ON THE BREEDING HABITS OF SOME ARIZONA BIRDS.

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THIRD PAPER. *Phainopepla nitens.*

A FEW words as to the distribution of the species (*Phainopepla nitens*) under consideration, as I have found it occurring in Pinal and Pima Counties, Arizona, and something regarding its movements in a migratory sense, will occupy part of the present paper, which should, perhaps, more properly have to do only with data regarding the breeding season.

At Riverside, in Pinal County, during the spring of 1882, I found this species to be rather uncommon, and doubtless it will be found breeding at that point, though I failed to detect it; and during my stay of two months at Riverside I saw only three or four of the birds.

Later in May I had occasion to go into the mountains to the north of Riverside, at a considerably higher altitude than that place, and here, in what is known as the Mineral Creek District, in the Pinal Mountains, I found the species an abundant one. My stay was so short and my time was so fully occupied with other matters, that I had no leisure to do more than make the above observation.

Coming back to this same region, Mineral Creek, in late July, and remaining for about five weeks, I found that the young birds were full grown, and that the great numbers of birds I had seen in May were now only represented by a very few moulting birds, mainly young ones. Again, leaving Mineral Creek about the last of August, I returned to that point about the 10th of October and remained until December 15. Soon I found that in certain localities,—sheltered flats in broad cañons, where there is a heavy growth of a kind of juniper, then laden with fruit,—the birds were very abundant, often gathering in flocks of fifty or more, and reminding one of the common Cedar Bird (*Ampelis cedrorum*). The individuals making up these parties were mainly young birds of the year, all having *fully completed the moult*, the young males being in a curious parti-colored plumage,

sometimes almost black mixed with only a few gray feathers, and presenting every phase between this dress and an almost gray or leaden colored one, with only a few black feathers intermixed. The iris in most of these young birds was dark brown.

They feed mainly on the berries of the juniper, but often one or more might be seen passing with peculiar flight through the air, turning on its own track, descending abruptly, as abruptly rising, and all the time with very measured wing-beats, evidently in pursuit of small insects.

All the time they, both adults and young birds, male and female, were calling to each other in a peculiar, bell-like, whistling note that was very musical. This I have since found is at all times the principal song.

I observed these birds at this point well into December, and think it probable they remained as long as the food supply was abundant.

During the season of 1883 I had little or no leisure to look after birds, and so I was unable to renew my acquaintance with this species until the last part of May, 1884. I was then living at the point treated of in the former two articles of this series, a cañon* in Las Sierras de Santa Catalina, on the northern side of the mountains, and running northward and a little easterly to the valley of the Rio San Pedro.

Here in May the birds were abundant, and wherever the mesquite extended into and mixed with the live-oak belt, they followed the first mentioned kind of wood, and later in the season I frequently met single ones well away from the mesquite in the oak region. Even at this time of year (May) they show a strong preference for all kinds of small fruits, especially wild mulberries, though insects enter as no small item into their diet.

My observations of the present year lead me to believe that the birds begin to breed early in, that is by the 5th, of May, at this point, which is about a mile down the cañon from my house, and at an altitude of about 3500 feet; though the first nest I found last year (1884), and which contained perfectly fresh eggs, was on the 17th of June.

* This cañon rises high in the mountains, as before described, and runs for twelve miles to the valley above mentioned. In the first article of this series (*vide* 'Auk' for January, 1885, p. 2, line 11), an error in printing speaks of the cañon as *two* miles in length.

That there is a wide difference in the time of the breeding of different pairs in the same locality cannot be doubted, but my experience leads me to believe that here, at least, only one brood is raised during the season.

All through July and August, and for the greater part of September, the birds remained abundant, feeding on the various berries and small fruits which became ripe as the season progressed, and wherever such fruit as they liked was at all abundant they paid little attention to any other kind of food, though insect life fairly teemed in and about the berries that attracted the birds. They showed a particular fondness for a kind of wild grape, and hunted the country through for such fruit, in parties of from ten to forty. In August and early September the young and old birds were moulting, and by the end of the latter month they began to disappear from the higher altitudes, retiring gradually as the weather became cooler.

At any time during the past winter, that of 1884–85, until about the middle of March, by going down the cañon to the vicinity of the river I could find a few individuals. But after the last of October I did not find them in flocks, but generally singly, or at most two or three in the same locality; and their food after the middle of November seems to be, in this region, almost entirely insects, which is contrary to the above recorded observations at Mineral Creek.

