THE RAFFLES BULLETIN OF ZOOLOGY 2005 **53**(2): 277-279
Date of Publication: 31 Dec.2005

THE FORMER STATUS OF THE WHITE-SHOULDERED IBIS *PSEUDIBIS DAVISONI* ON THE BARITO AND TEWEH RIVERS, INDONESIAN BORNEO

Erik Meijaard
The Nature Conservancy, J. Kuranji no. 1, Vorvoo, 75123, Samarinda, East Kalimantan, Indonesia
Email: emeijaard@samarinda.org (Corresponding author)

S. (Bas) van Balen
Department of Animal and Plant Sciences, Sheffield University, Alfred Denny Building, Western Bank, Sheffield, England, UK
Email: bvanbalen001@hotmail.com

Vincent Nijman
Zoological Museum, University of Amsterdam, PO Box 94766, 1090 GT Amsterdam, the Netherlands
Email: nijman@science.uva.nl

***ABSTRACT*. –** Analysing historic species ranges is important for assessing the population trend and conservation status of threatened species. Understanding the spatial variation in threats to these species requires an analysis of regional differences in historic and current status, and the underlying causes of their decline. Historic literature can help in this process. Here we provide a translation of field notes by Salomon Müller during his 1836 travels in SE Kalimantan. We focus on the notes regarding White-shouldered Ibis *Pseudibis davisoni* (Hume, 1875), one of Southeast Asia's most critically endangered birds. Indonesian records for this species from the few last decades are mostly restricted to the Mahakam River in East Kalimantan, Indonesian Borneo. Müller recorded the species almost daily along the middle reaches of the Barito River in Central Kalimantan, and provided details on its food and morphology. Müller's data suggest that in the 19th century a healthy population of White-shouldered Ibis was present along the Barito River. We speculate on the connection of this population with the Mahakam one and the cause of its apparent extinction.

***KEY WORDS*. –** bird, Borneo, endangered species, historic range, historic literature.

INTRODUCTION

A proper assessment of population trends and threats to species is needed to understand the processes that cause population declines. Understanding the historic situation provides important collateral data. What we need to know is whether a particular species was historically rare, or whether large changes in the species' status have occurred in relatively recent times. Knowledge of this points to potentially limiting factors. For instance, a species that has traditionally been rare is probably limited by ecological factors (e.g., a species that only feeds in a particular rare habitat type). Species that have recently declined are probably affected by 'modern' threats like large-scale deforestation, human disturbance, or forest fires. Especially for species that range over large areas it is important to assess their historic status on a region by region basis. This way, regional differences between the historic status, current status, and local causes of decline can contribute to understanding the processes that reduce population numbers of the species.

Collar et al. (2001) provided lengthy and detailed descriptions of the historic conservation status of many threatened Southeast Asian birds. One of the most critically endangered birds of Southeast Asia, and one that has undergone a dramatic decline over the course of the 20th century, is the White-shouldered Ibis *Pseudibis davisoni*. Once distributed over large parts of Southeast Asia, from Myanmar and Vietnam in the north to Peninsular Malaysia and Borneo in the south, it is nowadays confined to pockets of riverine and swamp forest in Myanmar, Vietnam and Indonesian Borneo. At present, the largest single population is confined to the Mahakam River in East Kalimantan where the species is regularly recorded (Sözer & van der Heijden, 1997; Collar et al., 2001,VN & EM, pers. obs.). Other Bornean records are from the Seruyan River, a tributary of the Barito River in 1984 (Holmes & Burton, 1987), the northern Barito ('*Barito Utara*') in 1979 (J. T. Marshall *in* Smythies, 1999), and possible sightings, in 1974, on the Banjarmasin airport, at the mouth of the Barito River, and in Binuang just northeast of Banjarmasin (Holmes & Burton, 1987). Older Barito

records date from Purukcahu in the upper reaches of the river (Chasen & Kloss, 1931) in 1909, and the always unspecified record from 1836 by S. Müller. Collar et al. (2001) provided a detailed assessment of the historic status of the Asian mainland populations of White-shouldered Ibis, but gave few details on its historic status in Borneo (NB: A number of localities on their map have been mixed up).

Salomon Müller (1804-1864) was a German taxidermist from Heidelberg, who, as a member of the *Natuurkundige Commissie voor Nederlandsch Indië* travelled in July – December 1836 through southeast Kalimantan. Müller collected birds, amongst others seventy taxa new to Borneo (Smythies and Davison, 1999), but also some plants on the Troe and Palandau tributaries of the Karau River (note that Karau is the Punan and Bakumpai general word for stork, Sözer & van der Heyden 1997) a tributary of the Barito (Van Steenis-Kruseman, 1950). He observed the White-shouldered Ibis and collected several specimens. As his detailed records are written in Dutch, we consider it worthwhile reproducing those sections relevant to understanding the biology of the White-shouldered Ibis. We provide a translation of Müller's original Dutch text. In addition, we use this note as a reminder of the importance of historic literature for the conservation of many species that remain virtually unknown. Where necessary, we provide details between square brackets. We determined geographic coordinates in the text by comparing Müller's detailed map with a recent digital map of the region.

