

Developing a survey protocol to monitor distribution, abundance and population trends of streaked horned larks on private lands in the Willamette Valley, OR

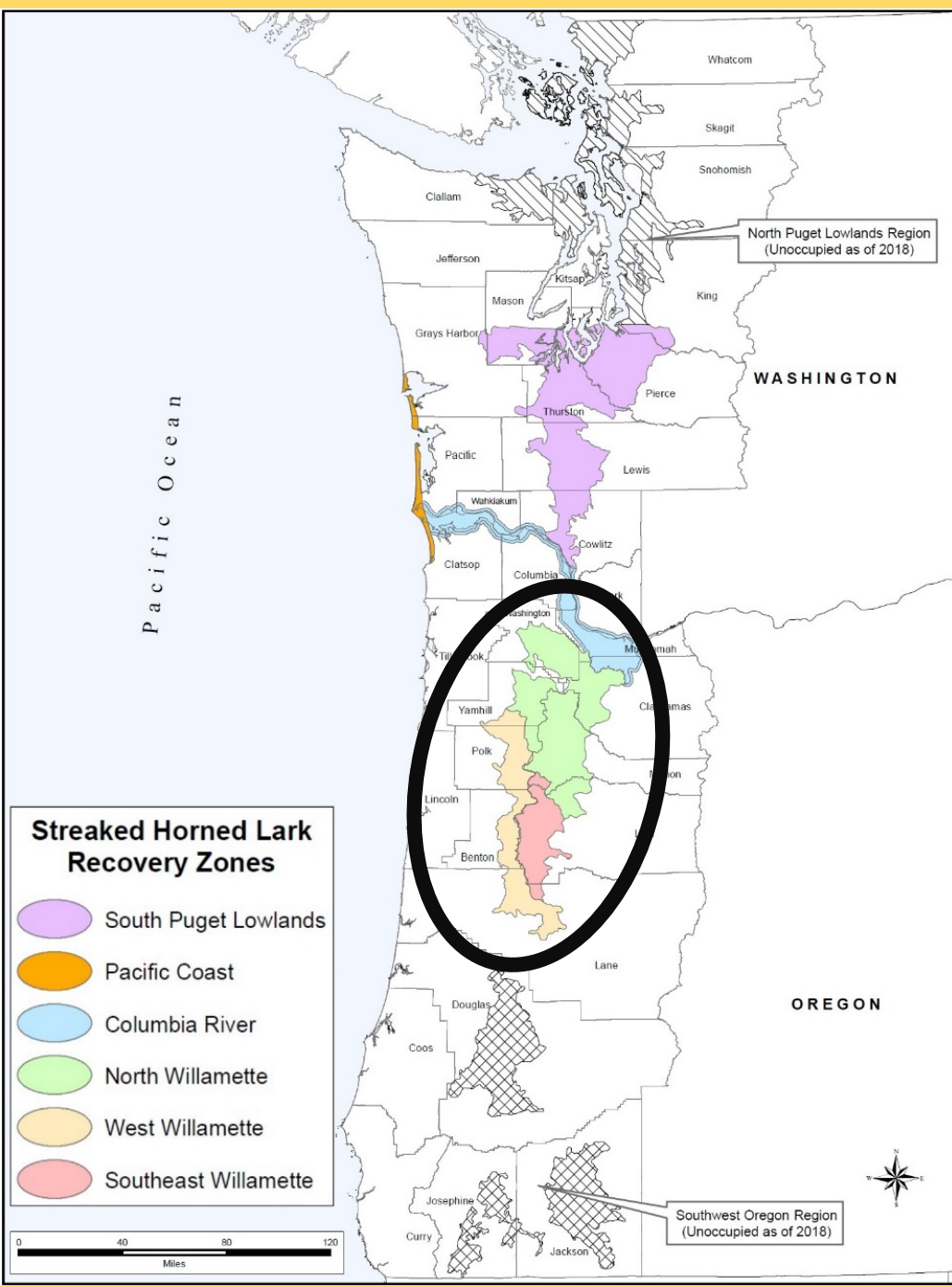
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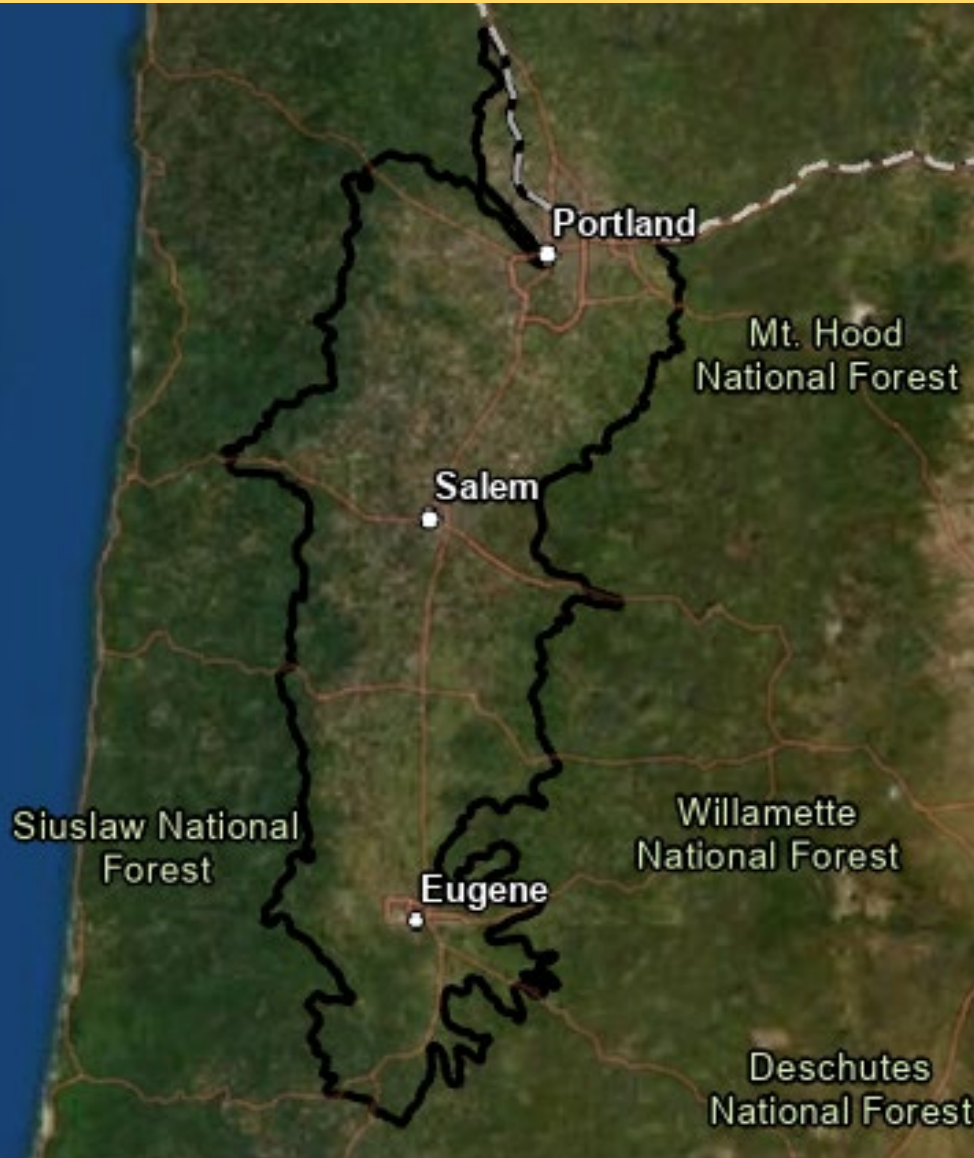
²CoreGIS LLC, Seattle, WA

