

Breeding Behaviour of a Pair of Whistling Kites *Haliastur sphenurus*

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Summary

The progress of a pair of Whistling Kites *Haliastur sphenurus* nesting at Careel Bay (suburban Sydney, N.S.W.) was monitored over seven years 1985-1992, during which they fledged one or two young. The pair built and occupied five nests during this time; two nest trees were cut down and one nest was blown down, forcing them to select new sites and rebuild. Notes on territory, display, nest-building, parental behaviour, post-fledging period and diet are presented.

Introduction and methods

The breeding biology and behaviour of the Whistling Kite *Haliastur sphenurus* have been described by Boehm & Heinecke (1967), Frauca (1980), Cupper & Cupper (1981), Hollands (1984) and Baker-Gabb (1984). Philipps (1988) provided details on a pair breeding in captivity. This paper presents observations on the breeding attempts of a pair of Whistling Kites over seven years 1985-1992 at Pittwater, on the central coast of New South Wales.

The Kites were observed with binoculars, and a diary of events kept. The sexes were distinguished mainly by behaviour, and by slight plumage differences. One, presumed female, had a paler head, and during the nest-building phase in 1988 it was the recipient of sticks brought in and presented by the other. In 1989, this paler one appeared to do almost all the feeding and tending of the fledgling. At this time, when both adults were seen together, the presumed male was darker and shorter-tailed, which made it look smaller. It also had an uneven-edged tail. This darker one flew about with sticks and displayed more aggression to the juvenile when it was reaching independence.

All times are given as Eastern Standard Time.

Study area and habitat

Careel Bay (33°37'S, 151°19'E) is on the eastern side of Pittwater, an inlet off Broken Bay which is the mouth of the Hawkesbury River. Careel Bay is flanked on the west by a narrow, wooded and residential peninsula jutting into Pittwater, and on the east by Barrenjoey Peninsula which separates it from the ocean (northernmost of the Sydney suburban beaches). Careel Bay has extensive sand and eel-grass flats and mangroves at the head of the bay. The eastern Pittwater shore south from Careel Bay and the west shore are mostly rocky, each with several small sand beaches, and steep hills, residential on the east shore and forested on the west (Kuring-gai Chase). The sea coast has cliffs, edged in a few places with heathland, many houses, and four ocean beaches.

Near the head of the bay is a wharf and slipway. Many boats are moored all over the bay. The Kites use the mast-tops of certain boats for daytime perching places and while feeding. This stretch of shore, used for nesting, faces east-north-east and is sheltered from the westerly and southerly winds. However, the Kites' new nesting area, after they were displaced from their favoured area in September 1991, is exposed to all winds. There is a wide variety of waterbirds on the bay. A pair of White-bellied Sea-Eagles *Haliaeetus leucogaster* sometimes roosts and hunts on the west side of Pittwater; they may be the pair which nests in America Bay on the western side of West Head peninsula.

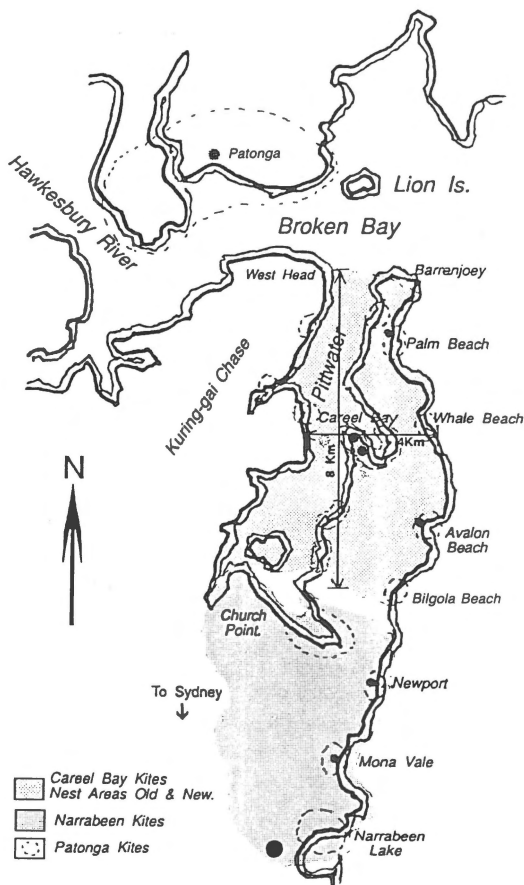


Figure 1. Map of study area, showing places mentioned in text. Nest sites (●) and approximate home ranges of Whistling Kite pairs shown.

