



# Selection of Nest Boxes by Cavity Nesting Waterfowl Based on Diameter at Breast Height in Mead Wildlife Area

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## Introduction:

Cavity nesting birds such as *Aix sponsa* (Wood duck) and *Lophodytes cucullatus* (Hooded merganser) rely on nest boxes in areas where natural cavities are not available. In Wisconsin, specifically the George Mead State Wildlife Area in Marathon County, cavity nesting birds have the option to use nest boxes mounted on poles or to trees of various sizes. While nest box use by these species has varied over time, managers have inquired which, if any, tree size class is favored by either species.

Our study aims to evaluate if the diameter at breast height (DBH) of trees that are mounted with nest boxes effects selection. This study will also compare nest success separated by DBH of trees to nest success of boxes mounted on poles.

Beginning in 2008 data has been collected by the University of Wisconsin Stevens Point Student Chapter of the Wildlife Society by checking 78-129 boxes annually in January and February. The DBH of trees has only been measured during the last three years.

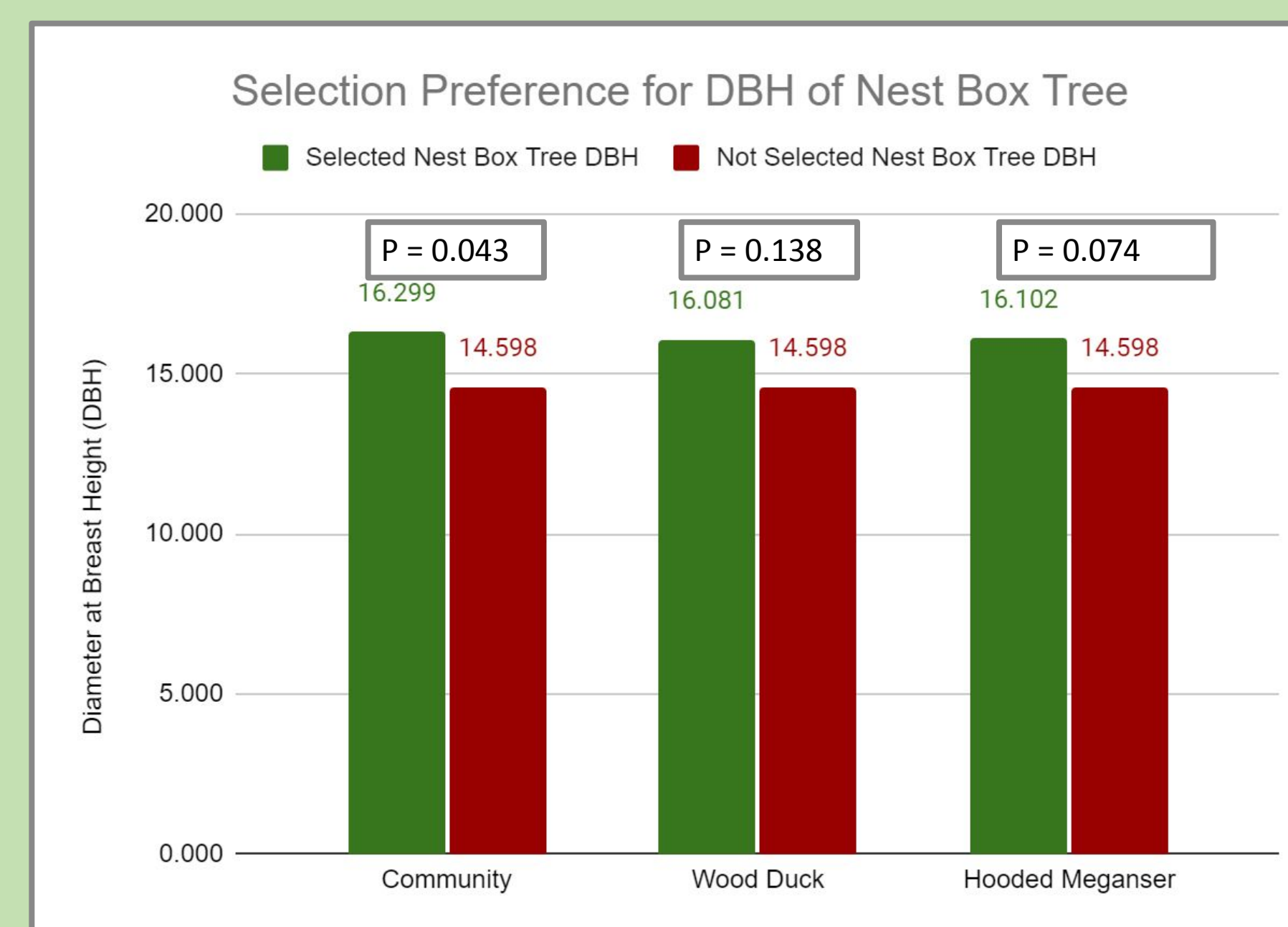
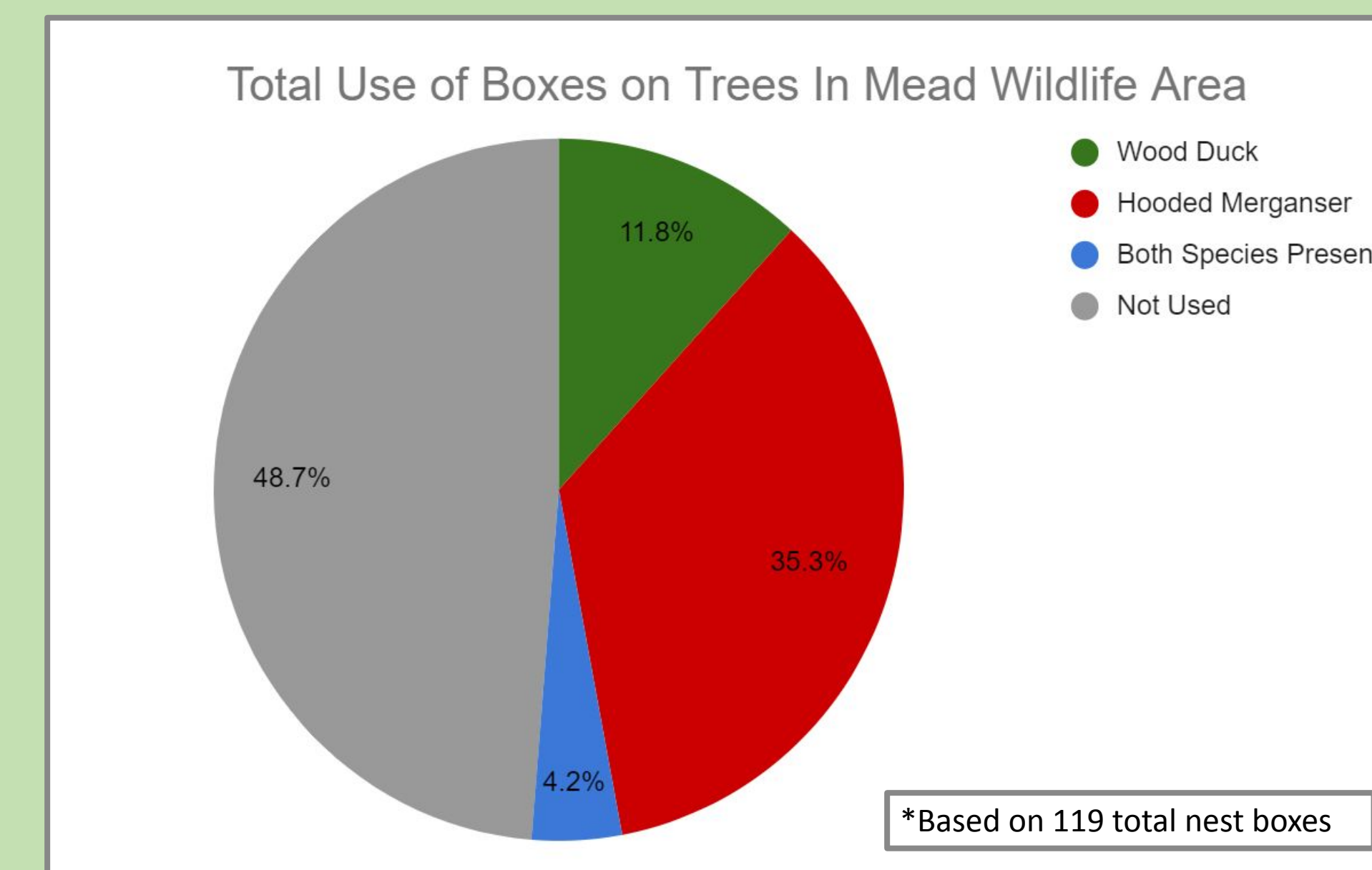
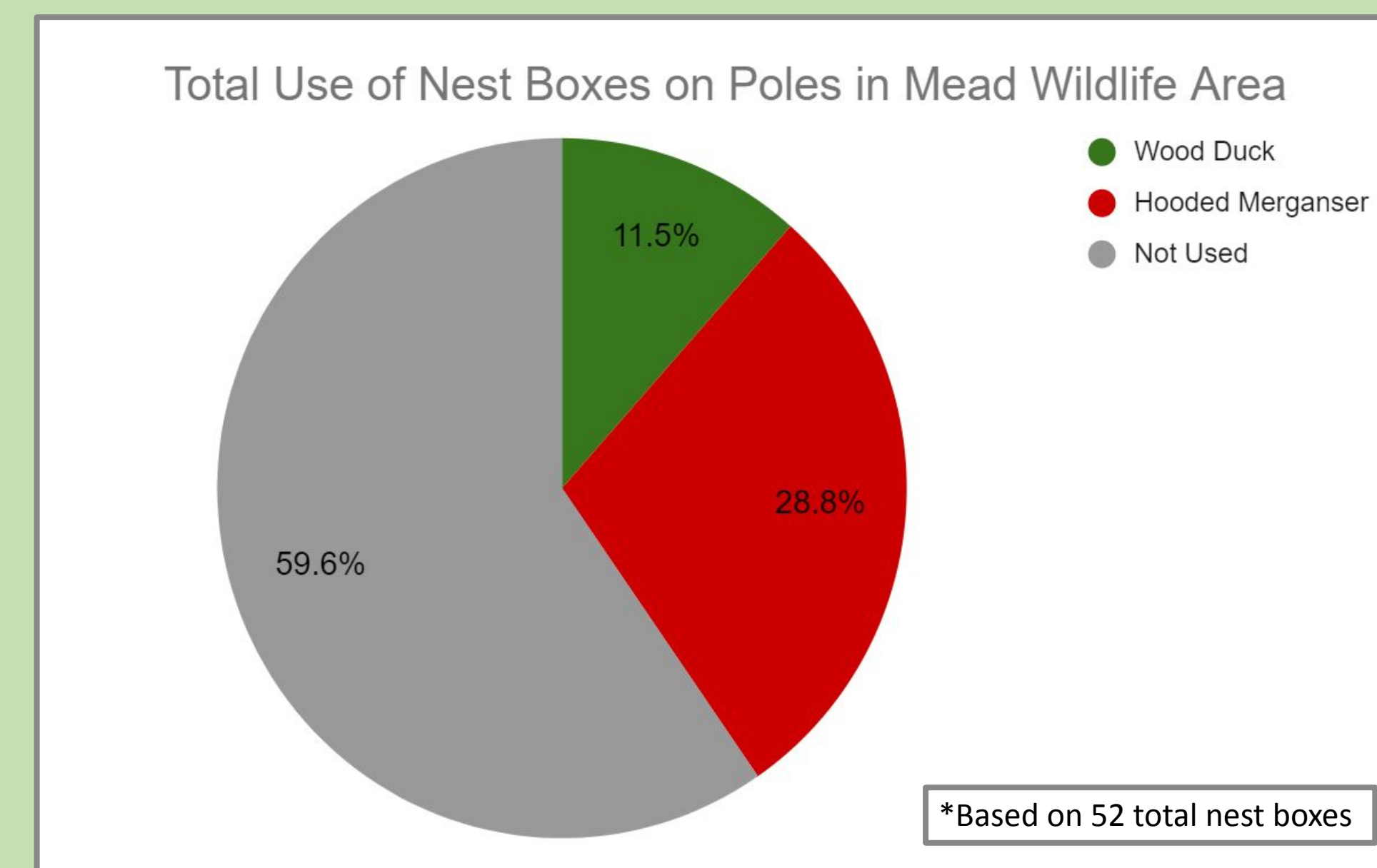
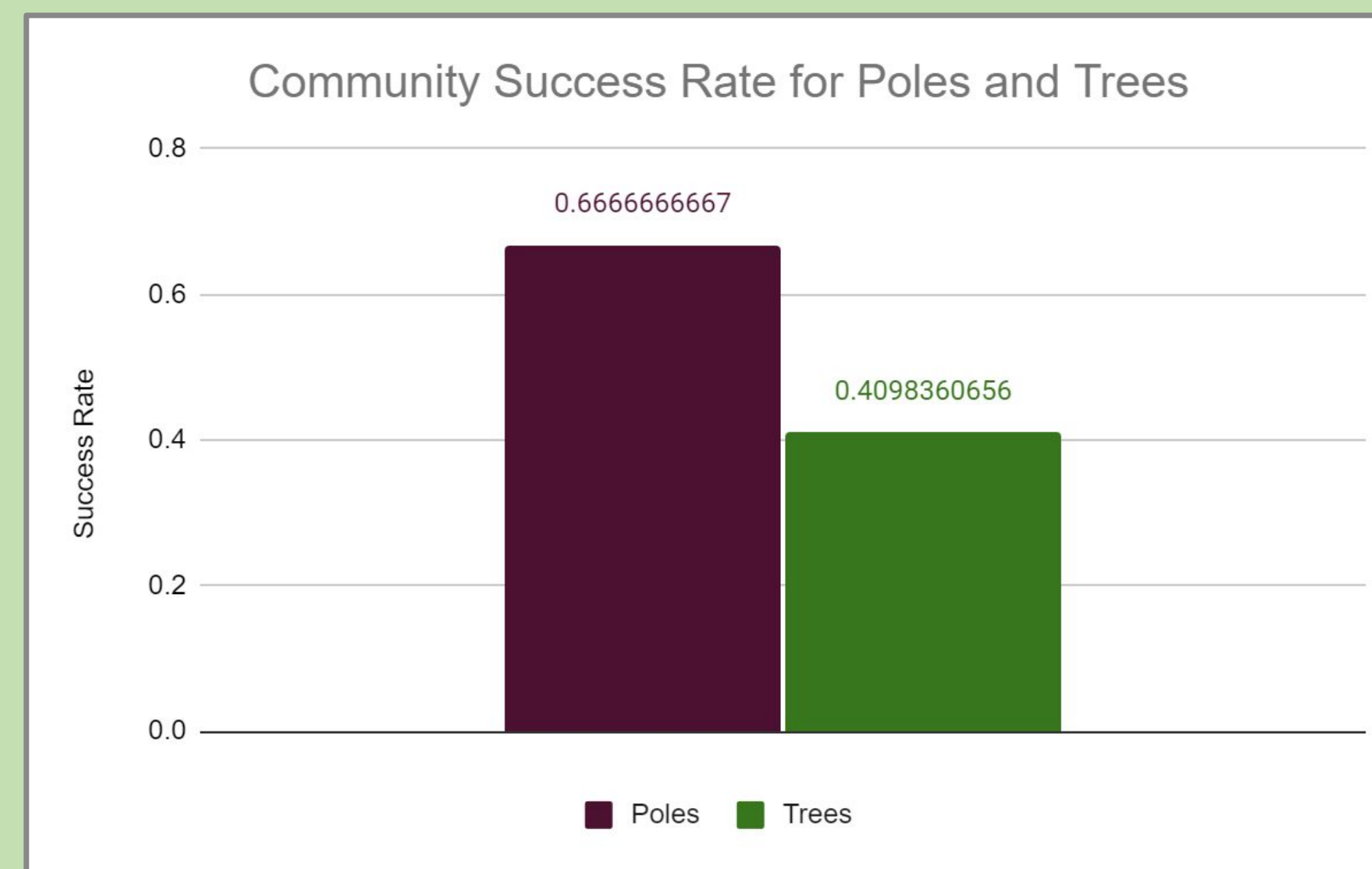
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## Data Collection:

