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CAPTIVE BREEDING OF THE LESSER GREEN BROADBILL

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The Lesser Green Broadbill *Calyptomena viridis continentis* is the most well known species in the Eurylaimidae family. These are deep forest dwellers of the Old World Tropics ranging from Southern Burma, Thailand to Malaysia; Sumatra, Borneo and some of the adjacent islands. Both sexes have short stout bodies with wide flat bills. The males are iridescent emerald-green with black above the eye and behind the hind cheek. The primaries and secondaries are barred in black. There is a short crest that extends over the long wide bill. The female is similar but more drab in colour and lacks the black markings.

The Zoological Society of San Diego has maintained Lesser Green Broadbills in its collection since August 1964. However, it was not until August 1992 that any attempt at breeding was observed.

This particular pair of Broadbills along with a pair of Pompadour Green Pigeons *Treron pompadora* and a single Striated Yuhina *Yuhina castaniceps* were housed in an outside enclosure measuring 3.7m x 6m x 3m. The rear wall is concrete with two doors leading into anti-rooms used as keeper access. The back 75 centimetres is covered by a concrete roof, while the rest of the enclosure is covered with 1.3cm x 2.5cm 12 gauge galvanised welded wire.

The enclosure was rather thickly planted with a variety of tropical flora with several large *Tupidanthus* sp. dominating the landscape. Other plants in the exhibit included *Raphis humilis*, *Cassia* sp., and *Phyllostachys aurea*.

The diet of the birds in the enclosure consisted of a diced fruit mix, (apples, papaya, grapes and boiled long grain rice), a slice each of banana, papaya, and avocado, crickets, mealworms *Tenebrio molitor*, wax moth larvae *Galleria mellonella*, soaked Purina Hi-Pro dogchow, and Zeigler Low-iron pellets. Blair's Super Preen powered vitamin/mineral supplement was sprinkled on the diet.

During August of 1992 to August of 1993 the Lesser Green Broadbills nested three times.

Nest 1

On August 21, 1992 at 16.30, the hen was observed approximately 2 metres high under the concrete roof in an artificial nest. The nest they chose was a domed woven basket measuring 18 cm high and 12cm deep. Shortly after being noticed, the female flew from the nest to perch beside the male. The male began to "head bob" and vocalise, after which, the female flew to another perch.

The next morning the hen stayed in the nest until 11.47 at which time the nest was inspected and one oval white egg was observed. The female returned to the nest approximately 10 minutes later. At 15.47 the female left the nest and bathed in the water pan. After fluffing and preening for several minutes, she began bobbing her head and calling. The male answered. They called back and forth and changed perches several times. Twice the male came down to the perch beside the female, both head bobbed and vocalised. The female opened her mouth towards the male, then vocalised more and the male flew away. This happened twice within the hour that the female was off the nest.

On August 23 at 11.30 when the hen left the nest two eggs were observed. It was decided at this time to minimise all disturbance to the enclosure. On August 25, video equipment was installed for observation and recording of the nesting activities.

Through direct and video tape observation, it was observed that only the female incubated the eggs. The male was never seen at the nest. The male did, however, continue to vocalise and would occasionally try to approach the female when she would leave the nest. In contrast to the period before egg laying, the female was not receptive to his approach and would immediately fly away.

On September 8, the hen was off the nest at 7.30 the nest was inspected and 1 chick and 1 egg were observed. There were no eggshell fragments found in the nest or on the exhibit floor. At 8.49 the female was hanging on the side of the nest basket feeding the chick.

A second video camera was installed in order to monitor the food pan more accurately for the specific food items that were being taken during the chick rearing process.

The morning of September 9, revealed 2 chicks - one twice the size of the other. The food pan and the nest were observed for a total of 10 hours during which time the female was observed feeding the chicks 18 times. There were a total of 21 visits to the food pan. Eight times avocado was taken, 5 times fruit mix, 3 times wax moth larvae, once dog food, and there were 4 visits in which nothing was taken.

Throughout the day of September 10, both chicks were visible and exhibiting very strong feeding responses whenever the female would land on the nest. 22 feedings were observed from 07.15 to 18.30.

