

Nest building and early incubation in Squirrel Cuckoos (*Piaya cayana*)

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RESUMO. Construção de ninho e incubação em *Piaya cayana*. Foram observadas as atividades de construção de ninho e incubação de ovos de um casal de alma-de-gato (*Piaya cayana*). Uma ave sentou-se ao ninho e adicionou o material trazido pelo suposto macho. Este, segurou no bico e quebrou os ramos secos e folhas verdes de árvores circunvizinhas. A maioria da construção foi efetuada na parte da manhã. A incubação irregular, misturada às atividades de construção, sugere incubação desde os primeiros ovos.

PALAVRAS-CHAVE: Leste brasileiro, construção de ninho, incubação, *Piaya cayana*, alma-de-gato.

KEY WORDS: Eastern Brazil, nest-building, incubation, *Piaya cayana*, Squirrel Cuckoos.

The Squirrel Cuckoo (*Piaya cayana*, Cuculidae) is common in dry or upland forests, at forest edges, and in patchy woods from México to Argentina (Meyer de Schauensee 1970). Nests or fledglings are reported by several authors. Euler (1900: 82) saw one carrying a leaf in the bill in November. Ihering (1900: 263) bought eggs from R. Krone that measured 32-33 x 26-27 mm and were white with a thin, homogeneous dirty-white calcareous crust. Ihering (1902) reported three eggs collected by Garbe in Bauru, São Paulo State. A nest with six eggs in Spix and Martius (vide Burmeister 1856) probably was of *Guira guira* according to Ihering. Todd and Carriker (1922) reported three eggs found by H. H. Smith on a "frail platform". Guimarães (1929) found a nest with two young in November 1923 and other nests with eggs in November-December. Stone (1928) reported that Meyer de Schauensee found a male carrying a stick up to a high nest. Belcher and Smooker (1936) reported nests in July in Trinidad, while Friedmann and Smith (1955) found a nest in April in Venezuela. Snethlage (1935) found two eggs in a nest in January. Haverschmidt (1968) reported eggs and nests from Surinam. Rowley (1984) found a nest with two eggs in Mexico. Skutch (1966, 1983) reported on nests, young and behavior. Willis (1983) reported on young and adult Squirrel Cuckoos following army ants. Belton (1994) found a fledgling in September. Clutch size seems to be 2 to 3 eggs, and breeding seems to be in August-December in the south.

Here we report detailed observations of nest building and the first stages of incubation. Payne (1997) notes only brief information on nests for the other two species of *Piaya* (*P. melanogaster* and *P. minuta*), the latter with a cup nest. As only five of the 15 *P. cayana* nesting references above are in the "Handbook", there may be other references for all the species. We studied nest construction in a tree 100 m north of forests of the Companhia do Vale do Rio Doce, Linhares, Espírito Santo, Brazil, in September 1994. The birds were not wary and were watched with binoculars from a distance of 8 to 12 m. Searching for material, the presumed male

came within 2-3 m of the observer. Y. O watched from 08:47h to 17:50 h on 14 September, E. O W. from 06:56 h to 17:00 h on 15 September, and Y. O from 07:15 h to 17:45 h on 16 September and from 05:35 h to 12:15 h and 15:10 h to 17:15 h on 17 September, for a total of 38.4 hours. The location was at 50 m elevation, about 19°10'S and 40°05'W, on the south edge of the reservoir 1 km above the visitors' quarters and just east of the main highway (BR-101) next to plantations of *Grevillea nana* (Proteaceae), *Euterpe oleracea* (açai, Arecaceae or Palmae), and young eucalyptus saplings.

The nest was 6m up in a dense parasitic vine (Loranthaceae), about 50 cm below the top of a tree several meters from nearby trees, over a lawn at the edge of a marshy site. An old nest was 30cm away at the same level. One bird, probably the female, stayed on the nest and the other, probably male, brought material for the first to arrange. The female sat on the nest with the tail somewhat raised, even vertical, grabbed material from the male, and quickly inserted it beneath her, at times with a sidewise jerk of the head.

On 14 September, the presumed male brought material 16 times in 48 minutes, before the birds were scared off by a tractor from 09:35 to 09:45 (the female returned at 9:41 and the male brought a leaf at 09:49). From 09:41 to 10:38, there were 14 visits with material by the male and one by the female.

