

# Effects of Background Noise and Playback on Avian Detection Probabilities in a Piedmont Forest

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AEC 501



# Background

Detection during bird surveys is easily affected by many outside variables. One cause of interference is background noise

Observers exposed to a 10 dB increase in ambient noise level experience a significant decrease in call detections (Simons et al. 2007)



# Objectives



Two main questions:

1. What effect does background noise have on bird detection rates on point counts?
2. What effect will broadcasting Eastern Screech-Owl playback have on detection?

Implications for future research:

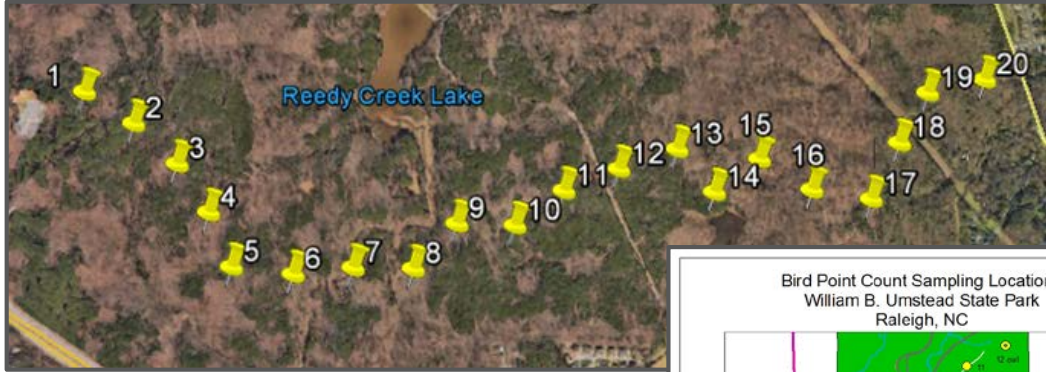
Use what we find in planning/development of future point count surveys of wintering forest birds



# Methods

- 60 sites, 10 points, close proximity to trails
- Carl Alwin Schenck Memorial Forest, Umstead State Park
- Visited each point 3 times
- Sampling window- 7 am to 10 am, Feb. 27 - Mar. 6
- Screech Owl playback- every other point, 2 minutes
- Documented every bird heard or seen
- Analyzed data using R for American Crow, Carolina Chickadee, Carolina Wren, Eastern Tufted Titmouse, Northern Cardinal, Pine Warbler, Red-bellied Woodpecker

