Characterizing Space Use and Estimating Home Range Sizes of 'Akikiki, an Elusive Endangered Honeycreeper

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KAUA'I FOREST BIRD RECOVERY PROJECT

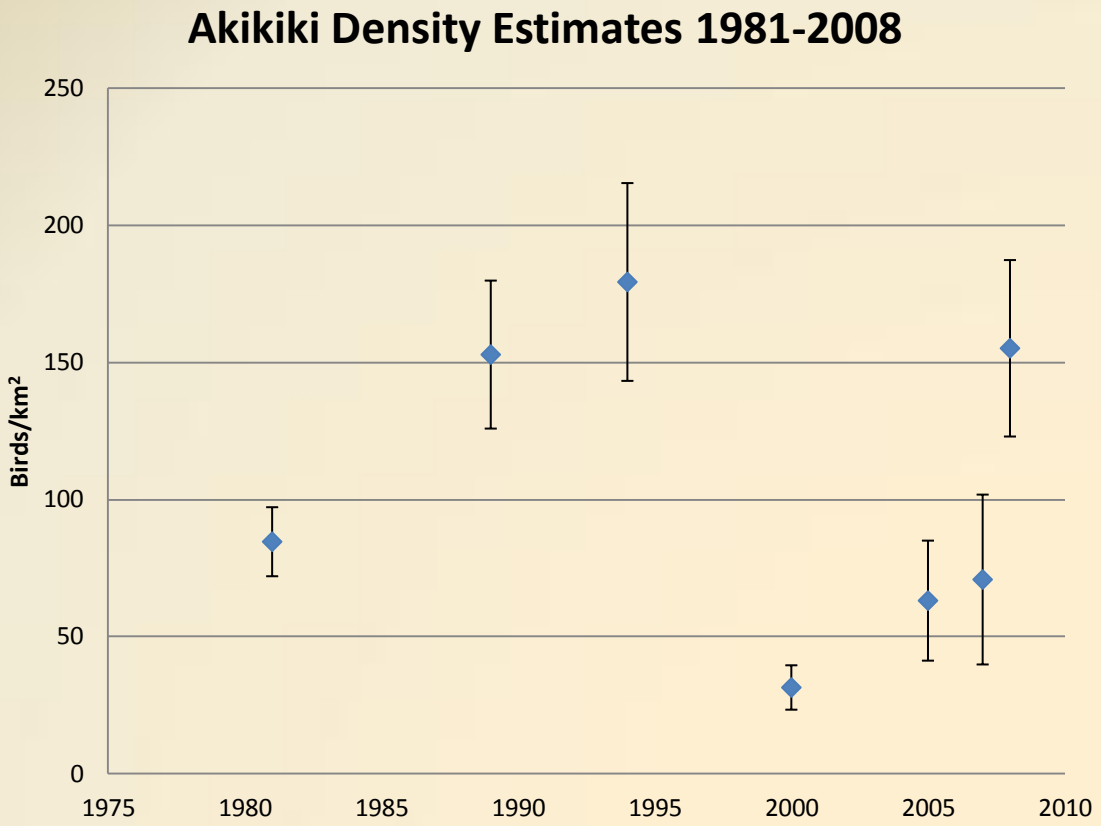
Background- Focal Species

'Akikiki, *Oreomystis bairdi*, or the Kaua'i Creeper

- Insectivorous
- Feeds by gleaning, probing and occasionally digging
- Highly Social
- Detected in subcanopy by contact calls

Background- Conservation Status

- Small and uncertain population size estimate
- Extremely limited range
- Facing multiple threats



(Camp and Gorreson 2010)

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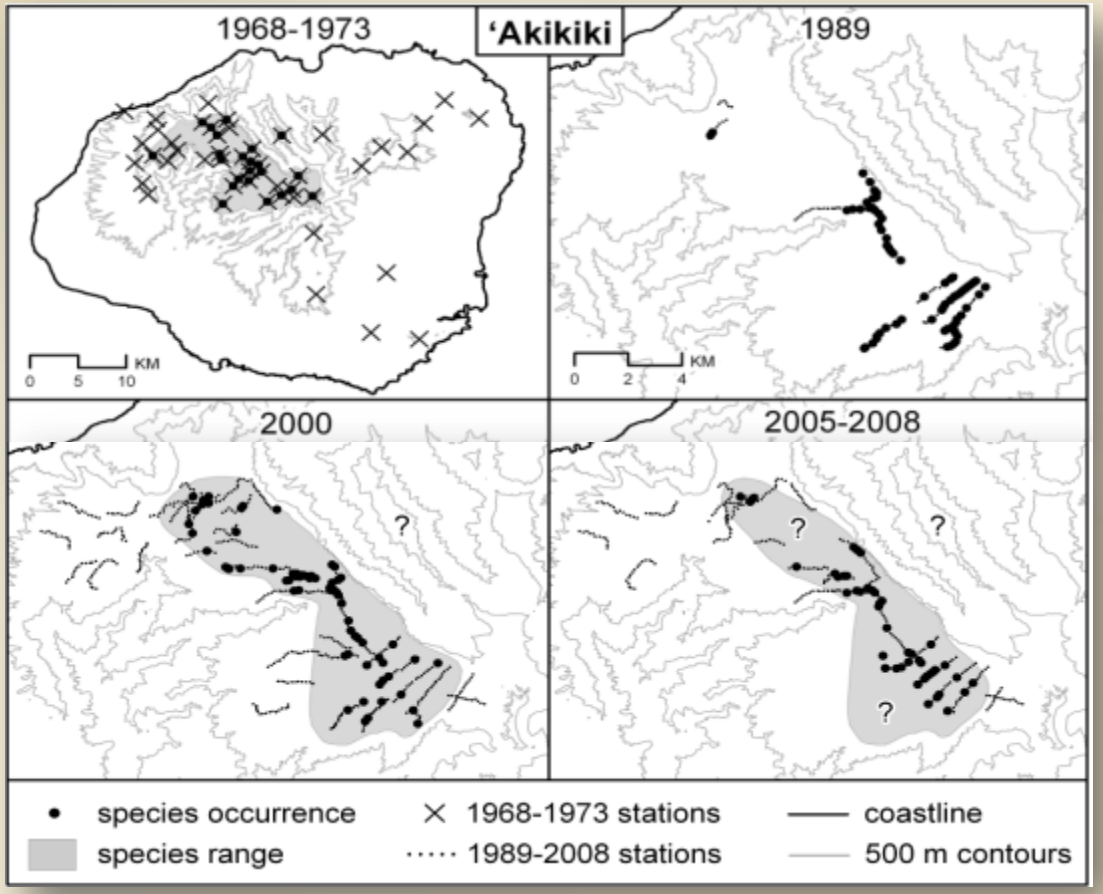

