

AVIAN HUSBANDRY NOTES

FIG PARROTS

MACLEAY'S FIG PARROT

Cyclopsitta diophthalma macleayana

BAND SIZE AND SPECIAL BANDING REQUIREMENTS -

Band size 3/16" - Donna Corporation Band

Bands must be metal as fig parrots are vigorous chewers and will destroy bands made of softer material.

SEXING METHODS -

Fig Parrots can be sexed visually, when mature (approximately 1 year).

Males - Lower cheeks and centre of forehead red; remainder of facial area blue, darker on sides of forehead, paler and more greenish around eyes.

Females - General plumage duller and more yellowish than male; centre of forehead red; lower cheeks buff - brown with bluish markings; larger size (Forshaw, 1992).

ADULT WEIGHTS AND MEASUREMENTS -

Male - Wing: 83-90 mm

Tail : 34-45 mm

Exp. cul: 13-14 mm

Tars: 13-14 mm

Weight : 39-43 g

Female - Wing: 79-89 mm

Tail: 34-45 mm

Exp.cul: 13-14 mm

Tars: 13-14 mm

Weight : 39-43 g

(Crome & Shield, 1992)

Orange-breasted Fig Parrot *Cyclopsitta gulelmitertii*

Edwards Fig Parrot *Psittaculirostris edwardsii*

Salvadori's Fig Parrot *Psittaculirostris salvadorii*

Desmarest Fig Parrot *Psittaculirostris desmarestii*

NATURAL HISTORY

Macleay's Fig Parrot

1.0 DISTRIBUTION

Macleay's Fig Parrot inhabits coastal and contiguous mountain rainforests of north - eastern Queensland, from Mount Amos, near Cooktown, south to Cardwell, and possibly the Seaview Range. This subspecies is particularly common in the Atherton Tableland region and near Cairns where it visits fig trees in and around the town to feed during the breeding season (Forshaw, 1992).

1.1 HABITAT

In northern Queensland, fig parrots frequent rainforest, gallery forest and adjacent open forest up to about 750 m. In the Atherton district, it is well distributed in rainforest and wet sclerophyll forest. It is not infrequently sighted in parks and gardens in and around Cairns (Forshaw, 1992).

1.2 HABITS

Pairs or small parties of fig parrots usually are seen flying above the forest canopy or feeding among the branches of trees. In flight, they are noisy, but while feeding, seldom call, the only indications of their presence being the movement of foliage and the steady flow of debris falling to the ground below. Feeding trees are easily identified by the large quantities of discarded pieces of fruit and seed husks on the ground below. During the breeding season, pairs maintain territories that are centered around feeding trees and the birds feed consistently in these trees. There are 3 discernible feeding periods; early to mid-morning, mid-day and mid-to-late afternoon.

Outside the breeding season, these parrots congregate in small flocks and a communal roost is used. Soon after sunrise, small groups leave the roosting tree and move out to the feeding areas. During bright sunny weather, they travel by means of short flights, pausing on route to preen and to stretch their wings, but in overcast or wet conditions, they fly straight to the feeding trees. Towards dusk, they return to the roosting tree, where by nightfall many birds have congregated.

In many of its actions a fig parrot is 'lorikeet - like', undoubtedly a manifestation of its totally arboreal existence (Forshaw, 1992).

1.3 FEEDING BEHAVIOUR

Fig parrots are seed eaters and their main food is *Ficus* seeds, which they take from ripe or near - ripe fruits. They are methodical feeders, returning to the same fruit until its seed supply is exhausted. The birds have also been observed feeding on exposed insect larvae.

1.4 BREEDING

The nest is in a hole excavated by the birds in a rotten tree trunk or a dead limb in a living tree. Active nests have been found during August to December. A nest found in the wild was 12 m above the ground in a decayed limb of a living tree. The hollow had been excavated by the birds, the entrance was 38 mm in diameter and an access tunnel turned down and extended to a depth of 23 cm. The bottom of the hollow was lined with small wood chips, obviously from the excavation (Forshaw,1992). No nest containing more than two chicks or eggs has been found in the wild , however in captivity the normal clutch size can be three.

The female does most of the excavation of the nest hole, and when she has excavated enough to enable herself to fit inside the hole, each night and most of the day she spends in the hollow. Courtship feeding is frequent and copulation is accompanied by a shrill chattering from the male. Incubation commences from the laying of the first egg and lasts approximately 18-21 days. Only the female broods and she sits very tightly, being fed by the male during early morning and late afternoon. Males will feed the chicks. The chicks fledge between 36 - 42 days after hatching, and appear to become independent between 7 - 10 days after fledging. After 10 months, the first red feathers start to appear on the males and the adult plumage is acquired by 14 months after leaving the nest. It is assumed once adult plumage is acquired the birds are sexually mature.

CAPTIVE HUSBANDRY (Both Genus)

PREFERED HOUSING REQUIREMENTS

2.0 SHELTER

Fig Parrots have been successfully bred in several different types of enclosures. These enclosures include outside flight aviaries measuring approximately 2m long x 0.9m wide x 2m high; heavily planted outside flight aviaries measuring 5m long x 2m wide x 2m long, approximately 1/3 of which is sheltered and inside suspended cages measuring 193.75cm long x 87.5cm wide x 118.5cm high. These cages have a solid back wall with a double barrier between adjoining cages (Romer & Spittall).

Fig Parrots cannot withstand cold weather, so shelter and a warm dry area with heat lamps must be provided in climates that are not suitable for these birds. Usually temperatures below 18 degrees Celsius require the addition of an artificial heat source.

2.1 WATER

Fig Parrots have a tendency to bathe in water, so water bowls large enough to suit these needs are necessary. Fig Parrots are particularly messy in there eating habits, daily changing of water supplies is therefore required. Currumbin Sanctuary adds Aviclens to the water to prevent bacterial growth.

