

THE DISTRACTION BEHAVIOUR OF A FEMALE KORI BUSTARD *Ardeotis kori*

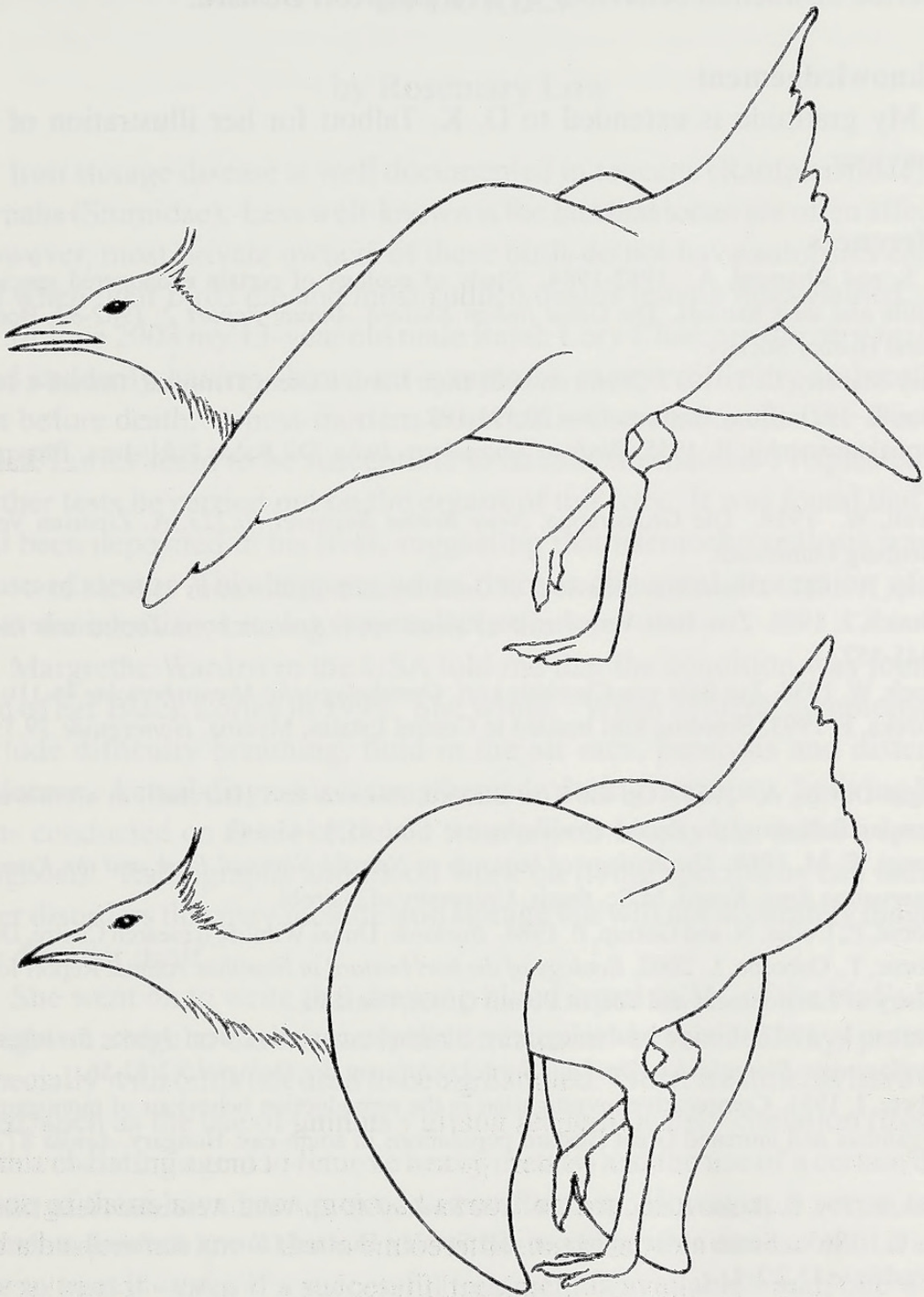
by Sara Hallager

The Kori Bustard *Ardeotis kori* is a large, mainly ground-dwelling bird of eastern and southern Africa. Numerous accounts describe the sexual display of the male (Astley-Maberley, 1937; Hoesch, 1938; Urban et al. 1986; Hellmich, 1988). However, little has been written about the incubation by the female and the behaviours associated with incubation. This is likely due to the secretive nature of the female during the incubation period. Only the female Kori Bustard incubates the eggs and rears the chicks. Like other bustards, female Kori Bustards lay their eggs on the ground in a shallow scrape. Nests are usually partly hidden by tall grass, small trees or bushes (Mwangi, 1988; Maozeka, 1993; Osborne & Osborne, 2002) and are near a natural feature such as a bush (Osborne et al. 1984) or rocks (Maozeka, 1993). Usually the first sign that a female has bred, is that she is accompanied by chicks. Because females are well camouflaged and are inconspicuous during the incubation period, it is not surprising that a thorough description of distraction behaviour has not been documented for this species.

On June 21st 2007, a female Kori Bustard at the Smithsonian's National Zoological Park in Washington DC, USA was displaced from her nest by the alpha male. At the time this happened the female Kori Bustard was 21 days into her 23 days incubation period. Upon displacement from the nest, she ran away with her head held high, barking as she fled from the male. Several seconds after the displacement, she lowered her head to a level below her back, erected her crest feathers, spread