Of the first 16 items, 15 were long twigs and one was a yellowing leaf of *Eucalyptus sp* (Myrtaceae). Of 10 identified items after the tractor passed, five were yellowing leaves and five were twigs. Typically, after flying from the top or edge of the nest tree, often on a descending glide, at times almost to the ground, the male looked about and hopped quickly to pull off a dead twig or leaf with the beak, then flew back low in the nest tree. He then hopped up through the tree holding long twigs near one end, maneuvering expertly among the branches. At 10:20, with a 25 cm twig, he flew to above the nest and descended through the dense limbs, aided by a quick grab of the twig by the sitting female. Intervals away from the nest ranged from one to seven

minutes. The male was on the treetop above the nest from 10:04 to 10:08. At 10:17, on the second visit after the 10:07 one, the presumed male erected his chin feathers and twitched his head twice, champing the beak on leaving. The male caught and ate a few insects despite his rapid work, including two insects between the 09:15 and 09:18 visits.

At 10:27 the male gave a "chi-cuã" loud call, away from the nest; at 10:26 the female had flown off, joined the male but then picked a yellow leaf and returned to the nest at 10:28. She sat until the male brought a leaf at 10:36 (he had dropped another leaf, tried for a twig unsuccessfully and gotten a second leaf on his way up the nest tree); at 10:38 she flew off, and there was no more activity the rest of the day.

On 15 September, the presumed male arrived at 08:12 with a "stít!" note, having flown to a patch of woods across the lake with that note at 07:20. The presumed female was already on the nest, and he brought 17 items between 08:18 and 08:56. He dropped to low in the nest tree and froze for 10 minutes while a band of six *Crotophaga major* wandered by, then brought three more items from 09:10 to 09:16. He then moved off west, giving a series of alarm notes and a faint series of "wheep" notes, 3-4 per series. The female remained on the nest, working until 09:36, when she moved to the treetop, twitched her head laterally, fluffed and shook her body, raised her bill to give a "chi-cuã", and flew westward to a line of trees.

The presumed male brought nine or more twigs, plus a dead leaf at 08:18 and a green one, held by the petiole, at 09:10; many items were pulled off with quick sideways jerks of the head from 1-3 m up in a small tree just east of the nest. He always hopped up through the dense nest tree and came out to twitch the head sideways and to look about warily above and NE of the nest. The sitting female left briefly and returned at 08:49, not leaving the nest tree.

At 15:11, one bird without material flew to the nest tree with a four-note alarm call, moved up, gave a "wicky-y-were" faint series, one loud "chi-cuã", flew to a tree westward with a "stít" alarm, and then flew off to the forest south with a three-note alarm. At 15:14 a silent bird flew to low in a tree, to the right of where the male had gotten almost all his material. Moving rapidly to the nest tree and up, pecking at twigs, it hopped to the empty nest and gave a faint 6-note song. It pecked and arranged material on the nest, then sat until 15:29, when it gave a 3-note song. It dropped to low on the far side of the tree, up as if with material at 15:31 and again at 15:33 with a leaf. Sitting until dark, it gave one "chi-cuã" at 16:36. Possibly it was the male, sitting for the night.

Nest contents were not checked, but the bird seemed to be incubating on 16 and 17 September. Because there had not been time to finish the clutch, incubation probably started with the first egg. Incubation was somewhat irregular on both days, and the bird often brought a leaf on returns. On 16 September, after sitting on the nest from 07:15 to 08:01 (some turning and moving material with the bill), the sitting bird brought a leaf for an 08:09-08:34 session. The other

bird gave a "stít" alarm at 08:18 off east in the palm plantation but did not approach. The sitting bird left the tree at 8:48, when it flew off with alarm notes. There was soon a distant "chi-cuã" call. At 09:02 one approached with a "wicky-y-were" aggressive chitter, head and chin feathers up, got a small leaf on the way up, and added it to the nest. At 09:05 it added another leaf and sat on the nest. A minute later, the other bird brought it a leaf and left. The bird was on from 09:05 to 10:01 and from 10:13 to 11:03, hiding in the nest tree between sessions and leaving with a triple alarm call. Arriving after a double alarm call, one bird was on the nest from 11:28 to 12:45, gave a "chi-cuã" call, and left with some alarm calls in a nearby tree. From 13:34 to 14:24 one bird sat on the nest, after bringing a yellow leaf on the way in. Arriving with a green leaf, a lone bird incubated from 14:45 to dark.