2.2 CAGE FURNISHINGS

Being avid chewers adding cuttings of eucalyptus species and ficus species is behaviourally enriching to the birds. Pandanus logs and other soft bark logs can also be provided to 'entertain' the birds, particularly in aviaries that are planted. Providing suitable chewing materials will prevent the birds from destroying their enclosures.

Sheltered areas provided with large cuttings of native trees also offer the birds privacy. Natural substrate such as tea tree mulch or leaf litter is suitable for outdoor enclosures.

Sprinklers are used at Currumbin Sanctuary, Perth Zoo & Lory Lore Avian Breeding Centre.

Perth Zoo place in swamp paper barks each season which are stripped.

Lory Lore Avian Breeding Centre use eucalyptus branches changed on a regular basis. The branches provide natural perching and something for them to chew on. Some species strip the bark and foliage and take it to their nests.

2.3 SPATIAL REQUIREMENTS

Fig Parrots should not be housed in a spacious aviary unless it is heavily planted with trees etc, these birds can sustain serious injuries from collisions with the wire. These robust little parrots build up a strong momentum in flight and appear to be unable to turn quickly to avoid crashing into the wire. The aviary should be large enough to allow adequate exercise and wire-netting should be restricted to one, or at most two sides and part of the roof. Confinement in close-quarters necessitates a careful watch on the birds, to ensure that they do not become overweight.

Currumbin Sanctuary has bred them in a number of enclosures of vary types & sizes. This has included indoor suspended cages measuring 1.9m x 0.9m x 1.2m and outside flights measuring 1) 2m x 0.9m x 2m 2) 2m x 2m x 2m 3) 5m x 2m x 2m .

Lory Lore Avian Breeding centre houses 5 species in aviaries measuring 4m x 1.5m x 1.8m. The floors are concrete with river sand on the top which is raked daily.

John Doole in Winnipeg Canada - housed his Fig Parrots (4 species) in cages 180cm x 90cm x 90cm.

Stan Sindel in Sydney houses his Double-eyed Fig Parrots in a solid walled aviary with a concrete floor and open only at the front. The front was enclosed for the top 30cm to protect the front perch. The aviary 's are 2.15m long, 0.9m wide and 2 metres high facing north and opening onto a front service corridor.

Taronga Zoo bred them in a suspended aviary 1.85m x 65cm x 93 cm high.

HEALTH REQUIREMENTS

3.0 ROUTINE WORMING

Like most aviary kept birds, Fig Parrots should be routinely wormed every 3 - 4 months to prevent parasite infestations such as Ascaris, Coccidiosis, Platyhelminthiasis and Protozoans such as Trichomonas. In contrast faecal examinations may be performed routinely and birds wormed accordingly.

3.1 HEAT

If housed in cooler climates (temperatures below 18 degrees Celsius) heat lamps or some alternative heat source is recommended, especially during winter months and nights. Fig Parrots cannot withstand cold conditions and laying females are susceptible in cold conditions, often becoming egg bound. Therefore artificial heat is a necessity for this small parrot.

3.2 CLEANING

Due to messy eating habits, Fig Parrots tend to foul their enclosures and feeding areas quite quickly. It is recommended that feed areas are cleaned on a daily basis and disinfected with an avian disinfectant such as avisafe.

Natural substrate should be raked over on a regular basis and completely changed every six months. Concrete and wire should be cleaned on a weekly basis.

3.3 NEST HYGIENE

Nesting boxes should be disinfected prior to breeding and fresh nesting material supplied at commencement of the breeding season. Once chicks have hatched, if possible nesting substrate should be changed on a regular basis to minimize bacterial overgrowths and build-up of excrement. Nest boxes should be cleaned, disinfected and nesting material replaced after each clutch has fledged. Suitable nesting material is peat moss, spagnum moss and various natural wood shavings. Currumbin Sanctuary uses heat sterilization (autoclav) on nesting materials prior to use.

3.4 KNOWN HEALTH PROBLEMS

There have been instances where chicks that were previously doing well and fledged have died having shown unusual behaviours such as head shaking. Subsequent post mortems revealed that the brain was only partially developed. Whether this is due to a nutritional deficiency is still unknown. This has also been reported at Melbourne Zoo. (Reece 1988, as quoted by Romer & Spittall).

Recently (November 98) polyomavirus was diagnosed in Fig Parrots at Currumbin Sanctuary. This was the cause of death in a number of nestlings. A few chicks did survive due to antibiotic therapy while in the nest.

Beaks can become overgrown if suitable chewing material is not supplied.

Worms can also pose a problem and preventative treatment needs to be in place.

John Doole lost one chick at 3 months of age due to internal haemorrhaging. The vitamin K was increased in the diet and they had no further problems.

3.5 ROUTINE VACCINATIONS

None known.

3.6 ROUTINE QUARANTINE VACCINATIONS

Three faecal checks over a three week period is recommended for new birds to the collection along with a 30 - 45 day quarantine period.

3.7 VET PROCEDURES

Regular beak trimming is required for some birds in captivity.

BEHAVIOURAL NOTES

4.0 SOCIAL STRUCTURE

Outside the breeding season, these parrots congregate in small flocks and a communal roost is used. Birds feed in small flocks. On breeding, pairs form and a nest site is found and excavated.

In captivity birds are often kept as pairs although small sibling groups can be housed together. Prior to breeding birds should be separated into pairs due to aggressive behaviour.

4.1 AGGRESSION

Fig Parrots are very aggressive birds and single pairs or small groups should be housed together. Double wire should separate adjoining aviaries especially during breeding periods as birds are prone to chewing neighbours toes etc.

