

Assessment of Bird Damage to Sunflower and Corn in North Dakota

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Introduction

North Dakota is the top sunflower producer in the United States, annually harvesting about 1 million acres (404,686 ha). The red-winged blackbird (RWBL), common grackle (COGR), and yellow-headed blackbird (YHBL) cause significant damage to these crops. Peer et al. (2003) estimated bird damage to sunflower at \$5-10 million annually.

Recently, corn has become a major crop within the state with 69,793,704.56 hectares planted in 2008 and 2009.

In the past 40 years, stable YHBL and increased COGR populations in the Prairie Pothole Region (PPR) may have lead to greater losses. While RWBL populations have declined slightly, populations in North Dakota have remained large and producers continue to report intense blackbird damage.

In central North Dakota, sunflower and corn fields are typically distributed within a landscape scattered with cattail wetlands, shelterbelts and Conservation Reserve Program (CRP) lands which provide prime roosting, nesting, and loafing areas for blackbirds. Local nesting blackbirds along with migratory birds from the north cause significant crop damage.

The National Sunflower Association considers blackbird depredation of sunflower to be a key factor in the reduction in sunflower acreage in the PPR. Complaints on blackbird damage to corn have increased in recent years. Corn may be providing an alternate food for foraging blackbirds, thus reducing damage in sunflower. Quantitative surveys of blackbird damage to corn, however, have not been conducted in North Dakota. This study will measure blackbird damage to sunflower and corn crops across the PPR of North Dakota in 2008, 2009, and 2010 and determine possible factors correlated to this damage.

Objectives

1. Estimate blackbird damage to sunflower and corn in the PPR of North Dakota.
2. Determine relationships between land cover types, wetland types, and crop damage across the PPR.

Study Area and Methods

The study area (95,200 km²) is the PPR of North Dakota. The topography of this region is characterized by numerous wetlands. In a previous study, Ralston et al. (2007) stratified the PPR into the Missouri Coteau, Northwest Drift Plains, Northeast Drift Plains, and Southern Drift Plains. In his study, 120 randomly selected sample plots, each 3.2 x 3.2 km (1,036 ha), were proportionally allocated to the strata. We will analyze bird damage in all corn and sunflower fields within a 2.56-km² area (1 mi²) in the center of each of these plots (Figure 1).



Damage measurement taken on sunflower and corn.

Each sampled field ≥ 4.0 ha will be divided into two equal strata. A row (transect) will be randomly selected within each stratum, and randomly selected plots consisting of five plants along each transect will be evaluated for damage. The percent loss for each field will be calculated by averaging the percent loss of all heads/ears in both strata. The average damage in each field will be used to calculate average percent losses within each physiographic region.

Table 1. Variables used to determine landcover significance to blackbird damage.

Landcover Variables
Wetland
CRP
Pasture
Corn
Beans
Sunflower
Wooded
Small Grains
Open Water
Other

Study plots within the PPR, showing landcover (2008)

