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A TREE NESTING QUAIL

WITH THREE ILLUSTRATIONS

By HARRY L. CROCKETT and RUTH CROCKETT

Bird life in the desert areas was changed at least temporarily during the dry summers of 1933 and 1934. Many of these changes were intangible, but they prompted us to add in the margins of our notes "very dry" and "dry season." The Gambel Quail (*Lophortyx gambelii*), however, offered a change which was rapid enough and striking enough to warrant comment.

The irrigated section known as the Salt River Valley, with Phoenix, Arizona, as its hub, lies at the center of a broad plain with a desert area surrounding it. Throughout the course of our observations which began in 1924, the desert area has supported a fair-sized Gambel Quail population, with the marginal groves and orchards slightly

Fig. 18. Male Gambel Quail on nest in citrus grove, near Phoenix, Arizona; photographed on May 27, 1934.

Fig. 19. Nest and eggs of Gambel Quail, the same as shown in figure 18.

Fig. 20. Nest of Gambel Quail in a sour orange tree near Phoenix, Arizona; photographed on June 2, 1935.

more populous. The first dry year (1933), with its shortage of water and food, was very hard on the desert dwellers. The next year brought more of them into the citrus groves and orchards. Growers have told us of leaving field boxes out several days and on returning, finding quail's nests and sometimes eggs in them. Their natural nesting sites on the ground at the bases of trees and bushes were often destroyed by cultivation or flooded by irrigation. We ourselves have observed, and we also have been told of, many nests that were washed away. Some of the more thoughtful growers went to the pains of throwing up dikes around nests to protect them from irrigation water.

Our first two pictures (figs. 18 and 19) show one such nest which was protected by Mr. Carlos Stannard. This nest was photographed on May 27, 1934. It contained eight eggs, and the young were off in a few days. The male was covering the eggs and had become so used to the people that he had to be touched before he would leave.

At the end of the second dry year, quail had gathered in great numbers on irrigated places, where they found food, water and protection, but very precarious nesting places. Imagine our amazement when the Stannards called us early in June of 1935 to look at a quail's nest in a sour orange tree. This nest was in the center of the tree, four feet from the ground, and it held fourteen eggs. It was well constructed, of sticks and was better lined than ground nests we have seen. We believe it was built entirely by the quail, as it did not have a "built over" appearance and all the materials seemed fresh.

On the morning of June 21 there was much activity at the nest, and soon the parent birds were on the ground enticing the young to follow them. Later in the day it was discovered that three weaklings had been left and three eggs did not hatch. "One Swallow does not make a summer," but at least one female quail had broken a tradition to solve the problem of protecting her nest under new conditions.

Phoenix, Arizona, November 29, 1935.

AGE DETERMINATION IN THE AMERICAN CROW

WITH ONE ILLUSTRATION

By J. T. EMLEN, Jr.

In a series of bird specimens it is often convenient if not important that immatures be separated from adults. In certain species this is not easy, and many data in literature have lost much of their potential value to modern investigators through the failure or inability of ornithologists to make such distinctions.

In the course of certain recent ecological studies with eastern and western crows (*Corvus brachyrhynchos*), a proper interpretation of the data in hand required that specimens be grouped by age as well as by sex into four categories: adult male, adult female, immature male, and immature female. The well-known characters, diagnostic of age, that are associated with the degree of ossification of the skull and the presence of the bursa fabricii were found to be reliable only in summer and early fall when the fluffy juvenal contour feathers formed an equally accurate and much easier means of age identification. Similarly, the blue color of the iris and the clear horn color of the undersurface of the claws are distinctive only in very young individuals. As winter approaches, the young birds tend to accumulate larger quantities of fat around the gizzard and other viscera and generally weigh 20 to 30 grams more than adults of their respective sexes. With the approach of the breeding season the