

A GROUP OF BAT-EATING DUCK HAWKS

By KENNETH E. STAGER

Occasionally there comes to the field observer one of those fascinating opportunities of watching some bird or mammal behave in a manner entirely foreign to its usual pattern, or at least foreign to the pattern which it has been observed to follow in the past. The observations set forth in the following paragraphs deal with a group of Duck Hawks which have departed from their usual diet of aquatic bird life and are apparently using bats as the major item of their bill of fare. Literature contains many records of raptorial birds feeding upon bats and the following observations are similar in some respects to those of other writers, but also they tend to differ in many ways.

On August 5, 1938, my companion and I established camp on the ranch of a jovial Texan named Ben Gerdes. The Gerdes ranch lies among the low, forest-covered hills of the Balcones Escarpment in Medina County, of south-central Texas. On the ranch is a large limestone cave, known as Ney Cave. This cave is the diurnal retreat for a huge colony of Mexican free-tailed bats (*Tadarida mexicana*). The guano deposited by the colony has proved a source of revenue for the Ney family of D'Hanis, Texas, for many generations. It is from this family that the cave derives its name.

The area was purposely visited because of the widespread stories of the bat population of the cave. After several hours had been spent in studying the colony within the depths of the cave, my companions and I withdrew early in the afternoon in order to observe the spectacular bat flight which, according to Mr. Gerdes, "usually begins late in the afternoon, but several hours before darkness sets in, as the cave contains so many bats, that it is necessary for them to start coming out early, in order that the last ones to depart could leave before the first ones began to return."

As I stood in the ranch yard below the mouth of the cave, watching for the vanguard of bats which would announce the evening flight, my attention was drawn to the arrival of three Duck Hawks (*Falco peregrinus* subsp.) which instead of passing on around the hill began circling and making rapid dives through the air, directly above the mouth of the cavern. This maneuvering continued with an increase in the speed of the aerial acrobatics. The falcons would disappear for a short period and then suddenly reappear from around the hill, dashing horizontally through the air, directly above and slightly out from the cavern's mouth. Throughout this performance the falcons kept up a steady cry, similar to that given when in combat with a fellow bird over the possession of captured prey.

At this point, Ben Gerdes noticed my interest in the activities of the falcons and informed me that the performance was a daily affair at the cavern mouth and that the "blue dodgers" were "warming up" to catch their evening meal of bats. According to Mr. Gerdes, the falcons had been making a practice of catching bats at the cavern's mouth for many years. The rancher and his two sons kill the falcons at every opportunity, because of the depredations made upon the young poultry and also because of the number of bats that they kill. The Gerdes family hold the bats in high esteem and are careful to see that nothing harmful befalls the colony.

The three falcons had appeared at approximately 3:10 p.m. and by 3:30 their numbers had been reinforced by three more. The six birds continued to cry and dive at the cavern mouth as if they were calling the bats to come out. Suddenly a dark cloud of bats broke from the portal of the cave and poured out in a long stream to the east, flying directly over the ranch house at a height of about 300 feet. The column was approximately fifteen feet in diameter, with the bats flying in as compact a formation as possible. As the stream of bats emerged from the cave, it rose at an angle of almost 45°

for approximately fifty feet and then leveled off. The head of the column was soon lost to sight in the east where it disappeared beyond the tree-covered hills. The thousands of bat wings set up a decidedly noticeable roar, which tended to add to the awe-inspiring spectacle.

The instant that the bats made their appearance, the band of falcons set to work. Darting from above, or on the flank of the column, the birds would cut into the on-rushing mass of bats with talons set, and they seldom emerged on the opposite side without their prey held fast. Upon capturing a bat, a falcon would then skirt the tops of the trees covering the hillside and disappear around the hill, presumably to devour its prey. In a short time the bird would reappear and immediately join its companions in the harassment of the bat flight.

The bats apparently took no notice whatever of the falcons, except at the point at which the diving bird broke into the column. As the falcon flashed into the flying mass, collisions were inevitable and many times the birds would be deflected from their course.

The flight continued for over an hour and then began to dwindle in numbers. The number of falcons had diminished to two birds by this time, with the others presumably having fed to capacity. According to Mr. Gerdes, the flight just witnessed was only the "preliminary flight" and but an example of the main flight which customarily follows the vanguard after the lapse of approximately one hour.

