

Brahminy Kite nesting at Port Stephens, NSW: extension of southerly breeding range

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The existence of an active Brahminy Kite *Haliastur indus* nest at Lemon Tree Passage (Port Stephens, NSW), was confirmed on 31 May 2016. The nest site was monitored for eight months, and parental behaviour and time-budgets are described. Incubation lasted a maximum of 43 days (probably less), and the nestling period at least 50 days; development of the juvenile is described. The only identified prey items at the nest were fish. One juvenile was raised successfully by the adult pair; a second fledgling fell from the nest, was rescued, successfully raised in care and released. A second nesting attempt in the same year proved unsuccessful and the egg was presumed to be infertile. The nest location, which is currently the most southerly Brahminy Kite nest site in New South Wales to be identified, monitored and described, supports the view that Brahminy Kites are extending their southern breeding range.

INTRODUCTION

Brahminy Kites *Haliastur indus* are predominately coastal raptors, although they may occur inland along rivers, estuaries and wetlands (Marchant & Higgins 1993). Their distribution is widespread from coastal south-east Asia to Australia. Generally common along Australia's northern coastline, they range south to Shark Bay, in Western Australia, and the Hunter coastline in New South Wales (Marchant & Higgins 1993; Debus 2012). Historical evidence indicates that the eastern coastal range of the Brahminy Kite extended further south at the time of European settlement, to the Sydney region. A northern New South Wales range-contraction appears to have occurred during the first 80 years of European settlement (Cooper *et al.* 2014).

Contemporary data compiled by the NSW Bird Atlas and the Hunter Bird Observers Club (HBOC) indicate that sightings of Brahminy Kites are no longer a rarity along the Hunter coastline (Stuart 1994-2016; Cooper *et al.* 2014). HBOC nesting records for this species also suggest the steady consolidation of a southerly range reversal as more pair-based territories become established (Stuart 1994-2016). This paper describes nesting activity at a site one degree south of all Brahminy Kite nests reported to date (R. Cooper pers. comm.). The detail obtained, including on parental time-budgets, extends the few, incomplete behavioural studies of this species in Australia and globally (e.g. Rourke & Debus 2016), and provides the first detailed account of the nesting period. The pair

also attempted a second clutch soon after the first brood fledged.

Background observations

The first reported sighting of Brahminy Kites at Port Stephens occurred in 2005 when two birds were recorded as "often present" at Bulls Island, Lemon Tree Passage (Stuart 2006). In subsequent years, single birds and pairs were routinely recorded at various locations within the estuary and along the coast. One pair was frequently seen hunting around Bulls Island, Lemon Tree Passage and Tilligerry Creek (Stuart 2006-2016). The frequency of Brahminy Kite sightings in the Port Stephens estuary strongly suggested the existence of a local nest.

In December 2012 a report, accompanied by photographs of a juvenile Brahminy Kite landing on the balcony rail of a residence overlooking Lemon Tree Passage, was received. The juvenile lost its balance and tumbled into some nearby mangroves, where it managed to right itself and perch on a branch before flying away. In one photograph two adult Brahminy Kites can be seen flying overhead (P. Eltoft, pers. comm. and photos). The awkwardness and inexperience of the juvenile indicated fledging from a nearby nest.

In 2013, there was further evidence suggesting a local nest when, during July, a Brahminy Kite was seen carrying a branch and flying towards Lemon Tree Passage (L. Crawford & C. Herbert, pers. comm.). No nest was found until December 2014,

when local birdwatcher, Pam Hill, heard about the location of a large nest. The nest was visited and photographed, but no activity was noted. However, discussion with local property owners, and showing them field-guide photographs, suggested that the nest had been occupied by Brahminy Kites.

During 2015 the nest site was visited on a monthly basis, but no activity was noted. On 21 April 2015, an east-coast, low-pressure weather system caused severe damage throughout the estuary. The nest tree was badly damaged, but the nest remained intact. The nest tree was scheduled for removal, but when alerted to the presence of the nest, a decision was made to lop the tree and make it safe rather than remove it. Brahminy Kites were seen regularly at Lemon Tree Passage during 2015 but the nest remained unoccupied, probably because lopping of the nest tree, and other trees in the area, occurred during the breeding season. On a routine visit on 31 May 2016, an adult Brahminy Kite was seen at the nest. Monitoring commenced immediately.

