

NOTES ON THE NESTING OF SELECTED SPECIES OF BIRDS OF THE SONORAN DESERT

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THESE miscellaneous data were collected during June and July of 1948, and from February through August of 1949, in a study (Hensley, 1954) of the breeding birds of the intermountain desert plains in Organ Pipe Cactus National Monument, Arizona. Notwithstanding the time interval since the conclusion of that study, it seems likely that the data presented here may be of interest to investigators concerned with the bird species found in this significant region. The topography, flora, and breeding bird population are given in detail in my earlier report (*ibid.*).

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SYSTEMATIC LIST

Of the 25 representatives of 16 families of birds known to nest in the region, observations on 16 species are presented below.

Turkey Vulture (*Cathartes aura*).—This species was recorded from March 1 through August. One nest with two eggs was discovered on May 31 in a cairn of rocks in a small valley. The boulders were arranged so as to form a chamber, 10 feet in diameter and about 3.5 feet high, with a single small entrance.

Red-tailed Hawk (*Buteo jamaicensis*).—Eight nests of this resident species were located in saguaros (*Cereus giganteus*), but only one site was suitable for frequent observations. This nest contained two eggs when found on April 1. Both adults shared in the incubation of the eggs and care of the young. The first egg hatched on April 7. On May 19, 42 days later, the young birds were still in the nest but left within the next two or three days.

The food of these hawks consisted mostly of rodents with the round-tailed ground squirrel (*Citellus tereticaudus*) the most common species taken. The desert spiny lizard (*Sceloporus magister*) and Clark's spiny lizard (*S. clarki*) were both found in this nest. One of the adults was seen flying overhead with a sizable snake dangling from its talons. The heads of the rodents were generally removed before being offered to the young, while the lizards were entire. The most active feeding periods appeared to be during the mid-morning (8 to 9 a.m.) and again around 5:00 p.m.

Harris' Hawk (*Parabuteo unicinctus*).—Two nests of this resident hawk were found in saguaros. Some 10 hours of observations were made at a nest which contained two eggs on April 17. It was placed about 19 feet above ground in a cradle made by two short arms of the cactus.

Both sexes are said to share in incubation (Bent, 1937) but I recorded only the female incubating at this nest on each of three visits. Both eggs hatched on May 4, 17 days after the nest was found. Two days after hatching one nestling was found dead at the base of the saguaro. The down at this stage was a soft "pinkish buff" color above, fading to white below. On the eighth day the surviving chick had lost the early reddish-colored natal down and appeared completely white. The wing and tail feathers were fully developed within two weeks and at approximately 17 or 18 days the crown, back, and scapulars were covered with juvenal feathers. The first wing exercising was noticed at this age and food was being left at the nest for the young to pick up unaided. It was not until May 31, when the young bird was 27 days old, that it was seen actively feeding from a carcass left at the nest.

Feeding was observed on the fourth and eighth day after hatching. On both occasions the adult tore the food into small pieces which were rapidly picked from her bill by the nestling. Food was brought to the nest two or three times daily, in the early morning, midafternoon, and late evening as a rule. Round-tailed ground squirrels were the only animals recorded being fed and invariably the heads of the rodents were removed prior to feeding. The intestines and skin of the ground squirrels were not fed to the young nestling, but were consumed by the adults at the nest. On three occasions branches of the mistletoe (*Phoradendron californicum*) were brought to the nest by the adult birds. In the first instance the fledgling picked at the twigs. On the other two occasions the twigs were ignored. So far as is known, vegetative items do not comprise any part of the diet.

The young bird left the nest at about five and one-half weeks of age but remained in the vicinity for several more days.

Gambel's Quail (*Lophortyx gambelii*).—Twelve pairs of Gambel's Quail were found nesting in wash areas where adequate cover was available. Nesting of this permanent resident was under way by the latter part of March. The first brood was observed on May 12, when 15 to 20 young chicks were counted with the attending adults. Six pairs were seen with broods ranging from three to 20 chicks each.

White-winged Dove (*Zenaidura asiatica*).—White-wings may be seen almost anywhere during the summer season. The fruit of the saguaro was found to be the most highly favored food and was consumed throughout the ripening period. Also, the fruit of the condalias or wild jujubes (*Condalia lycioides* and *C. spathulata*) was consumed.

