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THE NESTING BEHAVIOUR OF THE MUSOPHAGIDAE

by Myles Lamont

The Musophagidae are renowned for their poor nest making, with their feeble attempts at nest construction often being likened to those of the Columbiformes (Pigeons and Doves) (Payne, 1997; Isenberg, 1993; Schroeder, 1991; Fry et al. 1988; Maclean 1985; Rowan, 1983; Berry & Todd, 1982; Britton & Britton, 1976; Lamont, 2005; McLachlan & Liversidge, 1976; Stannard, 1971; Mackworth-Praed & Grant, 1957; van Someren, 1956; Courtenay-Latimer, 1942; Bannerman 1933; Friedman, 1930). Due to their poor nest building skills, most aviculturists do not encourage natural nest building besides which most aviaries lack suitable natural nest sites within their perimeters. This has in effect led to a gap in our knowledge of the natural nest building behaviour of this family of birds in captivity. There is also a lack of knowledge about this activity in the wild.

Here at the Hancock Wildlife Research Center in Canada, each breeding pair of turacos is provided with a nest platform measuring approximately 30cm x 20cm with a 7cm perimeter lip (12in x 8in with a 2¾in perimeter lip). This is similar to that used at other facilities (Bruslund Jensen, 2006; Lamont, 2006b; Paterson, 1993; Milne, 1991; Heston, 1987) and, incidentally, is very similar in size to natural nest sites found in the wild (Borghesio pers. comm. 2006; Rowan, 1983). In addition to a nest platform, hanging or wicker baskets are used successfully, however, occasionally a pair will decide to make its own nest.

Although a rather uncommon occurrence, natural nest construction has occurred at the Hancock Wildlife Research Center and has resulted in some interesting behavioural observations, most of which are described in more detail later in this article.

There follows a summary of numerous published and some unpublished records of nest observation of the Musophagidae compiled on a species by species basis, both from the wild (*in situ*) and in captivity (*ex situ*).

Nest observations

Species

Guinea or Green Turaco *Tauraco persa*

In the wild. Bannerman (1953) described the nest as roughly built and bulkier than a dove's nest. That of *T. p. zenkeri* was described by Chapin (1939) as being a frail structure of dry twigs, placed in a low forest tree and containing two eggs. Fry et al. (1988) described the nest as a shallow platform 20cm-30cm (8in-1ft) in diameter, made of sticks and

twigs interlaced together. It was said to be flimsy or compact but open, with light showing through and looking reminiscent of a large dove's nest. Nests were found 1.5m-3m (approx. 5ft-10ft) above the ground in a thick portion of an isolated bush, a tree, and in a tangle of leaves and twigs on the outer branches of a tree. Creepers are also used, but usually concealed from view. Twigs are normally snapped from a tree and brought to the nest one or two at a time. One nest took five days to complete. Payne (1997) described the nest as a roughly built platform of twigs interlaced with finer twigs and found in the thickest part of a bush or tree. He described it as bulkier than a dove's nest.

In captivity. A flimsy platform of twigs, similar to that of other species of turaco. A failed nesting attempt in thick ivy was also noted by Rutgers and Norris (1972). A female *T. persa* x *T. hartlaubi* hybrid attempted to nest in a clump of ivy, but did not complete the nest (Lamont, 2006a). The pair of *T. p. buffoni* kept by Horne (1991) nested in a hanging basket suspended in an elderberry bush.

Black-billed Turaco *Tauraco schuetti*

In the wild. Mackworth-Praed and Grant (1957) wrote of a stick nest like that of other turacos in a thick tree or creeper. Chapin (1939) mentioned that, "At Lukolela a female about to lay was collected on September 2nd, and a nest was found under construction in some dense second growth in early December, but it was never completed." Referring to *T. s. emini*, he wrote, "In the region of Medje we were shown nests on August 24th and September 28th, frail structures of twigs, about 12ft (3.6m) up, in tangled second growth." Fry et al. (1988) referred to a frail platform of twigs some 4m (approx. 13ft) above the ground in tangled growth in a tree. Payne (1997) described the nest as a frail platform of twigs some 3m-5m (approx. 10ft-16ft) above the ground in tangled secondary growth.

Schalow's Turaco *Tauraco schalowi*

In the wild. Mackworth-Praed and Grant (1957) described the nest as a flimsy structure of sticks, some 10ft-30ft (approx. 3m-9m) above the ground. Chapin (1939) made a brief mention of this species and described the nest as, "...like a dove's, 12ft (3.6m) up in an acacia." Payne (1997) wrote of a flimsy structure of sticks some 3m-l0m (10ft-32ft) above the ground in the thickest part of a tree or bush.

In captivity. Boehm (1967) wrote of this species building a "...much more elaborate nest than has been observed in other turaco species we have bred. The nest is more "jay-like" in its construction. Not having experienced nesting preparations of all turaco species, I cannot say definitely that this is characteristic only of Schalow's." However, Roles (1973) wrote: "mating was never observed and no form of nest building was seen to take place, the

two dull white eggs being laid on April 13th 1972 on the totally unadorned nest platform."

Fischer's Turaco *Tauraco fischeri*

In the wild. Britton and Britton (1976) wrote of a nest found 7.5m (approx. 24ft) above the ground. It was described as a loose platform of twigs with no lining or other nest material used. It was not taken as it could only be removed in pieces. Fry et al. (1988) referred to a loose platform of twigs placed 7.5m (approx. 24ft) above the ground in a *Syzygium* tree. Payne (1997) described the nest as a frail platform of twigs placed 3m-l0m (approx. 10ft-32ft) above the ground in thick tree foliage.

In captivity. Milne (1991) described the nest as measuring 1ft x 1ft x 6in deep (approx. 30cm x 30cm x 15cm deep). Twigs and grasses were placed in the shallow box to help stimulate the pair to breed. Paterson (1993) wrote that the nest box measured 1ft x 1ft x 1ft (approx. 30cm x 30cm x 30cm). The base was made of wire mesh and the front lip was 4in (l0cm) high; the roof had a 2in (5cm) overhang and slanted down towards the front. The box was lined with apple tree twigs of uniform length (approx. 6in (15cm)) and thickness. The twigs were then reorganised by the birds.

Livingstone's Turaco *Tauraco livingstonii*

In the wild. The compact but transparent nest is a well woven mass of large twigs with fine ones, usually in the top of a small tree and well concealed (Mackworth-Praed & Grant, 1957). Payne (1997) described it as a well woven platform of sticks and twigs some 3m-l0m (approx. 10ft-32ft) above the ground in the thickest part of a bush or tree.

In captivity. Garsee (1992) noted: "I had an open platform with 6in (approx. 15cm) sides constructed and painted black. It was hung approximately 6ft 6in (2m) high on the side of the aviary. I first placed twigs in it for nesting, but they were not to their liking and were all thrown out. They were replaced with natural wood fibre packing material and they seemed to like this."

Knysna Turaco *Tauraco corythaix*

In the wild. Nests can be found at various heights from 3m-9m (approx. 10ft-30ft) above the ground, usually in a tangle of leafy twigs in the outer branches of a tree; often among creepers and also in the crown of a tree fern. Nests measure 20cm-30cm (8in-lft) across and are usually fairly flimsy platforms of interlaced twigs with a shallow depression in the centre. Both sexes seem to partake in nest construction, with one bird bringing twigs to the nest site while the other works them into the nest (Rowan, 1988). Stannard (1971) wrote: "Today I stood stock-still under the bougainvillaea and by craning my neck, could see through the tangle of branches and

watch the birds come in, stand or sit on the nest and place their sticks right inside the tangled mass of creeper." McLachlan and Liversidge (1976) described the nest as a shallow platform of sticks placed in a tree or in thick creepers.

Courtenay-Latimer (1942) described how he found a pair, "...building in a Boerboon tree *Schotia brachypetala* approximately 12ft (3.6m) from the ground. The nest was completed November 1st and measured roughly 1ft (30cm) in diameter, whilst the hollow or depression measured 4in-5in (10cm-12.5cm) across. The foundation was built of fairly heavy sticks with finer twigs towards the top and resembled a large dove's nest in appearance." Maclean (1985) noted that the nest is a shallow platform of sticks, like a large dove's nest, in a leafy tree or dense creeper. According to Payne (1997), the nest is "...a shallow platform of sticks, much like that of a large dove, 2m-9m (approx. 6ft 6in-29ft 6in) above the ground in a leafy tree or among dense creepers."

In captivity. One nest was made in the top of a hawthorn tree where a female took over a discarded nest of a Grey-winged Blackbird *Turdus boulboul* and reared three young from two clutches. Further nests were made in a basket in a pine tree (Everitt, 1965a). Payne (1963) wrote: "..at the highest point in the shelter I put up a contraption made of thin saplings and the last-year runners from the Russian vine made to resemble an open nest, and into this saucer-like shape I put a handful of straw and rootlets." At Cologne Zoo: "The eggs were laid in a wooden bowl, about 4ft 6in (approx. 1.4m) above the floor of the inside cage. Little twigs which had been placed on the floor for them had been used as nesting material" (Hick, 1964). Two young were reared in a nest that the parents built of pine needles and green grass shoots in a shallow wooden tomato box in South Africa. (Barnicoat, 1987).

Bannerman's Turaco *Tauraco bannermani*

In the wild. Payne wrote: "Nest a flimsy platform of twigs, well hidden in thickest part of an isolated tree or bush among a tangle of creepers, or in the thick foliage on outer branches at 1.5m-10m (approx. 5ft-32ft) above ground in open forest or along forest edge."

Red-crested Turaco *Tauraco erythrolophus*

In the wild. The nest is assumed to be similar to that of other *Tauraco* spp.

Yellow-billed Turaco *Tauraco macrorhynchus*

In the wild. Bannerman (1933) considered a nest found by Bates (1909) and described as belonging to *T. p. zenkeri*, to actually be that of *T. macrorhynchus*. He went on to describe it as "placed in the thick top of

a low tree...and built of tiny dry twigs laid loosely together, so that it fell to pieces when taken in hand." Fry et al. (1988) described the nest as a flimsy platform of dry twigs, hidden in the thick foliage of a tree or creeper 7.5m-l0m (approx. 25ft-32ft) above the ground. There was also mention of a nest that was apparently located on the ground. Payne (1997) wrote: "Nest a flimsy platform of dry twigs, well hidden in tree foliage, 7m-l0m (approx. 23ft-32ft) above the ground, reports of ground nesting on Bioko require confirmation."

White-cheeked Turaco *Tauraco leucotis*

In the wild. The nest is a rather thick platform of dry twigs, very loosely put together, with a slight hollow at the top (Mackworth-Praed & Grant, 1957). Payne (1997) also described it as a rather thick platform of dry twigs, loosely constructed with a slight depression at the top, built some 7m-l0m (approx. 23ft-32ft) above the ground.

In captivity. Thomson (1991) stated that the birds did not make substantial nests, rather more a gathering of flexible twigs placed randomly together in a thick part of a tree or bush. Foxall and Burton (1975) noted that a 9ft (approx. 2.7m) high section of a felled Lawson Cypress *Chamaecyparis lawsoniana* was erected in a well-lit shelter. A nesting platform was placed in the cypress and furnished with some small twigs, but this arrangement was apparently ignored. The cypress twigs were still green, but dry and brittle and it was these that the birds used to make their own nest, 7ft (approx. 2.1m) above the ground in the cypress itself. When completed the nest was quite substantial and measured approximately 8in-9in (20cm-23cm) in diameter and 4in (l0cm) thick at the centre. A pair in the Boehm aviaries nested successfully 10ft (approx. 3m) up in a White Pine *Pinus strobes*. The nest of twigs, which was quite fragile, fitted into a crutch in the branches and owing to its insecure appearance, was supported by a wire-netting basket. The nest was prepared by the female alone (Everitt, 1965a).

Rutgers and Norris (1972) noted that a pair of *T. l. donaldsoni* had nested approximately 9ft (2.7m) above the ground in a poplar tree *Populus* sp. and laid three successive clutches of two eggs in the nest.

Prince Ruspoli's Turaco *Tauraco ruspoli*

In the wild. The nest is assumed to be similar to that of other *Tauraco* spp.

Hartlaub's Turaco *Tauraco hartlaubi*

In the wild. A very pigeon-like flat, transparent tray of sticks, placed among dense creepers in a bush or tree and usually within 15ft (4.5m) of the ground (Mackworth-Praed & Grant, 1957). The nest had previously been

described by van Someren (1956) as being comparatively low down and characteristically near thick foliage and fine twiggy branches. It was said to be loosely constructed of twigs, interlaced to form a shallow platform, like a pigeon's nest. He noted that it is often so transparent that the eggs can be seen from below. Finer twigs are sometimes used to line the nest, which is usually on a horizontal branch.

