



Telemetry 2007: Spotted Owl
Home Ranges, Habitat Use,
and Winter Movements—
Preliminary Results

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Telemetry Objectives

1) Fine scale habitat associations of spotted owls during the breeding season

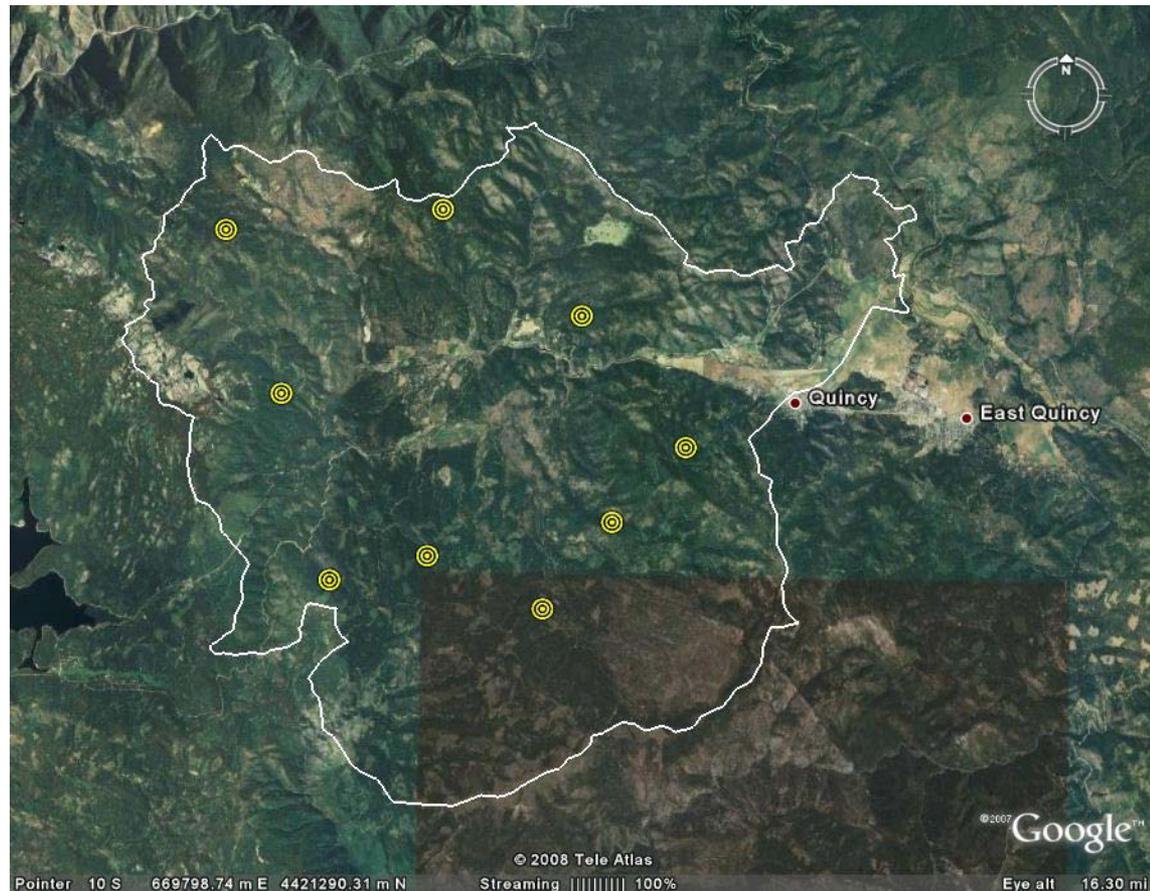
- Where are spotted owls foraging? (Home Range)
- Why might they be there? (Habitat Analysis)
- Where else are they likely to be? (Fire and Fuels Treatment Use, Modeling, Future Work)

2) Winter movements

- Where do spotted owls go during the non-breeding season?

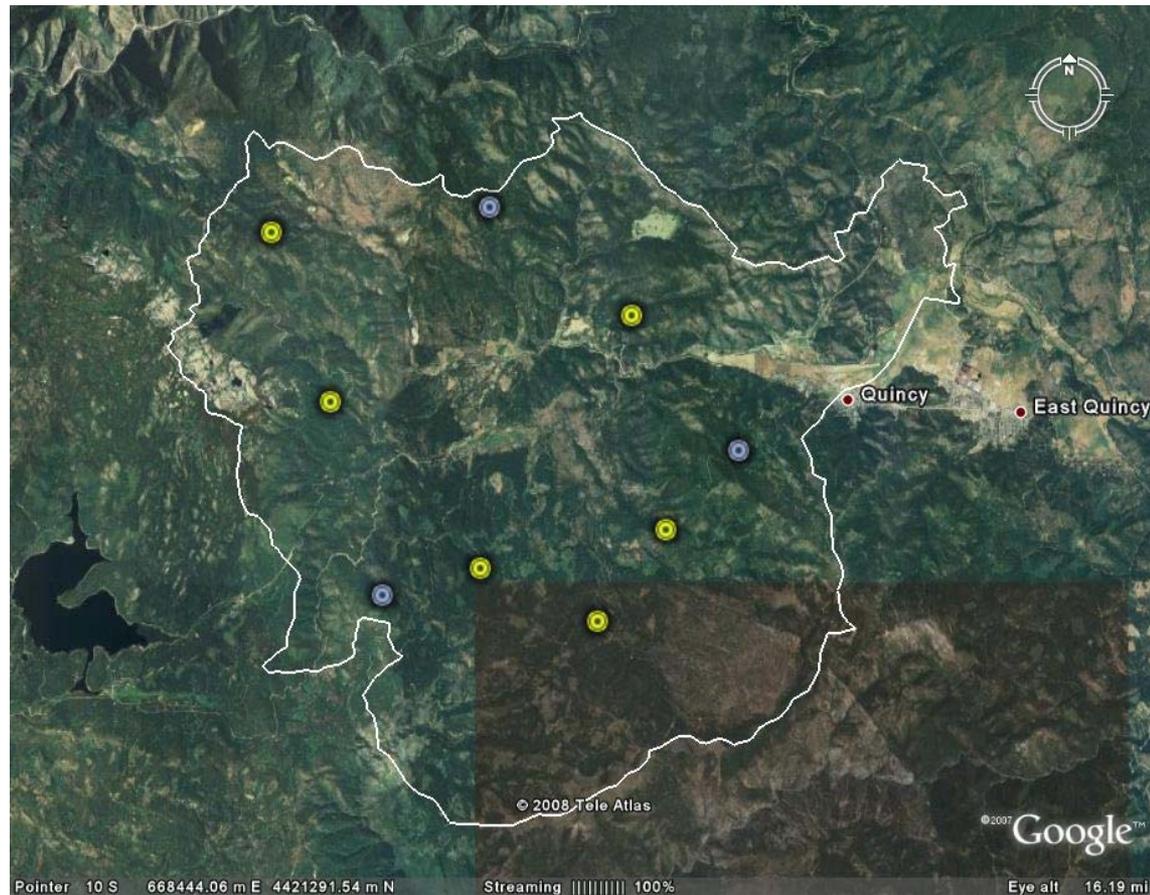
Methods- Site Selection

- SA-4 chosen: portion of study area where most fuels treatments have been completed
- 9 total territorial sites in SA-4 in 2007



Methods- Site Selection

- Selection of telemetry sites limited to:
 - 1) pairs
 - 2) “core” sites—sites that have been occupied more than one year.