My first White-winged Dove record was April 19, after which the population gradually built up to a peak in May. The first nests were found on June 2, and each contained two freshly laid eggs. The latest date of active nests was July 27, when one nest had two very young nestlings and another contained two eggs. These July records indicate second nestings as they were well toward the end of the breeding season for all species. Only two other nests were still active at this date: a Curve-billed Thrasher with two eggs under incubation and a pair of Gila Woodpeckers with young about ready to fledge. The height of the nesting season for the doves was during the first part of June. Neff (1940) recorded one nest with eggs on August 5.

Incubation lasted 14 days (June 7 to 21, date of last egg laid to last egg hatched) in one nest and 18 days in another (June 2 to 20). In accordance with Kendeigh (1952), the attentive periods of the adults at these nests lasted for several hours during incubation. The single exchange of incubating birds observed was accomplished in a matter of seconds.

Chasing was observed on only one occasion, when a male (?) gave chase to another White-winged Dove which stopped to rest in the nest tree. Of the 26 pairs observed nesting this was the only instance where this behavior was noted.

Nest locations varied in height above the ground from 3 to 25 feet with an average of 7.5 feet. Thirteen were placed in palo verde (*Cercidium microphyllum* and *C. torreyanum*) (av. 7.3 feet); six in ironwood (*Olneya tesota*) (av. 10.6 feet); two in mesquite (*Prosopis juliflora*) (av. 6.5 feet); two in catclaw (*Acacia greggii*) (av. 6.0 feet); one in bitter condalia (*Condalia globosa*) (8 feet); and one on a broken saguaro stump (6 feet). Two of the nests in ironwood trees were placed in clumps of mistletoe and mark the only instances (except one Mourning Dove, *Zenaidura macroura*) of this plant being utilized as a nest site. The fruiting season for this plant was waning by this time, so the usual attraction of birds to these sites for food was negligible. This food attraction may account for the reluctance of earlier nesting species to utilize the excellent cover afforded by the mistletoe.

By late August and early September most of the White-winged Doves had either left the nesting grounds entirely or were moving about seeking out the available food.

Ground Dove (*Columbigallina passerina*).—The single nest of this species was found in a dead catclaw tree, partly uprooted and extending out over a large wash. The nest was typically dovelike in appearance but more sturdily constructed and sparsely lined with grass. It was placed on the main trunk of the tree some six feet above ground and contained two eggs when found on May 30.

The first clutch hatched around June 1, and by June 6 feather development was evident on wings and tail. The young fledged by June 15. Thirteen days later the nest again contained two eggs. The second clutch probably hatched on July 1. Ten days later one young was frightened from the nest; the other left a day or two later. The nestling period for the first brood was less than 15 days, and the first bird of the second brood left the nest when it was not over 12 or 13 days of age. Neither the adults nor young were seen later, and this single instance marked the only record for the species during the study.

Costa's Hummingbird (*Calypte costae*).—A single nest was found in Arch Canyon (Ajo Mountains) on May 1, when it contained one newly hatched young and one egg. It was located in a Palmer's oak (*Quercus palmeri*) on the tip of a limb five feet above ground. The nest was placed within six feet of the vertical canyon wall which shaded the structure during the day, except at high noon. The activity at the nest was observed closely for the next three hours and 17 minutes. During this period the female was on the nest during 13 attentive periods ranging in length from one to 25 minutes, averaging 12.7. The 13 inattentive periods were much shorter, lasting from one to five minutes and averaging only 2.6. Fifty minutes after observations started the young bird apparently was fed nectar. After one hour and five minutes (11:06 a.m.) the second egg was broken in half with the young bird still in the larger end. Fifty-three minutes after the first feeding the young bird was fed again, and 28 minutes later the third feeding was administered. By 12:25 p.m., two hours and 25 minutes after the start of the observation, the second bird had emerged. During the last hour following the hatching of the second egg, one or both of the nestlings were fed twice, the second feeding coming 25 minutes after the first. In all five feedings were recorded, averaging 59.2 minutes apart. The shells were still in the nest at 1:15 p.m. when observations terminated.

Little fear was displayed by the adult, which allowed a hand to be moved within an inch of the nest before she would hop off and hover a foot or two away. All observations were made within three or four feet of the nest.

