

OBSERVATIONS ON A NEST OF THE STYGIAN OWL (*ASIO STYGIUS*) IN THE CENTRAL BRAZILIAN CERRADO

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Observações em um ninho do Mocho-Diabo (*Asio stygius*) no Cerrado do Brasil Central.

Key words: Stygian Owl, *Asio stygius*, reproductive biology, diet, cerrado, Brazil.

The Stygian Owl (*Asio stygius*) is a large size owl that ranges from northern Mexico to northern Argentina (Sick 1997, Holt *et al.* 1999, König *et al.* 1999). It is locally distributed, being considered as threatened in some countries (Holt *et al.* 1999, König *et al.* 1999). Its natural history is virtually unknown (Melo-Junior *et al.* 1996), with only scattered information about its breeding (Bond 1942, Oliveira 1981, Albuquerque 1983, Neto 1985, Franz 1991), and feeding habits (Borrero 1967, Franz 1991, Motta-Junior & Taddei 1992, Motta-Junior 1996). This is one of the few Neotropical owls classified by Stotz *et al.* (1996) as presenting a high research priority.

METHODS

This study took place at Estação Ecológica de Águas Emendadas (hereafter ESECAE),

Planaltina, central Brazil (15°32'35.9"S, 47°37'06.2"W), in an area of about 10,500 ha. The ESECAE is located in the Cerrado region, with 1500–1750 mm of annual rain, almost restricted to October–April (Nimer 1979).

The study area is very flat (1040 m a.s.l.), with a vegetation mosaic varying from grasslands with few or no shrubs or trees (campo-limpo) to dense and closed woodlands (cerrado denso), *sensu* Ribeiro & Walter (1998). The nearest forest-like vegetation is the Brejinho's stream gallery forest, about 5 km from the nest site. In the study area we also recorded the Short-eared Owl (*Asio flammeus*) and the Striped Owl (*Asio clamator*) living sympatrically with the Stygian Owl.

The nest was daily monitored until hatching, being checked every other day after that. Observations were only opportunistic and we did not perform any watching at night. After the end of the monitoring period, we collected the nest debris (feathers and body parts) and identified ingested prey items by

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FIG. 1. Left: The nest with eggs of the Stygian Owl (*Asio stygius*). Upper right: Detail of eggs. Bottom right: 10-day old nestlings.

comparison with specimens deposited in the Marcelo Bagno Ornithological Collection (Univ. de Brasília). All distances were measured with a GPS.

RESULTS AND DISCUSSION

The nest was located on 19 March 2003 in a cerrado ralo area (an open scrubland with few trees). It was structurally very simple, consisting of a shallow depression on the ground, poorly covered by a thin layer of dry grass. The nest measured 17 cm in diameter by 3 cm deep. It was located under a shrub (*Davilla elliptica*) less than 70 cm in height, providing shade and shelter to the eggs and the adult (Fig. 1). Nests of the Stygian Owl were also reported on the ground by Bond (1942), Scherer-Neto (1985), and Franz (1991). Oliveira (1981) and Albuquerque (1983)

described nest locations in the trunk and a branch of a Paraná pine (*Araucaria angustifolia*) in southern Brazil. Since owls only build very simple nests (Holt *et al.* 1999), we presume that these nests were built by other birds, such as a jay or a hawk, as reported by Burton (1973). The fact that two abandoned nests, one of the White-tailed Kite (*Elanus leucurus*) and one of the Curl-crested Jay (*Cyanocorax cristatellus*), were available for breeding at distances of 285 m and 235 m, respectively, suggests that breeding on the ground did not result from the scarcity of available nests.

On 19 March, the nest contained three white, unmarked, ellipsoid eggs (Fig. 1), measuring (mm): 47.4 x 37.6, 46.7 x 38.1, and 46.7 x 38.8, respectively, each weighting 37.0 g. A clutch of two eggs was reported by Bond (1942) and two nestlings were observed by Oliveira (1981) and Albuquerque (1983).

Three nestlings were reported by Scherer-Neto (1985). As a consequence, the normal clutch of this species appears to be of two or three eggs.

