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## Probable Causes of Bird Scarcity in Parts of the Sierras

AN ARRAIGNMENT OF THE CHIPMUNK

BY JOHN J. WILLIAMS, INDEPENDENCE LAKE, CAL.

[Read before the Northern Division of the Cooper Orn. Club, Sept. 15, 1900]

COMPLYING with the request of the Club's secretary, I have gathered into readable shape all of my summer's notes on the existing causes of bird scarcity in the Lake Independence region of the Sierras, believing that similar causes are probably active in other localities, and will yield interesting results if studied more in detail. Roughly speaking, these causes can be classed under two heads, viz: destruction due to (1) bipeds, and (2) quadrupeds; the former to include man, the raptors and the Blue-fronted Jay; the latter to include chiefly the chipmunk. I will turn first to biped destruction and briefly consider it, as it is the lesser of the two evils. The small boy with his mania for collecting or harming the nests or young of birds in this and similar sections is a rare article, scarcely to be noticed, but grown people, with the inevitable small caliber rifle, have in years past been important factors in bird scarcity here. However, the practice has been discouraged by the man-



JOHN J. WILLIAMS

agement within the last four years, so that this year very few instances of the useless killing of birds have come to my notice, the chief one being the wanton killing of one of six sea-gulls that are found on the lake yearly. This was done by a person who believed that there was a fine for such offenses, but who, on August 11, willfully shot one for lack of something else to shoot at. The destruction due to raptors is in no way greater here than it is elsewhere, and the Blue-fronted Jay, whose bad reputation is known so well, is only infrequently met with, so that he, too, need not be considered.

I have no notes on the damage done by quadrupeds, other than chipmunks, and do not believe it is greater here than in other localities, but the following notes on the mischief done by chipmunks, while far from complete, will show in a way how great is the damage done by them yearly. During my outing here in July, August and September of last year, I noticed the scarcity of

birds but attributed it to casual or temporary causes of the year, as is frequently the case. On my return a month earlier this year, birds were common until about June 24. Up to that time, owing to the increased number of migrating birds and the greater number of bird songs due to the mating season, the scarceness of resident birds was not noticeable, but from that date on there was a change. Species had followed species on their northern journey and although many stayed quite a while, I soon saw that the bulk of them were leaving us. Gradually, as the rest settled down to home life, their mating songs decreased in frequency and I found that last summer's scarceness was to be this year's share as well.

On the 6th and 10th of June I noticed various birds, such as robins, bluebirds and flycatchers, driving chipmunks out of trees, and I will add that this fact was noticed by myself and others frequently during June, July and part of August. It was interesting and amusing, and thinking I might find out the reason, I began to watch them. On the 12th I caught a chipmunk in the act of robbing a robin's nest. The parents were both away at the time and when I first noticed him, one of the old birds had returned and was driving him down the tree trunk. Finally he had to drop his booty in order to escape the bird's wrath, and then quickly got away. On picking it up, I found I had the first piece of evidence against the little animals, for in my hand lay a very young robin in his last struggle. After a short search under the tree I found another dead young bird, almost under the nest, out of which he must have been ejected, either accidentally or forcibly. The chipmunk that did the deed was the only one of the larger ones that I have seen doing harm to the birds, but all three sizes of these little animals do such work, whether they are one species or several. On June 16 I found three small-sized chipmunks engaged in a three-cornered tug-

of-war over the arm of a very young bird, and on getting closer to them they scurried off, leaving the mutilated remains behind them, but in this case I only succeeded in finding an empty nest so that I was unable to identify it or the arm.