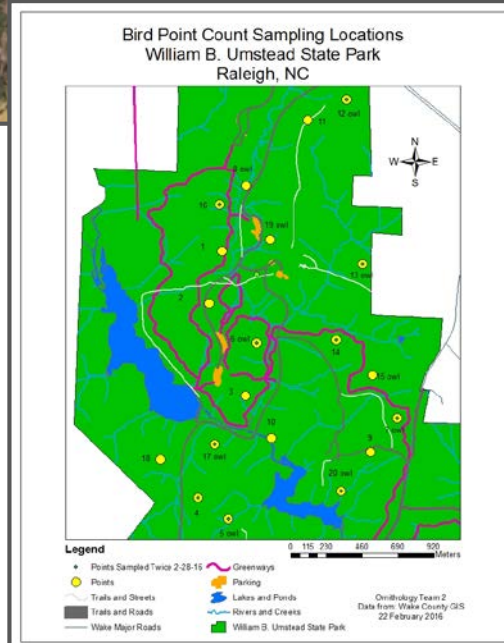
# Sample Point Locations



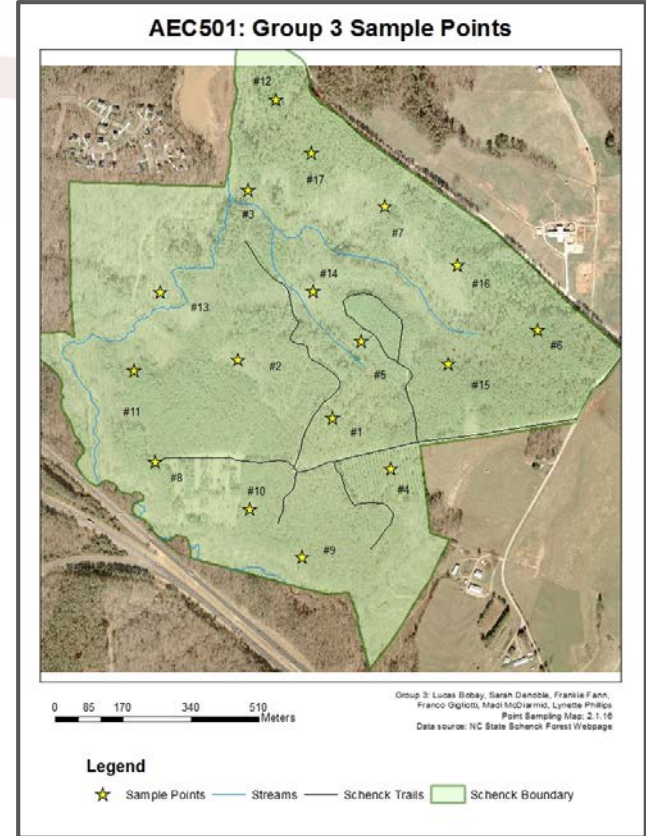
Team 1



Team 2



Team 3



# Point Coordinates

Site	GPS coord
1	35.836211,-78.758009
2	35.835235,-78.756149
3	35.834017,-78.754525
4	35.832527,-78.753331
5	35.830848,-78.752459
6	35.830674,-78.750163
7	35.830883,-78.747910
8	35.830848,-78.745635
9	35.832199,-78.744002
10	35.832147,-78.741813
11	35.833199,-78.739968
12	35.833886,-78.737887
13	35.834473,-78.735698
14	35.833177,-78.734287
15	35.834229,-78.732549
16	35.833264,-78.730596
17	35.832938,-78.728413
18	35.834619,-78.727383
19	35.836237,-78.726203
20	35.836602,-78.724100

Team 1

Site	GPS coord
21	35.815855, -78.727395
22	35.817053, -78.729440
23	35.820951, -78.729741
24	35.813946, -78.725631
25	35.817357, -78.726098
26	35.817699, -78.721853
27	35.820564, -78.726143
28	35.814374, -78.732397
29	35.812491, -78.727533
30	35.813580, -78.729975
31	35.816757, -78.732694
32	35.823123, -78.729386
33	35.818539, -78.730646
34	35.819151, -78.727686
35	35.816603, -78.724017
36	35.818961, -78.723906
37	35.821574, -78.727810
38	35.831022, -78.736657
39	35.833018, -78.737633
40	35.830092, -78.733818

Team 3

Site	GPS coord
41	35.879198, -78.760695
42	35.876117, -78.761601
43	35.870867, -78.759031
44	35.864659, -78.762425
45	35.863415, -78.760277
46	35.873793, -78.758248
47	35.869314, -78.748216
48	35.883065, -78.758944
49	35.867328, -78.75014
50	35.868178, -78.757206
51	35.868919, -78.754557
52	35.888112, -78.751798
53	35.87783, -78.75822
54	35.873944, -78.752579
55	35.87186, -78.749973
56	35.881958, -78.760867
57	35.867798, -78.761266
58	35.866941, -78.7651
59	35.879848, -78.757245
60	35.865038, -78.752251

Team 2

# Results

Data from 53 points examined  
for 7 focal species

Occupancy models created  
based on Screech Owl and  
Ambient Noise covariates

Model selection based on AIC

Values back-transformed to  
arrive at occupancy and  
detection estimates

Species	Best Model	Occupancy Estimate	Detection Probability Estimate	Positive or negative relationship
American Crow	Det = Noise Occ = Null	0.927	0.305	Negative
Carolina Chickadee	Det = Noise Occ = Null	0.931	0.498	Negative
Carolina Wren	Det = Screech and Noise Occ = Null	0.948	0.549	Negative
Eastern Tufted Titmouse	Det = Noise Occ = Screech	0.923	0.576	Negative for both covariates
Northern Cardinal	Det = Noise Occ = Null	0.865	0.494	Negative
Pine Warbler	Det = Null Occ = Null	0.823	0.683	N/A
Red-bellied Woodpecker	Det = Null Occ = Null	0.538	0.275	N/A

# Discussion

Minimal Effect for Screech-Owl

Playback

Background Noise Negative

Effect

Variables and Irregularities?

Improvements?

Uses and thoughts for the future





# Literature Cited

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Any questions?