³South Strafford, VT

Streaked Horned Lark – *Eremophila alpestris strigata*

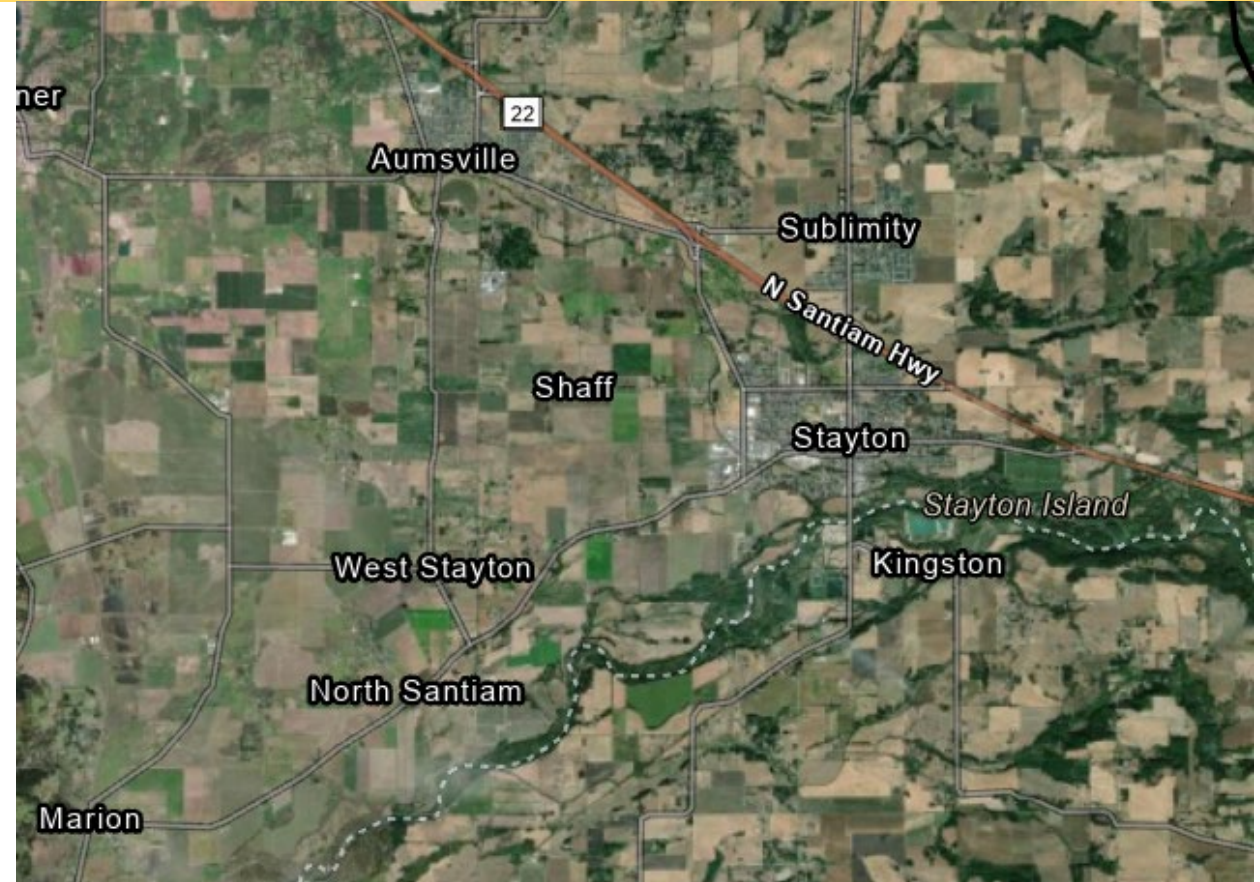
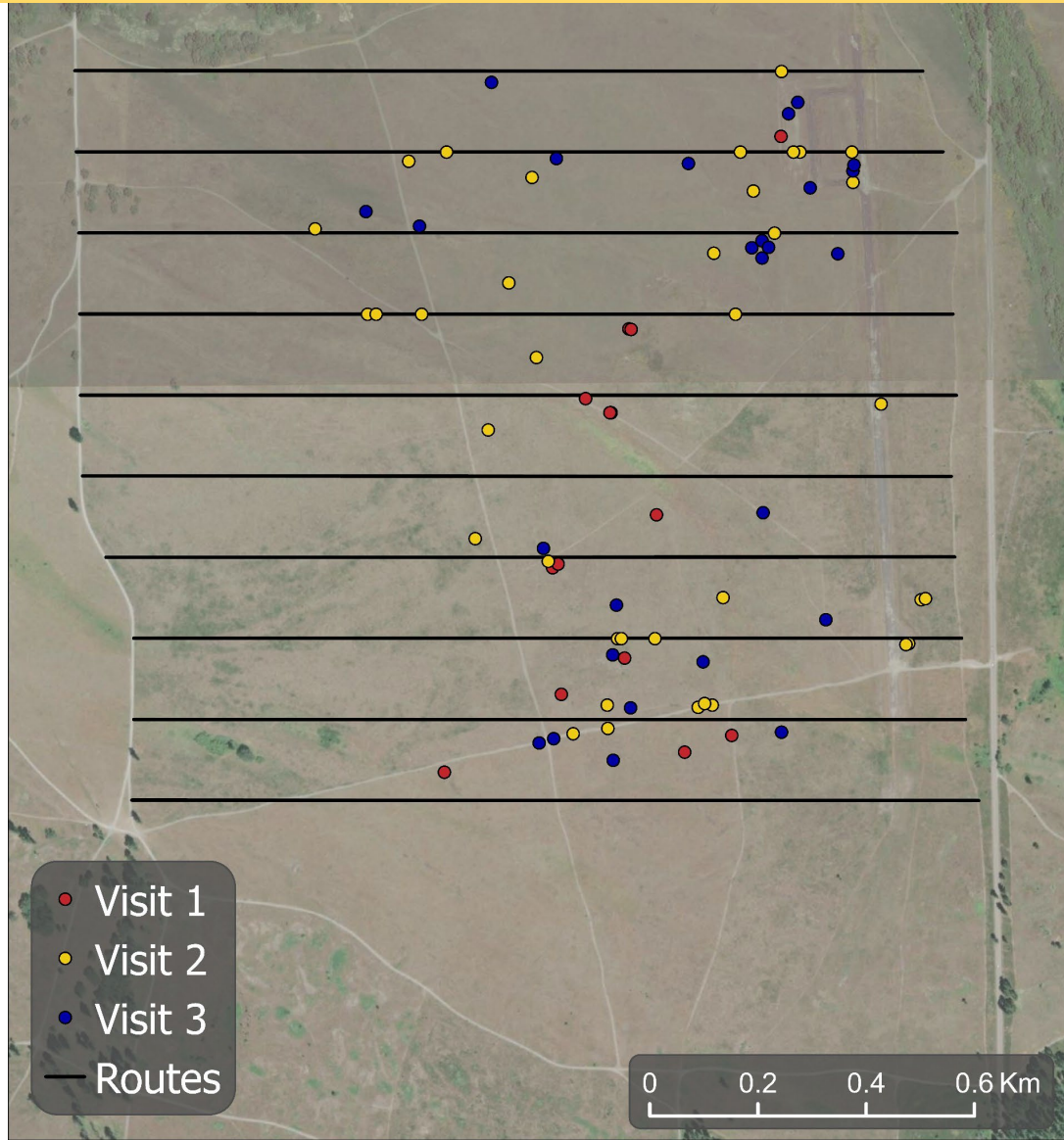


