

SPRING DISPERSAL PATTERNS OF RED-WINGED BLACKBIRDS STAGING IN EAST-CENTRAL SOUTH DAKOTA

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Introduction

The red-winged blackbird (*Agelaius phoeniceus*) is the most abundant passerine in North America (Meanly and Royall 1976, Jaramillo and Burke 1999, Sauer et al. 2001). Population counts at winter roosts indicated a continental population of 179 million (Meanly and Royall 1976). By July the continental population increases to 350 million (Dolbeer 1990).

Surveys from the Breeding Bird Survey (BBS) between 1998-2000 showed that North Dakota averaged 208 red-winged blackbirds/route, surpassing all other states and provinces in North America (Sauer et al. 2001). Indeed between 1998-2000, BBS counts were the highest ever recorded in North Dakota, 41% greater than the 32-year average from 1966-1997 (147 birds/route).

To develop management strategies that will effectively reduce sunflower damage caused by migratory red-winged blackbirds, a thorough knowledge of the patterns of seasonal movements is needed. Our objective was to determine dispersal patterns of a population of red-winged blackbirds staging in east-central South Dakota during spring migration.

Methods

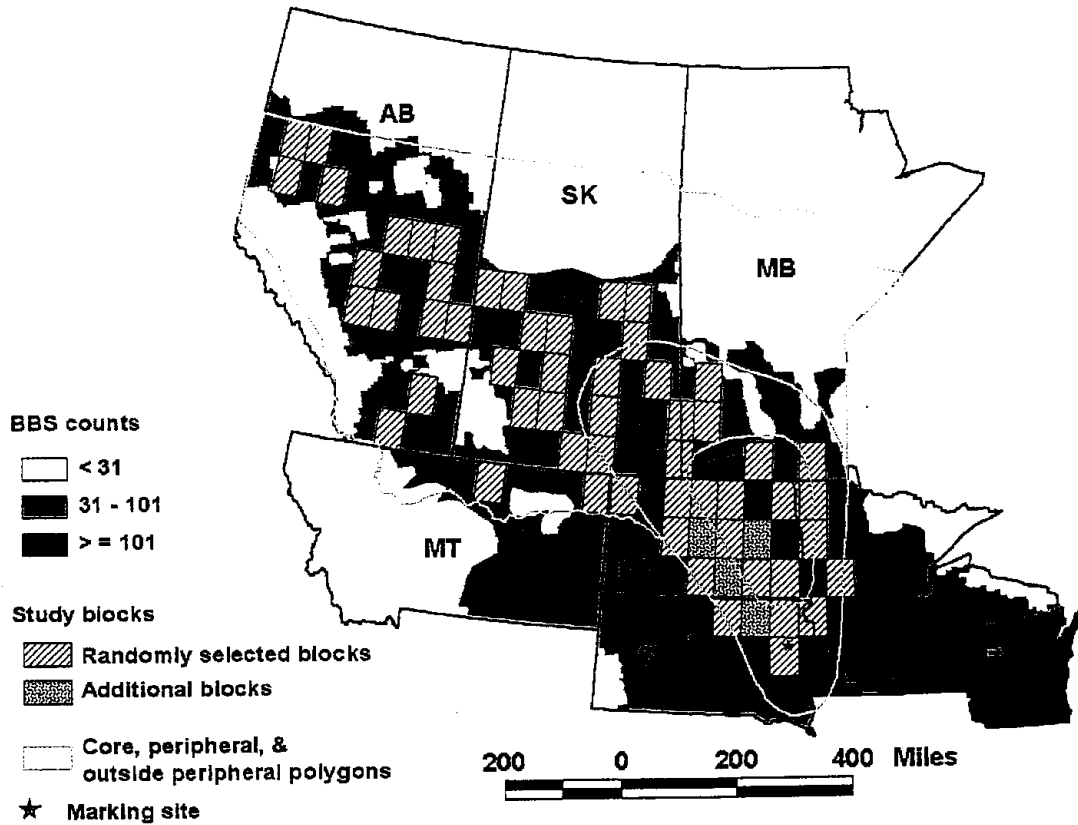
In April 2001, we aerially color-marked migratory red-winged blackbirds at three spring roosts in east-central South Dakota. This area was chosen because it lies just south of the zone of highest sunflower production and harbors large numbers of migrating blackbirds that may remain for up to three weeks before leaving.

