

Initial Study Report Meeting

Study 10.10 Terrestrial Furbearer Abundance and Habitat Use

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Study 10.10 Objectives

- Develop population estimates of coyotes, red foxes, lynx, and marten.
- Assess prey (snowshoe hare and vole) abundance in the study area.
- Compile habitat-use data for the furbearer species being studied.

Study 10.10 Components

- **Sample Collection** (ISR Part A, Section 4.1, pg 2):
 - Collect **scats** along transects following trails and streams during winter months (January through March) in 2013 and 2014.
 - Collect **hair samples** from lynx and marten using hair-snag devices in both years and, in 2014, at natural rub sites.
- **Genetic Analysis** (ISR Part A, Section 4.2, pg 4):
 - Perform **fecal genotyping** to identify each collected sample to the species and individual level.
- **Habitat Use** (ISR Part A, Section 4.3, pg 5):
 - Conduct **aerial track surveys** in winter.
- **Statistical Analyses and Data Interpretation**
(ISR Part A, Section 4.4, pg 6):
 - Use **genetic fingerprints as a genetic mark for a capture–mark–recapture population estimate.**
 - **Model species occupancy and detection probabilities.**

Study 10.10 Variances

- Lack of access to Cook Inlet Regional Working Group (CIRWG) lands in 2013 prevented **marten surveys** from being conducted as planned (RSP Section 10.10.4.1).
- No surveys were conducted in the **Chulitna and Gold Creek corridors** in 2013 due to limitations on access.
- To maximize sampling effort in areas accessible by snowmachine from the 2013 winter base of operations on the Denali Highway, the study team expanded the **2013 survey area** to include areas northeast of the study area.
- Deployment and use of **lynx hair snags** (RSP Section 10.10.4.1) was modified to increase sampling efficiency in the field and to create a survey layout that allowed better comparison of the lynx survey data with those from the canid scat collection effort.
- **Snowshoe hare sampling** grid distribution (RSP Section 10.10.4.1) was altered to better account for variability of habitats throughout the 2013 survey area.
- The **vole live-trapping surveys** were shortened from the 1–5 nights originally proposed to a single night per grid.

Study 10.10 Summary of Results in ISR (ISR Part A – Section 5)

Sample Collection in Winter 2013 for Genetic Analyses:

- Scat collections were successful in 2013, whereas hair collection had variable success.

ISR Table 5.1-1 (table number corrected per ISR Part B)

| Species | Number of Scat Samples Collected |
|--------------|----------------------------------|
| Coyote | 35 |
| Red Fox | 76 |
| Lynx | 2 |
| Marten | 6 |
| Wolverine | 12 |
| Total | 131 |

ISR Table 5.1-2 (table number corrected per ISR Part B)

| Species | Number of Hair Samples Collected |
|--------------|----------------------------------|
| Lynx | 23 |
| Wolverine | 6 |
| Total | 29 |

Study 10.10 Summary of Results in ISR (ISR Part A – Section 5)

Prey Surveys in Summer 2013:

- Prey numbers were highly variable across the study area, but appeared to be at relatively low densities overall.

ISR Table 5.1-3 (table number corrected per ISR Part B)

| Survey Location | Average Number of Snowshoe Hare Pellets / Plot |
|---------------------------------|--|
| 1) Watana Creek Shrub | 2.04 |
| 2) Jay Creek Forest | 2.24 |
| 3) Tsusena Creek Shrub | 8.7 |
| 4) Deadman Creek Forest | 25.84 |
| 5) Watana Creek Forest | 3.34 |
| 6) Upper Butte Creek Forest | 0.48 |
| 7) Upper Butte Creek Shrub | 1.32 |
| 8) Seattle Creek Shrub | 3.78 |
| 9) Seattle Creek Forest | 0.33 |
| 10) Butte Lake Forest | 0.62 |
| 11) Butte Lake Shrub | 16.48 |
| 12) Southern Butte Creek Forest | 6.16 |
| 13) Southern Butte Creek Shrub | 3.28 |
| 14) Jay Creek Shrub | 45.16 |
| 15) Oshetna Creek Forest | 29.78 |
| Range | 0.33 – 45.16 |

