

# The Effects of Corn Ear Declination on Waterfowl Forage Availability in Unharvested Flooded Corn Fields

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## Introduction

- Flooded, unharvested corn is used by waterfowl managers and hunters to attract ducks for recreational opportunities.
- Flooded, unharvested corn is energy-rich compared to natural seeds, and allows ducks to easily build energy reserves for spring migration.
- Therefore, the factors affecting depletion of flooded, unharvested corn may be important for managers to ensure adequate food for wintering waterfowl.

## Objectives

- Estimate biomass, energetic use-days, and depletion of flooded, unharvested corn for wintering waterfowl in western Tennessee.

## Methods

- Surveyed 30 flooded, unharvested corn fields (Figure 1) in western TN every two weeks throughout the winter (late Nov to late Feb).
- Sampled corn ears along 5-m transect by counting number of kernels, assessing forage intensity on ear, recording ear declination, and measuring ear height on corn stalk and water depth at 15 points along transects (Figure 2).
- Corn ear declination is the orientation of the corn ear towards the water and if facing towards the water was assigned a category of 'down', otherwise it was considered 'up'.
- Any corn ear that had more than 20% of kernels removed from ear was considered to be foraged on.

## Study Area

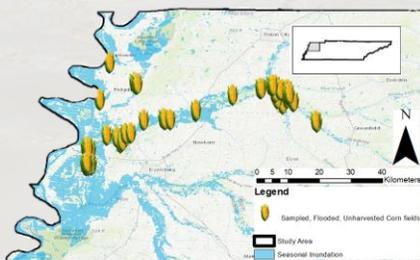


Figure 1. The study area spans the northwest corner of TN. Blue shaded area shows region with surface water for a month or more, indicating available duck habitat. We focused on surveying the Obion River watershed.



Figure 2. Corn cob collected during a field survey that was foraged on by waterfowl (left), and measuring water depth and corn ear height (right).



Figure 3. Proportion of corn ears foraged on at a field ( $\pm$  standard error) by waterfowl during the final survey of 30 flooded, unharvested corn fields in western TN.

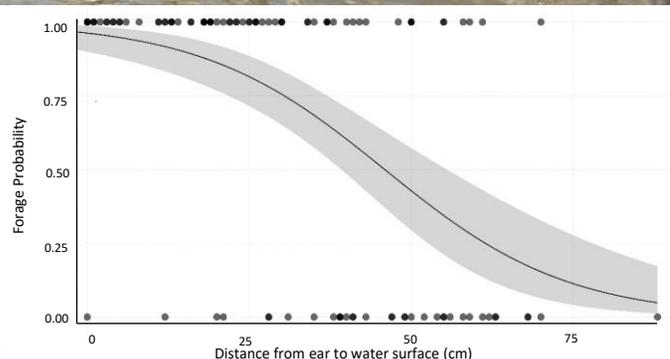


Figure 4. Probability of waterfowl foraging on ear of corn ( $\pm$  95 CI; grey shading) by end of winter in relation to distance between ear height and water surface.

## Preliminary Results

- Corn ears that were facing downward towards the water were more likely to be foraged on than those facing upward towards the sky (Figure 3).
- Regardless of declination, most corn ears were foraged on by the end of winter.
- Probability of an ear of corn being foraged on by end of winter <50% when the distance between the ear and water surface >45 cm (Figure 4).
- 70% of corn ears with a distance >50 cm from the water surface were not foraged on by end of winter.

## Future Sampling and Analysis

- We will compare depletion rates to possible influential factors including temperature, precipitation, Julian date, hunting pressure, water depth, proprietorship and field size.
- We will develop a depletion curve for flooded, unharvested corn that can be applied to fields throughout western Tennessee.

## Management Implications

- Understanding the depletion of flooded, unharvested corn and the factors that drive corn depletion will allow managers to create inundation schedules and maintain inundation depths that best meet the needs of wintering waterfowl.



## Acknowledgments

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