

## OBSERVATIONS ON THE IN-CAPTIVITY DEVELOPMENT OF A RESCUED CHICK OF THE STRIATED HERON, *BUTORIDES STRIATUS* (LINNAEUS)

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### INTRODUCTION

The striated heron, *Butorides striatus* (Linnaeus), is a common resident, as well as a rare winter visitor in Singapore (Wang & Hails, 2007). Commonly found around fresh and brackish water bodies, it builds a simple loose platform of small twigs about 30 cm across and 5 cm deep, 2–10 m up a tree (Wells, 1999). The nest is generally unlined (Hancock & Kushlan, 1984). Unlike other herons, the striated heron does not seem to nest colonially (LKW, per. obs.). A clutch of three eggs is usually laid, with as many chicks fledging. The eggs are pale green or blue, and average about  $37 \times 28$  mm (Hancock & Kushlan, 1984). The incubation period varies from 19–25 days and the chicks hatched naked and blind, soon to be covered with pale grey down, and fledging about five weeks later (Martinez-Vilalta & Motis, 1992). Since hatching is asynchronous, there is a significant size difference in the brood. The earlier-hatched chicks will be larger, and they will tend to show siblicidal aggression, such as seizing most of the food that the parents bring and depriving the younger and smaller chicks of proper nourishment (Martinez-Vilalta & Motis, 1992). Therefore, the survival of the smaller chicks will be jeopardised.

On the evening of 2 Nov. 2007, a concerned member of the public picked up a striated heron chick that appeared helpless on the grounds of the National University of Singapore Bukit Timah Campus near the Singapore Botanic Gardens extension. Placed inside a cardboard box, it was handed to one of us (YCW) to be looked after. It was estimated to be about a week old, if not more. When found, the chick was capable of running but could not fly as the wings were not fully developed. It could have been pushed off the nest by its older siblings or it could have wandered off from the nest and got lost because they have been known to do so about half way through their growing period (Martinez-Vilalta & Motis, 1992).

This article is a compilation of observations made on this chick during its one-month stay in captivity, until its release into the wild on 3 Dec. 2008.

### OBSERVATIONS

**Growth and development.** – Initially the chick was placed inside a cardboard box that was covered at the top to keep it safe from stray cats. Two days later it had to be transferred to a larger container as it outgrew the box. By the tenth day it had to be transferred to a still larger wire cage. The base of this cage was lined with newspapers and a branch was added as a perch, to prevent it from developing “bumblefoot” (abscessed feet), as advised by a veterinary surgeon (G. Chay, pers comm.).

The chick was about 100 g when found (Fig. 1). The natal downs that developed at the time of hatching were still covering the entire body. These downs were actively being shed as juvenal feathers began to develop. These developing feathers were obvious on the head and neck where they appeared as pin feathers (Figs. 2–3). The wing feathers were more developed, but still only partially out of their sheaths (Figs. 4–6).

When it was placed in a larger cage, the bird regularly exercised its wings. Although still unable to use its wings effectively, it could run off relatively fast if left unattended. By 20 Nov. 2007, most of the wing feathers had fully emerged from their sheaths. Traces of natal downs were still visible and delicate white flakes of feather sheaths were littering the bottom of the cage.

Parent birds regularly preen the chicks in the nest, and this may continue even after the chicks have fledged. However, without its parents, a heron chick is unable to maintain its own feathers until very much later. The chick began to preen itself only when its juvenal feathers were fully formed. With its long and flexible neck, the bill managed to reach almost every parts of its body. At places where the bill could not reach, such as the head, the toes were used instead as preening tools.



Fig. 1. The recently rescued striated heron chick.



Fig. 2. The chick looking bigger at four days after rescue with the downs still conspicuous.





Fig 3. Head of the chick with pin feathers and exposed greenish skin. Natal downs are still prominent on the head.



Fig. 4. The chick trying to balance on the rim of a metal container, showing off the underside of the wing with flight feathers still not totally formed.





Fig. 5. Close-up of wing to show flight feathers still not fully emerged from their sheaths.



Fig. 6. Chick flapping its wings, showing developing flight feathers.



Fig. 7. Pectinate claw of the middle toe.



Fig. 8. Powder-downs around the breast area.