Methods- Transmitters



- 12g transmitter (less than 3% body weight)
- Radios on adults only
- Females radioed AFTER juveniles fledged from nest
- 8 birds radioed: 3 males and 5 females

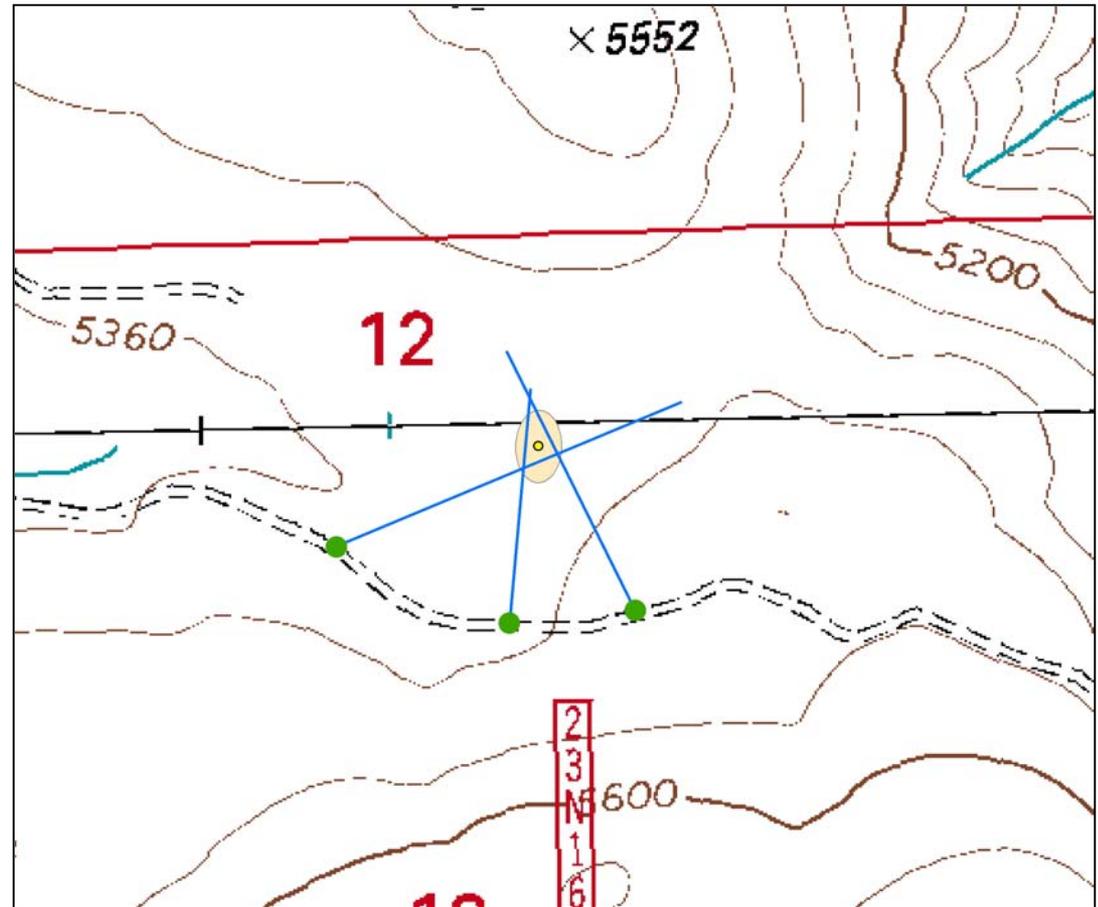
Methods- Breeding Season

- Telemetry conducted between an hour after official sunset and an hour before official sunset
- Half of locations before midnight
- Half of locations after midnight
- At least 24 hours between foraging locations, to avoid temporal auto-correlation
 - Maximum sampling of 5x/ every two weeks or ~10 locations per month