her wings horizontal to the ground and began fluttering her wings. Her wings were arched while held horizontally out with the tips of the primaries nearly touching the ground. Her tail was cocked (Fig. 1). She slowed her pace and while continuing to flutter her wings, altered her vocalization from a barking sound to a croaking sound. Her mouth was wide open as she uttered the croaks. She ran behind a bush from where she continued to croak and flutter her wings for the next several minutes. The male eventually located her behind the bush at which point she immediately ran back to the eggs. Incubation resumed approximately 10 minutes later.

Distraction behaviour has been documented for other species of bustard, including the Great Bustard *Otis tarda* (Schuster, 1927; Gewalt, 1959; Sterbetz, 1981; Goriup, 1982), Great Indian Bustard *A. nigriceps* (Dharmakumarsinhji, 1955; Ali & Rahmani, 1982), Australian Bustard *A. australis* (Carter, 1921) and Denham's Bustard *Neotis denhami* (Uys, 1963).

Fig.1. Postures adopted by female Kori Bustard during distraction display.



The descriptions are similar in nature and describe females with outstretched wings either crouched on the ground or walking and fluttering their wings. A croaking noise made by a female Australian Bustard when driven away from her nest by approaching sheep was described by Carter (1921).

Behaviours ascribed as distraction behaviour in Kori Bustards have been reported by Morgan-Davies (1965) and Maozeka (1993). Both authors reported females with young chicks walking in a crouched position with

drooped, waving wings and barking. This paper is the first to thoroughly describe distraction behaviour by a female Kori Bustard.

