ROADS AND BIRDS

WITH TWO ILLUSTRATIONS

By JOHN McB. ROBERTSON

Any one who travels by automobile over our highways cannot fail to notice occasionally the remains of birds and mammals that have met their death by one means or another. As was shown in a recent article by Linsdale (Condor, XXXI, 1929, pp. 143-145), the whole story has not been told when we enumerate such casualties observed over certain time and space and proceed to deplore the great destruction of wild life. This roadside destruction of birds and mammals, and if we are sufficiently observant we can enlarge the case to include reptiles, amphibians and insects, is only one phase of the reaction of Nature to man's activities. Ever since man became a factor in the natural history of the earth he has been wielding an ever increasing power to change the other factors that make up his natural environment. Through willful destruction for food or pleasure and, more potently, through the destruction of old environments to make way for new ones more suited to his own needs, man has been an influence for good or evil to nearly all of his fellow creatures. And it is as only one phase of this ever changing scene that we must consider the influence of roadways upon birds and mammals. If we consider man and his activities as a phenomenon of Nature, a vast array of interesting problems, past, present and future, opens up before us.

I have observed this roadside mortality in an area five miles east and west by two and one-half north and south, lying around the towns of Buena Park and Cypress, in northwestern Orange County, California. This area lies entirely on the coastal plain and in a comparatively flat country without any marked physiographic features. The drainage is to the west and southwest into Coyote Creek. Prior to the agricultural settlement of this area, about forty-five years ago, it was used as cattle and sheep range, and the natural cover for birds and other animals was probably limited to a scattering of willows along Coyote Creek and a few elders and cactus patches on the so-called "sand ridges" that mark the last flood courses of the Santa Ana River over this portion of its debris cone. I have no knowledge of what the bird life was in those pre-cultivation days, but some of the changes that have come about during my lifetime are worthy of note.

With the destruction of the cactus from the "sand ridges" the Cactus Wrens and the Road-runners have gone from this area as residents although they sometimes stray into it from more favored areas where they still persist. On the other hand the Valley Quail, which probably used the same cover, have adapted themselves to the orange groves and other cover planted by man, and are found over a greater part of this area than formerly. With the development of farming came the artesian wells and irrigation. The old irrigation systems consisted of open reservoirs which grew up with tules and other water plants that furnished food and cover for marsh-loving birds. With the lowering of the underground water level, so that pumping became necessary, water was too costly to waste in open reservoirs, so now they are gone; and underground pipe lines do not form haunts for Coots and Red-winged Blackbirds. The Red-wings have taken to nesting in the orange groves in some cases, but the Coots are found along Coyote Creek only. I have recorded the coming of Screech Owls as residents of this area (Condor, XXIII, 1921, p. 138; XXVII, 1925, p. 38; XXIX, 1927, p. 203), and at the present time, the Bush-tit, the California Jay, and the Crow are becoming established as breeding birds. Another

conspicuous change of the last ten years is the coming of the California and Ring-billed gulls to feed behind the plow during the winter season.

Thus we may enumerate some of the changes in bird life brought about through man's activities; now let us consider the influence of our modern highways and our ever increasing automobile traffic, and it will not be long before we will have to consider the air traffic also. The roadways in this area are of two kinds, the paved roads and the oiled dirt roads. Roadside shrubbery is almost entirely lacking, shade trees where present are spaced far apart and even the weeds that grow up each year are usually cut before they are of much benefit to the birds; so the immediate roadsides are not here to be considered as equivalent to streamsides, as may be the case in other regions. Some weed-grown fences exist, well back from the road, and several eucalyptus groves furnish cover for some birds, while orange groves and various field crops give cover and food in the areas adjacent to the roads.