We applied from one to four colors to mark each roost. No color was applied more than once per roost site.

In June, male and female red-winged blackbirds were collected on breeding territories in 56 random 1° x 1° latitude-longitude plots. In addition to these random plots, we collected blackbirds in four plots in the core region of highest sunflower production in central North

Dakota and northern South Dakota (Fig. 1). An equal sex ratio was sought. Wings were later examined under an ultraviolet light for color marks.

Figure 1. Sampling design used to assess dispersal patterns of spring migrating red-winged blackbirds mass color-marked in east-central South Dakota in April 2001. The sampling plots covered a 1° by 1° latitude-longitude area. Only regions with breeding densities greater than 30 birds per BBS route were sampled. A total of 60 plots out of 140 were sampled.



Results

We applied the marker seven times between 1–23 April 2001, marking 366,600 red-winged blackbirds.

We collected 4,458 birds (2,398 males; 2,060 females); of these, 33 (0.74%) were marked (Fig. 2). The overall recovery rate was not different from the expected recovery rate of 0.88%. Similarly, the ratio of marked males to marked females in the sample (23:10) was not different from the expected ratio of 22:11. We did not collect any marked birds above 53° N.

The collections were categorized into three polygon classes (core, peripheral, and outside peripheral). The core polygon, which contained the approximate breeding range of red-winged blackbirds responsible for the majority of sunflower damage in North Dakota, had the highest percentage of marked birds (1.03%; 15 marked/1,461 collected) (Fig. 3).

Figure 2. Depiction of the dispersal pattern of breeding red-winged blackbirds color-marked while migrating in east-central South Dakota during spring 2001.

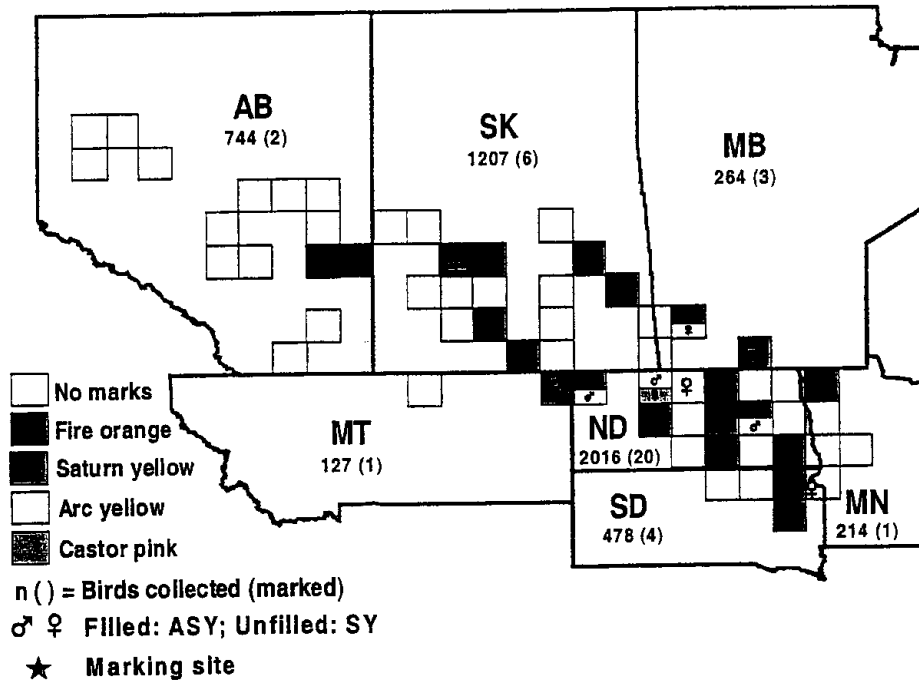
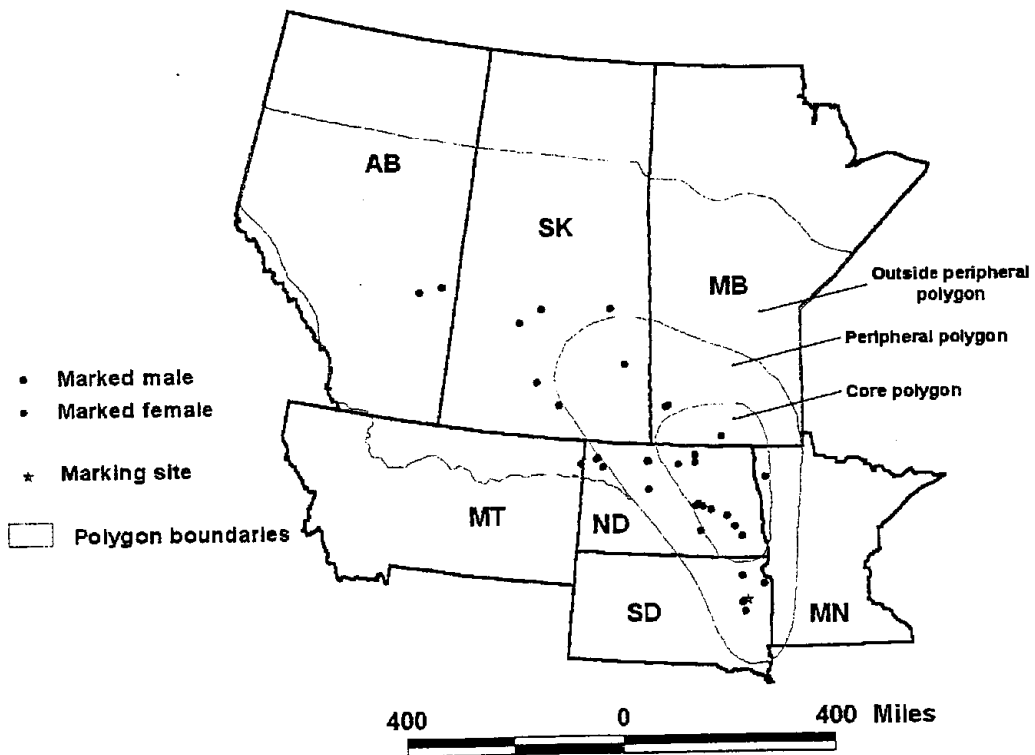