4.2 HABITS

These small parrots are noisy, and chatter amongst themselves. There are 3 discernible feeding periods; early to mid-morning, mid-day and mid to late afternoon.

In many of its actions, a Fig Parrot is 'lorikeet - like', undoubtedly a manifestation of its totally arboreal existence. Captive birds move along branches in small hop-like steps (Forshaw,1992).

These parrots are fond of chewing and are capable of stripping bark from cuttings in minutes. They are very active and vocal.

4.3 COURTSHIP

Allofeeding is frequent and copulation is accompanied by a shrill chattering from the male.

4.4 BATHING

Fig Parrots are fond of bathing and do so on a daily basis. Therefore it is important to ensure sufficient water is supplied.

4.5 DRINKING

Due to their tendency to foul feeding areas it is important that clean water is supplied on a daily basis.

4.6 COMMON CAPTIVE PROBLEMS

Aggression with neighboring birds is the most prominent behavioral problem encountered. Either a solid barrier or double wire is recommended to prevent toes being chewed.

4.7 HANDLING REQUIREMENTS

Routine parrot handling techniques should be employed when handling these little birds, despite their size these birds are capable of delivering a nasty bite.

4.8 TRANSPORT REQUIREMENTS

IATA Regulations - birds should be transported singularly in small transport boxes, preferably with one side meshed for ventilation.

4.9 MIXED SPECIES COMPATIBILITIES

Fig Parrots are very aggressive and should not be housed with other parrot species. Fig Parrots have successfully been housed with various ground dwelling birds such as Pitta's and Quail species, but it should be noted that they have also caused damage to Quails. Single birds appear to be less aggressive than pairs.

Perth Zoo have had pairs cause injuries to the following species:

Black-breasted Button-quail

Parrot finches

Pekin Robins

4.10 BEHAVIOURAL ENRICHMENT ACTIVITIES

Native figs and fruits should be offered when available, and given to the birds still attached to cuttings. These parrots are stimulated by chewing and excavating and native cuttings and soft logs, for example pandanus etc. should be offered regularly. Other browse and logs should be supplied for the birds to chew on.

Insects such as mealworms are greatly accepted by the birds and provide the birds with a live feed to search for.

Maarten de Rooter advises it is almost essential to provide them with fresh tree branches on a regular basis. In Europe their favorites are willow and fruit tree branches. In addition a rotten tree trunk can also provide them with many hours of activity and amusement.

FEEDING REQUIREMENTS

5.0 DIETS AND SUPPLEMENTS

It was discovered early on in the history of the bird in captivity, that they had a requirement for vitamin K. Native figs are high in vitamin K and zinc. (See section 6.3 for breeding diets)

Currumbin Sanctuary

½ - 1 Turkish fig each. The dried figs are covered in water and microwaved on high till they have boiled for approximately 1 minute. The figs when cooled have Nekton Q sprinkled over them at a rate of ¼ teaspoon per 2-4 figs.

1 tablespoon Avione dry lorikeet mix

1 teaspoon Finch seed

A variety of fruit ie apple, pawpaw, passionfruit, cherry tomatoes, banana, pear, grapes, rockmelon, corn on the cob, guava

Non-breeding greens mix

A few mealworms

Perth Zoo

Breeding (per com Neil Hamilton)

Soaked dry figs

Zoo grounds figs - Port Jackson's and Moreten Bay Fogs

Diced fruit - all types of soft fruit in an egg mix - hard boiled eggs, insectivores mix and currants

Budgie or finch mix

Fly pupae, mealworms, insect in mulch in exhibit. (Termites tried but not eaten)

Plants in exhibit eaten included:

Fish Bone Fern - spores underneath & stems

Banana Plants - strip leaves

Seeding grasses - all types given

Bottlebrush - strip stems on this plant.

Lory Lore Avian Breeding Centre (Shaun Wilkinson)

Adult birds

Boiled Maize and mixed pulses

Various diced fruit and vegetables are given, pending availability eg : apples, pears, bananas, figs, paw paw, strawberries, prickly pears, grapes, oranges, guavas and watermelon.

Beetroot, sweet potatoe, carrot, brocoli, spinach, beans, cabbage, butternut and corn on the cob.

Sprouted sunflower seed

Proprietary Parrot Soft Food

The home-made Lory Nector

Melbourne Zoo (Roy Dunn)

Sunflower, millet and canary seeds and various fruit. Moreton Bay Figs (*Ficus macrophylla*). The berries of *Pyracantha* in autumn and winter. Cultivated figs either dried or fresh.

Prior to the breeding season they were habituated to small quantities of bread soaked in a milk based lorikeet mixture.

Paradise Gardens, NSW (Pauline Courtney)

Per pair - 6 figs, 8 cherry tomatoes, 12 mealworms, fruit salad.

Calcium Sandoz was sprinkled on the fruit salad and nekton K on the figs.

Madera cake and corn on the cob were fed every second day.

Small amounts of sunflower(preferred seed) and canary.

Lorikeet dry mix

The juice from soaking the figs.

Maarten de Ruiter, Fijinaart, The Netherlands

On fifth of each of the following:

- Baby food mixture (*Milupa* is popular in Germany)
- cooked rice
- fruit - as many different types as possible
- insect food: and
- soaked seed.

This is supplemented with the addition of small quantities of eggfood, some sprouted sunflower seed, a few mealworms and most importantly one fig per bird per day. Dried figs are used which are soaked in water for a day. As fig parrots appear to require a regular intake of vitamin K this is usually added in a powder form on a regular basis.

John Doole - Winnipeg Canada

Fed a twice daily schedule - Mix #1 in the morning along with half an apple hung on cage wires. Birds with eggs or chicks receive half an apple, 2 inch piece of banana and a 2 inch piece of corn on the cob. Mix #2 sprinkled with vitamin mix and probiotic is given in late afternoon.

