

Fourth and fifth confirmed breeding records of Black-necked Stork in the Hunter Estuary near Newcastle, NSW

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A pair of Black-necked Stork *Ephippiorhynchus asiaticus* has now bred successfully in Hexham Swamp, New South Wales, in three successive years, 2020, 2021 and 2022. Six juveniles, two in each year, have fledged from three different nests all of which were located in the same general area of Hexham Swamp. Four of the juvenile birds were banded before they fledged but there have been no reported sightings of them subsequently. There were five sightings in early 2023 of unbanded juveniles, presumably those from the 2022 breeding event.

In view of the persistent breeding activity and the dearth of suitable nest trees, we recommend that investigations be made into the possibility of erecting artificial nest platforms in Hexham Swamp.

INTRODUCTION

The Black-necked Stork *Ephippiorhynchus asiaticus* is a large waterbird resident across the Indian sub-continent and south-east Asia. The subspecies *australis* occurs in Australia and Papua New Guinea. The breeding biology of this species is not well understood. It is classified as Endangered under the *NSW Biodiversity Conservation Act 2016*; hence it is important that information about its breeding behaviour is documented. It is known to breed as solitary pairs in often difficult-to-access places, making detailed breeding studies a challenge.

The first confirmed breeding record for Black-necked Stork in the Hunter Region was in 2017. The region is regarded as the southern limit of its the breeding range.

This note documents the fourth and fifth Black-necked Stork breeding events in the Hunter Estuary. The three previous breeding events in the estuary involved two events at Tomago on private land and one at Hexham Swamp. A pair bred successfully at Tomago in 2017 and 2018 using the same nest both times, and with one young bird fledging each year (Lindsey 2019b). In 2020 there were two chicks in a nest in Hexham Swamp, with both of those birds considered to have successfully fledged (Lindsey 2020).

The two new breeding events occurred in Hexham Swamp in 2021 and 2022. The swamp (see **Figure 1** for some key locations) covers almost 2000 ha and supports a range of wetland types including mangroves and saltmarsh (Local Land Services 2022). The dominant vegetation is Common Reed *Phragmites australis*. Other vegetation includes Cumbungi *Typha latifolia* and various *Casuarina* and *Melaleuca* species (Winning & Saintilan 2009).

Black-necked Stork usually choose a flat-topped tree on which to build their nest (Clancy & Ford 2011). The nest is substantial and can be one to two metres wide and one metre high. The same nest may be used year after year and each time it is reinforced with new branches (Clancy & Ford 2013). Few suitable trees are available in Hexham Swamp to support such a large nest platform.

METHODS

Some of the observations for this report were made using binoculars, telescopes or cameras at various locations around Hexham Swamp. The majority of such observations were from an observation point at Kau Ma Park, Fletcher (**Figure 1**).

Use of drones

Land access to the nest sites was difficult as it entailed walking in water for over one kilometre through tall, dense Cumbungi and Common Reed vegetation. From Kau Ma Park, it was difficult for observers to see into the

nest. Hence, drones were used to assist the monitoring program.

The main drone used, an Autel EVO II, was flown by trained pilots. The drone was never flown directly over the nest site. Each time that a drone was flown, an observer or observers at Kau Ma Park used telescopes to monitor for any signs of distress on the part of the storks, in which case the drone was to be withdrawn.

Additional details about the use of drones to observe breeding Black-necked Stork will be documented in a future article.

Banding the chicks

Black-necked Stork chicks were banded under a licence held by Dr Greg Clancy (banding authority 536). Once the chicks were considered old enough to be banded, two

people walked to the nest tree, with an observer or observers at Kau Ma Park monitoring the behaviour of the storks. The observer/s and banding team were in radio communication at all times. Chicks were lowered one at a time to the ground in a cloth bag, banded, measured and photographed, and then returned to the nest.

OBSERVATIONS

The nest used by the Black-necked Stork pair in 2020 disintegrated prior to the 2021 season (AL pers. obs.). The branches on which the nest was resting (in a Narrow-leaved Paperbark *Melaleuca linariifolia*) were well spread out and there was little support underneath the nest platform. In the 2021 and 2022 breeding events, nests were constructed in other trees.



Figure 1. Some key landmarks in Hexham Swamp (map modified from an image sourced from Google Maps).

Breeding event in 2021

The 2021 nest (32°51'25" S, 151°39'39" E) again was straddled between trunks of a *Melaleuca linariifolia*. The nest was first discovered on 17 November, when one of us (AL) observed two well-developed young on the nest. As they were large and looked almost ready to fledge, we decided to band them as soon as possible. This took place on 19 November (**Figure 2**).