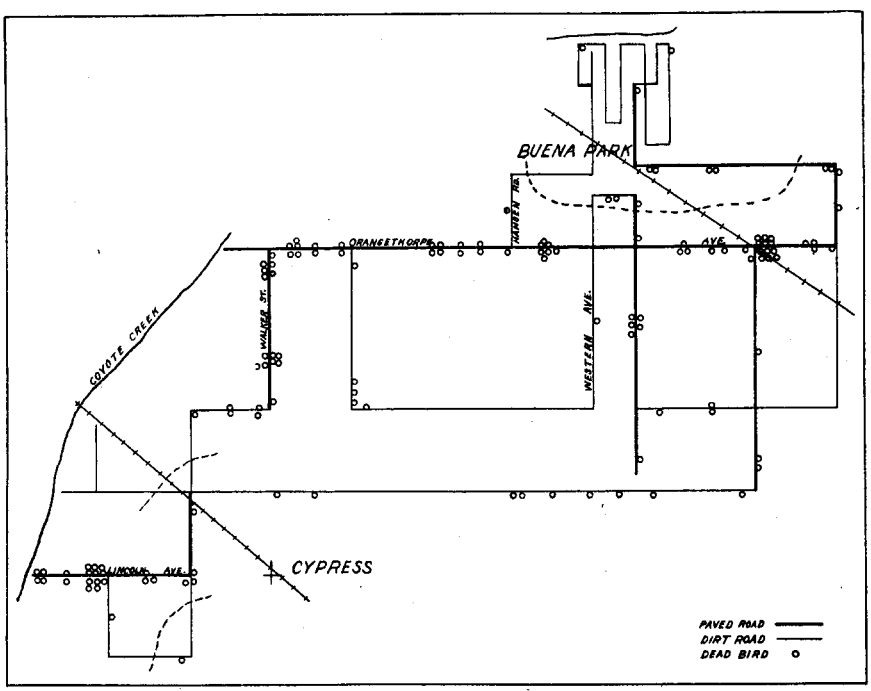

Fig. 48. DEAD BIRDS FOUND ON RURAL MAIL ROUTE NO. 1, BUENA PARK, CALIFORNIA, NOVEMBER 1, 1927, TO OCTOBER 31, 1928.

In some of the more thickly settled parts of the area lawns and shrubbery about the houses are inviting to many birds, and palms of two kinds shelter colonies of English Sparrows. The telephone and power pole lines are conspicuous features along most of the roads and should be considered as a part of the road system. These poles and wires furnish perches for many birds and are probably helpful to such birds as Shrikes and Sparrow Hawks that watch the ground for their prey; Western Kingbirds have been known to nest on a pole and the only Red-shafted Flicker nest known to me in this area is in a power pole. But on the other hand, these wires are dangerous to some birds which fly against them, and the larger hawks perching on roadside poles or fences are conspicuous targets for thoughtless gunners.

Now to pass from generalities to actual observations: For one year, from November 1, 1927, to October 31, 1928, I kept a record of all the dead animals observed along my rural mail route. Figure 48 shows the roads covered, a total of 30.3 miles; the heavy lines indicate the 9 miles of pavement and the lighter lines the 21.3 miles of oiled dirt roads. This route was covered 287 times during the year and the small circles indicate the locations of the 136 dead birds observed. This is not a complete record for the year because I was absent on vacation for eighteen days in August and birds killed on Sundays or holidays might be reduced to an unrecognizable spot on the pavement before the next day. The casualties indicated are as follows: English Sparrow 28, Coot 16, Western Meadowlark 15, California Shrike 10, Brewer Blackbird 9, Linnet 8, Gambel Sparrow 8, Killdeer 7, Mourning Dove 4, Western Mockingbird 4, Barn Owl 3, Western Kingbird 3, Brown Towhee 3, California Horned Lark 2, Arizona Hooded Oriole 2, California Gull 1, Western Red-tailed Hawk 1, Burrowing Owl 1, Texas Nighthawk 1, Red-shafted Flicker 1, Golden-crowned Sparrow 1, Western Lark Sparrow 1, Green-backed Goldfinch 1, Savannah Sparrow (subsp.) 1, Black-headed Grosbeak 1, Cliff Swallow 1, Pipit 1, and unidentified sparrows 2. As shown by figure 48 the 9 miles of pavement claimed 104 of the casualties and the 21.3 miles of dirt road only 32.

I did not see any of these accidents happen. I believe that most of them happen at night or perhaps at dusk or dawn rather than during the day. A recent article by Wetmore (Bull. Northeastern Bird-Banding Assn., v, no. 4, October, 1929, pp. 141-143) discusses this question of the time when such accidents are most apt to occur, as well as other phases of the problem. There are several dangers to be considered in connection with roads; first and probably most important are automobiles, then overhead wires, and destruction by shooting. It is difficult to arrive at a fair estimate of the relative danger from automobiles and overhead wires. The one Western Red-tail was a victim of shooting; the Coots, I believe, were killed by flying into wires at night. In checking up I find that only four of the birds were found where there were no overhead wires, thirty-six where the wires were on one side of the road and ninety-six where the wires were on both sides; but as the busiest highways are very apt to have pole lines on both sides and only a very small part of the roads have none at all this evidence is not very reliable.

As will be seen in figure 48 there are several well defined groups of casualties and I will analyse some of them. The group on Orangethorpe Avenue just east of the railroad contains twelve casualties as follows: English Sparrow 6, Brewer Blackbird 1, Hooded Oriole 1, Linnet 1, Black-headed Grosbeak 1, Shrike 1, Mockingbird 1. The roadway has palms, backed up by berry patches and fruit trees, on the south side, and a dairy, small vineyard, and a farm yard on the north side. There is a suspicion of small boys with .22 rifles as an extra hazard here. There are wires on both sides of the road.

On Orangethorpe Avenue between Western Avenue and Hansen Road is a compact group of seven. At this place there are two fan palms on each side, well back from the road, and each harboring a colony of English Sparrows. Six of the seven casualties were English Sparrows, the other being a Brown Towhee. Overhead wires on both sides of the road would not seem to be the cause of these casualties.

