

## Observation of Milky Stork *Mycteria cinerea* breeding on Pulau Dua, Banten, Indonesia, after 45 years

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**Abstract** Observations of Milky Storks *Mycteria cinerea* were made in Pulau Dua Strict Nature Reserve (Cagar Alam Pulau Dua; 30 hectare reserve; 6° 01' S, 106° 21' E), Banten, Northwest Java, Indonesia in 2020. These observations confirmed that the storks returned to breed at a site where breeding was last recorded in 1975.

**Keywords** Indonesia, Milky Storks, *Mycteria cinerea*, Pulau Dua Nature Reserve

### Introduction

The Milky Stork *Mycteria cinerea* is categorized as Endangered on the IUCN Red List, with an estimated global population of 1,500 individual and a decreasing population trend. This stork was up-listed to Endangered in 2013 because recent population estimates from its stronghold population in Sumatra suggested that it is undergoing a very rapid ongoing population decline due to intense hunting pressure at nesting colonies, human disturbance and the rapid loss and conversion of coastal habitat (BirdLife International 2020).

The Milky Stork has been a regular visitor to the Pulau Dua Strict Nature Reserve. Kretschmer de Wilde (1939) reported the presence of “each time a small group”, but mentioned explicitly no breeding of the storks in 1936, 1937 and 1938. Hoogerwerf (1947) reported breeding before May

1942, when the whole vegetation of the island was razed immediately after the outbreak in the region of World War II, but he reported a rapid recovery in the years after. Hoogerwerf (1948) also listed Milky Stork as breeding on the island, 11 years after the island was gazetted as protected area in 1937.

Van Beuninger *et al.* (1976) recorded 7 Milky Stork nests in 1975, “when overland access to the island first became possible”. Harvey (1975) reported maximum of 11 birds roosted in tall trees and fed on muddy shores. No nests seen although some of the birds appeared to be juveniles and a few pairs may have bred earlier in year. Alternatively breeding may not have begun yet. Milton and Marhadi (1985) counted 32 non-breeding individuals in 1985. During a four-year (1997 - 2001) weekly observation of waterbird species on the island, Noor (2004) observed regular visitation of Milky Storks to the island; the maximum being 32 individuals in June 2000. During June 2000, several storks brought nest materials to one of the tallest Kepuh/Java Olive *Sterculia foetida*, but abandoned the nests (Noor

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2004).

## Study area

Observations were conducted in the Pulau Dua Strict Nature reserve, Banten, Indonesia. The origin of the name Pulau Dua is explained by Kretschmer de Wilde (1939) to refer to the original existence of twin islands which were subsequently united and still later connected to the mainland. At that time, the island of Pulau Dua was separated from the main island of Java by a 500 m narrow strait. The island eventually became connected with the main island due to sedimentation resulting from materials transported by several rivers to the Banten Bay (Sulaeman 1995). The accreted land, which was still submerged during the high tides, became naturally vegetated by *Avicennia marina* with a 6-8 m canopy height. These trees were then occupied by a waterbird breeding colony (Milton and Marhadi 1985).

## Methods

The Milky Stork nests were irregularly monitored from 18 April to 15 October 2020 following the sighting of two Milky Stork nests on the island by the Ranger of the reserve. Observations were made from a distance by using binoculars to observe the occurrence of breeding and non-breeding Storks, nest condition and breeding success. We also photographed the nest at different intervals to record the growth of the chick.

## Results

We made the following observations of the Milky Stork nest. Both behavioural observations as well as dates of observation are provided. We stopped observations after the chick fledged from the nest.

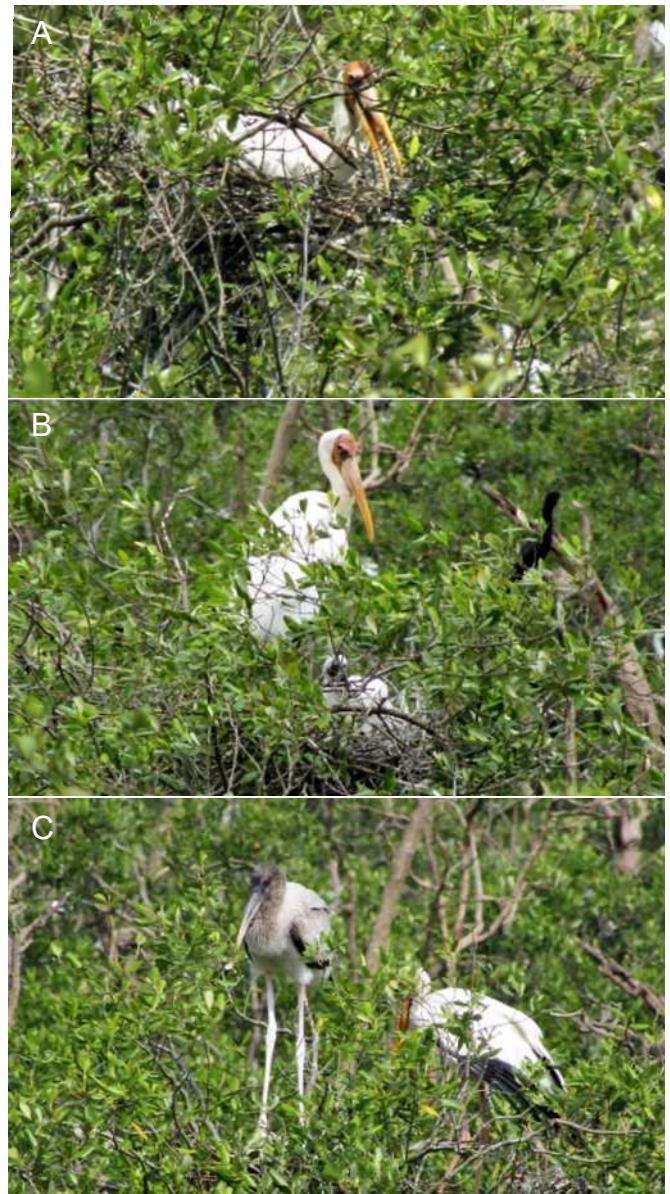
18 April 2020, *ca.* three and a half morning hours: day 1 of observation 25 Milky Storks observed, two pairs sitting on two nests (Figure 1A).