SALOMON MÜLLER'S ACCOUNT

[pages 198-199] 'Near Becebang [three small islands in the Barito River, south of Muara Kalahian, 1º42'36"S 114º49'48"E some 250 km from the mouth the Barito River], and from there on almost daily, we occasionally saw a sooty-brown ibis with white shoulder feathers. It is known among local people as *Burung Karau*. Usually, we observed groups of two, and rarely of three or four birds together. Their frequent, slightly mournful call is rather loud, but despite this they are very secretive. Only after many failed attempts I managed to approach a few birds by stalking them through forest, across the [Barito] river from Tanjung-Jawa village [1º36'00"S 114º49'48"E]. There, I shot one bird from a pair feeding among *Pekumpai*-grass [*Panicum stagninum* Retz]. This male bird was typified like several other male and female birds that we obtained later by the somewhat wrinkled skin on the head and the nipple-shaped appendices on the neck. Despite the presence of these features, which may only appear during mating season, I do not consider this species to be different from *Ibis papillosa* [=Black ibis *Pseudibis papillosa* from mainland Asia], which was described and depicted by Mr. Temminck in his Planches Coloriees (see note 66). Although we have not observed this ibis on any other island of the Indonesian archipelago it was not rare at this latitude and further up the Barito and Tewei [=Teweh, a tributary of the middle Barito River, branching off at Muara Teweh (0.87ºS 114.93ºE)] Rivers, and even north of the equator. In its stomach we found remains of worms and larvae of aquatic insects.'

[page 226] 'Along the borders [of the Teweh River up to Kampung Silo] we often saw little groups of sooty-black ibises.'

Note 66: 'The unfeathered parts of the specimen that we shot were coloured as follows: Skin of head and chin sooty-black; the anterior side of the naked neck is bluish-white, grading posteriorly into sky-blue; bill is lead-coloured grading into purple near the basal part; legs are a dirty light-red, although in older birds this seems to change to a darker, more purplish hue.'

DISCUSSION

Holmes (1991) discussed the status of the White-shouldered Ibis in Kalimantan and noted for the Barito River that the species has always been rare. This perception is understandable given that the last confirmed record from this river dates back to 1984. Also more recently, the White-shouldered Ibis has not been recorded by ornithologists who surveyed the river and its tributaries over the last two decades (e.g. Wilkinson et al., 1991; van Balen & Prentice, 1997; see Collar et al., 2001). However, as appears from his field notes, in Müller's time it was commonly observed along the Barito River, especially in its middle reaches. For the Mahakam River in the early 1990s, Sözer & Nijman (2005) reported an encounter rate of 0.6 – 2.5 birds per 100 km, with a large variation between sites. Maximum encounter rates at some sites could be as high as 16 birds per 100 km, with birds being observed almost daily. If we consider that Müller could travel some 20-30 km a day, the historic abundance of White-shouldered Ibis along the Barito River could be as high as that along some stretches of the Mahakam River in the 1990s. Although admittedly highly speculative, given the presence of White-shouldered Ibis along the middle reaches of the Barito and Teweh Rivers (c. 250 km in length), the total population along this river could easily have been a hundred individuals or more.

The Barito River population is spatially separated by that of the Mahakam River basin by two narrow mountain ranges: the Müller range in the upper reaches of both rivers, and a low range between the Teweh and Lahai Rivers, tributaries of the Barito River, and Pelajan River, a tributary of the Mahakam River (Smyhties, 1981; Sandy, 1986). Straight line distances between the river basins are locally less than 25 km, and possibly the ibises of these basins in Müller's days formed one single population.

Why did the species disappear from the Barito and Teweh Rivers? There are two obvious candidates for its causes, not mutually exclusive: human disturbance by hunting, and by deforestation. But have these factors been much more prevalent along the Barito River during the 19th and early 20th century than along the Mahakam River where the species still occurs? Before answering that question we focus on the key ecological requirements of White-shouldered Ibis. Müller's information suggests that the species is most common along the strongly meandering middle section of

the Barito, where many oxbows occur. Similarly, along the Mahakam River, the species is most common along the meandering middle section of that river. These swamp areas are prone to frequent flooding and probably provide key habitats like seasonally flooded grasslands, lakes and pools, and marshes and muddy streams (Collar et al., 2001).

Information from the mid-1850s (Schwaner, 1853) suggests that the middle Barito River was surrounded by mostly continuous forest. Dry grasslands were restricted to some minor parts of the region and areas of shifting cultivation rapidly converted back to shrubland and secondary forests (Schwaner, 1853). *Panicum stagninum* grasslands, i.e. the vegetation in which Müller shot his specimen, were restricted to swampy riverside flatlands. Knapen (2001), however, reports that the area of the lower and middle Barito was rapidly developed after the 1850s following a dramatic shift from pepper to rice growing. Human population densities along the middle Barito River were very low in the 1850s with only 1,905 inhabitants recorded along a 200 km stretch of the middle Barito River (Schwaner, 1853: 105), but these grew rapidly following the expansion of rice growing. By about 1880, most of the lower and middle Barito area was 'terribly devastated' because of swidden cultivation and almost no primary forest was left (Knapen, 2001).