Nests have been found in dense tangles of bush. They were quite thick and approximately 20cm (8in) across and were cup-shaped (Borghesio pers. comm. 2006). Fry et al. (1988) described the nest as, "... a shallow platform of loosely interlaced twigs, sometimes lined with finer twigs; eggs showing through. Always built amongst fine, twiggy branches with thick foliage, high in e.g. *Rhus* or thorny *Chaetacme* tree. Nest added to during nestling period." According to Payne (1997) the nest is a platform of loose sticks and twigs, sometimes lined with finer twigs. It is usually 3m-8m (approx. 10ft-26ft) above the ground among thick tree foliage.

In captivity. Risdon (1954) wrote: "...we fixed up a bunch of twigs in a corner of the flight. The middle of this was flattened out and a shallow dish-shaped piece of wire netting was fixed to form a platform. On this some coarse hay was shaped to form a foundation for a nest." Rutgers and Norris (1972) described the nest as a platform of twigs, usually built among creepers enveloping bushes or low trees and seldom more than 15ft (4.5m) from the ground.

White-crested Turaco *Tauraco leucolophus*

In the wild. The nest is a saucer-like platform of dry twigs (Mackworth-Praed & Grant, 1957). It is built of small, dry sticks and twigs interwoven into a saucer-like shape some 15cm (6in) in diameter, according to Fry et al. (1988). One nest was located in some forked branches 7m (approx. 22ft) high in an acacia-like savannah tree, while another was found 3m (approx. 10ft) above the ground in a small tree (Fry et al. 1988). Payne (1997) described the nest as a flimsy saucer-shaped platform of interlaced twigs and sticks 3m-7m (approx. 10ft-22ft) above the ground, often in an acacia.

In captivity. Brown (1971) witnessed an unusual nesting attempt, in which the pair nested on the floor and only sat at night. Unsurprisingly, nothing came of the eggs.

Purple-crested Turaco *Tauraco porphyreolophus*[1]

In the wild. Rowan (1983) described the nest as a flimsy, unlined platform of intertwining twigs, through which the eggs can often be seen from below. Favoured sites are among matted creepers and in dense parasitic growth. Maclean (1985) described the nest as a platform of sticks in a tree or creeper, up to about 4m (13ft) above the ground, often in an

isolated thicket or at the edge of a forest. According to Fry et al. (1988) the nest is a flimsy platform of interwoven twigs 3m-9m (approx. 10ft-30ft) up in a tree, well concealed in a matted creeper or in parasitic growth. Both sexes are involved in its construction. The nesting tree is usually isolated on an open savannah or is part of a dense thicket. Payne (1997) described it as a flimsy, unlined platform of twigs 3m-9m (approx. 10ft-30ft) above the ground, well concealed in a tree among matted creepers or in dense parasitic growth.

In captivity. Jarvis and Currie (1974) described how a cut pine tree was fixed upright in the enclosed section of the aviary and a wire mesh platform 90cm (almost 3ft) in diameter was placed in it 1m (approx. 3ft 3in) from the earth floor. The platform was covered with pine needles which the birds later rearranged. An empty orange box with an open top, prepared with a layer of fresh hay, to which the birds added a few small sticks, was also used successfully by this species (Raison, 1992).

Rwenzori Turaco *Ruwenzorornis johnstoni*[1]

In the wild. Fry at al. (1988) described the nest as being a small platform of sticks built 1m-3m (approx. 4ft-10ft) above the ground in a clump of bamboo. Payne (1997) also described it as being a small platform of sticks, often in a clump of bamboo, but gave the height as being some 3m-5m (approx. 10ft-16ft) above the ground.

Violet Turaco *Musophaga violacea*

In the wild. The nest was described by Mackworth-Praed and Grant (1957) as a slight structure of twigs in a bush 10ft-12ft (approx. 3m-3.6m) from the ground. Fry et al.(1988) described it as being a fragile pigeon-like nest of twigs and sticks in a leafy tree some 6m (20ft) up.

In captivity. Nests are usually made on a typical nest platform of the type described earlier or in a basket. They have also been made by placing sticks in the corner of a square frame designed for ibis and spoonbills to nest on. This species has also built its nest in a *Berberis* sp. (Gomis pers. comm. 2006). Nests consisting of fragile stick platforms, so transparent and flimsy that the eggs could be seen through the bottom, 6.7m (approx. 22ft) above the ground, were noted by Bent (1988); who further noted that the pair were seen carrying twigs broken from a *Ficus* sp. and taking them

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[1]*I have followed The Clements Checklist of the Birds of the World, Sixth Edition (2007) and listed the Purple-crested Turaco in the genus Tauraco and the Ruwenzori Turaco in the genus Ruwenzorornis. Some other recent publications have placed both of them in the genus Gallirex and they may also be found listed in the genus Musophaga or with the Ruwenzori Turaco listed in the genus Tauraco with the Purple-crested species. - Ed.*

into artificial rock planters full of vegetation, which were approximately 6m (20ft) off the ground.

Ross's Turaco *Musophaga rossae*

In the wild. Mackworth-Praed and Grant (1957) described the nest as a pigeon-like platform of sticks and Maclean (1985) described it as a platform of sticks and twigs in a tree. Fry et al. (1988) gave a more detailed account, describing it as a pigeon-like platform of sticks up to 60cm (almost 2ft) long, lined with twigs (375 in one nest) and 20cm-21cm (approx. 8in -8¼in) in diameter. It is built by the male and female 2m-16m (approx. 6ft-62ft) above the ground, in a clump of thick foliage, mistletoe or creepers, usually in an isolated tree. It takes the birds five to 16 days, working mainly in the morning.

In captivity. Rutgers and Norris (1972) described the nest as a flimsy platform of twigs fairly high above the ground. Some interesting observations of nesting at Disney's Animal Kingdom were provided by Congdon (2000). The nest was approximately 30ft-35ft (9m-l0m) off the ground in a clump of bamboo *Bambusa* sp. It consisted largely of sticks approximately ⅛in (2mm) in diameter and of various lengths. They were not observed to be picked up off the ground, but were broken from three branches. They also appeared to come from another tree, possibly a Chinese Elm *Ulmus parvifolia*. There was also a large amount of leafy foliage. Both the male and female took part in the nest building. Approximately a month after the above observations were made, the nest was inspected again and did not have so much leafy material but consisted mainly of twigs and sticks. Plasse (pers. comm. 2006) noted that the birds apparently succeeded in building the nest so that several stalks of bamboo were pulled together by the twigs, leaves and rootlets that had been accumulated to make the nest platform.

Royston (1974) noted that her birds made their nests partly of bunches of long grass fixed high up in secluded places in bushes and trees in the aviaries, the birds adding a few sticks and using the same nest for a second brood. Steel (1973) wrote: "I hurriedly spent a whole afternoon erecting a large log at the far end of the flight, up against a south-facing wall, hoping that this might be a suitable home for them but not, they took no notice of it whatsoever, but preferred to carry stupid pieces of stick to some dangerously insecure branches in the greenhouse. I endeavoured to help them by putting some flat, dry laurel branches and leaves horizontally, but for all their industrious stick carrying, everything fell to the ground again. I then wove in a piece of wire netting upon which I thought they could lay their sticks more securely." Eventually, a modified shopping basket with a concave bottom, placed 6ft (1.8m) above the ground, was utilised as a nest

site.

Ellis (1975) mentioned a letter from Syd Downey in Kenya, in which Mr Downey wrote: "... the pair of Ross's Turacos had nested again and hatched two chicks, but for some reason neither survived." They appeared to have been sat on too heavily and, Mr Downey, wondered, if the nest which he arranged for them, was too cup-shaped. He added, he knew that in the wild the nest is a bare, flat platform. Milne (1990) described how this species successfully used a bowl-shaped, thick wicker basket, 1ft 2in (35.5cm) in diameter and 7in (17.5cm) deep.

Grey Go-away Bird *Corythaixoides concolor*

In the wild. Mackworth-Praed and Grant (1957) stated that this species makes a stick nest like that of a pigeon, usually in dense creepers or high on an acacia. Rowan (1983) provided further information, stating that the nest is always built in a tree, most commonly a thorny species, and is usually placed high in the crown. There may be a scant attempt at concealment, as the chosen tree often has little or no foliage. The height of the nest can vary from 1.5m-20m (approx. 5ft-65ft), but is most commonly 3m-10m (approx. 10ft-32ft) above the ground. It is a platform of interlaced twigs resembling a dove's nest in its simple and often flimsy construction. It is usually 18cm-24cm (approx. 7in-9½in) across and about 3cm (1¼in) thick. McLachlan and Liversidge (1976) described it as the usual dove-like structure, often so thin that the eggs can be seen from below. It is up to about 25ft (7.6m) from the ground, according to them, in a thorn tree or sometimes a soft-foliage tree.

Maclean (1985) called it a scanty platform of sticks and twigs in a fork or crown of a tree (usually thorny) or in a clump of mistletoe or matted creeper 1.5m-20m (approx. 5ft-65ft) above the ground. A flimsy pigeon-like nest measuring 18cm-24cm (approx. 7in-9½in) in diameter, with the eggs visible from below, was how Fry et al. (1988) described it. Both sexes partake in nest construction, building it 3m-20m (approx. 10ft-65ft) up in a tree, usually an acacia. They may also build in a non-thorny species of tree and in clumps of mistletoe and dense matted creepers.

In captivity. A pair at Busch Bird Park laid three eggs on a ledge of a steel support beam (Young, 1975). Further notes by the same author indicated that a flimsy nest of bamboo twigs was constructed in a clump of bamboo, against the wire side of the enclosure approximately 20ft (6m) above ground level and 8ft (approx. 2.4m) above the top of a waterfall. Roles (1970) noted that a female at Jersey Zoo carried hawthorn twigs to a wire nesting platform on a conifer branch, about 7ft (2.1m) above the ground. The female and her mate built the nest entirely of hawthorn twigs; oak and various other twigs lying in the aviary were left untouched.

Bare-faced Go-away Bird *Corythaixoides personatus*

In the wild. A round, loosely made stick nest in the fork of a tree, generally an acacia (Mackworth-Praed & Grant, 1957). "A shallow platform of loosely interwoven sticks, sometimes lined with rootlets and dry grass, in a fork or near the top of a tree, usually an acacia" (Fry et al. 1988).

In captivity. A wire platform designed for Threskiornithidae (Ibis and Spoonbills) has been used, with sticks and twigs being placed in the middle of the wire square, to make a poorly built nest (Gomis pers. comm. 2006).

White-bellied Go-away Bird *Corythaixoides leucogaster*

In the wild. A bare platform of sticks, which is usually almost transparent, some 10ft-20ft (approx. 3m-6m) from the ground (Mackworth-Praed & Grant, 1957). The nest is usually placed in the crown of a tall acacia tree. Friedman (1930) described the nest as a mere lattice of sticks, 10m (approx. 32ft) above the ground, near the end of a horizontal bough of a large thorn tree. Built of twigs and thorns, it resembles a large dove's nest and is so loosely constructed that an observer can look up through it and see if it contains eggs or young. Fry et al. (1988) described the nest as an untidy, thin and flat structure built of twigs, 3m-12m (approx. 10ft-32ft) above the ground in an *Acacia xanthrophloea* or other thorn tree.

In captivity. Isenberg (1993) found that the nest made by his birds was worse than the most loosely built dove's nest and as a result the eggs kept dropping out, until an artificial nest was woven for them using fruit tree twigs. At Houston Zoo a second nest platform (smaller than the first) contained a handwoven framework of dried vines over straw. This was fixed to the shelter wall a short distance below the older nest which contained only straw (Todd et al. 1985).

Western Grey Plantain-eater *Crinifer piscator*

In the wild. The nest was described by Fry et al. (1988) as a substantial platform of dry, thin sticks, that was some 30cm (approx. 11¾in) in diameter and 12cm (4¾in) deep. It was some 4m-l0m (approx. 13ft-32ft) above the ground in a leafy tree. *Khaya senegalensis* and *Acacia albida* have been used.

Eastern Grey Plantain-eater *Crinifer zonurus*

In the wild. Mackworth-Praed and Grant (1957) described it as a large nest of loose sticks and Fry et al. (1988) described it as a substantial nest made of sticks, built near the top of a tree.