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Background- Conservation Status

- 'Akikiki: Candidate for federal listing under ESA since 1994
- Listed as Endangered in March of 2010 with 'Akeke'e
- Current focal species of Kauai Forest Bird Recovery Project

Study Questions- Big picture

1. Does forest structure and composition vary across the current range of the 'Akikiki?
2. Is there evidence of a distinct gradient of disturbance (weeds and ungulate damage) across the range of the 'Akikiki
3. Does home range size and population density vary as a function of habitat structure or composition?

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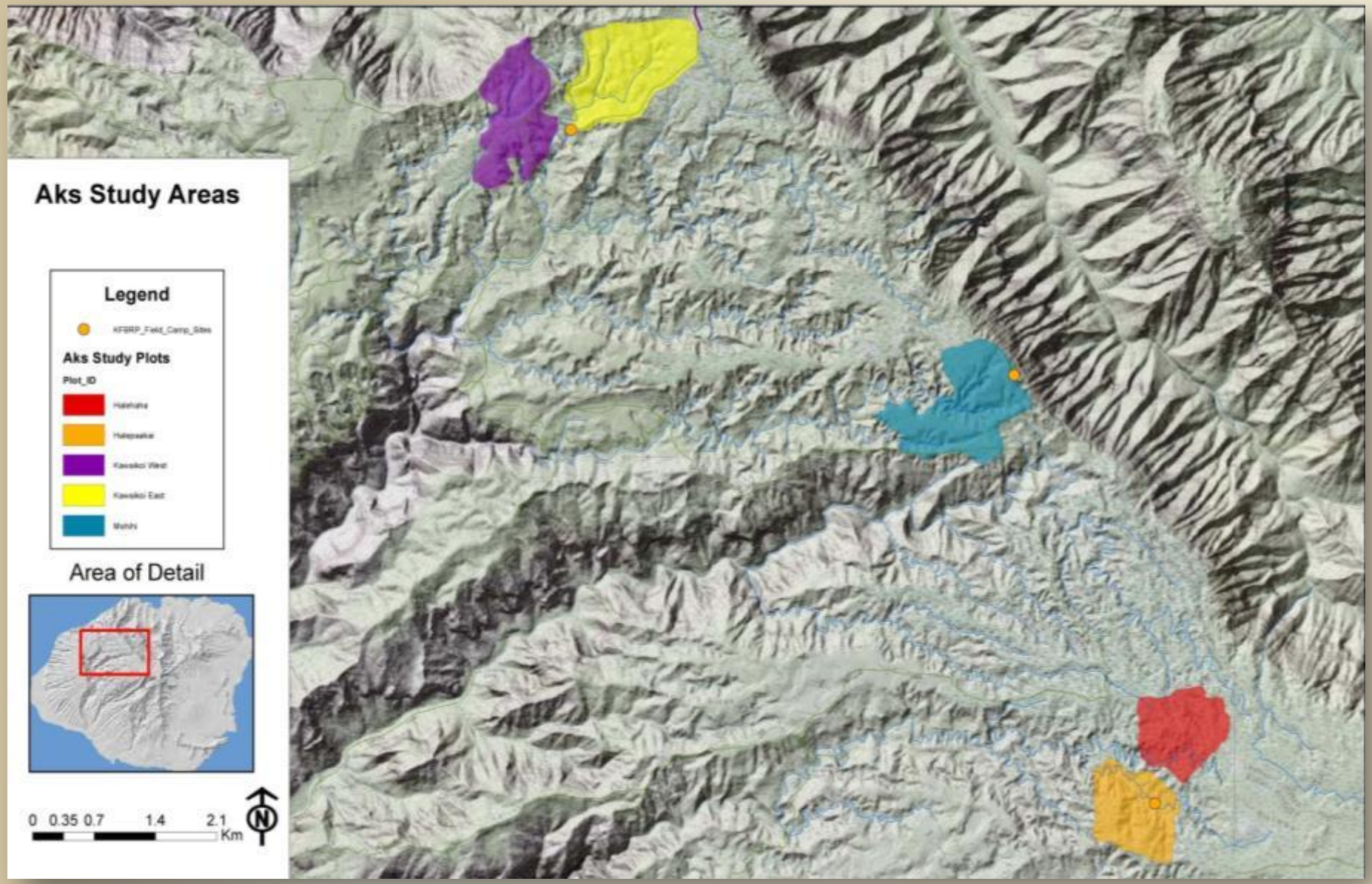
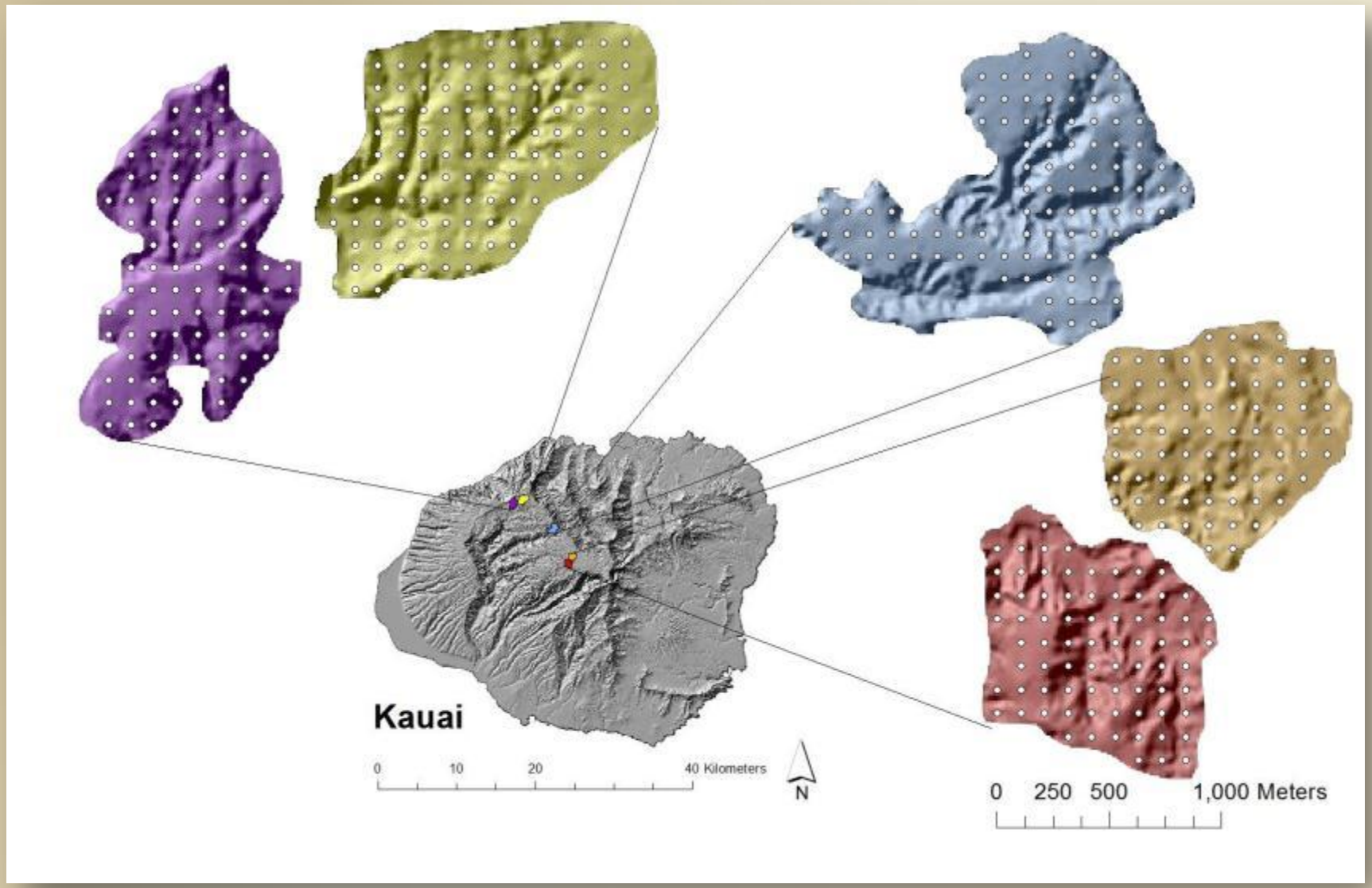
Study Area - Overview

