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OBSERVATIONS AT NESTS OF THE LESSER KISKADEE (*PHILOHYDOR LICTOR*) ON BARRO COLORADO ISLAND (REPUBLIC OF PANAMA)

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INTRODUCTION

Although the Lesser Kiskadee (*Philohydor lictor*; old name: *Pitangus lictor*) is widespread, information on its breeding biology is limited to general consideration in Wetmore (1972) and Ridgely & Gwynne (1989), and to nest reports in Wied (1825–1833), Penard & Penard (1910), Snethlage (1928), Haverschmidt (1957, 1961), Smith (1962), and Willis (1962). Some authors (Young 1929, Davis 1961) erroneously report of enclosed nests. Here I report on incubation, young feeding and contribution of sexes to parental care.

STUDY AREA AND METHODS.

Barro Colorado is an island of 1642 ha having the status of nature reserve in the artificial Lake Gatun, created during the building of the Panama Canal. It is mainly covered with tropical moist forest, both primeval and secondary. I conducted observations mostly from March to April 1999 along the coast with the help of a small motorboat. I found 7 nests of the Lesser Kiskadee, including 4 active ones (containing eggs or nestlings), plus 3 without eggs on or near which a pair of adults was observed. In some cases my premature checking of a nest might have resulted in nest abandoning. On the basis of nests and observations of pairs without nests, I estimated the number of birds nesting around the island at 15 pairs. In 1998 I found one active nest. In 1999 at two nests, I mist-netted parents and marked them individually with colour rings. I sexed birds based on presence of brood patch. At 3 nests I conducted observations (for 37 h) from a blind on the boat at anchor.

RESULTS

Nests. All 8 nests were shallow cups of small and dry twigs, stems and roots, as described by Wied (1825–1833), Penard & Penard (1910), Haverschmidt (1957), Smith (1962) & Willis (1962). Seven were on more or less horizontal branches of bushes and small trees growing in water near the shore, but at the same time near open water. One nest (1998) was atop of an old broken trunk, emerging from water close to shore. Five nests were on *Annona glabra* (subfamily Annonaceae); in other cases, plants were not identified. Approximate heights of nests above water level were: 120, 135, 160, 180, 200, 200, 210 and 240 cm. One nest on *Annona glabra* had an outer cup of 10 and 8 cm (egg-shaped), inner cup of 6.5 and 5 cm, outer height of 4.5 cm, inner depth of 2.5 cm. The nest atop the trunk was 8.5 cm in outer diameter, with

TABLE 1. Brooding and nestlings' age in Lesser Kiskadee based on 2-h observation per day (at two nests).

Day of life	Number of brooding spells	Range of brooding spells (min)	Mean length of brooding spells (min)	SD	Percent of time spent brooding
4	11	1-18	6.9	5.77	63.3
5	12	1-11	4.8	2.72	48.3
6	5	1-19	10.8	6.94	45.0
7	16	1-8	2.6	2.10	34.2
8	5	3-16	7.8	5.63	32.5
9	7	1-7	4.1	3.76	24.2
11	5	1-8	5.0	2.92	20.8
12	0	—	—	—	—

outer height of 6.5 cm. Only once did I observe a bird collecting nest material, about 100 m from a nest.

First egg dates, clutch size and incubation. First egg dates were: 7 March, 2 and 21 April 1999, and 27 April 1998. Clutch size at two nests was 3 eggs each. In one nest, the second egg was laid two days after the first. A color-ringed pair was observed for 2 h during incubation on each of 4 consecutive days (08.02–10.02, 09.44–11.44, 07.58–09.58, 16.03–18.03) during which I recorded 16 incubation spells by females, but only one by a male. Incubation spells lasted 5–43 min (mean ± SD = 18.1 ± 10.47, n = 17), and intervals between spells 1–34 min (11.5 ± 7.45, n = 15). The male was often nearby, with a vocal greeting ceremony with the female when she arrived at or left the nest. I also watched another nest (4 days, 9 observation h), where parents were not individually marked. Incubation spells lasted 1–56 min (14.5 ± 13.52, n = 18) and intervals 1–22 min (8.4 ± 5.51, n = 18). Corresponding values for both nests were: 16.3 ± 12.1, n = 35, and 9.8 ± 6.55, n = 33. The weights of 16-day old nestlings (in one nest with two young) were 18 and 14.75 g, with wing lengths of 46 and 41 mm, respectively, suggesting asynchronous hatching.

Care of nestlings. I observed individually marked parents feeding young at two nests. In the first nest, with two young 13–15 days old, observations lasted two h each day. The female fed young 26 times (62% of all feedings), the male 16 (38%), with a similar bias on each day. At the second nest, 2-h observations were conducted for 4 days. During the first two days, the nest contained three nestlings, on the third day two, and on the fourth day only one (predation). The female brought food 45 times (55%) and the male 37 (45%). The female also devoted much time brooding nestlings (see below). Feeding frequency varied from 2.25 to 6.5/h/nestling. The minimum frequency was for a brood with two 4-day nestlings, the maximum at a nest with one 11-day nestling. During these and other hours, a total of 170 feedings were recorded. In 17 cases, dragonflies were brought to nestlings; most (16 cases) were big or medium-sized, delivered to nestlings at least 10-day old; one small dragonfly was brought to a 7-day nestling. Other prey items were not identified due to their small size.

Brooding decreased as nestlings grew (Table 1), and they were no longer brooded from 11 days on. When birds were individually marked only females brooded.

