

Monitoring stress physiology in reintroduced Canada lynx



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INTRODUCTION

- Many reintroduction efforts are jeopardized by increased mortality and decreased reproductive success during the early stages of the project.
- In 1999, the state of Colorado initiated a Canada lynx reintroduction and adopted a program of intensive post-release monitoring.
- The goal of this project is to monitor changes in stress physiology throughout the reintroduction process, and integrate those findings with ecological and behavioral data that has been collected.



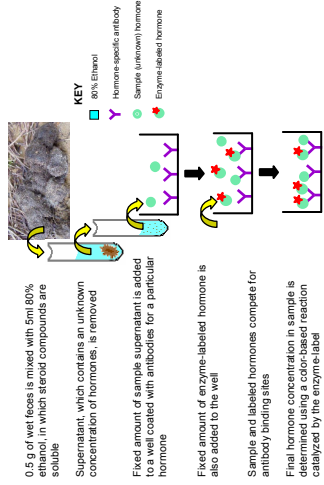
METHODS

FECAL SAMPLE COLLECTION

- Fecal samples were collected from reintroduced lynx, both while in holding pens as well as after they were released.
- Biologists snow-tracked radio-collared individuals every winter (Dec. – Apr.) to collect fecal samples, as well as information about lynx behavior in the environment.
- Samples are stored at -20°C until they were analyzed.

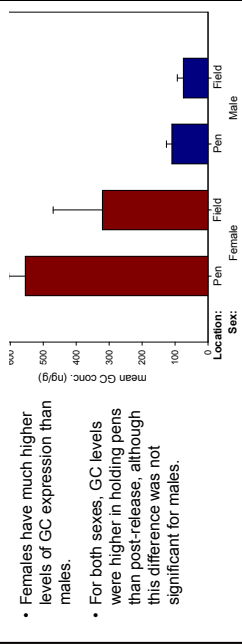
FECAL HORMONE ANALYSIS

- Enzyme-immunoassays (EIAs) were used to quantify the fecal concentrations of glucocorticoids (GCs), which are a principle component of the physiological stress response.



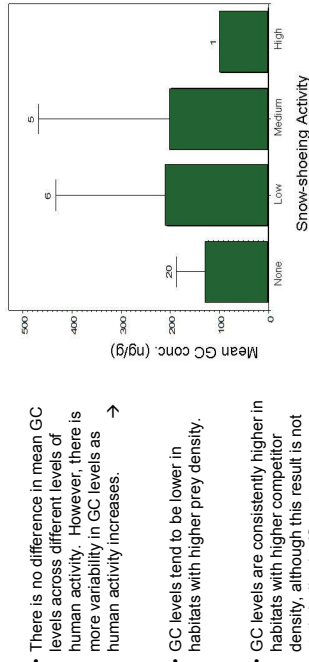
RESULTS

GENDER AND LOCATION DIFFERENCES IN GCs

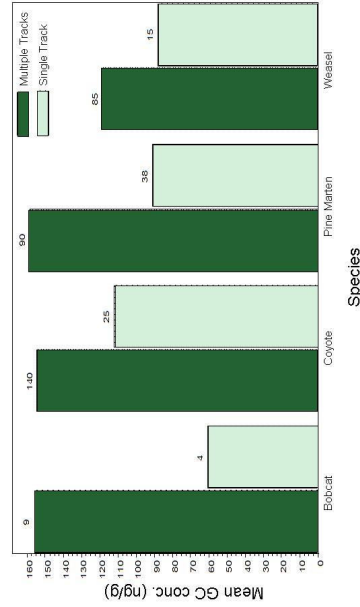


- Females have much higher levels of GC expression than males.
- For both sexes, GC levels were higher in holding pens than post-release, although this difference was not significant for males.

ENVIRONMENTAL CORRELATES OF GC LEVELS

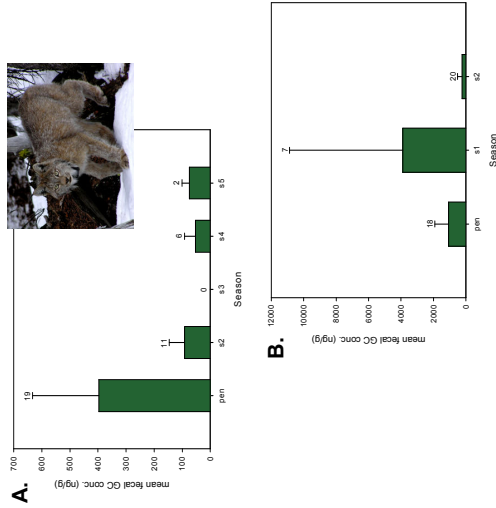


- There is no difference in mean GC levels across different levels of human activity. However, there is more variability in GC levels as human activity increases. →
- GC levels tend to be lower in habitats with higher prey density.
- GC levels are consistently higher in habitats with higher competitor density, although this result is not statistically significant. →



GC EXPRESSION THROUGHOUT THE REINTRODUCTION

- Most individuals exhibit a notable decrease in GC levels after they are released (Figure A).
- In cases when the individual is held in Colorado for a shorter period of time and released in winter (rather than the spring), GC levels increase dramatically post-release (Figure B).



FUTURE DIRECTIONS

- Continue to increase the sample size.
- Test whether individual patterns of GC expression in holding pens are related to post-release fitness.
- Compare patterns of hormone expression between reintroduced and naturally-occurring lynx populations.

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