The Kites' original nest area at Careel Bay is on a hillside with houses on the waterfront extending up the hill, and a road with moderate traffic parallel to the shore, half-way up the hill. Amongst the houses is a fair coverage of trees, mostly Spotted Gum *Eucalyptus maculata*. Many of the large trees in the area are deteriorating from the stresses of housing development, and some are felled for new or enlarged houses.

In January 1992 the Kites spent most of their time on the Pittwater shoreline north of Careel Bay. Here there is a sandy beach on the north point of the bay, with a wharf and slipway, a low-lying area of houses and few trees, a park and ferry wharf (Palm Beach), and the narrow neck of the peninsula: a sandy beach on the Pittwater side, golf course and sand dunes along its length, bordered on the east by the ocean beach and ending in the high, heath- and rock-covered hill of Barrenjoey. On the Pittwater beach, fishermen daily bring in their nets, and White-bellied Sea-Eagles, Australian Pelicans *Pelecanus conspicillatus*, Silver Gulls *Larus novaehollandiae*, Crested Terns *Sterna bergii* and the Kites may be seen catching the escaping fish.

Home range

The Kites appear to use most of Pittwater, about 8 km from West Head and Barrenjoey in the north to Scotland Island and Church Point in the south (Figure 1). At Careel Bay, the mid point, they range about 4 km from the west shore of Pittwater (Kuring-gai Chase) east across the peninsula to the coast at Whale Beach. A neighbouring pair nested until 1992 at Narrabeen Lake, and ranged from Dee Why Lagoon to Church Point (R. Angus pers. comm.), about 10 km north to south, and adjoining the range of the Careel Bay pair. A third pair nests at Patonga, on the north side of Broken Bay and about 8 km from Careel Bay; their range would meet the northern edge of the Careel Bay pair's range.

Nest sites and breeding attempts

1985

I first saw the Kites in June when I started visiting the area weekly. The nest was in a large Spotted Gum (tree 1). I saw the Kites regularly over the bay and over Pittwater, and at the nest, but never more than the pair. I resided in the area from 1986. A neighbour reported that a pair of Kites has occupied the immediate nest area since he came to live there 20 years ago; they first nested in tree 1 (R. Lonnon pers. comm.).

1987

In April, the nest tree (1) was cut down. The Kites moved across the road to a tall, isolated Spotted Gum (tree 2) where they had either previously built a nest, or they took over a disused one. Trees 1 and 2 were in the middle of the peninsula, half-way up the hillside. R. Lonnon (pers. comm.) reported that after tree 1 was cut down they built a nest on his property just uphill from tree 2, and used it for about 12 months while also building the nest in tree 2; they abandoned it for the nest in tree 2.

1988

On 20 May the Kites began building a nest in a tall Spotted Gum (tree 3) in the garden where I live, by the water's edge. They had been perching in and feeding in this tree consistently by day for several days. On 5 July the nest appeared almost completed, 46 days from the start of building. The Kites were using the nest at night and still building, but the nest was blown down by a gale overnight. After a day in the tree drying their feathers, the Kites moved back to tree 2. They built a second nest in this tree and seemed to use the two nests alternately.

1989

On 23 August the female Kite came with a juvenile to a tree in the garden where I live, about 20 m from tree 3. The young was fed in this tree and roosted in it every night, while the parents returned to the nest tree at night (about 300 m away). The young was fully feathered, flying and perching clumsily, and begging to the adults. I did not know that this juvenile had been in the nest.