The Willamette Valley is a missing puzzle piece in the story of the streaked horned lark



- **~50% of the breeding population + overwintering birds**
- **Agricultural lands: habitat-specific management effects?**
- **Needed for rangewide evaluation of conservation measures**

Existing monitoring protocol complicated by private land ownership in the Willamette Valley



A new approach:
roadside point counts

Where to survey? Modeling habitat suitability

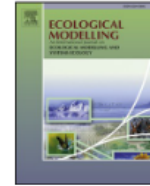
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A spatial model of streaked horned lark breeding habitat in the Columbia River, USA

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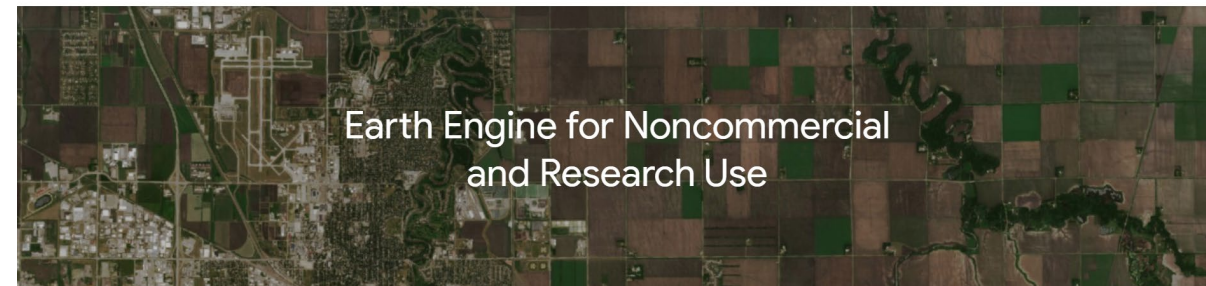


Ingredients

- ESA Sentinel 2 Satellite imagery => NDVI
- Habitat suitability 1 May – 30 June in 2017-18, & 2020-21
- Maximum predicted suitability value