STUDY AREA AND METHODS

The nest was located in an urban setting at Lemon Tree Passage, Port Stephens, New South Wales (32°43'50"S, 152°02'03"E), 630 m from the northern entrance to the Passage, and 830 m from Tilligerry Creek (Google Earth 2015). The nest tree was a mature Blackbutt *Eucalyptus pilularis* (estimated canopy height: 45 m; estimated nest height: 28 m). Blackbutts dominated the area, along with an intermingling of mature Sydney Peppermint *Eucalyptus piperita*, which the kites often used when perching. The nest tree was situated at the intersection of one undeveloped and three developed building lots, on the eastern side of a steep slope leading up to a well-treed ridge. The topography, dense understorey and built environment made it impossible to accurately measure canopy height, nest height and trunk diameter with conventional survey equipment, so these parameters were estimated.

Observation position

Views of the nest interior were not possible; also foliage, surrounding trees, scrub and the built environment restricted nest observation to a position approximately 30 m north-west of the nest tree, at an angle of approximately 40° to the nest. Most observations were made from a vehicle. The adult birds, while appearing tolerant of the

property owners, often showed signs of agitation when strangers approached. The car, always parked in the same position, was quickly accepted.

Identification

Determining the sex of the adult birds was initially difficult. In good light the presumed female appeared bulkier than the male, and her russet-coloured feathers looked dull. The lighter, brighter plumage of the presumed male had a noticeable sheen in sunlight. Behaviour (i.e. copulation, food drops, nestling), also helped to determine the gender of the adult birds, although herein gender is always putative (Lutter *et al.* 2006).

Observation schedule

Regular nest observations began on 31 May 2016, and continued until 21 December 2016. During this period the nest was visited on 58 occasions for a total observation time of 101.5 hours: eight visits, 9 h 35 min, during the pre-laying phase (to 16 June); 14 visits, 32 h 6 min, to hatching (2 August); seven visits, 15 h 50 min, in the chick's first 30 days (to 1 September); nine visits, 19 h 30 min, to fledging (21 September); and 19 visits, 24 h 8 min, over 65 days during the pair's second nesting attempt (15 October–21 December). The behavioural sequence for each observation session was logged and transferred to an Excel spreadsheet for analysis. Observations were made with binoculars (Swarovski EL10x50 SV) and a spotting scope (Swarovski HD 20x60). Photos and videos were taken using a Canon EOS 7D Mark II camera equipped with a Canon EF 100-400 f/4.5–5.6L IS USM lens, and a Nikon Coolpix P900 camera.

Nest monitoring began when nest preparation and courtship were already underway, and continued through the complete cycle of egg-laying, incubation, nestling period and fledging, to eventual nest desertion. During this time, a juvenile was seen to fledge and fly strongly. The presence of a second juvenile was confirmed when human disturbance caused an adult and the first juvenile to abandon the nest site, leaving a previously unseen, fledged juvenile to unsuccessfully attempt flight. The second juvenile was collected by a representative of Wildlife In Need of Care (WINC). The bird survived and was later transferred to the Australian Raptor Care and Conservation Centre for rehabilitation. The rescued juvenile was released in the Lemon Tree Passage area on 6 March 2017.

RESULTS

The nest

The size of the nest was estimated at 1 m (L) x 0.7 m (W) at the rim, with a cup-depth of 30 cm. Nest construction consisted of interwoven twigs and branches of varying lengths and diameters. The nest was wedged into the branching fork of a large secondary limb at an estimated distance of 8 m from the main trunk of the nest tree, at a height of 28 m (**Figure 1**).



Figure 1. Nest tree

Courtship and nest preparation

Very little nest preparation was observed. Photographs taken between December 2014, when the nest was first discovered, and May 2016 when observations began, showed little evidence of nest deterioration. Repair work may have been undertaken before the commencement of nest monitoring.

Courtship and nest preparation occupied 31 May to 16 June 2016, during which the female was on or near the nest for 99% of observation time (9.58 h), and the male for 14.8% (**Table 1**). The male was observed bringing a long, thin stick to the nest on two occasions, but the female did not place either stick into the nest structure. Both sticks dropped to the ground and no attempt was made to retrieve them. The female occasionally tugged at nest branches already in situ.

Throughout the entire 8 months of nest monitoring, both adults showed an individual preference for 2-3 different perches, all on exposed branches 2-15 m from the nest. Perch heights varied, and some were located in neighbouring trees, but all offered a clear line of sight to the nest. The daily choice of perch appeared to be a response to wind direction and sunlight, especially in the early morning and late afternoon. During the courtship phase the female sometimes joined the male on his perch, occasionally in response to his quiet call. Both adults then perched very close together for 5-35 min, looking around and occasionally touching bills. Copulation was witnessed on 1 and 3 June.