On 6 September (i.e. at least two weeks post-fledging) the young Kite was flying well, keeping near the shore, and practising picking up objects from the ground. On 17 September the young was flying out over to the mangroves and back. The female was still bringing food to it. On 22 September (a month post-fledging) the young was chasing the female when she was carrying food, and grabbing it from her in the air with its feet.

On 24 September the male was picking up sticks and flying around with them. He chased the young in the air and sometimes when it was perched in a tree. On 26-28 September the young was away for two days. It returned and behaved as usual, and the female still brought food to it. The young was seen for the last time on 1 October, 40 days after it was first seen out of the nest. The post-fledging dependence period thus lasted about six weeks.

There may have been a second breeding attempt in 1989. On 22 October the Kites chased a Pied Currawong *Strepera graculina* from the outer nest in tree 2. One Kite returned to sit in the nest, while the other continued to confront the Currawong. On 25 December I thought I could hear faint peeping sounds coming from the nest, in which one adult Kite was sitting, while the other was perched nearby. However, I saw no further evidence of a chick. During this month the female Kite had been taking newly hatched ducklings and carrying some of them towards the nest.

1990

On 3 June a third Kite flew in from the north-west, over the nest area and met the adult pair over the bay, circled with them several times with no sign of aggression from any, then flew on southwards. On 23 June I found an old, crushed egg under the nest tree. There was no sign of a chick. On 8 July three Kites were chasing and diving at one another.

1991-92

In January 1991, a probable second young was reared in a tree along the shore. On 5 January a Kite was whistling, a different call from usual. Throughout January I heard a piping whistle from the trees. I saw the female carrying food and visiting the area by day. A third Kite was seen flying with the pair near the shore several times to 2 February, but I could not positively identify it as a juvenile.

Over 2-3 weeks to 1 September, the adults were carrying sticks and sitting in the nest, which had been enlarged, in tree 2. On 9 September tree 2 was cut down, because of root damage and subsequent deterioration. It was close to a house and so considered dangerous. On 10 September the property owner saw the Kites carrying sticks into a tree c. 100 m uphill from the felled tree. For the next 10 days the Kites attempted to roost in tall trees uphill from the felled tree, but were constantly harassed by Australian Ravens *Corvus coronoides*, Australian Magpies *Gymnorhina tibicen* and Pied Currawongs.

On 21 September the Kites roosted at the end of the peninsula jutting into Pittwater. Several times when the Kites were soaring after aerial conflict with the Ravens, one Kite uttered a soft, high trilling note. On 22 September at 0530 h one Kite briefly pursued a passing White-bellied Sea-Eagle as it flew over the roosting area. At 0720 h both Kites were circling, one trilling. At 1750 h they settled to roost in trees on the point.

On 23 September the Kites commenced a new nest (tree 4), after two days of consistently roosting in the new area. At 1750 h one was sitting on the beginnings of a nest in a high fork of a tall Spotted Gum (tree 4), on the end of the point about 30 m above the water, in the grounds of a house. This tree has a commanding view of Pittwater. The second Kite flew in to perch on the nest with the first. The Kites were displaying on 16 October (see p. 234).

The Kites continued building until the end of October, but during November the nest did not increase in size and they appeared to abandon their breeding attempt. On 4 November Australian Ravens were on the nest, in the Kites' absence. On 6 November at 0500 h the Kites were on and around the nest. One uttered a trilling call as it flew to the nest, when the other brought food. They ate together then both left. On 7 November at 0515 h Ravens were flying around the trees near the nest, as one Kite was on the nest. The Ravens left as the second Kite arrived. On 17 November at 0415 h both Kites were in the nest tree, but took no action against an adult Raven which pulled at sticks on the nest. By December the nest looked smaller and untidy, and on 16 December it looked dilapidated. On 27 December the nest had gone.