On June 24 I found the dead body of a very young bird near an old stump, where innumerable chipmunks dwelt, so I withdrew to a distance and with my glass watched the bird closely. As soon as they felt sure I had gone, the chipmunks began scampering around again, and in a short time one came across the young bird and quickly retired with it to a hole in the stump. Whether he had dropped the bird on hearing me coming or had simply found it accidentally, I am unable to say. On June 28, hearing a lot of noise between some small birds and a chipmunk, I went nearer to see what the trouble was and found a pair of Pileolated Warblers trying to drive a chipmunk away from their nest. They were successful finally, but not until the chipmunk had been also, for the nest contained four young birds the day before and when I visited it this time all I found was one dead bird with two fresh wounds in its back and one live one, which I returned to the nest. On the following day I revisited the nest and found that something, probably the same animal, had made off with the remaining bird. This same day I found two more warblers' nests, one more than a hundred feet away from the first one and the other but forty feet away, this last one containing four eggs, apparently well incubated. Five days later, on July 2, I returned to the nest but it was empty and the hair lining partly torn out. However, I believe it had only been done a short time before as both parents were near and anxiously watched me, while at the same time there appeared to be a lively time in a nearby chipmunk residence. On July 5 I witnessed the most daring piece of mischief done by the chipmunks.

Some time before I had found a nest of young Snowbirds, and on the 5th I visited them for the last time to see them take their initial flight. It was a fine day and I was soon rewarded for making the trip, the birds leaving their nest quickly after the first one led the way. For awhile it was all right, but soon two became entangled in the long grass near the nest and in a minute there was quite a commotion. After awhile one flew out but he was no sooner out than he was pounced upon by a medium-sized chipmunk that had followed him and I at once knew what had caused the commotion. The chipmunk was as quick as a cat, and by the time I got there and drove him off, the bird was dead. I hunted around quite a while for the other one but was unsuccessful, so I watched the two remaining ones until they were safe. One week later almost the same occurrence was repeated about five miles away, but in this case I managed to lay the chipmunk out for good, while he in turn only killed one of the young Snowbirds. On July 16, the last piece of evidence was seen by me, when two young Louisiana Tanagers were thrown from their nest suddenly during a struggle that occurred between one of the parent birds and a medium-sized chipmunk. The latter was bent on mischief and the young ones either were frightened out of the nest while the male bird attacked the animal, or else fell out accidentally. It also showed me a new trait in the character of the adult bird. On July 27 I noticed several chipmunks being driven away from some tamarack trees on the lake shore, by a band of Mountain Chickadees. Later on I found that a pair of these birds had a nest in one of the trees, and I presume that when they found the chipmunks were bent on mischief, they summoned their mates to help them, as they and the flycatchers often do.

My summer's notes contain no more direct evidence against them, but naturally, after a close study of the habits of

these animals and their results to the lives of our young birds, I have arrived at certain conclusions in regard to them which I give as being pertinent to this article. To begin with, the few instances that I have come across in a summer's work of destruction done by chipmunks to birds, would undoubtedly be greatly multiplied if systematic attention was paid to their wrong-doings by a larger number of observers, so there would then be no doubt as to their being to blame for a considerable percentage of the scarcity of mountain birds. In thus laying part of the blame on the chipmunks, we unconsciously give them some competitive advantage over the birds of their own habitat, or else we must grant that the agencies of man interfere in some way to their good, for were it not so their relative numbers would remain the same and nature's balance would continue undisturbed. After studying them closely for a long time, I have been unable to see where any agency of man interferes advantageously to the chipmunks, for the small amount of food they derive from us, is in itself insufficient to account for their increase in numbers over the birds; our presence affords them no better protection from their enemies or from climatic conditions, and in no other way can I make out that man or his agencies work to their advantage. Therefore in allowing that they possess some competitive advantage over the birds of their own habitat, with whom they enter into severe competition during the active portion of their lives, I have been led to compare in detail their habits, one by one, with similar features of the birds of the vicinity, in order to find out what was the nature of this advantage, and I consider that it is directly due to the much more varied food supply of the chipmunk.