Great Blue Turaco *Corythaeola cristata*

In the wild. The nest, generally built high in a tree, was described by Mackworth-Praed and Grant (1957) as a loose platform of small sticks, appearing ridiculously small for the bird. This was contradicted by Chapin

(1963), who noted that the nest of *Corythaeola* is the largest built by any turaco and is composed mainly of dry sticks, some of which may be nearly 1m (3ft 9in) in length. The nest is said to often be in the forked branches of a tree, some 20m (approx. 65ft) or more above the ground. Sites chosen though can vary in height from 10m-16m (approx. 32ft-52ft) and may be hidden in a clump of semi-parasitic mistletoe or in a creeper covered tree (Candy, 1984).

Fry et al. (1988) provided the most complete description of the nest, describing it as a well constructed to flimsy and insecure platform of dry sticks, measuring 31cm x 51cm (approx. 1ft x 1ft 8in) with a shallow rim. The base is made of sticks up to 61cm (2ft) long, with smaller twigs used to line the nest. It is constructed by both sexes usually over a period of a week, some 8m-25m (approx. 26ft-82ft) above the ground in a tall tree covered with creepers or in dense foliage and often in a clump of mistletoe. Old nests may be re-used. Payne (1977) described the nest as usually being a platform of dry sticks with a shallow rim, built by both sexes at 8m-25m (approx. 26ft-82ft) in a tall leafy tree. The nest is often over water.

In captivity. It is relatively rare, hence there is a lack of information on its captive breeding behaviour. It has been known to use nesting baskets and has used a natural nest site, using leaf material in a clump of *Cissus antarctica* (B. Macordes pers. comm. 2006).

The second part of the above article - Further notes on the White-cheeked Turaco T. l. leucotis - will be published in the next issue of the magazine. The author, Myles Lamont, Avian Manager, Hancock Wildlife Research Center, 19313 Zero Avenue, Surrey, British Columbia V3S 9R9, Canada, would like to hear from those aware of other reports of turaco nesting behaviour, either published or unpublished. E-mail:myles@ hancockwildlife.org

* * *

BATES'S FIREFINCH

Writing about additions to the London Zoo collection, Arthur Prestwich (A.A.P.), *Avicultural Magazine* Vol.53, No.5, p.191 (September-October 1947), listed among the "more interesting arrivals," Bates's Firefinch *Lagonosticta rubicata virata*, a bird new to the collection, from "Kulikoro, French Sudan." Described by Bates in 1932, it is, of course, now accorded full species status and known as the Mali or Kulikoro Firefinch *L. virata*. It was first bred in the UK by Ian Hinze, who described the breeding in the *Avicultural Magazine* Vol. 107, No.1, pp.27-34 (2001). Ian was subsequently awarded the society's medal for the first UK breeding of this West African firefinch.

BREEDING THE RUFOUS-COLLARED SPARROW *Zonotrichia capensis*

by Jim Jerrard

According Clements (2007) the Rufous-collared Sparrow *Zonotrichia capensis* has 28 subspecies, whereas Howard & Moore (1980) listed 25. Not surprisingly perhaps, it has a wide geographical distribution, being found from the highlands of southern Mexico southwards to Cape Horn. The four other members of the genus, the White-crowned Sparrow *Z. leucophrys*, White-throated Sparrow *Z. albicollis*, Golden-crowned Sparrow *Z. atricapilla* and Harris's Sparrow *Z. querula*, breed in North America.

The sexes of the Rufous-collared Sparrow look alike, so I was pleased to purchase a proven pair at the Stafford Show in spring 2006. During the summer of that year I had no luck with the pair, only clear eggs were laid - nine in all. So in September I caged the pair for the winter and fed the pair seed only until the following February. I then began to feed some livefood to the pair and, by March, the female was ripping up the paper covering the floor of the cage and the male was starting to sing.

On March 14th I put the two into a flight measuring 9ft x 3ft x 6ft (approx. 2.7m x 0.9m x 1.8m) and supplied them with dry grass, dog hair and sisal. On April 5th the female began to build in an open nest box, about 5ft (1.5m) above the ground. The first egg was laid on April 10th and was followed by a further two. The female began to incubate on April 12th and 10 days later two chicks hatched. The other egg was clear. The chicks were ringed (banded) at seven days old by my friend Sean Fitzpatrick and left the nest on May 3rd, aged 11 days old.

On May 6th, the female laid again and, on May 8th, was once more incubating a clutch of three eggs. As the male was continuing to feed the two young from the first nest, I left them with their parents. Unfortunately, they harassed the female while she was sitting and perhaps as a result of this, the eggs became addled and were abandoned on May 15th.

I removed the two young on May 17th. The female cleaned and relined the nest and laid again on May 24th - a further clutch of three eggs. All three hatched on June 6th and when the chicks were seven days old they were ringed by Sean Fitzpatrick. When they were 23 days old I removed them from their parents.

Following their removal, the female went to nest yet again, this time choosing a slightly higher nest site. There was a clutch of four eggs, which should have hatched on July 24th, but when tested on the 26th, proved to

be clear. Fortunately, I was able to use this to my advantage, as in the next flight a pair of buntings *Emberiza* sp.[1] were nesting and, that same day, I noticed some eggshells on the floor, one of which had a chick stuck to it. On inspecting the nest, I found it contained a chick and an egg. I left things as they were and went to get some livefood, however, on my return I found the remaining chick on the floor. It was cold, but by holding it in my cupped hands and using my warm breath, I managed to revive it.

I immediately transferred it and the remaining egg to the nest of the pair of Rufous-collared Sparrows, while doing so removing their clear eggs. When I checked the nest again less than half an hour later, I was delighted to discover that the buntings' egg had hatched and the nest now contained two chicks. The foster parents made quite a commotion, but all went well and both chicks were reared successfully. They were ringed at seven days old and left the nest at nine days.

It was the first time I have bred the Rufous-collared Sparrow, and I found the species very easy to cater for. The nests were very deep and the eggs were stony-grey, heavily blotched and streaked rusty red at the large end. In the past, when I kept this species, the eggs that were laid were similar in coloration to those of the Blackbird *Turdus merula* (i.e. usually bluish-green or greenish-blue speckled and mottled light reddish-brown). My Rufous-collared Sparrows are very lively birds but are shy and would leave the nest and hide when I entered the flight, as did the young. The latter had brown backs, grey underparts heavily streaked with brown and lacked the rufous collar and well defined head markings. The five Rufous-collared Sparrow chicks and the two bunting chicks the pair fostered were all reared on buffalo worms, small crickets and, after the first week, waxworm larvae. The young of both species were ringed with I.O.A. rings size D.

[1] *The identity of Jim Jerrard's buntings has been the subject of a number of letters between the two of us. He is convinced that his birds are Somali Golden-breasted Buntings E. poliopleura, but I am not so sure and think it more likely that they are the more wide-ranging Golden-breasted Bunting E. flaviventris. A colour photo of the buntings can be seen in the Avicultural Magazine Vol.111, No.4, p.162 (2005). If they prove to be the Somali Golden-breasted Bunting, he will be the first person in the UK to have bred this species.- Ed.*

Jim Jerrard, who lives in south Yorkshire, here in the UK, would like to hear from anybody who breeds foreign buntings. He can be contacted via the Hon.Editor.

PARENTAL BEHAVIOUR BY TWO PAIRS OF GUAM MICRONESIAN KINGFISHERS *Halcyon cinnamomina cinnamomina*

by Jennifer J. Elston, Christy Sky, Glorieli Quinones, Jennifer Carney, Chelle Plasse and Tammie Bettinger

Introduction and background

Historically, the Guam Micronesian Kingfisher *Halcyon c. cinnamomina* - hereafter referred to as the Micronesian Kingfisher - existed throughout the forested regions of Guam[1] (Fry et al. 1992). The population of this subspecies was decimated following the unintentional introduction of the Brown Tree Snake *Boiga irregularis* to the island and by 1986 the Micronesian Kingfisher was extinct in the wild (Savidge, 1987; Wiles et al. 2003). Today, the Micronesian Kingfisher survives only in captivity as part of a captive propagation programme. The birds are spread among 11 institutions in the USA and one on Guam (Bahner, 2006). The goal of the propagation programme is to increase the population through captive breeding for release in the future on Guam or other appropriate sites (U.S. Fish and Wildlife Service, 2004).

Despite the accomplishments of the programme in keeping this subspecies alive, breeding the birds in captivity has presented challenges, including that of the failure of the parents to rear their offspring (Bahner et al. 1997), resulting in the majority of offspring being hand-reared (Bahner, 2006). The hand-rearing protocol has been instrumental in increasing the population of Micronesian Kingfishers, because chicks that may otherwise have perished through parental inexperience or neglect, have survived by being hand-reared. In addition, when their eggs are removed from the nest, the females lay a further clutch (Oehler, 1990), so maximum egg production can be encouraged during the breeding season. As a result of the extensive need to hand-rear the chicks, little is known about the parental behaviour of the Micronesian Kingfisher. A larger more stable population of these birds needs to be established in captivity before reintroduction attempts occur, and information regarding parent-rearing behaviour is necessary so that avian managers can feel confident that these birds are sufficiently able to care for their offspring. Parent-rearing experience gained in captivity may better prepare the birds for reproductive success in the wild (Wallace, 1994).

During the 2005 and 2006 breeding seasons, we had the opportunity to study parental activity by two pairs of Micronesian Kingfishers housed at Disney's Animal Kingdom, Lake Buena Vista, Florida, USA. Our

objectives were to record the frequency and duration of parental visits to the nest log during incubation and nestling periods and to establish a preliminary database documenting parent-rearing behaviour by the Micronesian Kingfisher.

Materials and methods

Subjects and housing

Two pairs of Micronesian Kingfishers were housed in separate off-display, outdoor aviaries. Both pairs had visual access to other birds in the facility, but did not have visual access to other Micronesian Kingfishers. Other birds in the facility, including additional Micronesian Kingfishers, were audible. The aviaries measured 6m x 6m x 2m (approx. 20ft x 20ft x 6ft 6in) and 6m x 3m x 2m (approx. 20ft x 9ft 9in x 6ft 6in) and each contained two or three decayed queen palm logs that could be used for nesting.

One pair of Micronesian Kingfishers (a mature pair) consisted of a seven year-old parent-reared male and a six-year old hand-reared female. The pair had resided together for two years. Neither bird had prior experience of parent-rearing a chick, but had previously incubated and hatched an egg in 2004. The 2004 chick was removed from the log three days after hatching and hand-reared, after it was determined that the chick was not gaining weight. The second pair of Micronesian Kingfishers (a novice pair) was hatched and hand-reared at Disney's Animal Kingdom in 2004. At the time of the study, the two birds were approximately two years old. The pair had been housed together since fledging and had no prior experience of breeding.

During reproductive periods food was provided ad-lib at least four times a day. The diet consisted of pinkie mice, anoles, crickets, large mealworms, superworms and waxworms (Crissey and Toddes, 1997). Vitamin E (Roche, Nutley, New Jersey, USA) and chitin (Fisher Scientific, Pittsburgh, Pennsylvania, USA) supplements, manufactured in powdered forms, were also offered to the birds daily in 2cm (¾in) plastic capsules that were inserted in the pinkie mice or anoles (one capsule per bird each day). Vitamin E was provided to enhance fertility and chitin was supplied in order to replicate the insect exoskeletons in the natural diet. Supplementation ceased when offspring were present in the nest log to avoid the risk of a chick choking if an adult attempted to feed a capsule to it and resumed after the chicks fledged. Because the aviaries are outside a variety of natural foods, including insects, anoles, frogs and toads, were also available.

Mature pair

In July 2005 the mature female produced her third clutch of the season, consisting of two eggs. The eggs from the previous two clutches had been

Christy Sky

Female Guam Micronesian Kingfisher chick aged 27 days in nest log.

removed from the nest log for the chicks to be hand-reared. In the case of the third clutch, one egg was removed so that the chick could be hand-reared and the second egg was left with the parents to incubate. Daily video recordings were made at the nest log from the day the chick hatched until it fledged. The chick was weighed when the opportunity arose up until day nine, when its size and behaviour made it difficult to remove it from the nest log.

In early summer 2006 a bullet camera was inserted inside the cavity the pair had excavated in the nest log. In June 2006 the mature female produced her third clutch of two eggs inside the nest log. Similar to the 2005 breeding season, the eggs from the previous two clutches were removed from the nest log for the chicks to be hand-reared. With this clutch, however, one egg was removed for the chick to be hand-reared and the other egg was left in the nest log for the pair to incubate. All parental activity inside the nest cavity during the day was recorded. The chick was weighed when the opportunity arose up until the time it was removed from the log to be hand-reared. Because the chick was removed from the log, data were recorded only for the incubation and early brooding periods.