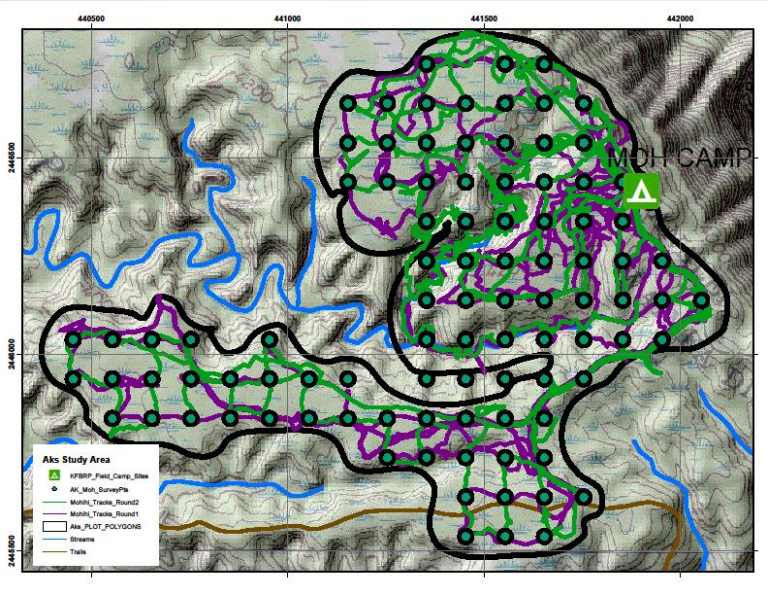


Study Area - Plots



Methods – Area Searching

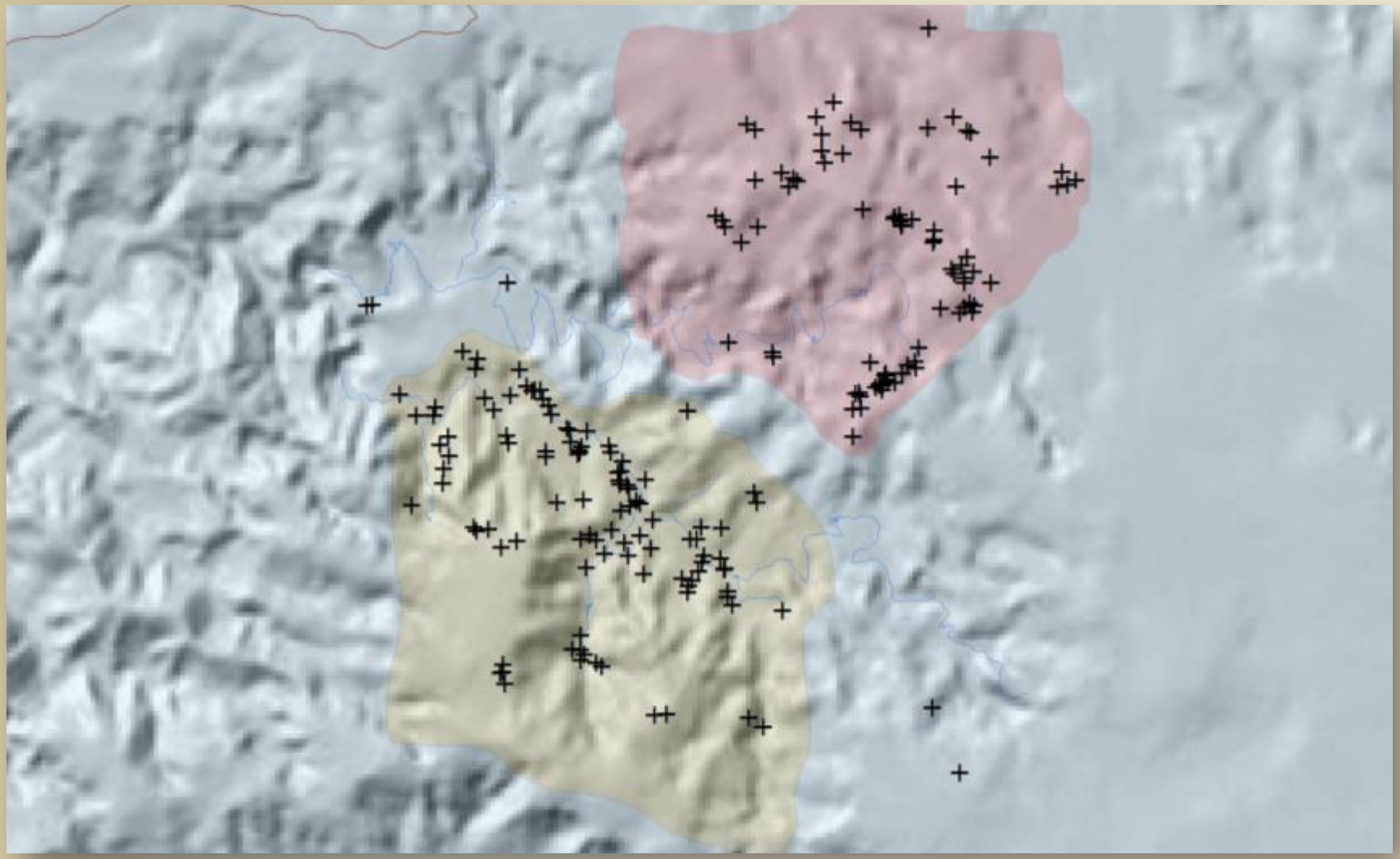
- Each plot searched 3-5 times per year between March and July
- In 2012 used playback to increase detections
- Used color bands, unique plumage, and behavior to help distinguish individuals and home ranges