In early January 1992 the Kites shifted to the northern part of their home range, and apparently hunted and roosted there. However, from mid January they appeared to be roosting again on the point, in the previous nesting tree (tree 4). From 23 January to 13 February they had begun to visit the original nest area regularly during the day for the first time since September 1991, apart from the display on 16 October. They perched in the trees uphill from the old site, displayed over it and perhaps roosted there for one or two nights. The young Ravens, fledged late in 1991, appeared to have dispersed. Only the adult Ravens remained by late February 1992, and were much less territorial. On 2 March the Kites were building again on the point in tree 4, in the same fork as previously. They had placed about 15 sticks in the fork.

Aerial display

On 16 October 1991 the adults were seen displaying. On a day of strong, hot westerly winds and bushfire haze, the Kites put on a display of aerobatics together three times, of 30-60 minutes each time (1115, 1530 and 1730 h). They flew all over the bay (c. 1 x 1 km) with exaggerated high climbs, stoops, spirals and long glides, sometimes apart, then circling together almost wingtip to wingtip. In this manoeuvre they spiralled tightly in the same direction on opposite sides of a circle, as if rotating on an axis, the wingtip of one bird almost touching that of the other. On the third occasion one carried a fish for nearly an hour, until dark, and once it chased the Australian Ravens aggressively. This was the first aggressive move seen from the Kites for many months, even during the two weeks when the Ravens were ousting the Kites from their old nesting territory. The Kites had been virtually absent from the bay from September until this date.

The Kites made many 'dive-bombings' of their old area during this pre-dusk display, causing birds and dogs to protest. When the Kites were soaring over the trees in my garden, I could hear the fish-carrier uttering a high trilling note that I heard it make on three other occasions (September 1991, when harassed by Ravens) when it was carrying food and circling overhead.

Nest building, courtship and roosting

On 20 May 1988 the nest-building Kites displayed what appeared to be courtship behaviour. One Kite gathered dead sticks (c. 0.7-1 m long) from a neighbouring Spotted Gum by flying up to the tree, seizing a stick with its claws, snapping it off and flying away with it. The Kite circled the nest tree and over the water nearby, passing the stick repeatedly from claws to beak and back again. Then it flew in to the nest tree to land close beside the other Kite which was perched there. The incoming Kite laid the stick between them, across the branch, bobbed its head rapidly several times and both then bent their heads down towards the stick as though peering closely at it. Then the stick fell, seemingly accidentally.

The typical routine during the building phase was as follows. On 27 May (seven days after beginning to bring sticks to the nest branch), at c. 1700 h (dusk), both Kites were sitting together on the nest branch, whistling softly and touching beaks. At 2045 h I could see one on the nest branch. On 28 May at 0600 h (still dark) one Kite, on the nest branch, called the typical loud call, the other also from its perch among the leafy branches in the middle of the tree. At 0630 h the one from the nest branch flew towards the old nesting area, where a flock of Sulphur-crested Cockatoos *Cacatua galerita* was moving around noisily. The Kite soared upward in a spiral very high into the sky. Both Kites roosted that night on the same branch in the rain. On 29 May both were active just before 0600 h. Frequently, both were flying in with twigs but still not getting any to stay in position. In June the nest was gradually built, with many sticks dropped (not seen to be retrieved from the ground) until it was a bulky structure.

On 5 July, throughout a day of increasing wind and heavy rain, the Kites took turns to sit in the nest. They reached it with great difficulty, owing to the wind and the thrashing of branches. Often they had to make repeated attempts to land. More and more twigs were blowing off the nest. At dusk one Kite was on the nest while the other perched nearby. The storm reached its peak at about 0200 h, and when it stopped suddenly at daybreak, the nest was gone and there was much storm damage to other trees. The Kites were perched in the nest tree, feathers wet and bedraggled, wings spread in the sunshine. I searched through the litter on the ground under the tree, but found no sign of an egg.