Novice pair

In July 2006 the novice female produced her fourth clutch of the season, which consisted of two eggs. The eggs of the previous three clutches had been removed from the nest log for the chicks to be hand-reared. With the fourth clutch, one egg was left in the nest log for the pair to incubate and the other egg was removed for the chick to be hand-reared. Video

recordings were made at the nest log from the day the chick hatched until it fledged. It was weighed when the opportunity arose until day 10, when its size and behaviour made it difficult to remove it from the nest log.

In August 2006 the novice female produced her fifth clutch. It consisted of a single egg and the pair was given the opportunity to incubate it. Daily video recordings were made of all parental interaction at the nest log. The egg was hatched successfully and the chick was weighed when the opportunity arose, up until the time that it was removed from the nest to be hand-reared.

Data collection

All video recordings were made using VCRs between approximately 06.30-20.30hrs. Tapes were scored for all behaviours (behavioural sampling: Martin & Bateson, 1993) exhibited by the birds while at the nest log (see Table 1), as well as the number of visits to the log, the time of the visits, length of the visits and the sex of the bird. During the 2006 incubation and nestling periods the daily temperature and relative humidity were recorded by HOBO data loggers (Onset Computer Corporation, Bourne, Massachusetts, USA) that were positioned on the outside of each pair's nest log. After fledging the young birds were sexed based on feather coloration (i.e. males have a cinnamon coloured breast; females have a white coloured breast) and feather/tissue analysis (Avian Biotech International, Tallahassee, Florida, USA). Egg and chick data for both pairs during the 2005 and 2006 breeding seasons are presented in Table 2.

During incubation periods a total of 269.5 hours of video was recorded for the mature pair (June 2006) and a total of 239.3 hours of video for the novice pair (August 2006). During nestling periods a total of 274.8 hours of video was recorded for the mature pair (July 2005) and a total of 337.6 hours of video was recorded for the novice pair (July 2006). Food provision was not scored for the mature pair, because the position of the camera made it difficult to observe whether a bird had food in its beak when it arrive at the nest log.

Results

Incubation and early brooding periods

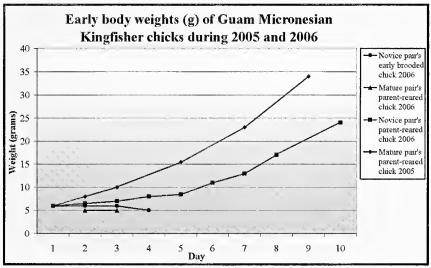
Mature pair - July 2006 and novice pair - August 2006

There was some variation between the two pairs in the percentage of time birds spent in the nest log per day during the incubation period (see Table 3). Birds spent time in the nest cavity throughout the day and on average fewer than 15 minutes elapsed without a bird being present in the nest log. Both pairs hatched their chicks after an incubation period of 25 days. The bullet camera in the mature pair's nest log made it possible to determine that the chick began hatching in the morning at 09.07hrs and

36.2 minutes later the majority of the chick's body was freed from the shell.

Staff determined that each pair's chick was not gaining weight after hatching (see graph below). As a result, the mature pair's chick was removed from the nest log on day three and the novice pair's chick was removed for hand-rearing on day four. During the first few days after the chicks hatched and before they were removed from the nest logs, the mature pair and the novice pair spent a large amount of time in their nest logs (85.46% and 72.13% of time per day, respectively). In addition, both pairs made visits to their chick during this time (the mature pair 4.37 visits per hour; the novice pair 2.83 visits per hour), however, food provision was observed only twice in the case of the mature pair and three times in the case of the novice pair. Both chicks were females. The average daily temperature was 26.6°C (79.9°F) and the average relative humidity was 81.3% during the incubation and early brooding periods.

Fig. 1. Both parent-reared chicks fledged from the nest log and both early brooded chicks were removed from the nest log for hand-rearing at three and four days old.



Nestling period

Mature pair - July 2005 and novice pair - July 2006

The mature pair's chick hatched after an incubation period of 23 days and the novice pair's chick after an incubation period of 24 days. Keepers provided a small amount of supplementary food (chopped pinkie mice) once a day for the first two days after hatching for the mature pair's chick and for the first eight days after hatching for the novice pair's chick. Both chicks gained weight steadily during the first few days after hatching (see graph).

The mature pair entered the nest log on day one of the chick hatching, however, only the female was observed entering the nest log after the first day and neither bird was observed entering the nest log after day four.

The novice pair entered the nest log on day one of the chick hatching and continued to enter the nest log until day nine. Both pairs made chick visits throughout the day. On average these occurred more than once per hour and lasted fewer than 10 seconds (see Table 3). The mature male and female made an equal number of chick visits during fledging (0.82 visits per hour), however, the novice female made approximately twice as many chick visits as the novice male (1.03 vs 0.44 visits per hour, respectively). When food provision occurred, parents presented whole items of food to the chicks. Both pairs began drilling new holes in their nest logs before the chicks had fledged. The mature pair's chick fledged at 31 days and was a male. Seventeen days after fledging it weighed 60.0g. The novice pair's chick was a female. It fledged at 33 days and weighed 65.2g on the day of fledging. The average daily temperature was 28°C (82.4°F) and the average relative humidity was 69.1% during the 2006 nestling period.

Discussion and conclusions

Incubation of the eggs and care of the chicks was undertaken by both sexes, which signifies the importance of the participation of both parents in the incubation of the eggs and the survival of the chicks. This finding is similar to the natural behaviour recorded for other species of kingfishers in the wild, in which male and female kingfishers are monogamous and both participate in the excavation of the nest cavity and the rearing of the chicks (Davis & Graham, 1991; Fry et al. 1992). Oehler (1990) reported the participation of both sexes in parental care by three different species of kingfisher in captivity. Even though the novice male visited the nest log less frequently than his partner during the nestling period, he was comparable to the female in providing food for the chick when he did visit the nest log (35.37% of visits by the male vs 28.94% of visits by the female), indicating that he was sharing responsiblity for care of the chicks.

During the incubation phase, birds spent on average fewer than 15 minutes between visits. Because predation pressure was absent and external disturbance (e.g. weather and humans, etc.) were miminal, the relatively continuous time spent in the nest cavity may reflect the importance of maintaining the proper temperature for the successful incubation of the eggs. During the nestling phase, both pairs visited the nest log slightly more than once per hour on average. Because chick visits occurred throughout the day, it is important that food sources are readily available so that parents can provide for their chicks.

Despite some variation between pairs regarding the percentage of time spent inside the nest cavity during the incubation periods in 2006 (mature pair's third clutch and novice pair's fifth clutch), both pairs successfully

hatched their chicks, indicating that the amount of time each pair spent inside their nest log was sufficient for successful hatching to occur. However, even though both pairs successfully incubated and hatched their eggs and were observed visiting their nest logs and brooding their chicks, the decision was taken to remove the hatchlings for hand-rearing because of the lack of weight gain during the first few days after hatching. In both instances in which the parents successfully reared their chicks, far less time was spent inside their nest logs after the chick hatched than during the occasions when it was necessary to remove the chicks for hand-rearing. It appears that in both of the latter cases the parents failed to switch their roles from incubation/brooding to more actively caring for the hatchlings (i.e. food provision). In the case of the Micronesian Kingfisher, there are probably many factors that contribute to the ultimate success or failure of a clutch, and successful incubation and/or fledging of offspring by a pair during one attempt does not always mean that the pair will be consistently successful in future reproductive attempts.

This study provides evidence that hand-reared birds can successfully incubate and hatch their own eggs and parent-rear their own offspring, which is encouraging for the propagation programme and future plans for reintroduction to the wild. However, when a pair is given the opportunity to parent-rear a chick, regardless of the individual parents' own parent- or hand-rearing background, or even their previous success at rearing chicks, careful monitoring of the chick should occur and supplementary feeding by keepers may sometimes be necessary. Although the sample size of the study was small, it provides information that can be used when giving pairs the opportunity to incubate their own eggs and rear their own offspring.

Table 1. Ethogram used during the reproductive periods 2005 and 2006.

Behaviour	Description
Entered nest log	Bird moved its entire body through the entrance hole and into the nest log.
Chick visit	Bird landed at nest log entrance hole and placed its head inside the hole; maybe accompanied by shaking of the body; occurred when offspring was present inside log.
Food provision	Visit made to the chick by a parent with an item of food visible in its bill and the food was deposited inside the nest log.
Drilling [1]	Bird flew at nest log and struck it one or more times with its bill.

[1] Adapted from Bahner et al. 1997.

Table 2. Egg and chick data 2005 and 2006.

Pair	Year	No. of clutches	No. of eggs[i]	No. hatched	No. fledged[ii]	Success rate[iii]
Mature pair	2005	7	12 (1)	4	4 (1)	33.33%
Mature pair	2006	5	8 (1)	4	2 (0)	25.00%
Novice pair	2006	5	9 (2)	7	6 (1)	66.67%

[i] Number in parentheses indicates number of eggs incubated by parents.
[ii] Number in parentheses indicates number of parent-reared offspring.
[iii] Number fledged/number of eggs.

Table 3. Parental activity during incubation and nestling periods 2005 and 2006.

Activity	Mature pair	Novice pair
Incubation periods 2006		
Average percent of time spent inside nest log per day	62.34	45.48
Average length of time spent inside nest log per visit	16.76mins	12.53mins
Average length of time between nest log visits	9.75mins	13.97mins
Nestling periods 2005 and 2006		
Average percent of time spent inside nest log per day[1]	28.06	24.59
Average number of chick visits per hour	1.79	1.50
Average length of chick visits	5.85secs	3.97secs
Percent of chick visits that food was provided		30.58

[1] Refers to the four days after the mature pair's chick hatched and the nine days after the novice pair's chick hatched.

Acknowledgements

We wish to thank the Aviary Team and Animal Research and Technology Team at Disney's Animal Kingdom for their cooperation during this study. Special thanks are extended to Cheryl Tybor for video recording and care of the birds, Jennifer Gaudio and Ginger Stanley for project support and Sue DuBois for assistance with video equipment. Christy Sky took the photograph.

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[1]*The island of Guam is about 30 miles (48km) long and 4 miles (6.4km) to 10 miles (16km) wide. It is a US territory in the Mariana Islands and is about 1,300 miles (2,100km) east of the Philippines. The Clements Checklist of the Birds of the World, Sixth Edition (Christopher Helm, 2007), lists the Micronesian Kingfisher as Todiramphus cinnamominus cinnamominus. - Ed.*

GOLDIE'S LORIKEET: HAND-REARING AND PARENT-REARING

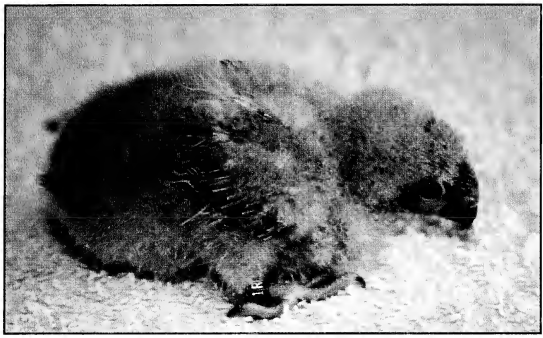
by Rosemary Low

During the 1970s many species were imported that previously were virtually unknown in aviculture and while importations continued and some breeding successes occurred, they were popular and easily acquired. However, numbers gradually, almost imperceptibly, declined until, at the end of the 1990s, people were asking: "Whatever happened to...?" Goldie's Lorikeet *Trichoglossus goldiei* fell into this category but, fortunately, it is one of the species that is making an avicultural recovery in Europe. It originates from New Guinea, where is occurs in the main central mountain ranges up to 8,500ft (approx. 2,500m). An ideal avicultural subject because it is small, quiet, relatively inexpensive and a free breeder, it will nest in a cage or aviary, indoors or outdoors. What more could one ask?

Our late member Stephanie Belford imported the first commercial consignment into the UK in 1977. There were 30 birds and, under her care, every one survived. The three pairs Bob Grantham and I bought from her each took one year to enter a nest box! This is unusual for lorikeets who normally roost in their nests. The first UK breeding occurred in 1979 and mine first reared young in 1980. Today many breeders fail to realise there were certain difficulties associated with breeding wild-caught birds - from Australian parakeets to lorikeets - notably that they were very choosy over nest sites.

