



# Assessing a Targeted Point Count Approach for Estimating Bird Abundance

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ZO 501

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# Introduction

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- ❖ Point counts are widely used to monitor and study bird populations.
- ❖ The detectability of birds during point counts influences estimates and consequent management, and conservation decisions.
- ❖ Many factors can influence detectability.
- ❖ We examined observer focus by comparing targeted and non-targeted methods.
- ❖ Brewster (2006) suggested that point counts might yield more reliable estimates if they target a few species rather than all species present.



# Objective

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- ❖ To compare a targeted and non-targeted point count method for sampling bird populations.

## Hypothesis:

Detectability differs between the two methods and therefore their population estimates are significantly different.



# Methods

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- ❖ Conducted 20 point counts using the targeted and non-targeted approach on March 3<sup>rd</sup> and 7<sup>th</sup>.
- ❖ Calculated estimates of target species abundance in quay woods.
- ❖ Compared abundance estimates from the two methods.



# Quay Woods



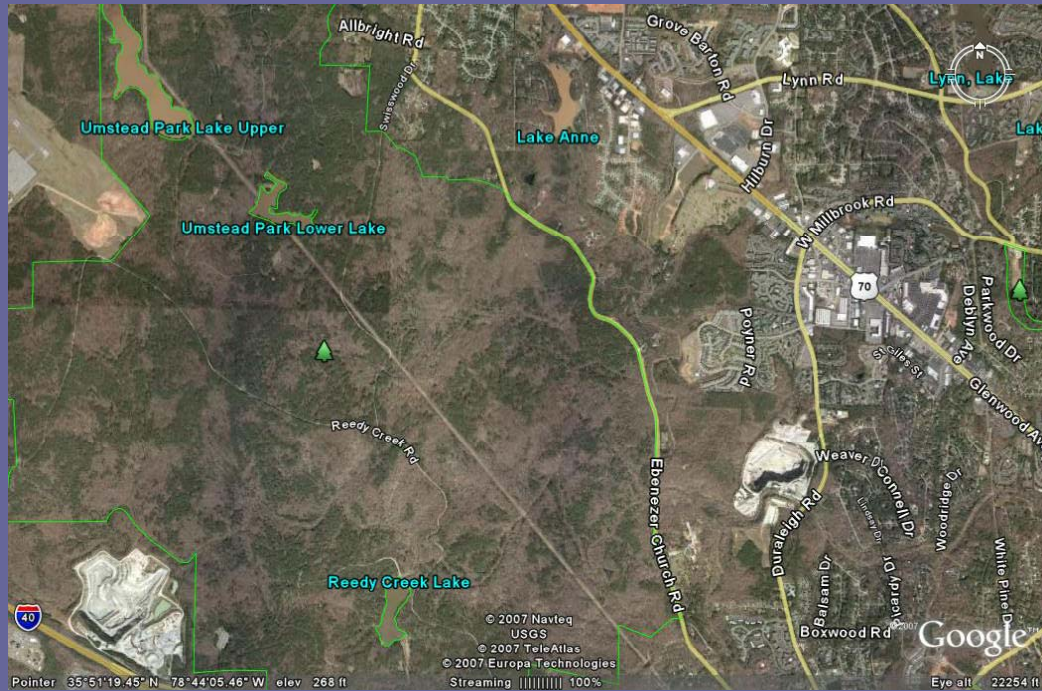
Dr. Quay's original study plots (1939)

## Recent

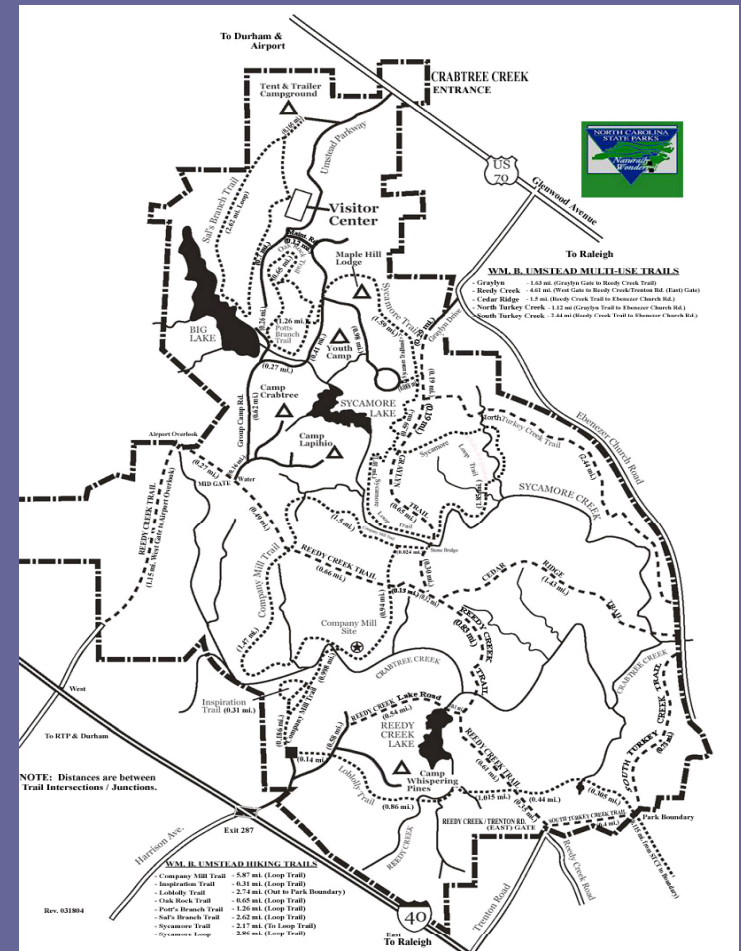
Dr. Quay's 8.1 study site  
78539.82 m<sup>2</sup>



