Preliminary Observations of the Breeding Biology of the Critically-endangered White-shouldered Ibis *Pseudibis davisoni* in East Kalimantan

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Ringkasan. Kami menyurvei empat anak sungai Mahakam untuk mencari Ibis Karau *Pseudibis davisoni*, spesies burung dengan status Kritis (*Critically Endangered*) lebih dari sembilan bulan, yaitu dari September 2003 sampai Juni 2004. Kami menemukan dua sarang yang diletakkan pada pohon Bangris *Koompassia excelsa*. Sarang pertama, ditemukan bulan Oktober, memiliki satu anak, sementara pada sarang lainnya telur ditemukan awal Desember. Ini menggambarkan bahwa pola berbiak secara lokal sudah berlangsung dari September sampai Desember. Laporan ini berbeda dari pola berbiak yang pernah dilaporkan di Burma (Februari-Maret). Ketinggian posisi sarang (30.2 and 41.5 m) juga menunjukkan perbedaan yang mencolok dibandingkan dengan laporan-laporan berbiak di kawasan lain Asia Tenggara. Inkubasi minimal 28 hari dan periode anakan (*nestling*) adalah sekitar 26 hari, informasi ini nampaknya masih relatif sama dengan literatur yang ada untuk jenis ini.

Once ranging widely from Burma through Southeast Asia to Borneo (Hancock *et al*. 1992), the White-shouldered Ibis *Pseudibis davisoni* is now restricted to northern and eastern Cambodia, southern Vietnam, extreme southern Laos and East Kalimantan. This species now has a very small, highly fragmented and declining population due to deforestation, drainage of wetlands and hunting, and with an estimated total world population of less than 250 individuals, is considered Critically Endangered (BirdLife International 2008). Up to 108 birds have been seen at one site in Cambodia, but numbers for the remainder of this country, and for Vietnam and Laos, are very small, probably numbering in the low tens. In Kalimantan, the population along the Mahakam River was estimated at 30 to 100 individuals (Sözer & van der Heijden 1997), but this population may have declined after the extensive forest fires induced by the 1997-98 El Niño Southern Oscillation (ENSO) event. Based on 25 boat surveys (covering 2,590 km), Sözer & Nijman (2005) found that encounter rates were higher before ENSO (1992–1996) than after it (1997–2000), and no ibises were seen along river sections that were affected by fire.

Very little is known of the breeding biology of the species. In mainland South-east Asia, it is said to build large nests in trees, or use old raptor nests, at heights of 5-10 m above the ground, where it lays 2-4 eggs (Matheu & del Hoyo 1992). Hancock *et al*. (1992) stated that its breeding season in Burma occurred in February-March and that the incubation period lasted for 29 days. In Cambodia,

it has been recorded nesting during the dry season (December to April) on the edges of seasonally abandoned wet season rice paddy and in the Mekong channel (Birdlife International 2008).

Sözer & van der Heijden (1997) showed that nearly all records of the White-shouldered Ibis in East Kalimantan since 1980 are confined to the middle and upper reaches of the Mahakan River and its tributaries. As individuals having blue napes were found on the large, open Mahakan River, whilst white-naped birds were predominantly recorded on the small, forested Ratah River, they suggested that the former were adults and the latter, sub-adults. From the dates of records of white-naped birds, they inferred that the species nested throughout the year. Observations of copulatory behaviour in February 1996, and of three immature birds in November 1996, were consistent with this assumption (Sözer & van der Heijden 1997).

Between 30 September 2003 and 24 June 2004 we found two nests of the White-shouldered Ibis while conducting transect surveys of the species along four tributaries of the Mahakam River, namely Datahbilang-Pari River (42 km), Datahbilang-Long Iram (54.5 km), Datahbilang-Long Bagun (85 km), and Datahbilang-Ratah River (35.5 km). Each transect was surveyed eight times (Sutrisno & Imanuddin 2005).

The first nest, located on 4 October 2003, was situated in the estuary of the Merah River (00°22'51"N, 115°26'02"E). The nest, composed of twigs and fresh leaves, had been built in a 'Bangris' tree *Koompasia excelsa* and contained one chick. Using a clinometer, the height of the nest was estimated to be 30.2 m. The nest tree was approximately 10.4 m from the edge of the river, and was surrounded by secondary riverine forest. About 500 m upstream from the nest tree the forest had been cleared at least five years ago for a log pond site, where logs were piled before transportation to markets, and about 500 m downstream was a disused log pond. We watched the nest daily until the young fledged on 30 October 2003, suggesting that the nestling period is over 26 days. During that period one or both parents (each with a blue nape) continued to add leaves and sticks to the nest at least once a day. The parents took turns in feeding the chick, at intervals of approximately 1-2 h (Sutrisno & Imanuddin 2005). The chick had light yellow legs and a bluish-white nape (Sutrisno & Imanuddin 2005).

The second nest was found on the Ratah River (00°17'34"N, 115°23' 40"E), another tributary of the Mahakam River. The owners were busily building this nest 41.5 m from the ground in a 'Bangris' tree on 10 December 2003 (Sutrisno & Imanuddin 2005). The nest tree was located c. 60 m from the Ratah River, on land owned by local people who practiced shifting cultivation. On 14 December 2003, the pair was observed copulating on the nest, after which the larger male flew to collect nest material, while the female incubated the egg(s) for periods of 1 to 10 minutes. On 12 January 2004 we observed one egg and one chick, as well as fresh broken eggshell, light blue in colour, under the nest, indicating that the chick had hatched earlier that day. This suggests an incubation period of at least 28 days. When re-visited for the last time, on 17 January 2004 the two chicks

were obviously different in size, suggesting that the eggs hatched asynchronously.

The minimum incubation period of 28 days is consistent with the full period reported for Burma (29 days; Hancock *et al.* 1992). It is also consistent with that of the Sacred Ibis *Threskiornis aethiopicus* (28-29 days), but slightly longer than that given for the closely related Indian Black Ibis *P. papillosa* (25-27 days; Matheu & del Hoyo 1992). Combining this period with a nestling period of at least 26 days (above), but possibly up to 40 days, as is typical of other ibis species (Matheu & del Hoyo 1992), the egg(s) in the first nest were probably laid in late August, while those of the second nest were apparently laid in mid-December.

With a combined incubation and nestling period of at least two months, it is conceivable that the immature birds observed by Sözer & van der Heijden (1997) in November came from eggs laid in September or earlier. We therefore suggest that the main breeding season is from September to December. This proposed breeding season seems to differ from those reported in Cambodia (December-April; Birdlife International 2008) and Burma (February-March; Hancock *et al.* 1992). However if we include the observations of copulatory behaviour (February) and sub-adults (June and November) by Sözer & van der Heijden (1997), the season may well be much longer. It is also noteworthy that the heights of our nests (30.2 and 41.5 m) were much greater than the range given (5-10 m) for the species by Matheu & del Hoyo (1992).

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Plate 2. Nest of White-shouldered Ibis on Merah River.

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Plate 3. White-shouldered Ibis, Tmat Boey eco-village, Cambodia.

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Plate 1. Nesting tree of White-shouldered Ibis on Ratah River, showing location of the nest (in yellow arrow).