

FLORIDA FIELD NATURALIST

QUARTERLY PUBLICATION OF THE FLORIDA ORNITHOLOGICAL SOCIETY

VOL. 10, No. 3

AUGUST 1982

PAGES 45-64

OBSERVATIONS ON LIMPKIN NESTING

LAWRENCE H. WALKINSHAW

Little has been published on the nesting of the Limpkin (*Aramus guarauna*) (Bent 1926), although additional unpublished studies have recently been completed by Ingalls (1972) and Bryan (pers. comm.). I have long been interested in Limpkins, from the time I first heard one in 1938. In this paper I present observations on nesting that I have made since 1966, especially on Lake Pierce, Polk County, Florida. Limpkins are common in shallow water along the lake shore and along the edges of man-made lagoons and waterways nearby. The number of Limpkins has varied with water levels and food conditions. At times nearly all birds leave the lake. On 12-15 December 1969, for example, practically all Limpkins disappeared from Lake Pierce, and 23 showed up at the same time at Nalcrest, 14.4 km east of Lake Wales and 19.2 km south of Lake Pierce, an area where previously none had been present. In spring the birds reappeared along the shores of Lake Pierce.

The Limpkin in the United States is primarily a Florida bird. It has been found north to South Carolina, in the Okefenokee Swamp, southern Georgia, and over much of peninsular Florida, west in the Florida panhandle rarely to Holmes, Jackson and Bay counties (Fig. 1). The region of greatest abundance is the central portion of the state (Sprunt 1954), north of the southern border of Lake Okeechobee. At Lake Pierce, where I made my observations, the Limpkin is fairly abundant.

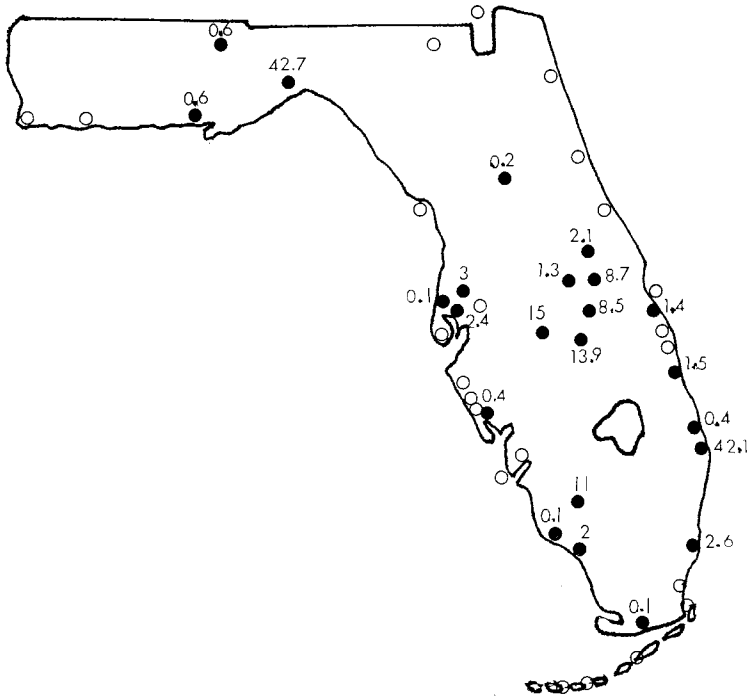


Fig. 1. Average number of Limpkins observed on Christmas bird counts, 1971-1980 (Amer. Birds Vol. 26-35). Closed circles indicate where Limpkins were observed, open circles where none was reported. Most counts were made every year. Highest totals (for the period of record) were: W. Palm Beach, Palm Beach Co., 421; St. Marks, Wakulla Co., 384; Lakeland, Polk Co., 150; Lake Wales, Polk Co., 139; Orlando, Orange Co., 87.

TERRITORIES

Six pairs of Limpkins occupied 3.2 km of the western shoreline of Lake Pierce (Fig. 2) over several years. The male territorial owner normally approached an intruder by flying toward it, at times screaming loudly the entire distance. The intruder generally flew in the opposite direction with the owner following closely behind. Female Limpkins also challenge female neighbors and chase juveniles if the male is incubating (Dana Bryan pers. comm.). Juvenile birds disappeared at about three months old.