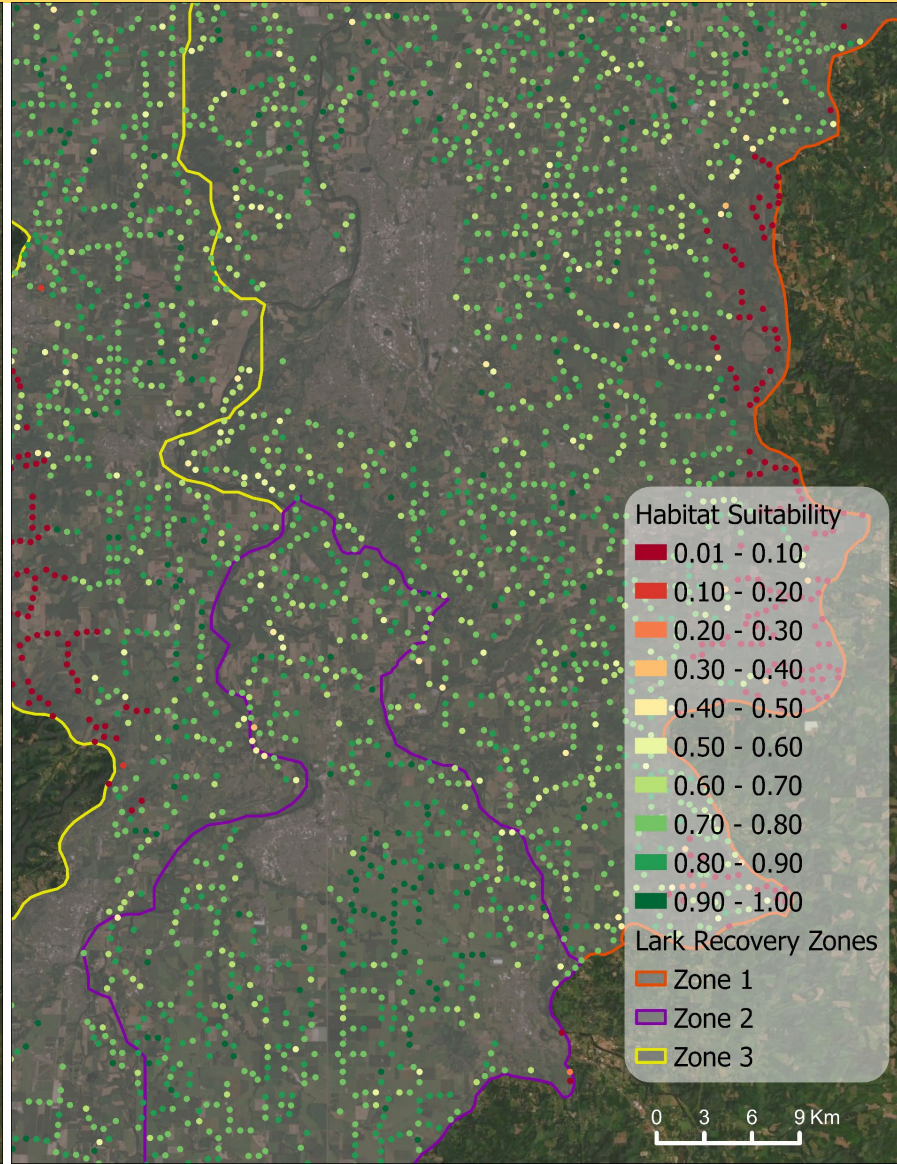
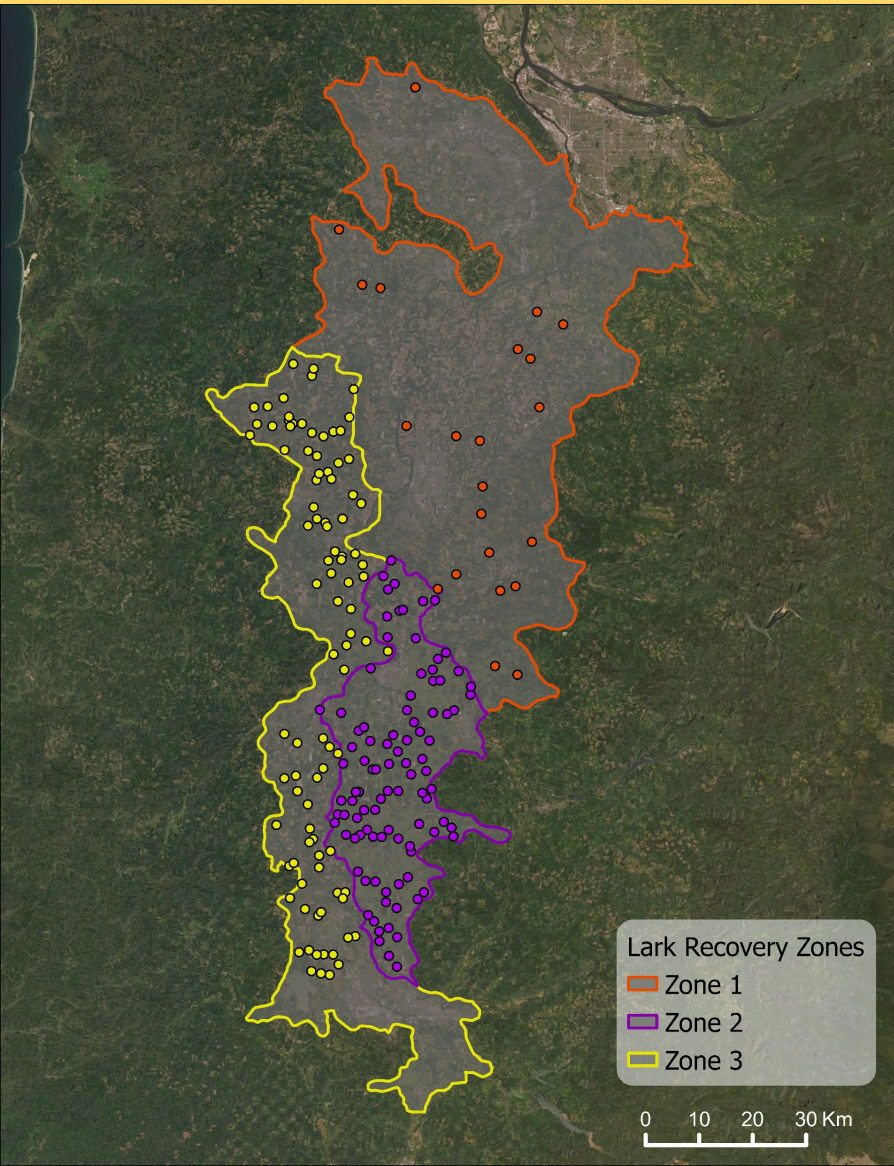
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Potential survey points 650 m apart on non-highways