Acknowledgement

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References

- Ali, S. and Rhamani, A. 1982-1984. Study of ecology of certain endangered species of wildlife and their habitats. *The Great Indian Bustard. Annual Report 2: 1982-84*. Bombay Natural History Society.
- Astley-Maberly, C. T. 1937. Notes on birds from North-Eastern Transvaal. *Ostrich* 8:10-13.
- Carter, T. 1921. Stray feathers. *Emu* 20:191-192.
- Dharmakumarsinhji, R. 1955. *Birds of Saurashtra, India*. Dil Bahar Publishers, Bhavnager, India.
- Gewalt, W. 1959. Die Grosstrappe. *Neue Brehm Bucherei* Nr.223. A. Ziemsen Verlag, Wittenburg Lutherstadt.
- Goriup, P. 1982. Distraction behaviour of Great Bustard. *British Birds* 75,6:288-289.
- Hellmich, J. 1988. Zum Balz-Verhalten der Riesentrappe (*Ardeotis kori*). *Zoologische Garten* 58:345-352.
- Hoesch, W. 1938. Zur Balz von *Choriotis kori*. *Ornithologische Monatsberichte* 46:110-113.
- Maozeka, F. 1993. Breeding kori bustard at Central Estates, Myuma. *Honeyguide* 39,3:133-137.
- Morgan-Davies, A. 1965. On the Kori Bustard, *Ardeotis kori* (Burchell) in north-western Tanzania. *Bulletin of the British Ornithologists' Club* 85,8:145-147.
- Mwangi, E. M. 1988. *The ecology of bustards in Nairobi National Park and the Kitengela Conservation Area, Kenya*. M.Sc. thesis, University of Nairobi.
- Osborne, P., Collar, N. and Goriup, P. 1984. *Bustards*. Dubai Wildlife Research Centre, Dubai.
- Osborne, T., Osborne, L. 2002. *Ecology of the kori bustard in Namibia*. Annual Report for the Ministry of Environment and Tourist Permit Office, Namibia.
- Schuster, L. 1927. Einige brubiologische Beobachtungen aus dem Jahre. *Beiträge zur Fortpflanzungs-Biologie der Vögel mit Berücksichtigung der Oologie* 3,2:52-56.
- Sterbetz, I. 1981. Comparative investigation in the reproduction behaviour of monogamous, polygamous and unmated Great Bustard populations in south-east Hungary. *Aquila* 877:31-47.
- Urban, E., Fry, C. H. and Keith, S. 1986. *The Birds of Africa* Vol.2. Academic Press, London.
- Uys, C. 1963. Some observations on the Stanley Bustard (*Neotis denhami*) at the nest. *Bokmakierie* 15,2:2-4.

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IRON STORAGE DISEASE (HAEMOCHROMATOSIS) IN LORIES

by Rosemary Low

Iron storage disease is well documented in toucans (Ramphastidae) and mynahs (Sturnidae). Less well-known is the fact that lories are often affected. However, most private owners of these birds do not have autopsies carried out when their birds die and most sudden deaths remain unexplained.

In June 2008 my 13-year old male Rajah Lory *Chalcopsitta atra insignis* died suddenly having shown no symptoms except difficulty in breathing just before death. A post-mortem examination was inconclusive. Because Black Lories seem to be susceptible to haemochromatosis I requested that further tests be carried out on the organs of this lory. It was found that iron had been deposited in his liver, suggesting that haemochromatosis was the cause of death. This happens when there is abnormal absorption of iron from the intestine, causing liver cells to die.

Margrethe Warden in the USA told me that the condition was found in five of her Black Lories in 1999. She wrote: "When evident, symptoms can include difficulty breathing, fluid in the air sacs, paralysis and distended abdomen. Actual diagnosis is usually made during necropsy. In living birds tests conducted on tissue retrieved from a liver biopsy can make a specific diagnosis. Radiographs and blood work on living specimens can indicate liver disorders that may include iron storage but will not accurately diagnose the disorder itself."

She went on to write that drawing blood equal to 1% of the bird's body weight on a regular basis is acceptable treatment - but is not always practical, especially with birds not used to being handled. Other treatments have been tried, such as the use of tannins - giving tea to toucans - chelation (treating with a chelating agent to remove heavy metals) and the use of a certain drug. None of these have been proved to be effective. However, it seems to me that one does not know that a bird is suffering from this disease until it is too late to treat it - even if a successful treatment is available - and, one would not want to use the suggested treatments as a prophylactic.

While it is usually suggested that iron in the diet is to blame, other factors might influence the condition. Haemochromatosis also occurs in humans and genetic factors have been isolated. It does seem strange that Black Lories in different collections have proved to be susceptible, even though the diets offered to them are entirely different. Therefore, I suspect diet is not entirely to blame.

However, we can do our best to feed our birds diets that are low in iron.

