

WHOSE BIRDS ARE THEY? PREDICTING THE GEOGRAPHIC ORIGIN OF
BLACKBIRDS DAMAGING NORTH DAKOTA SUNFLOWERS

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We collected adult, territorial male and female yellow-headed blackbirds (*Xanthocephalus xanthocephalus*) within distinct geographic areas of Alberta, Saskatchewan, Manitoba, Minnesota, North Dakota and South Dakota during 1987 and 1988. We used morphometric measurements obtained on these birds to construct sex specific discriminant function models. Models were constructed using either the first 4 principle components or a subset of the original morphometric variables. We used discriminant functions to compare birds collected in Canada with those collected in the U.S. for both males and females. Females were also compared among the states-provinces where they were collected. Similarly, we compared males among the 6 primary geographic collection areas.

A discriminant function of females using the first 4 principle components from 17 morphometric variables yielded an 82% probability of correct classification. However, if we discriminated on the first 4 principle components obtained from 11 temporally stable skeletal and body measurements, the probability of correct classification was reduced to 74%. A discriminant function based directly on only 2 morphometric variables (body and humerus lengths) resulted in an 81% probability of correct classification. Discrimination of females among the 6 states-provinces provided a 53% probability of correctly classifying an individual. The significant kappa statistic associated with this discriminant function indicated this model predicted geographic origin 36% better than chance alone.

Discrimination of males between the U.S. and Canada using the first 4 principle components obtained from 9 temporally stable morphometric variables provided a 68% probability of correct classification. However, using 5 of the original morphometric variables (body, skull, keel and tibiotarsus lengths and skull width) we still retained a 67% probability of correctly classifying an individual. This model classified male yellowheads about 35% better than chance alone. A discriminant function model classifying males into 6 primary collection areas resulted in a 40% probability of correct classification. This model classified about 19% better than chance alone.

Yellow-headed blackbirds were also collected weekly in central North Dakota from July through mid-September. We predicted the geographic origin of 677 female and 1433 male yellow-headed blackbirds collected in or near sunflower fields using the 2 morphometric variable and the 5 morphometric variable models, respectively. These predicted geographic origins were used to assess temporal changes in the proportion of migrant (i.e. birds of predicted Canadian origin) yellowheads in the population of birds potentially depredating sunflower.

We found an increase in the proportion of female migrants from near 20% in early June to near 60% by mid-September. This represented an approximate 5% increase in the proportion of female migrants every 10 days. Temporal changes in the proportion of male migrants were much less clear. However, analysis of bi-monthly pooled samples indicated a consistent, albeit slight, increase in the proportion of migrants through the end of August. Our predictive model suggested about a 4% increase in the proportion of male migrants every 2 weeks from the end of June through August.

Overall, our findings suggest a combination of both local and migrant yellow-headed blackbirds are present during the peak sunflower damage period of August and September. However, the migrants represent a temporally increasing proportion of the potential depredating population, at least through the end of August.