After the middle of March of the present year, though I was constantly collecting near the river in this and adjacent cañons, and on the mesas and hills at the lower altitudes, I lost sight of the species entirely. And on my frequent journeys to Tucson, about thirty-five or forty miles south, I rarely noticed the birds until well to the south of the mountains, and then only sparingly. My first notice of their return to the point near my house is April 20 of the present year, when they immediately became common, and were in some cases, at least, mated.

A female taken April 28, 1885, had an egg-yolk fully developed, and two others almost ready to enter the oviduct, and though I had not as yet noticed the birds building, this one must have begun to build, or possibly had already finished a nest.

The following data regarding nests and eggs collected during the breeding season of 1884, are from six nests before me and from notes made during that period.

Nest No. 1. June 17, 1884. Built in an oak, twenty-five feet from the ground. Contained three fresh eggs. It was saddled on a thick limb near where it forked, and about ten feet from the main stem of the tree. It is composed mainly of the stems of a soft flowering weed abundant hereabout, and the flowers, which are worked into and form a part of the structure. Also some strips of fine bark, and various dried grasses, small twigs, and much plant down, help to make up the walls and bottom. These are thick and very soft, and the materials composing them are not woven at all, but simply laid together with some little attempt at fastening them with thread-like grasses. Externally the nest is two inches deep, and the external diameter is a little less than four inches. The greatest depth inside is one inch, and the diameter of the interior at the rim of the nest is two and three-fourths inches. It is not at all an elegant structure, though peculiar, and is very fragile, being quite as delicate and soft as that of *Trochilus alexandri*.

The eggs, three in number, are greenish white in ground color, but so completely flecked all over with faint lilac spots as to seem at a very short distance of that general shade. Again, all over the lilac spotting, are very strongly defined spots of deep umber brown, almost black. These spots vary much in size, from that of a pin-point to as large as five one-hundredths of an inch in diameter. They are almost as various in shape as in size, and are dotted all over the egg in a rather regular manner. No. 1 measures .90 × .63 inches; No. 2, .84 × .64 inches, and the other is about like No. 2, but is unfortunately broken.

Nest No. 2. June 17, 1884. Mesquite, twenty feet from ground. Contained two young just hatched and an addled egg. Is a very similar structure in general appearance to the last, but the walls are much more compact, and the materials composing the whole are packed much more firmly together, being evidently secured together and plastered with saliva, especially on the rim of the nest and inside. The nest is saddled on a large limb, at least two inches in diameter, and is additionally supported by a twig that is about a third of an inch thick, and which, branching from the limb referred to at a point near the nest, passes through the wall on one side of the nest and is firmly built into the structure. The external diameter of the nest is four inches, and the external depth rather less than two inches. The internal diameter is two and

one-half, and depth one and one-quarter inches. The single egg remaining is entirely similar to those described, as far as color goes, and measures .91 × .64 inches.

Nest No. 3. June 17, 1884. Mesquite, ten feet from ground. Contained *three* young, just hatched. Saddled very securely on a limb four inches in diameter; it is very like Nest No. 2, only that it is rather smaller and deeper. The materials are the same, and the gluing with saliva is very apparent.

Nest No. 4. June 21, 1884. Oak, ten feet from ground. Contained *three* eggs, partly incubated. These differ from those already described in having the ground color greenish white, unspotted for the half toward the smaller end, and in lacking almost totally the faint lilac spotting, and further in having the dark umber markings almost confined to a circular band passing wreath-like around the larger end. They measure .88 × .70, .90 × .70, and .88 × .68 inches, respectively. The nest does not differ materially from those already spoken of, but is placed in a fork so that two branches support it, while it rests partially on a third limb.

Nest No. 5. June 21, 1884. Mesquite, ten feet from ground. Contains two eggs about to hatch. Is identical in material and position with No. 4, being placed in a fork of the limbs which support it. The eggs are not to be distinguished from those of nest No. 1.

Nest No. 6. June 29, 1884. Sycamore, forty feet from ground. Contained two young, half-grown. Is a loosely made structure, like No. 1, and is built on and attached to *four* rather small limbs where they branch.

This is not the only nest of this species which I have observed at a considerable height from the ground, at least three more being noted last year, but as they are built invariably, so far as I know, in such cases near the extremity of the branch, they are often unattainable.

The number of eggs would seem to be quite as frequently *three* as *two;* and it will be noticed that considerable latitude in choice is manifested as to the kind of tree built in, the height from the ground, and the position and method of placing the structure on the limb or in the forks of a branch.