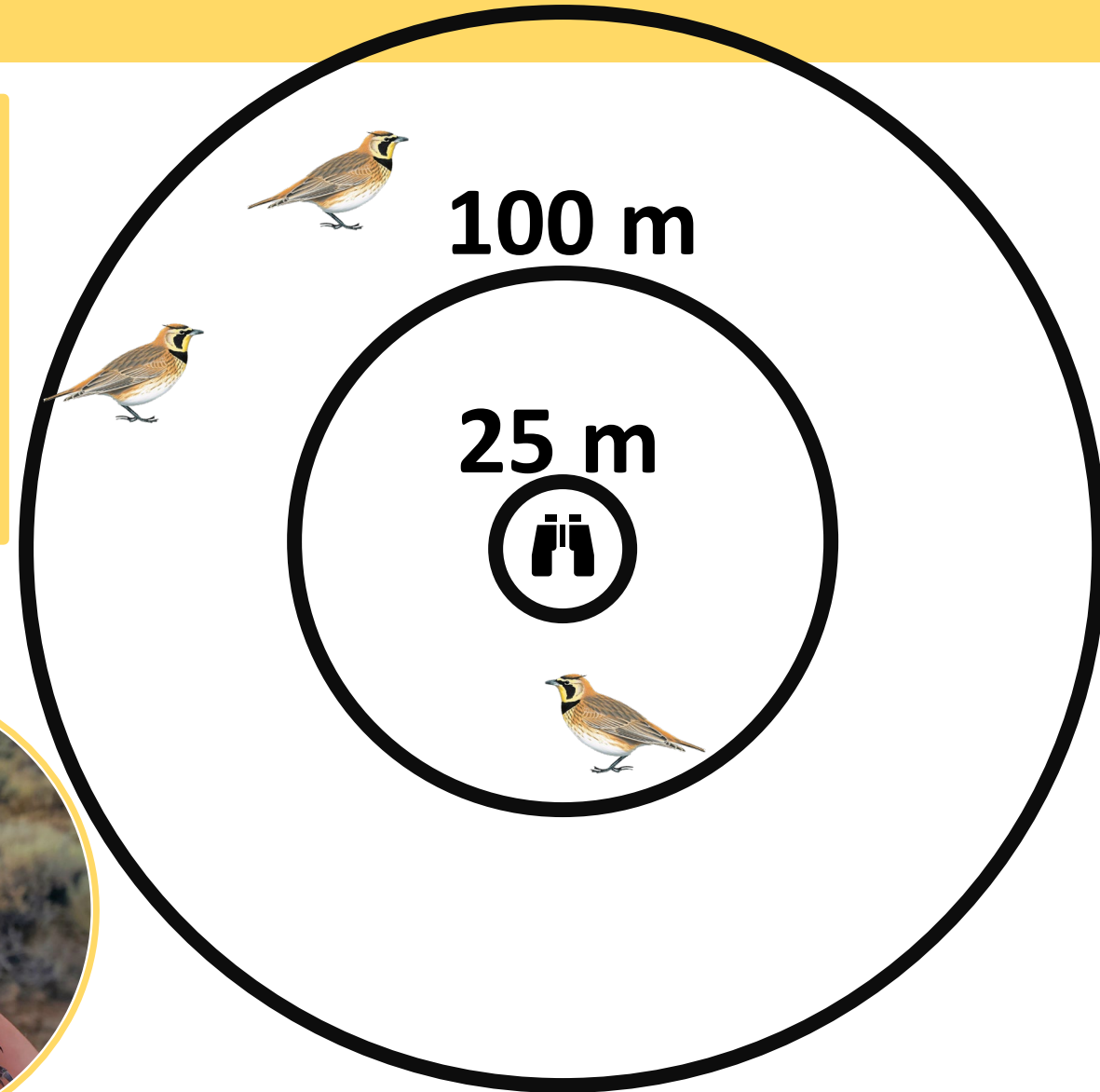
- 200 m buffer
- ~200 spatially balanced points
- Selection weighted by suitability
- Survey 15 May – 30 June, shifting suitability

Remote sensing is imperfect: sites with $> 50\%$ unsuitable (paved, perennial crop, forest) discarded

