

## ROADWAYS AS THEY AFFECT BIRD LIFE

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Roadways have such an important part in the welfare of persons in this country that it is natural to suppose that they should affect also the bird life of the land. It is not necessary to call attention of active observers of birds to the circumstance that many birds are killed by being run over by automobiles. The numerous counts, of birds' bodies seen on roadways, that have been made and published, indicate that this fact has invited concern on the part of many workers.

One trait that characterizes all the essays on this topic that I have come across is that the writers fail to consider more than an exceedingly small portion of the questions involved. The usual inference seems to be that the whole problem consists in establishing the already generally accepted reality that some birds die because of reckless or rapid driving of automobiles over the highways.

In order to arrive at dependable conclusions with respect to such a question as this one it seems desirable to consider the whole situation or at least as many phases of it as possible. Here is a problem for which, it seems to me, counts of dead birds found on small stretches of highway and other such meager collections of facts, alone, do not give a good basis for judgment. The influences are too complicated to be represented fairly by such counts.

For the present purposes it is well to consider only graded dirt roads and paved or hard surfaced highways, thus leaving out of consideration the slightly marked trails over plains country, logging roads through timber, and city streets.

In getting at an understanding of the relations of roadways to birds many sorts of factors might be mentioned as having importance. As a rule, the more highly cultivated a region is the more numerous will be the roadways through it. It is to be pointed out here that conditions out in the cultivated fields are usually not suitable for supporting a large bird population.

Even though every one is familiar with the ways in which conditions accompanying roads favor bird life it may be well now to outline briefly some of these benefits. As regards favorable food supply and feeding places: the roadside tangles on the strips of waste land in the fence rows, made up of various kinds of weeds, vines, shrubs, and trees, contribute huge amounts in the aggregate of food, directly in the form of fruits and seeds and indirectly in the abundant insect life which they support. Roadside ditches, which occur so frequently, often provide feeding situations not found elsewhere in the vicinity. Several bird species regularly use for feeding lookouts the perches on wires or posts of fences and telephone lines which follow roads. These birds may fly into the air for prey or they may watch for movements on the ground. Then the roadbed itself often is a favorable feeding place because of the waste grain or other trash left on it. Bodies of dead animals of all sorts left on the roads make an additional source of food.

For shelter the roadside vegetation favors the presence of birds by acting as a windbreak and by providing cover from the view of predators, even if the tangle does not actually deter the advance of these pursuers. Some birds, for example juncos, regularly roost at night in crevices in road-cuts. The dark bare soil of roads and their banks is often freed of snow sooner in winter than vegetation-covered adjacent ground. Birds seek out such places. In hot regions the small shade of each roadside post is usually taken advantage of by some bird.

Many birds are attracted to roadways for the places for bathing which they find there. Drainage ditches along roads often hold the only readily available

water supply in a vicinity for birds' drinking and bathing. Then many birds come to the roads to wallow and flutter in the dust.

The wires, poles and trees which go along with roads furnish resting perches for large numbers of birds such as hawks, swallows, and goldfinches.

Finally, roadsides supply a considerable variety of nesting sites that may accommodate all together great numbers of birds. These sites are chiefly in the roadside vegetation. Hedges of osage-orange which border so many miles of roads supply an amazingly large number of birds with nesting places. The vegetation of roadside ditches is occupied by nesting birds of several species. A few species of hole-nesting birds are especially well adapted to use cavities in poles and posts such as border most roads. Even the Bullock Oriole has placed a nest on a telephone pole brace. Cavities in cut banks of roads are nested in by Carolina Wrens and other species. Bridges attract many nesting pairs of phoebes, dippers, and swallows.

These examples are sufficient to show that the set of conditions which go along with roads is so favorable that a large bird population can live there. Remember that such a large number of favorable circumstances, ordinarily, is found neither in an equal sized strip of primitive territory nor in a strip across cultivated country as it is now.

The harmful features of roads are chiefly of two sorts: Indirectly, the approach to birds and their living quarters is made so much easier that the reduction in numbers of some conspicuous species may be thus accounted for. Then many birds are run over by automobiles. The published counts of dead birds that have been seen in roads establish that the number killed in the whole country is large—just as a summation of the numbers of persons killed in this way each year is an amazingly large number. A study of these counts and of impressions from seeing the birds in roads indicates that most of the deaths are in a few species and that these are common ones. In nearly every instance the bird species is actually too numerous, judged on the basis of human interests. The most conspicuous losses are in birds which occur in flocks or which have an exceptionally slow get-a-way in starting flight from the road. The most conspicuous example of this type of bird is the Red-headed Woodpecker. However, I am sure that there are a great many more of these woodpeckers in at least some parts of the country now than there were at any time before the settlement by men. There has been even an extension to the westward of the range of this bird in late years, apparently following the courses of highways and railways.

Another point to be taken into account is that most often the birds which are run over are ones which live in or next to the roads. They are not attracted there temporarily. A conspicuous exception to this is the case of those transients which die by flying into telephone wires and similar obstacles, but the total number killed in this way must be small when compared with the whole bird population.

Then, the recent discovery that lost mates in nesting pairs are often quickly replaced helps to minimize the losses during the nesting season. Thus the loss of one parent of each of many breeding pairs might have almost no appreciable influence upon the number of young produced in the habitat. The deaths from this cause being almost entirely of birds out of the nest, the stage affected in the bird's life cycle is not one which ordinarily would be thought of as critical. In other words, losses then do not affect population numbers so directly as do such agencies as ones which destroy nests or broods or which prevent the nesting of the birds. For instance, remove the wooden poles and posts from a stretch of road and there will surely be no birds, of the sorts attracted by these features, to be run over by automobiles on that road.

From one viewpoint the question to be answered is not: How many birds are killed by speeding automobiles? but: How many pairs of birds are prevented from successfully rearing broods of young? Might not the influence actually favor some kinds of birds by removing some of the surplus which could not find suitable breeding places but which, if they lived, would reduce the supply of food available for all?

The conditions in the roadside type of habitat may be compared in many ways with the conditions on a narrow strip of ground such as borders so many streams, especially in the central part of the country. Along the streams also the presence of many birds is favored. However, there as well, conspicuous dangers levy heavy toll of bird life. Predatory birds and mammals are undoubtedly more effective enemies of small birds in streamside thickets than along roadways. Frequently recurring high water destroys the lower nests and even carries away or completely covers the food supply of ground foragers. Yet, in these places the bird species which lose most always recover their usual numbers, at least by the following season.

To sum up, this brief sketch of the environmental factors effective particularly near roadways suggests that the beneficial influences upon the birds there more than offset the harmful influences. A further suggestion is that any analysis of roadway mortality of birds, to be complete, must also take into account as many as possible of these favorable influences effective in the area where the observations were made.

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