Although Holt *et al.* (1999) mention that Stygian Owls lay from November to March, Oliveira (1981) and Scherer-Neto (1985) found, in southern Brazil, two nests with young in September, and (Franz 1991) reported in Belize an active nest in June. Fledglings were observed in October by Albuquerque (1983), in southern Brazil. Together with our observations, those records indicate that this species may reproduce all year long, depending on the latitude and the climatic regime observed in the area.

We observed the nest for 23 days, until the first two eggs hatched, on 10 April. The hatching of the third egg occurred two days after, suggesting that incubation begins before clutch completion. Although we could not determine the incubation period of the Stygian Owl, the observation of an adult in the nest site one week before we discovered the nest suggests that the incubation period is probably a bit longer. One adult was observed in the nest on all visits realized during the incubation period. Those visits were carried out in almost every hour of the day, ranging from sunrise (06:00) to sunset (18:20), indicating that, at last during the day, incubation is constant.

The third nestling to hatch always showed a body size much smaller than its brothers. On its day-6, its wing chord and tarsus measurements were reaching about two thirds of the measurements of its brothers. This small nestling disappeared after 25 May. An unequal body size among the young was also observed by Oliveira (1981) and Scherer-Neto (1985).

After 1 May, the adult left the nest and perched in a small tree, about 8 m from the nest, where it spent all day long. This could indicate that after the 20th day of life, the nest-

lings are able to maintain their own body temperature. Interestingly, most diurnal birds seemed to ignore the presence of the Stygian Owl, and many passerine species continued to forage normally, even very close to it, when it was perched during the day, after having been flushed from the nest. On one occasion, a Chapada Flycatcher (*Suiriri islerorum*) perched on a small tree at about 8 m from it.

In the early days, the adult did not present any kind of aggressiveness, leaving the nest after the observer approach as close as 15 m from the nest. The adult generally flew and perched at about 50 m from the nest, carefully observing the researchers' activity. However, after 25 May, the adult suddenly behaved aggressively. After our approach to check the nestlings, the adult flew and perched where we could not see it, about 150 m away. After a few seconds, it returned and perched about 5 m from us, ruffled its feathers, and uttered a short catlike *miah*, as described by Hilty & Brown (1986). In subsequent observations, the adult left the nest and perched around 150 m, away becoming out of view. After about 20 s, it flew aggressively in direction of the observer.

Young were in the nest for 27 days (10 April to 6 May), when they were taken by a predator. A possible predator registered in the area is the domestic dog. Groups of up to six dogs were observed more than 20 times during one year and a half of fieldwork in the ESECAE. Footprints of domestic dogs were also observed daily in the study area. One day before being killed, the nestlings were a little more than two-third the adult body size. Their remiges and rectrices were still poorly developed, completely preventing any flight attempt.

On 10 October 2002, L.E.L. observed three Stygian Owls perched in a small tree, 150 m from the 2003 nest site. The presence of three individuals so close to the nest site suggests that this species may breed in the

same place on successive years. Apart from the nest observation period (March to May 2003), we watched this owl monthly from September to January 2003, indicating that it is resident in the study area all year long.

Only birds were found in the debris of ingested prey items, including the remains of the following species: Lesser Nothura (*Nothura minor*), an unidentified rail (Rallidae), Dark-billed Cuckoo (*Coccyzus melacorhynchus*), Ruddy Ground-Dove (*Columbina talpacoti*), Rock Pigeon (*Columba livia*), Sayaca Tanager (*Thraupis sayaca*), and Blue-black Grassquit (*Volatinia jacarina*). All those species were registered once, with the only exception of the Dark-billed Cuckoo, registered twice. The predation of the Lesser Nothura is a very interesting record, because it is a threatened species, endemic to the Cerrado region (BirdLife International 2000). In a detailed study about owls' diet in southeastern Brazil, Motta-Junior (1996) found that the Stygian Owl was the most specialized of the five owl species studied, feeding largely on birds. Given that nocturnal owls are thought to take birds only opportunistically (Marks *et al.* 1999), the foraging behavior of the Stygian Owl deserves additional study.

ACKNOWLEDGMENTS

We are grateful to ESECAE for the authorization to conduct this study. J. C. Motta-Junior provided some references and presented suggestions that considerably improved a first draft of this paper. We greatly appreciated the comments of R. McNeil, J. S. Marks and T. A. de Melo-Júnior on an earlier manuscript.

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Aceptado el 19 de Junio de 2004.

