

# Assessing the role of insectivorous birds in pest management of winegrape vineyards

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## CAN BIRDS PROVIDE PEST CONTROL?

- Pests cause billions of dollars in crop losses annually across the world<sup>1</sup>
- 191 million lbs pesticides sprayed across California in 2021<sup>2</sup>
- Birds eat ~28M tons/year of insects across global croplands<sup>3</sup>
- Yet birds tend to move from open to closed (e.g., riparian) habitats during heat waves<sup>4</sup>
- As such, we are not yet sure what birds are eating, let alone how to encourage them to eat pests within crop fields, especially with climate change

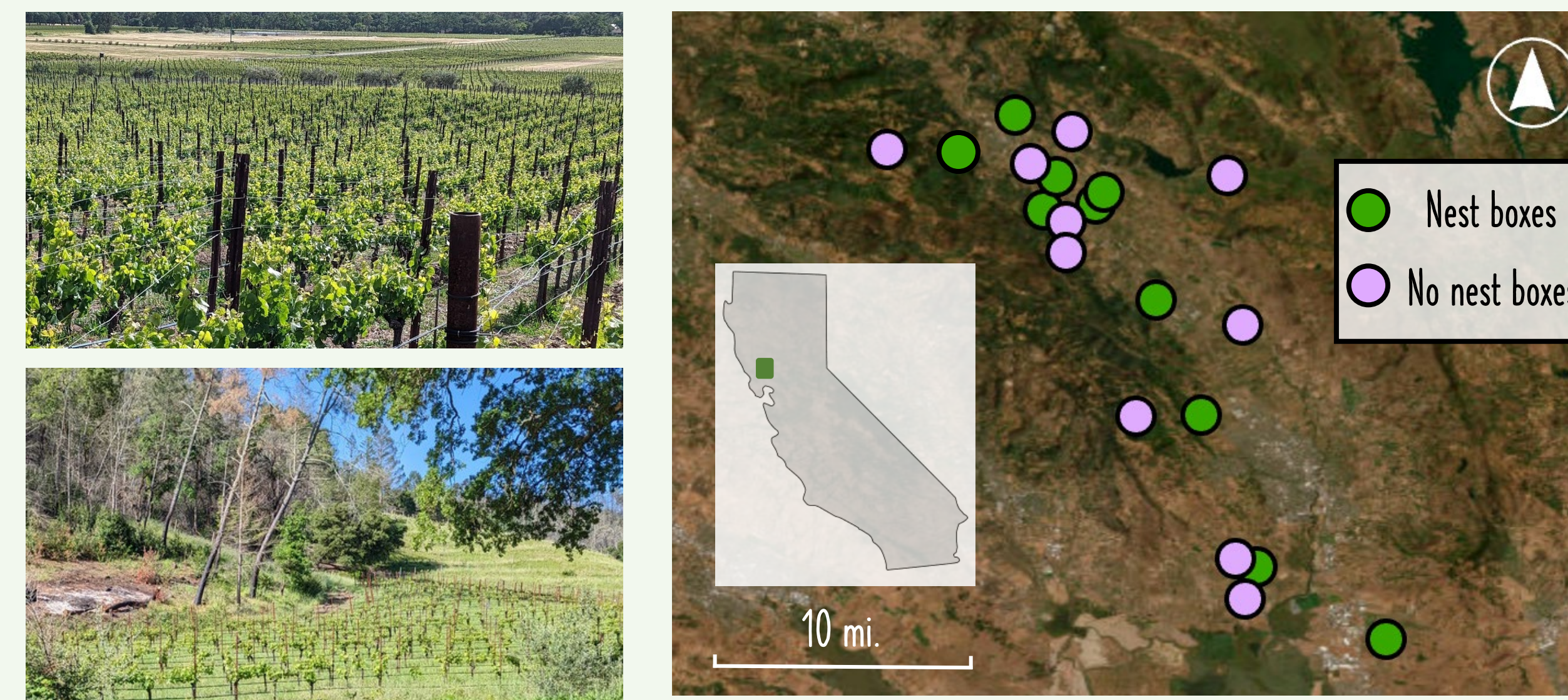
## GUIDING QUESTIONS

- 1) What are birds eating on farms?
- 2) Where are birds foraging on farms and how can we encourage them to forage within farms?
- 3) How will birds' foraging patterns change as temperatures continue to warm



