

VICTIMS OF THE BROWN-HEADED COWBIRD IN WHITMAN COUNTY, WASHINGTON

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The Brown-headed Cowbird (*Molothrus ater artemisiae*) is a fairly common summer resident in suitable habitats throughout eastern Washington, but it seems to attain relatively high population densities in the Palouse hills of Whitman County, as Snodgrass (1904) has previously noted. In this area the Cowbird is a regular member of the summer avifauna of deciduous flood-plain forest, willow-hawthorn riparian thickets beset with taller trees, and the open ponderosa pine woodland. However, very little is known of the breeding economy of this interesting brood parasite despite its local relative abundance, and the literature provides only a rudimentary list of its known victims in this area. Various observers (*in* Jewett, *et al.*, 1953:593-594) have reported Cowbird eggs in the nests of the Yellow Warbler (*Dendroica petechia*), Yellow-breasted Chat (*Icteria virens*), Yellow-throat (*Geothlypis trichas*), Tolmie Warbler (*Oporornis tolmiei*), Warbling Vireo (*Vireo gilvus*), Lazuli Bunting (*Passerina amoena*), and Chipping Sparrow (*Spizella passerina*). Bendire (1895:435) recorded the Fox Sparrow (*Passerella iliaca*) as a host species at Palouse Falls, Whitman County, and Bowles (*in* Friedmann, 1931:31) also reports parasitized nests of the "Slate-colored Fox Sparrow" (*P. i. schistacea*) found near Spokane.

The observations of the Cowbird and its victims described below were made principally while I was engaged in a general survey of breeding birds during 1952 in a tract of approximately two hundred square miles in area extending northwestward from Pullman, Whitman County. A few additional observations, particularly with regard to the Traill Flycatcher (*Empidonax traillii*) as a potential Cowbird victim, were made in this same study tract during 1953. Although these data add only five species to the total of known Cowbird victims in Washington, they define to some extent the degree of parasitism and describe certain host-parasite relationships. The Cowbird hosts discovered in the study tract, and the extent to which they were parasitized, are summarized in table 1.

A total of 349 nests of 44 passerine species was examined in the course of the field work. Seventeen (4.9 per cent) of these nests contained one or more Cowbird eggs. The incidence of parasitism of the ten known host species was found to be 13.2 per cent. In addition, a pair of Warbling Vireos (*Vireo gilvus*) was observed feeding a newly fledged Cowbird on July 8, 1952, thus increasing the total of known hosts in the study tract to 11 species. This list, it should be emphasized, is not proposed as a complete one. My field work has yielded nesting records of only 76 per cent of the approximately fifty-eight passerine species considered to be the normal passerine complement of the breeding avifauna of the study tract. Such potential Cowbird victims as the Spotted Towhee, Vesper Sparrow, Redstart, and others are in need of further investigation.

Migrant Cowbirds were first observed in the Palouse hills of Whitman County on May 13 in 1952, and, as might be anticipated because of the much-retarded season, on May 23 in 1953. These birds, during both years, were engaged in vigorous courtship when first observed. Fresh-egg dates for 18 Cowbird eggs in 1952 extended from May 14 ± 2 days to July 4 ± 2 days. Two eggs observed in 1953 were fresh or only slightly incubated on May 27 and June 25. Bowles (1921:10) reports June 5 as the mean fresh-egg date for the Cowbird in Washington. The relationship of the Cowbird fresh-egg season to that of its hosts in 1952 is shown in figure 1. The earliest and latest dates of fresh,

complete clutches, which the arrowheads indicate in the case of the host species, were derived by a process of extrapolation from the known or closely estimated age of the nest contents at some stage of their development, and upon a knowledge of the incubation and nesting periods and normal variations thereof. In the case of the Cowbird the incubation period is taken as 11-13 days (Norris, 1947:95), and the nestling period as 8-10 days (Norris, 1947:96; Friedmann, 1929:265). The determination of the age of nestling Cowbirds was based on descriptions of growth given by Norris (1947:95ff.) and Friedmann (1929:260ff.).

Table 1

Victims of the Brown-headed Cowbird and the Incidence of Parasitism, 1952-1953, in Whitman County, Washington

Host species	Total nests	Parasitized nests	Nests with	
			1 Cowbird egg	2 Cowbird eggs
<i>Empidonax traillii brewsteri</i>	44	2 (4.5%)	2
<i>Hylocichla fuscescens salicicola</i>	6	1 (16.7%)	1
<i>Oporornis tolmiei tolmiei</i>	5	1 (20.0%)	1
<i>Geothlypis trichas campicola</i>	1	1	1
<i>Dendroica petechia morcomi</i>	7	1 (14.3%)	1
<i>Agelaius phoeniceus nevadensis</i>	24	3 (12.5%)	3
<i>Euphagus cyanocephalus</i>	15	1 (6.7%)	1
<i>Passerina amoena</i>	3	2 (66.7%)	1	1
<i>Spizella passerina arizonae</i>	14	2 (14.3%)	2
<i>Melospiza melodia ssp.</i>	10	3 (33.3%)	2	1
	129	17 (13.2%)	14	6

Although it is tempting, on the basis of relative fresh-egg spans and habitat distributions, to advance certain generalizations concerning host-Cowbird relationships, I do not feel that the extent of the present data justifies this action. Some limited remarks concerning specific relationships, however, are indicated.

