

## 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 Kingdom<sup>1</sup>, Florida, USA, which came with the suggestion that the method of feeding is more important than the actual content of the diet, were trial led 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

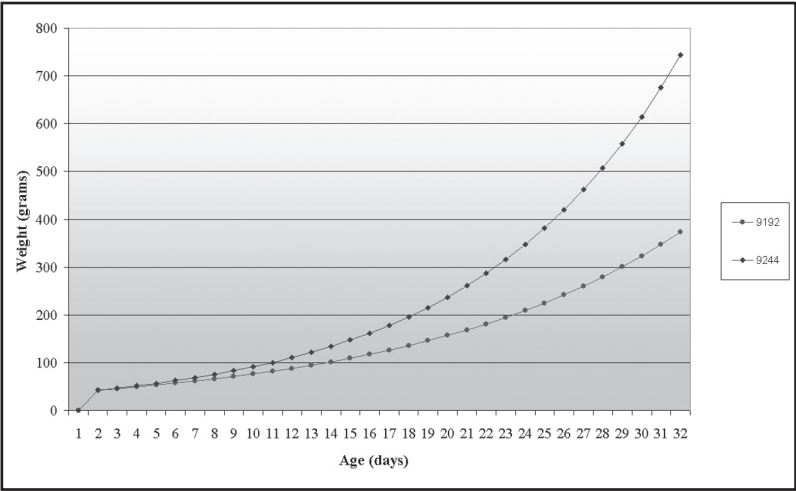
The diet consists of Avi-Plus parrot breeder pellets (20% protein, 8% fat) that were soaked in water overnight until all of the water had been absorbed. They were then cooked in a microwave for approximately two minutes until the mixture has homogenised and become runny. An alternative method is to heat 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

---

<sup>1</sup> 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

Fig. 1. Growth rate of Victoria Crowned Pigeon squabs. ....

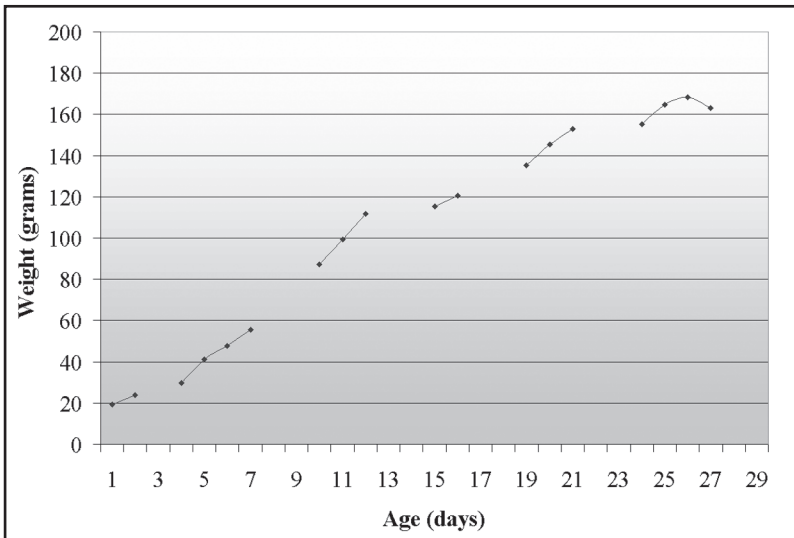


should receive only a drink of water on day zero and feeding with the formula should commence the following day (day one).

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 mandible 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.

Fig. 2. Growth rate of Pied Imperial Pigeon squab.



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.

**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.

**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**

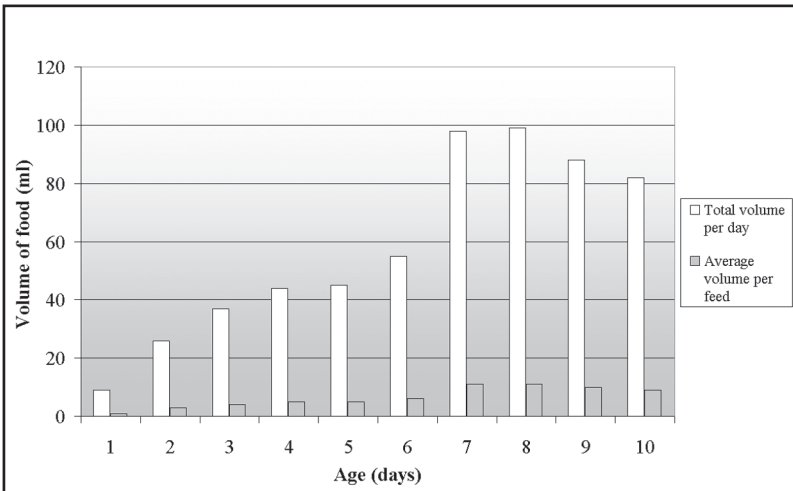
Quantity of pellets soaked in water overnight until the pellets have absorbed the water and swollen.

Soaked pellets micro-waved 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.

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



### 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.

*Nigel Simpson is Curator of Birds at Bristol Zoo Gardens, Clifton, Bristol BS8 3HA, UK. Website: [www.bristolzoo.org.uk](http://www.bristolzoo.org.uk)*