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SHORT-COMMUNICATION

Evidence of infanticide in the Scarlet Ibis (*Eudocimus ruber*) in southeastern Brazil

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ABSTRACT: An event of infanticide by Scarlet Ibises (*Eudocimus ruber*) was observed on 14 January 2014 in a breeding colony located in the mangrove swamps of Cubatão, southeastern Brazil. During a fight over a nest involving several adults who were stealing nesting material, two young (about four and seven days old) were thrown out from the nest and immediately attacked by a pair of adult birds, especially the female. This attack ceased only after the young fell in the water and drowned. The lack of intensive monitoring may be a reason infanticide is commonly underestimated, and mostly unrecorded, by most studies on bird breeding biology. More detailed studies, with adequate monitoring, are required to understand the role played by infanticide in the biology and population dynamics of colonial waterbirds.

KEY-WORDS: breeding colony, Cubatão, mangroves, nestlings, waterbirds.

Scarlet Ibises (*Eudocimus ruber*) occur along the mangroves and wetlands of Atlantic coast of most countries in northern South America, with an inland population in the Llanos of Venezuela. In Brazil the species once had a mostly continuous coastal range, but is now split and reduced in three disjunct populations: a northern population, larger, ranging from Amapá, Pará, Maranhão, Piauí and Ceará states; a quite small, possibly introduced, eastern population in Bahia state (Lima *et al*. 2007), and a southern reintroduced population now using the coasts of São Paulo, Paraná and Santa Catarina states (Silva-e-Silva 2007, Fink & Cremer 2015).

Mock (1984) defines infanticide as a "behavior that makes a direct and significant contribution to the immediate death of an embryo or newly hatched (or born) member of the performer's own species". He further states that this behavior usually occurs in the contexts of brood reduction, desertion, coloniality and communal nestling.

Among birds, infanticide is far from rare and is the main cause of nestling mortality in some species (Mock 1984). It is easy to misinterpret the remains of a nestling or egg found on the ground under the nest and assume that it was the result of predation, accident or parental eviction of a dead chick (Moreno 2012).

Although there are several studies on the breeding biology of Scarlet Ibises in the wild (Ramo & Busto 1985, Martínez & Rodrigues 1999, Olmos & Silva-e-Silva 2001b, Olmos 2003) and captivity (Antas 1979, Spil *et al*. 1985), no instance of infanticide had ever been recorded for this species. Here, I report the first documented case of infanticide among Scarlet Ibises.

Observations were made in the mangroves of Santos-Cubatão, central coast of São Paulo state, southeastern Brazil. This area is a mosaic of habitats including large mudflats, mangrove forest, freshwater wetlands and Atlantic Forest-mangrove ecotones (Olmos & Silva-e-Silva 2003). The mangroves are mostly surrounded by port and industrial areas, shanty towns and urban areas (Olmos & Silva-e-Silva 2001a).

During the 2013–2014 nesting season, Scarlet Ibises established a breeding colony in an area dominated by Red Mangrove trees (*Rhizophora mangle*), ranging from 1.5 to 8 m in height, situated between the USIMINAS port terminal and the low hill of Morro do Casqueirinho (23°52'18.60''S; 46°22'49.29''W), Cubatão municipality. This site is just 1.5 km, in a straight line, from the place the birds last nested in this area, in 1996–1997 nesting season (Olmos & Silva-e-Silva 2001b). The colony is located right by a pier used by the cargo ships servicing a large steel plant, with much noise caused by vehicles, machinery and people. It is also one of the pollution hotspots in an area highly polluted by heavy metals and organic contaminants (Luiz-Silva *et al.* 2008).

Scarlet Ibises were the most numerous species in this colony, representing over 80% of all individuals, but other species also nested among them. These, in decreasing order of numbers, were Little Blue Heron (*Egretta caerulea*), Yellow-crowned Night-heron (*Nyctanassa violacea*),

Black-crowned Night-heron (*Nycticorax nycticorax*) and Snowy Egret (*Egretta thula*). Access to the colony was possible only during the high tide using a 7 m aluminum boat with a 115 Hp engine.