This might not be easy, as commercial preparations do not always show this information. Also, there are some badly formulated commercial preparations on the market that might be suitable for more omnivorous lorries, such as the *Trichoglossus* species, but entirely unsuitable for those, such as the Black and other *Chalcopsitta* and *Charmosyna* species, which take a very high proportion of nectar in their diet. Also, some people make up their own lory nectar using such products as Complan and baby cereals which are relatively high in iron. I doubt whether many people would feed monkey chow to lorries, but this contains twice the recommended level. However, this might not be harmful to lorries that take nectar as only a small part of the diet. It is probable that animal protein (such as bone meal) is higher in iron than is plant protein, so this is another factor to consider.

It is suggested that lory diets should contain under 100ppm (parts per million) of dietary iron and this seems to be the case with most commercial lory foods, but where this figure originated from I do not know. After all, how much iron do lorries consume in their natural diets? Surely, almost none. The two products I use on a daily basis, CéDé (as one third of my lory mixture) and, Nekton, are relatively low in iron. CéDé lory food contains 61ppm and Nekton 71ppm. Kaytee hand-feeding formula, on the other hand, contains 374ppm. I have hand-reared lorries using nothing but Nekton when they are small and CéDé when they are older, or only Nekton, with excellent results.

I perused *Avian Medicine: Principles and Application* by Ritchie, Harrison and Harrison for references to haemochromatosis and found a photograph of the liver of a toucanet on necropsy. The caption stated: "The enlarged liver was orange and rough in appearance. Histopathology was suggestive of haemochromatosis, and the disease was confirmed using Prussian blue stain to demonstrate iron-laden hepatocytes."

Under iron storage disease the text states that abnormal storage of iron is usually seen in the liver but other organs may be involved and: "It has been suggested that excessive iron in the diet may be the cause of iron storage disease but this hypothesis has not been confirmed."

Rosemary's book *Why does my Parrot...?* is reviewed on pp.152-153.

HAND-REARING PIGEONS AND DOVES AT BRISTOL ZOO GARDENS

by Nigel Simpson

Introduction

Pigeons and doves have been successfully hand-reared in several institutions, but often with subsequent attempts these successes were not able to be repeated. Bristol Zoo has an extensive collection of pigeons and doves and has for many years successfully reared the young of several species, both by parent-rearing and the use of foster parents. On many occasions in the past hand-rearing was attempted but there were high rates of failure. Several diets and methods of rearing have been reported as having been successfully used to hand-rear Columbidae (Blanchard, 1992; Bell, 1981; Harrington et al. 1999). In 2004 a new diet and method used successfully by Chelle Plasse at Disney's Animal Kingdom¹, Florida, USA, which came with the suggestion that the method of feeding is more important than the actual content of the diet, were trialled at Bristol Zoo.

By following the Plasse diet and method of rearing, we succeeded in successfully rearing Victoria Crowned Pigeons *Goura victoria* and White-naped Pheasant Pigeons *Otidiphaps nobilis aruensis* at Bristol Zoo.

Method

The diet consists of Avi-Plus parrot breeder pellets (20% protein, 8% fat) that are soaked in water overnight until all of the water has been absorbed. They are then cooked in a microwave for approximately two minutes until the mixture has homogenised and become runny. An alternative method is to heat the mixture in a saucepan on a conventional hob until the mixture is of the required consistency. We have also used the formula uncooked, by liquidising the soaked pellets until they have reached the required consistency. In the latter stages of rearing, fruit can easily be added to the formula. The prepared formula can be stored in a sealable food container and kept in a fridge for up to 24 hours, after which any unused food should be discarded.

Newly-hatched squabs can be fed from day zero. If they hatch early in the day they can be given an initial drink of water and feeding with the formula can commence in the afternoon. Squabs that hatch late in the day

¹ This refers to a DVD produced by Chelle Plasse and Disney's Animal Kingdom. The author has also produced a DVD on the subject. Details on how to obtain copies of these DVDs are available from: Chelle.Plasse@disney.com and nsimpson@bristolzoo.org.uk

should receive only a drink of water on day zero and feeding with the formula should commence the following day (day one).

Squabs are fed using a 2.5ml pipette with the tip cut at an angle of forty-five degrees. Having it cut at an angle makes feeding easier and in the case of difficult squabs, means that it can also be used to gently prise open the upper and lower mandibles. The formula should be heated by standing it in a bowl in boiling water. It is important to test the temperature of the formula on the back of the hand before attempting to feed it to the squab. If it is too hot it will, of course, burn the squab and, if it is too cold, the squab may refuse to eat it.