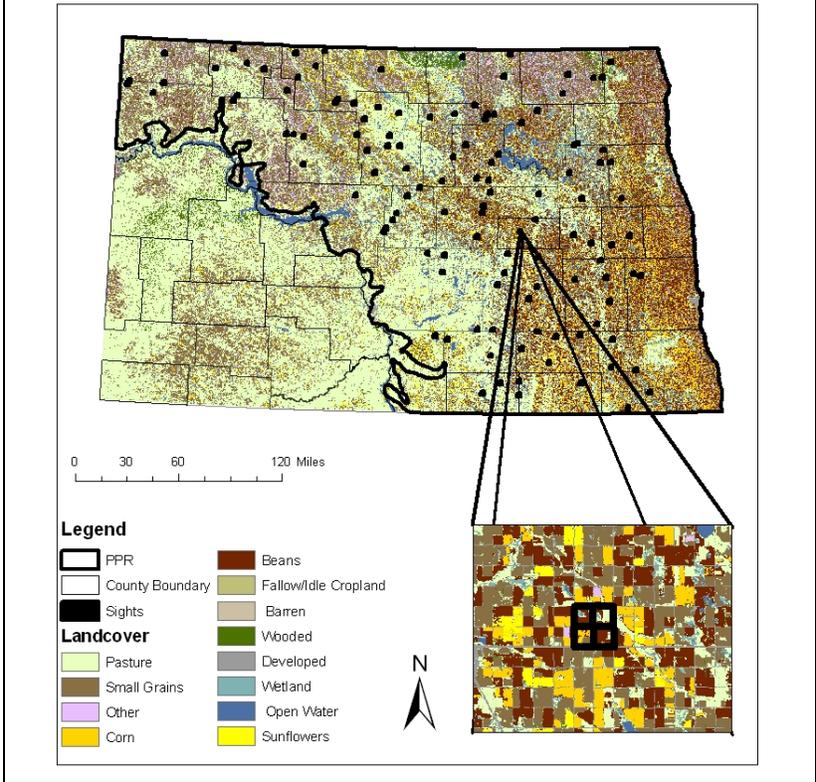


Figure 1. The “Ralston 120” plots in ND in reference to landcover for 2008.

Damage Estimates (2008 & 2009)

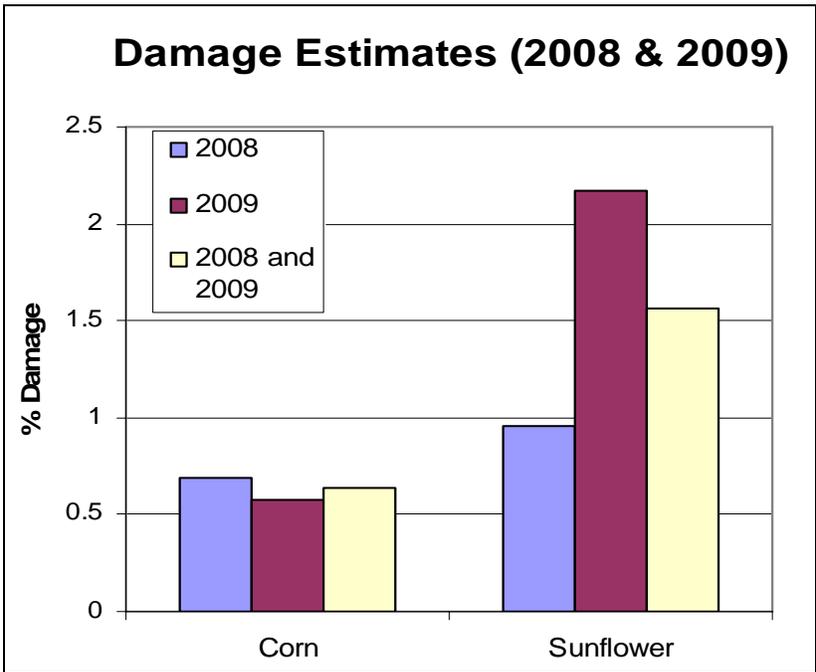


Figure 2. Estimates of average percent damage in randomly selected fields within the PPR of North Dakota in 2008 and 2009.

