

October 30, 1971

Radabaugh--1 of 3

I have an over-all sample of 223 nests of the Kirtland's Warbler.

Of these, 15 (6.7 percent) were abandoned during construction. In addition, four others (in 1969) were found under construction and not revisited.

Thus we have a sample of 205 nests, receiving eggs, which we can use to discuss parasitism.

Over-all, 83 (40.4 percent) of these were parasitized by the Brown-headed Cowbird. This figure is not too meaningful, however, because it includes many nests from an area with reduced cowbird activity--as I will soon show.

My main purpose here today is to fulfill a request for Kirtland's Warbler nesting data. I would now like to compare nests found on the control area with those found outside that area--i.e., compare cowbird pressure, at Kirtland's nests, on the control area with the pressure observed from areas of normal cowbird activity.

Of the 205 nests: 117 were found on the control area/period; and 88 were found off the control area/period.

Of the 117 nests on the control area, 25 (21.3 percent) were parasitized. The break-down of this, by years:

<u>Year</u>	<u>Number of nests</u>	<u>Number of nests parasitized</u>	<u>Percent of nests parasitized</u>
1965	21	4	19.0
1966	21	1	4.0
1967	27	7	25.9
1968	25	9	36.0
1970	9	1	12.5
1971	14	3	21.4
	<u>117</u>	<u>25</u>	<u>21.3 average</u>

Matfield's monograph (1960:152) shows percentages of parasitism for the years 1944-1957. The range is from 18 percent (1954) to 88 percent (1956). The tabulation shows considerable fluctuation from year to year. At no point do we see a period of six to seven years with low parasitism--such as have been demonstrated under the cowbird control program carried out by Nicholas Cuthbert in cooperation with the U.S. Forest Service.

Of the 88 nests found outside the cowbird control sphere, 58 (65.9 percent) were parasitized. You will note that this percentage of parasitism is higher than Mayfield's figure of 54.7--with a sample of 137 nests. The reason for this may have something to do with the age of the habitat. Evidence from west of Mack Lake suggests that the older habitats contain a complex of factors favoring higher parasitism pressure.

Another measure of the degree of parasitism can be obtained by comparing the actual number of cowbird eggs deposited in Kirtland's nests on and off the control area. These data are summarized below.

Data from 25 parasitized nests on control area.

	--Number of cowbird eggs--					Totals
	1	2	3	4	5	6
Number of----- warbler nests containing:	12	9	3	0	0	1 N=25
Totals	12	18	9	0	0	6 =45

Here, 48 percent of the nests received a single cowbird egg. There was an average of 1.8 cowbird egg per nest.

Data from 58 parasitized nests off control area.

	--Number of cowbird eggs--					Totals
	1	2	3	4	5	6
Number of ----- warbler nests containing:	16	28	9	3	1	1 N=58
Totals	16	56	27	12	5	6 =122

Here, 27.7 percent of the nests received a single cowbird egg. There was an average of 2.1 cowbird eggs per nest.

(I have two nests that contained six cowbird eggs each--and no warbler eggs. The largest clutch observed was one of nine eggs: five cowbird and four warbler.)

Perhaps a more ready comparison of the two groups of data can be obtained by the use of a single figure from each--the pressure index (P.I.). The pressure index, as worked out by Daniel McGeen, is the mean of the incidence (percent of total nests parasitized) and the intensity (percent of multiple cowbird eggs relative to the total cowbird eggs laid). The higher the index, of course, the higher the extent of parasitism.

The data from the 117 nests on the control area yield a P.I. of 47.3; while the data from the 88 nests outside the control area reveal a P.I. of 76.4.

Cowbird success in nests found on the control area.

We observed only four cowbird fledglings from these warbler nests. These came from (roughly) an original 31 eggs in 24 nests (the other six eggs came from a single nest interfered with by man). This yields only a 12.9 percent figure of success from eggs laid to fledging.

Cowbird success in nests off the control area.

I have records of 30 cowbird fledglings. These came from (again, roughly) an original 97 eggs in 44 nests (the other 25 eggs were in 14 nests not considered here-- because 10 were interfered with by man and four had an unknown outcome). Thus we see that 30.8 percent of the eggs laid resulted in fledged cowbirds.

These cowbird success figures are rough and are not intended to represent definitive evidence as to how well the cowbird does with this host. There is a suggestion, however, that their success rate is lowered as their local population density is decreased (as it was on the control area).

The most significant single finding of the control program was the greatly increased number of warbler nests untouched by the cowbird. By comparing parasitized and non-parasitized nests, Mayfield predicted that the warbler fledging production could be increased by 60 percent in the absence of cowbird activity. If we take his production per pair per season of 1.4, a 60 percent increase would be 2.2. On the control area the production per pair figures ran as follows:

<u>Year</u>	<u>Warbler fledglings per pair of adults</u>	<u>Percent of nests parasitized</u>
1965	1.63	19.0
1966	3.67	4.0
1967	2.31	25.9
1968	<del>4.83</del>	36.0
1970	----	12.5
1971	----	21.4

(My data for the last few years are inadequate ~~EMD~~ for this table. I indicate the parasitism figures for 1970 and 1971 to show that the parasitism rate is not simply climbing back to "normal" after the low of 1966.)

1. Cowbird control at all nesting areas.
2. No banding or handling whatever.
3. No access to nesting areas (except by censusers).
4. Census every year--or at least biennially.
5. Grant for work on Bahama wintering grounds.