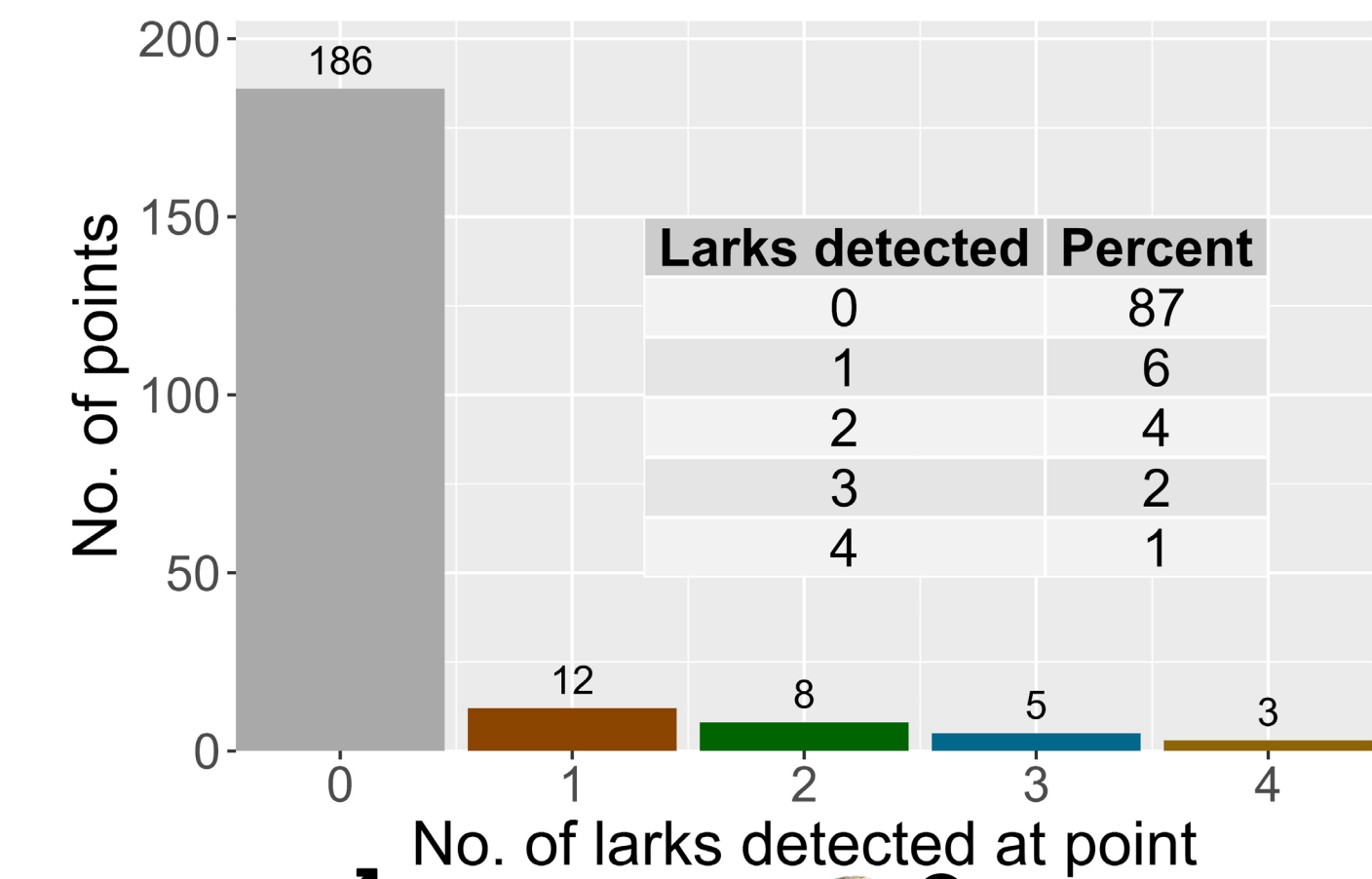
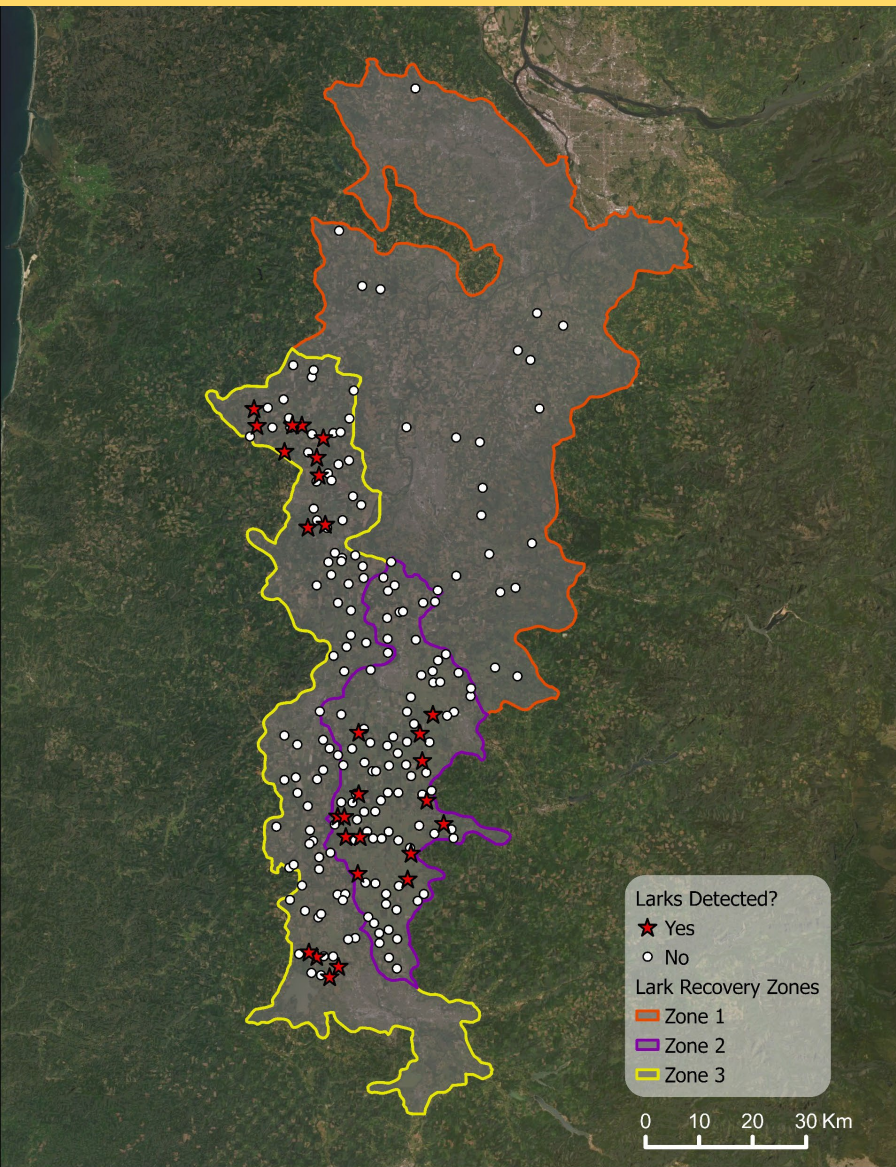


In the field: 8-minute point counts 200 m

- Divided into four 2-minute intervals
- Four distance bands
- Individuals tracked across intervals
- Sex, age, detection type, distance band
- Date, time, sky, wind, noise