Territories were linear, along the shores of the lake and neighboring channels, some of which were man-made. I never found the birds nesting further than 21-25 m inland from the shoreline. The

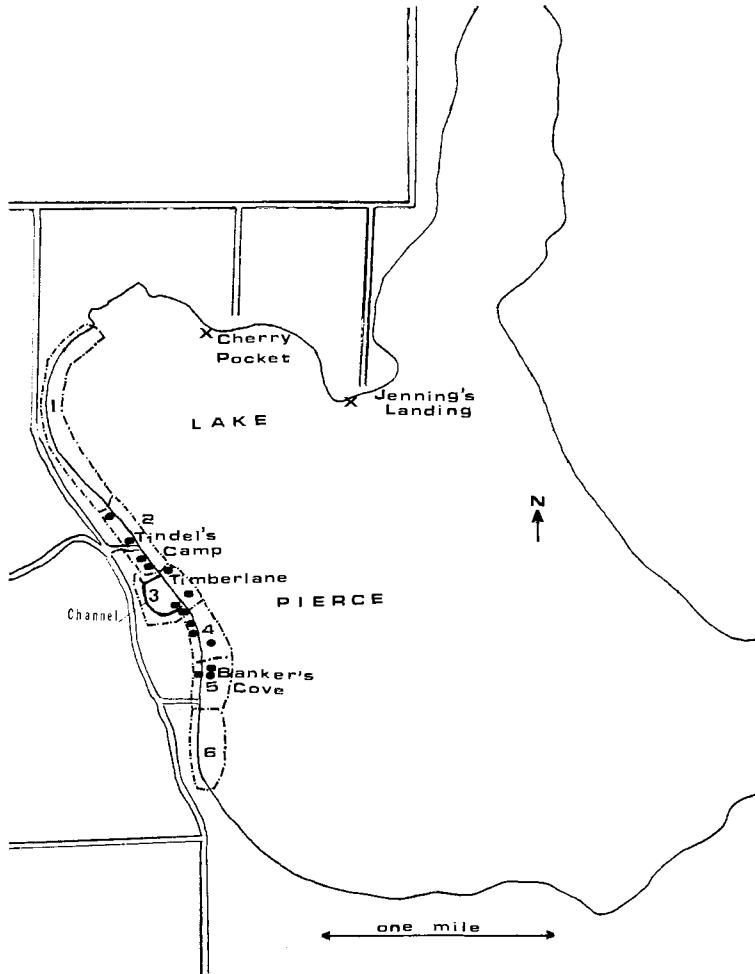


Fig. 2. Limpkin territories along the west side of Lake Pierce, Polk County, Florida, 1980-1982. Closed symbols indicate a nest site.

six Lake Pierce territories averaged 561 (329-1,390) m long. Territories I observed at Lake Wales were similar. At Harris Ranch, Okeechobee County, territories consisted of marshes 3 to 4 ha in size covered with maiden cane (*Panicum hemitomum*) and patches of pickerel weed (*Pontedaria lanceolata*) with occasional pools of open water.

VOCALIZATIONS

Normally Limpkins were fairly quiet, seldom if ever calling at night, and only periodically during the day. Prior to the nesting season, males became very noisy, uttering their shrill pathetic cry *kreeow* repeatedly, day and night. At this time of year another call, a sharp *kow*, was recorded by Dana Bryan (pers. comm.). In Okeechobee County, on the night of 18 March 1972, a male was heard calling *kreea-ka* while flying over the marsh. Periodically he also called a repeated *kik-kik-kik* when flying. On 18 to 20 January, 1982, as the weather became warmer at Lake Pierce, three males began their screaming. They continued this activity until mid-February when nest building began, and they then became much quieter. Females also gave the common call. Both birds uttered at times a guttural *krark* or an even more guttural call if their eggs or chicks were disturbed. When warning the chicks they uttered a low grunting call similar to the grunt of a pig, but when they moved or called the chicks they gave a low clucking, *kakaduck* or *kakluck*. Obediently the chicks followed them. The chicks' common call was *wheeteoo* (Dana Bryan pers. comm.). At times it was a shrill peeping similar to that of a Sandhill Crane (*Grus canadensis*) chick.