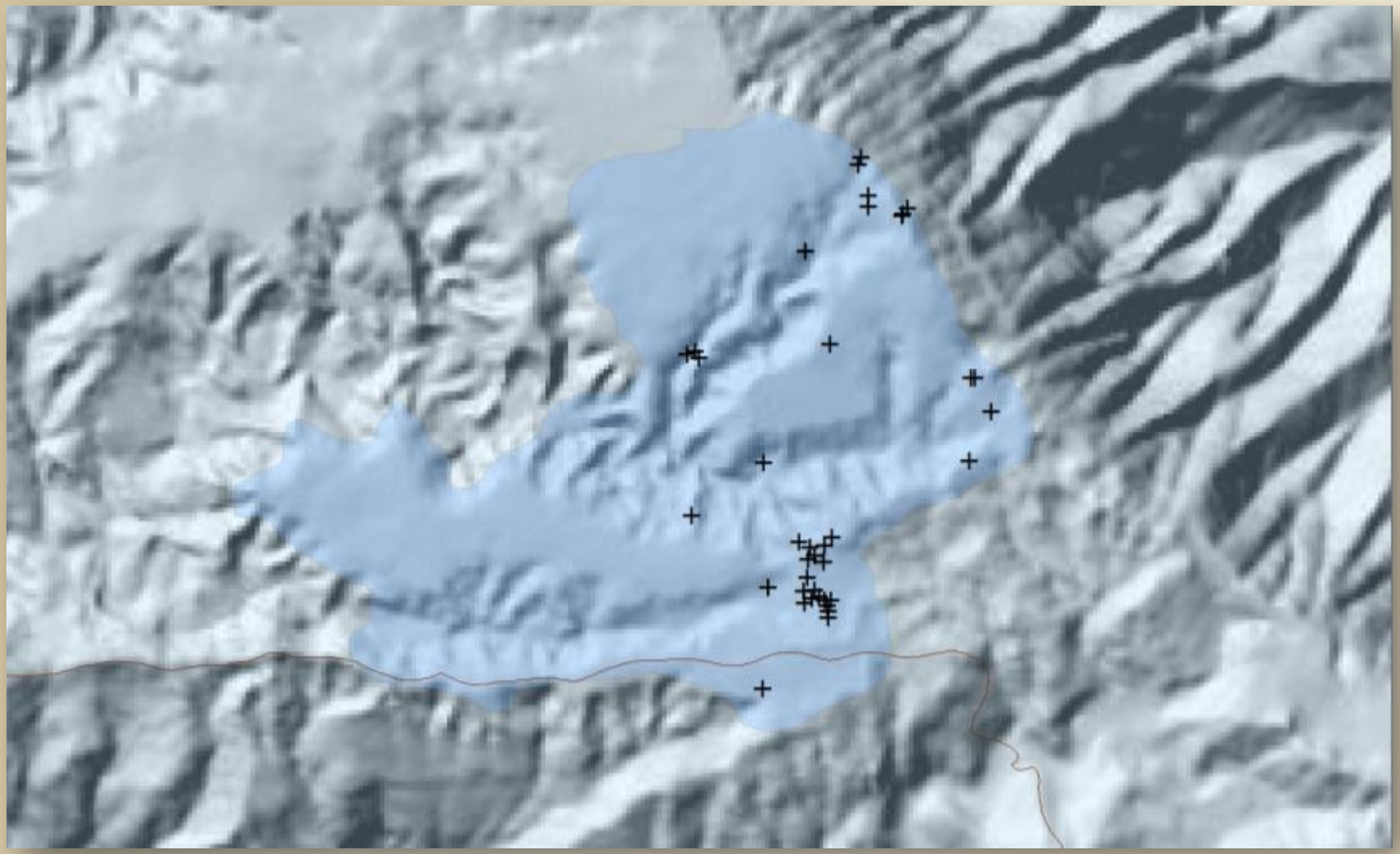
Methods - Radio Telemetry

- In February, HPK only
- Individuals tracked 1-3 times (Morning, Mid-day, Evening) per day for $\geq$ 1 hr
- New locations recorded once every 10 min or 25 m of movement