Indirectly too, the limiting and absence of great variation of the food supply of birds, decreases the extent of their range and confines them to special

areas. But it is only these conditions *combined* with the destruction of the young birds by the chipmunks, that give the latter supremacy in the mountain forests. Stop the damage that is being done to their young by the chipmunks and the birds would increase as rapidly here as they do elsewhere, for here as in other localities they have accommodated themselves thoroughly to the existing conditions imposed on them by the nature of their surroundings, except when it comes to the mischievous little chipmunks. With these rodents, so far, I believe they have been unable to cope. If we go into this conclusion in detail, we find that it is borne out by facts, for in the mountain forests of this section, large upland areas densely clothed with timber, are found to be practically devoid of bird life, and only the drumming of the woodpecker, the quirring note of the nuthatch and the frequent chatter of chipmunk or squirrel attracts the attention of the wanderer; but as one approaches the damp or brush-covered flats along the streams we become aware of a change, for from all sides come the notes or songs of birds innumerable and the roar of the cataract only serves as a setting for the pleasing note of the Water Ouzel. Here we find not only the great bulk of the flowering plants, but the birds whose very existence is in a great measure dependent on their blossoms or seeds; and here too we find the chipmunk, feeding as readily off of wild gooseberries, sunflower seed or columbine root, while here is where he does more damage to growing birds than elsewhere, because their nests are met with more frequently. From a close study of the birds themselves, I have found that those birds which nest on or near ground other than marsh land, are much less apt to rear their young to maturity, while those that nest in or near marshy soil or marsh grass or in the vicinity of occupied buildings are comparatively free from molestation by chipmunks.

Pileolated Warblers, Juncos and similar birds belong to the former class and are much scarcer here than they should be, while robins, sparrows, bluebirds and others rear from one to two broods annually in safety. The chipmunks are continually prying around old logs, bushes or trees that are situated on dry land, but they cease their investigations as soon as they come to marshy soil, marsh grass or localities frequented by man. In illustration of this I will add that a great many birds took advantage of the hotel and cottages this year, by nesting near them, and in no case did their young come to harm and chipmunks were seen very rarely in the vicinity of their nests while the place was overrun with people, but as soon as they had materially decreased in numbers, chipmunks increased in like amount but could not injure the young birds as they were nearly all gone. I might also show how several species of flycatchers have held their own here and are numerous, owing to the acuteness of their vision, which enables them to outwit these little animals, and several other instances of special faculties rendering aid to their avian owners could be introduced, but I believe I have at least outlined the subject so that others may follow it out more in detail.

It is also not assuming much to say that in such a region of cone-bearing trees, the family *Picidae* would be much better represented were it not for the presence of the chipmunks, who very probably take advantage as occasion offers, to visit the birds' homes while they are absent in quest of food for their young. Curiosity in the young, tempered by wariness in the older ones has, I feel sure, led them far in this work of destruction, for originally I do not believe chipmunks were in any way carnivorous. In conclusion, the advantage that the chipmunks possess over the birds of their habitat, is a more diversified food supply, making their annual increase many times larger than

that of the birds and were it not checked yearly they would soon overrun their range to the exclusion of all the more susceptible forms of life in it and nature's natural adjustment of all varieties of life would be lost; but the chip-

munk during his life undergoes a far greater rate of mortality than the birds do from various sources, so that the large annual increase is almost lost by the advent of the following season and nature's balance is thus maintained.



### Nesting of the Rivoli Hummingbird in Southern Arizona

BY O. W. HOWARD, FT. HUACHUCA, ARIZ.

[Read before the Southern Division of the Cooper Orn. Club, July 26, 1900]

**D**URING the spring of 1899, while camped near the summit of the Huachuca Mountains, Ariz., I spent considerable time watching the few Rivoli Hummingbirds (*Eugenes fulgens*) which I chanced to see, in hope of finding a nest or two. The birds

but was somewhat encouraged when one morning early in July a female Rivoli Hummer made her appearance at our camp and began pulling from a pine stump some cotton which I had placed there, thinking it might be the means of tracing some bird to its nest.



*Photo by C. W. Howard*

#### PLATE I. NEST AND EGGS OF RIVOLI HUMMINGBIRD (*Eugenes fulgens*)

were generally hovering over flowers, evidently feeding, and would soon disappear in the distance, possibly to the maples in the canons below where they usually nest.

I had about given up finding any nests, as the season was well advanced,

After Mrs. Rivoli had helped herself to the dainty morsel she flew in a direct line to the bottom of the canon, about seventy-five yards below our camp, and was soon back for more cotton. I felt certain then of a nest and shortly after my brother located it in a red fir tree.