On 17 September, one sleeping bird stayed on the nest from 05:40 to 07:33, despite a distant "chi-cuã" call from another bird at 06:56 and closer "stít-it" alarms at 07:07 and 07:19. At 07:33 the bird on the nest answered the other bird's double alarm and left. A lone bird arrived with a yellow leaf and went up through the tree at 07:37 and left some time between 8:20 and 08:50. At 09:48 one bird came with a leaf, leaving at 10:37 with a "stít it" or two. At 11:48 one brought a leaf and sat. A bird was still on the nest from 15:10 to 15:51. At 16:26 one bird went to the nest with a loud "chi-cuã" and remained until night. Only the observation at 07:33 seemed a direct exchange of incubating birds.

Skutch (1976) indicated that the male ani incubates at night, which probably is the pattern in other Cuculidae. Certainly, the Squirrel Cuckoo that sang sat on the nest at night on 15 September, but it is not certain whether there was an egg in the nest, which was being built that day. Skutch (1966) indicated that the female incubates during the day, the male entering to incubate mid-afternoon and staying to the next morning. Here, the birds were incubating more irregularly, perhaps because the clutch was incomplete. One bird carried most material to the mate at Skutch's nests, as well as at ours. The "chi-cuã" call was used by the female calling the male, as well as in unknown contexts; the presumed male sang to call the female.

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REFERENCES

- Belcher, C. and G. D. Smooker (1936) Birds of the Colony of Trinidad and Tobago. Part III. *Ibis* 13:1-35.
 Belton, W. (1994) *Aves do Rio Grande do Sul: distribuição e biologia*. São Leopoldo: Ed. Unisinos.

- Burmeister, H. (1856) *Systematische Uebersicht der Thiere brasiliens*. Parts 2 and 3. Berlin: Georg Reimer.
- Euler, C. (1900) Descrição de ninhos e ovos das aves do Brazil. *Rev. Mus. Paulista* 4:9-148.
- Friedmann, H. and F. D. Smith Jr. (1955) A further contribution to the ornithology of northeastern Venezuela. *Proc. U.S. Nat. Mus.* 104:463-524.
- Guimarães Jr., A. C. (1929) Ensaio sobre ornitologia (segunda contribuição). *Rev. Mus. Paulista* 16:99-116.
- Haverschmidt, F. (1968) *Birds of Surinam*. Edinburgh: Oliver & Boyd.
- Ihering, H. von (1900) Catálogo crítico-comparativo dos ninhos e ovos das aves do Brasil. *Rev. Mus. Paulista* 4:191-300.
- _____. (1902) Contribuições para o conhecimento da ornithologia de São Paulo. *Rev. Mus. Paulista* 5:261-329.
- Meyer de Schauensee, R. (1970) *A Guide to the birds of South America*. Wynnewood: Livingston Publ. Co.
- Payne, R. B. (1997) Family Cuculidae (Cuckoos), p. 508-607. In: J. del Hoyo, A. Elliot and J. Sargatal (eds.) *Handbook of birds of the world*. vol. 4. Barcelona: Lynx Edicions.
- Rowley, J. S. (1984) Breeding records of land birds in Oaxaca, México. *Proc. West. Found. Vert. Zool.* 2:73-224.
- Skutch, A. F. (1966) Life history notes on three tropical American cuckoos. *Wilson Bull.* 78:139-165.
- _____. (1976) *Parent birds and their young*. Austin: Univ. Texas Press.
- _____. (1983) *Birds of tropical America*. Austin: Univ. Texas Press.
- Snethlage, E. (1935) Beiträge zur Fortpflanzungsbiologie brasilianischer Vögel. *J. Ornithol.* 83: 532-562.
- Stone, W. (1928) On a collection of birds from the Para region, eastern Brazil. *Proc. Acad. Nat. Sci. Philadelphia* 80:149-176.
- Todd, W. E. C. and M. A. Carriker Jr. (1922) The birds of the Santa Marta region of Colombia: a study in altitudinal distribution. *Ann. Carnegie Mus.* 14:1-611.
- Willis, E. O. (1983) *Piaya* cuckoos (Aves, Cuculidae) as army ant followers. *Rev. Brasil. Biol.* 43:29-32.