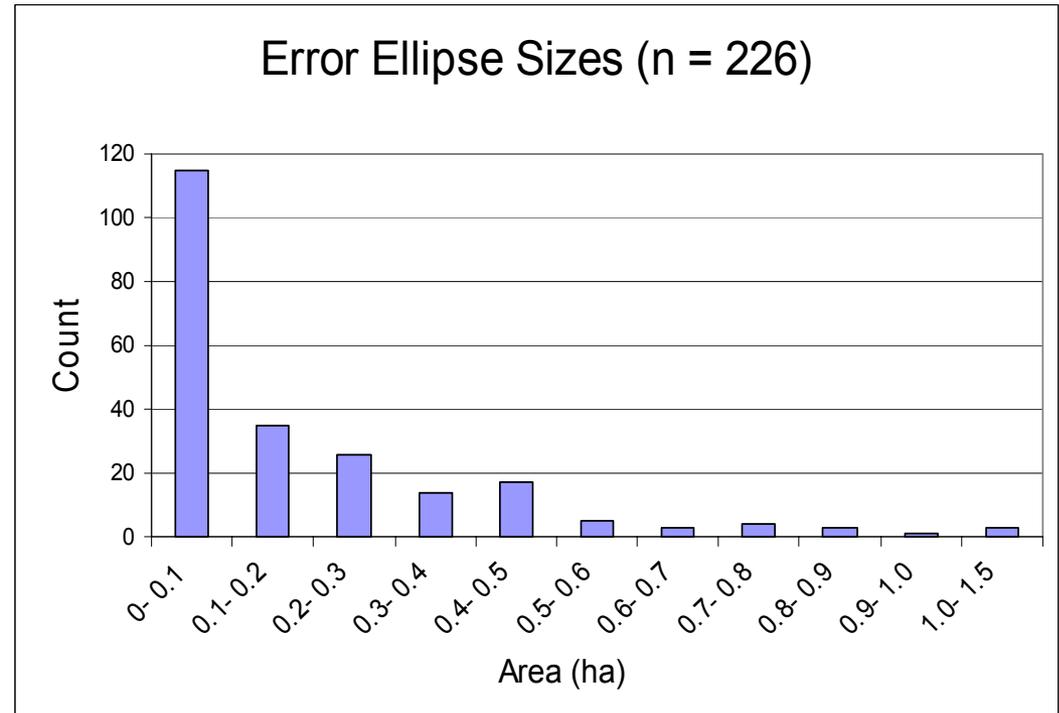
Methods- Triangulation

- Location of a transmitter is calculated by using the three sides of a triangle

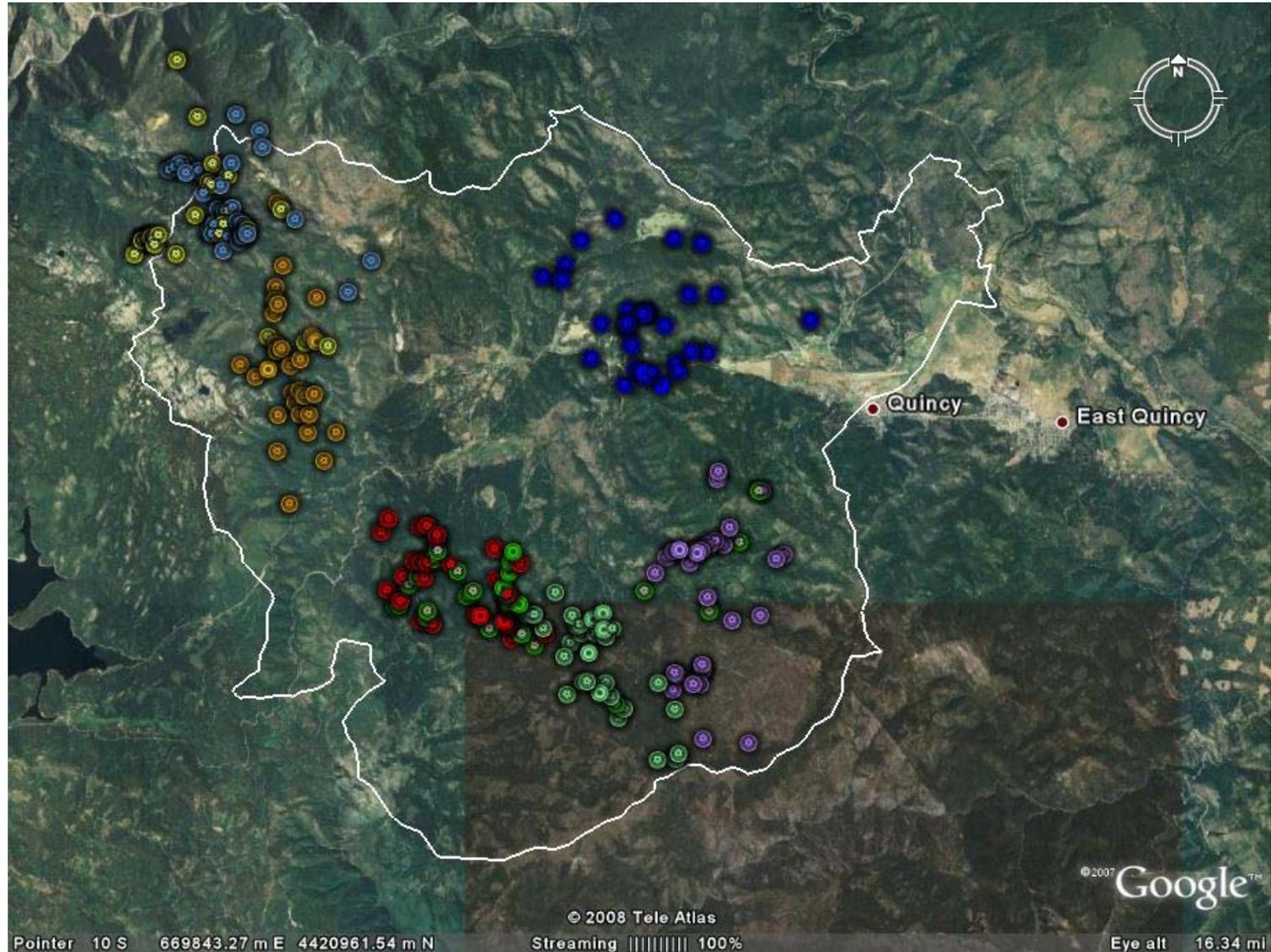


Methods- Triangulation

- 51% of error ellipses less than 0.1 ha (0.25 acres)
- 92% of error ellipses less than 0.5 ha (1.2 acres)

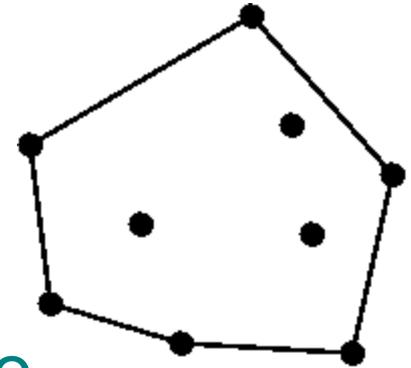


Foraging Locations ($n=236$)

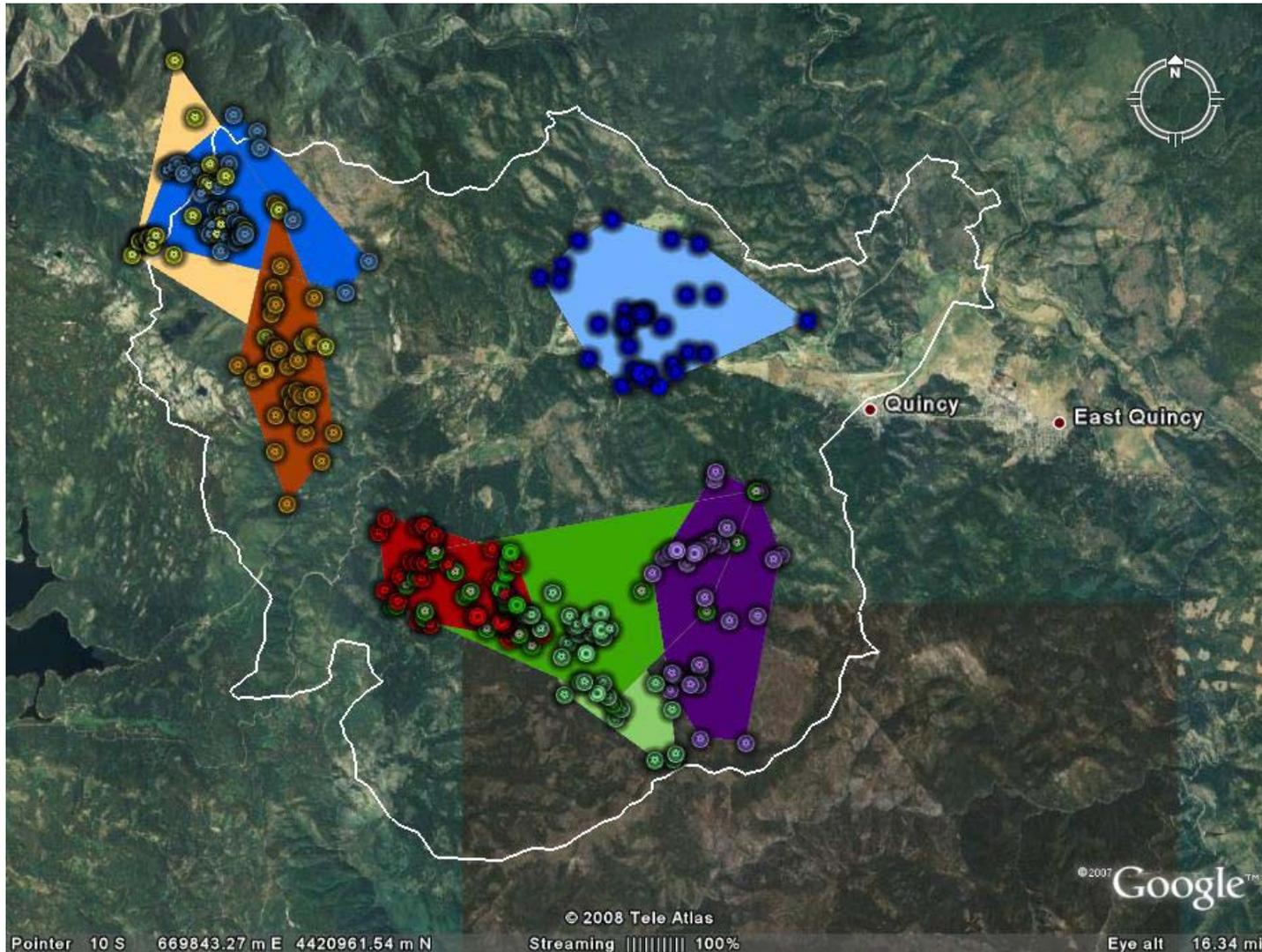


Home Range Analysis

- Minimum Convex Polygon (MCP) method, analyzed using Home Range Tools and Hawth's Tools in GIS
- MCP is the minimum area that includes all points where the bird has been located