Other behaviors of parents at the nest. Apart from incubation, brooding and feeding nestlings, I observed removal of feces (by both sexes),

ejection of pellets from the beak of adults, nest defense and courtship. During feedings, parents did not try to conceal nest location. They frequently perched near the nest, especially males. On six occasions at two nests, one or both parents attacked a Snail Kite (*Rostrhamus sociabilis*) passing or sitting nearby. In four cases, this behavior seemed to be effective, as the kite flew away. In two other cases, the birds attacked the kite sitting in the nest vicinity many times, but finally gave up. Both parents once attacked a Great Kiskadee (*Pitangus sulphuratus)* flying past the nest.

In about half the cases when the female left or returned to sit on the nest, the male appeared and there was a greeting ceremony: birds slowly spread their wings and uttered characteristic calls, a sort of duet. In one case, after feeding the nestlings, the male performed a kind of courtship flight with exaggeratedly slow wing movements, and the female followed him.

Breeding success. At the first nest (1998), observations took place only during egg laying. The second nest (the earliest brood in 1999) contained two nestlings. About day-16 when I took them out to take measurements their parents called and attacked; the next day, the nest was empty. Perhaps young had left the nest, as the nest was not disturbed and did not contain remnants of nestlings. At the third nest with 3 eggs, two disappeared after 12 days of incubation and the female continued to incubate the remaining egg for the following 16 days; thereafter this egg disappeared too. The fourth nest contained 3 young until they reached 7 days of age. Single nestlings then disappeared, the last at 13 days of age. They must have been taken by a predator. In the fifth nest, a female started to lay eggs, but after the second egg the clutch disappeared and the nest was disturbed, probably predated.

DISCUSSION

Clutch size at two nests was 3 eggs each, in accordance with Young (1929) who reported three eggs in a clutch. According to Hellebrekers (1942), clutch size is 1–4 eggs.

An interesting feature of Lesser Kiskadee is a certain inconsistency between the signs of close social monogamy and unequal shares of parental care of males and females. Frequent greeting ceremonies, pair members staying together during breeding stages and duetting suggest monogamy. However, incubation and brooding nestlings were mainly by the female, and she fed nestlings more.

Skutch (1976) distinguished 17 kinds of incubation patterns. According to his classification, the Lesser Kiskadee has an "hummingbird pattern", in the sense that only the female incubates, and she takes several or many recesses each day. This is a prevailing pattern in Passerines and it seems to be followed by most tyrant-flycatchers (Skutch 1976). Mean total attentiveness during incubation by the Lesser Kiskadee was 54.6% of time for the female, a rather low figure in comparison to other tyrant-flycatchers, e.g., in 57% for the Rose-throated Becard (*Pachyramphus aglaiae*), 62% for the Royal Flycatcher (*Onychorhynchus coronatus*) (Skutch 1976), 68% for the Great Crested Flycatcher (*Myiarchus crinitus*) (Taylor and Kershner 1991), 71% for the Streaked Flycatcher (*Myiodynastes maculatus*) and the Bright-rumped Attila (*Attila spadiceus*) (Skutch 1976). Skutch (1976) provides also information about the hourly rate of feeding visits per nestling in the second week of life for four species of tyrant-flycatchers. This value varied from 1.2 in the Masked Tityra (*Tityra semifasciata*) to 9.4 in the Yellow-bellied Elaenia (*Elaenia flavogaster*), compared to 3.0 for the Lesser Kiskadees.

I observed one case of incubation by a color-ringed male (14-min incubation spell). Male tyrannids have rarely been known to

incubate. According to Skutch (1976), it seems that in tyrannids invariably only the females incubate. Lesser Kiskadee may be unique.

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REFERENCES

Davis, T. A. W. 1961. Nests of *Empidonomus varius, Pitangus lictor*, and *Myiozetetes cayanensis*. Auk 78: 276–277.

Haverschmidt, F. 1957. The nests of *Pitangus lictor* and *Coryphotriccus parvus*. Auk 74: 240–242.

Haverschmidt, F. 1961. Reply to T. A. W. Davis. Auk 78: 277–278.

Hellebrekers, W. P. J. 1942. Revision of the Penard oological collection from Surinam. Zool. Meded. (Leiden) 24: 240–275.

Penards, F. P., & A. P. Penards. 1910. De Vogels van Guyana. Volume 2. Bravenhage (Martinus Nijhoff), Paramaribo.

Ridgely, R. S., & J. A. Gwynne, Jr. 1989. Birds of Panama with Costa Rica, Nicaragua, and Honduras. Princeton Univ. Press, Princeton, New Jersey.

Skutch, A. E. 1976. Parent birds and their young. Univ. of Texas Press, Austin.

Smith, W. J. 1962. The nest of *Pitangus lictor*. Auk 79: 108–111.

Snethlage, H. 1928. Meine Reise durch Nordostbrasilien. J. Orn. 76: 668–738.

Taylor, W. K., & M. A. Kershner 1991. Breeding biology of the Great Crested Flycatcher in central Florida. J. Field Ornithol. 62: 28–39.

Wetmore, A. 1972. The birds of the Republic of Panama. Part 3 – Passeriformes: Dendrocolaptidae (Woodcreepers) to Oxyruncidae (Sharpbills). Smithsonian Institution Press, Washington, D.C.

Wied, M. 1825–1833. Beiträge zur Naturgeschichte von Brasilien. Landes Industrie Comptoirs, Weimar, Germany.

Willis, E. O. 1962. Another nest of *Pitangus lictor*. Auk 79: 111.

Young, C. G. 1929. A contribution to the ornithology of the coastland of British Guiana. Part III. Ibis 5: 221–261.

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