Three courtship (supplementary) food exchanges by the male were confirmed during this phase (= 0.31/h) and several more were reported by the property owners (A. & C. Morgan, pers. comm.). Food exchange usually occurred on the female's favourite perch. The food conveyed to the female was always identified as fish either visually during the exchange or from remains that fell to the ground.

Incubation

On 20 June, a distinct behavioural change was observed in both adults. One adult bird sat low in the nest at all times. Male and female exchanged places twice. From the observation station, the bird incubating was either low in the nest or not visible until the bird changed position. Repositioning was conducted slowly and carefully, usually with the head of the sitting bird out of sight below the nest rim. The bird's body movements suggested attention to an egg. It was assumed, but not confirmed, that an egg had been laid and incubation, or preparation for laying and incubation had commenced.

The behaviour witnessed during the 20 June observation was repeated during subsequent observations until 2 August. The female was responsible for the majority of incubation (79.5% of observation time; male 14.7%; = 32.1 h), with her shifts averaging 115 min (range 37-207 min). The male's shifts averaged 21 min (range 10-77 min) and signs of restlessness were sometimes observed if the female was absent for longer than 30 min. Both were on or near the nest for 88.9% (female) and 31.5% (male) of observation time. There were 17 observed incubation changeovers (= 0.53/h). When approaching and leaving the nest the male usually soared in 4-8 wide circles high above the nest. The female tended to fly directly to and from the nest and was never seen circling more

Table 1. Summary of nest activity over total observation period (31 May to 21 December 2016) expressed as a percentage of total observation time.**COURTSHIP AND NEST PREPARATION TO EGG LAYING (Observation period 31 May - 16 Jun = 17 days)**

# Visits	Total Obs Time (min)	Female at nest	Male at nest	M & F both at nest	Female nearby	Male nearby	M & F nearby	Female absent	Male absent	M & F absent, nest unattended	Female feeding juvenile	Juvenile feeding itself	Female eating	Juvenile visible	Juvenile off nest	Food drops	Nest change-overs	Copulation
8	575	57.0		2.1	37.0	8.9	3.8		85.2							3		2

INCUBATION TO HATCH (Observation period 17 Jun - 2 Aug = 47 days)

# Visits	Total Obs Time (min)	Female at nest	Male at nest	M & F both at nest	Female nearby	Male nearby	M & F nearby	Female absent	Male absent	M & F absent, nest unattended	Female feeding juvenile	Juvenile feeding itself	Female eating	Juvenile visible	Juvenile off nest	Food drops	Nest change-overs	Copulation
14	1926	79.5	14.7	3.5	4.5	11.9	1.4	10.9	68.2	0.3						5	17	1

HATCH TO FIRST SIGHT OF JUVENILE (Observation period 2 Aug - 31 Aug = 30 days)

# Visits	Total Obs Time (min)	Female at nest	Male at nest	M & F both at nest	Female nearby	Male nearby	M & F nearby	Female absent	Male absent	M & F absent, nest unattended	Female feeding juvenile	Juvenile feeding itself	Female eating	Juvenile visible	Juvenile off nest	Food drops	Nest change-overs	Copulation
7	950	64.5	0.4	0.8	17.5	4.7	9.9	3.8	80.6	3.5	22.8	0.8				8		

FIRST SIGHT OF JUVENILE TO FLIGHT (Observation period 31 Aug - 21 Sep = 20 days)

# Visits	Total Obs Time (min)	Female at nest	Male at nest	M & F both at nest	Female nearby	Male nearby	M & F nearby	Female absent	Male absent	M & F absent, nest unattended	Female feeding juvenile	Juvenile feeding itself	Female eating	Juvenile visible	Juvenile off nest	Food drops	Nest change-overs	Copulation
15	1170	15.2		1.0	40.8	5.1	1.2	3.7	54.5	38.1	14.0	7.3	1.1	43.7	6.6	7		

SECOND NESTING ATTEMPT (Observation period 10 Oct - 21 Dec = 72 days) (Nest abandoned 3 Dec, 52 days after "2nd Sitting" was noticed)

# Visits	Total Obs Time (min)	Female at nest	Male at nest	M & F both at nest	Female nearby	Male nearby	M & F nearby	Female absent	Male absent	M & F absent, nest unattended	Female feeding juvenile	Juvenile feeding itself	Female eating	Juvenile visible	Juvenile off nest	Food drops	Nest change-overs	Copulation
18	1468	50.3	15.7	0.4	8.0	5.7	1.2	15.3	52.2	24.7							8	

than 3 times. Copulation occurred again on 12 July. At least four food deliveries by the male occurred ($\geq 0.12/h$) (**Table 1**).