14 May 2020, *ca.* two morning hours: One nest still used by a pair; the other nest was no longer used. Some individuals were still observed in the island, but no additional nest building was seen.

26 May 2020, *ca.* three afternoon hours: One chick observed in the active nest (Figure 1B). Some Milky Storks (< 25 individuals) still returning to the island, but we could not identify the individual that abandoned the nest.

24 June 2020, *ca.* three and a half afternoon hours: one chick was observed being fed by one of the parents (Figure 1C).

15 October 2020, *ca.* one morning hour: chick observed flying from the nest.



**Figure 1.** Nest of Milky Stork observed in Pulau Dua Strict Nature Reserve, Indonesia. This series of photographs shows the nest being incubated nest on 18 April 2020 (A), with recently hatched single chick on 26 May 2020 (B), and a juvenile bird immediately after the adult fed it on 24 June 2020 (C).

On 18 April 2020, 25 Milky Storks were observed perching on top of the seven-eight-meter canopy of *Avicennia marina* mangroves, together with Little Egret *Egretta garzetta*, Black-crowned Night Heron *Nycticorax nycticorax*, Cattle Egret *Bubulcus ibis*, Intermediate Egret *Egretta intermedia*, Great Egret *Ardea alba* and Grey Heron *Ardea cinerea*. Two pairs of Milky Storks were observed sitting on nests. As no observations





were made prior to 18 April 2020 it is highly possible that the birds arrived at the island much earlier, and the nest was built prior to this first observation.

One of these two nests was no longer in use by 14 May 2020. Although some of the Milky Storks were still returning to the island, we could not identify whether the abandoned individual was still returning to the island. On 26 May 2020 still only one chick was observed on the active nest and no more nests had been built by other individuals/pairs. We do not know the chick's hatch date. One chick was observed being fed by one of the parents on the remaining nest on 24 June 2020. During observation on 15 October 2020, the chick flew away from the nest together with one parent and less than 10 Milky Storks were one observed on the island.

## Discussion

The only other known breeding site of this species in Java is in Pulau Rambut Wildlife Sanctuary, some 60 km eastward of Pulau Dua Strict Nature Reserve. A total of 17 nests were recorded in 2001 and 20 nests in 2002 with a breeding success of 46% and 49%, respectively (Imanuddin and Mardiasuti 2003). Observations made every January during the last 4 years (2017 - 2020) recorded populations of 11, 70, 36, 64 individuals, respectively, including breeding and non-breeding individuals (Y. R. Noor pers. obs.)

During the Asian Waterbird Census 2017 (supported by National Geographic Society Explorer), 73 Milky Storks were observed at a colony with about 20 nests in the Liquefied Petroleum Gas/LPG terminal complex of Patrol, Indramayu, West Java (Y. R. Noor and R. S. Gumilang pers. obs.). No chicks were reported on any of the nests however.

Most observations of Milky storks are from South Sumatra Province. Iqbal and Hasudungan (2008) indicated a maximum population of 324 individuals in Banyuasin Peninsula (in 2002) and 500 individuals in Timbul Jaya Village (in 2005). Three breeding populations were recorded during 1988, with estimated numbers of 280, 300, and 300-400 nests respectively (Danielsen *et al.* 1991). On 17 June 2008 after a gap of 20 years (2 September 1988), a Milky Stork breeding colony of 100-115 nest was found on Kumpai lake (Iqbal

*et al.* 2008). Two additional records from South Sumatra are of at least 81 juveniles feeding with adults in Siput on the coast of the Banyuasin Peninsula on 1 November 2008 and a group of six juveniles resting in mangroves on Lumpur river on 30 November 2008 (Iqbal *et al.* 2009).

The Black-headed Ibis *Threskiornis melanocephalus* also ceased breeding in Pulau Dua for some years before breeding was recorded again in 1998 (Noor and Hasudungan 2000).

It is difficult to explain the temporary absence and comeback of both Black-headed Ibis and Milky Stork as breeding species in Pulau Dua, as they still occur regularly on the island. However, disturbance from visitation of local tourists (despite the status of the island as strict nature reserve) may have been an important factor as the last reports of breeding were when overland access to the island became possible (Milton and Marhadi 1985). We suspect that the comeback of Milky Stork to breed again in Pulau Dua related to the placement of the nested tree, which is located some distance from the tourist's foot track. Further observations are still required to confirm whether the Storks will continue breeding in this location, or in other locations in Indonesia.

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