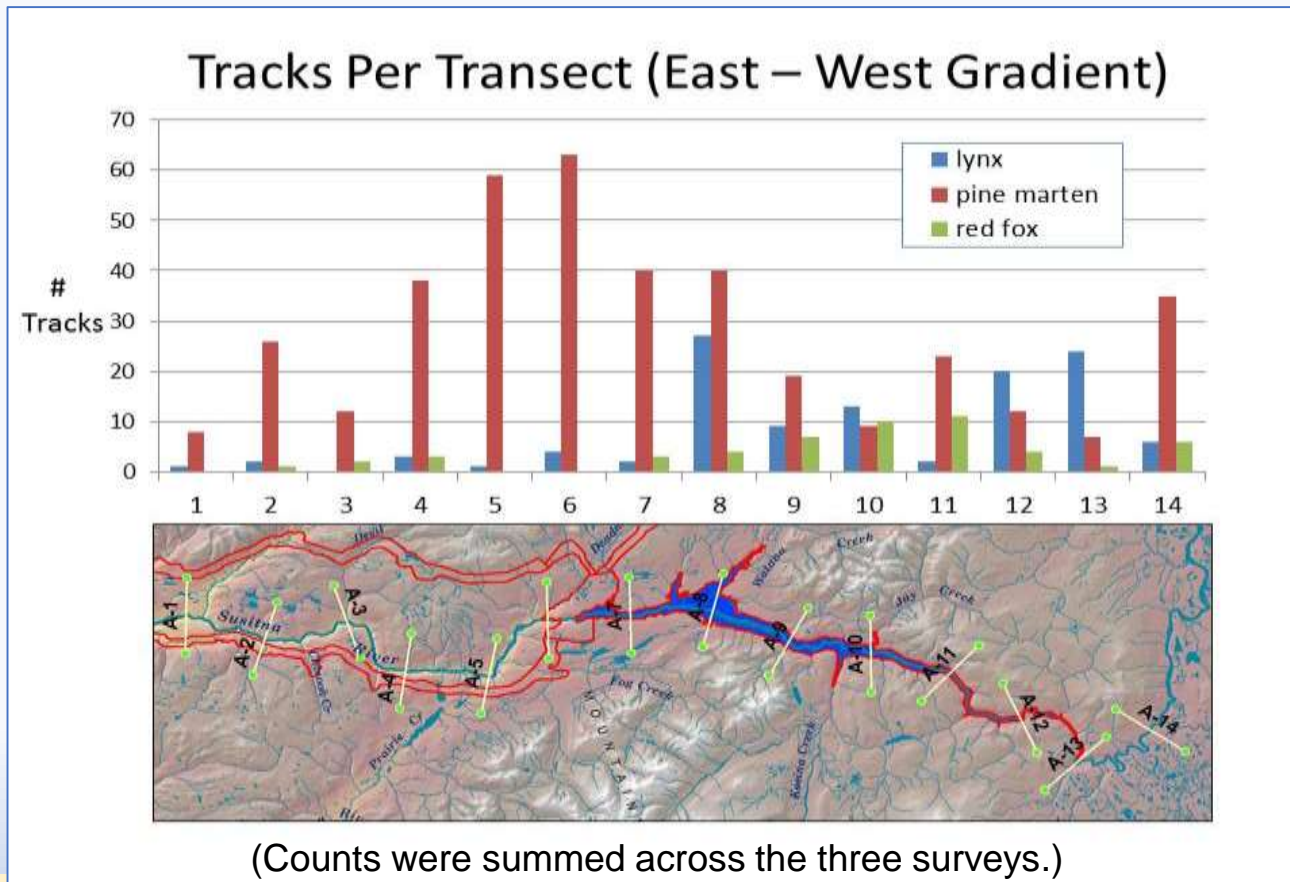
ISR Table 5.1-4 (table number corrected per ISR Part B)

