

corner of the Lake, thence east to Palm Beach, and west across the Tamiami Trail to Everglades. A total of sixty-one specimens was noted, of which twenty-five were adult males! This gives about one adult male to two and a half specimens seen! A decided increase above the ratio noted in the January trip, high as that was.

About the region lying southeast of Lake Okeechobee, the Marsh Hawk is very abundant and on two occasions five consecutive birds noted, were adult males! In a string of fifteen noted between Belle Glade and a point about half way to Palm Beach, eleven birds were adult males. South Florida seems to be far more prolific in adult males of this species in the winter range than any locality of which the writer has knowledge.—ALEXANDER SPRUNT, JR., *R. F. D. No. 1, Charleston, S. C.*

Bone Healing in Young Marsh Hawks.—In connection with some work on the food habits of the Marsh Hawk (*Circus hudsonius*) near Ruthven, Iowa, it has been part of our technique to tether the larger and more active nestlings in the vicinity of their nests in order to prolong the period of profitable study (Errington, Condor, 1932, pp. 75-86). During the summer of 1933, two immature Hawks, thus tethered, suffered broken legs and were brought in to the field laboratory for treatment. They were given the same food (small vertebrates) upon which they had been feeding in the wild. Notes were taken on their recovery as a matter of interest.

Particular attention was paid to the rate of return of function to the injured legs. It was not until the Hawks showed evidence of a fatal mouth disease that they were killed and the healed bones dissected out.

Hawk No. 1 broke its left tarso-metatarsus at about the mid-point on July 7. It was then 22 days old, at which age the young have commonly attained about three-fourths of their adult growth, and their bones, while fairly well formed, are still not enough calcified to be very strong. The young usually begin to fly at about five weeks (Breckenridge, Condor, 1935, pp. 268-276), and at three weeks are able only to walk and flap clumsily through the grass.

Although the bone slipped after bandaging, it is likely that the leg would have been somewhat less straight after healing had it not been for our aid. It is entirely possible, however, that the healing would have occurred naturally without serious deformity, as the positions assumed by the Hawk in standing and sitting tended to keep the leg comfortably outstretched.

By July 18, 11 days after the fracture, Hawk No. 1 (an unexcitable bird which had become tame) was using its injured leg to fair advantage; by July 21, the leg was quite functional; and by July 29, no indications of favoring were to be noted.

Hawk No. 2 was brought in on July 17, its left tibia broken near the distal end. This individual was between 29 and 31 days old, well developed, and with juvenal plumage predominating.

In this case, the loose bandage put on probably had slight if any influence in keeping the healing bone in place; and the bird was not disturbed except for an examination of the injury on July 21, at which time, four days after the break, the bone had not set.

By July 27, ten days after the break, the Hawk was beginning to put weight upon the leg, especially in the course of frenzied efforts to escape (contrasted with Hawk No. 1, No. 2 was untameable and reacted violently to human presence). Two days later, Hawk No. 2 was regularly using its weak leg, though not with complete freedom.

Recovery had progressed sufficiently by August 3 so that Hawk No. 2 was occasionally using its weaker leg to strike with when approached. In walking, most of the weight was borne by the uninjured leg, but this was partly due to a slight bow-like

deformity resulting from the position in which the tibia end had healed. The leg had much recovered by August 9, and the bird was striking viciously with it.

Both Hawks were killed on August 10, No. 1 on the 34th day and No. 2 on the 24th day after injury, and 23 and 14 days respectively after the use of the legs had obviously been resumed.

It may be said that the time required for the healing of broken leg bones was practically the same for the two nearly grown Marsh Hawks studied. As might be expected of a raptorial species having access to abundant calcium in the bones of its prey, recovery took place rapidly, voluntary function being regained about the 11th day after injury, and emergency function at least a day earlier.—PAUL L. ERRINGTON, *Iowa State College Ames, Iowa.*

Purple Gallinules (*Ionornis martinica*) are Predatory.—For many years I have known that the Purple Gallinule (*Ionornis martinica*) was predatory, as I have seen them take the young and eggs from the nests of Herons and Egrets and other birds a great many times.

My first knowledge of their predatory habit was more than thirty years ago. At that time, I was raising Wood Ducks (*Aix sponsa*) along the edge of my Heron colony now known as "Bird City." The young Ducks were inclosed by a fine-meshed wire fence with an overhanging top, so that they could not climb out or stray away. From time to time I would miss some of them and was at a loss to know what was destroying them, as they were closely confined at night, and in the daytime, were in water too shallow for loggerhead turtles or other predatory creatures.

As the loss continued with great regularity, I built a blind near the pen and put an old darky to watch. In a few hours he came to me and stated that the young Ducks were being taken by "dem blue marsh hens." Knowing that he meant Purple Gallinules, I did not give his statement credit, but decided to watch for myself.

Getting into the blind, I soon was convinced that the Purple Gallinules were the reason for the disappearance of my young Ducks, some of which were almost half-grown and beginning to be quite well feathered. I had hardly gotten into the blind when a Purple Gallinule flew from the rushes of the pond beyond the fence, alighting in the shallow water near the bank and quite near me. There were no Ducks near where it lit, but a number of them were feeding towards it perhaps fifty feet away. The Gallinule walked along in the shallow water on the border of the pond, seemingly busily searching for insects, as it moved slowly and pecked from time to time in the grass which grew out from the bank into the water. It paid no attention to the Ducks, as they approached, until they came directly to it, when suddenly it sprung onto the back of one of the largest, and at one stroke of its beak severed the spinal cord at the base of the brain. It then proceeded to peck a hole in the back of the dead Duck, which was accomplished with remarkable speed, the viscera being drawn out piece by piece and eaten. After eating the viscera, it continued pulling out, through the back, bits of flesh. I had taken my gun into the blind with me, and shot it as it stood on its victim.

Supposing this was an unusual case of the Gallinule preying on the young Ducks, I did not wait to see if more Gallinules would attempt the same thing, but as from day to day I continued to miss my young Ducks, I had a watch set covering a full day, arming the watchman with a gun, and he killed five Gallinules, three of which had already gotten young Ducks before he shot them.

In later years, I have seen Purple Gallinules many times take eggs and young of many species of birds. This predatory habit was brought definitely to my attention during three consecutive days—on May 10, 11, and 12 of this year.