On 2 August, the female appeared agitated, frequently shifting position and looking down into the nest. Over a period of 2 h 25 min the male was observed flying above the nest tree on four occasions, and perching nearby three times. During the male's presence the female sat very low and still, appearing to ignore him. When the male flew away for the fourth time the female stood up and began to tug at something in the bottom of the nest. She then flew to a nearby branch to defecate, and wipe her bill vigorously on the side of the branch before giving a soft call and returning to the nest. The male immediately flew in and walked around the nest rim, but the female sat low and motionless in the nest until he left.

Again the female flew off the nest. She perched in a nearby tree and was seen to drop something. When the female returned to the nest and settled, a search of the ground revealed half an egg-shell, which was photographed in situ then collected. The eggshell was later identified (from Beruldsen 1980) as being from a Brahminy Kite. It was assumed that a chick had hatched, and two nestlings were confirmed at fledging time (see later). Apparent incubation from 20 June to apparent hatching on or by 2 August gives a maximum incubation period of 43 days, but may be an overestimate as incubation behaviour could have commenced some days before laying (Lutter *et al.* 2006). If the removed eggshell (2 August) was from the second-hatched chick, the first may have hatched a day or two earlier.

Nestling period: first month

For 3 days post-hatch, a severe weather front passed through the area. Daytime high temperatures of 12°C were recorded at the nest site. High winds buffeted the nest tree, amid falling branches, low light and heavy rain. The nest swayed violently at times, but held fast, and remained sound. The female sat low and tight, and was only seen to leave the nest to defecate then circle overhead 2-3 times before resettling. The male was only seen on three occasions, twice circling overhead and once bringing food.

On 3 August, the first indication that the female might be feeding a chick was noted. Twice, she stood up in the nest for 13-15 minutes with her head out of sight below the nest rim. Her jerky, intermittent body movements suggested she was

tearing up food and passing it to a chick. When she lifted her head above the nest rim small morsels of food were seen on her bill. This action was repeated during all subsequent observations, and as the chick grew in size feeding activity was confirmed visually and photographed.

On 10 August, the fish dropped into the nest by the male was instantly seized by the female and taken to a favourite perch. On video, the fish was seen to open and close its mouth and twitch its body. The female held the fish firmly in her talons for several minutes, appearing to squeeze it. She also pecked at its gills. When the fish became still she carried it back to the nest and commenced feeding the chick.

During the chick's first 30 days the female was on or near the nest for 92.7% of observation time (= 15.83 h), at the nest for 64.5% and feeding the chick for 22.8%. The average time spent feeding the chick over the seven observation sessions was 30.4 min, ranging from 6 to 55 min. Initially feeding times were short and frequent, but gradually the time spent feeding increased, as did the breaks between feeds, consistent with the development of the chick, and the amount of food it could consume at each feeding session. The female was seen to consume food herself on only three occasions while in the nest.

During this phase the male brought food to the nest, but did not participate in brooding or feeding the chick. He was on or near the nest for 15.8% of observation time, at the nest 0.4%, and made eight food deliveries (= 0.51/h) (**Table 1**). Both adults were fastidious about cleaning their bills and talons. Much of their off-nest perching time was spent pecking at their feet and vigorously wiping their bills on a branch.

Nestling period: feathering to fledging

During the next phase of the nestling period (~30 days old to fledging), the female was on or near the nest for 58.2% of observation time (= 19.5 h), feeding the nestling for 14%; the nestling fed itself for 7.3%. The male was on or near the nest for 7.3% of time, and made five food drops to the nest (= 0.26/h) (**Table 1**).

From the egg-shell collection date (2 August) the juvenile was about 30 days old when first seen (1 September). Both adults were absent at the time, and the juvenile was photographed looking out over the rim of the nest. The juvenile was half to two-thirds the size of the adults. With the exception of bare areas around the eyes, the head

and body were covered in thick, greyish-white down, with a row of emerging feathers down the back of the neck. Dark pin feathers were visible beneath the wings, and dark feathering covered the back and upper wings (**Figure 2**). The juvenile preened frequently but unsteadily in high winds rocking the nest.



