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LACK OF BROWN-HEADED COWBIRD NEST PARASITISM IN A SHORT GRASS REGION -- While conducting field work in Morton County, southwestern Kansas and Baca County, southeastern Colorado, during the period 27 May to 2 July, 1997, we found 36 nests of seven bird species. Nests were not searched for systematically, but were found coincidentally as data were collected along transects during research investigating the breeding bird and plant communities of black-tailed prairie dog (*Cynomys ludovicianus*) colonies and noncolonized shortgrass prairie (Winter 1999).

The number of nests for each species and the contents of those nests were: mourning dove (*Zenaida macroura*) (n = 5 nests; 1, 2, 2 eggs/nest; 2, 2 chicks/nest); common nighthawk (*Chordeiles minor*) (n = 1 nest; 2 chicks/nest); horned lark (*Eremophila alpestris*) (n = 7 nests; 3, 4 eggs/nest; 1, 3, 4, 4 chicks/nest; 1 nest with both 2 eggs and 2 chicks); lark bunting (*Calamospiza melanocorys*) (n = 15 nests; 0, 1, 4, 4, 4, 5, 5, 5, 5, 5, 6 eggs/nest; 1, 5, 5 chicks/nest); grasshopper sparrow (*Ammodramus savannarum*) (n = 3 nests; 0, 0, 5 eggs/nest); red-winged blackbird (*Agelaius phoeniceus*) (n = 2 nests; 4 eggs/nest; 1 nest with both 2 eggs and 2 chicks); and western meadowlark (*Sturnella neglecta*) (n = 3 nests; 1, 4, 5 eggs/nest). None of the nests contained brown-headed cowbird (*Molothrus ater*) eggs or young.

Study sites were pastures and black-tailed prairie dog colonies located on the Cimarron National Grassland and adjacent private land and encompassed a total area of approximately 1,269 ha. Cattle (*Bos taurus*) were present in most areas within the study landscape including many of the study sites. Cropland was adjacent to or near many of the study sites, but all study sites were contiguous with larger blocks of grassland vegetation. Vegetation of the study sites was characterized by the perennial shortgrasses *Aristida purpurea*, *Bouteloua gracilis*, and *Buchloe dactyloides*, and the perennial mid-height grass *Bouteloua curtipendula* (Winter et al. 2002). Vegetative structure in all study sites was characterized by relatively low values of height and visual obstruction (Winter et al. 2002).

Woody vegetation within the study sites was scarce to nonexistent, but when present was represented by shrubs and succulents such as *Baccharis wrightii*, *Chrysothamnus pulchellus*, *Gutierrezia sarothrae*, *Opuntia polyacantha*, and *Yucca glauca* (Winter 1999). Trees in the surrounding landscape were scarce and restricted to plantings around farmsteads. A riparian forest consisting of *Populus deltoides* and *Tamarix* spp. was present along the Cimarron River, greater than or equal to 4 km from the study sites. Habitat characteristics at nest sites were not quantified, but a qualitative assessment of lark bunting nest sites suggests that nests were preferentially placed at the base of prominent plants, especially *Cirsium ochrocentrum*, often with the previous years stem fallen down and partially covering the nest.

Shaffer et al. (2003) summarized the results of previous research on rates of brown-headed cowbird parasitism in grassland environments. Reported nest parasitism rates for the nesting species we found in our study, as reviewed by Shaffer et al. (2003), ranged from 0-60% for horned lark, 0-61% for lark bunting, 0-58% for grasshopper sparrow, and 7-46% for western meadowlark. Much of the research reviewed by Shaffer et al. (2003) indicated that nest parasitism rates in grassland environments can be influenced readily by the presence or absence of perch sites and the proximity of nests to woody edge habitats. The scarcity of woody vegetation and prominent perches in our study landscape might have been a contributing factor to the lack of nest parasitism.

However, density-dependent factors might ultimately determine brown-headed cowbird habitat selection and parasitism rates (Herkert et al 2003, Jensen and Cully, 2005). In regions of the Flint Hills of Kansas and Oklahoma where brown-headed cowbird densities were low, parasitism rates were related positively to the presence of wooded edge habitats; in regions of the Flint Hills with high brown-headed cowbird densities, parasitism rates were high in all habitats, showing no relationship to the density of hosts or the availability of perch-sites (Jensen and Cully, 2005).

Breeding Bird Survey data showed that the region encompassing our study area is characterized by relatively low densities of brown-headed cowbirds (Price et al. 1995). This is corroborated by the results of Winter et al. (2003). When avian relative abundance data were collected on transects within our study sites in 1996 (21 km of transects sampled) and 1997 (34.6 km of transects sampled) during May and June, only two brown-headed cowbirds were recorded out of a total of 1,362 individuals detected for all species (Winter et al. 2003).

Low densities of the brown-headed cowbird in our study region, which is characterized by a semi-arid climate, might be a consequence of host populations that exhibit extreme temporal and spatial variability in response to the climatic variability of these regions (Wiens 1974, Cody 1985, Winter et al. 2003). As host populations vary greatly in time and space over large areas on the western Great Plains (Wiens 1974, Cody 1985), perhaps the brown-headed cowbird is simply unable to effectively respond to host population changes. -- *Stephen L. Winter¹ and Jack F. Cully, Jr. U.S. Fish & Wildlife Service, San Luis National Wildlife Refuge Complex, Los Banos, CA 93635 (SLW). USGS-BRD, Kansas Cooperative Fish and Wildlife Research Unit, Kansas State University, Manhattan, KS 66506 (JFC).* ¹E-mail address: Stephen_Winter@fws.gov

LITERATURE CITED

- Cody, M. L. 1985. Habitat selection in grassland and open-country birds. Pp. 191-226 in *Habitat selection in birds* (M. L. Cody, editor). Academic Press, Inc., Orlando, Florida.
- Herkert, J. R., D. L. Reinking, D. A. Wiedenfeld, M. Winter, J. L. Zimmerman, W. E. Jensen, E. J. Finck, R. R. Koford, D. H. Wolfe, S. K. Sherrod, M. A. Jenkins, J. Faaborg, and S. K. Robinson. 2003. Effects of prairie fragmentation on the nest success of breeding birds in the midcontinental United States. *Conservation Biology* 17:587-594.
- Jensen, W. E., and J. F. Cully, Jr. 2005. Density-dependent habitat selection by brown-headed cowbirds (*Molothrus ater*) in tallgrass prairie. *Oecologia* 142:136-139.
- Price, J., S. Droege, and A. Price. 1995. *The summer atlas of North American birds*. Academic Press, San Diego, California.
- Shaffer, J. A., C. M. Goldade, M. F. Dinkins, D. H. Johnson, L. D. Igl, and B. R. Euliss. 2003. Brown-headed cowbirds in grasslands: their habitats, hosts, and response to management. *Prairie Naturalist* 35:145-186.
- Wiens, J. A. 1974. Climatic instability and the "ecological saturation" of bird communities in North American grasslands. *Condor* 76:385-400.
- Winter, S. L. 1999. Breeding bird and plant communities of black-tailed prairie dog colonies and non-colonized areas in southwest Kansas and southeast Colorado. M.S. Thesis. Kansas State University, Manhattan.
- Winter, S.L, J. F. Cully, Jr., and J. S. Pontius. 2002. Vegetation of prairie dog colonies and non-colonized shortgrass prairie. *Journal of Range Management* 55:502-508.
- Winter, S.L, J. F. Cully, Jr., and J. S. Pontius. 2003. Avian communities of prairie dog colonies and non-colonized areas in shortgrass prairie. *Transactions of the Kansas Academy of Science* 106:129-138.

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