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# Effects of Aerial Lines on Red-winged Blackbird Nesting

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## Introduction

The Red-winged blackbird (RWBL) is one of the most abundant birds in all of North America (Dolbeer 1980, Beletsky 1996). Red-winged blackbird damage to crops continues to be a dilemma in localized areas of the United States (Dolbeer 1980). In addition to economic losses, bird damage may intensify conflicts between agricultural interests and the enforcement of laws defending wildlife and their habitats (Stone et al. 1984). When chemicals are shown to be environmentally harmful or when public unease grows over the mass killing of wildlife, new methods of repelling blackbirds need to be evaluated. A more humane and less hazardous technique is the use of aerial lines to repel birds. Although the use of lines is not a new technique (McAtee and Piper 1936), applications have been performed largely on aquatic sites. Overall aerial lines have shown promise in reducing bird damage in both agriculture and aquaculture facilities. The purpose of the study is to determine if the presence of aerial lines in nesting territories affects reproductive effort of red-winged blackbirds, and determine the spacing, type, and size of aerial lines that serve as an effective deterrent for highly motivated (territorial) red-winged blackbirds.



A Typical Ditch Wetland Within the Prairie Pothole Region

## Methods

During the spring of 2003, six roadside ditches were chosen in the vicinity of Pingree, North Dakota. Roadside ditches were selected based on the following parameters: percent of cattail (>75%), width of ditch (>3m), length of ditch (>30m) and presence of territorial RWBL (>6). FireLine<sup>®</sup> (fishing line) (4.5 kg) and monofilament line (fishing line) (4.5 kg) were strung horizontally between two vertical wooden poles, which were placed within the bird's territory. The poles were 6 meters apart and the height of the lowest line was just above the height of the vegetation. Lines were tied to one pole and then secured to the other pole with a metal clip. Consequently, if a bird collided with one of the lines, the line would come loose from the clip and the bird would not be injured. Six different "treatments" were tested. One territory served as a sham, that is, there was no treatment at all, other than two strands of flagging tied to two cattail stalks that are 6 meters apart. In a second treatment (control), two wooden poles spaced 6 meters apart were placed within a territory. Four additional treatments included poles spaced at 6 meters with monofilament line or FireLine<sup>®</sup> strung between the poles. One of these treatments had 30-cm spacing between each line and another one had 60-cm spacing between lines (see Figure 1 for a plot diagram).

The reproductive effort of individuals was evaluated with nest checks that occurred at three-day intervals. During these checks, data on number of eggs, hatch date, number of nestlings, and number of individuals fledged were collected. After the data were collected Program MARK was used to predict a daily survival rate for each of the focal nests and a model that best fits the data.

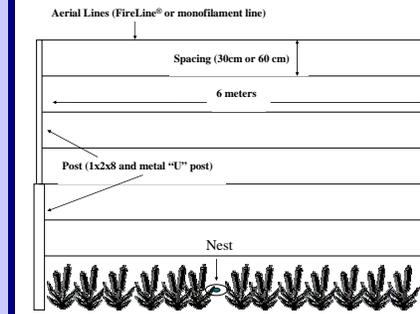


Figure 1: Diagram of a Treatment Plot

## Results

A total of 36 focal nests were observed in this study: 6 nests in each of the 6 treatments. Program MARK designed two models that best explained the data. The delta AIC values show that the two models are not significantly different (delta AIC < 2) – Model 1 which compares daily survival rate of FireLine<sup>®</sup> (30 cm and 60 cm), monofilament line (30 cm and 60 cm) and Controls (Sham and Control)(Figure 2), and Model 2 which compares aerial lines (FireLine<sup>®</sup> and monofilament line(30 cm and 60 cm) and Control (Sham and Control)(Figure 3). Daily nest survival is lower in both models for those plots with aerial lines present. Due to the small sample size, no inferences can be made on the differences between FireLine<sup>®</sup> and monofilament line.

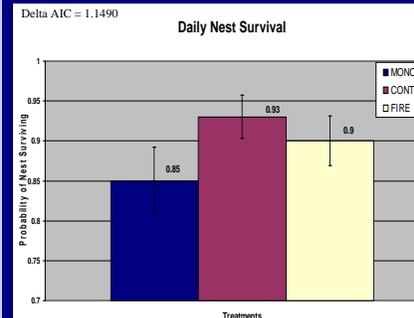


Figure 2 (Model 1): Daily Nest Survival Rate for FireLine<sup>®</sup>, Monofilament Line and Controls

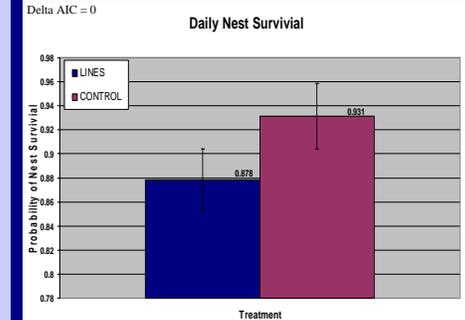


Figure 3 (Model 2): Daily Nest Survival Rate for Aerial Lines and Controls

## Management Implications

Together, North Dakota, South Dakota and Minnesota lose approximately 20 million dollars a year to crop predation by RWBL. This research will be used to evaluate a new technique to reduce sunflower depredation by RWBL. The use of this technique is not feasible for large fields but may be a good technique for small high-value fields. Fields in which the sunflower heads are normally bagged may now have an alternative technique that requires less effort. In conclusion this technique does seem to have an effect on RWBL fecundity by decreasing the daily survival rate of their nests. Further research will be done to evaluate the use of this technique to protect sunflower.

## Acknowledgements

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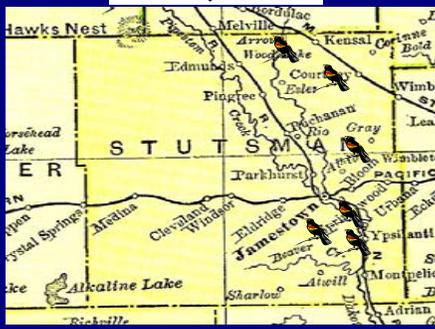
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Blackbird Damage to a Sunflower Head

## Study Area



Stutsman County North Dakota With Approximate Location of Field Sites

USDA National Wildlife Research Center  
Great Plains Field Station

