

BREEDING LESSER GREEN BROADBILLS AT LINCOLN PARK ZOO

by Jill Gossett and Cheryl Beseke

The Lesser Green Broadbill *Calypdomena viridis* is one of 14 species of the family *Eurylaimidae*. This species was first kept in captivity in 1928 in London. The first captive breeding took place at the Wuppertal Zoological Garden in Germany in 1980 (Webster, 1991). The only other documented successful fledging occurred at the San Diego Zoo in 1993 (Lewins, 1996). Lesser Green Broadbills are found from peninsular Thailand, Malaya and Sumatra to Borneo. Both sexes have stout bodies with short necks and a dense growth of feathers from the cere extending over most of the bill. The males are bright green with black bars on the primaries and secondaries and black dots in front of and behind the eyes. The females are a dull green and lack the black markings.

Lincoln Park Zoo first had broadbills in its collection in 1969. The breeding pair has been together since 2nd June 1994. The renovated Bird House was reopened in 1991 and this particular exhibit design has been conducive to breeding. The exhibit housing this pair measures 30ft x 20ft x 20ft (approx. 9.2m x 6m x 6m) and contains a variety of plants including *Ficus benjamina*, *Ficus allii*, *Ficus elastica*, *Rhapis excelsa*, *Spathiphyllum*, *Philodendron*, and *Epipremnum aureum*. The concrete walls are painted as a deep forest and the front is glass with a thin strip of wire mesh on either side. Skylights on the top of the building provide natural sunlight which is supplemented with halogen lights. There is one door for keeper access and a waterfall with three pools. The exhibit is misted daily. Several other bird species, each a pair with offspring, share this exhibit including four Crested Wood Partridges *Rollulus roulroul*, four Red-legged Honeycreepers *Cyanerpes cyaneus* and three Jambu Fruit Doves *Ptilinopus jambu*.

The broadbills have access to a variety of foods including cooked rice, chunks of banana, grapes, blueberries, orange, papaya, spinach, kale, bird of paradise, gel-based diet¹, peas, corn, soaked dog chow, chopped hard-boiled egg with the shell, waxworms², crickets and mealworms. In October jumbo mealworms were added to the daily diet. There is another special diet for the honeycreepers which the broadbills later showed an interest in. It includes soaked monkey chow, honey, and banana topped with chopped papaya, apple, and orange.

Previous to 1995, stimulation included an artificial, domed nest measuring 5in x 3½in x 4in (12.7cm x 8.9cm x 10.2cm). The female entered it several times but did not lay any eggs. Keepers built a second

nest constructed of cotton mesh in a tear-drop shape with grasses woven through. Dried grasses, fiddleleaf ficus leaves *Ficus lyrata* and *Rhapis excelsa* leaves were offered loose as well as tied in a ball with jute twine to stimulate nest building. In October of 1995 the female began to show interest in dried grasses. The pair was nearly always more active in the early morning, during the mid-afternoon mist, and in the late afternoon. In mid-November the female was seen tapping on the side of the male's bill, though no regurgitation was observed. By December she was becoming more aggressive, perching in new places, and flying to the keeper access door and to the ground. In January new nest material was added including dried Spanish moss, excelsior, strips of brown packing paper, green tissue paper, tan streamers, and green Christmas ribbon. The female's obvious preference was Spanish moss though she did use a lot of the brown paper strips. It was at this time that the pair began to show interest in the honeycreeper diet. In February various palm fibres were added; blond coconut fibres were the most utilized by the pair.

In mid-January the female looked as though she was inviting copulation and the male frequently raised his crest. At various times the male offered jumbo mealworms to her, but the female always rejected them. There was an 'aerial fight' at the end of February that might have been a precursor to copulation. At the end of February, the female was lethargic and non-attentive and she was removed from the exhibit for treatment. The male continued to call and search for her and she was returned to the exhibit on 9th March.

Live Spanish moss was added to the exhibit in mid-March and the female was immediately interested. Though there were various pre-woven nests available, she began building her own on 24th March. The male stood guard on a perch directly in front of the nest before she flew over, and while she added nest material. Initially there were just a few strands of Spanish moss draped over a limb 2ft (61cm) from the ground, against the wall directly opposite the access door. The female always approached the nest the same way. After circular flights at the top of the exhibit, she flew low to the ground across the front of the exhibit, then to the back of the nest (which eventually became the entrance) and finally perched on the top of the nest. She then would climb, while flapping her wings, around the bulk of the nest and weave fibres into it. Eventually rope fibres were offered and the female used them almost as much as the Spanish moss. Because the tail hung to the ground and the Crested Wood Partridges kept becoming entangled, keepers cut it several times before its completion. The female never seemed to mind nest manipulation or cleaning in the area.