I will now fast-forward nearly 30 years to March 7th 2007, when due to the sad death of the owner, a pair of Goldie's Lorikeets arrived at my home at quite short notice. I had been told there was a chick or chicks in the nest box. Inspection revealed a downy little chick, with its eyes closed, that I estimated to be 11-12 days old. It weighed 20g. I could not take the risk of leaving it in the nest box in case due to the strange surroundings the pair might fail to re-enter the nest box. I placed the pair in a totally covered aviary measuring 8ft long x 4ft wide (2.4m long x 1.2m wide) in a very sheltered position. The pair seemed to settle down very quickly and within two hours had eaten a piece of pomegranate from a fruit holder and consumed the nectar.

The chick was placed in a brooder with the temperature set at 94°F (34°C). It was in a small container on a bed of tissues below which was a facecloth; the tissues were packed around it as, of course, it was used to the feeling of being brooded by the female. (After a few days it was moved into a 8in (20cm) wide tub.)



© Rosemary Low

At 24 days (and weighing 34g) the chick's tail feathers were starting to erupt.

© Rosemary Low

Aged 28 days.

It fed readily from a teaspoon with bent sides. The first couple of days I fed it every two hours between 6.15am-l0.45pm. The food consisted of a fairly thin solution of Nekton Lory. After two days the food was changed to Lory CéDé which makes up to a slightly thicker food. This was offered every 2½ hours. Throughout the rearing period a pinch of Nekton MSA was given at one feed daily. This is my favoured source of calcium, minerals and amino acids for growing parrot chicks.

For the purpose of this article I am assuming that the chick was 12 days

old when I received it. Three days after it arrived I ringed (banded) it with a size N (5.35mm) ring. I think this is slightly too large for Goldie's Lorikeet but size M (4.4mm) would probably have been too small.

By day 18 the chick's eyes were wide open. This usually occurs several days after the eyes start to slit. By day 19 green feathers were starting to erupt on the breast and sides. Two days later its ears were just open (though difficult to discern). There was a red blush on the forehead where the feathers were developing and prominent wing quills that had not yet emerged. By day 23 it was quite thickly covered with grey down and the growing tail feathers were just visible. The forehead and cheeks were dark with growing feathers.

By day 25 its underparts were one third feathered and the red feathers on the forehead were starting to erupt. Growth of the wing and tail feathers was then rapid. By day 28 the underparts were half covered with striped feathers but most of the upperparts were still very downy. By day 30 it was flapping its little wings and its nails were very sharp and useful for clinging on. I suspect that in the wild chicks might start to climb towards the nest entrance at this stage.

It was just over 4in (11cm) in length and its tail measured nearly lin (2cm) in length by day 33 and it was calling to be fed even before its crop was empty. It had grown too large for the tub and was free to move about in a large plastic container - within the brooder - with a floor of very small gauge soft plastic mesh. At this age it was extremely appealing with its big dark eyes and pretty markings.

By day 36 its underparts were fully feathered and the violet feathers of the forehead were erupting. It had started to preen itself. A couple of days later it would run about when removed from the brooder. The nape was still downy and conspicuously bare of feathers and this also applied to the area under the wings. By day 42 it was fully feathered except for the nape, although down protruded through the wing feathers. It was perching on a small twig. On day 43, when it was taking nectar from a small, very shallow container on the floor of the brooder, it was moved to a small cage. From now on I will refer to the young lorikeet as her, as the bird's low peak weight and small beak suggested to me that the bird was of the gentle sex and, she had too much personality, to be thought of as "it".

Rearing this little bird was almost a new experience for me. At one time I had 24 consecutive years of hand-rearing parrots. At times it was intense and very hard work, along with the other tasks of running a collection. During the past 11 years I had hand-reared only about a dozen chicks and none since 2000. I thought I had put away my spoon forever, partly because I had virtually stopped breeding from my pairs and because my attitude to

hand-rearing has changed to the point where I consider it advisable only to save the life of a healthy chick. To be able to focus on a single chick and to watch very closely its development - physical and psychological - was interesting and rewarding.

Awareness of her surroundings came first, then the desire to climb. The next stage (at 38 days) was running when placed on a flat surface. At 40 days came the need to flap her wings and to test surfaces with her tongue. At 43 days she started to preen herself. At 45 days she was "*cheeping*" and wanting to fly. The next day she took off and the following day she flew to me and landed on my head. Within two more days she could control her landings perfectly and fly very strongly. Small lorikeets fly very fast and presumably have to learn quite quickly to keep up with the flock when it is on the move visiting food trees. Contrast this with larger parrots which are at first quite clumsy in flight and take a while to learn how to control their landings. After mastering the art of flight she liked to sit in a hibiscus plant and nibble at its leaves. It was not until day 55 that she roosted on a perch at night.

It was a wrench to part with the young Goldie's Lorikeet at the age of nearly eight weeks. She was weaned and I was going away two days later. She was becoming too attached to me and needed a new home where she could be with others of her own species. She loved to fly but after a couple of circuits of the room she would return to me like a boomerang and perch on my head. If she perched up high (on a pelmet or light shade), she would fly down when I called her.

I wanted her to lead a normal life with her own species. Fortunately, someone I knew had two Goldie's Lorikeets fledge just before she was weaned. As he is that rarity, one of the few breeders intent on setting up more pairs, rather than selling the young, I agreed that she should go to a small aviary with these two youngsters

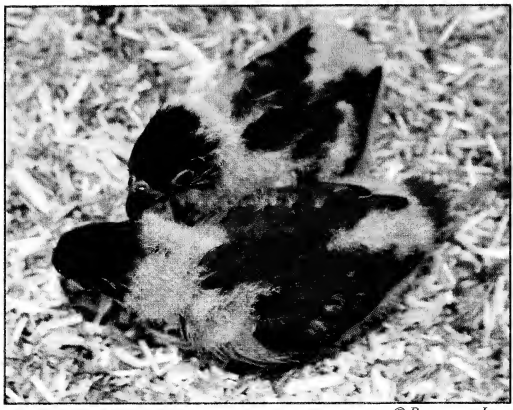
Meanwhile, the adult female of my pair laid the first of two eggs on March 26th. On April 9th a ball hit the aviary by the nest box and the female deserted. I gave one of the two eggs to an incubating Stella's Lorikeet *Charmosyna papou stellae* but after three or four days it had gone. About three weeks later the female Goldie's Lorikeet laid two more eggs. They, too, were deserted and I suspected that the larger lories living nearby were making them nervous.

On May 17th I moved the pair of Goldie's Lorikeets to a small 'detached' aviary with a fence and a buddleia behind it. The female laid again at the end of June. After incubation commenced it was rare to see the male or female outside the nest box. However, on July 21st the male was out of the nest, trying to attract my attention by nibbling at a piece of

Aged 36 days. Note especially the pin-feathers on the head.

At 50 days old it still had some down.

the previous day's Chickweed *Stellaria media*. I guessed he was trying to tell me he needed more greenfood and possibly a more varied diet. The chicks must have hatched! I found him some Chickweed, seeding grasses and a golden flowering head of Smooth Hawk's Beard *Crepis capillaris*



Parent-reared chicks at 34 days. One weighs 51g and the other 60g.

The day before they left the nest. The difference between the male (right) and female (left) is apparent by the size and colour of the head. Note also that young birds have a pale coloured cere.

from my garden. Dandelions *Taraxacum officinale* had temporarily halted flowering and although hawk's head beard contains less pollen, the flowers were eagerly accepted

I cautiously checked the nest the next day, when both birds were out and found two very small chicks covered in white down. Within about five days both adults were eating quite a lot of seeding dock *Rumex* sp. at the green stage and millet spray. (When the young fledged they lost

interest in seeding dock but, with the young, eagerly consumed Chickweed, Dandelion flowers and spray millet.) I started to give them a little Nekton Lory as well as the usual nectar mixture. All of my lories get small cubes of Madeira cake, some sweet corn kernels daily and a few soaked sultanas a couple of times a week. All of these items were readily eaten by the Goldie's Lorikeets along with the nectar.

I knew nothing of the breeding history of this pair, other than the fact that the pair had fed the single chick for up to about 12 days, which was when the pair and the chick were moved to my aviaries. I was therefore quiet and rapid with my nest inspections every four days or so, which were carried out only when both parents had left the nest. When the chicks were about nine days old I removed the wet nest litter from the corners of the nest and replaced it, leaving intact the dry litter on which the chicks were resting. I did not touch them.

Two days later I removed the chicks and changed more of the litter, and ringed (banded) the largest, although there was little difference between them in size. I deliberately ringed it a day or so early, so that if the female took a dislike to the ring she could remove it without injuring the chick's foot. For the same reason I ringed only one of the chicks. I normally have no qualms about ringing chicks but without knowledge of the pair's breeding behaviour, I was cautious. The female has a silver coloured ring on her left leg so she is familiar with rings. Two days later the chick's ring had come off so I ringed it again and, on August 5th, ringed the second chick, noting it had no food in its crop. The grey second down was then tinged with yellow at the tip. On August 11th the ring had come off so I re-ringed the chick - just in time. The parents showed no concern when I removed the chicks to clean out the nest - and carried on feeding on dock.

The parents were especially keen on consuming pollen-filled blossoms such as Dandelion, which were again available, and on eating Chickweed and seeding dock. They became quite vocal when they saw me, apparently inviting me to give them different foods. They were spending quite a lot of time out of the nest, as the weather had become warmer (after a long cool, wet spell).

By mid-August they entered the nest only to feed the chicks, and at night. In the evening I often saw them nibbling at the leaves of a passion flower *Passiflora* sp. that grew over the front of the aviary. This was interesting because they were not short of seeding dock. I was handling the chicks every second or third day when I changed the litter in the corner of the nest box. On September 7th the young ones weighed 59g and 65g and started to climb up the aviary mesh when I put them on the floor! The parents, who were normally nonplussed when I handled their chicks, were

very concerned and started to climb down to their young, so I quickly put them back.

The first young one left the nest on the morning of September 10th. It was flying and perching well. At dusk I returned it to the nest box but it would not stay there with its sibling, so I placed it in the small shelter where it stayed for the night. Early the next morning the second young one fledged. The day was sunny, the sky clear and the night was set to be cool, so I tried unsuccessfully to return the young one to the nest and to place it in the shelter. I was worried about it - especially when my next-door neighbour started a bonfire at 9.00pm close to the aviary. Thankfully, the next morning all was well.

By September 17th both young were nibbling at apple. A couple of days previously they had started to spend a lot of time in the shelter with their parents, so they might also have been taking nectar, although the parents were still feeding them. None of the family went near the nest box after the second youngster fledged, which is unusual behaviour for lorikeets. At night they slept on a perch with overhead cover.

Some days before they fledged I knew that the oldest was a male and the youngest was a female. The male had a larger head and beak and slightly more extensive red on the forehead. With adults the head and beak of the male are usually larger and he generally has more extensive red markings on the head.

At the time of writing (October 31st 2007) they are still with their parents - and I intend to leave them there indefinitely. I could spend hours watching this delightful family group. Observing the interactions between individual birds and their young at play is, for me, the most rewarding part of aviculture.

Postscript

On November 13th when they were moved indoors for the winter their weights were as follows: adult male 58g, adult female 53g, young male 52g; the young female was not weighed.

NEWS FROM WALSRODE

In 2007 the first attempts were made to set-up a gull colony in one of the large flight aviaries. Walsrode started off with 11 Grey-headed Gulls *Larus cirrocephalus* and two Mediterranean Gulls *L. melanocephalus*, two species which exhibit classic colony-based breeding behaviour. In the past it had been reluctant to display large groups of gulls due to their copious and corrosive droppings. However, the liveliness of the birds and the fact that visitors are able to observe their natural behaviour, outweigh the fact that some boulders have white blotches that are difficult to remove, along with the realisation that these are as much part of life in a gull colony as the loud calls and lively intrigues between pairs.

Staff had fairly high hopes that such a large group of birds would breed and increase in numbers and, the first eggs were laid early, but shortly thereafter went missing and later clutches also disappeared without trace. They wondered if this problem might have been due to a Weasel *Mustela nivalis* and carefully observed the colony to rule out the fact that the gulls may have been stealing each others eggs. To their surprise, the culprits proved to be two young Siberian Cranes *Grus leucogeranus* sharing the exhibit with the gulls. Each day the cranes would swim to the gull colony and systematically 'sweep' the ground for fresh eggs. Staff only managed to secure a few eggs before the end of the breeding season, but having identified the culprits, will be better prepared this year. The concept of a gull colony has proved popular with visitors and gulls alike.