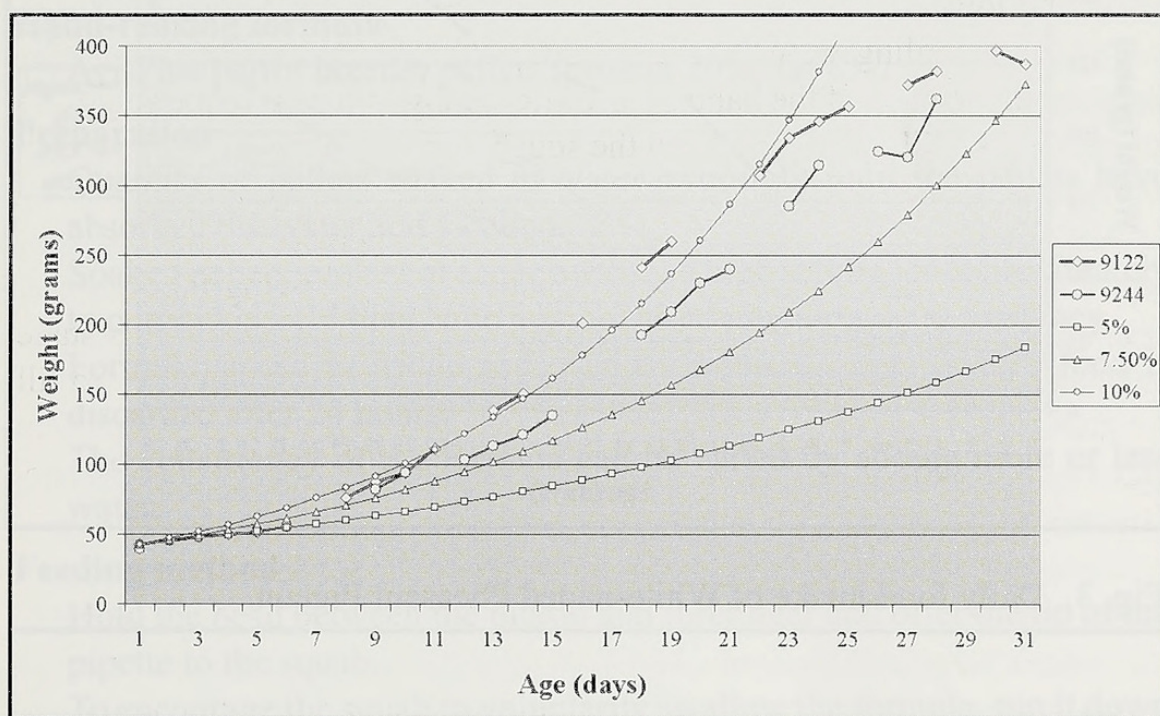
Squabs are fed initially by slightly prising open the mandibles and dribbling the formula into the lower mandible and allowing the squab to voluntarily swallow it. The formula needs to be fairly runny at this stage to enable it to flow into the squab's lower mandible. It is important to fill the crop to its maximum capacity in order to stretch the walls of the crop in preparation for the large volumes of food which will be eaten later. As the squabs grow larger and become accustomed to being fed by hand they begin to solicit food and open their beaks more easily. Also, as they continue to grow larger the thickness of the formula can be increased and the delivery method will need to be changed and the squabs fed from a syringe. Large syringes can have the end cut off and the squab will insert its entire beak into the end and take the formula from it. There will be little need to use the plunger at this stage, as the squab will suck out the formula for itself.

With most birds a good indicator that the rearing process is going well is that the chick's crop is emptying between feeds. With this method, however, the crop should be filled at each feed and should remain full throughout the day and be allowed to empty only overnight. When you go to feed the squab, it may seem unusual to discover that it still has some food in its crop, but it nonetheless needs to be filled again. It is felt that maintaining a full crop has the effect of getting sufficient food into the squab and helps the formula move through its system. Most squabs pass faeces after each feed and this is generally a good indicator that all is going well. If it appears that the squab is not digesting the formula and has stopped passing faeces, increasing the humidity in the brooder may help. The humidity level should be maintained at about 60% (rh).