Larks were detected at 28 points (13%) - 55 individuals



42



♂

7



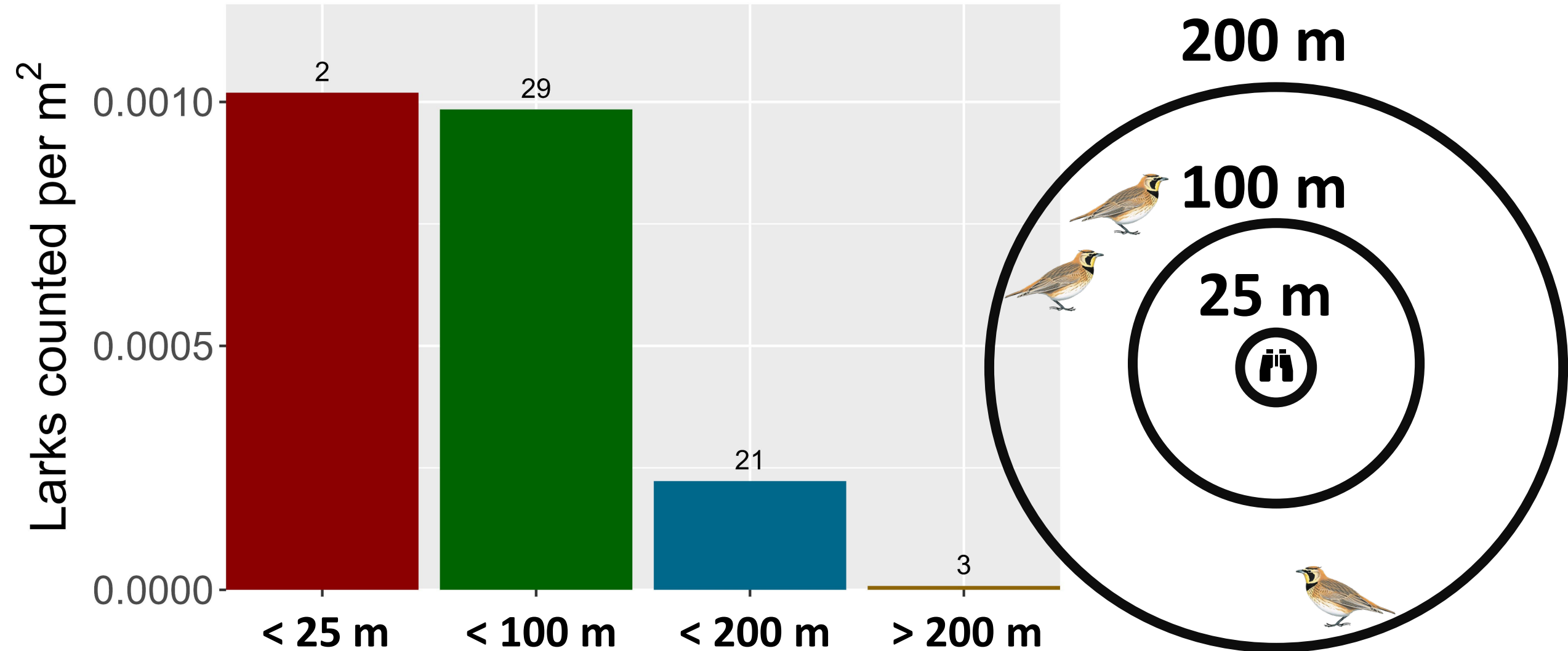
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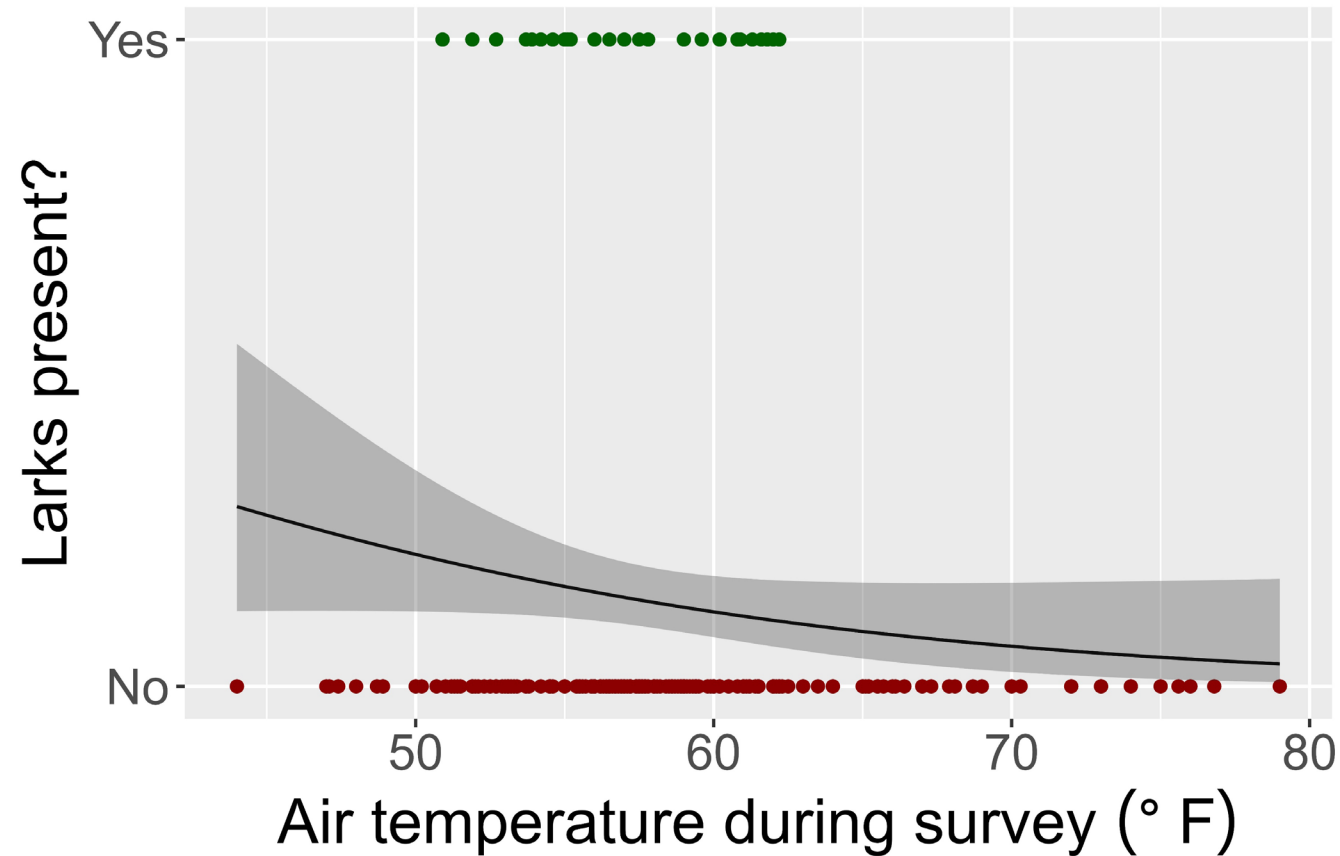
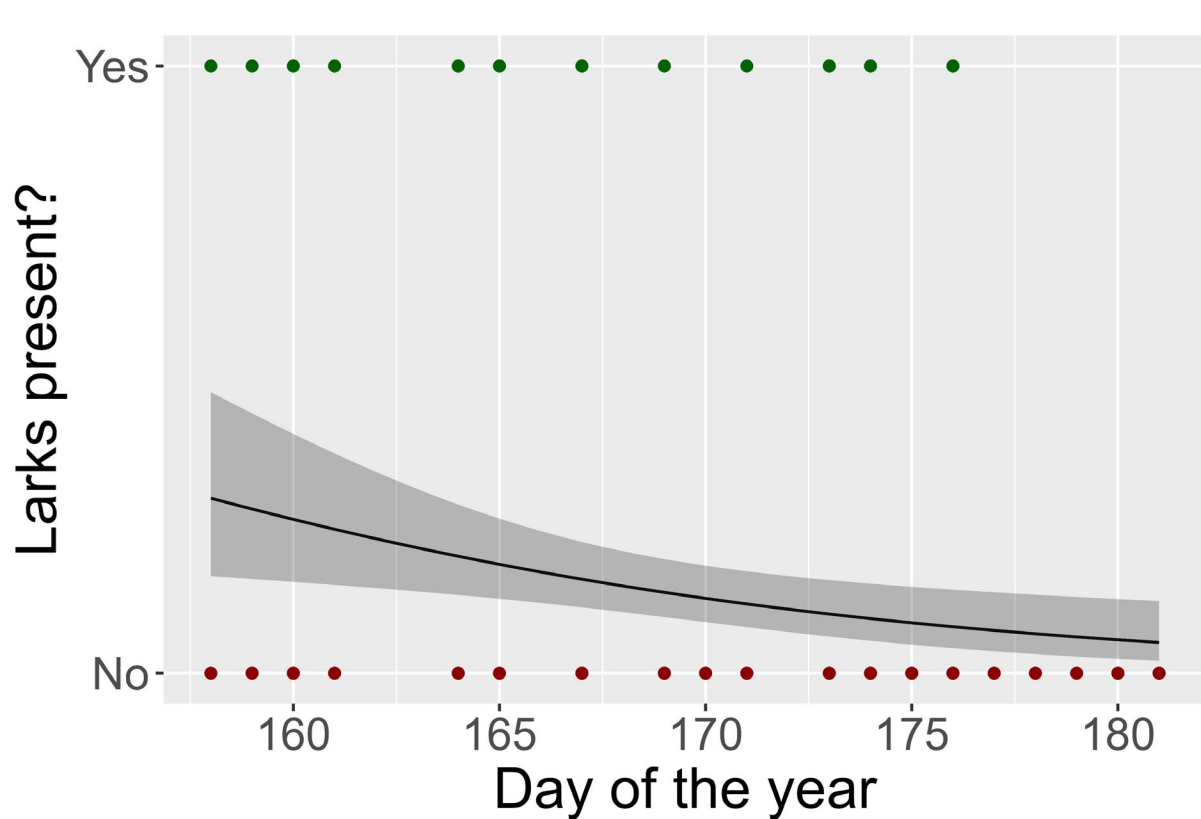