During a week of strong winds, heavy rain and storms from 21 to 27 November, the nest collapsed. Photographs taken using the drone on 1 and 2 December confirmed that the nest was on the

ground but lying above water level. There was one young bird standing on the fallen nest (**Figure 3**); it was identified as the younger of the two birds banded on 19 November. There was no sign of the other young bird. On 8 December, R. Kyte and G. Little walked out to the nest site and successfully stabilised the trunks of the tree with ropes, then lifted the nest platform back onto the top of the tree and put the young bird into the nest. The bird was later observed to be standing in the nest with outstretched wings, and bill-clapping. It is assumed to have fledged between 9 and 11 December as it was not seen again after 11 December. On 15 December photographs taken by the drone confirmed that the young bird was not on or

underneath the nest or anywhere within the immediate surrounds.



Figure 2. Two juvenile storks immediately after they had been banded (Photo: G. Little 19/11/2021.)



Figure 3. A juvenile stork on the nest which had fallen to the ground. (Photo: B. McDonald 07/12/2021.)

Breeding event in 2022

From April 2022 one of us (RK) sometimes observed two adult storks flying back and forth to a Swamp She-oak *Casuarina glauca* (32°51'08"S, 151°40'04"E) north-west of the 2021 nest site (**Figure 1**). On 24 April the storks were observed to be copulating whilst on the tree. On 2 June the drone was launched and the adult male was photographed sitting on the nest. The female joined him and they both stood together for some time. On 23 July the adults were standing on the nest together when

observers arrived at the Kau Ma Park observation point. Then on 30 August the storks were again observed together on the nest, firstly with the male sitting and the female standing. They changed positions and the female sat down whilst the male flew off, collected some sticks and returned to the nest. The drone was launched and when it arrived at the nest site, the female was sitting and the male standing. Shortly afterwards the female stood up, revealing five eggs. Again they changed positions and the male sat down on the eggs. When the drone was next flown to the nest on 19 September the female was sitting. The male flew in with a stick which he placed on the nest. Shortly afterwards the female stood up and two chicks and two eggs could be seen (**Figure 4**). The next observation was made on 23 October by J. Little using a telescope at Kau Ma Park. She observed the female standing on the nest with two young at her feet.



Figure 4. Adult pair with two chicks and two eggs. (Photo: L. Williams 19/09/2022.)

On 29 November the drone was again deployed. The female stork was standing on the nest and two large young birds were visible. On 4 December an attempt was made to band the young birds, but before this could be done, they flew away.

Although this nest remained viable throughout the 2022 breeding event, it became unstable during the following year's breeding event (in prep.).

DISCUSSION

Since it is known that Black-necked Storks will return to the same nesting site (Clancy & Ford 2013), we think that the 2020, 2021 and 2022 breeding events in Hexham Swamp involved the same pair of Black-necked Stork each time. The fact

that the pair chose three different trees in three years may be indicative of the unsuitability of nesting trees in Hexham Swamp. Each tree proved to be unstable in the long term.

The deployment of drones allowed detailed observations within the nest which would not have been possible to achieve using a telescope or binoculars.



Figure 5. Pair of adult Black-necked Stork with juvenile near the Pipeline Track, Hexham Swamp. (Photo: P. Fuller 25/01/2023.)

CONCLUSIONS & RECOMMENDATION

From 2020 to the end of 2022, six Black-necked Stork chicks fledged, from three different nests. Four of those birds had been banded; however none of the banded birds was ever seen subsequently. There were several sightings of unbanded juvenile birds. In January 2023 there were three sightings made from along the Pipeline Track, Hexham Swamp of an unbanded juvenile in the company of an adult pair (E. Vella pers. comm., S. Owen pers. comm., P. Fuller pers. comm.; **Figure 5**). At the same location in March 2023, a juvenile was present while at the same time the adults could be seen in the distance standing on the 2022 nest tree (T. Kendall pers. comm.). A juvenile bird was sighted, also in March 2023, near Bulbul Crescent, Fletcher (C. Dearing pers. comm.). Presumably those latter sightings involved one or both of the juveniles which fledged from the 2022 nest before they could be banded.

After leaving the nest, Black-necked Stork juveniles often remain with their parents or in the same area for several months (Clancy & Ford 2013). The 2017 Tomago juvenile presumably remained in the estuary from August 2017 when it left the nest to May 2018 when it was taken into care (Lindsey 2019a). However, after it was released in Hexham Swamp in July 2018, it left the area and was next

sighted in Port Stephens (Lindsey 2019a). Given the large number of birdwatchers in the Hunter Region, it is surprising that so few sightings have been made and that there have been no sightings of any of the banded young.

In view of the dearth of suitable nest trees in Hexham Swamp and the persistence of the adult storks to nest in that area, we recommend that investigations be made into the possibility of erecting artificial nest platforms. Such platforms have been successful in Europe and Asia for White Stork *Ciconia ciconia* and Oriental Stork *Ciconia boyciana* respectively. So far as we are aware, artificial platforms have not been trialled for Black-necked Stork in Australia.

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