Mix #1

2 parts Purina Pro Plan Performance dog food (soaked in hot water until soft, not mushy)

2 parts Cooked beans (10-12 varieties), lentils, rice, hulled sunflower, millet and groats *

1 part corn (frozen, thawed)

6 parts Chopped fruits (apple, pear, kiwi, banana, grapes and orange)

6 parts chopped vegetables (carrot, celery, red & green peppers, cucumber, zucchini and squash)

* The beans, which comprise 60% , are soaked overnight and the other ingredients are added before cooking for 30-40 minutes.

Mix #2

Equal parts of ten chopped fruits (apples, pears, grapes, kiwi, banana, oranges, mango, papaya, peaches, plums, nectarines, melons, strawberries, cherries etc.) Canned fruit (no sugar added) is used to replace the more exotic fruits during winter.

2-3 dried Calmyrna Figs (large, soaked 48 hours) per bird.

Vitamin mix

1. 2 parts: K3 Vite (Dominion Veterinary Laboratory, Winnipeg)
2 parts: Nekton Q (Canaviax Products, Toronto)
1 part: Nekton E
1 part: Nekton MSA
1 part: Nekton B-Komplex
1 part Nekton S or Prime (Rolf C. Hagen, Inc Toronto)
1 part ASCORBIVITE (Vitamin C, Vydex Animal Health Ltd, U.K.)
2. Probiotic: Sprinkled separately from above mix (various brands)

Additionally 12 grain bread well dampened with whole milk has been added to morning salad.

Boil only salad mix - comprises of (approx)

5 parts HULLED sunflower

5 parts HULLED millet

2 part buckwheat

3 part 4-5 different rice varieties

1 part 2-3 lentil varieties

1 part split peas

1 part chick peas

1 part barley

1 part wheat

5 parts various small vegetable and egg pastas, vermicelli etc broken up small.

Mixed well then boiled for 30 minutes or until ingredients are soft but not broken down into mush. It is then thoroughly drained and placed in plastic storage containers. These are stored in the freezer.

Stan Sindel, Sydney Double-eyed Fig Parrots

Maintenance diet (per pair)

one heaped teaspoon sprouted french white millet

20 grains sprouted sunflower

¼ apple or equivalent

1cm cube madeira cake

A little silverbeet

Dried fig scaled with boiling water and then washed before feeding to avoid bacterial & fungal infections.

Additional foods such as pears, bananas, orange, paw paw, grapes, cherries, stone fruits, berries including strawberries, black berries, blue berries etc as well as green peas, beans and various vegetables, may be fed as treats or regularly in small amounts to receptive birds.

Soft food at a rate of one dessertspoon per bird is fed. The soft food consists of a base of 1 cup of rice flour

1 cup of Heinz Rice baby cereal

1 level teaspoon of multivitamin and mineral supplement and one level teaspoon of calcium powder

Mixed together and stored dry.

This is moistened with lorikeet nectar to a thick and creamy consistency.

Taronga Zoo

Per pair

Delicatessan figs (4 figs each - 62g)

¼ Apple

¼ pear

½ Kiwi fruit

1 tablsn Silverbeet

1 tablsn each soaked sunflower and millet seed

3 x weekly

10 mealworms

6g fly pupae

Corn on cob

Vogelpark Walsrode Germany (Psittaculirostris)

The diet is fed twice daily in bowls

The amount below is sufficient for approximately 10 birds.

3 Tablespoons of cooked rice

1 medium - sized cooked potato cut into pieces

1 large apple peeled & steamed (with core removed)

1 steamed carrot

1 banana

2 tablespns Humana Spezial (powdered special diet for babies, which is free of lactose, fructose & refined sugar)

2 tablespoons of soft oat flakes

¼ teaspoon Korvimin (powdered vitamin/mineral supplement for birds)

10mls honey

½ teaspoon of oil (olive or wheatgerm oil)

1/8 lettuce or chinese cabbage

Approx. 100mls of water

All the ingredients are mixed in a blender until they form a paste-like substance.

The diet fed consists of the above mentioned paste fed twice a day and once a day , one tablespoon of sprouted seeds and pulses and half a dried fig (which has been soaked per pair.

The sprouted seed & pulse mix includes sunflower seed, mung beans and a seed mix intended for pigeons. These are soaked in 5 litres of water to which 2 Chinosol tablets are added to prevent them from becoming mouldy. They are soaked approx. 8 hours after which they are thoroughly rinsed with clean running water and then kept in a sieve and allowed to sprout for 24 hours. In addition maize & rice which has been boiled for 10 minutes are offered.

Every other day 5 ml of one of the following supplements is added to the food: powdered yeast, Muschelkalk (ground shells which provide calcium), powdered soya-malt, Nekton Tonik K (vitamin/mineral supplement for seed eating birds).

5.1 PRESENTATION OF FOOD

Birds will take mixes and fruit from trays positioned at a level a few feet off the ground, or on the ground.

Native figs still attached to cuttings are readily devoured and stripped. The mixes and fig juice is offered in small bowls placed on the trays. Birds will forage for mealworms thrown onto the ground.

BREEDING

6.0 SEASON

Breeding season is from July to December (Australia), but eggs have been recorded as early as June. (Currumbin Sanctuary)

6.1 NESTING REQUIREMENTS

Currumbin Sanctuary has used a variety of nesting boxes with success. Pairs have also bred in *Pandanus* logs into which they have excavated their own hollows. The drawbacks with this is the inaccessibility of the chicks for checking and weighing. Nesting boxes most commonly used basic parrot breeding boxes similar to those used with budgerigars. It has been thought that Fig Parrots require the stimulation of digging out a nest cavity for themselves in order to breed, we have not found this to be the case and find they will use the basic wooden box with either peat or spagnum moss as the substrate.