?

Detections declined with distance when we account for area of the distance band



Covariates: there were more detections earlier in the year and at lower temperatures



No observed effect of ambient noise, wind speed, sky code, or time of day

Takeaway: roadside point counts are a promising approach to monitor Willamette Valley populations

- We found larks!
- Identified suitable habitat despite the lack of 2022 cloud-free imagery
- Unusually cold, wet, spring → different vegetation?
- Surveys will begin by 15 May in 2023



Year 1 of the pilot study complete – what's next?

- Collecting second year of data
- Continually assess protocol with technical advisory group
- Power analysis: what effect size matters?
- Evaluating trends vs. population size
- Road bias?



Technical Advisory Group

Bob Altman / Sarah Converse / Beth Gardner / Scott Pearson / Randy Moore



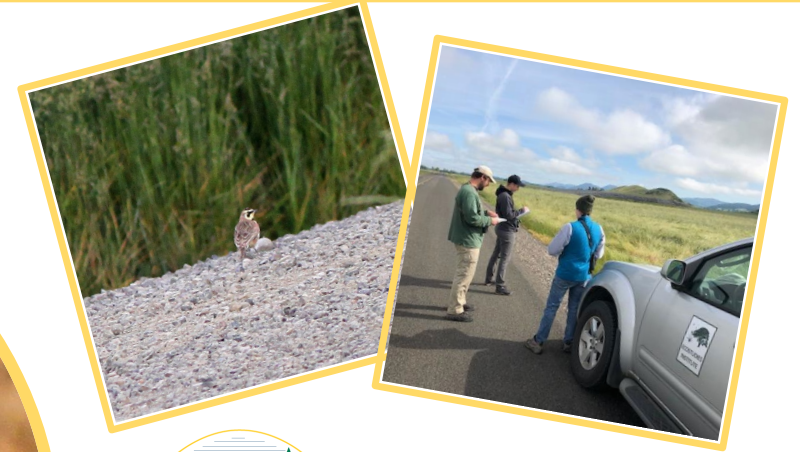
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Field technicians

Brandon Wagner / Marissa Gibson

Thank you!



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Field technicians

Brandon Wagner | Marissa Gibson

Questions?



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