Gila Woodpecker (*Centurus uropygialis*).—Seven nest sites of this permanent resident were observed. One pair was beginning nesting operations on April 13 in a cavity some 30 feet up in an arm of a large saguaro. By April 20 the young birds could be heard for

several feet around the nest site. The young of the first brood fledged shortly after May 4, and the second left the nest soon after June 15.

Three pairs completed their first nestings around June 6. In two of these cases the second nestings were completed by July 22, and the remaining pair had successfully reared the second brood by July 19. Apparently a single brood was raised by two other pairs, these fledging about May 5 and July 8, respectively. All nest cavities were in saguaros and ranged from 25 to 30 feet above ground. The last active nest was recorded on July 27 with young about ready to fledge. Both sexes assisted in incubation and care of the young as was indicated for several other species of woodpeckers by Kendeigh (1952).

Say's Phoebe (*Sayornis saya*).—This species occupies an interesting niche in this region. Four of five nests were found in old wells or abandoned vertical mine shafts. The nests were placed on ledges or in crevices usually about five to seven feet down from the rim of the holes. The only exception was a nest in the garage at Monument Headquarters. In this instance the nest was placed on a support about 12 feet above the floor. This same nest was used during the previous season and for both nestings of 1949. Two clutches of five eggs each were hatched and successfully fledged. The young of the first brood fledged during the first week in April, and after a 10-day interval the second nesting began. The second set of eggs was present on April 25. The species was recorded from March through the month of June.

Verdin (*Auriparus flaviceps*).—Of 16 nests found, 14 contained clutches of four eggs, one had five eggs, and the other had three young when discovered.

Nests were placed from 2.5 to 7 feet above ground and near the periphery of a tree or bush. Branches extending over washes were commonly selected as nest sites. Palo verde trees provided nest sites for eight pairs, and two each were placed in condalia, catclaw, and cholla cactus (*Opuntia fulgida*). The other two nests were in desert hackberry (*Celtis pallida*) and ironwood.

One nest, placed six feet up in a catclaw tree, contained one egg on March 23. By March 27 the full complement of four eggs was present. At this time, during a 71-minute observation period, the female made six trips to the nest carrying feathers. On three occasions the female sang from within the nest in response to the song of the male.

The incubation periods lasted from 15 to 17 days and only the female was recorded as performing this duty. Steady incubation did not occur, at least in one instance, until after the clutch was completed.

The young stayed in the nest from 15 to 18 days. Three of the pairs were known to raise two broods. Nest construction was first noticed on March 8, and all nests were empty by June 6. Verdins are permanent residents of this area and were recorded throughout the study.

Cactus Wren (*Campylorhynchus brunneicapillum*).—Twenty-one of 22 active nests observed were in the cholla cactus. The other one was on an arm of a saguaro some 15 feet from the ground. Heights of the nests in the chollas ranged from 3 to 10 feet. Anderson and Anderson (1957) recorded a similar minimum nest height in chollas even though suitable sites at lower heights seemed available in both studies. As pointed out by Huey (1942), Curve-billed (Palmer's) Thrashers competed with Cactus Wrens for nest sites in this cactus.

Incubation lasted 17 days in two nests. In one case the clutch of three eggs was completed on March 29, and on April 16 the nest contained three newly hatched young. Incubation dates for the second nest were April 2 to 19, from completion of the set until all were hatched. The nestling period for six of the nests ranged from 17 to 20 days. The egg

number per clutch was three or four with about equal numbers of each. Three pairs raised a second brood. Nesting activities of this common permanent resident began in late March and continued until late June.

Curve-billed Thrasher (*Toxostoma curvirostre*).—Twenty-seven nests of this resident species were observed. All were in cholla cactus and ranged from 3.5 to 9 feet above ground. Nesting operations were under way by late February and continued until early August.

Sixteen of the 27 nests contained three eggs, eight had two, two had four, and one had a single egg. Of the five pairs known to have attempted two nestings, three used the same nest for both, but the other two pairs built new nests. The initial attempts of the latter two pairs, however, were unsuccessful. Both pairs had deposited incomplete clutches of two and three eggs for their first nesting before desertion. Three and four eggs, respectively, comprised the clutches of the second attempts. Another pair had two eggs in the first clutch and one in the second.