## NEST BOXES, GPS TAGS, & DIET ANALYSES

- 20 vineyards across Napa Valley, CA
- Farms in simple and diverse landscapes



- 435 nest boxes
- Adult and nestling fecal samples collected for diet analyses
- Automated monitors for provisioning rates

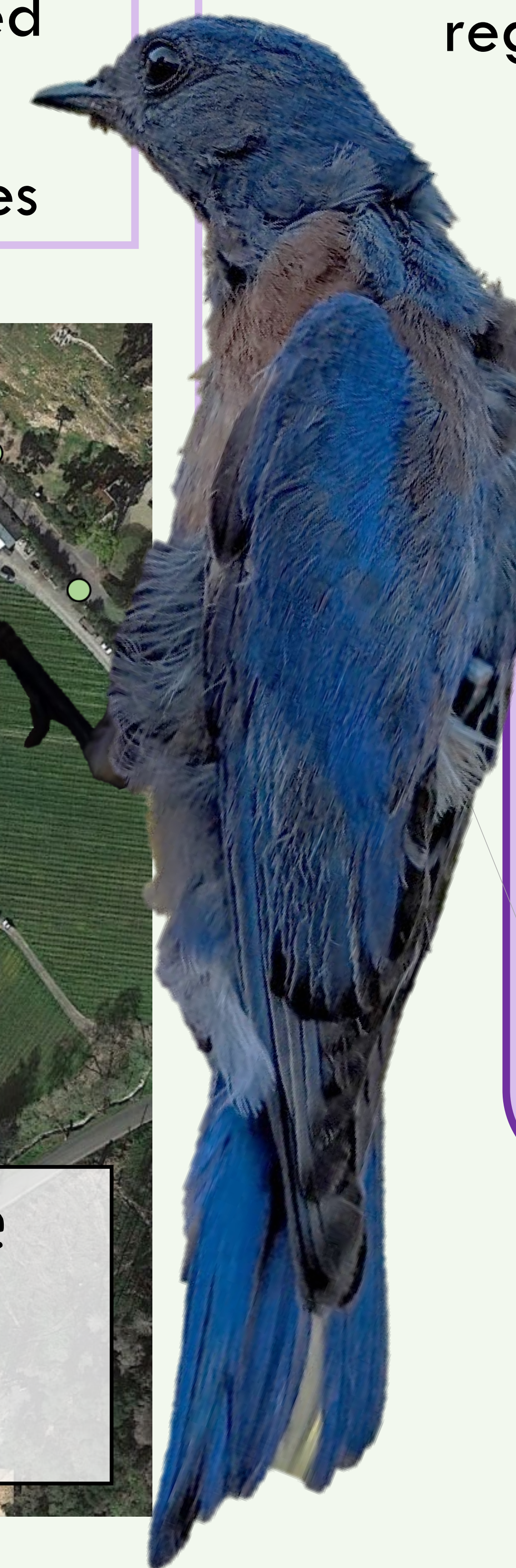
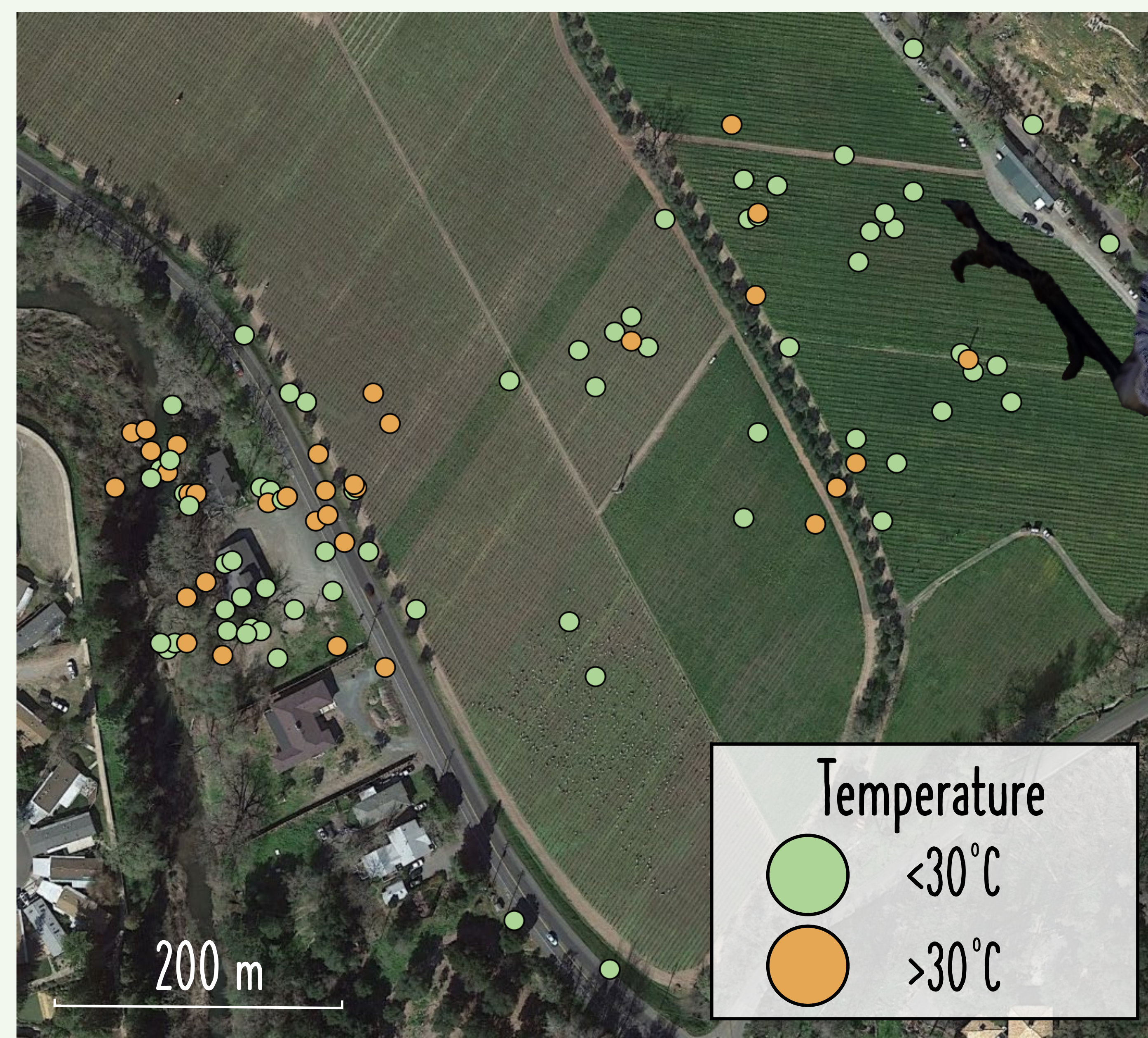
## Preliminary Results