At 1730 h on 24 September 1991, one Kite was on the new nest (tree 4) which appeared bigger than on 23 September. On 29 September at 0715 h the Kites flew onto the nest, one with a stick, and both worked together to secure the stick in the nest. On 14 October at 0525 h one Kite was on the nest, and the second flew in with a stick and fixed it in place. Both preened on branches for 20 minutes, calling occasionally. On 16 October both Kites were perching together on a mast-top, either feeding together or possibly allopreening for 20 minutes.

On 20 October 1991 I observed the Kites building between 0500 and 0600 h. Together, they busily worked sticks into the inside of the nest, at times with their heads well down into the cup. One bird spent 30 minutes uninterruptedly working, head down, while the other helped but frequently looked up, appearing vigilant.

On 21 October at 0700 h, over the bay, one Kite followed the other which was carrying food. On 30 October one Kite was on the nest, and the other was calling from across the bay. At 0630 h the second flew in to a lower branch. The first moved but stayed on the nest. The second hopped onto a nearby twig, snapped it off and took it to the nest, where both worked it in for 10 minutes. One sat still in the nest, and the other preened on the rim for a few minutes until both flew into nearby trees.

Events in January-March 1992 followed a similar pattern. On 18 January between 0540 and 0620 h, both Kites were on mast-tops across the bay; one was feeding and the other was following it from perch to perch. On 1 February at 0515 h both Kites were flying and circling over tree 4, one trilling occasionally. Both perched in the tree, then one departed at 0533 h (sunrise) and returned in a few minutes with a small fish, which it ate in the tree while the other Kite perched beside it, until 0555 h. On 11 February at 1530 h in a strengthening breeze, one Kite was soaring and hovering high over the original nest area, holding a snake or eel c. 50 cm long, dangling it from its claws; it maintained almost the same hovering position for one bout of nearly five minutes. On 27 February the Kites were in tree 4 when two Ravens approached

and called, whereupon one Kite chased them away. On 2 March from 0430-0550 h, both Kites brought material to the nest in tree 4: large sticks to small (15 cm) twigs and one or two leafy twigs (one green), from branches in that tree, or from nearby trees; the male brought 12-15 sticks, and the female three. She spent more time sitting in or on the nest. While he worked twigs into the nest she helped or watched but as before, she was more vigilant. At times both birds worked together, side by side or from opposite sides, heads down and tails up. When selecting and breaking off twigs, the male sometimes flew at or seized the twig in passing, or sometimes (less often) perched beside the desired stick and, bracing himself with his feet, pulled with his bill and flapped his wings. If unsuccessful after two or three tugs, he flew to another branch. The female used the same methods.

During nest-building in March 1992, both Kites perched and called. At 0515 h on 3 March the pair of Ravens landed in the tree. Both Kites flew at them aggressively, and the female Kite perched with raised wings and all her feathers fluffed out, looking large as she stared at one Raven. There was a scuffle and she flew back onto the nest with a black feather (Raven primary or rectrix) in her bill, and stuck it into the outer rim of the nest. The Ravens left.

The Kites were still building to 30 March, when they performed a courtship flight: they were flying together, one repeatedly rising above the other then gliding down; the upper bird then swooped and the pair grappled claws.

Post-fledging period

Week 1

On 23 August 1989 (assigned as day 1 of the post-fledging period), a juvenile Kite arrived in the garden with one (female) then both adults, signalled by alarm calls of Noisy Miners *Manorina melanocephala* which pursued the Kites around the garden. The Kites appeared agitated and excited, flying about and calling loudly. Late in the afternoon the young Kite walked along the edge of a swimming pool, watched by a cat. The cat was removed, and as I returned to scare the Kite away and was about 8 m from it, one of the adult Kites flew in from the bay, fast and straight, uttering a chittering note, and passed low over my head (2-3 m). Both Kites flew away.

For the next two days the Kites came each morning to the trees in this garden, where the juvenile remained all day. On the third evening the juvenile stayed to roost alone in its preferred perching tree in the garden while the parents returned to the nest.