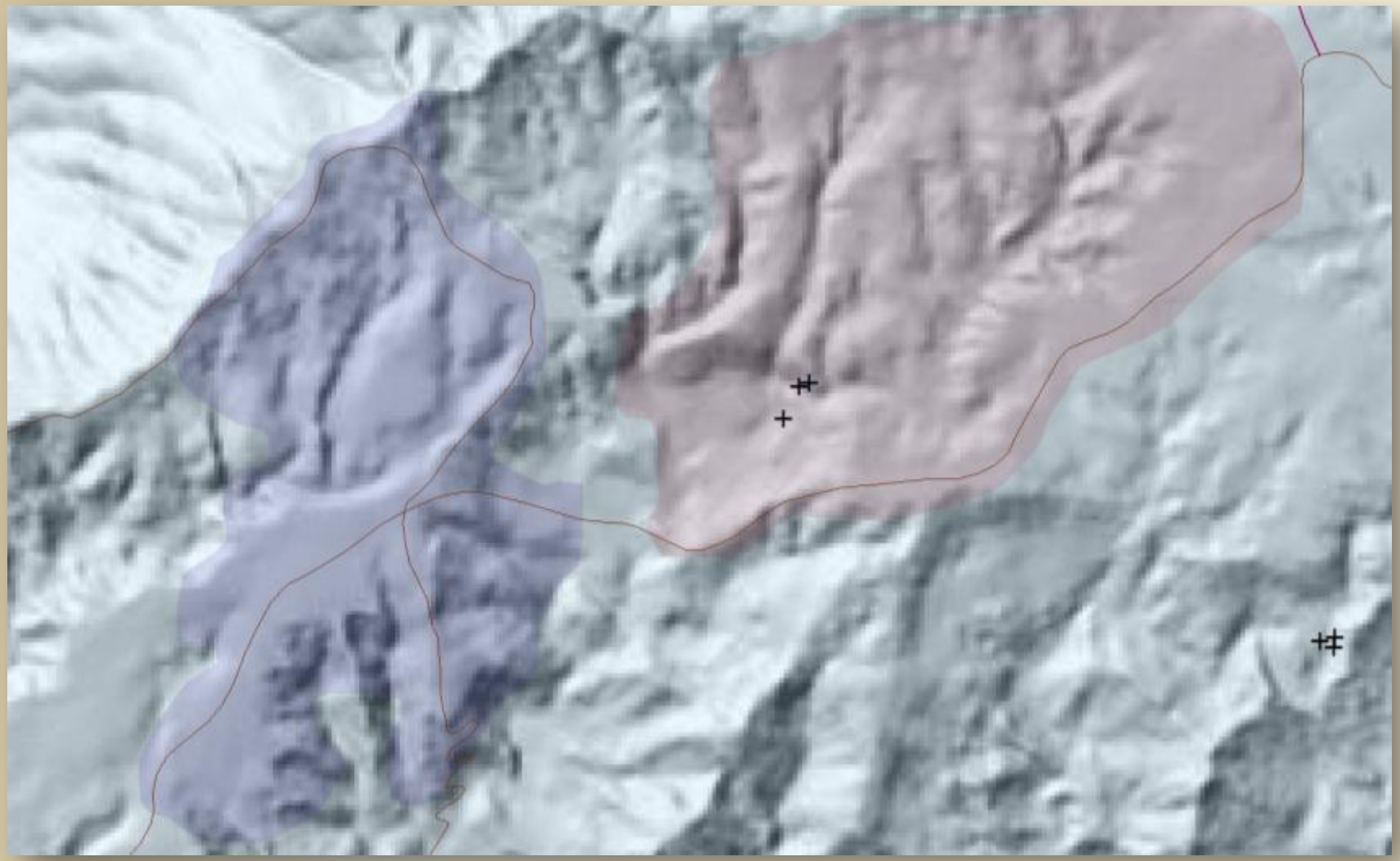
Results – 2011 HPK/HH Detections



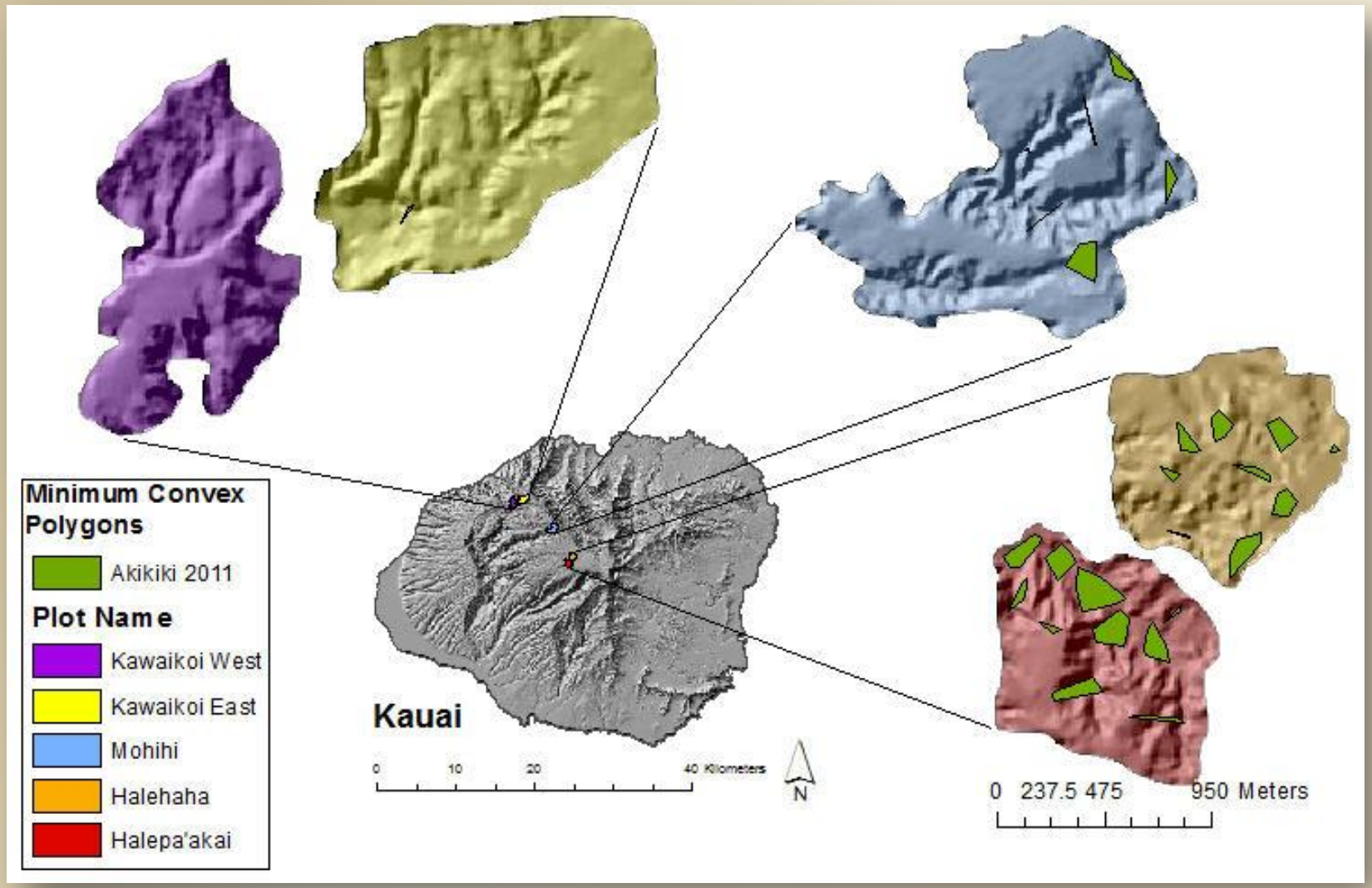
