

Does habitat use and home range size differ between urban and rural wild turkeys in Minnesota?

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Background

- Wild turkeys were once extirpated from the state of Minnesota in the 1880s due to overhunting and massive habitat loss (MNDNR 2007).
- The large birds have become increasingly abundant in urban areas near the Twin Cities after their successful reintroduction in the 1970s (Kane et al. 2007).
- Hunting of wild turkeys currently brings in revenue to Minnesota of \$47 million (MNDNR 2007).
- Efficient management strategies in urban areas are not currently known due to lack of understanding of turkey behavior in urban environments.
- Human-acclimated turkey populations have increasingly become associated with nuisance complaints by residents (MNDNR Wildlife Complaint Log 2001-2009).
- It is difficult to address urban wildlife issues due to a cultural divide between rural and urban values regarding acceptable wildlife management, along with strict hunting regulations within city limits (Adams 2006, Conover and Chasko 1985).



Figure 1. Flock of turkeys in close proximity to humans. Shoreview, MN.

Hypotheses:

My null hypothesis is that there is no difference between habitat use and home range size of wild turkeys in rural versus urban environment types. Alternative hypotheses are:

- (1) Winter home range size of wild turkeys in urban landscapes will be smaller than that of wild turkeys in rural landscapes.
- (2) Preferred habitat (vegetation) types of urban wild turkey populations will be significantly different than those of rural wild turkey populations.

References

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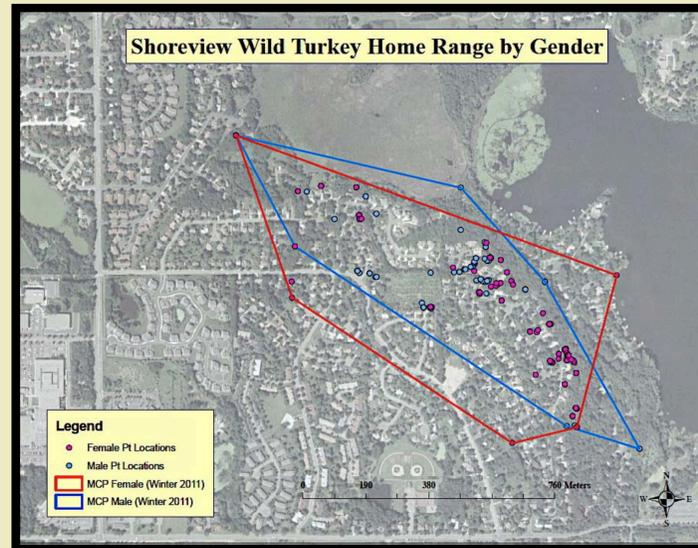


Figure 2. Minimum convex polygon preliminary winter 2011 home range estimates of male and female turkeys in Shoreview, MN.



Figure 3. Winter 2011 home range estimates for male and female turkeys. Battle Creek-East study location.

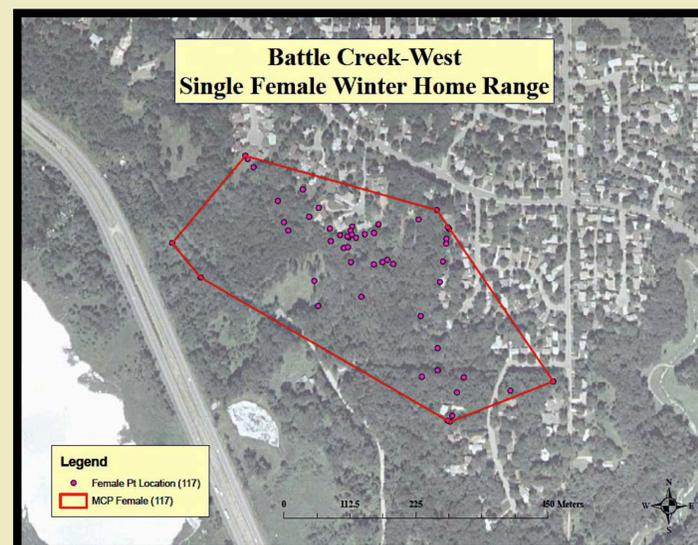


Figure 4. Winter 2011 home range estimates of single female. Battle Creek-West study location.

Methods

- I used telemetry to track VHF radio-equipped turkeys at Battle Creek Park Reserve (urban population) and Shoreview (moderate-urban population) during daytime hours at four random intervals weekly.
- Standard radio telemetry techniques were used to calculate wild turkey positions using a GPS (Garmin Dakota 10), a handheld compass, and an ATS receiver with antennae.
- Home range size and core-use areas will be calculated using LOAS (Ecological Software Solutions LLC) and Biotas software.
- Home range will be estimated using Lenth Maximum Likelihood Estimator with 90% confidence intervals, and outlying locations from normal home range usage will be eliminated using 90% utilization estimates, and core estimates will be calculated using 50% utilization estimates.
- Locations with large error polygons (>5000 m²), diverging lines or low observer confidence will be eliminated from the final analysis.
- T-tests will be used to determine differences in home range size
- ArcGIS, FRAGSTATS, and the Twin Cities Metro Hybrid Land Cover 2000 layer and 2003-2004 FSA Color Orthophotos (from the DNR Data Deli) will be utilized to characterize land cover type, from which the proportion of time spent by the turkeys in human manipulated habitat versus remnant habitat will be calculated.

Preliminary Results

Location	Male Home Range (m ²)	Female Home Range (m ²)
Battle Creek - West	-	151,689
Battle Creek - East	187,705	374,696
Shoreview	405,323	526,016

Table 1. Home range size areas (m²) of males and females as of April 4, 2011.

- Data collection is still in progress.
- The majority of observed winter feeding occasions were heavily correlated with human-supplied bird seed.
- Home range sizes as of April 4 show a larger home range in moderately-urban flocks than highly-urban flocks between both sexes.
- Statistical analysis will yield further correlations between individual home range size and habitat preference among urban and rural flocks.

Acknowledgements

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