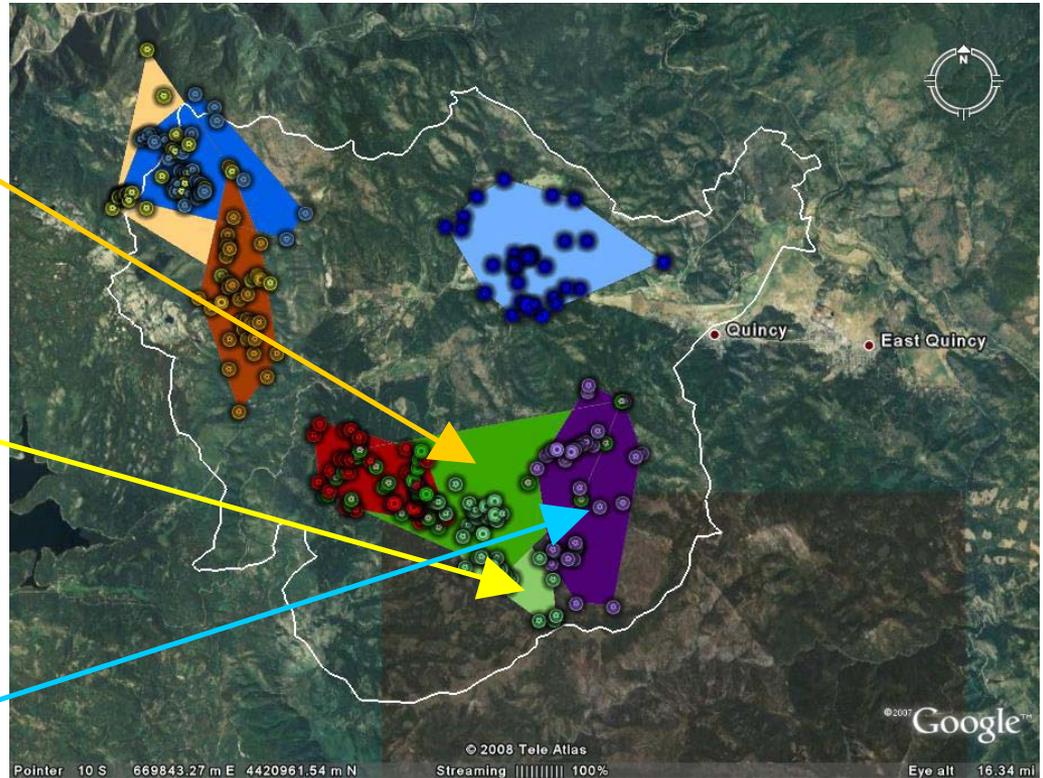


2007 Home Ranges



2007 Home Ranges

- Largest Home Range: 2421 ha (6,000 acres)
- Smallest Home Range: 690 ha (1,700 acres)
- Average Home Range: 1312 ha (3,300 acres)

