

## A HAWK CENSUS FROM ARIZONA TO MASSACHUSETTS

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On June 18, 1933, our family left Ohio for a motor trip to Chicago, Oklahoma, New Mexico, and Arizona, returning to Columbus July 24. During twenty-one of the thirty-five nights we camped out in the open, in woods, pastures, or deserts. On August 7 and 8 we drove from Columbus to Pelham, Mass. A record was kept of all hawks, owls, and vultures seen, and also all owls heard while camping. The results are given in Table I.

TABLE I  
CENSUS OF RAPTORES THROUGH TWELVE STATES

STATE	Nights Camping	Mileage	NUMBERS SEEN				NUMBER OF MILES TO A BIRD			
			Hawks	Owls	Vultures	Total	Hawks	Owls	Vultures	Total
Massachusetts .....	0	71	0	0	0	0	0	0	0	0
New York .....	0	391	3	0	1	4	130	0	391	98
Pennsylvania .....	0	47	0	0	0	0	0	0	0	0
Ohio .....	0	410	1	0	4	5	410	0	102	82
Indiana .....	1	310	0	0	1	1	0	0	310	310
Illinois .....	1	656	1	1	2	4	656	656	328	164
Missouri .....	1	626	0	0	1	1	0	0	626	626
Kansas .....	0	26	0	0	0	0	0	0	0	0
Oklahoma .....	7	1480	7	6	20	33	211	247	74	39
Texas .....	2	557	7	7	16	30	79	79	38	19
New Mexico .....	6	1606	28	12	23	63	57	134	69	25
Arizona .....	3	678	6	6	3	15	113	113	226	45
Total .....	21	6858	53	32	71	156	129	214	96	44

On the 6858 miles we recorded 53 hawks, 32 owls, and 71 Turkey Vultures. This gives one owl every 214 miles, one vulture every 96 miles, and one hawk every 129 miles.

The states east of the 94th meridian have a much worse showing than those west of it, for in these seven states only 5 hawks, one owl and 15 vultures were noted on our drives of 2511 miles; i. e., one vulture to every 168 miles and one hawk to every 502 miles!

In the western states—from Oklahoma to Arizona—conditions were not so dismal. Here on drives of 4347 miles we saw 48 hawks, 31 owls, and 56 vultures, or one owl to every 140 miles, one vulture to every 77 miles, and one hawk to every 90 miles. Yet New Mexico was the only one of the twelve states where hawks did not seem scarce.

The weather was oppressively hot during the drive west until New Mexico was reached, the thermometer reaching 107° F. in the shade in western Oklahoma on June 30. The heat made most birds inactive

and perhaps reduced the numbers of raptors to be seen. Yet on our thousand mile return journey from Oklahoma to Ohio, July 22 to 24, when the weather was not uncomfortably hot, exactly one hawk and one vulture were recorded.

As to the kinds of hawks seen, there was one Marsh Hawk (*Circus hudsonius*), 2 Prairie Falcons (*Falco mexicanus*), 16 Sparrow Hawks (*Falco sparverius*), while the rest were *Buteos*. No Cooper's or Sharpshinned Hawks (*Accipiter cooperi*, *A. velox*) were noted, although undoubtedly present in the wooded regions.

Owls were heard on only seven of the twenty-one nights on which we camped out, and twice these were Burrowing Owls (*Speotyto cunicularia hypugaea*). There were 25 of the latter on our list, 3 Screech Owls (*Otus asio*), one Horned Owl (*Bubo virginianus*), and 5 of whose identity we were not sure.

Oklahoma is the only state for which I have earlier records for comparison. From 1920 to 1923 we took 1689 miles of "Roadside Censuses" (Nice, 1921, 1922) in the nesting season, in which all birds seen from the motor car were recorded (but not those met in camp). These trips covered all parts of the state, something which was not true in 1933. The earlier censuses showed 16 hawks, 31 owls, and 105 Turkey and Black Vultures (*Cathartes aura septentrionalis*, *Corygyps atratus atratus*), i. e., one hawk to every 106 miles, one owl to every 55 miles, and one vulture to every 16 miles. If the trips were strictly comparable, it would appear that hawks have decreased by nearly one-half, and owls and vultures have shrunk to one-fifth their numbers ten years ago!

I do not believe the facts are as bad as this; if our former trips were to be repeated, it is to be hoped that the reduction in numbers would not prove as great as in these sets of figures. The owls in the earlier censuses were all Burrowing Owls, but in 1933 there were only two of this species. These birds are very dependent on the prairie dog as host in Oklahoma, and as this delightful little animal is exterminated, the owls disappear. The striking falling off in vultures may perhaps be partly due to lack of sufficient food.

In 1926 a hawk killing contest was staged in Oklahoma in which single men shot as many as 277 and 321 hawks. More than 4000 hawks must have been slaughtered (Nice, 1931, p. 68). It is not surprising that only a few of these fine birds are left, especially as their persecution never ceases.

The numbers of hawks in England and on the Gold Coast are compared by Winterbottom ('33a) in a discussion of censuses taken

from trains and motor-cars, the mileage in each country amounting to approximately 2700 miles. In another paper ('33b) he reports on a census of 352 miles in southern Africa. In both sections of Africa there was one hawk to every 82 birds, in England one to every 1060\*. (In Oklahoma in the 1920 to 1923 censuses there was one hawk to every 626 birds). "That our English avifauna was impoverished has long been known", writes this author (1933a, p. 90), "but that hawks should be reduced to one-tenth of their numbers under more natural, if climatically different conditions, is somewhat surprising."

We are accustomed to pointing to England as a horrible example of a country where most of the raptorial birds have been exterminated. How do we compare with her? On the Gold Coast Winterbottom found one hawk to every 11 miles, in southern Africa one to every 15 miles, in England one to every 81 miles. We found one to every 129 miles.

The average for the three states west of the 100th meridian—Arizona, New Mexico, and Texas—is a little better than England,—one hawk to every 70 miles; if we include Oklahoma we are a little worse—one hawk in every 90 miles. *But the average of the states from Missouri to Massachusetts is six times worse than in England.*

Of course a main highway is not the best place in the world for seeing hawks, yet if the birds were not pitifully rare, one should have the pleasure of seeing several in a day's trip.

Our hawks are in a perilous position, and those who love nature must come to their rescue.

#### REFERENCES

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Winterbottom, J. M. 1933a. Bird Population Studies: a preliminary Analysis of the Gold Coast Avifauna. Jour. Animal Ecology, 2, 82-97.  
— 1933b. Bird Population Studies. A. Train Counts between Capetown and Mazabuka, Northern Rhodesia. The Ostrich, 4, 63-66.

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\*Mr. Winterbottom in a letter informs me that his figure of 36 hawks and owls in England included 33 of the former, 3 of the latter.