The squabs are weighed each morning and their weights are plotted on Excel spreadsheets. Growth rates for parent-reared pigeons and doves are known to be over 20% per day. However, for hand-reared Victoria Crowned Pigeons it can be 10% per day (see Fig.1), but other taxa have been reared at higher levels, more like those of parent-reared squabs (Fig.2). The volume of food taken by squabs varies depending on the species and its age. Fig.3

shows the total volume of food consumed by a pheasant pigeon during the first 10 days of rearing.

Fig. 1. Growth rates of two hand-reared Victoria Crowned Pigeon squabs.



Rearing schedule for Victoria Crowned Pigeon.

| Age (days) | Feeds per day | Average temperature | Average humidity | Comments |
|------------|---------------|---------------------|------------------|---|
| 0-11 | 8 | 36°C (96.8°F) | 65% | Fed using 2.5ml pipette with end cut at an angle. |
| 12-19 | 6 | 32°C (89.6°F) | 65% | Fed using 5ml syringe with end cut at an angle and allowing squab to fully insert beak and suck out food. |
| 20-30 | 4 | 24°C (75.2°F) | 65% | At 17 days heat turned off during daytime. Fed using 10ml syringe with end cut off. From 25 days onwards a 20ml syringe was used. |
| 31-33 | 3 | Ambient | Ambient | Fed using 20ml syringe. Formula changed to Avi-Plus pellets and liquidised fruit. |
| 33-weaning | | Ambient | Ambient | Squab begs for food and is fed small pieces of fruit and (Kaytee Exact) low iron pellets. These are placed in the beak and are swallowed by the bird. It was later moved into an enclosure with bleeding heart doves to encourage it to learn to feed itself. |

Fig. 2. Growth rate of a parent-reared Pied Imperial Pigeon squab.