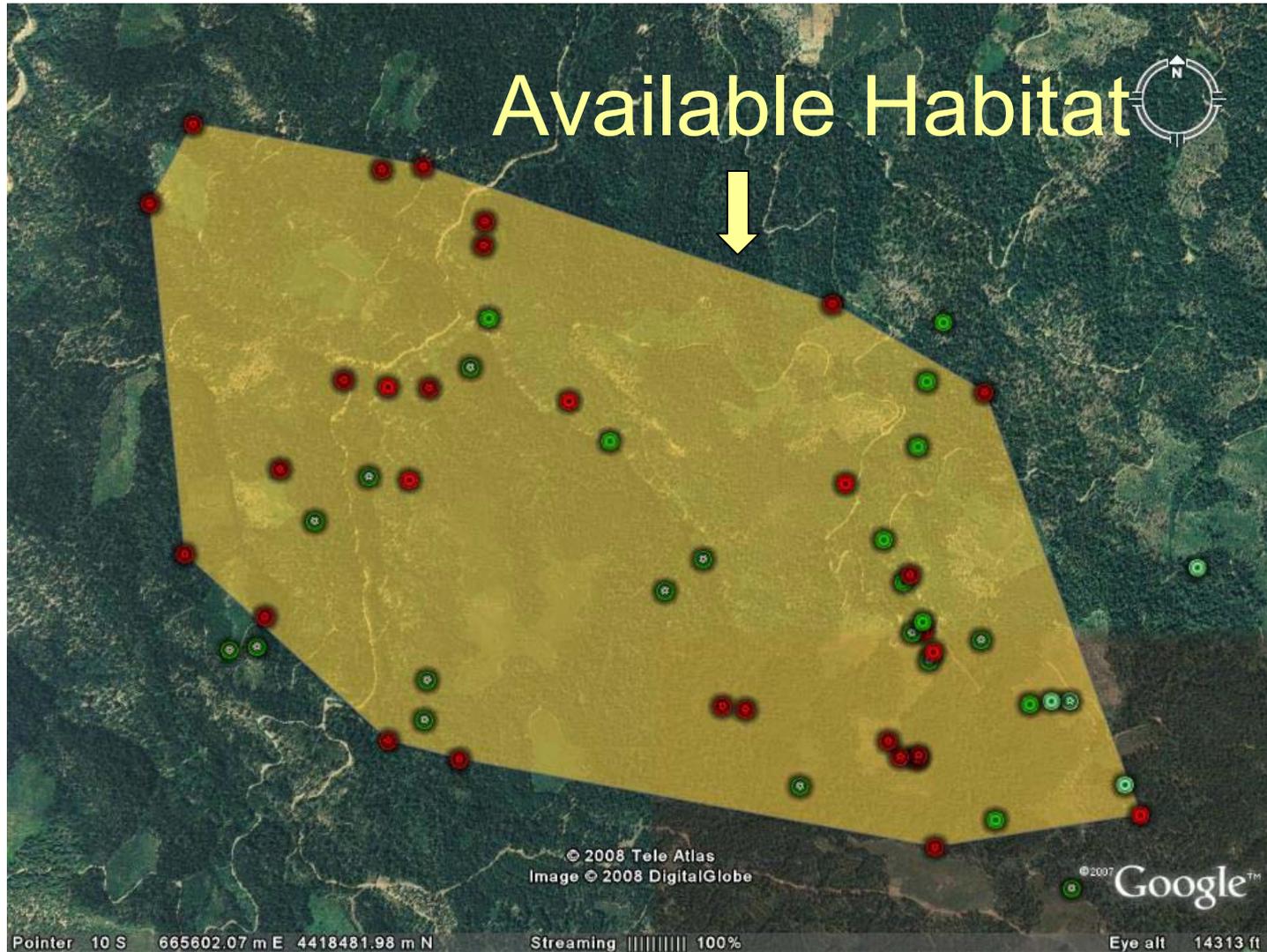




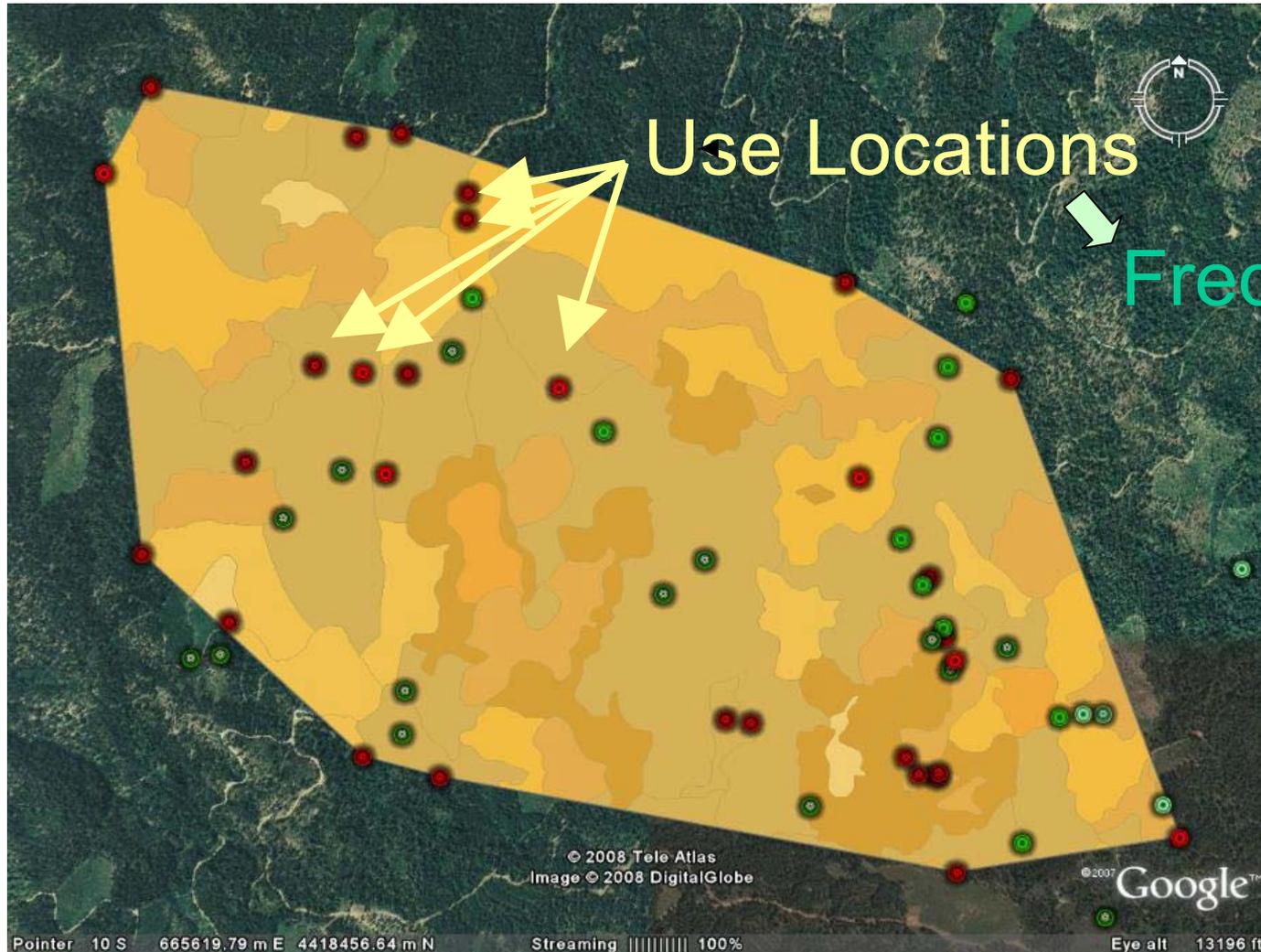
Habitat Use

Photo: Claire Gallagher

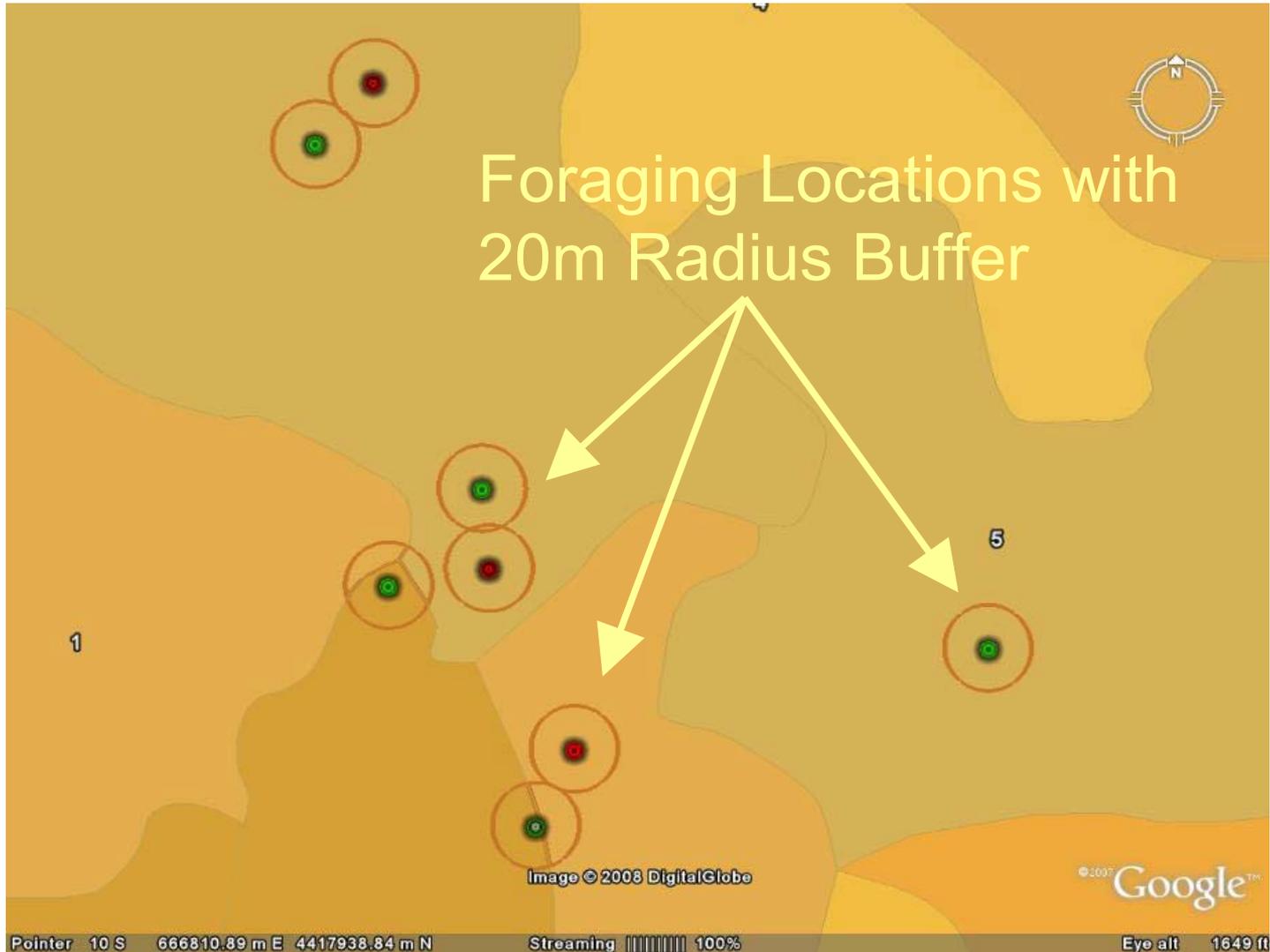
Habitat Use- Methods



Habitat Use- Methods



Habitat Use- Methods



Habitat Use: Forest Type ($n= 236$)

Habitat Type	Available (% Total Area)	Frequency	Use (% Area)
Chaparral	3.3	1.3	1.2
Douglas-fir Mixed Conifer	19.8	26.3	26.4
Mixed Conifer	0.6	0.4	0.4
Bare Ground	2.3	2.1	1.9
Ponderosa Mixed Conifer	35.9	28.0	27.5
Ponderosa Pine	6.0	4.2	3.8
True Fir	7.4	10.2	10.8
White Fir Mixed Conifer	22.6	26.7	26.9
Other	2.2	0.8	1.0
Total	100.0	100.0	100.0