Figure 2. Juvenile 1 (~30 days)



Figure 3. Juvenile 1 (~32 days)

The juvenile developed rapidly. On 4 September (33 days), again while the parents were absent, the juvenile was photographed perching almost on the nest rim (**Figure 3**). This perch appeared precarious, but the juvenile showed no sign of the unsteadiness of 1 September. With most of its body visible the juvenile's size and feather development became more apparent. In three days it had grown larger, the wings seemed fully developed and although patches of down were still visible, feathering was well underway. The

juvenile was alert. It watched the movements of people passing below and the flights of other birds in the area. Wing stretching, flapping and jumping were frequently noted. During this observation session the juvenile's activity periods averaged 30 min, after which it appeared to tire. It yawned, its eyelids closed momentarily, then it disappeared below the nest rim, presumably to sleep.

By 10 September (39 days) juvenile plumage was clearly evident (**Figure 4**). Although still accepting food from the female, it fed itself during her absence. By 17 September (46 days) it was frequently off the nest, jumping and flapping to nearby branches of the nest tree ("branching" behaviour) (**Figure 5**). On 21 September (50 days) the juvenile was making short flights around the nest area, and on 22 September (51 days) it was flying with the female, over the Lemon Tree Passage town site. The juvenile's robust appearance suggested it might be female.



Figure 4. Juvenile 1 (~40 days)



Figure 5. Juvenile 1 (~47 days)

Though flying well, the juvenile returned to the nest, to sleep over the next four days. One or both adults (usually the female) were sometimes nearby. On one occasion the perching female was joined briefly by the male, which then flew away. The female then flew to the nest and appeared to nudge the juvenile. The juvenile stood, stretched, yawned, and flew off with the female.

Apparent hatching on or by 2 August to fledging (first true flight from the nest tree) on 21 September gives a nestling period of a least 50 days, or possibly a day or two longer if the chick hatched a day or two before 2 August.

Second juvenile

No evidence of a second juvenile was seen. The following account is a compilation of verbal reports from local sources and raptor-carers.

On 28 September, a work crew began clearing the vacant building lot behind the nest tree. An adult and the juvenile Brahminy Kite, frightened by the commotion, left the nest site and flew towards Tilligerry Creek. Minutes later a second weak juvenile was seen struggling to the nest rim from which it made an unsuccessful attempt at flight (A. & C. Morgan, pers. comm.), i.e. fear-induced premature fledging. The bird fell into the backyard of a nearby house. The homeowner placed it in a large shrub, hoping that the adults would return and collect it. When no adults appeared, the bird was taken indoors overnight. It refused to eat or drink. Catherine Wroe, WINC's raptor-carer, collected the bird on 29 September, and had it examined by a veterinarian. Apart from poor condition (weight 460 g), there was no evidence of physical damage. X-rays detected the presence of developing gonads indicating that the bird was male (C. Wroe pers. comm.) The juvenile's age was difficult to assess, but based on plumage, it was estimated at between 50 and 55 days. The second fledgling's lag in development of about a week was perhaps related to food supply and dominance by the older chick.

The rescued bird thrived, and when visited on 27 October, it flew confidently around a large aviary looking healthy and alert (**Figure 6**). Its estimated age was 62-67 days. The bird was later transferred to the Australian Raptor Care and Conservation Centre Inc., where it responded well to rehabilitation. Plans to equip the bird with a geo-tracker were aborted by lack of funding (P. MacDonald pers. comm.). The bird, estimated at 6-6.5 months old, was released in the Lemon Tree

Passage area 6 March 2017. In subsequent days it was observed flying by the author.



Figure 6. Juvenile 2 at WINC care facility (62-76 days)

Second nesting attempt

After the block-clearing incident on 28 September, local residents again reported sighting adult Brahminy Kites in the area (A. & C. Morgan, pers. comm.), but presence on the nest was not noted until 15 October 2016, 3.5 weeks after the first juvenile fledged. Between 15 October and 17 November (33 days) both adults resumed shared incubation duties (female on or near nest 59.9% of observation time, incubating for 50.3%; male on or near nest 22.6%, incubating for 15.7%; = 24.47 h). Again, regular change-overs were witnessed (= 0.33/h), with the female averaging longer shifts than the male. During observations between 17 and 29 November, the male was seen at the nest once. After 18 min he flew away leaving the nest unattended. The female persisted, but her increasing absence from the nest indicated waning interest. She was last seen at the nest 29 November (45 days), but was observed perching nearby until 3 December (49 days). It was assumed that the egg was infertile. The female's incubation time was 29.2% less than that during the first, successful incubation event (50.3%, vs 79.5% during the first event).