The next day, however, there was only one chick visible when the female would feed. The previous day's video tapes were reviewed in detail and upon very close scrutiny it was observed that at approximately 17.30 the female seized the smaller of the two chicks in her mouth and appeared to strangle it. Surprisingly, the chick was not only active and exhibiting a strong feeding response just prior to this, but also appeared to struggle against the attack.

After the chick ceased struggling, the hen flew off with the body. Approximately 30 minutes later the hen returned to the nest and fed the remaining chick after which she entered the nest and began to brood as before.

The next three days proceeded with regular feeding and brooding of the remaining chick. However, on September 14, there was no feeding activity at the nest. Upon inspection the body of the chick was discovered on the ground approximately 2 metres from the nest. The video tapes did not render any new insights into this assumed second genocide.

Reviewing the video tapes of the food pan revealed that the item most taken during the six days in which the female was feeding the chicks was avocado. Second, was insects with a preference for wax moth larvae and mealworms over crickets. The diced fruit mix was third in frequency with the soaked dog food only occasionally taken. Banana and papaya slices were not eaten from at all.

Nest 2

April 13, 1993, the female Broadbill was observed building a nest about 1 meter off the ground in a *Tubidanthus* using strands of Spanish moss *Tillandsia usneoides*, bamboo leaves *Phyllostachys aurea* and goat hair. The female would carry the material to the water pan and soak it before taking it to the nest site where she would drape the long strands over the limb. After there was a large pendulous mass she would hang on the strands circling around and around probing and tugging as she interwove the fibres.

By the 18th, the integrity of the nest was in question, so the same type of woven basket as was used previously was placed in the nest mass. The female was not disturbed by the manipulation. As she continued her own additions, she eventually probed into the nest basket entrance. It was not long before she was inside the basket lining it with bamboo leaves.

On April 26, two eggs were observed in the nest. A third egg was laid on April 28 at which time the female began to incubate consistently, rarely leaving the nest. When she did leave the nest during the day, she would usually bathe before returning. This continued throughout incubation.

Since the male was not observed participating in any of the nesting or chick rearing activities, it was decided to remove him in case he was

interfering in some unobserved way with the chick rearing process. On May 7, the male was trapped in a catch cage and removed from the exhibit.

After a 17 day incubation period, two chicks hatched on May 14. The chicks were orange with flat heads and yellow edged beaks. The female was observed hanging on the side of the nest and feeding the chicks after eating avocado and fruit mix.

On day 2 it appeared that the chicks were being fed mostly waxworms and avocado. By day 5, the order of preference for food items was waxworms/avocado, mealworms, crickets, mega worms, and then mixed fruit. This remained consistent throughout the rest of the chick rearing process.

On May 17, the 3rd unhatched egg was pulled and found to be infertile.

On May 21, there was only one chick in the nest. At 8 days, this chick was becoming more grey in colour with two dorsal feather tracks appearing. By May 24, the chick was large enough so that it was difficult for the hen to enter the nest and brood. At 13 days, the pin feathers started to break open in the scapular, dorsal and rump regions. On June 4, at 22 days, the chick fledged weighing 51 grams. Its overall colouring was dull green with a light-grey green breast. Its beak was horn coloured with a black tip and yellow edges. Pin feathers were still visible on its head and the tail was very short.

From the onset of incubation the female rarely vocalised, however, at fledging, the hen very frequently called especially before and after feeding the chick. The chick, on the other hand, was rarely heard vocalising at any time. All seemed to be going well until the chick died at 28 days of age from head trauma sustained from a female Striated Yuhina.

Nest 3

June 10, the male was reintroduced into the exhibit and the two began to call back and forth and head bob immediately. By June 22 the female was engaged in intense nest building in the same location as the previous nest.

In order to minimise the possibility of future mishaps, the Striated Yuhina and the Pompadour Green Pigeons were removed from the exhibit.

Once again a nest basket was added to insure the integrity of the nest. However, because the original basket seemed to be too small for more than one chick, a larger basket was used. This basket was made by forming a domed basket of *Trachycarpus fortunei* palm fibres around an inflated balloon. The fibres were adhered together with 3M super 77 spray adhesive and the balloon was deflated and removed. The approximate dimensions of this basket were 25 cm high and 16 cm deep. Again the female accepted this addition without hesitation and was soon lining it with bamboo leaves.



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