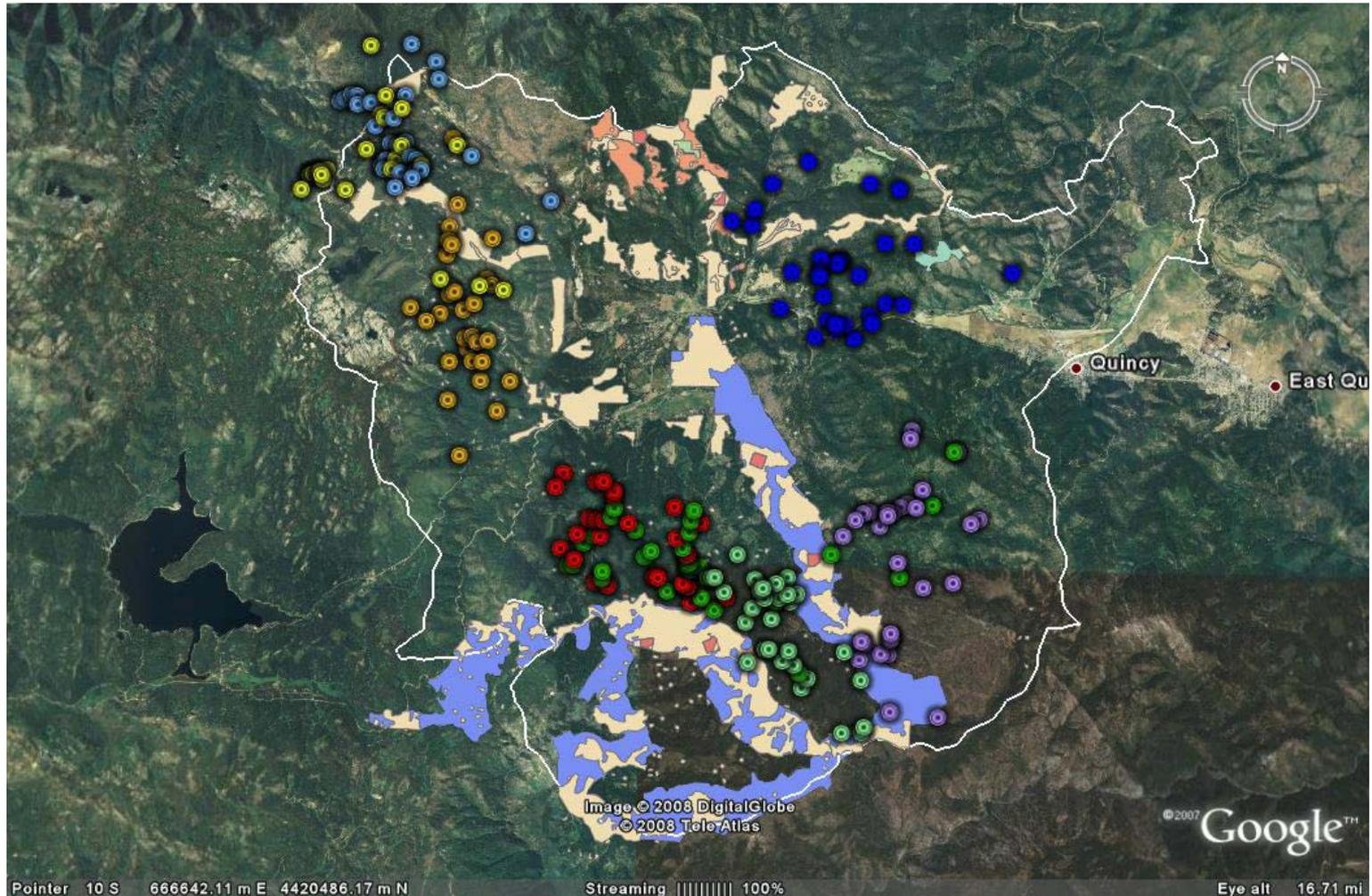
Habitat Use: Size Class ($n= 236$)

Size Class (Crown Diameter)	Available (% Total Area)	Frequency	Use (% Area)
1 (< 6 ft)	3.1	5.9	5.4
2 (6 -12 ft)	13.2	7.6	7.5
3 (12-24 ft)	51.6	44.9	46.1
4 (24-40 ft)	24.8	37.7	37.3
5 (40+ ft)	0.0	0.0	0.0
6 (>24 ft, 2-storied)	0.4	0.0	0.0
No Veg Data	6.9	3.8	3.7
Total	100.0	100.0	100.0

Habitat Use: Canopy Cover ($n= 236$)

Canopy Cover	Available (% Total Area)	Frequency	Use (% Area)
0-10%	0.0	0.0	0.0
10-20%	9.0	6.4	6.5
20-30%	13.0	8.9	8.6
30-40%	10.5	7.6	7.2
40-50%	13.4	12.7	12.4
50-60%	26.4	40.7	41.5
60-70%	18.4	14.4	14.7
70-80%	5.7	6.8	6.6
80-90%	0.1	0.0	0.0
No Veg Data	3.6	2.5	2.5
Total	100.0	100.0	100.0

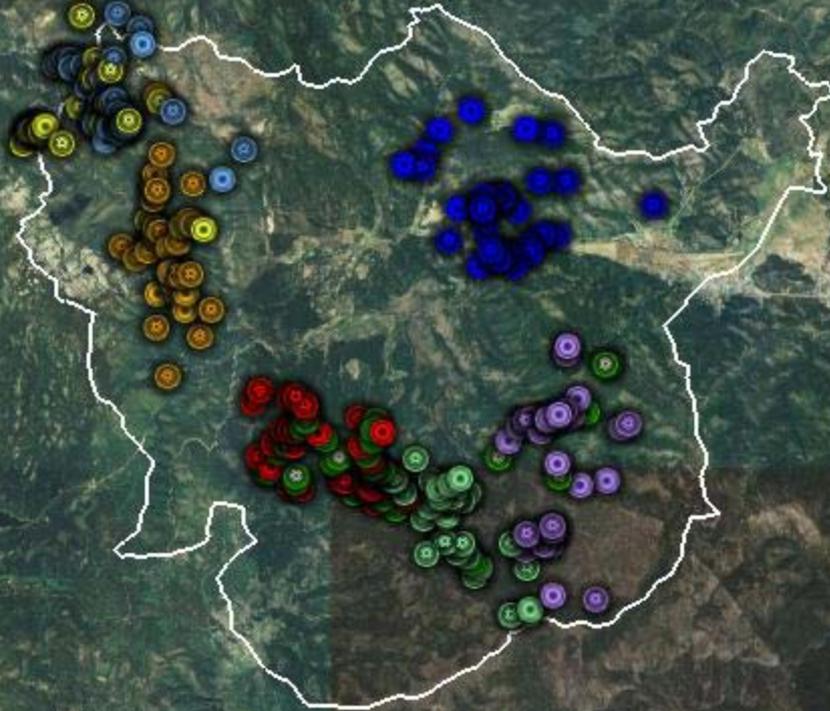
Fire and Fuels Treatments



Fire and Fuels Treatments ($n= 236$)

Owl	Available (% Total Area)	Frequency	Use (% Area)
1	10.4	6.7	5.2
2	13.6	13.3	13.4
3	19.8	30.0	31.3
4	8.7	0.0	0.2
5	13.4	3.8	6.4
6	0.8	0.0	1.4
7	27.1	3.3	3.3
8	9.9	0.0	0.0

Non-Breeding Season Movements



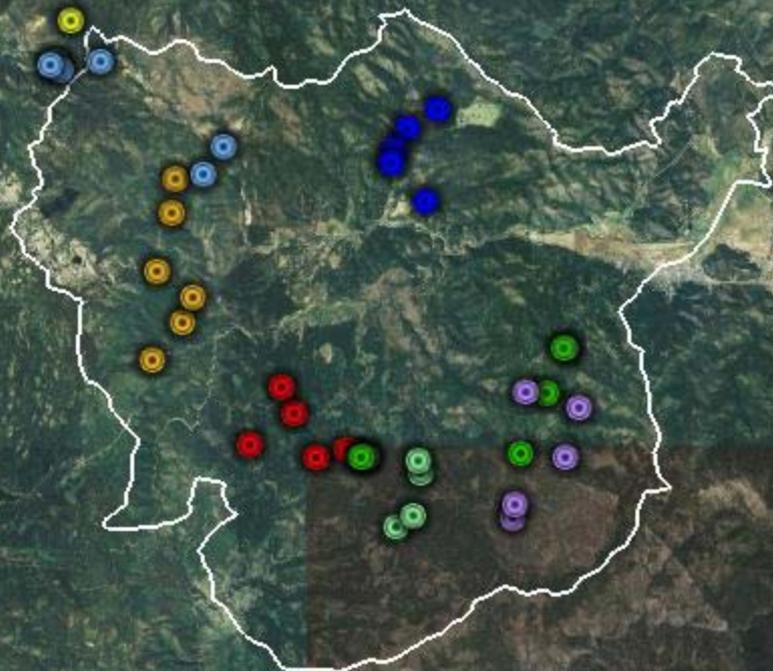
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Non-Breeding Season Movements