Observations continued until 21 December 2016. An adult Brahminy Kite (thought to be female) was seen flying overhead on two occasions, and on 3 December the female flew in and perched on one of her favourite branches. She was joined by the

male which perched close beside her. They sat quietly for 16 min before the male left. The female followed 4-5 min later. No Brahminy Kites were seen at the site after 3 December, until observations ceased on 21 December.

During the second nesting attempt the first juvenile was not seen at the nest site. One unconfirmed report was received of a juvenile and an adult Brahminy Kite seen flying in the vicinity of Bulls Is. (date and observer unknown). Since December a pair of adult Brahminy Kites have been routinely seen flying, perching and hunting, in the vicinity of Lemon Tree Passage and Tilligerry Creek.

Food

Fish, whole (~200 to 250 mm) or in portions (~100 to 150 mm) was the only identifiable food brought to the nest. The male was the main provider, although the female was occasionally seen delivering a fish during the nestling's feathering phase (second month until fledging). Fallen fish remains were either removed by the property owners to prevent the smell attracting vermin, or consumed by one of the three cats that regularly patrolled the area. Food remains found by the author were identified as Bream *Acanthopagrus australis* and Mullet *Liza vaigiensis* (Department of Agriculture & Fisheries).

DISCUSSION AND CONCLUSIONS

This study generally confirms and extends, or complements, previous studies on the breeding cycle of the Brahminy Kite. Breeding behaviour, parental time-budgets and development of the juvenile were similar to, and enlarge upon, previous descriptions, allowing for individual variation and the lack of prior data on the nestling period (cf. Marchant & Higgins 1993; Lutter *et al.* 2006; Indrayanto *et al.* 2011; Rourke & Debus 2016). The parental food delivery rate to nestlings was lower than that recorded by Hollands (2003) in the tropics. This study confirms pre-laying food exchanges, not recorded by some previous accounts (Marchant & Higgins 1993; Indrayanto *et al.* 2011; Rourke & Debus 2016), though observed by Lutter *et al.* (2006). Observed prey delivered to the nest (only or mainly fish) is consistent with some prior observations (Hollands 2003; Rourke & Debus 2016), although others have recorded a more diverse diet (e.g. Marchant & Higgins 1993; Lutter *et al.* 2006; Riddell 2013).

The presumed maximal incubation period of 43 days exceeds the estimated incubation period of about 35 days previously reported (Marchant & Higgins 1993; Rourke & Debus 2016), but may have been several days shorter for reasons given earlier. Lutter *et al.* (2006) observed incubation behaviour several days before laying. Development time from presumed hatching to fledging (50 days) is consistent with the literature (50-56 days: Marchant & Higgins 1993; Rourke & Debus 2016), but could have been a day or two over 50 days if the first chick hatched before 2 August.

The discovery of an active nest at Lemon Tree Passage supports the view that Brahminy Kites are extending their southern breeding range along Australia's eastern coastline. Given the number of sightings of a pair of Brahminy Kites in the vicinity of Lemon Tree Passage over the past 10 years (Stuart 2006-2016), a photographic report of a juvenile in 2012 (P. Eltoft, pers. comm.), comments by local residents (A & C. Morgan, pers. comm.), and the suggestion that some Brahminy Kites are thought to be territorial and site-faithful (Marchant & Higgins 1993; Rourke & Debus 2016), a pair of Brahminy Kites may have nested at the study site for several years.

The quick actions of carers of the rescued juvenile meant that the 2016 nest produced two young, although without human intervention only one might have reached independence. Two young reaching fledging age equates to 1.0 young fledged per attempt in 2016 but only 0.5 young per year over 2015-16, similar to that recorded by Rourke & Debus (2016) and reaffirming the negative impact of human disturbance. Double-clutching within a year in this species has previously been recorded only after failure of the first clutch (Rourke & Debus 2016). The short interval between fledging and the new clutch also suggests that the first juvenile may not have survived the post-fledging dependence period, which lasts at least 6-7 weeks (Rourke & Debus 2016).

Regular site visits will continue until the start of the 2017 breeding season. The nest will be monitored photographically for signs of deterioration and evidence of reoccupation recorded. A request has been submitted to the Port Stephens Council asking that the nest tree be registered in their catalogue of "Significant Trees in the Port Stephens Area" to try to assure its protection in the event of future housing development.

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