NESTING PERIOD

At Lake Pierce, Limpkins nested throughout the year. One pair, the male of which had a crippled left wing, nested twice in a year. They had five eggs 20-25 April 1981 (LHW), four of which hatched in May (Dick Kessler pers. comm.). They reared two young (Mildred Comstock pers. comm.). Then they nested a second time 150 m north of their first nest in late July rearing two more young (Mildred Comstock pers. comm.). Other laying dates have been (E = laying date estimated, allowing a 27 day incubation period where hatching date was known; K = laying date known): 16-21 March 1971 (E); 25-29 January 1972 (E); 9-12 February 1972 (E); 13-17 March 1972 (E); 14-17 March 1974 (K); 26-29 February 1976 (E); mid-October 1979 (E); 7-10 February 1980 (E); 18-21 March 1980 (E); 3-7 March 1981 (K); 20-25 April 1981 (K); 30 January-3 February 1982 (E); 5-11 February 1982 (K); 13-18 February 1982 (K); 23-27 February 1982 (K); and 1-5 March 1982 (K). Most eggs were laid in late January, February, or March, coinciding with the laying period of the Florida Sandhill Crane (*G. c. pratensis*) at the same Florida latitude.

Hatching dates have been: 17 April 1971 (3 young); 10 March 1972 (3 young); 13 April 1972 (no. ?); 27 March 1976 (4 young); 8 March 1980 (4 young); 17 April 1980 (4 young); 2 April 1981 (5 young); 21-22 May 1981 (4 young, estimated); 9-10 March 1982 (6 young); 16-17 March 1982 (6 young); and 21-22 March 1982 (6 young).

NESTS

Limpkin nests have been described by several authors (Bent 1927, Nicholson 1928, Howell 1932, Sprunt 1954, Ingalls 1972, and Bryan pers. comm.). I have seen two types, those built in emergent vegetation over shallow water, and those placed in bushes or trees adjacent to water.

I found both types of nests at Lake Pierce. In all cases they were built where snails were abundant. Of the marsh nests, three were built in cattails (*Typha domingensis*) and three under dead dog fennel (*Eupatorium capillifolium*), which grew on a damp mat out from shore covered by pennywort (*Hydrocotyle umbellata*). Another nest was placed in torpedo grass (*Panicum repens*). A nest in Okeechobee County was in pickerel weed. All of these nests were fairly well hidden. In some, the birds had pulled vegetation down partially hiding the nest from above as is done by rails and gallinules. All of these nests were built of the dominant vegetation in the vicinity, and the Lake Pierce nests were located within 2 m of an opening so that access was made easy. The nests averaged 36.4 (26-48) m out from the lake shore. They were 18.2 (3-39) cm above water level, while the water beside them averaged 61.2 (41-122) cm deep. They measured 51.7 (28-82) x 62.5 (28-94) cm in diameter and were rather circular. The top center was depressed about 7.5 (3 to 28) cm for the eggs.

I found eight nests in trees. Two were built in live oaks (*Quercus virginiana*), two in cypress trees (*Taxodium distichum*), and four in cabbage palms (*Sabal palmetto*). In the oak and cypress trees, nests were built of Spanish moss (*Tillandsia usneoides*) and twigs from the surrounding location. Six of the tree nests averaged 3.1 (1-4) m from the trunk. Two of the palm nests were placed in the center of the crown where the leaves radiate out, and two were located on the top of several closely situated palm fronds. One of these nests failed during a severe windstorm; the second was eventually deserted. The palm nests were built of portions of nearby palm flower stalks and some dead grasses carried, one or two at a time, from the lake.

The eight tree nests averaged 6.36 (3.5-11.6) m above ground. Of the oak tree nests, one measured 45 by 61 cm across, 15 cm deep while the second measured 94 by 128 cm across and 36 cm deep. Both consisted chiefly of Spanish moss. Palm tree nests were smaller, about 35 cm across and 20 cm deep. They averaged 14.6 (7-31) m from the lake shore and were generally above mowed lawns.

Both male and female helped build the nest. In a future nest site, I watched the wing-crippled male carry Spanish moss and twigs for over an hour onto a horizontal ash (*Fraxinus* sp.) branch over the channel. When the final decision was made, the female built a cattail nest some 180 m away along the lake shore.

THE EGGS

At most nests eggs were laid daily until the clutch was completed. Limpkin eggs resemble Sandhill Crane eggs but are much smaller. However their clutch size is much larger. I have seen four clutches of four eggs, four of five eggs, and three of six eggs. The mean for 11 completed clutches was 4.9 eggs. Bent (1926) remarked that clutch sizes ranged between four and eight eggs. Roderick Chandler (pers. comm.) noted a clutch of nine eggs once in Okeechobee County. Sprunt (1954) wrote that clutches commonly were six or seven. The normal egg shape is somewhat more elliptical than the ovate crane eggs, but the ground color as described by Bent (1926) was 'deep olive buff,' 'cream buff,' or 'cartridge buff,' with longitudinal striations of some shade of drab-gray, or brown. Bent also gave measurements of 40 eggs as 59.4 x 43.8 mm. I have measured 27 eggs. The mean was 61.29 (SD 1.92, 58.8-66.1) mm by 44.01 (SD 0.968, 42-45.4) mm. The mean weight of 13 eggs was 57.4 (SD 2.84) grams. The mean elongation ratio (length divided by width) was 1.393.