| Survey Location | Number of Captured Voles (Species) |
|-------------------------------|------------------------------------|
| 1) Watana Creek Forest | 1 (Red-backed Vole) |
| 2) Watana Creek Meadow | 0 |
| 3) Jay Creek Forest | 0 |
| 4) Jay Creek Meadow | 2 (Meadow Vole, Singing Vole) |
| 5) Tsusena Creek Forest | 1 (Red-backed Vole) |
| 6) Tsusena Creek Meadow | 0 |
| 7) West Tsusena Creek Forest | 2 (Red-backed Vole) |
| 8) West Tsusena Creek Meadow | 1 (Red-backed Vole) |
| 9) Upper Butte Creek Forest | 1 (Red-backed Vole) |
| 10) Upper Butte Creek Meadow | 1 (Red-backed Vole) |
| 11) Upper Watana Creek Forest | 1 (Red-backed Vole) |
| 12) Upper Watana Creek Meadow | 0 |
| 13) Seattle Creek Forest | 1 (Red-backed Vole) |
| 14) Seattle Creek Meadow | 2 (Red-backed Vole) |
| 15) Deadman Mountain Meadow | 0 |
| Total | 13 |

Study 10.10 Summary of Results in ISR (ISR Part A – Section 5)

Aerial Track Surveys in Winter 2013:

- Three surveys were conducted (February 26, March 27, April 19) along the same 14 transects surveyed for the APA Project in November 1980.



ISR Part A,
Figure 5.2-1

Study 10.10 Summary of Results since ISR

Sample Collection in Winter 2014 for Genetic Analyses:

- Success of coyote and red fox scat collection increased from 2013.
- Lynx hair collection was improved from 2013 by adding backtracking and collection at natural rub sites.
- Marten hair collection was again hindered by lack of access to CIRWG lands.

| Species | Number of Scat Samples Collected | Number of Hair Samples Collected |
|---------------|----------------------------------|----------------------------------|
| Coyote | 99 | 0 |
| Red Fox | 101 | 0 |
| Lynx | 14 | 46 |
| Marten | 4 | 20 |
| Unknown canid | 6 | 0 |
| Total | 224 | 66 |

Study 10.10 Summary of Results since ISR

Prey Surveys in Summer 2014:

- Prey surveys were conducted during July. Raw data suggests variable hare distribution and a significant increase in vole abundance from 2013.

2013 Vole Captures, by Survey Site

| Survey Location | Number of Captured Voles (Species) |
|-------------------------------|------------------------------------|
| 1) Watana Creek Forest | 1 (Red-backed Vole) |
| 2) Watana Creek Meadow | 0 |
| 3) Jay Creek Forest | 0 |
| 4) Jay Creek Meadow | 2 (Meadow Vole, Singing Vole) |
| 5) Tsusena Creek Forest | 1 (Red-backed Vole) |
| 6) Tsusena Creek Meadow | 0 |
| 7) West Tsusena Creek Forest | 2 (Red-backed Vole) |
| 8) West Tsusena Creek Meadow | 1 (Red-backed Vole) |
| 9) Upper Butte Creek Forest | 1 (Red-backed Vole) |
| 10) Upper Butte Creek Meadow | 1 (Red-backed Vole) |
| 11) Upper Watana Creek Forest | 1 (Red-backed Vole) |
| 12) Upper Watana Creek Meadow | 0 |
| 13) Seattle Creek Forest | 1 (Red-backed Vole) |
| 14) Seattle Creek Meadow | 2 (Red-backed Vole) |
| 15) Deadman Mountain Meadow | 0 |
| Total | 13 |