Empidonax traillii. Traill Flycatcher. The habitat distribution of this species and that of the Cowbird are, for the major part, co-extensive. Egg deposition by Traill Flycatchers, however, did not begin in 1952 or 1953 until considerably after the height of the Cowbird's egg-laying season had passed. This may in part account for the low incidence of parasitism, although, as Friedmann (1929:209) notes, western races of *E. traillii* are apparently not commonly victimized by the Cowbird except in Colorado and southern California. Cowbird parasitism of *E. traillii* in the East has been reported, in different areas, as 8.1 per cent (Berger, 1951:28), 21 per cent (Hicks, 1934:386; Berger and Parmelee, 1952:37), and 56.2 per cent (9 out of 16 nests; Trautman, 1940:269). The incidence of parasitism during both years of the present study was 4.5 per cent (1 out of 22 nests).

Dendroica petechia. Yellow Warbler. This is the most common warbler of the Palouse hills, but unlike its eastern races, *morcomi* apparently suffers only moderate parasitism. Of the approximately forty fledged families of this species which I recorded during my field work, only one was seen to contain a juvenal Cowbird (July 5, 1953). Eastern races, however, are among the most common Cowbird hosts, and parasitism frequencies of 42 per cent and 40.9 per cent have been reported by Hicks (1934:386) and Berger (1951:28), respectively. There is no apparent ecological reason for the comparatively low incidence (14.3 per cent) observed in the present study area, since both the breeding cycles and habitat distributions of the two species overlap to a high degree.

It should be realized, however, that the present study tract lies near the western periphery of the range of *Molothrus ater* and that the population density of the species here is doubtless considerably less than that attained at points near its center of abundance in the Midwest. Nor should the fact be disregarded that actual interracial differences in host-parasite relationship may occur. The literature references cited above relate to *Molothrus ater ater*.

Oporornis tolmiei. Tolmie Warbler. Friedmann (1929:248; 1934:104) reports three records of the Tolmie Warbler as a Cowbird victim in California, Colorado, and

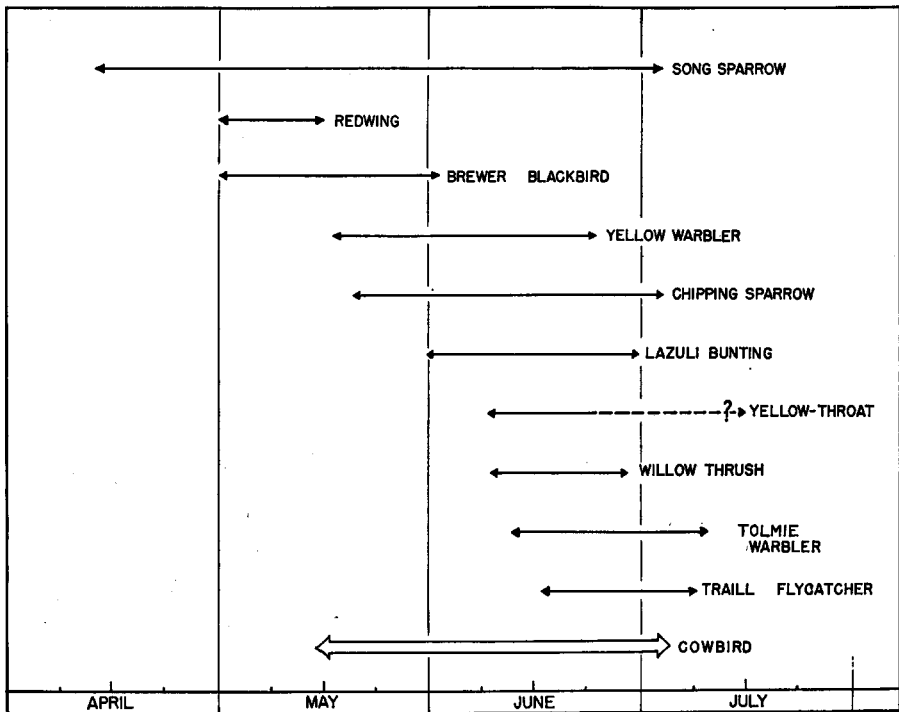


Fig. 1. Fresh-egg seasons of the Cowbird and its hosts in Whitman County, Washington, in 1952.

