Effectiveness of Vehicle-towed Nest Drags at Finding Duck Nests

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Introduction

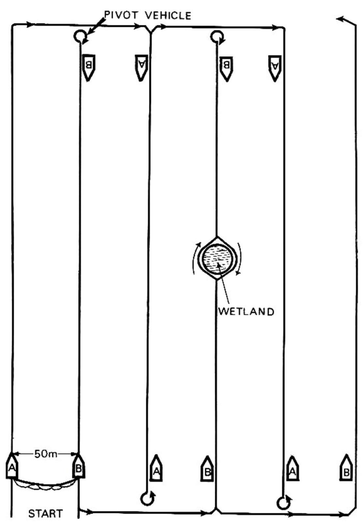
Many studies have used vehicle-towed nest drags to find duck nests, which occur at low densities and are well hidden in dense prairie vegetation. This technique involves systematically searching a study site using two vehicles with a heavy cable, chain, or rope dragged between them. As the nest drag passes over the vegetation where ducks nest, females flush from the disturbance (see photo), allowing their nests to be found. Although the technique is effective at finding nests, the question remains "**How many nests are missed?**"

Objectives

- Use line-transect sampling to assess detection probability of vehicle-towed nest drags for finding duck nests
- Explore sources of variation in detection probability due to species biology and search methods.

Hypotheses

- Detection probability decreases with distance from the tow vehicles
- Detection probability decreases as nest age increases
- Gadwalls and mallards have higher rates of detection compared to shovelers and blue-winged teals.



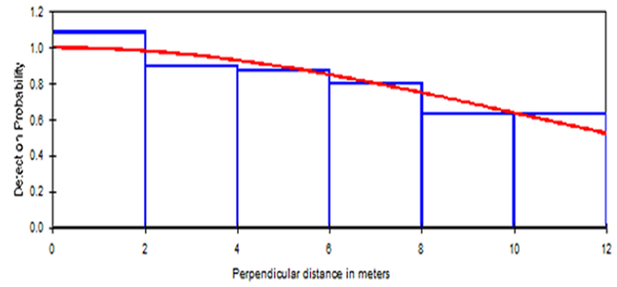
Study Area & Methods

- Searches conducted in 2000-2001 by J. Devries and B. Maile in southern Manitoba and Saskatchewan in areas owned and managed by Ducks Unlimited Canada

Ducks Unlimited Canada
Conserving Canada's Wetlands

- Specialized population estimation software program DISTANCE

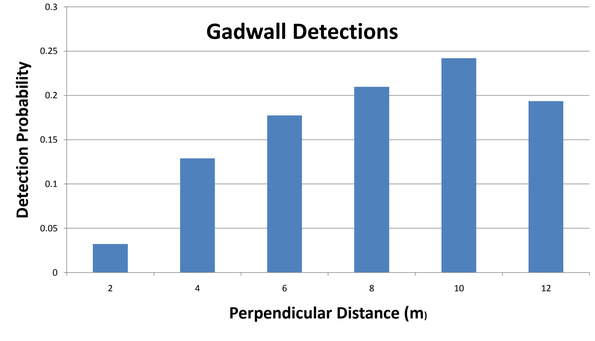
As expected, detection probability declined as a function of distance from towing vehicle, but the decline was slight:



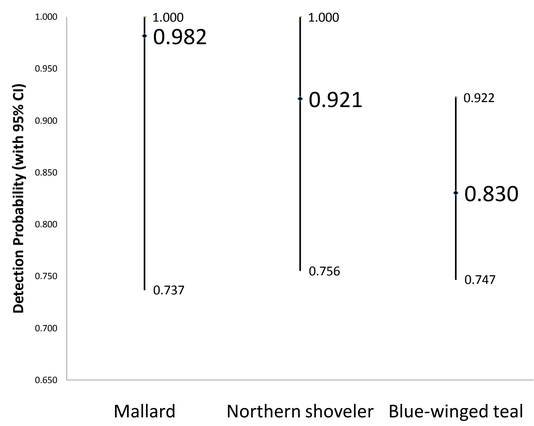
Detection probability increased later in the nesting season (i.e. June vs. May), presumably because female ducks were less likely to "sit tight" on their nests as the breeding season progressed.

Results

- Effective technique - 0.866 overall detection probability
- Best model included search date and location
- Gadwalls were excluded from analysis for failing to meet assumption of monotonically declining frequencies



As predicted, detection probability was higher for mallards than for shovelers or teals (but SE and overlap are large):



Conclusions:

Vehicle-towed nest drags are effective at finding most of the available nests (except gadwalls), and the fraction that are missed can be easily estimated. There appear to be relatively few biases with the method.

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