The falcons were not observed to pursue solitary bats in the fashion of the Bat-eating Buzzard (*Machaerhamphus anderssoni*) of Africa (Lang and Chapin, Bull. Amer. Mus. Nat. Hist., 37, 1917:552), but seemed content to take their prey in the easiest manner possible, namely, by flying directly into the heart of the column and taking a victim as it came in contact with the bird's talons. To an observer it would seem an impossibility for the bird to break into this living mass without making a capture, but *Tadarida mexicana* is noted for its erratic and rapid flight, and the occasional emergence of birds with talons empty might be attributed to this fact.

At approximately 5:30 p.m. the main flight began, with the column emerging with the same volume and speed as the preceding flight. A pair of the falcons reappeared and began to harass the outcoming bats in a rather desultory fashion as compared to the gusto with which they had set upon their unfortunate prey earlier in the afternoon. Apparently because their crops were filled, interest in the flight had diminished. This second flight of bats from the cave continued until approximately 9:30 that night, as attested by the roar made by the countless thousands of wings.

Camp had been established along a pecan-bordered stream which flowed along the base of the hill in which the cavern was situated. The mouth of the cave was not over two hundred yards up the hillside from our camp, so that the noise made by the outgoing and incoming column of bats was clearly audible from this point. I awoke at 3:00 a.m. to the roar of the incoming flight. Shortly after 4:00 a.m. it became light enough to see, and I arose and made my way up the hillside to the mouth of the cave. The return flight was made in a different manner from the evening flight in that the incoming bats flew to a point several hundred feet directly above the cavern's opening and then volplaned downward and into the yawning mouth of the cave at a terrific rate of speed. By training one's eye to the top of the descending column, bats could be discerned approaching the "diving point" from all points of the compass.

The mouth of Ney Cave opens as an oval doorway, ten feet high and twenty feet wide. This made it necessary for the descending bats to execute a sharp turn as they entered the cave. Taking up a position on the hillside directly over the mouth of the cave, I found myself within ten feet of the rapidly descending column of bats. They

were so close that the ripple of air on their wing membranes was clearly audible and much like the sound produced by air being rippled over rubber sheeting.

Shortly after daylight, the Duck Hawks put in their appearance and immediately set to work securing their morning meal of bats. The capture of incomers was not as easy a feat as that of the preceding evening, largely because the incoming column was not as compact as the outgoing stream and was descending at a much greater speed.

Although the catches of the falcons were less numerous, the birds seemed not the least discouraged and worked with great alacrity. Upon making a capture, a falcon would immediately retire to a point out of sight around the hill, as had been done on the previous evening. I was armed with a shot gun and in one instance fired at a bird as it started to make off with a bat in its talons. The gun was not of a suitable type for stopping Duck Hawks, however, and the charge of shot only made the falcon drop its prey. The limp body of the bat dropped on the open hillside and when retrieved it was found to be lifeless, with deep talon punctures in its body. Apparently the falcons were not devouring their prey on the wing as is done by *Machaerhamphus*, but retired to some favorite perch out of sight around the hill, for without exception the birds would fly away as soon as a bat was secured.

The birds continued to raid the incoming stream, but began to work at a greater height, out of range and danger of my gun. I had not taken any precautions to conceal myself as my primary desire was to get as close to the descending column of bats as possible.

On the ground just outside of the cavern mouth lay the decomposed bodies of two of the "blue dodgers" which had fallen victim to the gun of the rancher's son. One of the bodies was in a better state of preservation than the other and from it a complete skeleton was secured for later identification. The bones are now in the collection of the Los Angeles Museum.

The spectacle of the Duck Hawks feeding on the colony of *Tadarida mexicana* is of great interest for many reasons. Aside from the fact that the birds were securing food of an unusual nature and in a unique manner, it causes one to pause and consider the unusual concentration of Duck Hawks in the vicinity of the cave. Did the surrounding area have an overabundance of Duck Hawks or were the birds drawn to the area by the presence of the bat colony and the huge food reserve which it offered? As far as endangering the existence of the bat colony is concerned, the depredations of the falcons would seem insignificant because of the enormous size of the colony.

The time allotted for studying this enormous chiropteran colony and its predators came to an end only too soon, but at a future date I hope to return to the area and continue observations over a longer period of time. From what has been seen it would seem that the Duck Hawk can definitely be listed as a bat predator if given an ideal situation such as the one just described. Because of the early emergence and late arrival of portions of the bat flight, the activities of the falcons can hardly be termed crepuscular, as in the case of *Machaerhamphus*. The situation at Ney Cave appears to agree with reports of other authors that colonies of bats preyed upon by birds are usually those of the early-flying, free-tailed family, Molossidae.

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