On Walker Street just south of Orangethorpe Avenue a group of six casualties is found to consist of four Meadowlarks and two Shrikes. At this place there are no trees or shrubbery and not even weeds most of the time. On the west side

is a field of alfalfa and on the east side is pasture land. An occurrence noticed here a number of times illustrates how a paved road may be both a source of food and a menace to the lives of the birds. In late spring and summer the southwest breeze blows insects from the alfalfa field onto the concrete pavement and birds of several species come to gather the resulting harvest of easily found food. Brewer Blackbirds are in the majority, but Meadowlarks, Horned Larks, and Shrikes have been seen to do this. I do not know if extra alertness on the part of the Blackbirds and Horned Larks accounts for their absence from the casualty list at this place or not. Overhead wires on one side do not seem to be a dominant factor here.

Farther south on Walker Street a group of seven appears: English Sparrow 3, Linnet 2, Burrowing Owl 1, and Gambel Sparrow 1. The stage setting here is a chicken ranch on the west side and a weed-grown field on the east side, with a pole line on the west side.

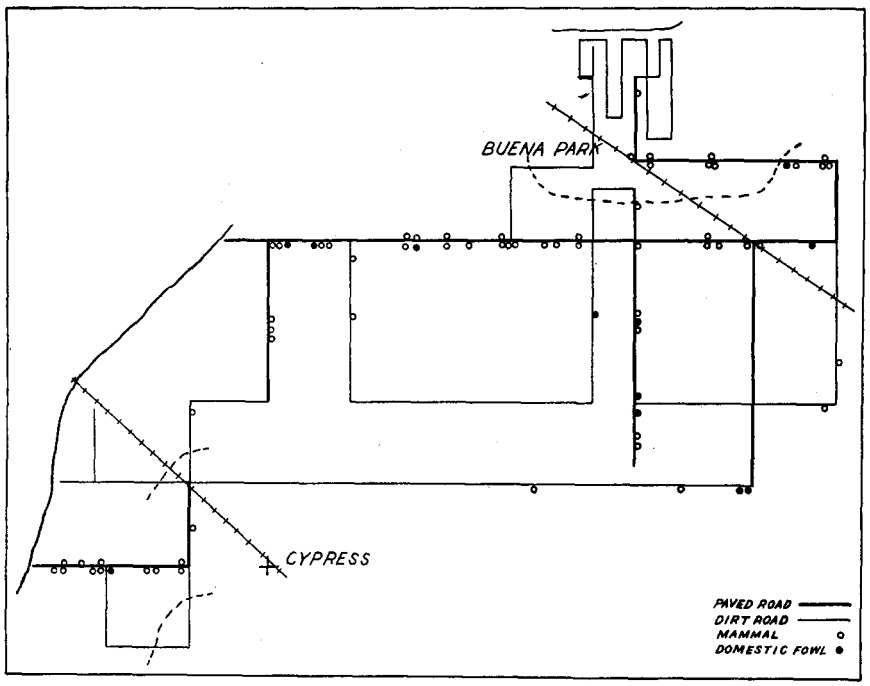

Fig. 49. DEAD MAMMALS AND DOMESTIC FOWLS FOUND ON RURAL MAIL ROUTE NO. 1, BUENA PARK, CALIFORNIA, NOVEMBER 1, 1927, TO OCTOBER 31, 1928.

Nearly one mile of Lincoln Avenue is covered by the route and shows twenty-three casualties as follows: Coot 8, Meadowlark 6, Brewer Blackbird 3, Killdeer 2, Western Kingbird 1, Linnet 1, Gambel Sparrow 1, and Shrike 1. This road is bordered by farm land and several dairies and has a pole line on one side. A flight line of Coots from the ponds of the Farmers Gun Club, a mile to the south, to Coyote Creek, would seem to account for the fact that one-half of the Coots found in the whole area were on this mile of road. I think the wires are responsible for the killing of most of the Coots.

In an effort to throw some light on the relative importance of automobiles and overhead wires in this destruction of life I have charted the mammals and domestic

fowls killed on the same roads during the same period of observation. Figure 49 shows sixty-two mammals as follows: Cat 21, jack-rabbit 15, dog 8, cotton-tail rabbit 5, ground squirrel 4, pocket gopher 3, mouse 2, rat 2, weasel 2; and in addition, domestic fowls 12 (chicken 8, pigeon 2, duck 1, and Guinea fowl 1). In every case except that of the pigeons the overhead wires would seem to be out of the question; so, as they are grouped very much the same as the bird casualties are, they would strengthen the idea that automobiles constitute a more potent factor than overhead wires.

This article does not pretend to exhaust the possibilities of the subject. For instance, a study could be made of the casualties of some section of a road in relation to the time of day and the amount of traffic; and the relation of roadside cover to such accidents, the spacing and number of wires on pole lines, the season and the condition of the weather, and many other possible factors could be studied. But the observations above recorded lead me to the conclusion that roadside mortality is only a minor factor, although a conspicuous one, in the avian reaction to the activities of man, in the area under consideration, and that the species that suffer most are abundant ones that seem to be in no danger of extermination from this cause.

Buena Park, California, November 21, 1929.