- Expected birds to range more widely from core areas
- Expected birds to move to lower elevations in concert with harsh weather conditions
- Goal of one daytime location per bird per week

September 2007



Quincy

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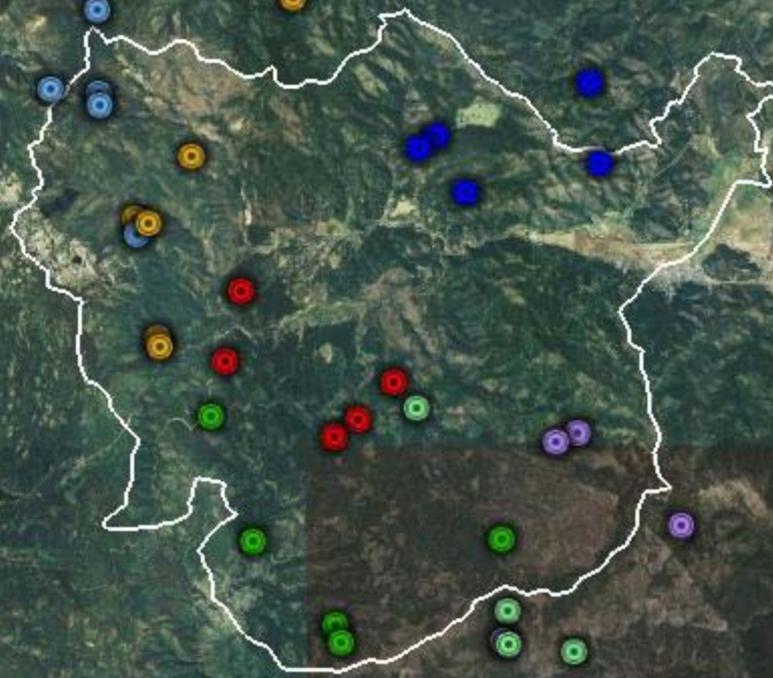
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Pointer 10 S 668604.04 m E 4425285.43 m N

Streaming ||||| 100%

Eye alt 27.18 mi

October 2007



Quincy

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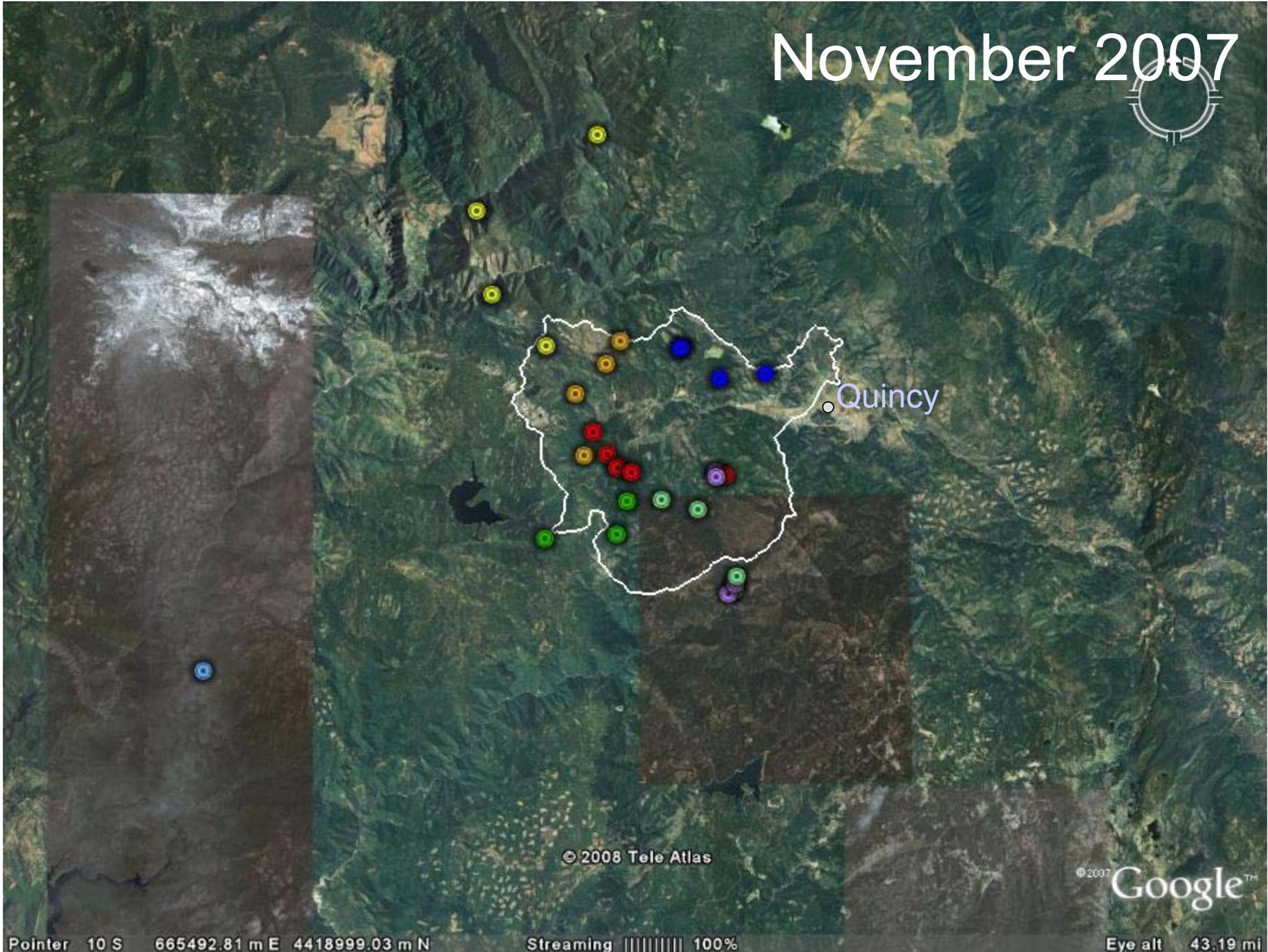
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Streaming ||||| 100%

Eye alt 27.18 mi

November 2007



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Pointer 10 S 665492.81 m E 4418999.03 m N