The juvenile used a high, cheeping whistle and 'hunched' posture when an adult appeared with food. The parent sometimes held the food in a place other than the juvenile's roosting tree, and used the typical loud call, then the juvenile followed to a perch where the parent tore pieces of food and fed the juvenile bill to bill. By 27 August (day 5) the parent sometimes allowed the juvenile to take the entire food item in its claws on the branch, and feed itself.

Feeding times peaked at about 0600 h, midday and 1600 h. Most food was generally given in the morning. Items were often dropped during feeding, and the parent called 'angrily', but items were not seen to be retrieved by the adults. However, the juvenile was frequently on the ground during the day, eating items presumably dropped.

Typically, at about 0545 h (first light), the juvenile commenced whistling a high, repetitive *eeee...i-i-i-i...* (many times) from its roosting perch. At about 0600 h an adult gave the typical call from the nest area and in about 10 minutes or less, an adult came flying and whistling along the shore. The juvenile whistled excitedly, moving

about on the branch and raising its wings, then flew out to circle near the tree, then perched again until the parent returned with food. The most actively feeding parent was the pale-headed one (presumed female).

The juvenile had down on the back and sides under the wings. It was flying well, close to the shore and garden, but was clumsy when perching and moving about on the branches.

On 27 August (day 5) the parents fed the juvenile for two or more hours in the morning, flying around with food before giving it to the juvenile in various trees. The juvenile was frequently circling and flying together with the parents, but remained within about 50 m of the shore.

Week 2

On 31 August (day 9) the juvenile was walking around on a wooden boat-ramp, chasing a White-faced Heron *Ardea novaehollandiae* from the latter's usual fishing spot. The juvenile then flew in circles after the Heron and returned to the ramp alone. Later, it tried to perch on a mast-top but was unable to balance. It was gliding near the shore on the first strong nor'easter of the season.

On 1 September a tape-recording was obtained of the juvenile calling and greeting its parents. The adult (only one, presumed female), as often, greeted the juvenile at its roosting branch, sitting close and nibbling at its head while the juvenile uttered quiet cheeping sounds. At 0640 h the juvenile sat on a foam-rubber raft in a swimming pool, looking at the water with its feet immersed, then drank several beakfuls (fresh, chlorinated), until the parent returned with food and fed it in trees along the shore.

During these days, when the adults were absent, the juvenile roosted quietly late in the morning and early to mid afternoon, often preening itself for long periods.

On 2 September (day 11) the juvenile was chased by an Australian Magpie far out on the bay, returning soon after. Neighbours lit a garden fire near the juvenile's tree, and the juvenile flew around in the smoke, squeaking loudly, then flew away. In the afternoon, all three Kites were flying together off shore, soaring and swooping. One parent (male?) had something in its claws, dropped it, and the other (female?) dropped swiftly and caught the object in its claws before it hit the water, then gave it to the juvenile in its roosting tree, while the other parent perched high in a nearby tree.

At dusk, the juvenile was chasing or flying in circles with three shrieking Galahs *Cacatua roseicapilla*, before settling in its roosting tree. When roosting for the night, the juvenile settled quickly and quietly, as always after briefly (c. 2 minutes) preening, and then remained very still.

On 4 September the juvenile or an adult was out over the bay, chasing and being chased by Australian Ravens, turning over and thrusting its claws up at the Raven when the latter attempted to strike.

Week 3

On 6 September the juvenile, as often, was practising picking up and dropping an object on the lawn, with a parent (male?) in the tree above. The juvenile flew at a cat which had been watching it from cover, sending the cat running. On 7 September (day 16) the juvenile appeared to go out over the bay after its parents in the morning, instead of waiting for food.

On 8 September (day 17) the juvenile gave the 'adult' call for the first time (the

only time it was heard to do so), flew out of its roost tree and down the shore for 10 minutes, then returned and commenced cheeping. Its parents answered from the nest area.

On 11 September (day 20) the juvenile flew around all day along the shore. At 1700 h it perched in the roost tree at the onset of a thunderstorm, then flew around in the storm (its first experience of such) until it was met by an adult, and stayed with it, cheeping, in trees along the shore.

