BREEDING THE PAPUAN WREATHED HORNBILL *Aceros plicatus* AT PAIGNTON ZOO ENVIRONMENTAL PARK, ENGLAND

by Jo Gregson

The Papuan Wreathed Hornbill, otherwise named Blyth's Hornbill, is an irregular breeder in captivity. However, as we have begun to learn more about its avicultural requirements more successes have occurred. Asian hornbills can be quite a challenge: these species are intelligent and sensitive to change and take longer to form pairs; young males are vulnerable to bullying by older females; heated accommodation is necessary and a higher protein diet is needed for them to rear their chicks successfully. These and several other factors make them more difficult to maintain and breed compared to their African counterparts.

The pair of Papuan Wreathed Hornbills came to our collection on December 20th 2000. They are housed in an aviary which measures 3m x 5m x 4m high (approx. 9ft 9in x 16ft 4in x 13ft high), with an adjoining inside area measuring 2m x 3m x 4m high (approx. 6ft 6in x 9ft 9in x 13ft high). In the summertime the outside temperature ranges from 10°C-23°C (50°F-73°F), with the average being about 16°C (60°F). During the wintertime the birds are shut in the inside area that at night is heated to an average 15°C (59°F). In the summertime the inside temperature occasionally reaches 25 °C (77°F).

Two nest-boxes are provided. The one in which the pair bred measures 60cm x 70cm x 60.5cm high (approx. 2ft x 2ft 3in x 2ft 1½in high), with a 15cm x 15cm (6in x 6in) entrance hole 12.5cm (approx. 5in) from the bottom on the left-hand side of the 60cm (approx. 2ft) side. The box is 2.5m (approx. 8ft 2in) above the floor of the inside area. The other nest-box, which is in the outside aviary, measures 66cm x 40cm x 50cm high (approx. 2ft 2in x 1ft 3¾in x 1ft 7¾in high) and is 3m (approx. 9ft 9in) above the ground. The entrance hole measures 20cm x 20cm (approx. 8in x 8in) and is at the centre of the narrow end where there is a small landing ledge. This is the same type of box used by our Wrinkled *A. corrugatus*, Trumpeter *Bycanistes* or *Ceratogymna bucinator* and Northern Ground Hornbills *Bucorvus abyssinicus*.

The diet consists of a varied fruit mix, along with mealworms, mice, cooked minced (ground) beef and boiled egg. SA37 is sprinkled onto the food. When the chicks were due to hatch pinkies were added to the diet, then after eight days, 'small fluffs', and by day 25 'large fluffs' and small adult mice were offered.

The pair did not seal the nest-box entrance. The female was often seen

out of the box and the male was sometimes seen in the box with the female and chicks. The first chick left the nest-box at 100 days and spent a few days of the floor before mastering the art of jumping from perch to perch. Once one chick has fledged it is important to watch for any others remaining in the nest, and this was the case with our birds. Three days after the first chick fledged the female began spending less time in the nest-box and, on inspection, the second chick , still quite heavy in blood quills, was found to be very soiled. As it probably had some time to go before fledging, we decided to clean it and then placed it in an open-fronted box of the floor of the aviary, where it remained for several days and was fed by both parents.

As the first chick to fledge was also soiled and spent some time on the floor of the aviary, I think that it fledged too soon and may have left the box at 100 days because the inside of the box was dirty. The chicks would have been better prepared at 115 days.

Once both were fully feathered, on fine days they were lightly sprayed with water to help improve the condition of their plumage. Asian hornbills have a large and very active preen gland and when these birds are handled they are found to be greasy and have a distinctive smell. The red, yellow and orange bill colours of some of these species are obtained from the oils of this gland. As these birds spend much of the day preening and oiling their feathers, our chicks soon had waterproof plumage. Both chicks when they fledged had male-type plumage. However, at four months of age, the head of one of them began to sprout black feathers and this proved to be a female. The beak of the other bird, a male, had by then grown longer than that of the adult female. The two were separated from their parents at five months of age, by which time the female seemed to have tired of their company.

As described above, the Papuan Wreathed Hornbill *Aceros plicatus*, also called Blyths Hornbill, has been bred at Paignton Zoo Environmental Park. This is probably the first successful breeding of this species in Great Britain or Ireland. Anyone who knows of a previous breeding is asked to inform the Hon. Secretary.

I know that this species has nested at Cricket St Thomas and Linton Zoo, but so far as I am aware, in neither collection were the chicks reared successfully. Hornbills in Zoos - a Review by Dr Harro Strehlow published in International Zoo News Vol. 48/2 (March 2001), reviews the breeding of hornbills in collections throughout the world and is recommended reading for those interested in these species. At El Retiro Park, Malaga, the young Papuan Wreathed Hornbill left the nest cavity after 126 days - Ed.

DO VITAMINS A AND E HAVE AN IMPACT ON THE FERTILITY OF HUMBOLDT PENGUINS *Spheniscus humboldti*?

by Kelly Rose and Caitlyn Hopkins

Aims of study

To investigate the impact on fertility from adding supplementary vitamins A (retinol) and E (α-tocopherol) to the diet of captive Humboldt Penguins.

To improve the number of viable chicks produced each year.

Introduction

Humboldt Penguin in the wild

The Humboldt Penguin *Spheniscus humboldti* is native to the coastlines of Peru and Chile in South America. The birds spend time at their colonies nesting, rearing their chicks and moulting, but otherwise are thought to spend most of the year at sea. The species is listed as CITES 1, due mostly to extensive guano mining in the nineteenth and twentieth centuries, for use as a commercial fertiliser. The continuous disturbance of the birds at their nesting grounds in the course of its collection reduced the population size considerably (del Hoyo et al. 1993). Other problems such as intensive egg collection, indiscriminate fishing and oil spills (Frost et al. 1976) have also contributed to the reduction in numbers. The current population is unknown, however, following El Nino the population is known to have decreased to below 65% of its former number (Hays, 1984).

In captivity

The captive population of the Humboldt Penguin is decreasing (Blay, 1995) and therefore many zoos are carrying out research to find out why this is and what, if anything, can be done about it. In most zoos they are fed frozen fish, and due to the limitations of this diet, considerable attention has been given to their feeding as a possible variable/experimental factor (Wallace et al. 1992). In the wild their diet consists mostly of anchovies and anchoveta (Blay, 1998) which together with the availability of other fish may mean that vitamin levels are higher in wild birds. This coupled with the fact that vitamins A and E have important roles in reproduction were among the major factors when deciding on this study.

At BirdWorld

BirdWorld has kept Humboldt Penguins since 1983. During this time, data have been recorded on breeding patterns, matings and the number of