INCUBATION AND FLEDGING

Both birds incubated the eggs. I have found Limpkins incubating two or three eggs before the clutch was completed. Even then they often refused to leave a nest when I touched them with my hand or canoe paddle. During the incubation period, immediately after daylight males fed more rapidly than usual. Between 0630 and 0715, they flew to their nest and began incubating while the females went away to feed. Nest changes have been observed at 0630, 0631, 0645,

0648, 0715, then later during the day at 0930, 1130, 1150, 1300, and several times between 1915 and 2000, the latter changes occurred before dark when the female took over. Dana Bryan (pers. comm.) noted that the female incubated at night.

The incubation period (the time between the laying and hatching of the last egg) was noted four times: William A. Dyer (pers. comm.) noted a period in May 1967 as 28 days; at 1981 Nest 1, the last egg was laid 7 March and hatched 2 April, 26 days later; at 1982 Nest 1, the sixth egg was laid 11 February and hatched 10 March, 27 days later; at 1982 nest 2, the sixth egg was laid 18 February and hatched 17 March, 27 days later. All the eggs hatched during a period of 18 to 24 hours. Florida Sandhill Crane eggs hatch 29 to 30 days after laying. Chicks often left lower Limpkin nests prior to the hatching of the last two to four eggs. At a few hours after hatching, chicks were capable of swimming, walking, clambering over debris, and hiding. Apparently all of the chicks that hatch in tree nests fledge from the nests at once.

In all cases at fledging the parents built a platform or settled into vegetation so dense it made a natural nest just above water level and there took part or all of the chicks. From lower nests they had little trouble joining the nearby male. From tree nests, they tumbled out when the female flew below, then uttered her 'chick-call'—a low somewhat vibrating clucking note. Sandhill cranes call their chicks with a vibrating *purrrr* call.

On 17 April 1971 at 0600 Marjorie Marshall (pers. comm.) observed such an incident in Lake Pierce. A female Limpkin was swimming in the channel adjacent to their house. The nest was in a live oak above the channel. Responding to the clucking of the mother, three downy chicks, one at a time, tumbled the 6 m out of the nest into the channel then swam behind their mother some 61 m out into the emergent vegetation. On 8 March 1980 about 1600, four chicks tumbled similarly out of a cabbage palm tree nest onto the lawn grass 11 m below then followed their mother first to the lake shore then 3 m out into the lake into some heavy torpedo grass where she quickly trampled down a temporary nest. Here she began brooding the shivering chicks and continued this in the spot for the next two days. In both cases the male rushed up and down the lake front hunting for snails and bringing his catches back to both mother and chicks. In both cases I sat or stood within 2 m of the family as the male fed them.

On the third day this second pair, the male in front the female behind and the four chicks between, swam 120 m to a cattail patch where there was excellent cover. Here the family remained for the next month and made occasional daily forays for food. When night arrived they always returned to the cattail patch. In 1982 a pair nested in this patch. The eggs hatched on 16-17 March, and the adults kept the chicks in the region until 5 April when at 1600 one parent with two chicks swam back 120 m to a Timberlane shore. These changes were made apparently to move to regions where snails were more plentiful. As the chicks grew older, around a month, parents often left them standing in a group in good cover while they dashed around the lake shore procuring food, often flying or running between the food supply and the chicks.

THE CHICKS

One newly hatched chick measured: wing chord, 32 mm; tarsus, 28 mm; exposed culmen, 18 mm. He was covered with long very dark down, and resembled a rail chick more than a crane chick in color, but was much larger. Yet they did resemble crane chicks in shape and behavior. The down on the baby Limpkin, described by Bent (1926), was "cinnamon brown" to "snuff brown" paler on the sides of the head and almost white under the chin. Sprunt (1954) described this down as "black." Regardless, it was very dark at first and slowly became a lighter brown but still much darker than the down on baby Sandhill Cranes. When chicks were 28 days old they resembled adults except for down remaining on the top of the head, neck, and rump. When 45 days old they were better than three-fourths grown and showed no down. Four chicks hatched on 8 March 1980 could fly about 5 m on 22 April, 45 days later. At that age they often found their own snails, but one parent often accompanied them and procured their food. When they were fed, even at this age, they often vibrated their wings as they anticipated the new food morsel. Shortly thereafter they were on their own. What happened to them thereafter I never knew for none had been banded.

