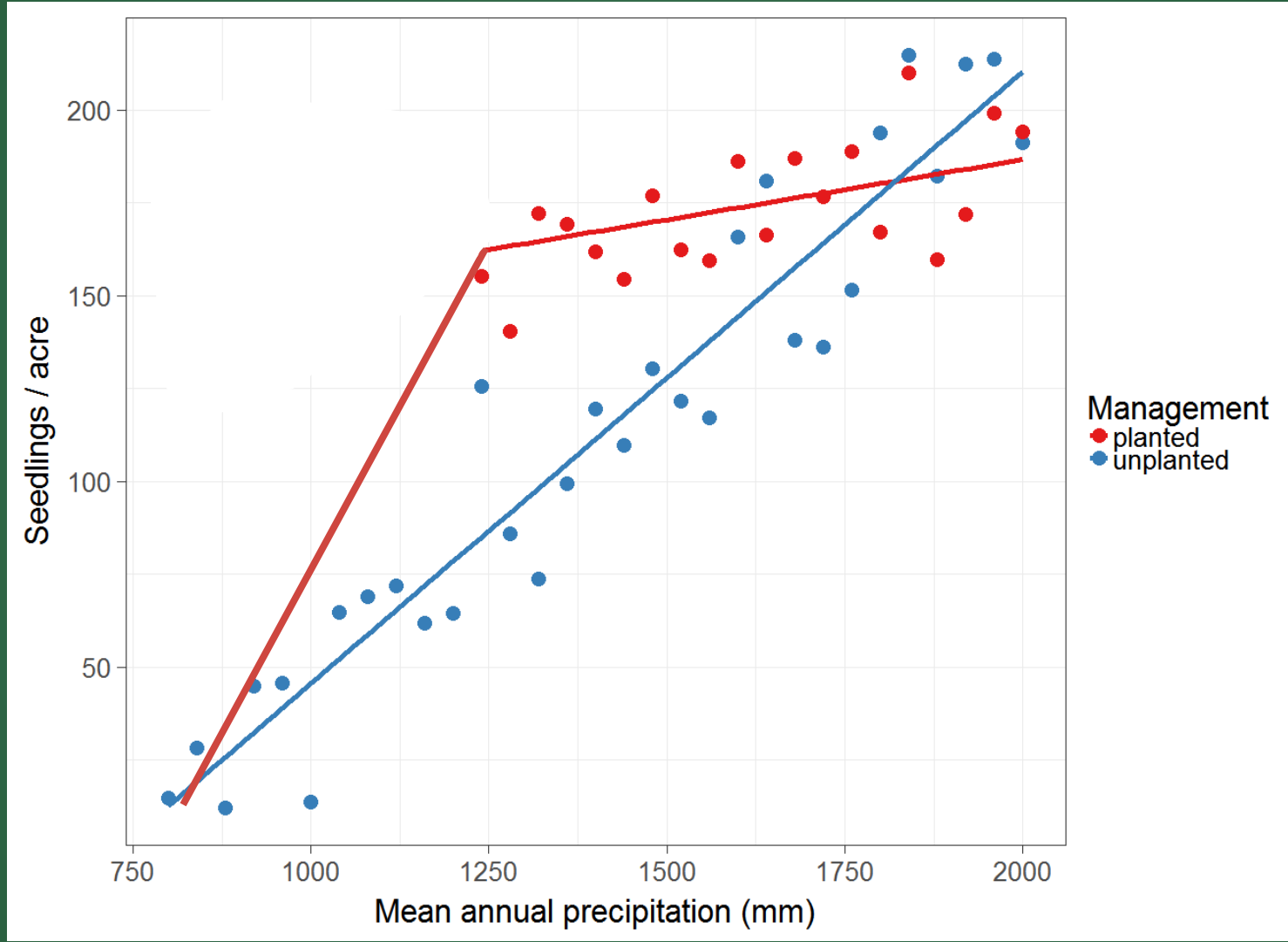
Field data collection







Hypothetical result: seedling density vs. climate

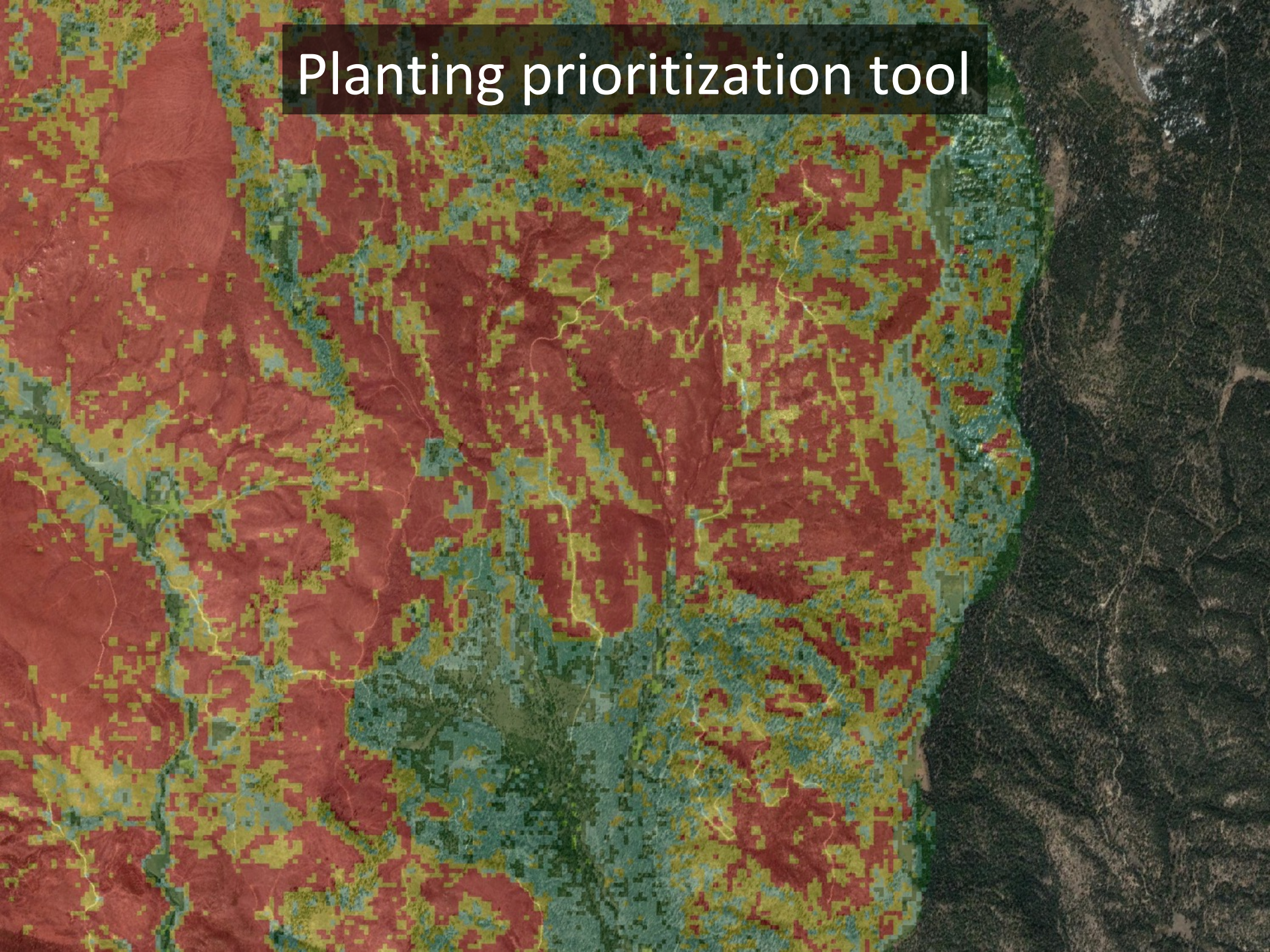


Hot and dry

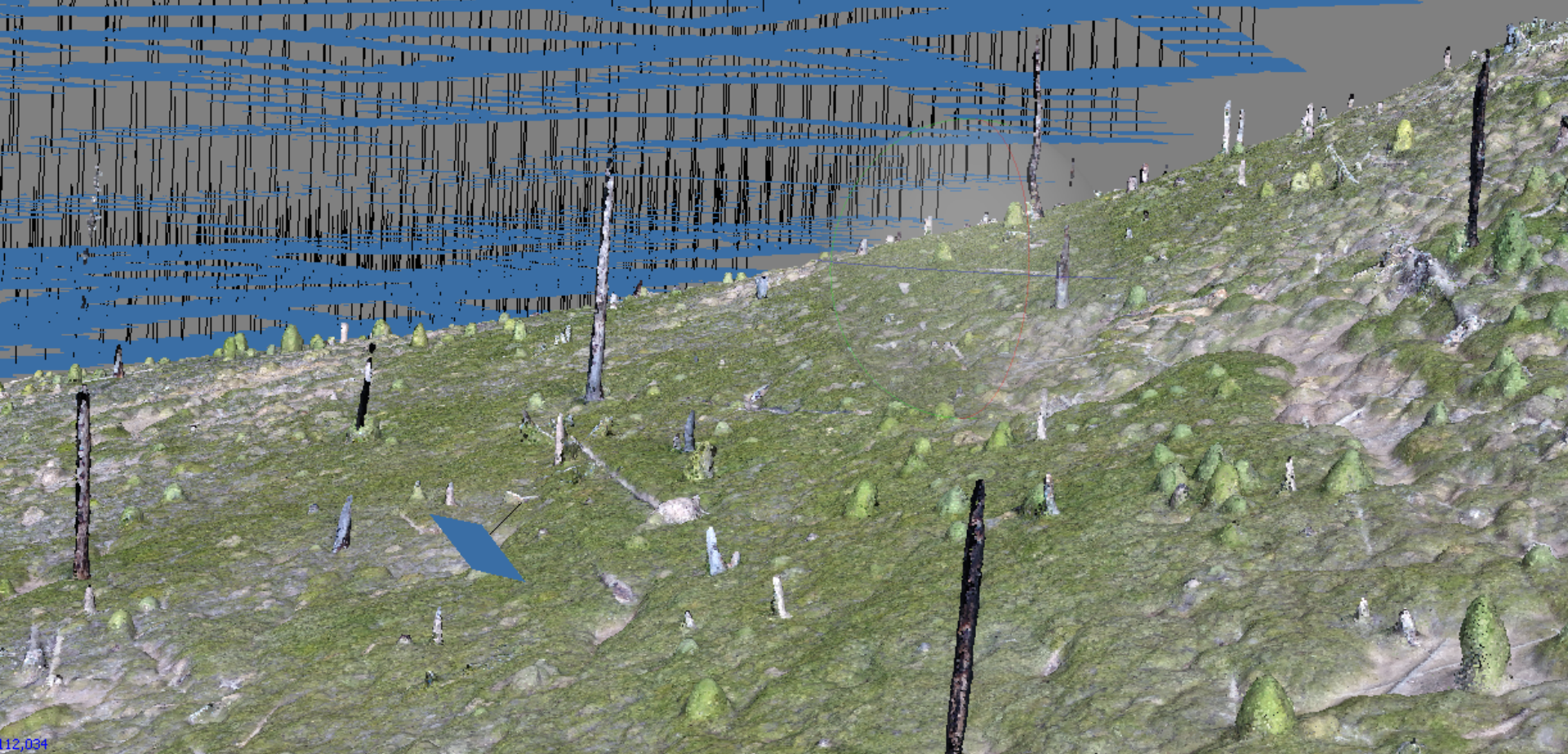


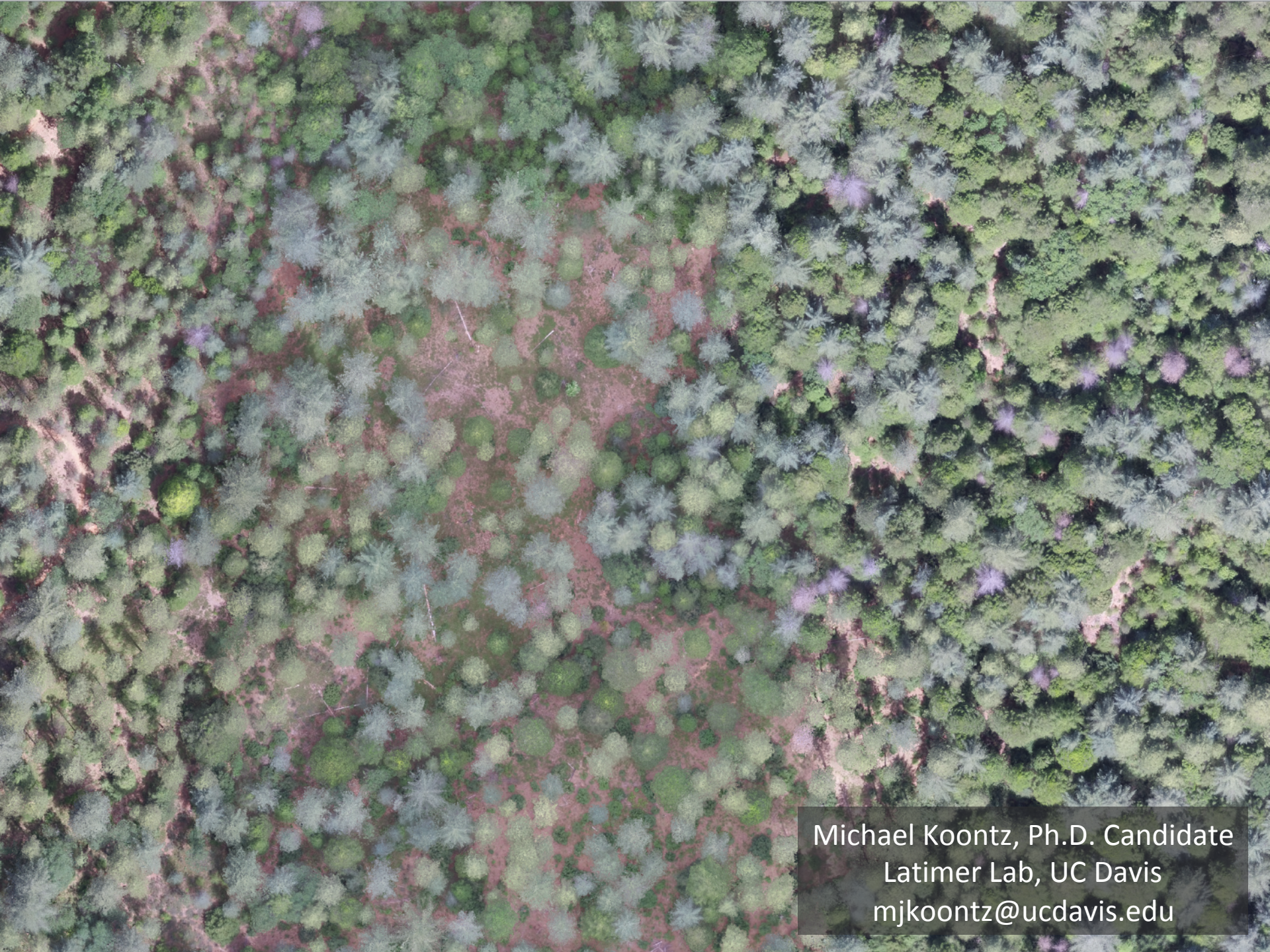
Cold and wet

Planting prioritization tool



Evaluating supplemental data collection using drones





Michael Koontz, Ph.D. Candidate
Latimer Lab, UC Davis
mjkoontz@ucdavis.edu



Michael Koontz, Ph.D. Candidate
Latimer Lab, UC Davis
mjkoontz@ucdavis.edu

Questions for the group

Q1:

What environmental factors do you believe are the most influential in the success of post-fire plantations?

Questions for the group

Q2:

Given we surveyed plots at a fixed time point (mostly ~10 years post-fire), can we also make projections for longer-term outcomes?

Questions for the group

Q3:

How can we reconcile the desire to reforest previously-forested areas with the fact that some of those areas may not be suitable for forest (either now or in the future)?

Questions for the group

Q4:

What features would make a web-based planting prioritization tool most useful?

Questions for the group

1. What environmental factors do you believe are the most influential in the success of post-fire plantations?
2. Given we surveyed plots at a fixed time point (mostly 10 years post-fire), can we also make projections of longer-term outcomes?
3. How can we reconcile the desire to reforest previously-forested areas with the fact that some of those areas may not be suitable for forest (either now or in the future)?
4. What features would make a web-based planting prioritization tool most useful?