- 73 birds tracked: 49 Western Bluebirds and 24 Tree
- 180 fecal samples from GPS tracked nests
- 119 additional fecal samples

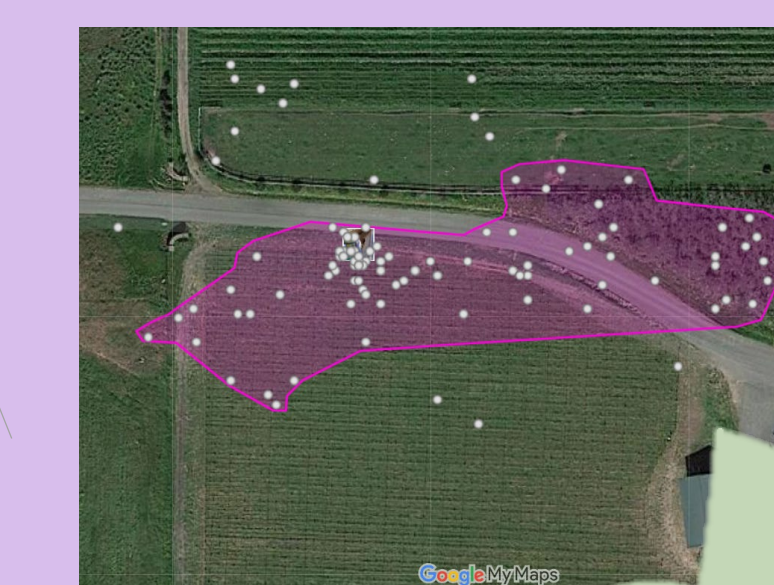
## FARMS FOR CROPS AND CONSERVATION

With our data, we aim to inform...

- How birds can control key pest species
- Optimal nest box placement for pest regulation
- Management of natural habitats within farms for bird conservation of birds and pest control, as temperatures rise



AN INTERACTIVE MAP OF SOME OF OUR TRACKED BIRDS



UC DAVIS  
WILDLIFE, FISH AND  
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Cal Poly  
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