

# Bobcat Hair Snare Study



New Jersey Division of Fish and Wildlife

# Research Objectives

- Bobcat occupancy and density

north of US 1 and west of I-287

utility in southern NJ?

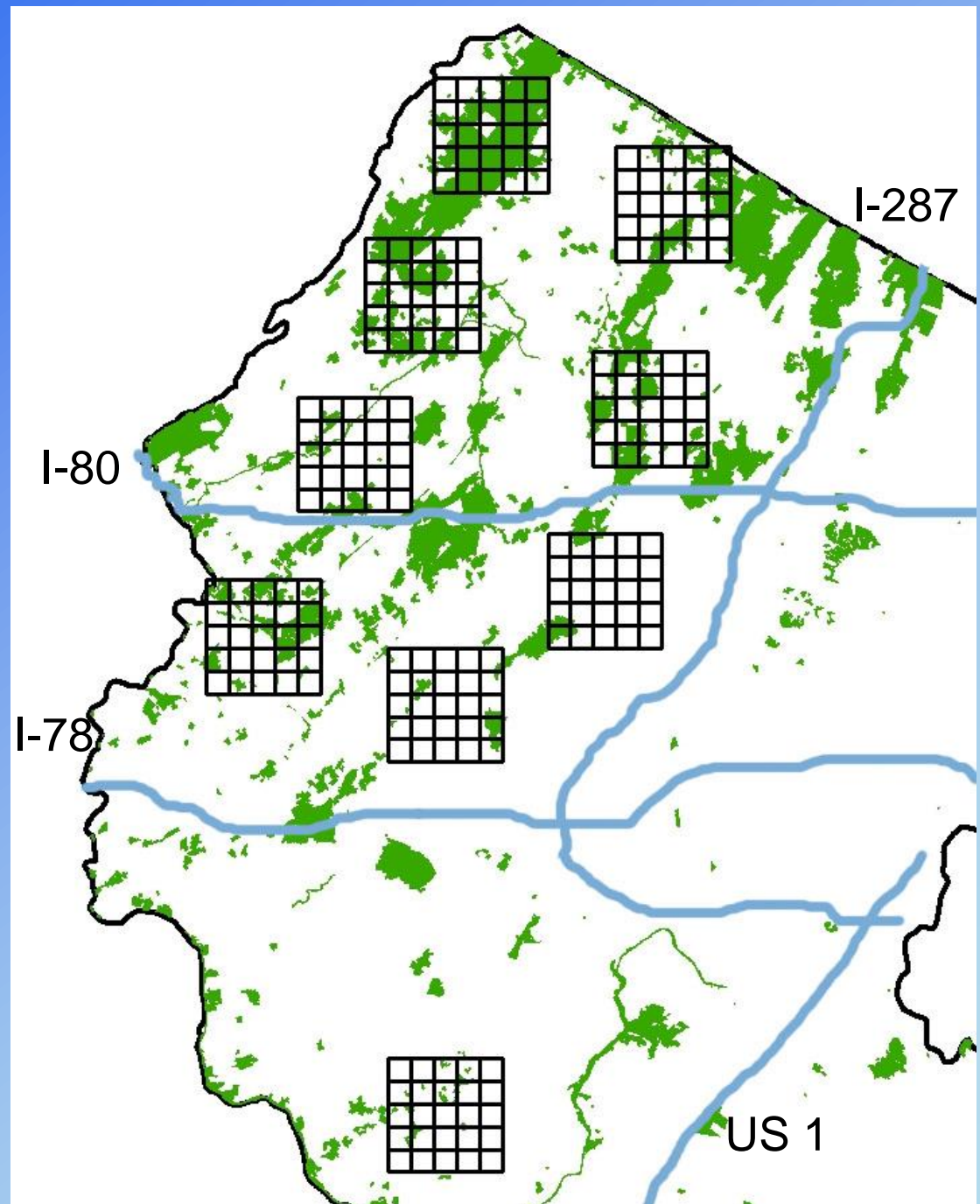
- Other species sampled

fisher?