British Columbia. Bent (1953:539) gives four records from unspecified sources. Sloan-aker (*in Jewett, et al.*, 1953:594) reports this species as a Cowbird victim near Spokane, Washington. In addition to the parasitized nest noted in table 1, I observed two nearly full-grown juvenal Cowbirds being fed by a pair of Tolmie Warblers on July 13, 1952. In view of the overlap of breeding cycles and of habitat distributions of these two species in the study tract in 1952, it is probable that the incidence of parasitism indicated in table 1 is approximately correct.

Agelaius phoeniceus. Redwing. The fresh-egg season of this species and that of the Cowbird overlapped by only three or four days in 1952. As would be predicted, only the very latest Redwing nests were parasitized. In other years the fresh-egg span of the Redwing is not so restricted, and the degree of overlap with that of the Cowbird is considerably greater. In 1953, for instance, egg deposition began in one Redwing nesting group at the end of the second week of May, and in another group during the fourth week of May. The egg-laying period of the Cowbird during this year extended from

about May 27 to at least June 25; hence the degree of overlap in the breeding cycles of these two species was extensive. Despite this condition, the amount of observed parasitism during the two years was equal (12.5 per cent). It should be pointed out, however, that my observations at Redwing nests during 1953, unlike those of 1952, were confined to an early part of the season, prior to the height of Cowbird breeding activity. It is possible, and probable, therefore, that the actual incidence of parasitism during 1953 was greater than that observed.

Euphagus cyanocephalus. Brewer Blackbird. In view of the comments of various authors (in Friedmann, 1929:215) on the rather heavy parasitism suffered by this species in the West, the low level of parasitism (6.7 per cent) reported here may be regarded as unusual, since the habitats and, ostensibly, the fresh-egg seasons of the two species overlap. However, in re-examining my nesting records of the Brewer Blackbirds, I find that 75 per cent of the clutches were complete and well incubated by May 12, 1952, leaving only late nesters and re-nesters as potential Cowbird victims during that year. The single parasitized nest was found, with fresh eggs, on May 31.

Passerina amoena. Lazuli Bunting. The nesting data in table 1 indicate that this species is very heavily parasitized by the Cowbird. In view of the fact that only three nests were found, it might be suspected that, on the basis of chance, an atypically large proportion of parasitized nests was observed. This suspicion would be fortified by Friedmann's (1929:231) remark that the Lazuli Bunting is an uncommon victim. However, juvenal Cowbirds were observed on four occasions during 1952 in fledged families of Lazuli Buntings, making it apparent that this relationship was decidedly not an uncommon one.

Spizella passerina. Chipping Sparrow. This bird, considering its abundance in the Palouse hills, suffers comparatively little from the habits of the Cowbird, even though the breeding cycles, including both of the annual broods of the Chipping Sparrow, are coincident. Parasitism frequencies of about 15 per cent and 11.1 per cent have been found for *S. p. passerina* in New York and Pennsylvania by Friedmann (1929:221) and Norris (1947:90), respectively. Although these data compare rather closely with the observed incidence in the Palouse hills (14.3 per cent), Berger (1951:28) and Hicks (1934:386) report parasitism frequencies of 62.5 per cent and 53 per cent in Michigan and Ohio. On the study tract the habitat distributions of the Cowbird and the Chipping Sparrow overlap only slightly. Cowbird populations attain their greatest density in stream valleys providing tall trees for perching, and the species is uncommon or absent in the comparatively treeless uplands, occurring in only relatively small numbers in timber tracts and along the edges of ponderosa pine woodlands. Occasionally Cowbirds utilize telephone poles as perches in the uplands. The Chipping Sparrow, on the other hand, is pre-eminently an upland bird, reaching its greatest abundance in nine-bark (*Physocarpus malvaceus*) thickets and the understory of the open ponderosa pine woods, and extending in lesser numbers into upland hawthorn (*Crataegus douglasii*) and rose (*Rosa* sp.) thickets. The major habitats of the parasite and its host overlap, then, only to a comparatively minor extent, and it is pertinent to note that the two parasitized nests of the Chipping Sparrow were both found where open brushland abutted on stands of box elder (*Acer negundo*) or black cottonwood (*Populus trichocarpa*).

In conclusion, the reader will note that this paper has emphasized the temporal and spatial factors which, together with population density, contribute to the availability of host species. This does not imply a depreciation of the other ecological, physiological, and behavioral factors whose interaction determines the suitability of a potential host

species as a foster parent of the Cowbird, but results simply from the restricted scope of the present paper and from our essentially fragmentary knowledge of the breeding ecology of the Cowbird.

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