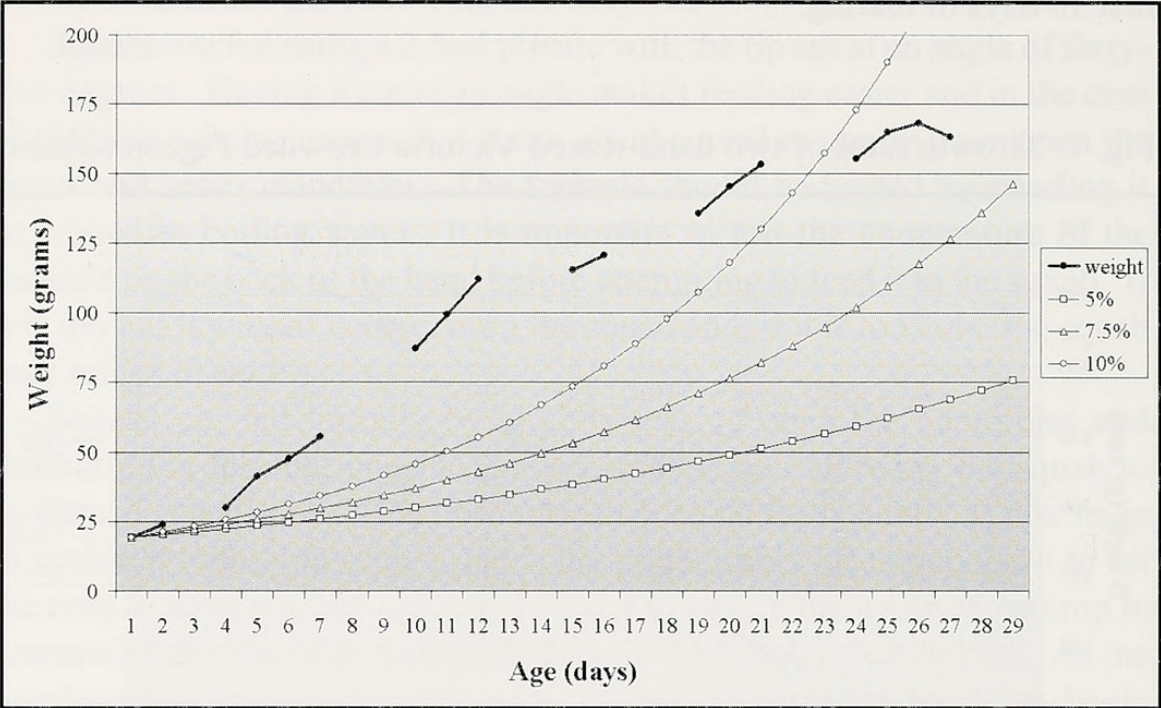
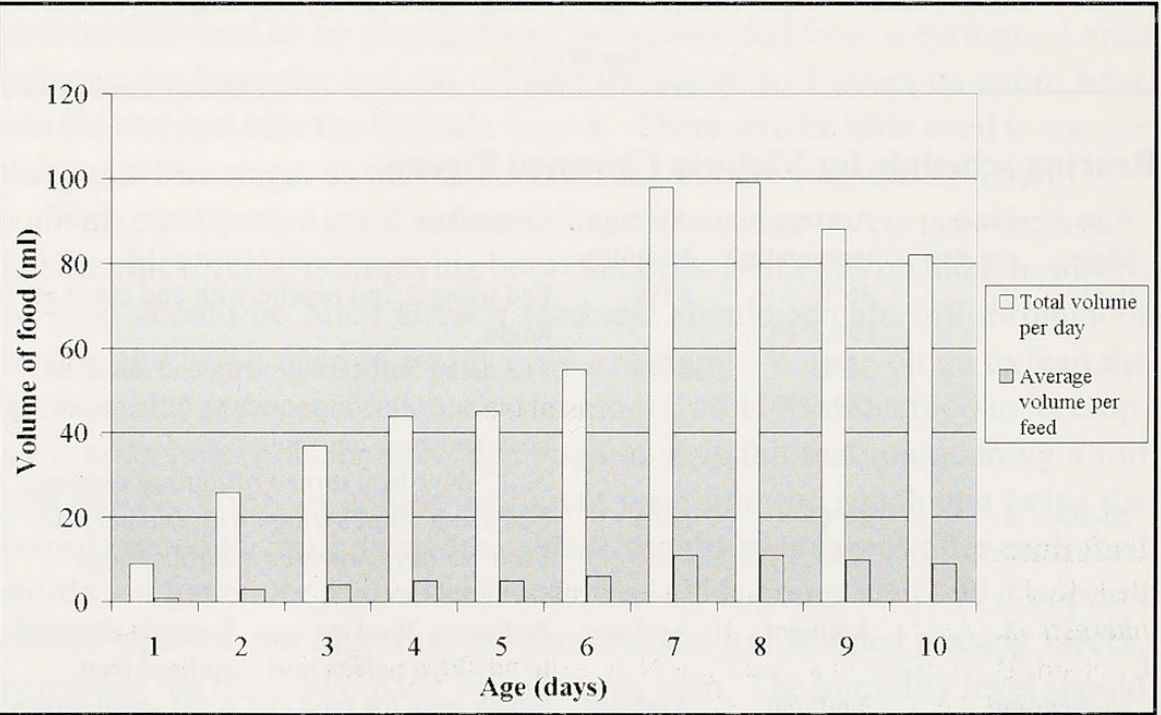


Fig. 3. Daily food intake of White-naped Pheasant Pigeon.



Weaning

As the squab grows, depending on the species, either fruit or grain can be added to the formula. Fruit should at first be puréed and then later cut into pieces and mixed in with the formula. As the squab continues to grow larger, small pieces of fruit can be placed in its open beak and a small bowl of food can be left with the bird to encourage it to feed itself. It is crucial to

monitor its weight at this time to ensure that it is eating sufficient food, and is not losing too much weight. If at any point it is felt that the squab is not eating enough, a single feed of the formula can be given in the morning, to ensure the bird is receiving sufficient nutrition.