- Utility for other projects...Furbearer Proj./ CHANJ

# Sampling Grids

(Based on forest  
cover and  
Shannon Diversity  
Index)

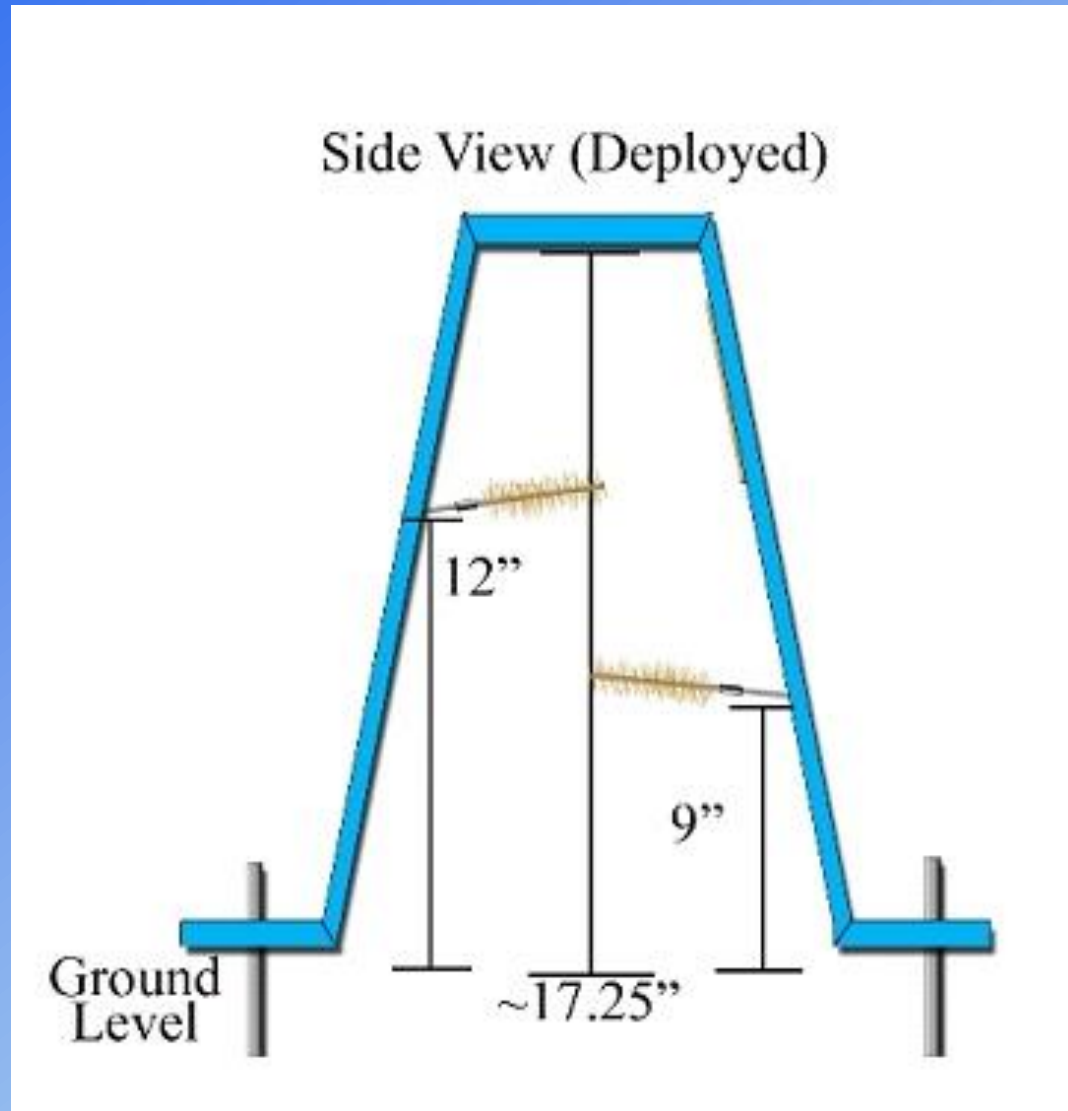




# Hair Snare Cubby



# Hair Snare Cubby





# Hair Snare Tree





# Hair Snare Tree



Best results when cubbies used throughout.