Unlike the Barito River, forest loss along the Mahakam River is much more recent, and those sections where White-shouldered Ibis are found remain forested. When the Norwegian naturalist Bock (1881) travelled up the Mahakam River in 1878, he reported that most of the area around the lakes [0º33'S 116º87'E] and upstream from there was still completely forested. A Dutch map from the early 1930s (Boschwezen, 1931/1932) shows that the area around the Mahakam Lakes and at least 120 km upstream from there was still covered in dense forests. In fact, most of these swamp forests were still intact up until the major fires of the early 1980s, as shown on satellite imagery. As such, deforestation and rapidly increasingly human population densities is much more recent along the Mahakam than the Barito River.

Loss of riverine forest will not only have led to a loss of breeding sites, but also to secondary effects such as a change of the depositional character of river habitats (with finer substrates and more eroded banks), decrease in water clarity (as result of an increase in erosion) and an increase in temperature regime (as a result of loss of over-hanging trees) which may interfere with the birds' ability to find food (Nijman & Sözer, 2005). Furthermore, loss of forest would have led to an increased accessibility to nesting and feeding sites, possibly leading to increased egg and chick collecting and hunting.

ACKNOWLEDGMENTS

We thank Nigel Collar for his insightful review of the submitted manuscript. We thank the Bogor library of the Indonesian Institute of Sciences (LIPI) for lending us a copy of Müller's book.

LITERATURE CITED

van Balen, S. & C. Prentice, 1997. Birds of the Negara River Basin, South Kalimantan, Indonesia. *Kukila,* **9**: 81-107.

Bock, C., 1881. *The head-hunters of Borneo*. London.

Boschwezen, 1931/1932. *Begroeingskaart*. Vluchtig opgenomen door de Onderafdeeling (Kantoor Bandjermasin) van het Boschwezen in 1931/1932. Scale 1: 100,000.

Chasen, F. N. & C. B. Kloss, 1931. Additions to the list of Bornean birds. *Bulletin of the Raffles Museum,* **4**: 124.

Collar, N. J., J. V. Andreev, S. Chan, M. J. Crosby, S. Subramanya & J.A. Tobias (eds.), 2001. *Threatened birds of Asia: the BirdLife International red data book*. Cambridge: BirdLife International.

Holmes, D. A., 1991. Note on the status of white-shouldered ibis in Kalimantan. *Kukila,* **5**: 145-148.

Holmes, D. A. & K. Burton., 1987. Recent notes on the avifauna of Kalimantan. *Kukila,* **3**: 2-32.

Knapen, H., 2001. *Forests of fortune? The environmental history of Southeast Borneo, 1600-1880*. KITLV Press, Leiden.

Müller, S., 1857. *Reis in het zuidelijk gedeelte van Borneo gedaan in het jaar 1836*. Pages 129-326 in S. Müller, editor. *Reizen en onderzoekingen in den Indischen Archipel gedaan op last der Nederlandsche Indische Regering tusschen de jaren 1828 en 1836*. Vols. 1 and 2. Koninklijk Instituut voor de Taal-, Land- en Volkenkunde van Nederlandsch-Indië, Amsterdam, The Netherlands.

Sandy, I. M., 1986. *Atlas Indonesia* (sixth edition). Jakarta: PT Dhasawarna & Universitas Indonesia.

Schwaner, C. A. L. M. 1853. *Borneo. Beschrijving van het stroomgebied van den Barito en reizen langs eenige voorname rivieren van het zuid-oostelijke gedeelte van dat eiland in de jaren 1843-1847*. 2 Vols. van Kampen, Amsterdam, the Netherlands.

Smythies, B. E. & G. W. H. Davison, 1999. *The birds of Borneo*. 4th Edition. Kota Kinabalu: Natural History Publications (Borneo).

Sözer, R. & A. J. W. J. van der Heijden, 1997. An overview of the distribution, status, and behavioural ecology of the White-shouldered ibis in East Kalimantan. *Kukila,* **9**: 126-140.

Sözer, R. & V. Nijman, 2005. Effects of ENSO-induced forest fires and habitat disturbances on abundance and spatial distribution of an endangered riverine bird in Borneo. *Animal Conservation,* **8**: 27-31.

van Steenis-Kruseman, M. J., 1950. *Malaysian plant collectors and collections*. Djakarta: Noordhoff-Kolff.

Wilkinson, R., G. Dutson, B. Sheldon, Darjono & Y. R. Noor, 1991. The avifauna of the Barito Ulu region, Central Kalimantan. *Kukila,* **5**: 99-116.