Until now Walsrode's pair of Congo Peafowl *Afropavo congensis* had restricted breeding status within the EEP (European Endangered Species Programme) studbook and as such was not allowed to breed due to risks related to inbreeding. Instead the pair was given chickens' eggs to hatch and was allowed to rear the chicks as a form of enrichment and to keep the pair in practise in case it might be required to foster young of another pair of Congo Peafowl or some other species. The most recent edition of the studbook, however, takes into consideration the fact that very few founders now remain and it is unlikely that new bloodlines from the wild will become available. This year, therefore, the pair will be allowed to breed and staff at Walsrode are hopeful that the pair will produce fertile eggs and healthy chicks. Within the captive population, a number of problems occur, all likely related to inbreeding. These include poor feather quality, poor fertility and the tendency for chicks to suffer from metabolic bone disease. The recent diagnosis of type A diabetes in a male Congo Peafowl at Walsrode is also of concern. It is the first time that this mainly inherited disease has been diagnosed in a Congo Peafowl.

The Crested Guineafowl *Guttera pucherani* produced quite a few chicks in 2007. Walsrode's birds have the characteristic face and neck coloration of the nominate subspecies *G. p. pucherani*, sometimes called the Kenya Crested Guineafowl, but consistently have a black collar, a characteristic of other subspecies such as *G. p. verreauxi* and *G. p. barbata*. It is unclear whether Walsrode's birds represent a colour morph, originate from a population in which two subspecies had intergraded, are a previously unrecorded geographical variant, or there is some other explanation. Walsrode's Crested Guineafowl can be traced back to birds imported from Kenya in the 1960s. They were identified originally as *G. edouardi granti* (a subspecies found in eastern Tanzania) but later the taxonomy was reviewed and this subspecies was renamed *G. pucherani granti*. Following a further review *granti* is no longer recognised as a valid subspecies. Walsrode Birdpark also has Vulturine Guineafowl *Acryllium vulturinum* and tries to simulate their behaviour in the wild by keeping them in a group outside the breeding season and letting pairs form within the group and then isolating them in a separate aviary in April or May depending on the weather.

The Laughing Kookaburras *Dacelo novaeguineae* reared two single chick clutches in 2007 and as expected the chick from the first clutch assisted in rearing the second chick. By keeping these birds in such groupings as opposed to only in pairs, Walsrode hopes to present this interesting kingfisher in a much more active and dynamic fashion. The difficulty for the keepers, however, is to determine when it is time for the young to be removed in order to avoid aggression. Once a bird has been away from the group for more than a few days it is impossible to reintroduce it back into the group. Therefore, if a bird is removed for treatment its isolation is likely to become permanent until a new home can be found for it in another collection.

The Hoopoes *Upupa epops* reared their first clutch unnoticed in a nesting chamber that was intended for the Carmine Bee-eaters *Merops nubicus*. The latter failed to breed successfully in 2007, probably due to the rather skewed sex ratio within the colony, rather than the presence of the Hoopoes. In the aviary there are a number of very old male Carmine Bee-eaters, several of which are almost 20 years old and no longer breeding. It seems that males live longer than females and these old males spend a good deal of time harassing younger pairs that are attempting to breed. This year the colony has been split up into a bachelor group and a breeding group with an even sex ratio.

A pair of Horned Guans *Oreophasis derbianus* arrived from Mexico as part of an international breeding project. After release from quarantine

the two birds proved to be a very compatible pair. The pair is housed in one of the off-exhibit breeding complexes. Thanks to donations the Walsrode Birdpark Foundation has been able to commit to a parallel *in situ* conservation project, for at least the next five years, to benefit this Endangered species in the wild.

Six Black Munias *Lonchura stygia* were received from a breeder in Flensburg, Germany. This New Guinea species is under threat in the wild due to habitat loss. The Black Munia is rare in aviculture in Europe and Walsrode is pleased to have found a dedicated breeder of this species. All of the birds arrived closed ringed (banded) and with exemplary documentation.

On a Sunday evening in October 2007, it became clear that Walsrode would have to say goodbye to one of its oldest and most charismatic cranes. The old female Hooded Crane *G. monachus* had been suffering from age related gout for sometime and was no longer able to stand. So the difficult decision was taken to put her down for humane reasons. Several keepers share fond memories of this old and rather eccentric bird. She must have been at least 40 years old, as she was already in adult plumage when she arrived at Walsrode unexpectedly in a shipment of Demoiselle Cranes *Anthropoides virgo* from Mongolia in 1969. She was for a long time the only Hooded Crane in Europe. After considerable effort, a male was brought in from the USSR in 1987 and the following year the pair produced a chick. It was possibly the world's first captive breeding of this species.

In 2007 Walsrode Birdpark again reared Hooded Cranes and now has a third generation. In Europe Hooded Cranes are currently kept only at Walsrode and in one zoo, whereas in North America, the breeding programmes for this small crane are more successful and it is kept in at least 10 zoos.

Madagascar programmes

Walsrode Birdpark has been involved in projects with the unique avifauna of Madagascar for more than a decade. Staff first travelled to Madagascar in 1998 and there have been expeditions to Madagascar most years since then. An aim of the Madagascar programmes has been to collect founder stocks of species that have never before been maintained in captivity. Establishing captive populations at both the zoo at Tsimbazaza in Madagascar and at Walsrode in Germany have helped provide valuable information about several little known birds, as well as creating safe populations in case of ecological disasters in their natural but endangered habitats. All birds have been collected as young or even at the egg stage, ensuring that the minimum impact is made on the wild populations.

All three species of couas or silky-cuckoos at Walsrode Birdpark bred successfully in 2007. The Crested species *Coua cristata* first arrived at Walsrode from Madagascar in 1998, since when more than 60 young have been reared and distributed to zoos around the world. The propagation of the Blue species *C. caerulea* has proved considerably more difficult. Between 2003-2006 only a single chick was successfully reared to independence. Following a review, a few changes were made in 2007, including higher brooder temperatures and the use of bee larvae in the rearing food, which may have provided the solution, as following the changes eight young were reared to independence. After several infertile clutches the Giant species *C. gigas* finally produced a fertile egg last year and the youngster was hand-reared in the nursery. It is the first of its species to be reared in captivity and as the captive population consisted of just two males and a single female, it was hoped that it would turn out to be a female, but unfortunately it turned out to be a male. The breeding success does though provide hope that this impressive cuckoo can be bred again in the future.

One of the main species in Walsrode's Madagascar programmes is the Crested Ibis *Lophotibis cristata*. Eleven were reared in 2007 and will be integrated into the international breeding programme that is managed by Walsrode Birdpark. Madagascar Crested Ibis hatched at Walsrode can be seen in zoos around the world and breeding success has been achieved in the USA, Switzerland and Japan. Hand-reared birds from Walsrode, whose parents were hand-reared in Madagascar, have successfully reared their own young. A third generation of this species is now breeding in captivity and hopes are high that it will become firmly established in captivity.

As well as collecting endemic species, the Madagascar expeditions have also been involved in *in situ* conservation efforts aimed at conserving the Madagascar Pond-Heron or Madagascar Squacco Heron *Ardeola idae*, financing research on this species which is believed to be threatened by the invasion of the closely related African Pond-Heron or Squacco Heron *A. ralloides*. Since the arrival on Madagascar of the first humans about 2,000 years ago, the landscape of this once completely forest covered island has been continually changing and becoming a more open habitat that may favour the African species. Recently there were the first indications that the two species might be hybridizing in the wild. Therefore, a small number of young were collected in 2003 from nests attended by Madagascar Pond-Herons in one of the last colonies where this species is known to breed. They were brought back to Walsrode and later started to breed. However, based on morphological and genetic studies it is now obvious that some of these birds carry genes of the African Pond-Heron. In future staff at Walsrode will aim to breed towards the phenotypes of the Madagascar

Pond-Heron and continue to investigate the relationship between the two species.

Only recently accorded full species status the Blue-eyed Ibis *Threskiornis bernieri* was previously regarded as a subspecies of the Sacred Ibis *T. aethiopicus*. Following its upgrading to full species status, a review of its conservation status showed that although there is only limited data available, it can be said with a good degree of certainty that the world population numbers fewer than 2,500 birds. It is therefore now listed as Endangered by BirdLife International. Walsrode Birdpark has for sometime been developing a conservation project for this ibis. Habitat destruction poses the main threat to its survival. It is strongly tied to the mangrove and coastal forests of western Madagascar, which in common with all forest habitats in Madagascar, are in severe decline. Hunting is also a major problem and in areas where some of the largest breeding colonies are located almost all of the nestlings are collected for human consumption.

The Perschke-Voronosy Project, initiated by Walsrode Birdpark Foundation employee Mario Perschke, who unfortunately died in Madagascar in 2007, aims to increase the awareness of local people to the legacy of this unique species and develop a protected area and encourage the participation of local communities in its development. The project has the support of several other institutions that have come together under the conservation organisation Stiftung Artenschutz. The zoos at Münster, Landau, Duisburg and Berlin are involved and further support in the form of €20,000 (approx. £15,000 or US$29,000) was granted to the project from the proceeds of the European Association of Zoos and Aquaria (EAZA) Madagascar Campaign 2007.

The above report is based on information contained in two press releases from the Walsrode Birdpark Foundation and Walsrode Birdpark, D-29664 Walsrode, Am Rieselbach, Germany. The press releases were issued by Zoological Director Simon Bruslund Jensen. E-mail:simon.jensen@vogelpark-walsrode.de

THE SPRING SOCIAL MEETING AT THE HAWK CONSERVANCY, APRIL 2008

by Philip Schofield

Opened as Weyhill Zoo with a general collection in 1966, this establishment then became Weyhill Wildlife Park and specialised for a time in European fauna and also kept other animals, before becoming the Hawk Conservancy in 1981. The leopards, wildebeest and hyenas are all long gone, as are the bears and wolves. Run by the Smith family throughout (Ashly Smith is now Chief Executive), this is now a bird of prey and owl collection, that is also widely involved in conservation, education and rehabilitation. The hospital facilities cater for up to 200 birds annually. There is also a sponsored nest box scheme which caters for local wild owls and Kestrels. For many years the conservancy bred Common Buzzards for release, which provided helpful experience for a similar exercise with Red Kites, which started in 2002. In recent years it has been involved with vulture studies in Africa and the Weyhill collection houses a number of White-headed and White-backed Vultures that were confiscated from the illegal side of the international bird trade.

There was a Council Meeting, followed by the AGM and then lunch, after which Avicultural Society members and their guests joined other spectators for the first of two flying displays. An early highlight of the first display was an African Fish Eagle, which was dive-bombed by the local nesting pair of Kestrels and eventually went off to sit on the top of an aviary out of their line of vision. This was followed by the familiar but always impressive high speed expertise of a Peregrine and the 'canting' flight of a juvenile Bateleur. Attention was drawn to how this short tailed species steers with its wings, in contrast to the fish-like steering with the tail of the local Red Kites. One of the latter joined with a group of six Black Kites competing for food shot high in the air from a catapult. Both species 'stood on their tails' in their attempts to snatch the projected morsels. (Wild Common Buzzards also sometimes join the flying displays.) While the kites performed high above, four Hooded Vultures flew back and forth low over our heads. The display culminated in a huge female American Bald Eagle flying to her handler from a valley in the middle distance where she had been awaiting the signal to fly in, a spectacle eclipsed only by seeing the pair of these eagles performing the same exercise during a previous visit. It was not possible on the day of the society's visit, because the wind was in the wrong direction and would have led to the male eagle flying off hunting rabbits rather than sticking to his display schedule. Apparently he

makes a habit of this.

A static feeding display of Gymnogenes (African Harrier Hawks) in an aviary, showed off their double-jointed dexterity in retrieving food from holes in posts and artificial weaver birds' nests. In the wild, these birds hang with one foot onto the underside of weavers' nests, while using the other foot to feel inside for nestlings. While I did not find time between the flying displays for a detailed study of the aviary population (most of the display birds are loose in aviaries rather than tethered when 'off-duty'), I did notice two female Andean Condors and a pair of Steller's Sea Eagles - the first Steller's Sea Eagles I have seen. This Far Eastern species is a size larger than our own White-tailed Sea Eagle, known in some birdwatching circles as the 'flying barn door'. At the other end of the scale were the charming Ferruginous Pygmy-Owls, which always suggest to me a carnivorous Budgerigar.