In April the female fluttered in front of the male several times, but no attempt at copulation was observed. A crude cavity appeared in the nest and the male stood guard while the female was inside. It was around this

time that the male began to moult. The female continued to add to the nest until the beginning of May when she began a second nest. The second nest was also against the wall opposite the door and was anchored on the stalk of a palm leaf 3ft (91.5cm) off the ground. It was mainly constructed from rope fibre, Spanish moss, and dark, coarse palm fibre. The female created a hole in the second nest by pushing brown packing strips all the way through. Rope fibre was eliminated because the Crested Wood Partridges kept becoming entangled. The brown paper strips were also eliminated because they were not flexible enough.

By the end of May, the female had begun her moult and nest activity ceased. In the beginning of August, both adults' moults were complete. The female's plumage seemed whiter than before, especially in the area of the cloaca. The males plumage, too, was brighter but it was indiscernible if the bars on his wings had changed at all. The female had ripped apart the second nest and finished construction of the first nest. She also began collecting *Ficus allii* leaves and lining the nest with them. Fresh green leaves were offered, but she seemed to prefer the dry leaves. Several days later she was seen in the cavity pulling fibres up to shape the entrance and on 23rd August two eggs were confirmed.

The male was left in the exhibit and guarded both the nest and the female while she was inside, but he never had any active part in nest building or incubation. Throughout incubation, use of the misters was reserved for when the female emerged from the nest because she enjoyed bathing. In fact, she would immediately fly to her normal bathing perch in anticipation of a shower. The male continued to displace and chase her. On 8th September the male was unusually vocal. On 9th September the female was spending more time off the nest and hanging on the edge of the nest entrance with her head inside. On the 10th the female flew out of the nest with an eggshell. Examination of the shell fragment indicated a perfect hatch. It measured approximately 19mm wide.

The female usually fed the chicks before 8.00am and continued at various times throughout the day. She most frequently chose waxworms and papaya followed by mealworms and avocado (the latter had been added to their diets a few days prior to the hatch). The male was not observed feeding the chicks though he did still guard the female and the nest site. On the 16th the female began spending all her time out of the nest and the chicks could be heard begging for food. On the 18th, at 11 days old, the chicks' heads could be seen protruding from the nest when the female fed. The Crested Wood Partridges were removed from the exhibit on the 20th to prevent them from interfering with the chicks. It was noted the broadbill chicks had bluish-green skin and were covered with a small amount of down but no feather tracts were visible. At 20 days, it was observed that the chicks were fully feathered. On the 28th the male was observed next to the nest,

watching and calling. No chicks were visible at the time. At 22 days old, the first chick emerged from the nest. There was concern for the second as the bill was visible but did not seem to move. However, by mid-afternoon it was perched on the rim of the nest entrance and after a few minutes, it fledged. Both chicks' bodies were greyish green with light grey on the underside. Their tail feathers had not yet emerged. Both had yellow beaks with black at the tips.

After the chicks fledged, the male's role expanded and he was observed guarding and feeding the chicks though the female still provided the majority of the chicks' nourishment. The chicks' diet remained approximately the same, mostly waxworms, papaya, mealworms, and avocado though a variety of other fruits and vegetables were offered. On the fifth day after fledging, the female laid a piece of papaya on the perch next to the chick who picked it up and ate it. On 7th October the chicks were obviously more aware than before and the female appeared to be trying to wean them. On 9th October the female was observed at a food dish showing a chick how to pick up food but the female continued to feed the chicks.

The chicks found leaves and sticks irresistible as playthings and were seen drinking from leaves when the misters were turned on. Both chicks enjoyed the mist spray and bathed as enthusiastically as the adults. On 7th October one of the chicks was seen mimicking the 'goik goik' head bobbing call of the adults but no actual vocalization was heard. On the 11th both chicks were observed head bobbing and 'goik goik' calling. Additionally, on 8th October one chick was observed aggressively chasing a Jambu Fruit Dove off a perch.

Throughout October all four were frequently seen perching together and behaving as a family unit. By the end of October the chicks were fully weaned. On 29th October all four were caught and the chicks were banded and blood feather sexed. The chick that was later determined to be female weighed 57.3g. The other chick, a male, weighed 56.9g.