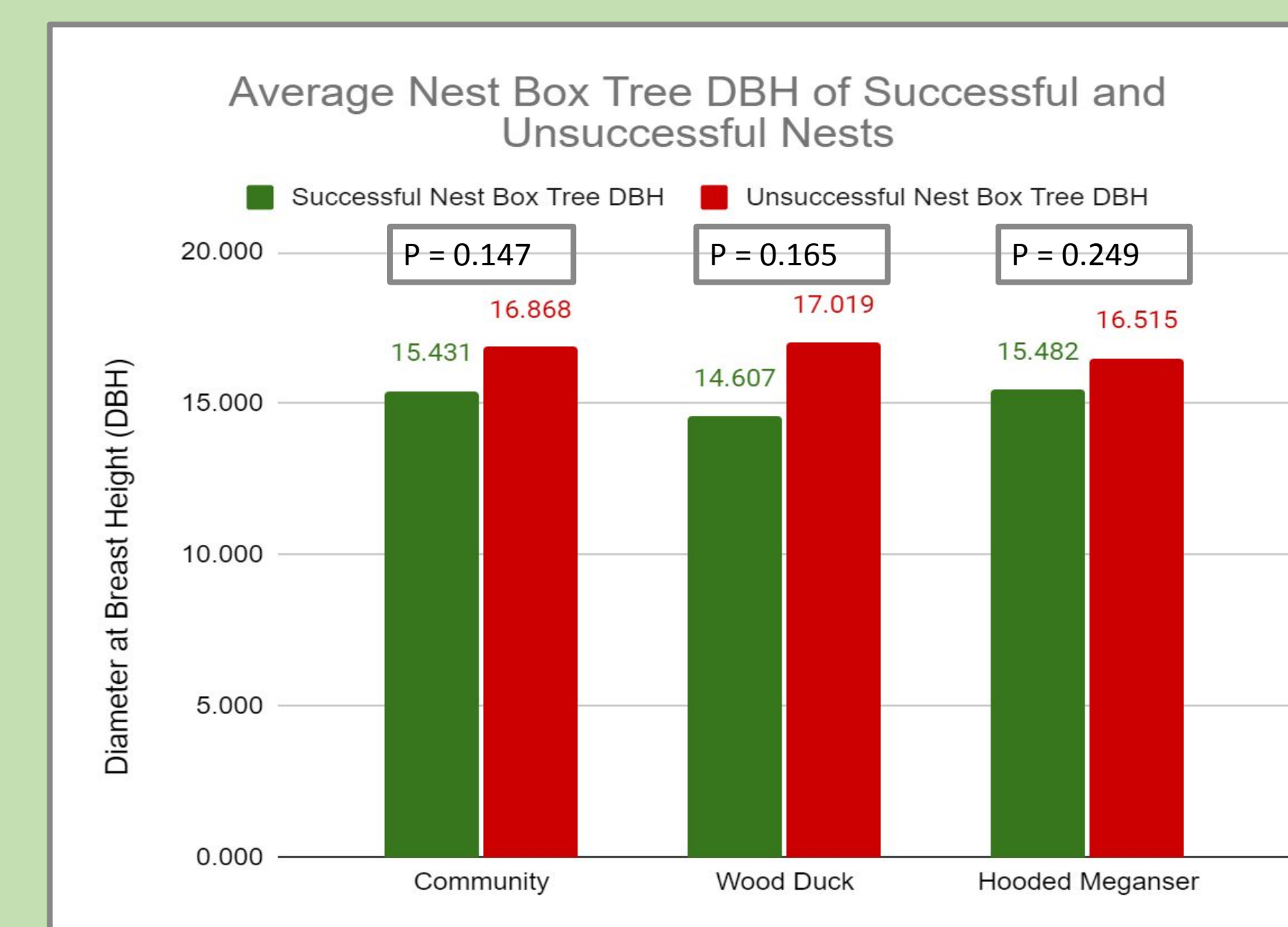
- We collected data at the George Mead Wildlife Area, WI. We identified boxes by location name and number, along with a GPS coordinate.
- We collected data by checking each box for use. We examined the contents and determined what species of duck occupied the box, success of clutch, or use from non-target species.
- If eggs were present, we based species identification from size, color, and shell wall thickness. Wood duck eggs are typically cream/tan in color and oblong in shape with a thinner shell compared to Hooded Merganser eggs which are white and more rounded in shape with a thicker shell. (Baicich and Harrison 2005).
- We determined success of an egg by the observation of inner membrane separation from the eggshell, which would be classified as successful.
- We examined the physical condition of the box to determine whether it was useable for the ducks during the past brood season.
- We measured DBH if the box was affixed to a tree using a DBH tape, measuring to the nearest tenth of an inch.