# Umstead Park



## Sycamore Trail



## Umstead State Park Map

# Sampling Methods

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## Non-targeted:

- All species recorded

## Targeted:

- Carolina Chickadee
- Carolina Wren
- Red-bellied Woodpecker
- Yellow-rumped Warbler



# Point Counts

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- ❖ Independent double observer
- ❖ 10 points at each site, 5 minutes long
- ❖ 50 meter radius, 200 m apart
  
- ❖ Targeted and non-targeted performed simultaneously
  
- ❖ Observers randomly assigned to method
- ❖ Systematically distributed or along Sycamore Trail
- ❖ Observers matched detections after each point

# Methods (continued)

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❖ Estimated abundance at each point by species:

$$\hat{N} = \frac{(n_1 + 1) \times (n_2 + 1)}{m_2 + 1} - 1$$

Chapman's Equation

❖ Estimated variance at each point:

$$\hat{V}(\hat{N}) = \frac{(n_1 + 1) \times (n_2 + 1) \times (n_1 - m_2) \times (n_2 - m_2)}{(m_2 + 1)^2 \times (m_2 + 2)}$$

$N$  = the population estimate in the plot

$n_1$  = the number of individuals counted by observer 1

$n_2$  = the number of individuals counted by observer 2

$m_3$  = the number of individuals counted by both observers.



# Comparison of methods

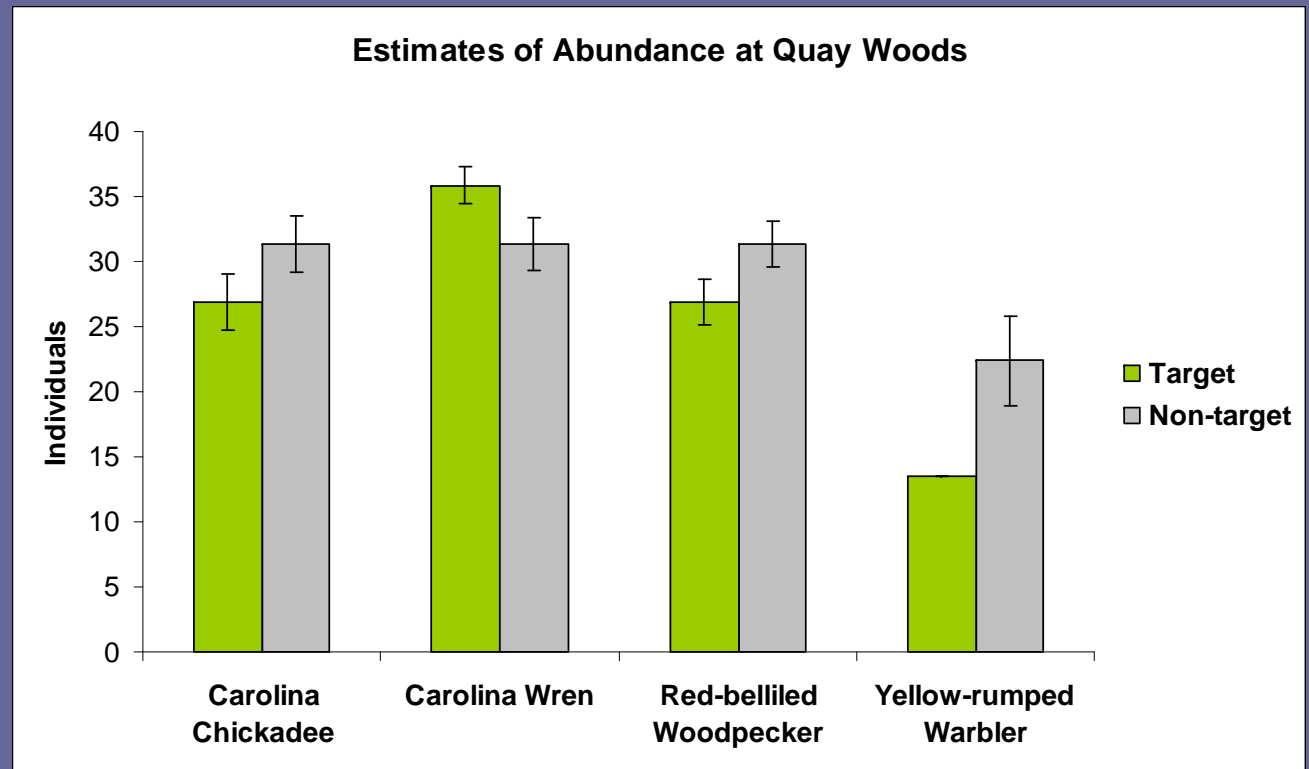
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- ❖ Used a two-tailed t-test
- ❖ Used all 20 points to increase sample size