Results – 2011 MOH Detections



Results – 2011 KWK Detections



Results –
Home range size from area searches



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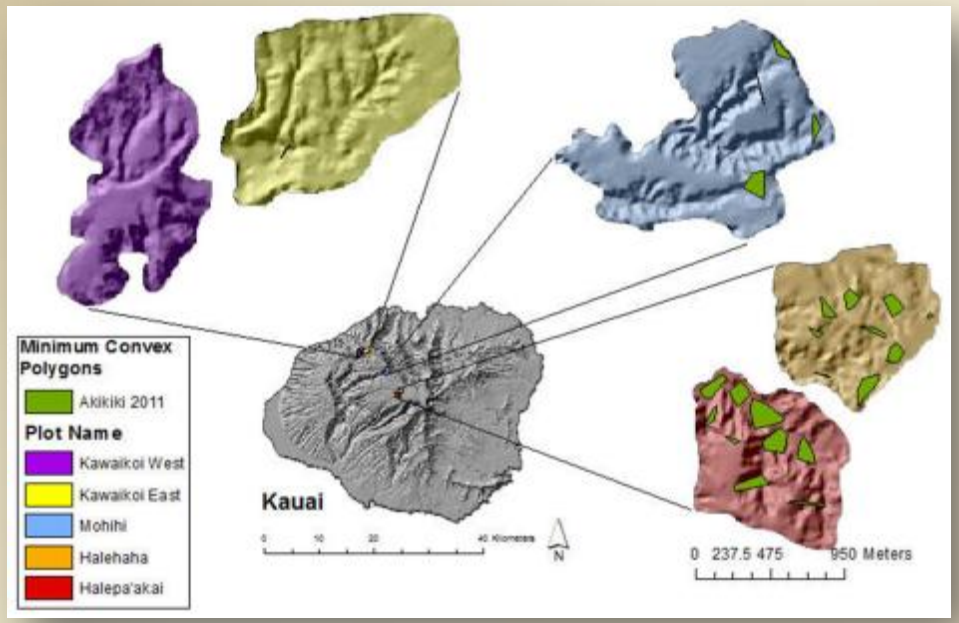
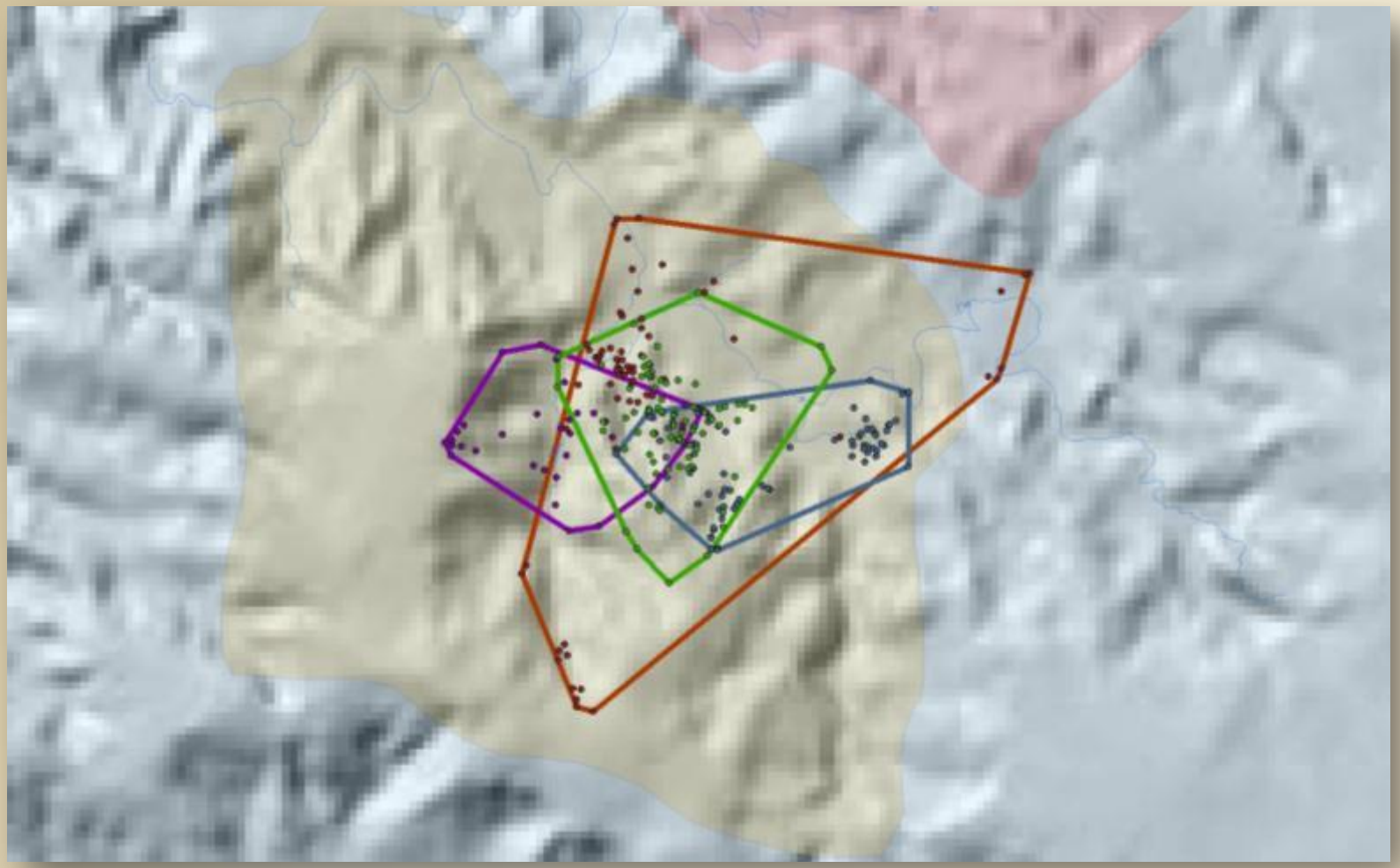