Week 4

On 15 September (day 24) the juvenile circled up and glided powerfully off shore and over the garden, snatching at twigs when passing the tree-tops; it was missing a left primary (probably through damage). It then perched, preened its breast (from which down drifted), stropped its beak and pecked bits of bark off the branch.

At 0635 h the female was flying in from the bay with a fish in her claws. The juvenile was waiting in its tree, then flew out and followed her, cheeping. The male was also following, and both jostled the female who called 'angrily', with the fish now in one foot, and then almost dropped it. Both had made a grab for the fish, the male first then the juvenile.

On 16 September the juvenile was dropping and catching a stick in the water. On 17 September (day 26) the juvenile was chased by a Magpie. The juvenile flipped over on its back, thrusting its claws up, or evaded the Magpie by a 360° roll. The juvenile did not fly away from this situation, but the Magpie returned to the trees.

When the parent brought food to the tree, the juvenile perched beside it and took food with its beak, cheeping softly. The parent moved to a nearby branch and the juvenile began to eat, then the parent flapped at the juvenile ('pounced' on it), causing it to drop the food and fly about, calling loudly.

Week 5

On 21 September (day 30) at 0535 h all three Kites were high-flying and swooping, one diving at the juvenile briefly. On 22 September there was much flying about and calling during the day. Late in the afternoon the female (?) was flying around with something in its claws. The juvenile was chasing and turning up to grab at it with its claws, seized it on the second attempt and flew along the shore, while the female called 'angrily'.

On 24 September (day 33) all three Kites were circling and two attempted to take food from the claws of the other. At 1415 h the female was feeding herself but mostly the juvenile, bill to bill. The male called, and the female flew with the food to another tree where both adults ate side by side. When the juvenile arrived, the male chased it around, calling loudly. The male picked up a stick in his claws from the ground and flew over the bay, passing the stick repeatedly from beak to claws and back again. This behaviour was repeated in the afternoon, when the male (?) once appeared to strike the juvenile's head, leaving the juvenile sitting in a tree with ruffled feathers, shaking its head. From 26 to 28 September (days 35-37) the juvenile was absent.

Week 6

The juvenile returned on 28 September, and may have been fed once, by the female, in the morning: at 0600 h the female returned with a fish, there were sounds of a squabble and the female left, while the juvenile remained, cheeping. On 29 September

it was calling, and roosted at 1800 h as usual. On 30 September the juvenile chased an adult which was carrying a fish at 1600 h, and at 1700 h all three Kites were flying and striking at one another off shore. At 1800 h the juvenile and female (?) were perched on yacht spreaders, the juvenile trying to balance: wobbling, head down, tail up, feet apart and cheeping, in contrast to the adult next to it which was quite relaxed and still. At 1830 h the juvenile roosted for the night. On the next day (1 October, day 40) it was seen for the last time.

Diet and foraging behaviour

The Kites took food from the sandflats, tideline and surface of the water. They have been seen catching or carrying small fish, and once a snake or eel 50 cm long. Scraps they have dropped include parts of or whole fish ranging from small bream (Sparidae, probably *Acanthopagrus australis*, c. 12 cm) and pipefish (Syngnathidae) to large flathead (Platycephalidae, probably *Platycephalus fuscus*, 35 cm), a small (probably immature) Water Rat *Hydromys chrysogaster*, and a headless Brown Rat *Rattus norvegicus*. They took newly hatched ducklings from the water surface, from the large population (c. 30) of Pacific Black Duck *Anas superciliosa*, Mallard *A. platyrhynchos* and hybrids, on the shore of the bay. I have seen only one Kite doing this, and only during the two duckling seasons of December 1989 and 1990.

When taking ducklings, the female Kite perched on a yacht mast or jetty post and watched the female duck and ducklings on their first swim (hatched in bushes in waterside gardens). The Kite gave its typical loud cry as it swooped low over the ducks. The female duck reared up, flapped its wings with neck upstretched, and quacked loudly as the Kite passed over. The ducklings scattered, dived and quickly re-grouped near their mother. The Kite took a duckling in its claws after no more than about three passes, and ate it immediately on a yacht mast or jetty, or flew off towards the nest area with it. It took several in one day. Very few ducklings survived, and those that did so were apparently reared in the mangroves, protected by the tree cover.