# Trail Cameras

(deployed at every sampling site)



Moultrie M40



# Cooperators

- NJ Trappers Association
  - Invaluable help through volunteer effort
  - Expertise in setting cubbies in ideal locations
- East Stroudsburg University of PA
  - determine species based on fur sample
  - conduct genetic analyses of bobcat samples
- NJ Div. Parks and Forestry
- Wallkill River NWR
- Morris County Parks

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# Volunteers

39



# Results after two sampling seasons:



## DNA – Hair Samples

	2018	2019
Hair Samples	320	200
# Sequenced	102	104
Bobcat Positive	17	16



# Videos

- 75 cameras deployed for three months.....

	2018	2019
Total Videos	37,448	32,063

## Number of Videos

Category	2018	2019
Wildlife	17,761	10,369
Domestic animals	77	110
Hunters	27	31
Hikers	71	114
Other (study pers./wind/snow)	19,512	21,439



## Number of Videos

Species	2018	2019
Gray Squirrel	6,945	2,475
Deer	3,428	3,141
Bird	1,211	873
Wild Turkey	150	755
Opossum	304	452
Rabbit	419	269
Mouse	365	88
Chipmunk	308	120

Species	2018	2019
Skunk	117	71
Red Squirrel	95	42
Flying Squirrel	111	21
Black Phase Gray Squirrel	33	5
Porcupine	6	3
Woodchuck	6	2
Beaver	0	3
Muskrat	0	1

# Number of Videos

(Numbers of Individual Appearances in Parentheses)

Species	2018	2019
Raccoon	964	1,055
Red Fox	503	704
Bobcat	94 (56)	140 (100)
Coyote	62	162
Black Bear	71	42

Species	2018	2019
Fisher	14 (9)	18 (10)
Gray Fox	14	13
Mink	8	6
Weasel	8	4

# Bobcat Comparison 2018-2019

- 51% increase in total bobcat cells with detections 2018 - 2019

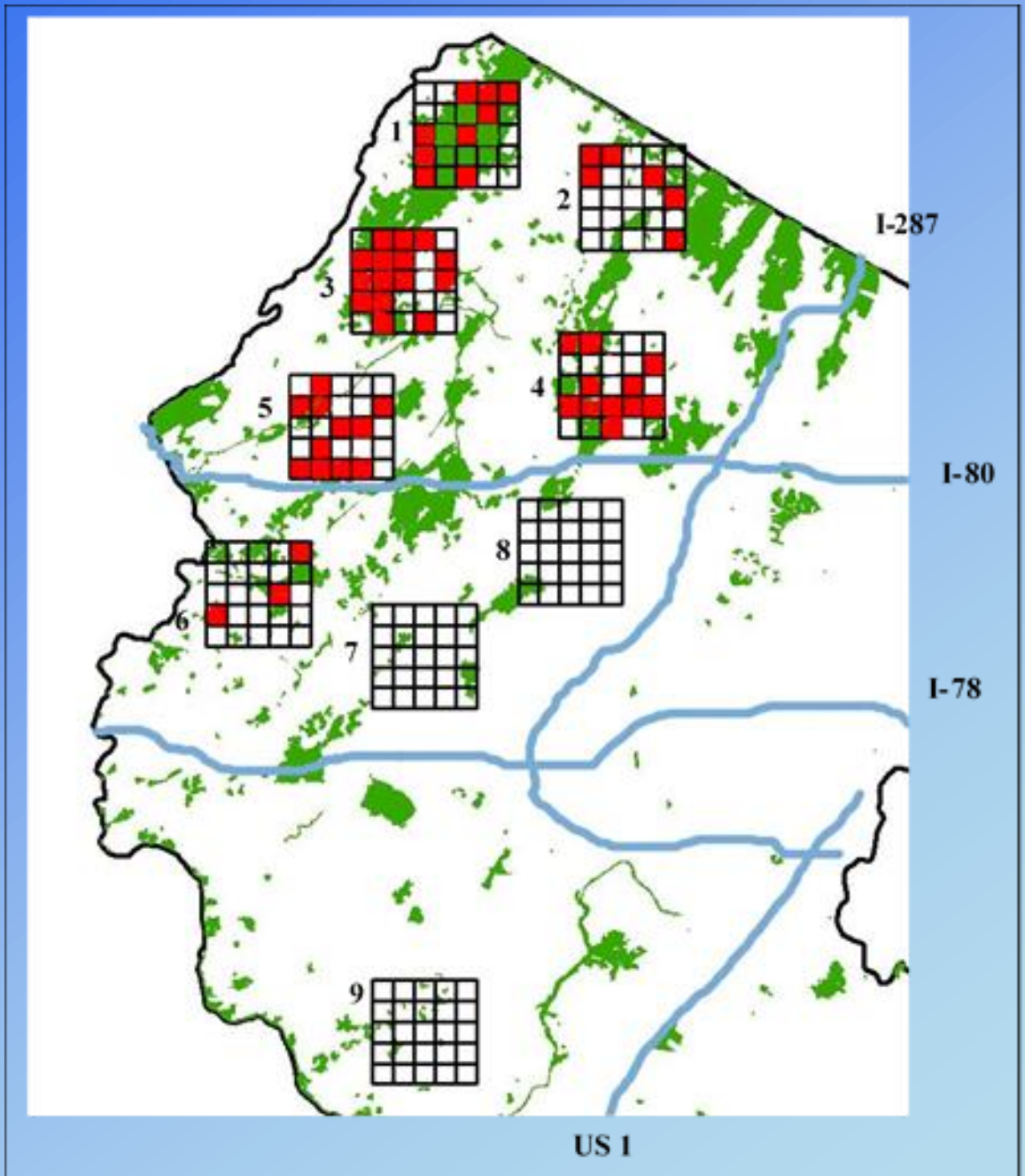
(37 cells in 2018 and 55 cells in 2019)