Perth Zoo used natural Palm log on a stand. Ants were a problem so staff used grease under the stand to stop them.

Lory Lore Avian Breeding Centre provide the fig parrots with three nest boxes, either a Lovebird nest box or a Gouldian nest box or a Cockatiel nest box. Most of them have gone for L-shaped boxes. I put about 2cm of sawdust in the bottom. The female removes most or all of the sawdust out of the box, there is very little material left for the baby/ies to sit on.

Frank Tromp in the USA has found that there is a much better survival rate in the *Oropsitta* (*Cyclopsitta*) when the males are removed after egg laying and the females are allowed to raise the young on their own.

John Doole has tried four different styles & sizes of nestboxes and all have been readily accepted and successful. A handful of shredded Eucalyptus wood is used as bedding.

Taronga Zoo used a nest box length 17cm, height 30cm, width 13cm, entrance diameter. This was 1/3rd filled with 50/50 peat & soil.

6.2 DIET CHANGES PRIOR TO BREEDING

The two factors in breeding appear to be an ad lib supply of figs (particularly native) and an ad lib supply of insects (mealworms) (Romer & Spittall).

Stan Sindel adds 3 drops of Viatmin K1 in the form of Koagulon and enough crushed zinc to cover the head of a match to each pairs daily soft food ration.

6.3 DIET CHANGES WHILE BREEDING

In the USA research into the death of *Psittaculirostris* chicks (Muler & Neuman 98) found that the young fig parrots were unable to digest the seeds of figs & apples etc as the adult birds do. Even soft and sprouting seeds are a potential danger to young birds.

When any Double-eyed Fig Parrot chicks hatch, native figs and mealworms are fed ad lib - the amounts increasing as the chicks grow. It has also been thought that it is important to ensure vitamin supplements of vitamin K, calcium and zinc are fed with the diet. (See section 5.0 for more detail.) Though this is in some dispute. Success has been obtained just through a slight increase in live food at Currumbin Sanctuary (1999). In this case 3 chicks were fledged from a nest in a pandanus log.

Currumbin Sanctuary

BREEDING - In addition to the above food, calcium is added to the diet at the onset of breeding, calcivet is added to the figs at a rate of 0.1mls per bird.

Native figs and mealworms are fed ad lib. Fig species fed include -

Port Jackson Fig - *Ficus rubiginosa*

Weeping Fig - *Ficus sp.*

Moreton Bay Fig - *Ficus macrophylla*

Small - leaved Fig - *Ficus obliqua*

Sandpaper Fig - *Ficus coronata*

(Romer & Spittall)

Frank Tromp (Double-eyed) in the USA has been able to breed them without the use of figs or supplements such as Vitamin K.

John Doole (all species) removes all seeds from breeding pairs well before first chick hatches. As an experiment they left seed in one Double-eyed breeding pairs cage. They hatched and fledged one youngster, and did OK but didn't seem as robust as 2 other youngsters which hatched at the same time in another nest where there was no hard seed. Millet sprays are introduced a few days before the young fledge.

Mealworms are fed at a rate of 2-3 dozen per breeding pair with young. The double-eyed all relish them and most Salvadori's & Edwards also, but some pairs won't touch them. They have had equally good results with pairs who don't eat them as with pairs that do. It is possibly the High Protein dog kibbles in the salads that is more important than the mealworms.

Although they lost all the young at 5-25 days when feeding hard seeds, they now use dishes of small pellets (dry) in every cage all the time. Some eat them sometimes, others ignore them but babies don't die as a consequence.

Lory Lore Avian Breeding Centre (all species) In addition to normal diet

Parents with Chicks

Diets vary according to pairs. Below is standards diet offered and the variants added depend on the pair and how they respond.

From Day #1 : Just diced fruits and vegetables, soaked figs and home-made Lory Nector. A honey-based nector is also given.

From Day #7 I include the boiled maize and mixed pulses with soaked/sprouted sunflower seeds.

Variants offered to parents to increase the protein levels include:

Hard boiled egg

Kaytee Exact Handrearing Food on its own and also mixed with liquidised paw paw.

Mealworms

Raff

Some took what was offered, but most refused as they preferred the nectors and fruit.

(Raff is a insect mix from Spain. However due to its scarcity it was changed to Orlux products from Belgium - 1) Universal softbill (14% protein) and 2) Insect food (22%) protein.

Stan Sindel (Macleays)

When young are being reared adds 1 cup of Egg & Biscuit canary rearing food to the softfood base mix.

The introduction of live food such as mealworms or termites is important.

Increase the supply of dried fig when young fledge.

Taronga Zoo (Macleays)-

When chicks hatch mealworms. Fly pupae & native figs, strawberries, kiwi fruit, grated cheese & boiled eggs are added to the diet.

Vogelpark, Walsrode Germany (Psittaculirostris)

The seeds & pulses are removed from the diet 2 days before chicks are due to hatch. Only the paste is provided until the chicks are 14 days . Then from 15 days old onwards 10 blanched mealworms per day are added.

When the young fledge the basic fig parrot diet of paste, seeds, pulses and figs is offered and the mealworms are stopped.

6.4 INCUBATION PERIOD

Double-eyed Fig Parrot Incubation has been recorded between 20 - 24 days. *Psittaculirostris* incubation takes 22 days (Muller & Neumann 98)

6.5 CLUTCH SIZE

The normal clutch size is 3 eggs. Though 2 is often recorded.

6.6 TIME AFTER MATING FOR FIRST EGG

Approximately one week.

6.7 TIME TO LAY CLUTCH

There is a 24 -48 hour interval between the laying of each egg.