# Results

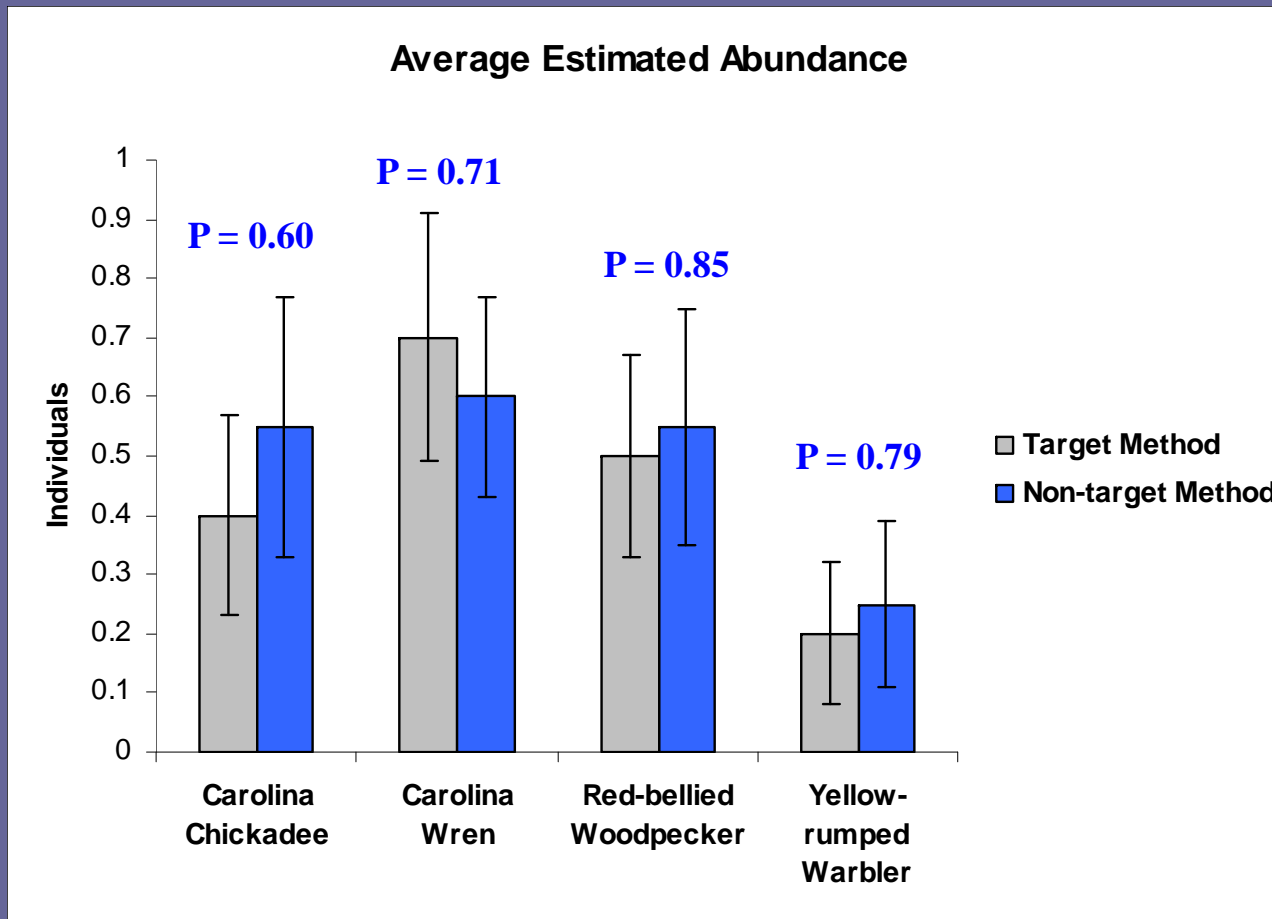
- ❖ Summed estimates from all points
- ❖ Multiplied sum by fraction of area sampled



Estimates from the two methods were different.

Targeted method estimate only higher for the Carolina Wren.

# Results



No significant difference between methods

# Results

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Several points had no birds:

- CACH – 13 points
- CARW – 11 points
- RBWO – 12 points
- MYWA – 17 points
- Any species – 8 points



# Discussion

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- ❖ Our hypothesis that estimates from the two methods are different was not supported



# Problems

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- ❖ Lots of empty points
  - No comparison being made
  - Missed the problem of overwhelmed observer
- ❖ Observer inexperience
  - Biased toward target species
  - Unsure of 50m distance
- ❖ Differentiating Tufted Titmouse from Carolina Chickadee



# Conclusions

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- ❖ We didn't succeed in successfully testing our hypothesis.
- ❖ **Future studies should:**
  - Larger sample size
  - Closer to Spring
  - Experienced observers
  - Warmer time of day



# Acknowledgements

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