

## EFFECTS OF COWBIRD PARASITISM ON BLACKBIRD POPULATION DYNAMICS AND RESULTING SUNFLOWER DAMAGE

BRIAN D. PEER<sup>1,2</sup>, H. JEFFREY HOMAN<sup>2</sup>, GEORGE M. LINZ<sup>2</sup>, AND WILLIAM J.  
BLEIER<sup>1</sup>

<sup>1</sup>Department of Zoology, North Dakota State University, Fargo, ND 58501

<sup>2</sup>USDA/National Wildlife Research Center/Great Plains Field Station, Bismarck, ND 58501

Blackbirds feed on ripening sunflowers in the northern Great Plains which results in significant losses to sunflower growers. These marauding flocks consist primarily of Red-winged Blackbirds (*Agelaius phoeniceus*), and to a lesser extent Common Grackles (*Quiscalus quiscula*) and Yellow-headed Blackbirds (*Xanthocephalus xanthocephalus*). The Brown-headed Cowbird (*Molothrus ater*) is also a blackbird species, but it does not depredate sunflowers. Brown-headed Cowbirds are fascinating in that they lay their eggs in the nests of other birds and rely on these "hosts" to raise their offspring, a behavior known as brood parasitism. All three of the aforementioned blackbird species are hosts of the Brown-headed Cowbird. Cowbird parasitism should be of interest to the sunflower grower for its potential effects on blackbird population dynamics (see May and Robinson 1985, Trine et al. 1998). Brood parasitism results in costs to the reproductive success of the host species, in other words they raise fewer young in parasitized nests than they typically would in unparasitized nests. Here we discuss the potential effects of brood parasitism on Red-winged Blackbird populations, a study which will be initiated in the spring of 2000.

Wildlife Services personnel are currently conducting a cattail management program to reduce cattail density with the hopes that this will result in decreased damage to the sunflower crop. Cattail is a favored roosting location of blackbirds, thus reducing the amount of standing cattail should disperse roosting birds from the region.

Cattail also serves as the prime nesting habitat for redwings. Therefore, cattail management will also reduce available nesting habitat for redwings. The reduction of cattail stands will force blackbirds to nest in upland sites where predation rates and cowbird parasitism are higher (Friedmann et al. 1977).

Parasitism frequencies on nests located in cattail in North Dakota have been recorded at 42% ( $n = 258$ ; Linz and Bolin 1982) and redwings raise an average of 0.2 - 1.1 fewer nestlings in parasitized nests. If redwings are forced into upland sites, parasitism frequencies may be even higher which would increase the effects of management strategies on redwing populations and may contribute to a population decline. An additional factor is that cowbird densities are highest in northern Great Plains (Price et al. 1995) which often leads to inflated parasitism frequencies. This may lead to even

greater negative effects on redwing populations. Thus, Brown-headed Cowbirds, which are often viewed as a harmful species because they may contribute to the population declines of some rare species, may actually prove to be beneficial in reducing Red-winged Blackbird populations and resulting sunflower damage. We plan to begin a study in the spring of 2000 to determine whether cowbird parasitism has the potential to effectively decrease redwing populations and these data will be incorporated into population models.

#### Literature Cited

- Friedmann, H., L. F. Kiff, and S. I. Rothstein. 1977. A further contribution to knowledge of the host relationships of the parasitic cowbirds. *Smithson. Contrib. Zool.*, No. 235.
- Linz, G. M., and S. B. Bolin. 1982. Incidence of Brown-headed Cowbird parasitism on Red-winged Blackbirds. *Wilson Bulletin* 94:93-95.
- May, R. M., and S. K. Robinson. 1985. Population dynamics of avian brood parasitism. *Am. Nat.* 126:475-494.
- Price, J., S. Droege, and A. Price. 1995. *The summer atlas of North American birds*. Academic Press, New York.
- Trine, C. L., W. D. Robinson, and S. K. Robinson. 1998. Consequences of Brown-headed Cowbird brood parasitism for host population dynamics. Pp. 273-295 *in* *Parasitic birds and their hosts: Studies in coevolution* (S. I. Rothstein and S. K. Robinson, eds.). Oxford Univ. Press, New York.