The bill was prominently large and pointed, an effective harpoon for prey capture (Fig. 3). The upper half of the upper mandible was brownish while the lower half had more white. The lower mandible had a tinge of pink. At the base of the upper mandible was the elongated nostril or nare. The long neck at most times was retracted into an s-shape, its length only obvious when the bird lunged forward during feeding (Fig. 2).

Legs were greenish and prominently long, and bare of feathers. The four toes were thin and long, with three pointing forwards and one backwards. The middle toe was the longest and according to Martinez-Vilalta & Motis (1992), it is joined to the shorter innermost toe by a short basal web. Our specimen showed it joining to the shorter outermost toe. The claw of the middle toe had a comb-like edge along its inner side, presumably used as a preening tool (Fig. 7). Such a pectinate claw is also seen in some other birds such as barn owl (*Tyto alba*), nightjars and bitterns (Clark, 2004). However, the comb-like edge only developed when the feathers were fully formed in the chick.

The wings were prominently long and broad and the tail short and squarish, not extending beyond the folded wings. The tail was not obvious unless wagged, especially when the bird was standing.

Hérons have powder-downs, a special type of feather that is normally present in three parts of the body—around the breast area, rump, and sometimes on the back and thighs (Martinez-Vilalta & Motis, 1992). These downs grow continuously and disintegrate to form powder, used in preening, especially when there is grease on the feathers. The bird is said to pick up the down in its bill, passes it to the serrated claw of the middle toe to apply it to the feathers being preened. In the case of the chick, only two patches of powder-downs around the breast area were present (Fig. 8).

**Feeding.** – Herons are carnivorous, feeding on live, normally aquatic prey like fish, prawns, crabs, molluscs, insects and spiders (Martinez-Vilalta & Motis, 1992). We fed the chick initially with small pieces of fish fillet. It reacted aggressively when fed, crying “keek-keek-keek” loudly and lunging with gaping bill when food at the end of a pair of tweezers was offered. Eventually, it accepted food less aggressively, taking one to two pieces at a time. It was fed three to four times a day, each time taking one to two pieces of fish fillet

Nine days after rescue, it was fed pieces of small fish with part of the head still attached, but with the backbones removed. The bird initially passed out a white liquid of uric acid but later small white pellets were found at the bottom of the cage (Wang et al., 2009). We did not witness the actual casting of these pellets but the fact that they were clean and dry, not mixed with uric acid, makes it a possibility that they were regurgitated. Subsequently, the white uric acid passed out included lumps of brown material, probably products of the digestive system. No more clean, white pellets were ever found after this.



According to Martinez-Vilalta & Motis (1992), herons have an efficient digestive system that is incapable of digesting only insect exoskeletons, bird feathers and mammal furs. These have to be regurgitated in the form of pellets. It is suggested that the system was not fully functional at a very young age, thus the presence of pellets then but not later.

The chick was subsequently fed live guppies (Fig. 9), goldfish (Fig. 10), earthworms, newly metamorphosed frogs (Fig. 11) and crickets (Fig. 12), all purchased from a pet shop. It managed reasonably well with the fish after an initial learning process. The frogs and crickets were easily handled owing to the presence of limbs on these prey. Earthworms posed a problem as they regularly slipped off the bill.



Fig. 9. The chick with a small guppy in its bill.



Fig. 10. The chick picking up a goldfish.



Fig. 11. The chick picking up a froglet by one of its legs.



Fig. 12. Striated heron chick with a cricket caught by the one of the limbs.



The bird sometimes drank by pushing its bill along the water surface. At other times it simply dipped its bill into the water. When fed crickets, it drank more often. When offered a piece of fish left at the bottom of the cage and thus a little dried out, it had difficulties manipulating it with its bill and tongue. It solved the problem by dipping the piece into the water and tried again. This it did a few times until it managed to channel it into its oral cavity.

**Bathing.** - As the days passed, the chick became dirty. A basin of water was placed inside the cage to allow the bird to bathe. This was done on 25 Nov.2007, 23 days after rescue. At first the bird sat on its perch, actively preening and looking at the basin of water. It then moved around from the perch to the rim of the basin, and back to the perch, flapping its wings. After that, it drank from the basin, poking its bill into the water. Then it entered the water and sat there (Fig. 13), soaking itself, shaking vigorously and splashing water all over, thoroughly wetting its feathers in the process. The heron chick stayed in the water for less than five minutes before stepping out of the basin.