In contrast to the open meadow setting of the earlier display, the second display took place in a woodland setting and began with a Pariah Kite picking up food out of a pond. Next we saw the huge Milky or Verreaux's Eagle Owl, the first I have seen flown free. The even larger Siberian Eagle Owl gave us a demonstration of its silent wing-beats, when it flew by us at close quarters. On an earlier visit I admired a group of South American Red-backed Hawks (with this dimorphic species the male has a grey back) which had arrived at Weyhill after having been confiscated by the customs authorities. On this occasion we were able to watch one of these, apparently taken from the wild as an adult, flown free among the trees.

The Hawk Conservancy is situated in Sarsons Lane, Weyhill, Andover, Hants. SP11 8DY. Website:www.hawk-conservancy.org

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AUTUMN SOCIAL MEETING

The society's Autumn Social Meeting will be held on Saturday, September 6th 2008 at Exmoor Zoological Park, South Stowford, Bratton Fleming, Barnstaple, Devon EX31 4SG. It was the first collection in the UK to breed the White-browed Coucal and has also succeeded in hand-rearing this species. The Bare-faced Currasow and Blue-throated Conure have also been bred there. Head Keeper Derek Gibson's accounts of these breedings will be published in future issues of the magazine. Paul Boulden, our Hon. Secretary/Treasurer, says it has an up-and-coming bird collection, and mentioned the cranes and breeding Abyssinian Ground Hornbills.

BOOK REVIEWS

RARE BIRDS YEARBOOK

The *Rare Birds Yearbook* 2008 is the first of what is intended to be an annual publication describing those of the world's birds that are most threatened with extinction - that is those listed as Critically Endangered by the IUCN.

The main part of the book is a directory of the 189 bird species named on the 2007 IUCN Red List as Critically Endangered. The information in the accounts largely follows that provided by BirdLife International and available on the worldwide web on the IUCN Species Survival Commission Red List (http://www.iucnredlist.org/) and is profusely supplemented with photographs or illustrations of each species. The photographs are the first I have seen of many of the species and these really are an important feature of the book. I had never before seen a photo of the enigmatic White-eyed River Martin and had no idea what a stunning little bird the Araripe Manakin (only discovered in 1988) really is. In the case of species, such as the Cebu Flowerpecker and Kinglet Calyptura, good quality photos remain to be taken and these birds are illustrated with paintings.

In the case of the species with which I am most familiar, the accounts seem already out of date, but then information often changes rapidly with the changing status of so many endangered birds. For some species this is very positive - for example the Echo Parakeet, which up until 2006 was considered Critically Endangered, no longer ranks as such, as increased conservation effort, including avicultural support, has resulted in the wild population increasing to over 300 birds and the downlisting to Endangered. In the case of other Critically Endangered Mauritian birds, such as the Olive White-eye and Mauritius Fody, the use of avicultural techniques is already showing benefits, with recently released hand-reared birds breeding on predator-free offshore islands. These new developments and the new survey data that suggest a wild population of over 1,000 Philippine Rufous-headed Hornbills, rather than the 120-160 indicated previously, remain in technical reports and are yet to be assimilated into the general body of conservation knowledge and indicate the value of this publication being updated annually.

Many of the birds listed as Critically Endangered are species held in captivity. These include the Northern Bald Ibis, Laysan Duck, Philippine Cockatoo, Yellow-crested Cockatoo, Blue-throated Macaw, Grey-breasted Parakeet, Bali Starling, Montserrat Oriole and Blue-crowned Laughingthrush. Four species - the Alagoas Curassow, Socorro Dove,

Spix's Macaw and Hawaiian Crow - survive only in captivity. The Kakapo, largely because of intensive management on offshore islands of New Zealand onto which it has been introduced, is now categorised as Critically Endangered, having previously been considered by the IUCN to have been Extinct in the Wild.

Additional chapters include feature articles on preventing extinctions, the work of BirdLife International and its partnerships, ornithologists who have made new bird discoveries, migration studies, climate change, ecotourism and in-depth articles on selected critically endangered species including the Madagascar Pochard and Balearic Shearwater. There are also chapters on extinct species and for those interested in seeing these critically endangered species for themselves there is a list of tour operators and a bird checklist. Keen birdwatcher that I am it frightens me to think of the cost in terms of cash, time and carbon footprint, that an attempt to see even a small proportion of these birds would cost - but if funds generated by ecotourism really can be made available to support the conservation of these critically endangered birds, this can be an important tool for conservation.

Anyone with an interest in birds will enjoy this book. It is the most up to date, readily available published source of information about the world's rarest birds and is worth the price, for the excellent colour photographs alone.

Rare Birds Yearbook 2008 (ISBN 978-0-9552607-3-5*)* edited by Erik Hirschfeld, paperback, 276 pages, is published by MagDig Media Limited in association with BirdLife International. Price £18.95, of which £4.00 goes to support BirdLife International's conservation work. It is available through a number of organisations as well as the website:www. rarebirdsyearbook.com

Roger Wilkinson

INTRODUCTION TO JAPANESE BIRDS

A Photographic Guide to the Birds of Japan and North-East Asia by Tadao Shimba, closely follows the same format as the guides to the birds of India, south-east Asia and Indonesia, which I reviewed in the *Avicultural Magazine* Vol.l09, No.3, pp.137-138 (2003).

The *Japanese Official Bird List* (2000) listed 542 bird species as having occurred on the islands of Japan, to which the author added a further 82 species, resulting in approximately 620 species, of which he selected 554 to feature in the main text. The objective is to provide a comprehensive introduction to Japanese birds, along with those of the wider region of north-east Asia, which for the purpose of this guide is considered to include the

Korean Peninsula, north-east China (the provinces of Jilin, Heilongjiang and Liaoning) and the Russian Far East (east of 120°E) north to the Arctic coast, incorporating Ussuriland, Sakhalin, Kamchatka and Chukotka.

Opening the guide for the first time and flicking through the pages - there are one or two species per page, illustrated by one, two, three of more good colour photographs - I was surprised to discover just how many of the birds are the same or very similar to those that occur in Europe and North America. Many of the others are instantly recognisable, none more so than the Mandarin Duck. In the past a good many others figured in western aviculture, including the Ryukyu (or Loo Choo) Robin and Lidth's (or the Loo Choo) Jay. A Ryukyu Robin owned by Raymond Sawyer won the class for flycatchers, robins, etc., at the National Exhibition of Cage Birds and Aquaria in London in 1958, and the same bird won again the following year. London Zoo received a Lidth's Jay in 1957 and this species bred at Paignton Zoo in 1964. Photos of the Narcissus and Blue-and-white Flycatchers and those of birds such as the Black-naped Oriole and Varied Tit recalled for me the late 1950s, when consignments of such birds, often including species that were new to the zoo collection, frequently arrived at the Bird House as gifts to London Zoo from Dr K. C. Searle in Hong Kong (who remains a member of the society, living now in Portugal). I recognised the Greater and Lesser Sand Plovers in the guide as winter visitors to East Africa and thought I also recognised the Oriental Plover as another winter visitor. However, although in the guide it has the scientific name *Charadrius asiaticus* (the same scientific name as the Caspian Plover), other recent works list it as *C. veredus*, separating it from the Caspian Plover, a migrant to East Africa.

There are sections on habitats, migration, conservation, photographing birds and where to see birds in north-east Asia. It recommends, for example, Arasaki, Kyushu, where thousands of cranes can be seen at close range and Geocheonnam Lake, Haenam, where enormous flocks of Baikal Teal congregate. Miyaki-jima, easily reached by overnight ferry from Tokyo, is recommended as a popular destination to see the endemic Izu Islands Thrush. Appendices list rarer vagrants not included in the main text, extinct or presumed extinct species, those extirpated from the region and English and Japanese names of species.

A Photographic Guide to the Birds of Japan and North-East Asia by Tadao Shimba, paperback, 504 pages, nearly 600 species and over 1,500 colour photos, is published in the UK by Christopher Helm, an imprint of A&C Black (website www.acblack.com). Price £24.99. In the USA it is published by Yale University Press (website:www.yalebooks.com).

Malcolm Ellis

NEWS & VIEWS

NEW PRESIDENT

Raymond Sawyer was elected the new President of the Avicultural Society at the recent Council Meeting held on Saturday April 5th at the Hawk Conservancy, Weyhill, Andover, Hants. He succeeds his late wife, Ruth, and is the tenth President in the Avicultural Society's 114-year history. At the same meeting, Mike Curzon MBE was elected a Vice President and Peter Stocks was elected a Council Member. Prof. J. R. (Bob) Hodges, who joined the society in 1947, was elected an Hon. Life Member, in recognition of his many years of work for the society.

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FOUNDED IN ADELAIDE 80 YEARS AGO

The Avicultural Society of South Australia Inc. (website:www.birdkeepinginaustralia.com), Australia's oldest avicultural society and thought to be the fourth oldest in the English-speaking world, celebrated its 80th Anniversary on February 10th 2008. It was founded in Adelaide in 1928 by a group of South Australian aviculturists who were concerned by the then Commonwealth Government's proposal to ban the importation of birds (which eventually happened 21 years later).

Its magazine, which is called *Bird Keeping in Australia*, recently (Vol.50, No.3/4, Winter/Spring 2007, pp.38-41 & Vol.51, No.1, Summer 2008, pp.8-9) reprinted Fred Lewitzka's 1973 account of breeding the Orange-bellied Parrot *Neophema chrysogaster*. His pair reared two young in 1973 and a single youngster the following year, shortly after which any further success was curtained by the South Australian National Parks & Wildlife Service (NPWS), that ordered him to surrender his birds, which were then released into the wild. Had he been allowed to continue, a captive breeding population might have been established far earlier. He bred the birds in his private aviaries at his home and was also in charge of the Bird Department at Adelaide Zoo, where this species is now being bred as part of a recovery programme.

Forty-eight birds at 18 locations was described in Birds Australia's quarterly publication *Wingspan* Vol.17, No.4, p.7, December 2007, as a "conservative estimate" of the number of Orange-bellied Parrots found wintering on the Australian mainland during last year's annual count. Sixty-seven birds were counted at 20 sites in 2006. The 2007 shortfall is attributed to smaller sized flocks at most of the key sites. The reasons for this are unclear, but it appears to have been an ongoing trend since the late 1990s. South-west Victoria still appears to be the current stronghold (with

16 birds last winter). Results from The Coorang were encouraging, with nine birds being sighted, the most recorded in South Australia for some years.

* * *

COUAS IN CAPTIVITY

In *International Zoo News* Vol.55, No.1 (2008), pp.13-17, Pierre de Chabannes and Simon Bruslund Jensen wrote about identifying the couas - non-parasitic members of the Cuculidae family found only on the island of Madagascar - and summarized their history in captivity.

Of the nine living species, four can be seen in European zoological collections, one of which has also been kept and bred in North America. As mentioned earlier in this issue of the *Avicultural Magazine* (p.34), 60 Crested Couas *Coua cristata* have been bred at Walsrode Birdpark in Germany. Several have been sent to other collections, notably Zürich Zoo, where this species now breeds regularly. They have also been sent to Wuppertal and Cologne Zoos. Walsrode birds have been bred at San Diego Zoo and San Diego Wild Animal Park, and birds from there have been sent to Central Park Zoo, Bronx Zoo, Disney's Animal Kingdom and Lowry Park Zoo, Tampa, Florida. Two male Reynaud's or Red-fronted Couas *C. reynaudii* are on show at Zürich Zoo and a pair live in an off-exhibit aviary at Wuppertal Zoo. In 2006 an adult male Blue Coua *C. caerulea* was sent from Walsrode to Cologne Zoo to be displayed in its new Madagascar exhibit. At present the Giant Coua *C. gigas* is kept only at Walsrode Birdpark. The remaining five species have never been seen alive outside Madagascar.

* * *

THREE IN A NEST

Loro Parque Fundación is collaborating with Fundación ProAves of Colombia and Fundación Jocotoco of Ecuador to conserve the Golden-plumed Parakeet *Leptosittaca branickii*, which has a fragmented distribution in the Andes of Colombia, Ecuador and Perú, where it inhabits temperate cloud forest to páramo at 2,400m-3,400m (approx. 7,800ft-11,000ft) and is threatened by widespread habitat loss.

An essential part of the project is monitoring reproductive activity in nests, including in nest boxes installed because of the scarcity of natural nest cavities. While doing this, biologists in Colombia discovered a hitherto unrecorded aspect of parental care by this species - the occupation of a nest box by three individuals, probably a pair and a 'nest helper'. The latter is presumed to have been a bird reared the previous breeding season, gaining experience by assisting with the rearing of three young siblings.