On 19 January 2014, at 14:27 h, while watching and photographing the birds at the colony, I noticed an unusual activity in an isolated mangrove tree with some active nests. About 10 adult Scarlet Ibises were engaged in a generalized fight. The adults jabbed at each other while trying to take position on a nest, about 3 m high. At the same time, they took the material out from the nest and attacked the two nestlings (aged about 4 and 7 days-old) occupying it. The two young were pulled out of the nest one at a time. They managed to hold on the branches but were repeatedly attacked by two adult ibises (a female and a male), especially the female. She repeatedly hit the young bird with beak (Fig. 1) on his head, feet and wings, while the male joined in a half-hearted way. The eldest nestling was finally dislodged, fell in the water and managed to hold on the lower branches of aerial roots for a while, and drowned. The younger one offered less resistance and was quickly thrown into the water and sank. This whole event lasted about 5 min.

A few days before this case of infanticide, a large number of nests in this colony had been blown away by a storm, a common occurrence at this time of the year (Olmos & Silva-e-Silva 2001b). The fight focused exactly on one of the few nests still remaining in that particular tree because it was particularly stout.

Infanticide among waterbirds has been shown both difficult to witness and to occur in a broad range of situations. Brood reduction due to food limitation has been reported for Black Storks (*Ciconia nigra*), in Poland (Klosowski *et al.* 2002), White Storks (*Ciconia ciconia*) (Tortosa & Redondo 1992, Zieliński 2002) and White Spoonbills (*Platalea leucorodia*), in Spain (Aguilera 1989). In all cases, parents killed their own progeny, usually the youngest chick.

Figure 1. Nestling being attacked by female and male adults, just below the nest where it was pulled out. Photo author: R. Silva-e-Silva.

Infanticide may also happen after a nesting bird loses its mate. In Japan a divorced male Eastern Cattle Egret (*Bubulcus coromandus*) discarded the only egg in his nest and displaying to attract a new female, while a widowed male Little Egret (*Egretta garzetta*) killed three of his four chicks and managed to attract a new partner, who killed the remaining chick. Both moved to another nest and raised three young (Fujioka 1986).

These instances aside, the commonest kind of infanticide among colonial waterbirds seems to be non-parental infanticide, when nestlings are killed by birds other than their parents (Mock 1985). This seems common in species such as Great Egrets (*Ardea alba*) and Black-crowned Night-herons (Parkes 2005).

In the present case it is impossible to be certain about the identity of the aggressors, but since several birds were involved in the nest take-over and one pair was fighting them and trying to rearrange the nest while the others were stealing the nest material it was most likely a case of non-parental infanticide. It is tempting to speculate the event was linked to most nests on that particular nesting tree being lost a few days before during a storm and the pair killing the nestlings doing so to take possession of a better nest site.

Olmos & Silva-e-Silva (2001b) found dead young and eggs under Scarlet Ibis nests and considered this the result of falls caused by winds or nest collapse. Nevertheless, the event described here suggests some cases might be the result of infanticide. Compounding the problem of assessing the causes of breeding failure, predators such as Crab-eating Raccoons (*Procyon cancrivorus*), Broad-snouted Caimans (*Caiman latirostris*), Black Vultures (*Coragyps atratus*), and Southern Caracaras (*Caracara plancus*), can take dislodged youngsters before they can climb back to the nest tree (Olmos & Silva-e-Silva 2001b, Olmos 2003).

Since infanticide events are of a short duration its occurrence and importance can be easily underestimated. Assessing the real cause of nest failure and mortality, including the importance of infanticide, requires longer and more detailed observation effort when monitoring nests.

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REFERENCES

Aguilera E. 1990. Parental infanticide by White Spoonbills *Platalea leucorodia*. *Ibis* 132: 124–125.