By the end of November both adults began exhibiting signs of aggression toward the chicks and the adult female began showing interest in nest material. In the beginning of December the adult female was observed with grasses and fibres in her beak. She flew from perch to perch beating them against a branch while the juvenile female seemed to mimic her. Subsequently the juvenile female was often observed manipulating nest material. In early January the juvenile female was on the same branch as the nest holding grass strands in her beak. On 10th January 1997, at 123 days, the chicks were taken out of the exhibit. The male weighed 51g and the female 60g.

Throughout the pair's breeding cycle, various vocalizations were heard. Most were produced by the male. The most common was the 'goik goik' call, with or without the head bob. This is done by both the male and

female but the male is usually louder. It seems to be the basic communication, the 'where are you' call. The degree of display or volume seems to change the meaning of this call on occasion. For example, when the female was reintroduced to the exhibit on 9th March, every feather on the male's body was erect, including his crest, and he called loudly. His body was very rigid with extreme excitement. A variation of this call, heard only from the male, includes a 'squeak' between each call when the head bobs back up. There is also the male's ascending 'trill' call, which may be associated with danger or excitement and was frequently heard when the male chased the female during misting. Another vocalization is the soft 'purring' call, similar to the 'trill' but not ascending. Only the male has been heard performing this call. His throat feathers are erect during the 'purr' call, which was performed mostly in the late afternoons after the chicks had fledged. The male also made some unusual vocalizations just after the chicks fledged that had not been heard before or since. He made a high squealing 'caa', almost like a chicken. It was heard when the male was agitated, possibly because the chicks had only recently emerged from the nest. The female made a low, softly pulsating call while she fed. One last call to be noted is the 'tarzan' call, performed only by the males when they were housed without females.

Some of the things we felt were important include:

- 1) Privacy and security for nest site.
- 2) Proper diet. Sufficient insects offered, especially jumbo mealworms.
- 3) Acceptable nesting material including Spanish moss, soft fibres and even fresh grasses.
- 4) Daily misting.
- 5) One of the most important things seemed to be to provide constant stimulation. Any kind of activity or change is a stimulus.

¹Gel-based diet consists of ground extruded, chopped fruits and gelatin.

² Waxworms are kept for three days on a special, nutrient medium.

References

- LEWINS, E. (1996). Captive Breeding of the Lesser Green Broadbill. *Avicultural Magazine*, 102,1:1-5.
- WEBSTER, R. (1991). The Broadbills: An overview of the *Eurylaimidae* with emphasis on the Lesser Green Broadbill (*Calyptomena viridis*) in the wild and in captivity (unpublished).

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EXPERIENCES KEEPING AND BREEDING THE WHITE-FRONTED BEE-EATER *Merops bullockoides* IN THE ZOOLOGICAL GARDEN COLOGNE

by Theo Pagel

Introduction

In one section of the pheasantry in the Zoological Garden Cologne we keep African birds. In one of the combined indoor/outdoor aviaries, made to look like an African riverbank, live White-fronted Bee-eaters *Merops bullockoides*, Baglafecht Weavers *Ploceus baglafechi reichenowi* and Egyptian Plovers *Pluvianus aegyptius*.

This article summarizes our experiences keeping and breeding the White-fronted Bee-eater.

General

There are 25 species of bee-eaters. They vary in size from 14cm-35cm (5½in-13¾in) long. Most have colourful plumage and a curved bill. The tail has 12 feathers and in some species the central tail feathers are longer than the others. Bee-eaters live in the warmer regions of the Old World, where most prefer open landscapes. They are mainly insectivorous and catch most of their prey in the air, especially bees. Bee-eaters breed in holes which they excavate themselves. Often you find their nest holes in riverbanks. Some species, such as the Rosy Bee-eater *M. malimbicus*, breed in large colonies of up to 25,000 birds.

Systematics

Bee-eaters are in a family of their own - the *Meropidae*. The White-fronted Bee-eater is a member of the genus *Merops*. There is just the nominate form, which has no known races.

Description

The White-fronted Bee-eater is 21.5cm-23.5cm (8½in -9¼in) long and weighs 31g-35g (Fry and Fry, 1992). Its forehead is dirty white, its crown is mealy and the nape, breast and belly are buff. It has a black mask, a white chin and cheeks, and a silky scarlet throat. Its wings and tail are green, and the vent, under and upper tail-coverts are midnight blue.

Distribution

West Gabon, Zaire and Kenya, south to Okavango, northern Botswana, and Transvaal and Natal, South Africa.



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