Incubation lasted between 13 (May 1 to 14) and 14 (March 7 to 21) days for two nests, and the young stayed in the nest for 17 and 18 days, respectively. The dates refer to the interval between the depositing of the last egg and the hatching of the last young. Bent (1948) gives 13 days as the incubation period and 14 to 18 days for the nestling period. The sexes share in incubation duties, as well as in the brooding and feeding of the young. During a one-hour observation period the male of one pair incubated for 19 minutes and the female, for 30 minutes. In a second pair, watched for two hours, the male incubated a total of 23 minutes; the female, 32 minutes.

One egg required two hours and 32 minutes for the hatching process, which occurred between 10:14 a.m. and 12:46 p.m., the warmest part of the day.

Black-tailed Gnatcatcher (*Poliopitila melanura*).—One nest was found on March 19 in the final stages of construction. It was placed within the many-branched interior of a small condalia tree 4.5 feet above ground. Both adults were engaged in the building activity.

On March 23 the nest contained one egg, and by March 28 the complete clutch of five eggs was present. During a two and one-half hour observation period the male spent 55 minutes on the nest as compared to 19 spent by the female. The incubation period for this clutch was 14 days (March 28 to April 11), with only two of the eggs hatching. The last young fledged in 12 days. During one 60-minute observation period, the young, nine days old, were fed once every 8.5 minutes with both parents participating. On April 25 three fledged broods consisting of two, three, and four young were seen accompanied by adults. Gnatcatchers were commonly recorded from March through July.

Phainopepla (*Phainopepla nitens*).—Eight nests were located as follows: four in palo verde, two in catclaw, and one each in condalia and mesquite. They were placed from 4 to 15 feet high and were usually in the outer third of the tree. No nests were found in mistletoe, a common site according to Bent (1950); they were, however, always in the vicinity of a plentiful supply of these berries. Rand and Rand (1943) noted that the tree containing a nest usually had mistletoe berries growing as well. In my study most nests were placed in trees without mistletoe, but always adjacent to ones with the parasite.

Only the male was recorded in nest-building activities. One individual ceased his labors only to help his mate chase an intruding female from the vicinity. The female continued the chase and on another occasion gave chase alone to an intruding female. Rand and Rand (*ibid.*) recorded similar chasings by the female.

Six of the nests found contained two eggs, and the other two held three each. The first nest was under way by March 10 and the last young left a nest shortly after May 30.

The incubation period at two nests was 14 days (March 28 to April 11, and April 6 to 20). The young remained in these nests for 17 and 19 days. Only the female was seen to feed the young during an hour and 17 minutes of watching at one nest. The principal food of this species in the nesting season appeared to be the red berries of the mistletoe, and as soon as the young had grown large enough to eliminate the seeds they were fed almost exclusively on these fruits.

Some *Phainopeplas* apparently winter in this region for they have been recorded in every month of the year by Monument officials. They were common throughout my stay in the area.

Loggerhead Shrike (*Lanius ludovicianus*).—The single nest, found on April 19, contained six eggs. It was in a thick clump of dead mistletoe seven feet up in a palo verde tree. The eggs hatched between April 19 and 24, and the young had fledged by May 4. No other individuals were seen.

House Finch (*Carpodacus mexicanus*).—All of the 12 nests found were located in cholla cactus at heights varying from three to eight feet above ground. The first nests of this resident species were discovered on March 28, and active nesting continued until the end of June. Clutch sizes varied from three to five eggs; nine nests had four.

Length of incubation in two nests was found to be 12 days (March 29 to April 10) and the young remained in the nest 15 to 16 days. Evenden (1957), in a study made in California, similarly found an average clutch size of 4.4 eggs for 25 completed nests, an average incubation period of 13.17 days, and an overall average nestling period of 15.1 days in 11 nests.

In my study, the only case of parasitism by the Brown-headed Cowbird (*Molothrus ater*) was recorded in a nest of this species. On May 4, four eggs (second clutch) were present in this particular nest. Five days later a cowbird egg was in the place of one of the finch eggs which was found broken on the ground below. The House Finches deserted this nest before the eggs hatched. Few records of this species being parasitized by the cowbird are available. Apparently Hanna (1933) and Robertson (1931) have recorded the only other known instances of parasitism in this species.

SUMMARY

During the summers of 1948 and 1949, 25 species of birds, representing 16 families, were known to nest in Organ Pipe Cactus National Monument, Arizona. Observations of 16 of these species are here briefly discussed, including information concerning nest sites, incubation, adult behavior, and breeding periods.

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