Streaming ||||| 100%

Eye alt 43.19 mi

December 2007



Quincy

Chico

Grass Valley

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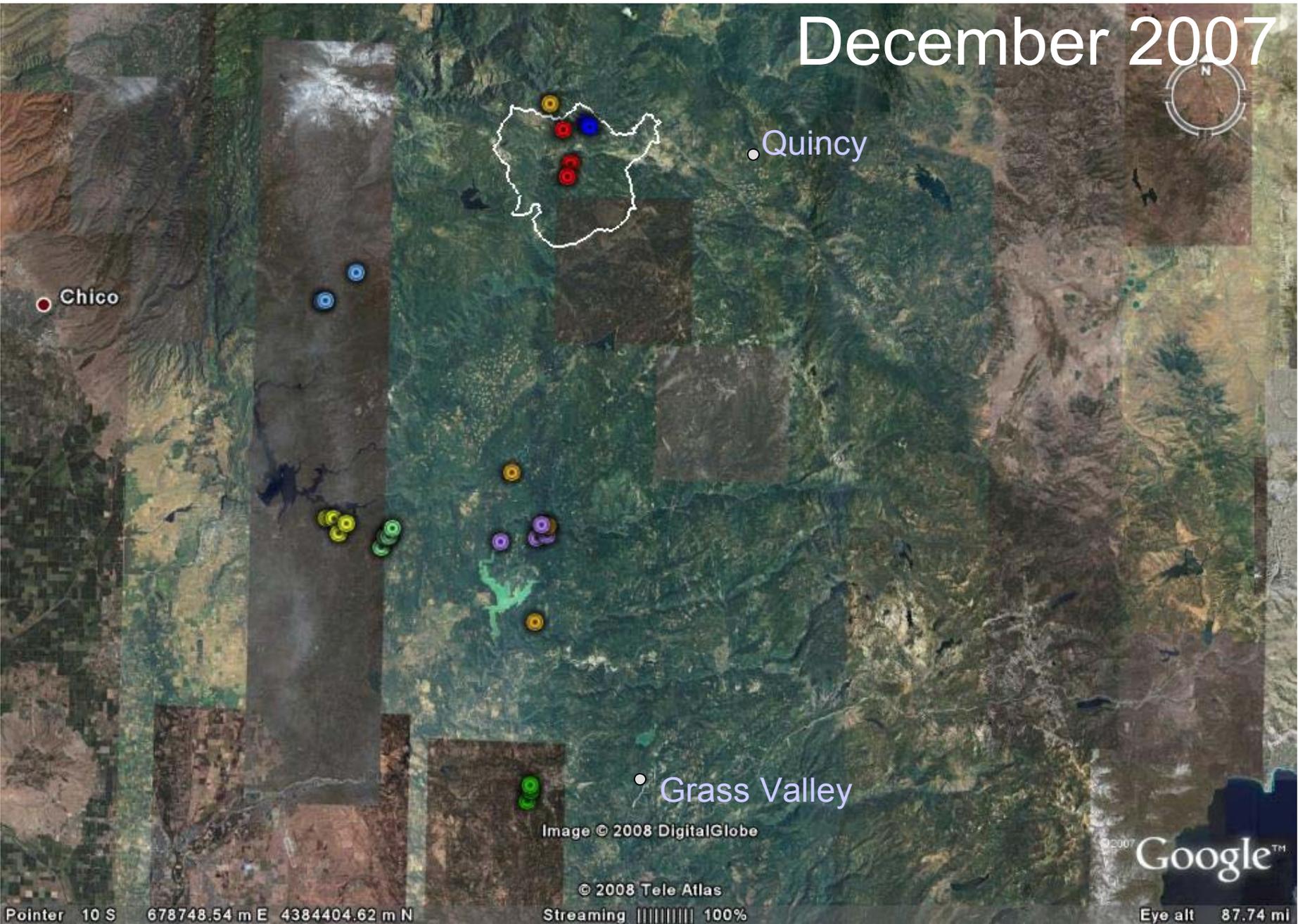
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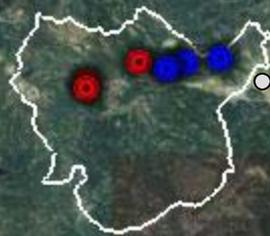
Streaming ||||| 100%

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Eye alt 87.74 mi



January 2008



Quincy

Chico

Grass Valley

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Pointer 10 S 671746.73 m E 4379306.93 m N

Streaming ||||| 100%

Eye alt 80.08 mi

February 2008



Quincy

Chico



Grass Valley

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Pointer 10 S 671746.73 m E 4379306.93 m N

Streaming ||||| 100%

Eye alt 80.08 mi

March 2008



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Chico

Grass Valley

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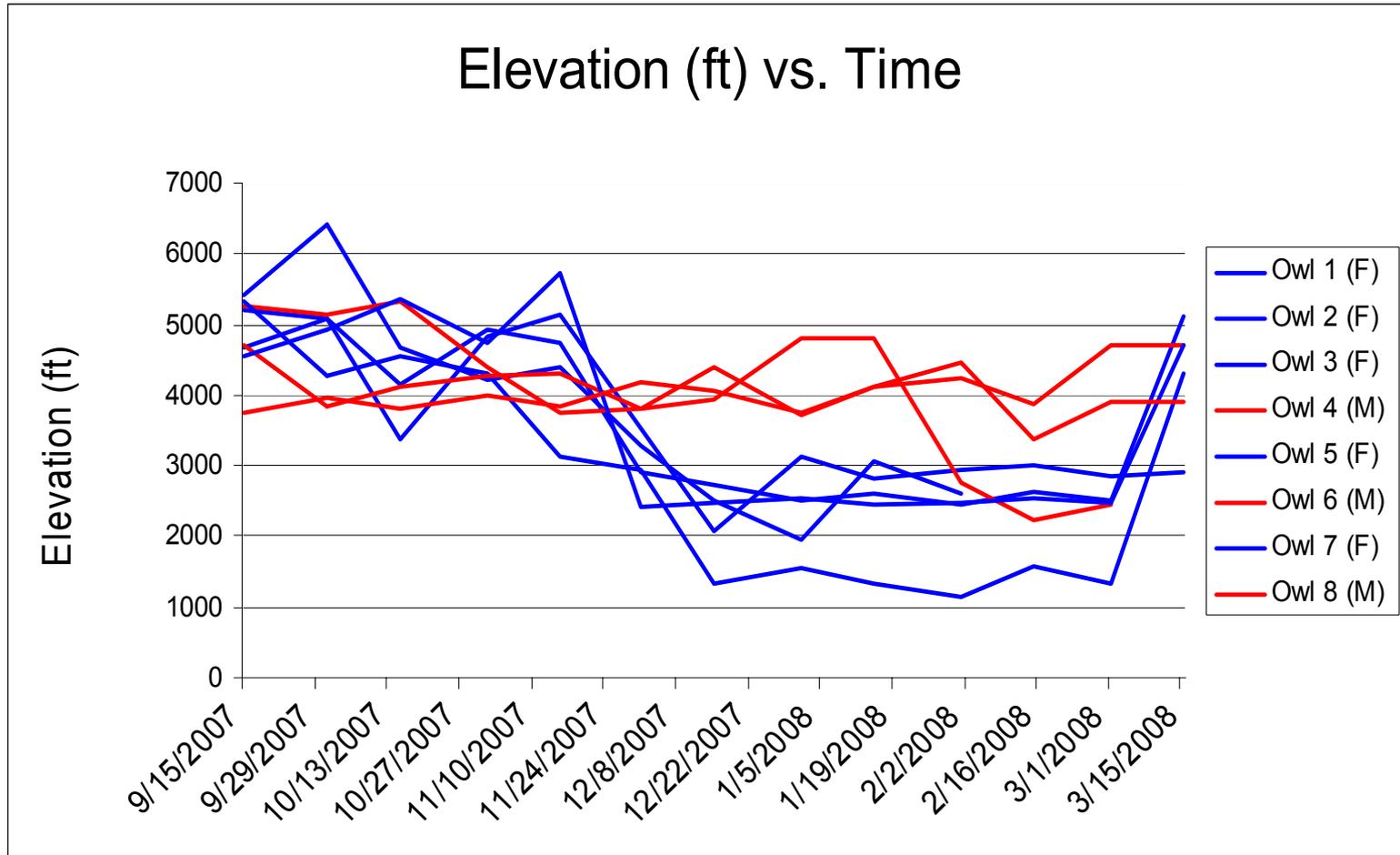
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Pointer 10 S 671746.73 m E 4379306.93 m N

Streaming ||||| 100%

Eye alt 80.08 mi

Non-Breeding Season Movements



Future Directions

- Continue telemetry in 2008 to increase sample size for habitat analysis
- Conduct FIA veg plots at sample of 2007 foraging locations
 - Finer scale resolution of foraging location habitat
- Explore spotted owl foraging use of fire and fuels treatments
 - Incorporate 2007 & 2008 breeding season locations with revised VESTRA map
- Closer look at non-breeding (winter) telemetry locations

THANK YOU

Telemetrists

Rachel Kussow

Paula Shaklee

Mason Werner

Analysis

John Keane

Ross Gerrard