Are city slickers more daring? Investigating the boldness of rural and urban grey squirrels

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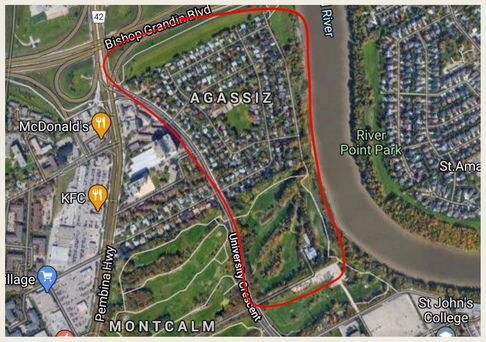
Background

- Personality types are assigned to animals based on their expression of 5 traits: activity, boldness, exploration, sociability, and aggressiveness (1).
- Traits are often correlated (ex. bold individuals tend to be more aggressive) (2).
- Degree of trait expression has consequences for fitness, so personality can shape ecological and evolutionary histories (ex. bold individuals have faster growth but increased predation rates) (3).
- Boldness is favoured in heterogenous environments with competition, whereas shyness is beneficial in consistent environments with evenly spread populations (4). Urban and rural habitats parallel these environments, respectively.
- Grey squirrels are one of the most common mammals to colonize cities.

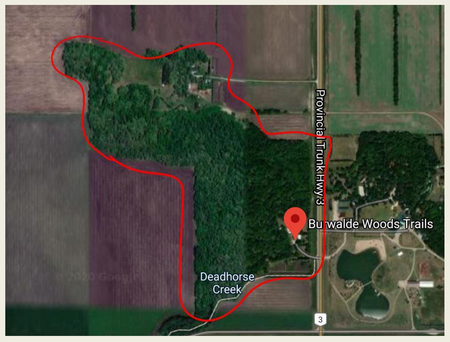
Objectives

- Confirm personality in the grey squirrel
  - Boldness and aggressiveness- repeatable?
- Compare and contrast rural and urban populations
- Determine the impact of anthropogenic activity on personality
- Hypothesis: Urban environments select for increased boldness and aggression to cope with high competition and heterogenous habitat and food.

Methods



Urban Site- UofM Campus



Rural Site- Near Morden, MB

- Trap 50 city squirrels, 50 rural squirrels
- Populations already tagged (PIT)- easy to track
- 6 trials per individual to test repeatability- minimum 1 week between trials
- Cage reaction test (5 mins):
  - High trappability indicates boldness, reaction to cage and humans reveals aggressivity (rattling cage vs. hiding in corner)
  - Assign score (0-5) based on amount and degree of bold/aggressive displays
- Novel object test- for control (5 mins):
  - Account for exploratory behaviour influencing MIS-tests
- Mirror Image Stimulus Tests (MIS) (5mins):
  - Assess reaction to mirror image (simulates reaction to conspecifics)
  - Assign score (0-5): aggressivity
- Use Linear Mixed Model (LMM) to interpret results

Expected Results

- LMM to control for non-target influences on results (ie age, sex)
- Predictions:
  - Traits will be repeatable and consistent
  - Urban squirrels will score higher for bold and aggressive displays than rural squirrels
- Results will be attributable to adaptations to human activity

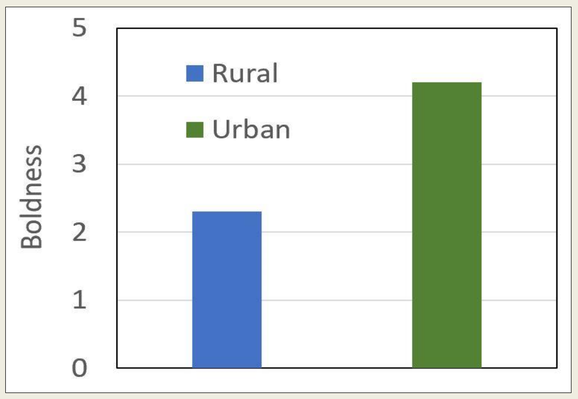


Figure 1. Average score on boldness/aggressivity tests

Conclusions

- Knowing degree of boldness/aggressivity that urban environments select for can provide a foundation for investigating the impact of an urban habitat on ecological factors such as weaning success, parasitic loads, etc (3).
- This study will broaden the scope of animals studied for personality in the urban/rural context.
- Deepen understanding of the effects of anthropogenic activity on animal behaviour

References

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