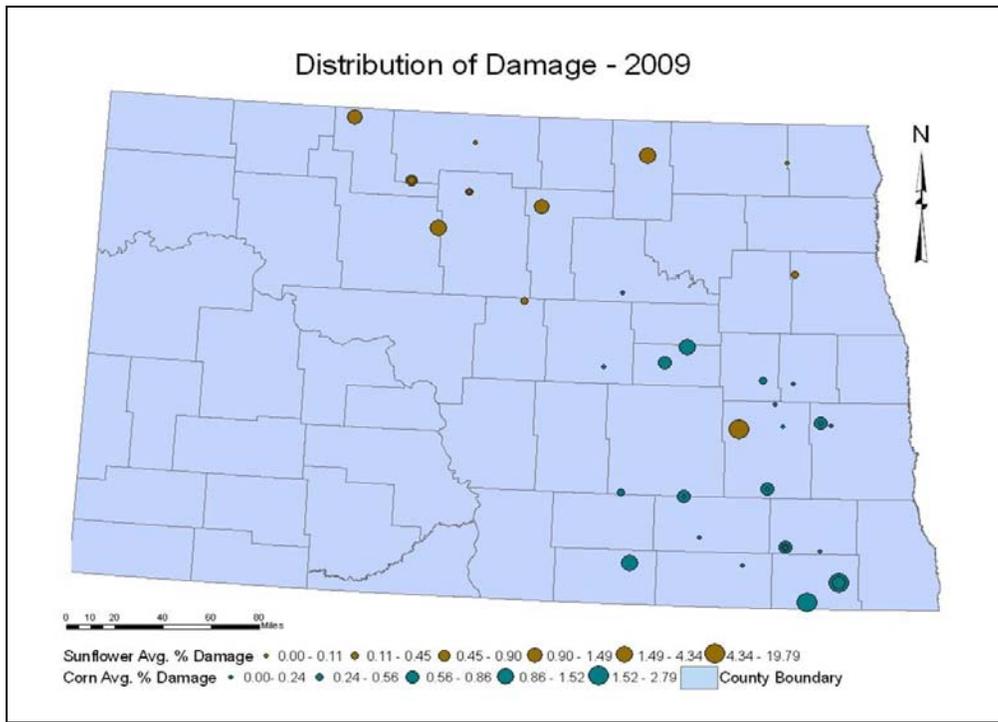


Figure 3. Distribution of damage across the PPR of ND based on plots evaluated during 2009.

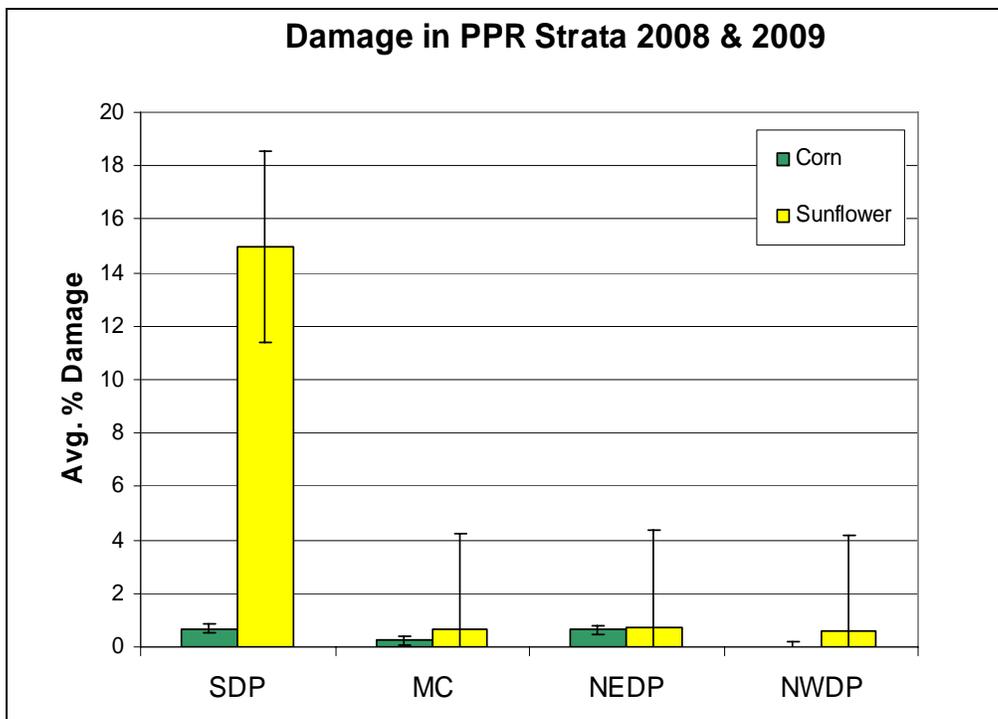


Figure 4. Average percent damage for individual strata within the PPR (Southern Drift Plains: [corn] n= 54, [sf] n=2; Missouri Coteau: [corn] n= 5, [sf] n= 2; Northeast Drift Plains: [corn] n= 5, [sf] n=9; and Northwest Drift Plains: [corn] n= 4, [sf] n= 16) for 2008 and 2009.

Literature Cited

- Ralston, S. T., G. M. Linz, W. J. Bleier, and H. J. Homan. 2007. Cattail distribution and abundance in North Dakota. *Journal of Aquatic Plant Management* 45: 21-24.
- Peer, B. D., H. J. Homan, G. M. Linz, and W. J. Bleier. 2003. Impact of blackbird damage to sunflowers: bioenergetic and economic models. *Ecological Application* 13: 248-256.
- Linz, G. M., A.A. Slowik, L. B. Penry, and H. J. Homan. 2009. Bird damage to corn and sunflower in North Dakota. 31st National Sunflower Association Sunflower Research Forum. NSA Website Online Forum.