

SURVIVAL RATES IN RED-WINGED BLACKBIRDS

By Don P. Fankhauser

Information on survival of Red-winged Blackbirds (*Agelaius phoeniceus*) was gained through a study of records of banded birds that were recaptured alive, and that were recovered dead (shot). All the banded Red-wings recaptured alive were banded at the Austin Ornithological Research Station, North Eastham, Cape Cod, Massachusetts. Records of Red-wings recovered by shooting were combined for analysis from many banding localities because of the few records from any one banding station.

The author is particularly indebted to the personnel of the Austin Ornithological Research Station for their outstanding work in banding and recapturing banded birds and for making these records available to the public. Appreciation is given to Mr. Robert Heath, Division Biometrician, for his advice in the preparation of this paper.

PROCEDURES

For the recapture data, only records of Red-wings retaken alive at the original place of banding (returns) were used because the vast majority (over 95 percent) of the records were of this type. Records from the Austin Research Station were picked because more Red-wings were banded there over a longer period of time than at any other banding location, and because of the fairly constant yearly effort made to recapture these banded blackbirds. All records of Red-wings banded at the station during the years 1930 through 1938 and recaptured at the station through 1946 were taken from the files of the Bird Banding Laboratory at the Migratory Bird Populations Station. Thus all birds were banded

TABLE 1. FINAL RETURNS OF RED-WINGED BLACKBIRDS BANDED 1930 THROUGH 1938

Year banded	No. years from first January after banding to last return										
	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-15	Total
1930	3	2									5
1931	11	8	8	5	2	3					37
1932	33	14	3	7	1	2	2				62
1933	24	6	1	2	1				1		35
1934	22	6	2			1					31
1935	13	2	1	3	2	1	1				23
1936	13	9	8	2	3	1					36
1937	24	11	3	5			1		1		45
1938	23	7	10	5	2	3		1			51
Total	166	65	36	29	11	11	4	1	2	0	325

at least 15 years before the records were taken for analysis. Records of Red-wings were tabulated by year of banding and number of years from the first January after banding to the *last* return (Table 1).

TABLE 2. SURVIVAL RATES CALCULATED FROM BANDED RED-WINGED BLACKBIRDS RECOVERED BY SHOOTING

No. of years from first Jan. after banding		No. known to have survived	Survival rates	Weighted annual survival rate	
0	Years	87			
1	"	43	$\frac{43}{87} = 49.4\%$	51.8%	51.1%
2	"	26	$\frac{26}{43} = 60.5\%$		
3	"	12	$\frac{12}{26} = 46.2\%$	37.5%	51.1%
4	"	6	$\frac{6}{12} = 50.0\%$		
5	"	2	$\frac{2}{6} = 33.4\%$	37.5%	51.1%
6 or more	"	1	$\frac{1}{2} = 50.0\%$		

For the recovery data, only records of shot birds were included because the reported cause of death of the vast majority (over 95 percent) was shooting. The records were of birds banded prior to 1945 and recovered through 1955; thus they were banded at least 10 years before the records were removed from the files of the Bird Banding Laboratory. Recoveries were tabulated by the number of years from the first January after banding to death (Table 2).

For both types of data (returns, and recoveries by shooting), only records of birds known to have lived to the first January 1 of life were included, because previous studies by Lack (1946) and Farner (1949) indicated that adult mortality rates in passerines are reached by the first January 1 of life. Thus, limiting the analysis to such records should ". . . eliminate the possibility of biased samples as well as the period of increased and unstable juvenile mortality rate following the departure from the nest" (Farner 1949).

TABLE 3. SURVIVAL RATES CALCULATED FROM FINAL RETURNS OF BANDED RED-WINGED BLACKBIRDS

No. of Years from first Jan. after banding		No. known to have survived	Survival rates	Weighted annual survival rate	
0	years	325			
1	"	159	$\frac{159}{325} = 48.9\%$		
2	"	94	$\frac{94}{159} = 59.1\%$		
3	"	58	$\frac{58}{94} = 61.7\%$	53.4%	
4	"	29	$\frac{29}{58} = 50.0\%$		
5	"	18	$\frac{18}{29} = 62.0\%$	52.6%	
6	"	7	$\frac{7}{18} = 38.9\%$		
7	"	3	$\frac{3}{7} = 42.9\%$		
8 or more	"	2	$\frac{2}{3} = 66.7\%$		

RESULTS AND DISCUSSION

An annual adult survival rate for Red-winged Blackbirds of roughly 50 percent was indicated from banding data (Tables 1 and 3). This rate was obtained from the analysis of two separate sets of banding data. One set was composed of 325 records of birds banded and retrapped at the Austin Ornithological Research Station, Cape Cod, Massachusetts. The other set was composed of 87 banded birds recovered by shooting. The shot birds had been banded in many different areas within the blackbird range. The calculated weighted survival rates were 53.4 and 51.1 percent respectively. Weaknesses in using either type of data for such calculations have been shown (Hickey 1952) but the agreement between these two independent estimates would seem to add to their validity.

Packard (1937) also analyzed recapture data from Red-winged Blackbirds banded at the Austin Ornithological Research Station

to gain information on survival. However, he did this only 6 years after the initial banding; therefore his records of recaptures must have been within a period from 1 to 6 years of banding. Also, he did not limit the records to those of birds that lived to at least the first January 1 of life. Probably for these reasons, his survival figures were much lower than the ones calculated in this paper. He compiled averages from 266 returns that showed ". . . 16 percent of the total number of Red-wings banded survived 1 year, 7 percent 2 years, 4 percent 3 years, 2 percent 4 years, and 0.3 percent 5 years after banding."

Farner (1945) presents data on survival rates for six passerine species, and the rates ranged from 33 percent per annum for the English Robin (*Erithacus rubecula melophilus*) to 60 percent per annum for the Song Sparrow (*Melospiza melodia euphonia*). The American Robin (*Turdus migratorius*), European Blackbird (*Turdus merula merula*), Song Thrush (*Turdus ericetorum ericetorum*), and Starling (*Sturnus vulgaris*) all fell within the range of 47 to 52 percent per annum.

From the return data, records were found of two Red-wings alive 9 years after being banded. One was a male and the other a female; the age of neither was given at the time of banding. From the shot data, a record was found of one male shot 14 years after being banded; at the time of banding it was aged as an immature.

REFERENCES

- FARNER, DONALD S. 1945. Age Groups and Longevity in the American Robin. *Wilson Bull.*, **57**: 56-74.
- FARNER, DONALD S. 1949. Age Groups and Longevity in the American Robin: Comments, Further Discussion, and Certain Revisions. *Wilson Bull.*, **61**: 68-81.
- HICKEY, JOSEPH J. 1952. Survival Studies of Banded Birds. Special Scientific Report: Wildlife No. 15. 177 pp. Bureau of Sport Fisheries and Wildlife.
- LACK, DAVID. 1946. Do Juvenile Birds Survive Less Well than Adults? *British Birds*, **39**: 258-264.
- PACKARD, F. M. 1937. A Further Analysis of some Banding Records of the Eastern Red-wing. *Bird-Banding*, **8**: 139-144.

Bureau of Sport Fisheries and Wildlife
Patuxent Wildlife Research Center, Laurel, Maryland.

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