NESTING OF THE BAND-TAILED PIGEON IN COLORADO

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The literature on Colorado birds contains relatively few references to the Band-tailed Pigeon (*Columba fasciata*), although in recent years a considerable mass of information on distribution and economic status has been accumulated by bird students and game managers. Until the present time, however, data on the life history of the species in Colorado have been almost totally lacking. Adults were known to be present throughout the summer, and juveniles not long out of the nest had been seen at several points. There were reports of Band-tailed Pigeon nests but none substantiated by specimens or photographs; where or when nesting occurred was not known.

Niedrach had collected an adult near Kittredge on June 20, 1928, that contained a fully formed egg. On September 11, 1938, in Jarre Canyon, near Sedalia, he took several specimens whose crops contained a heavy residue of "pigeon milk" cells (examined by Neff). None of the specimens collected by Game Management Agent Frank Poley and state game wardens during the "cherry damage" season (late June to about July 20), over a period of years, contained either pigeon milk cells or well-developed eggs, although Poley found milk cells in the crops of a number of pigeons he examined during the shooting season of 1944, between September 16 and 20. From these and other field observations in 1944, it appeared that late July and August was the most probable period of nesting in Colorado.

There remained the selection of the most favorable place for hunting nests. West of Sedalia and extending southward from the South Platte River canyon to Woodland Park, the Rampart Range rises to a height of 9,340 feet. It is a rugged range, cut by numerous deep stream drainages, and it is well-forested with the scrub oak and other shrubs in the foothills; higher, there are yellow pine, spruce, and Douglas fir zones, with a moderate expanse of lodgepole pine on the summit. A good road follows the ridge closely for its entire length.

Fringing the eastern edge of the range, at approximately 6,000 feet, are foothill farms whose grainfields have long been known as the feeding grounds of Band-tailed Pigeons between June and September. (Less than 10 miles away, near Castle Rock, Colorado, in this same rolling foothill farming area, the Band-tailed Pigeon was first discovered by Long's expedition to the Rocky Mountains and described by Say in 1823.) About June 20, 1944, a band of approximately 200 pigeons appeared on a ranch in this area and remained apparently intact until July 4, when it began to decrease gradually in numbers. Although Neff spent a number of days searching the steep front slope of the mountain and following pairs or single birds on their flight from the feeding ground, no nests were found that year.

In 1945, the pigeons were late in appearing in the area; by July 4 only a few had been seen on the feeding ground. Other assignments prevented further field work in the area until after mid-August. Then, on the assumption that the earlier search had been made at too low elevations, Neff began to work downward from the summit road. There, on the summit of the Rampart Range, on August 22, 1945, he discovered the first Band-tail nest reported for Colorado. The nest was in a lodgepole pine at an elevation of 8,400 feet and contained a squab not over one day old.

Niedrach visited the location on August 23 to begin the photographic history of the nest, and both authors, separately and together at various times, searched the adjacent

ridges. Six unused or deserted nests were found within a two-mile radius, and on August 31 Niedrach found a nest containing a squab about 20 days old just a mile from the original nest. Both young were banded and subsequently left the nest. To avoid disturbing the birds and thus to assure a full photographic recording of the nests, it was decided to forego a regular recording of weights and measurements, but such data were obtained from time to time when the brooding bird left the nest of its own volition or when the young bird was photographed.

Both nests were carefully studied. The squab of known age was under observation for 25 days. The other squab, feathered when found, was thought to be 20 days of age on the basis of close comparison of all details of parental care, feather development and growth, weights, measurements, and development of physical activity.

Nests.—One nest was placed at the base of two large branches, against the trunk of the tree; all others were one to three feet out on flat branches. All were 14 to 16 feet above the ground, and their structure was typical of the pigeon family. All were in

Fig. 16. Male Band-tailed Pigeon brooding a ten-day old squab, August 31, 1945, Rampart Range, Pike National Forest, Colorado. Photo by R. J. Niedrach.

similar locations, either in a tree on the rim of some declivity or in a tree that stood taller than its neighbors downhill. The adults as they left the nest always took off in a steep downward dive to gain momentum before circling up and over the ridge.

Brooding.—Like other members of the pigeon family, the parents took regular shifts in the care of the young. The female was on the nest when it was discovered at 3:00 p.m. on the second day of the squab's life; the male brooded from 9:15 a.m. to 4:20 p.m. on the third day, but the female was on the nest all of the fourth day. After that the

exchange was regular. The male returned to the nest between 8:45 and 9:30 a.m. and brooded the squab until late afternoon. The female was more erratic and returned any time between 3:45 and 5:15 p.m. On occasions when she was unusually late, the male usually greeted her with gutteral exclamations.

The parents brooded the nestling for 20 days, leaving the nest only rarely for a few minutes (never more than 30) to chase off an intruder or to get a drink from a near-by spring. After the 20th day, each adult came once daily to the nest, between 10:00 and 11:00 a.m., fed the squab, and departed; they no longer brooded the young, even at night.

Feeding.—Although the nest was watched from daylight to dark, the female was never seen to feed the squab until after the twentieth day; she did not do so even on the fourth day when she was not relieved by the male. The male, however, fed the squab regularly. During the first week, three feedings daily were observed, between noon and 3:00 p.m. During the second week the schedule was reduced to two feedings; these occurred between noon and 1:30 p.m.

Growth of the young.—At one day of age the squab was barely two inches long, and it was unable to hold its head erect for more than seconds at a time. It was covered with a fine cottony down of a rather odd shade of yellow. During the first 10 days its body size increased visibly, but its gain in strength and its feather development were slow.

At 17 days of age the body feathers were 15 mm. out of the sheaths. The head was dotted with pin-feathers and there were large bare patches on the sides. The first primary was 30 mm. out of the sheath, and the central tail feathers were 28 mm. long. The fine yellowish down still adhered to the tips of the feathers, giving the squab an odd fuzzy appearance. Even at this age the squab snapped its bill at an intruding hand and crawled about on the nest. It weighed 140 grams.

On the 20th day the central tail feathers were 42 mm. long, and the first primary was 40 mm. out of the sheath. The pin-feathers on the head were opening, but the sides were still bare. At 23 days of age the squab began to look much like its parents except for the short tail; at this age the squab snapped its bill vigorously, slapped with bent wing at an intruding hand, and danced awkwardly about the nest.

On the 26th day the central tail feathers measured 75 mm., and the body weight was 243 grams. The squab spent much of the day picking off the fuzzy down that still adhered to its feathers, preening and rearranging the feathers time after time. On this day, also, the squab began to exercise for the first time, walking about, going as far as two or three feet out on the nest limb, waving and flapping its wings vigorously, craning its neck, and peering about interestedly. This activity increased on the following day. Observations were not made on the 28th and 29th days, but at dawn on the 30th day the squab was gone from the nest and from the tree. The squab in the other nest was last seen late on September 15, when it was 25 days old; it was sitting quietly in the nest and had not yet begun preening or exercising.

It is presumed that both squabs joined the flocks which fed in the foothill fields. Little is known of the activity of the juvenile Band-tail after it leaves the nest. Frequently the feeding area is far from the nesting location. It seems likely that loss of weight after leaving the nest may be entirely normal as the young bird begins to fly with the flocks and feed itself. Juvenile pigeons weighing as little as 205 grams have been collected from feeding flocks.

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