Antas P.T.Z. 1979. Breeding the Scarlet Ibis *Eudocimus ruber* at the Rio Zoo. *International Zoo Yearbook* 19: 135–139.

Fink D. & Cremer M.J. 2015. The return of the Scarlet Ibis: first breeding event in southern Brazil after local extinction. *Revista Brasileira de Ornitologia* 23: 385–391.

Fujioka M. 1986. Infanticide by a male parent and by a new female mate in colonial egrets. *Auk* 103: 619–621.

Klosowski G., Klosowski T. & Zielinski P. 2002. A case of parental infanticide in the Black Stork *Ciconia nigra*. *Avian Science* 2: 59–62.

Lima P.C., Lima T.N.C. & Lima R.C.F.R. 2007. Ocorrência da reprodução do Guará *Eudocimus ruber* (Linnaeus, 1758) na Bahia, em colônia mista de Garça-vaqueira *Bubulcus ibis* (Linnaeus, 1758) e Garça-azul *Egretta caerulea* (Linnaeus, 1758), no Recôncavo da Bahia. *Atualidades Ornitológicas* 136: 12–13.

Luiz-Silva W., Machado W. & Matos R.H.R. 2008. Multi-elemental contamination and historic record in sediments from the Santos-Cubatão estuarine system, Brazil. *Journal of the Brazilian Chemistry Society* 19: 1490–1500.

Martínez C. & Rodrigues A.A.F. 1999. Breeding biology of the Scarlet Ibis on Cajual Island, northern Brazil. *Journal of Field Ornithology* 70: 558–566.

Mock D.W. 1984. Infanticide, siblicide, and avian nestling mortality, p. 2–30. In: Hausfater G. & Hrdy S.B. (eds.). *Infanticide: comparative and evolutionary perspectives*. Hawthorne: Aldine Publishing.

Moreno J. 2012. Parental infanticide in birds through early eviction from the nest: rare or under-reported? *Journal of Avian Biology* 43: 43–49.

Olmos F. 2003. Nest location, clutch size and nest success in the Scarlet Ibis *Eudocimus ruber*. *Ibis* 145: E12–E18.

Olmos F. & Silva-e-Silva R. 2001a. The avifauna of a southeastern Brazilian mangrove swamp. *International Journal of Ornithology* 4: 137–207.

Olmos F. & Silva-e-Silva R. 2001b. Breeding biology and nest site characteristics of the Scarlet Ibis in southeastern Brazil. *Waterbirds* 24: 58–67.

Olmos F. & Silva-e-Silva R. 2003. *Guará: ambiente, flora e fauna dos manguezais de Santos-Cubatão, Brasil*. São Paulo: Empresa das Artes.

Parkes M.L. 2005. Inter-nest infanticide in ardeids. *Waterbirds* 28: 256–257.

Ramo C. & Busto B. 1985. Comportamiento reproductivo del Corocoro (*Eudocimus ruber*) en los Llanos de Venezuela. *Memorias de la Sociedad de Ciencias Naturales La Salle* 45: 77–113.

Silva-e-Silva R. 2007. *Guarás vermelhos no Brasil: as cores vibrantes da preservação*. Vinhedo: Avis Brasilis.

Spil R.E., van Walstijn M.W. & Albrecht H. 1985. Observations on the behaviour of the Scarlet Ibis, *Eudocimus ruber*, in Artis Zoo, Amsterdam. *Bijdragen tot de Dierkunde* 55: 219–232.

Tortosa F.S. & Redondo T. 1992. Motives for parental infanticide in White Storks *Ciconia ciconia*. *Ornis Scandinavica* 23: 185-–89.

Zieliński P. 2002. Brood reduction and parental infanticide – are the White Stork *Ciconia ciconia* and the Black Stork *C. nigra* exceptional? *Acta Ornithologica* 37: 113–119.

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