6.8 AVERAGE NUMBER FERTILE, HATCHED AND FLEDGED

N/A

6.9 FLEDGING PERIOD

Double eyed Fig parrot chicks usually fledge between 40 - 45 days (8 weeks).
Psittaculirostris fledge at 45-50 days. (Muller & Neumann 98)

6.10 EGG WEIGHTS AND MEASUREMENTS & SPECIES SPECIFIC COEFFICIENT

Macleays Fig Parrot egg dimensions - 21.0 (av.20.6-21.8) x 17.6 (av.17.3 - 18.0)mm.

Average fresh weight of egg = 4.57 grams

6.11 YOUNG WEIGHTS, MEASUREMENTS, DEVELOPMENTAL NOTES

Macleay's Fig Parrot

Average weights (grams)

Day	Day
1 4.62	25 39.96
3 7.10	28 38.09
5 9.42	30 39.14
9 15.45	32 43.62
12 20.11	34 41.83
15 24.10	36 38.83
17 27.30	38 39.02
19 34.15	40 37.77
21 34.14	41 37.15 - chick fledged

The chicks hatch with a sparse white down covering their body. The eyes begin to open around day six and dark feathers begin to show on back. By twelve days pin feathers are present on wings. From day twenty-one onwards colours are very obvious and tail feathers begin to show, most feathers have lost there sheaths at this stage and the chick appears well feathered. Fledging weight is approximately 35-40 grams.

6.12 AGE OF REMOVAL FROM PARENTS, INCLUDING AGE OF INDEPENDENCE

Young Double-eyed Fig Parrots reach independence at approximately 2- 4 weeks post fledging, although it is recommended to leave young with parents for a period of at least 10 weeks (from hatching), to ensure birds are feeding sufficiently to survive on there own.

The young should be monitored closely when removed to ensure they don't stop eating.

Vogelpark separate young at 2 weeks of age. (*Psittaculirostris*)

6.13 USE OF FOSTER SPECIES

Chicks have successfully been raised by alternate Fig Parrot pairs. Macleay's Fig Parrots (*Cyclopsitta diophthalma macleayana*) are intended to be used as an analogue species
Fig Parrot Husbandry Manual – Draft September2000 Compiled by Liz Romer 14

for the raising of Coxen's Fig Parrot (*Cyclopsitta diophthalma coxeni*), in conjunction with Recovery Plan guidelines.

6.14 MULTIPLE CLUTCH - INTERCLUTCH INTERVAL (MIN. TIME TO COMMENCE SECOND CLUTCH)

Some Fig Parrots have been known to lay up to 3 clutches in one breeding season, usually going back to nest once chicks have fledged. This can be as soon as 2-3 weeks after chicks have fledged.

6.15 HATCHLING SEX RATIO

N/A

6.16 PROBLEMS WITH PARENT-REARED CHICKS

Lory Lore Avian Breeding Centre

Parents kill them usually within three days after hatching, but have also had two Salvadori's chicks killed at thirty days of age following the necessary changing of the sawdust. Sometimes the chicks have been devoured without a trace in the nest box, while at other times the mutilated remains of the chicks are left in the nest box.

The chicks die within two to six days after hatching and are too decomposed to determine the cause.

The chicks develop hard white ball of fungus in the crop, and when one attempts to remove it, the chicks die from stress. A post mortem invariably reveals a candida infection.

Due to lack of intake of proteins , the chicks were seriously under nourished.

Currumbin Sanctuary

Many chicks had died early with full crops- PM often revealed no cause as the chick was too autolysed. Many died as the result of bacterial infection. Some have also died of trauma - inflicted by the adults or possibly rodents. We have had cases of rickets and parasites. Pneumonia and genetic malformation have also shown.

Recently we have had polyomavirus turn up in our fig parrots on PM. This is difficult to diagnose and may have been in the collection prior. Reports are that this virus lowers the immune system causing the chicks to die of other infections. This fits the pattern of many deaths over the years.

We now routinely weigh chicks. Those chicks that are not doing well following standard growth charts are examined by a vet and put on the antibiotics and antifungals (Nilstat) immediately. These chicks have been our most successful in the last 3 years with the exception of 1999 when 3 chicks fledged from a pandanus log which had had no nest interference (no weights recorded) and little supplementation to the diet apart from extra live food (mealworms).

Vogelpark

During breeding season the birds can become stressed which can result in them killing or abandoning their chicks. This does not necessarily take place at the time of the disturbance, but often occurs some days later.

ARTIFICIAL INCUBATION

7.0 INCUBATOR TYPE

Still air/fan forced, auto/manual turn.

Multiplo electric incubator

Eggs were hand turned three times per day, in alternate directions.

7.1 INCUBATION TEMPERATURES AND HUMIDITY (DRY AND WET BULB READINGS)

Wet : 82 - 84 degrees Fahrenheit (27.75 - 28.86 degrees Celsius)

Temp: 98 - 99 degrees Fahrenheit (36.63 - 37.20 degrees Celsius) (Lory Lore 37.3 C)

Embryos begin to develop at a temperature of about 97 degrees Fahrenheit (36 degrees Celsius) and continue to develop up to a temperature of about 102 degrees Fahrenheit (38.85 degrees Celsius). The higher the temperature, the faster the development, and vice versa. The optimum temperature will be the one that the chick develops at exactly the same rate that it would if incubated by the natural parents. If chicks develop too fast or too slow they tend to be weak at hatch time, if there is a hatch time at all.

The humidity in the incubator is the controlling factor of how much weight or fluid an egg will lose during incubation. As the eggs develop, fluids evaporate through the shell pores. The amount of fluid that will evaporate is directly related to the humidity in the incubator (Jodan, 1989).

7.2 DESIRED PERCENTAGE WEIGHT LOSS

Average between 10 - 15 %.

7.3 HATCHING TEMPERATURE AND HUMIDITY

Humidity raised to 84 degrees Fahrenheit (28.86 degrees Celsius).