## Data Analysis:

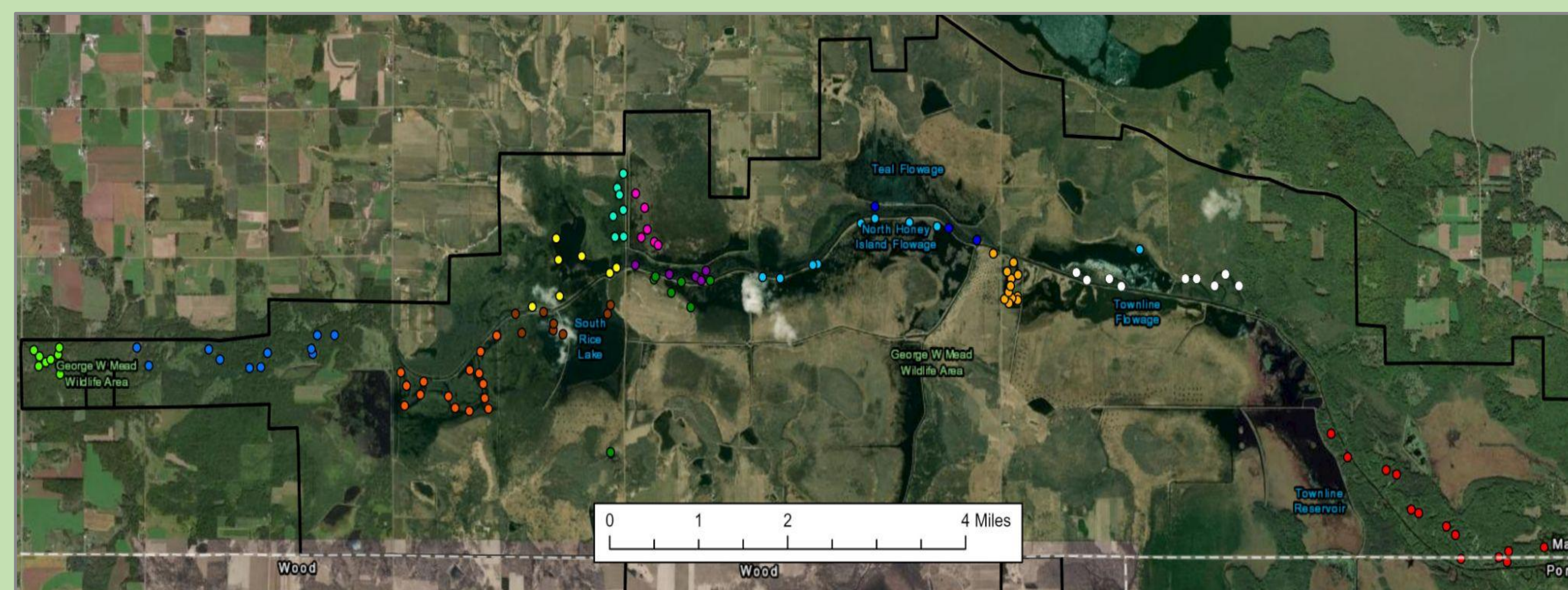
A one-tailed t-test for equal variance was performed for each comparison. All data analysis was done in Excel as well as all graphics used.



	Selected Nest Box Tree DBH	Not Selected Nest Box Tree DBH	P-value
Community	16.299	14.598	0.043
Wood Duck	16.081	14.598	0.138
Hooded Merganser	16.102	14.598	0.074



	Successful Nest Box Tree DBH	Unsuccessful Nest Box Tree DBH	P-value
Community	15.431	16.868	0.147
Wood Duck	14.607	17.019	0.165
Hooded Merganser	15.482	16.515	0.249



## Discussion:

Our wood duck sample size was lower than the hooded merganser sample size, making the comparison between the two harder to justify, but at a community level, these comparisons are much more applicable.

Hooded Mergansers have an earlier arrival time in the spring due to their diet being more consistent fish consumers. Wood ducks, on the other hand, must wait for macro invertebrates and the spring green up. This could explain the larger number of hooded mergansers use within the nest boxes, having more option and taking the preferable boxes for themselves

Our data was significant in the comparison of selection preference for the community as a whole, favoring trees with a larger DBH, but not significant in the comparison of selection preference for Wood Ducks or Hooded Mergansers alone. Our data was not significant in the comparison of average DBH of successful vs unsuccessful nests. This shows that in our study, tree DBH cannot be used to determine success of a Wood Duck or Hooded Merganser cavity nest and does not appear to have a selection bias for breeding female cavity nesters. Our last community comparison was between nest boxes on poles and nest boxes on trees, showing a difference in success rates with poles having a higher success rate.

## Future Research/Directions:

- Nest success could be differentiated by species of tree.
- The materials or age of the nest box could have selective pressure by the female wood duck at the time of choosing a next site.

## Management Considerations:

- If we can determine what factors influence species specific nest site selection, it will allow wildlife managers to focus on species specific management techniques.
- Relocation of non-productive boxes to areas that would be more successful.
- Nest box placement between trees or poles.

## Acknowledgements:

- WI Department of Natural Resources Mead Wildlife Area Staff
- UWSP Wildlife Society Members
- Other volunteers who assisted in data collection

Right: Former project co-leader Shelby Isensee checking SHS nest box #2