- **12** home ranges used for area calculations
- Mean home range size: **1.19 + 0.17 ha**
- Range: **0.32-2.52 ha**

Results –
Home ranges from telemetry



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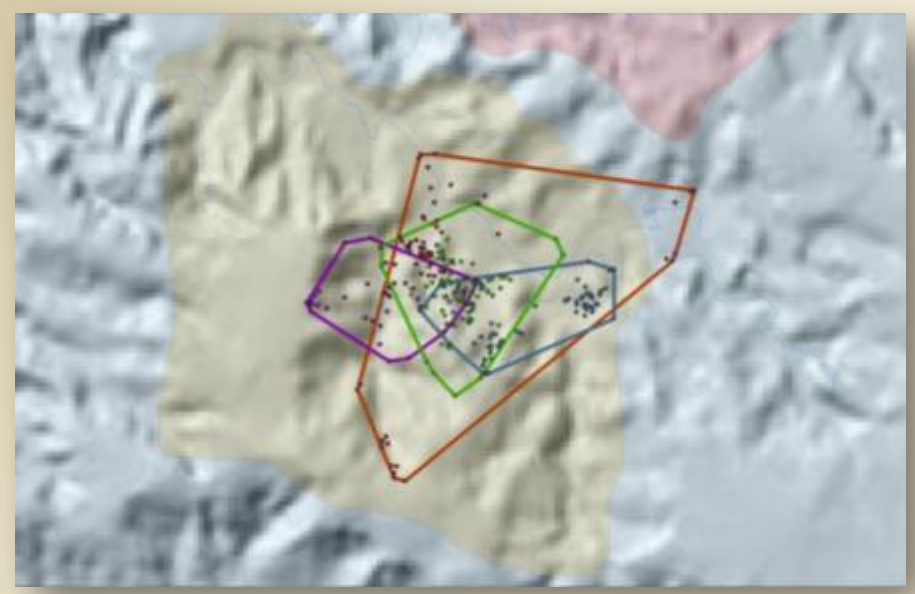

- **4** Akikiki tagged Jan-Feb
- Mean tracking time: **12d** (range= 5-18d)
- Mean home range: **11.05 ha** (range= 5.2-25.0 ha)
- Median home range: **7.0 ha**

Discussion - Summary

- Pair density ranges from 0-10.1 pr/km^2
- Density varies across the species' range; higher in more pristine area
  - Gradient agrees with HFBS results
  - Except Mohihi?
  - Even at high end, not very high

Discussion - Summary

- Movement of individuals greater than initially anticipated
- Differences in home range size across study areas uncertain
  - May vary seasonally, comparable to Hawaii Creeper
- Habitat characteristics of home ranges yet to be analyzed

Future Analyses

- Integrate results of vegetation surveys
- Compare alternate methods of abundance estimation and develop range-wide population estimate
- Apply findings to remotely-sensed data
- Develop habitat model for Akikiki to support management decision-making

Future Directions

- Continue population monitoring demographic work on Akikiki and other Kauai forest birds
- Investigate other potential factors influencing distribution of Kauai forest birds (e.g. predation, disease, food availability)
- Identify and research management options to ameliorate threats to biodiversity on the Alakai Plateau (e.g. predator control, habitat protection and restoration, food resource supplementation)

KFBRP Field Crew 2011
KFBRP Field Crew 2012
Committee and Colleagues at CSU
USFWS
The USGS “Hui”
Ruby Hammond
Eric VanderWerf
Jeremy Russell
Pauline Roberts
David Leonard
David Kuhn
Jim Denny

...mahalo