Canada goose space use in response to hunting pressure

Karen E. Beatty[†], Nathaniel R. Huck[‡], Frances E. Buderman[†]

[†]The Pennsylvania State University, Department of Ecosystem Science and Management, State College, PA
[‡]Pennsylvania Game Commission, Harrisburg, PA

Background

Hunting activity can alter space-use and movement of game species, but the type and magnitude of response varies by species and setting.

Understanding how waterfowl respond to hunting pressure can inform land management & hunting regulations, and elucidate behavioral adaptations for coping with disturbance and predation.

Research Questions

1. How do geese change their space and habitat use during the hunting season?
2. How does goose movement behavior change in response to hunting pressure?

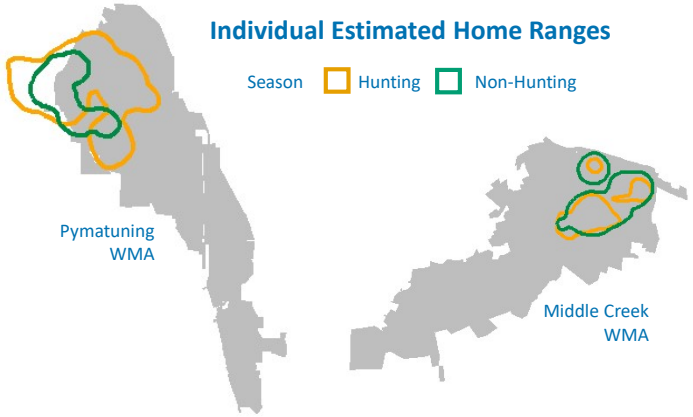
GPS collars on **72** resident after-hatch-year females

Obtained locations **every 10 minutes** from June 2020 - March 2022

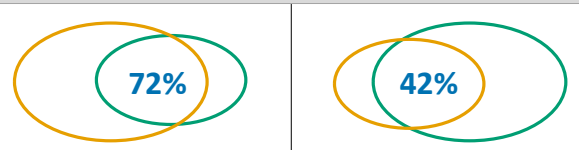
Preliminary Results

At both sites, **birds spent more time on the WMA during hunting season** than non-hunting season (p-value < 0.1).

Only 73.5% of individuals being tracked (n = 49) were located on or near the WMAs during this hunting period.



Pymatuning		Middle Creek
Average percent of observations located on WMA		
86.6	Hunting	91.5
79.5	Non-hunting	82.2
Ratio of hunting season to non-hunting season home range size		
2.15	Mean	0.53
0.53 - 16.38	Range	0.008 - 0.97
Average percent of non-hunting season home range that is also used during hunting season		



Methods

Individual home ranges (95%) estimated using Kernel Density Estimation with reference bandwidth selection.

WMA	Hunting season	Non-hunting season
Middle Creek	Dec 28 – Jan 22	Jan 23 – Feb 17
Pymatuning	Dec 20 – Jan 14	Feb 13 – Mar 10

- Included only individuals within 5 miles of each WMA (n = 15 MC, 21 PY)
- Locations resampled at a 1-hour interval for home range estimates

Future Analysis

Habitat selection on WMAs in response to hunting pressure via **Resource Selection Functions**

Movement around the landscape and behavioral states during hunting season via **Hidden Markov Models**

Acknowledgements

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Photo credit: Geese in field – Tyler Coleman; Geese in flight – Linda Wickmann