LOSSES

During the early 1970s, one nest was lost to a raccoon (*Procyon lotor*). Two other nests were lost to predators, either raccoons or Fish Crows (*Corvus ossifragus*). The eggs in another nest were destroyed by a severe windstorm. Of 16 nests, outcome known, 12 had eggs hatch (75%). Of a probable 71 eggs (56 observed), 48

hatched and 43 fledged (62.53%). Of 51 eggs that hatched and final outcome was known, 25 produced flying birds (49.01%), but there could have been more eggs in three nests. Of 26 eggs (where clutches were completed), 11 Limpkins reached flying stage (42.3%).

I have seen several birds with fractured wings. One of these happened the day the hunting season opened in 1980. The crippled male was flightless through January. He slowly became able to fly, by April acquired a mate, and had eggs in late April. He maintained his territory even when he could not fly, swimming toward his opponent then running in that direction. He maintained the same territory for both nests during 1981, and nested there again in 1982.

Another bird during the nesting season, March 1982, after eggs had hatched, showed up with a crippled leg. This bird left its family in the charge of the mate and worked back into more remote channels in its search for food. Although it could fly expertly, it had severe difficulty searching for food.

OTHER BEHAVIORS

Feeding behavior, well described by Snyder and Snyder (1969), consisted of four methods: visual searching on land; visual searching in clear water; tactile searching of surface vegetation with head above water; and tactile searching of the bottom with head above or under water. At Lake Pierce the water was often quite muddy, and the birds fed by the fourth method generally. Once I watched a Limpkin with head submerged holding out one spread wing to apparently give it better visual contact. Their main food in the Lake Pierce vicinity was the apple snail (*Pomacea paludosa*), but they also ate many mussels.

I have watched Limpkins bathe on several occasions. On 5 December 1980 when a female finished bathing, she walked out onto the adjacent mat, shook herself three times then began to jump like a dancing crane. She uttered four guttural 'krarks', jumped 25 to 30 cm up, then continued until she had completed a circle when she resumed preening. The male paid no attention to her dancing, unlike the behavior of cranes in which a pair often dances for some time together. I have seen one-third grown Limpkins do a similar jumping up and down after being fed.

I have watched copulation on different occasions, the female assumes a precopulatory pose, lying almost flat on the ground with spread wings. The male hops onto her back and copulates. It requires only a few seconds.

SUMMARY

At Lake Pierce, Polk County, Florida, Limpkins have been rather common during the past 16 years. The birds, seldom disturbed by local residents, have become very tame, feeding nearby and often nesting in the trees in yards. Six pairs normally nested along the northwest side of the lake each year. Most nests were found during February, March and April, but nests were found during the entire year, and at least one pair nested twice in one year. Egg clutches varied between four and six eggs; incubation required between 26 and 28 days with the average 27 days for four clutches. Young and eggs were cared for by both parents. An equal number of nests were in trees and in emergent vegetation along the lake front. Young were capable of flying 5 m when 45 days old. Around 42 per cent of eggs laid produced flying Limpkins.

Dancing by one adult resembled crane dances as did hopping up and down by chicks. Once a Limpkin used a spread wing to aid his vision under water in his search for snails and mussels, the chief food of Limpkins at Lake Pierce.

LITERATURE CITED

- BENT, A. C. 1926. Life histories of North American marsh birds, U.S. Nat. Mus. Bull. 135.
- HOWELL, A. H. 1932. Florida bird life, Coward-McCann, New York.
- INGALLS, E. A. 1972. Aspects of the ethology of Limpkins (*Aramus guarana*). M.S. Thesis, Univ. of South Florida, Tampa, Florida.
- NICHOLSON, D. J. 1928. Habits of the Limpkin in Florida. Auk 45: 305-309.
- SNYDER, N. F. R. AND H. A. SNYDER. 1969. A comparative study of mollusc predation by Limpkins, Everglade Kites, and Boat-tailed Grackles. Living Bird 8: 177-223.
- SPRUNT, JR., A. 1954. Florida bird life. Coward-McCann, New York.
5230 Timberlane Road, Lake Wales, Florida 33853.