Discussion

The Kites' sex roles in the building and post-fledging periods were generally similar to previous accounts, allowing for individual differences in the relative contribution of male and female (cf. Fleay 1948, Cupper & Cupper 1981, Hollands 1984). The behaviour of the adults and juvenile during and at the end of the post-fledging period was similar to that previously reported (Frauca 1980, Hollands 1984, Philipps 1988). The birds' aerial display was most similar to the manoeuvres reported by Sedgwick (1989) and Brouwer (1992). The Kites' diet at Careel Bay was varied, and broadly similar to previous studies in aquatic habitats in south-eastern Australia (Debus 1983, Baker-Gabb 1985, Bollen 1991).

The breeding success of the Kites at Careel Bay (2 young at most in 6 years, 0.3 per year) was lower than recorded elsewhere (1.3 young per pair per year, Baker-Gabb 1984). R. Lonnon (pers. comm.) also reported that the Careel Bay pair reared at least three young over the past 10 years (0.3 per year), but cannot say which years. (These would account for the 1989 young and possible 1991 young which I saw). This low success rate is probably attributable to frequent disturbance, particularly the destruction of nest trees and consequent disruption of the Kites' breeding schedule, at Careel Bay. My experience at Careel Bay suggests that Whistling Kites can breed on the edge of well-treed suburbs, in an estuarine situation, if suitable habitat and nest trees remain.

The Whistling Kite is uncommon in the Sydney area (only two other breeding pairs known in the northern suburbs), and the presence of the Kites adds to the wildlife amenity value of suburbia. Two Kites were found injured, in western and south-western suburbs, in 1990 (C. Russell pers. comm.). The Narrabeen Lake pair reared one young in 1991, but were later driven from their nest by Ravens, although still in the area (R. Angus pers. comm.). Each pair and nesting territory may be critical in maintaining a suburban population of the species. If the Kites are to persist, the relevant authorities should take account of their requirements and avoid disturbance at critical times of the birds' annual cycle.

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References

- Baker-Gabb, D.J. (1984), 'The breeding ecology of twelve species of diurnal raptor in north-western Victoria, Australia', *Aust. Wildl. Res.* **11**, 145-160.
- (1985), 'Accessory publication: the feeding ecology and behaviour of seven species of raptor overwintering in coastal Victoria', *Australasian Raptor Assoc. News* **6**, 4-9.
- Boehm, E.F. & Heinecke, R.P. (1967), 'Breeding of the Whistling Eagle', *Emu* **66**, 318.
- Bollen, C. (1991), 'Breeding diet of the Whistling Kite at Goulburn, N.S.W.', *Australasian Raptor Assoc. News* **12**, 7.
- Brouwer, J. (1992), 'From the BOPWatchers', *Australasian Raptor Assoc. News* **13**, in press.
- Cupper, J. & Cupper, L. (1981), *Hawks in Focus*, Jaclin, Mildura.
- Debus, S.J.S. (1983), 'Food of the Whistling Kite at Armidale, N.S.W.', *Corella* **7**, 62-63.
- Fleay, D. (1948), 'Notes on the White-breasted Sea-Eagle', *Emu* **48**, 20-31.
- Frauca, H. (1980), *The Australian Bird Spotter's Book*, Reed, Sydney.
- Hollands, D. (1984), *Eagles, Hawks and Falcons of Australia*, Nelson, Melbourne.
- Philipps, M. (1988), 'The breeding of the Whistling Kite *Haliastur sphenurus* at the Healesville Sanctuary', *Thylacinus* **13**, 12-16.
- Sedgwick, E. (1989), 'A note on Whistling Kites', *Australasian Raptor Assoc. News* **10**, 52.

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