Once out of the water, it shook itself to get rid of excess water in its feathers, and moved to the perch with wings flapping (Fig. 14). It remained on the perch with wings extended, preening for the next five minutes (Fig. 15). With wings still slightly extended, it indulged in wing-leg stretching for the next ten minutes, with neck and breast feathers fluffed (Fig. 16). This was its first and only bath. The bath water became visibly dirty. However, subsequent attempts at encouraging it to bathe failed.



Fig. 13. The chick in a basin of water just before its vigorous bath.



Fig. 14. The chick on the perch flapping its wings after its bath.



Fig. 15. The chick preening after its bath.



Fig. 16. The chick in a leg-wing stretch.





Fig. 17. The chick was ringed above the “knee”.



Fig. 18. Facial characters of the chick just before release.

**Release.** – After 12 days in captivity, the bird was ringed above the “knee” (Fig. 17). The ring was inscribed “Sungei Buloh Nat Park F0028.” By then it had shed almost all its natal downs and was then covered with juvenal plumage. All 10 primary and 16 secondary flight feathers had fully emerged from their sheaths, along with the five pairs of tail feathers. The wing length was 145 mm and the tail 38 mm. It was noted that the wing and tail feathers were still coming in (not fully grown). The weight of the bird was 175 g; bill length 50.4 mm and tarsus 42.1 mm. The iris was lemon yellow, outer eye ring black, upper mandible pinkish-blue, darker at the tip, and lower mandible paler (Fig. 18). The tarsus and toes were yellow-green and soles yellow.





Fig. 19. The heron juvenile just after release.

The bird had by then become aware of the sounds of other birds around the neighbourhood, stretching its neck and listening intently. It was also getting restless, pacing in the cage and poking its head out between the wire bars. At the same time it had been regularly exercising its wings and preening its feathers.

Final measurements were taken prior to release, about a month after it was rescued. Its weight was 195 g and the various lengths: bird in relaxed mode 310 mm, wing 165 mm, tail 53 mm; bill 56 mm and tarsus 42.1 mm.

The bird was then released on 3 Dec.2008 at the edge of a lake in the Singapore Botanic Gardens, near where it was found in Mar.2009. At the site, there was ample vegetation for it to take refuge, and a plentiful supply of fish (Fig. 19).

## DISCUSSION

Most people assume that chicks on the ground, looking lost and calling for their parents are doomed. Out of compassion, people will invariably pick them up hoping to look after them. But this may not be the best thing to do. For one, it is a full-time job. It needs to be fed regularly throughout the day and even if you succeed in raising it, it may not be able to adapt to life in the wild. More importantly, a chick hand-reared from a very young age may not be able to recognise members of its own species (D. M. Richardson, pers. comm.).

The best thing to do is to return the chick to its nest whenever possible. Otherwise, place it off the ground so that it is reasonably safe from ground-dwelling predators like dogs, and from being trampled accidentally by people. As long as the chick stays within the vicinity of its nest, its parents are likely to be around to feed it.

A pair of Malayan whistling thrush (*Myophonus robinsoni*) chicks that was nesting in Cameron Highlands, Malaysia fledged naturally in Apr.2008 (Teo & Wee, 2009). Their first flight out of the nest landed them on the ground of the warehouse where the nest was built. They were hopping about and the adults were around them all the time. To ensure that the fledged birds were safe from wandering dogs, they were put in a box and left outside the warehouse. Within two days they were flying around and the adults were busy feeding them.

Looking after a rescued chick and releasing it when it is ready to fledge is not as simple a task as it appears to be. A recently fledged bird takes time to learn how to fly effectively, how to forage efficiently, to distinguish predator from prey and a potential mate from rivals (Gill, 2007). Without its parents to guide it through its fledging period that may take from two weeks to a month or more, its chances of surviving in the wild would be slim. A seemingly good deed of rescuing a chick may turn out to be a tragedy when it becomes food for a predator. As Simonds (2000) puts it succinctly "...Even with all their natural training, young birds have a terrible time making it through their first year. Do you really, honestly, think your ignorant, hand-raised baby could survive?"

Simonds' point is further supported by this anecdote. Boniran (2007) nursed a juvenile pink-necked green pigeon (*Treron vernans*) after it was attacked by crows. When the pigeon was well enough to fly, it was released in an area where there were many other such pigeons. Once released, it was preyed upon by a changeable hawk eagle (*Spizaetus cirrhatus*). Although this pigeon was not hand-raised from young, it had not learnt to evade aerial predators.

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