2014 Vole Captures, by Survey Site

| Survey Location | Number of Captured Voles (Species) |
|-------------------------------|------------------------------------|
| 1) Watana Creek Forest | 3 (Red-backed Vole) |
| 2) Watana Creek Meadow | 10 (Red-backed Vole) |
| 3) Jay Creek Forest | 9 (Red-backed Vole) |
| 4) Jay Creek Meadow | 14 (Meadow Vole, Red-backed Vole) |
| 5) Tsusena Creek Forest | 9 (Red-backed Vole, Meadow Vole) |
| 6) Tsusena Creek Meadow | 11 (Red-backed Vole) |
| 7) West Tsusena Creek Forest | NA – grid flooded |
| 8) West Tsusena Creek Meadow | NA – grid flooded |
| 9) Upper Butte Creek Forest | 7 (Red-backed Vole) |
| 10) Upper Butte Creek Meadow | 2 (Red-backed Vole) |
| 11) Upper Watana Creek Forest | 4 (Red-backed Vole) |
| 12) Upper Watana Creek Meadow | 7 (Singing Vole) |
| 13) Seattle Creek Forest | 9 (Red-backed Vole) |
| 14) Seattle Creek Meadow | 2 (Red-backed Vole) |
| 15) Deadman Mountain Meadow | 0 |
| Total | 87 |

Study 10.10 Summary of Results since ISR

Aerial Track Surveys in Winter 2014:

- Due to poor snow conditions, only two aerial track surveys were conducted in winter 2014 (February 17 and March 25).
- A total of 458 furbearer tracks were detected, including 179 marten, 61 red fox, 47 lynx, and 21 coyote tracks.
- Coyote tracks were detected in 2014 but not 2013; increased coyote activity was likely due to reduced snow cover in 2014.
- Tracks of non-target species included 55 wolverine, 37 wolf, 33 weasel, 5 river otter, and 1 bear.

Genetic and Statistical Analyses in 2014:

- Fecal genotyping has been completed for all 2013 samples.
- Fecal genotyping is approximately 50% complete for 2014 samples.
- Preliminary population estimates for coyotes and red fox based on 2013 scat data have been completed.
- Occupancy modeling for 2014 furbearer track data is underway.

AEA Proposed Modifications to Study 10.10 in ISR (ISR Part C – Section 7.1.2)

- Addition of Denali East Option road and transmission corridor.
- The variances described in ISR Part A, Section 4.1.1, were continued, except for the use of motion-sensing cameras for occupancy modeling.
- Inclusion of marten survey as originally outlined.
 - Restricted to forested areas on accessible lands near proposed reservoir inundation zone (no access to CIRWG lands during winter sampling).
- A change in base camp location allowed a slight expansion of the accessible study area.
- Results from surveys on accessible land areas will be extrapolated across entire study area, based on habitat classifications.

New Modifications to Study 10.10 since ISR

- The Chulitna Corridor has been dropped from the study area.
- To increase hair sample size for lynx, fresh lynx tracks were backtracked through dense cover to collect hair from natural rub sites along trails.
- Incidental data on wolverine and wolf activity were recorded during the winter study season.



Example of lynx hair sample collected on backtracking survey.

Steps to Complete Study 10.10 (ISR Part C – Section 7.1)

- All data collection was completed during the winter (January–April) and summer (July) field seasons in 2014.
- Genetic analysis on scat and hair samples is underway in the Prugh Lab at UAF, scheduled for completion by January 2015.
 - DNA extractions are complete; amplification and individual fingerprinting analyses are underway.
- Spatially explicit furbearer population estimates will be generated upon completion of genetic analyses.
- Furbearer occupancy modeling is underway and will be completed by spring 2015.

Licensing Participants' Proposed Modifications to Study 10.10?

Coyote and fox photos taken at caribou carcass in upper Watana Creek.



- Agencies
- CIRWG members and Ahtna
- Public