Summary

Hand-rearing formula

Avi-Plus parrot breeder pellets (protein 20%, fat 8%)

Preparation

Quantity of pellets soaked in water overnight until the pellets have absorbed the water and swollen.

Soaked pellets cooked in a microwave on high setting for approximately two minutes until they have homogenised into a runny consistency.

Formula stored in fridge and used as required. Any unused food is discarded after 24 hours.

The consistency of the formula can be varied by adding more or less water.

Feeding method

Hold the head between the thumb and forefinger and offer the tip of the pipette to the squab.

To encourage the squab to voluntarily swallow the formula, run it down the inside of the lower mandible.

Fill crop at each feed and do not allow it to empty during the day, but leave it to empty overnight. This is the most important part of the method and is crucial for successful hand-rearing. Do not overfill the crop as regurgitation may lead to aspiration and death.

Feed every two hours from 6.00am-10.00pm, i.e. eight times a day.

Monitor defecation and if problems arise increase the humidity and dilute formula by adding more water.

References

- Bell, K. J. 1981. Breeding and hand-rearing the Nicobar Pigeon *Caloenas nicobarica*. *International Zoo Yearbook* Vol. 21.
- Blachard, B. 1992. Hand-rearing a New Zealand Pigeon *Hemipha n. novaeseelandiae*. *International Zoo Yearbook* Vol. 31.
- Harrington, P., Ferguson, A. and Joseph, P. 1999. Hand-rearing a Superb Fruit Dove *Ptilinopus superbus* at London Zoo. *Avicultural Magazine* 105,2:57-64.

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BIRDWATCHING IN THE PHILIPPINES

by Graham Thurlow

In April 2008 I joined a group of five fellow enthusiasts on a three week birdwatching trip to the Philippines. Although a holiday, I suspect that many would not have classed it as such, as it involved a great deal of hard walking and much of our accommodation was very basic - at one camp there were no facilities whatsoever. As one of the group observed, the trip overall was a good example of 'extreme birding'!

We made our way to Manila (some having stopped in Singapore for a few hours birding en route), where we assembled before leaving for Mount Makiling, an inactive volcano situated a few hours drive to the south-east of Manila.

We stayed overnight at Trees Lodge, where we had a few hours sleep and then got up before dawn to walk along a nearby track in the surrounding forest and were rewarded with sightings of a Philippine Hawk-Owl *Ninox philippensis* and, following daybreak, views of Black-chinned Fruit Dove *Ptilinopus leclancheri*, White-browed Shama *Copsychus luzoniensis*, Philippine Trogon *Harpactes ardens*, Philippine Hanging Parrot (Colasisi) *Loriculus philippensis*, two species of malkohas *Phaenicophaeus* spp, as well as flowerpeckers and sunbirds.

The climate was hot and humid, but the sights and sounds of the forest distracted us from any discomfort. The large forest butterflies were particularly noticeable and there was the constant "churring" of cicadas which, from time to time ceased, only to return in a sound version of the Mexican wave. The "buzzing" would be heard from far off and would gradually come closer and would become louder before dying away again - it was quite an assault on the senses!

From there we drove to nearby Los Banos and visited the botanical gardens, where we had good views of Indigo-banded Kingfisher *Alcedo cyanopectus* and, along a track bordered on each side by fields, saw Spotted and also Barred Buttonquail *Turnix ocellatus* and *T. suscitator* respectively. The highlight for me, however, was a Hooded Pitta *Pitta sordida* watching us from a lower branch of a bush in nearby woodland.

Another start at an ungodly hour the next morning resulted in sightings of Tarsier Hornbill *Penelopides panini* and Philippine Serpent Eagle *Spilornis holospilus*. We then returned to Manila for a flight to Tuguegarao in the north-east of the island, where we were met by our guide for the next few days. He was driving a *jeepney*, a vehicle which passes for a bus in the Philippines. Open at the back and sides and with a canvas roof and wooden



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