7.4 NORMAL PIP TO HATCH INTERVAL

Chicks will normally hatch within 24 - 36 hours of pipping. If chicks have not hatched by 48 hours there is obviously a problem and assistance may be required.

ARTIFICIAL REARING

8.0 BROODER TYPES/DESIGN

Cocoon Brooder Box - Dominion Incubators.

See Appendix

8.1 BROODER TEMPERATURES

Newly hatched chicks are kept at hatching temperatures (98.5 degrees Fahrenheit/36.9 degrees Celsius) for approximately 2-6 hours after hatching. After this initial period, the chicks are placed in a brooder set at 97.5 degrees Fahrenheit (36.35 degrees Celsius) for about 4 or 5 days. After about 4 or 5 days, the brooder is reduced to 95 degrees Fahrenheit for the next 5 - 9 days. At about 10 days of age, chicks are kept at about 93 degrees Fahrenheit (33.85 degrees Celsius) until they have sufficient down feathers for them not to be considered naked babies (Voren & Jordan, 1992).

8.2 DIETS - method, amounts, frequency and temperature fed.

For artificial rearing of chicks either syringes or bent spoons may be used, but due to the tiny size of chicks I find it easier to use syringes, this way also you can monitor accurately the amount of food each chick is consuming. It is also recommended to use separate feeding utensils for each chick.

For the first 24 - 48 hours of life chicks should only be fed an electrolyte solution such as lectade, this allows the chick time to fully absorb the yolk sac, and the fluid prevents the chicks from dehydrating during this stage. The electrolyte solution should be given warmed to between 100 - 102 degrees Fahrenheit (37.74 - 38.85 degrees Celsius), and newly hatched chicks should only take about 0.1 - 0.2 mls per feed. This should be given every two hours. When feeding solely liquid, care must be taken not to aspirate the chick (Voren & Jordan,1992). Some people use paint brushed to feed the very small chicks.

The first feed for chicks once the yolk sac has been absorbed should still be of a watery consistency, but will now consist of the substitute diet (See below). It is very important now to ensure correct temperatures of feeds and to monitor closely the emptying of the crop. Chicks should never be fed when there is still food present from the previous feed, the old food will ferment and cause crop stasis and bacterial / fungal infections.

Depending on how well the crop empties between feeds, chicks should be fed every 2-3 hours during the first week and then as the chick progresses and consistency of the food is thickened longer intervals will naturally be needed between feedings. Temperature of feeds should be between 100 - 102 degrees Fahrenheit (37.74 - 38.85 degrees Celsius). It is important to monitor the temperature of feeds, as feeding formula that is too hot will painfully burn chicks crops, and formula which is not warm enough will cause crop stasis. Before changing the consistency of the formula being fed, it is first necessary to evaluate how well the crop is moving and how the chick is developing (Voren & Jordan,1992).

Fig Parrot Diet Handrearing (Pauline Courtney)

- 4 tablespoons of Lakes Hand -rearing Formula
- 1 tablespoon of pre-cooked tinned baby carrot
- 1 tablespoon of Banana Custard (baby food)
- 1 tablespoon of pureed apple (baby food)
- 2 tablespoons of Nekton K powder
- 1 pinch of Enzyplex (enzyme powder)

- all ingredients are blended to a fine mixture with mineral water.

As chicks grow and when formulas are of a thicker consistency, it may be easier to revert to the use of a bent teaspoon to administer the food, this encourages the chick to start to feed for itself (picking at food) and is also easier. When feeding chicks in the last few weeks, just prior to weaning, it is possible to feed a much thicker consistency.

Lory Lore Avian Breeding Centre experience with Salvadori's, Edwards & Desmarest's Fig Parrots has found that by leaving a chick with the parents for the first eight days after hatching and then removing them to hand rear , the survival rate is far higher. They do not place them in a brooder - as the parents do not brood all that much on the chicks as they start to get older. They place the chick in a corrugated cardboard box (eg: commercial apple box) together with three to four other lorikeet chicks, next to a convection heater heating a closed room. The box is covered with a wire mesh lid which has been covered with a hessian sack clothe so that the chicks are less stressed.

It has proved beneficial to dose the chicks immediately with *Nystatin (Mycostatin Oral Suspension)* directly into the crop. Then for the next four days add the dosage into one of their feeds. The handrearing formula that has proved successful is:

**Kaytee Exact Handrearing Food*

* Rice cereal to reduce the protein levels

* *Purity* Baby food - using the various fruit/vegetable flavours such as apple, lamb & vegetable or pears. (Remember to stay away from flavours like prunes)

In the beginning of the process the following formula is used:

* *Kaytee* - 20%

* *Purity* - 70%

* Rice Cereal - 10% (Which remain constant through to weaning)

As the chicks develop, the ratio between *Kaytee* and *Purity* changes until weaning where the ratio is :

* *Kaytee* - 80%

* *Purity* - 10%

They use boiled water to prevent the PH levels in the water causing problems with the sensitive stomachs of the chicks of the chicks. They adjust the sliding scale of ratio between the *Kaytee* and the *Purity* for the chicks they take from the nest later than 9 days.

The chicks adjust quickly to their new environment and at about 14 days their eyes are open, at which stage they can be rung with a 6mm or 7mm closed ring. At this stage the chicks need to be kept individually, as they become very aggressive and may attack any and everything including the feeder. Some chicks have taken the crop needle in their beaks out of eagerness to get the food so handling was limited.

When the youngsters were fully feathered and looked ready, they were placed in a small cage, but still in the hand rearing room. The standard fig parrot diet was offered, and changed twice daily to prevent contamination. They were still hand fed until they started to eat on their own. The cages were always grouped together without other bird species next to in between them. This whole process, from hatching to weaned, takes approximately nine weeks.

