

# BLACKBIRD DENSITIES AND SUNFLOWER DAMAGE IN STUTSMAN COUNTY, NORTH DAKOTA

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Historically, breeding blackbird densities and blackbird damage to sunflower were estimated in different years and at various geographic scales. Breeding bird surveys were conducted statewide in 1981, 1982, 1990, and 1991; and regionally in 1995, 1996, and 1997. Statewide damage assessments were made only in 1979 and 1980. Thereafter these surveys were restricted to local areas. Because of these disparate temporal and geographic scales, efforts to test the hypothesis that breeding blackbird numbers in sunflower growing areas are related to the level of sunflower damage were thwarted.

Since March 1994, Wildlife Services and North Dakota State University have been testing an avicide on spring-migrating blackbird populations. During this time, we have explored several sampling designs for measuring the relationships between avicide applications and changes in blackbird populations and the reduction of sunflower damage. We concluded the best strategy was to reduce variances by establishing intensive surveys in 4 counties in the Dakotas. In this paper, we present preliminary data gathered in Stutsman County from 1994-1997 and introduce our long-term sampling strategy.

## METHODS

We used a 2-stage cluster sampling design, with townships as the clusters and 1/4 sections (1/4 S, 160 ac) as the elements, to estimate both bird damage to sunflower and breeding populations of common grackles, yellow-headed blackbirds, and red-winged blackbirds. Three randomly selected 1/4 S were censused within each selected township during both surveys. In 1996 and 1997, the breeding bird surveys were conducted in the same 1/4 S, whereas damage assessments were conducted in different randomly selected 1/4 S.

We conducted bird counts from 20 May to 1 June between 0.5 hr and 1100 hr after sunrise and 1600 hr to 0.5 hr before sunset. Two observers thoroughly examined the 1/4 S with binoculars and walked to those areas with reduced visibility to count birds hidden from view.

Bird damage assessments were conducted from 20 September to 1 October. Each field was divided into 4 strata; each stratum contained an equal number of rows. Six 1.5-m plots were randomly placed along 1 randomly selected row within each stratum. A template was used to estimate percent damage on all heads within each plot.

## RESULTS AND DISCUSSION

During 1996 and 1997, the breeding blackbird population in Stutsman County averaged 21.6 (range=5.7-46.7) pairs per 1/4 S or approximately 199,000 pairs in the county. Each pair produces about 2 young, swelling the county population to about 796,000 birds by late-summer.

From 1994 to 1996, bird damage surveys were conducted 1 or 2 times in 18 townships within Stutsman County. Average annual damage within the townships was about 2.4% (range=0.0-14.8%). Three (17%) of the townships showed losses greater than 5% and 1 (6%) township had >10% damage. Assuming an annual average production of about 200,000,000 lb in the county, the birds ate about 4,800,000 lb of sunflower, valued at \$480,000 (@\$0.10 lb).

About 75% of bird damage occurs within 18 d after anthesis (heads are green-yellow). Thus, we speculate that much of this damage is caused by local breeding birds and their offspring. However, a statistical relationship between the

number of local breeding birds and the level of sunflower damage has not been established.

#### FUTURE SURVEYS

To determine long-term trends, we plan to conduct intensive breeding bird and damage surveys in 2 counties in North Dakota (Pierce and Stutsman) and 2 counties in South Dakota (Clark and Brown). These data may be used to measure the efficacy of various damage management programs, to identify high damage areas, and to establish the relationship between bird densities and damage levels.

In 1998, we plan to sample at least 26 randomly selected townships in Stutsman County. Population and damage surveys will be conducted in at least 3 randomly selected 1/4 S within each township. In subsequent years, the same 1/4 S will be surveyed for blackbirds, whereas three different 1/4 S will be selected for the bird damage surveys. A similar sampling strategy will be employed in the other 3 counties.