Another surprise was finding that pairs occupying two nest boxes, having fed their own chicks, then entered two nest boxes occupied by other pairs in the same patch of forest and fed the chicks and females in those nests. A third surprise was the discovery that well-feathered young in the nest, turn onto their backs and strike upwards with their feet, defensive behaviour also seen in macaws and a few conures.

* * *

GOVERNMENT VET RETIRES

At the end of February, Avicultural Society Council Member Graham Thurlow retired from the post of Chief Advisor to DEFRA's (Department for Environment, Food & Rural Affairs) Animal Welfare Division. Graham, who last year wrote about breeding Layard's Black-headed Weaver *Ploceus cucullatus nigriceps* (*paroptus*) (see *Avicultural Magazine* Vol.113, No.3, pp.119-121 (2007)), hopes his slightly early retirement will allow him to devote more time to his avicultural interests.

* * *

REGRETTABLE LOSS

In the *Avicultural Magazine* Vol.59, No.6, p.216 (November-December 1953), John Yealland ended his London Zoo Notes by mentioning the "regrettable loss" of the Spix's Macaw *Cyanopsitta spixii* that had lived in the gardens for 23 years. It was presumably one of the pair that Arthur Prestwich saw living in an outside aviary of the Parrot House in 1943 (*Avicultural Magazine* Fifth Series, Vol.VIII, No.6, p.161 (November-December 1943)).

* * *

UNUSUAL ACHIEVEMENT

Leipzig Zoo in Germany bought a pair of Turquoise Tanagers *Tangara mexicana brasiliensis* in 1999. Six months later the pair started to breed. Using mainly coconut fibres, the pair nested in a 5cm (2in) diameter basket, in a dense bamboo. By 2007, no fewer than 59 chicks had been hatched, of which 31 fledged. Nineteen of the offspring were given to other collections. Last year the female died, probably of old age, but fortunately the zoo still had three of her female offspring. A male was obtained from a private breeder and this enabled the zoo to form two new pairs, one consisting of two completely unrelated birds.

OBITUARIES

DEREK GOODWIN

Derek's note on the Mistle Thrush's feet (*Avicultural Magazine* Vol.113, No.3, pp.130-131 (2007)) was, sadly, his last contribution to the magazine, for he died on May 14th, aged 88. He had supposed that it would be the last of his many contributions to the *Avicultural Magazine,* but following its publication, in his last letter (January 5th), he wrote that he was contemplating a short article on the folly of changing eminently descriptive English names into "ridiculous" ones. Among the examples he gave was how much more descriptive were the old names Brown and Wood Owl than the modern Tawny Owl. "THE TAWNY OWL HAS NO TAWNY PLUMAGE", he wrote in bold block capitals. He also ridiculed the use of the name Blue-capped Cordon-bleu instead of the more descriptive Blue-headed Cordon-bleu.

Such was Derek's standing, that he was the subject of an obituary in *The Times* newspaper (May 24th, p.79). It began with a limerick Derek wrote at the age of 76:

There was an old man who said:
"My! What a beautiful bird I espy"
When they asked: "Is it rare?"
He replied: "I don't care,
so long as it pleases my eye."

I have repeated it here, because as the obituary stated, it summed up succintly Derek's attitude to birds. He took as much, if not more, delight in common birds - such as the feral pigeon, Wood Pigeon, Magpie, Jay, Carrion Crow, Golden and Lady Amherst's Pheasants - as he did in observing rare birds.

I learned from the obituary that he was born Richard Patrick Goodwin on February 26th 1920 in Woking, Surrey. However, for reasons he never fully understood his parents called him Derek and he was known as Derek until the day he died.

It recorded that he survived the siege of Tobruk, when serving with the Royal Artillery in North Africa during the Second World War. Yet, almost invariably, his wartime reminiscences were about the birds he saw rather than the horrifying experience of battle.

It also recorded how our magazine came to play a pivotal role in Derek's life. In the *Avicultural Magazine* Vol.109, No.3, pp. 130-132 (2003), Derek himself described how in 1945 he returned home, as a soldier of 25, from service in Egypt, Libya and Malta and was granted four weeks leave. While

home he visited Gamages store in London, where he saw on sale some back issues of the magazine. The one which caught his eye contained an article on the Common Bronzewing Pigeon by T. H. Newman, illustrated by a beautiful painting of this species by H. Goodchild. He purchased this and several other back issues and the assistant who served him gave him the address of the Hon. Editor, Miss Phyllis Barclay-Smith, who then had rooms at the British Museum (Natural History) in South Kensington.

Derek joined the Avicultural Society in 1945 and when he was demobbed the following year, found himself wondering whether to try to find a more congenial job than his pre-war one in a mail-order business. Derek soon realised there were very few jobs connected with birds for someone like himself who had no formal educational qualifications. It was then that Miss Barclay-Smith stepped in and introduced him to J. D. Macdonald, who was in charge of the Bird Room at the museum.

To his great surprise Derek was offered a job as temporary assistant and subsequently was taken onto the permanent staff, something that would not have been possible a few years later. Despite his lack of formal qualifications Derek eventually rose to Principal Scientific Officer.

As part of his work at the museum Derek wrote four books, including his three best known and most referred to works: *Crows of the World* (1976), *Pigeons and Doves of the World* (1967) and *Estrildid Finches of the World* (1982). In all, he wrote six books and countless articles, many of which were published in the *Avicultural Magazine*. Derek is also credited as having been the first person in the UK to breed the Lanceolated Jay (1954).

When I was a young keeper at London Zoo, Derek was a frequent visitor to the Bird House. On one memorable occasion, when observing the feeding behaviour of a Red-billed Oxpecker, Derek produced a razor blade and as Curator of Birds John Yealland looked on aghast, proceeded to cut his finger and when it began to bleed offered it to the bird, which "appeared excited" and consumed the blood with "frantic haste and then nibbled avidly at the wound." A few minutes later Derek made a fresh incision and repeated the experiment, noting that whereas only very little blood oozed from the original wound, after the oxpecker nibbled at it for some moments the blood welled up more freely and in larger quantity!

According to the obituary in *The Times*, Derek eventually resigned from the RSPB (Royal Society for the Protection of Birds) in protest at its perceived lack of support for his campaign to save the introduced Golden and Lady Amherst's Pheasants. However, as I recall, he resigned over its support for the plan to cull the Ruddy Duck population here in the UK, fearing that if the Ruddy Duck was exterminated, his beloved Mandarin Duck

would be next, followed by the Golden and Lady Amherst's Pheasants. As I recall, he had been made an Hon. Life Member of the RSPB and received its magazine free, but resigned his Hon. Life Membership and insisted on paying for the magazine and continued to write long letters criticising the society's policies. He was convinced that it wants to exterminate these introduced species, while at the same time it is encouraging the spread of the Red Kite, White-tailed Sea Eagle and, worst of all, the Northern Goshawk.

Dr Cliff Frith in Queensland, who knew Derek for over 40 years, has written to say that he is devastated to learn of the death of his friend and former colleague. Robin Restall felt the obituary in *The Times* failed to touch on "the eccentric man of many passions," he knew. Another long time friend, Jeff Trollope, recalled the story of a pompous friend staying overnight with Derek, who when asked what he wanted for breakfast, asked for a small, poached egg. He got up the next morning to find that Derek had poached a waxbill's egg, which he put on a postage stamp-sized piece of toast and placed before him. On the first occasion Derek visited Jeff and his wife Pat, they watched him come in the garden gate, but then became puzzled why he had not come in the front door which they had left open for him. When they looked out the window, Derek was in their rather overgrown front garden, collecting *Poa annua* (Annual Meadow Grass) for his waxbills. At a meeting of the British Ornithologists' Club, Jeff was astonished by Derek's knowledge of birds in the Bible. He was also said to be able to quote at length references to birds from Shakespeare - French poetry - and other literature.

ANTHONY J. MOBBS

Anthony J. Mobbs died on February 5th 2008 following a short illness, reports Bryan Reed. Tony, who lived in Walsall in the West Midlands, joined The Avicultural Society in 1968. Most of his life he kept birds, including British species, parrots, softbills, nectar-feeders and Australian finches, and had many other interests.

As Bryan wrote, older members will perhaps best remember Tony for the wonderful hummingbirds he used to keep. He frequently wrote about these in the magazine and illustrated his articles with his photographs; see for example, his coloured photo frontispiece of the Frilled Coquette and his notes on keeping this species (Vol.78, No.3, pp.77-79 (May-June 1972)). Amongst the many other hummingbirds he kept and wrote about in the magazine were the Tourmaline Sunangel, Horned Sungem, Reddish Hermit, Black-tailed Trainbearer, Long-billed Starthroat, Golden-tailed

Sapphire and Velvet-purple and Chestnut-breasted Coronets. Tony wrote a book about hummingbirds, *The Complete Book of Australian Finches* and books about the Star Finch, Bicheno (Double-barred) Finch and the Gouldian Finch. In 1981 he wrote about breeding the Blue-winged Parrotlet (*Avicultural Magazine* Vol.87, No.2, pp.65-69 (April-June 1981)). By 1984 he specialised in breeding Gouldian Finches, but to add a little more interest, also kept and bred other Australian species.

His last two articles for the magazine were on breeding Gouldian Finches (*Avicultural Magazine* Vol.102, No.3, pp.99-102 (1996)) and the Star Finch (*Avicultural Magazine* Vol.104, No.1, pp. 10-12 (1998)). Up until the time of his death Tony was *Cage & Aviary Birds*' Australian finches expert.

PAT WISNIEWSKI

For many years Frank Woolham and I spoke to each other on the phone two or three times or more a week and Frank often talked about Pat Wisniewski and what was happening at Martin Mere, the Wildfowl & Wetlands Centre in Lancashire. It was not until April of this year though that I had any direct contact with Pat, when he and co-author J. Meldrum, submitted an account of the unusual breeding of Eurasian Goosander x European Eider hybrids at Martin Mere. Sadly, less than a month later, I had an early morning phone call from Frank's wife, Meg, who told me that they had heard from their son Michael at Banham Zoo, that Pat had died. The account of how the hybrid ducks came to be bred will be published in a future issue of the magazine along with, it is hoped, a fuller obituary.

JOHN LEONARD MARTYN

John Martyn, the owner of S P Press, who had printed the *Avicultural Magazine* since 1995, was tragically killed in a road traffic accident on May 22nd. I am sure members will join with us to extend our sympathies to his widow, Anne, and his sons Darren and Richard.

COMPLICATED HORNBILL TAXONOMY

Ongoing studies into their genetics, distribution, ecology, behaviour and calls, suggest that at least three or possibly four subspecies of the Red-billed Hornbill *Tockus erythrorhynchus* might better be regarded as separate (full) species. While most authors cautiously await the conclusion of these studies, others such as Sinclair & Ryan in *Birds of Africa south of the Sahara* (Struik, 2003), already treat them as five separate species: the Northern Red-billed Hornbill *T. erythrorhynchus*, Damara Red-billed Hornbill *T. damarensis*, Southern Red-billed Hornbill *T. rufirostris*, Tanzanian Red-billed Hornbill *T. ruahae* and Western Red-billed Hornbill *T. kempi*. Hockey, Dean & Ryan in *Roberts Birds of Southern Africa*, Seventh Edition (The Trustees of the John Voelcker Bird Book Fund, 2005), presently treat only *damarensis* as a separate species, while elsewhere *ruahae* may be treated as a subspecies of *kempi* or *erythrorhynchus*. In addition, some birds in northern Kenya have have a pale coloured iris and may represent a form that has yet to be formally described.

All can be distinguished visually by the colour of the bare skin around the eyes, the colour of the iris and the facial and breast coloration. With this in mind, Walsrode Birdpark and the EAZA Hornbill TAG Group (European Association of Zoos and Aquaria Taxon Advisory Group) are keen to determine the status of red-billed hornbills in zoos and private collections. A questionaire has been distributed to many zoos in Europe and North America, with illustrations by Thomas Eichler, aimed at helping distinguish the various forms. Holders are asked to identify which type or types they keep and how many; have they bred successfully since 2002; and do they have any known wild-caught founder birds?

It also asks for information about hybridization between different forms. Details should be sent to Simon Bruslund Jensen, Zoological Director, Vogelpark Walsrode. E-mail:simon.jensen@vogelpark-walsrode.de

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ONE OF TWO REMAINING

One of Taronga Park, Sydney, Australia's longest and oldest residents has been retired from exhibition. The bird, one of two Chilean Flamingos *Phoenicopterus chilensis* remaining in Australia, will spend the rest of its days on its own custom-built off-exhibit pool. It arrived at the zoo in 1948 and has outlived the other 52 flamingos in the flock.

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