- 79% increase in total bobcat appearances 2018 – 2019

(56 appearances in 2018 and 100 in 2019)



## Cells with Bobcat Activity



# Data Analysis

- Performed by Tom Rounsville of University of Maine (formally of WVU) [North of I-80 and West of I-287](#)

This method was used for one year in WV (Rounsville et al.) and WVDNR concluded that current management was appropriate.

- Royle-Nichols Model used for density and occupancy estimation
  - Assumes variation in abundance is consistent with variation in detection probability
  - Allows estimation of abundance through repeated observations without having to mark individuals
  - Our data modeled on weekly time intervals

# Results

## (north of I-80 and west of I-287)

- Most significant variable = forest; negative correlation to urban
- 166 bobcats in the area covered by cubbies (625 km<sup>2</sup>) – CI 84-331
- 665 bobcats in the entire area (2,500 km<sup>2</sup>) – CI 335-1323
- Density = 26 bobcats/ 100 km<sup>2</sup> - skewed slightly high (20)



# BWM / ENSP Data Comparison

## BWM:

- Field: Presence/absence at sites using hair snares with cameras
- Analytical: Royle-Nichols Occupancy Model
- Study area: 2,500 km<sup>2</sup> (N 80, W 287)

Year	Population Estimate (CI)	Density Estimate per 100km <sup>2</sup> (CI)
2019	665 (335-1323)	26 (13-53)

## ENSP:

- Field: Individual ID of bobcats using scat found by detection dog
- Analytical: Bayesian Spatial Capture-Recapture
- Study area: 3,000 km<sup>2</sup> (N 78, W 46, W 287)

Year	Population Estimate (CI)	Density Estimate per 100km <sup>2</sup> (CI)
2007	197 (51-447)	5 (1-12)
2008	<b>179 (102-315)</b>	<b>5 (3-8)</b>
2011	<b>308 (145-462)</b>	<b>8 (4-12)</b>
2012	<b>355 (197-466)</b>	<b>9 (5-12)</b>
2013	<b>334 (183-463)</b>	<b>9 (5-12)</b>
2015	180 (55-430)	5 (1-11)
2016	276 (85-459)	7 (2-12)

# Conclusions

- This estimate, 20 – 26 bobcats / 100 sq. km., is greater than or equivalent to density estimates in several other states (AR, AZ, ID, IL, MO, MS, NY, TN, TX, WI). NY estimates 8 - 9 bobcats / 100 sq. km.
- High bobcat density north of I-80 is likely a source population for dispersal into lower density areas of NJ as well as NY and PA.
- This method can be re-employed at intervals to measure change in occupancy and density.
- This method is not a good detection option for areas in NJ with low bobcat densities.