Figure 3. Locations of 37 color-marked red-winged blackbirds in relation to core, peripheral, and outside peripheral polygons.



The surrounding peripheral polygon contained the breeding population causing most of the sunflower damage in North Dakota, South Dakota, Minnesota, and Canada. For this polygon, the percentage of marked birds was 0.93% (12 marked/1,286 collected). The outside peripheral polygon, which contributed only a small portion of the population that damages sunflower, had the lowest percentage of marked birds (0.35%; 6 marked/1,711 collected).

In the four nonrandom blocks located in the major sunflower growing regions, we collected 592 birds (348 males; 244 females). Four birds (4 males; 0 females) were marked. The recovery rate in the nonrandom plots (0.6%) was not different from the recovery rate in the random plots.

Discussion

Our results suggest that the majority (82%) of red-winged blackbirds marked in east-central South Dakota came from breeding populations in the core and peripheral polygons. The core and peripheral polygons may have been more attractive to the marked population, because these polygons had a greater extent of Drift Prairie than the outside peripheral polygon. The area of Drift Prairie in the core and peripheral polygons (152,000 km²) was 77% greater than that found in the outside peripheral polygon.

The results from our experiment indicate that east-central South Dakota is a major staging area for red-winged blackbirds using core and peripheral polygons for breeding. It is estimated that 27 million breeding red-winged blackbirds reside in the core and peripheral polygons. Management of this population may reduce damage to sunflower in the northern Great Plains.

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The 2001 Sunflower Research Workshop, sponsored by the National Sunflower Association, took place on January 17 and 18, 2002, at the Ramada Plaza Suites, Fargo, ND. The workshop was very well attended and received by public and private researchers from the United States and Canada, as well as other interested parties.

This volume contains nearly all the presentations given at the 2001 workshop. Some of the papers are summarized or abstract form.

The National Sunflower Association would like to extend its appreciation to those presenting papers/posters at this annual Sunflower Research Workshop and to those who participated by their

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Questions regarding these proceedings may be directed to the National Sunflower Association, 4023 State Street, Bismarck, ND 58503.

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