8.3 SPECIES SPECIAL REQUIREMENTS. EG. NEST SUBSTRATE

Chicks in brooders are placed in a small container padded with tissue paper, and with a small square of 'gripper' pad placed on top of the tissue. The gripper provides a firm substrate that the chicks can grip onto helping to keep the toes open and preventing clenched feet.

Chicks are usually kept as clutches (3) and therefore use each other to prop themselves upright, if however there is only one chick sufficient padding must be provided to allow the chick to lean against it and stay upright.

Chicks are usually kept in the brooder box until fully feathered, once feathered they can be placed into small cages with perching and continue to be hand fed until they can eat sufficient food on their own.

8.4 MARKING METHODS

Chicks are marked with a stockmark spray via a cotton tip. Chicks are marked in order of succession, with chick #1 marked on the head, chick # 2 marked on the back and chick # 3 marked on the right wing. Some breeders use closed bands at 14 days.

8.5 GROWTH CHARTS / DEVELOPMENTAL NOTES.

Macleay's Fig Parrot

Weight (grams)

Day	Day
1 - 4.62	25- 39.96
3 - 7.10	28- 38.09

5 - 9.42	30- 39.14
12 -20.11	32- 43.62
15 -24.10	34- 41.83
17 -27.30	36-38.83
19 -34.15	38-39.02
21-34.14	41-37.15

Chicks hatch with a sparse covering of white down. By day 6 eyes are open and dark feathers are beginning to show on the back. By day 12 pin feathers are showing on the wings. From day 21 onwards feather colours are obvious and tail feathers are growing, overall the chick appears well feathered. Normally chicks fledge at a weight between 35 - 40 grams.

8.6 HYGIENE AND SPECIAL PRECAUTIONS

When handling chicks and eggs, first spray hands with a skin disinfectant e.g 'Hexifoam'. Soak feeding instruments and equipment in disinfectant between feeds.

When hand-rearing special care must be taken in monitoring the development of feet and legs. Plastic gripper pads are used to provide a suitable gripping substrate so as legs do not splay and toes do not curl.

8.7 BEHAVIOURAL CONSIDERATIONS

As parrots are easily imprinted it is advisable to not spend any more time than necessary handling chicks. Chicks should be fed and cleaned as swiftly as possible and definitely not 'babied' in order to prevent imprinting.

8.8 WEANING

When chicks approach fledging age, curiosity takes the better of them and they will begin to chew and nibble. It is recommended to place food in cage with fledglings to encourage them to eat, but chicks will generally not eat sufficient quantities to sustain themselves and hand feeding should continue until they can maintain their weight on their own. As with most parrot species the weaning process is very long and drawn out. Continue to offer fresh food and reduce hand-feeding as the chicks learn to eat. The last formula feed of the day should not be eliminated unless the bird has a full crop of weaning foods at the normal feeding time. Patience is vital as these chicks are dependent on hand-feeding and need to remain strong if they are to wean and thrive.

8.9 PROBLEMS ENCOUNTERED

Lory Lore Avian Breeding Centre - has successfully hatched chicks. Day one they are fed Ringer Lactate for the first 24 hours to prevent dehydration during which time the chick has digested it's yolk. It is from the second day that for no apparent reason they die.

Two situations arise where the chicks die:

- * When the chick is removed from the brooder to be fed, it goes off colour and dies.
 - * If the chick survives being fed it appears chirpy and in good colour but when it is time for the next feed, the chick is found dead in the dish, usually with a crop full of food.
- To date hand rearing from day one has been unsuccessful.

8.10 REHABILITATION PROCEDURES

Refer to guidelines for the Coxen's Fig Parrot Recovery Plan, outlined by the RAOU.

APPENDIX A

FOOD MIXES

Dry Lorikeet Mix - Rolled oats - 8 cups
Wheat germ - 4 cups
Full cream powdered milk - 1 cups
Glucodin - 1 cup
Brewers yeast - 1 tablespoons
Calcium powder - 2 tablespoons

- mix ingredients thoroughly and moisten until crumbly with sugar nectar.

Sugar Nectar Mix - 1kg Brown sugar
2L water

- mix until sugar has fully dissolved.

APPENDIX B

PRODUCTS MENTIONED

Avisafe - avian disinfectant cleanser
manufactured and distributed by VETAFARM,
Wagga Wagga, NSW. 2650.

Aviclens - manufactured and distributed by VETAFARM,
Wagga Wagga, NSW. 2650.

Calcivet - Liquid calcium and vitamin D3 supplement
manufactured and distributed by VETAFARM,
Wagga Wagga, NSW. 2650.

Vitamin K - Koagulon syrup
Parnell Laboratories, Australia. Pty.Ltd.

Nekton Q -Fig Parrot supplement vitamin and mineral.
Manufactured by Nekton Products, West Germany.
Distributed by Priam, Canberra, Australia.

Nekton K - supplement vitamin and mineral
Manufactured by Nekton Products, West Germany.
Distributed by Priam. Canberra , Australia.

Hexifoam - skin cleanser antiseptic
Soltec Research Pty Ltd.
8 Macro Court, Rowville, Victoria. 3178.

Stockmark - Steadfast Stockmark Spray
Stead Bros, 145 Beattie Street,

Balmain, NSW. 2041.

Enzyplex - enzyme powder
Nature Vet . Pty. Ltd.

Lectade - electrolyte solution
Pfizer Animal Health

Lakes - Hand - rearing Formula
Lake's Unlimited Inc.
639 Stryker Avenue,
St Paul. Minnesota. 55107. U.S.A.

Kaytee Handrearing Food - Kaytee products
PO Box 230
Chilton WI 53014

Purity Baby Food - Colman Foods
Bayete Road
N'dabeni
7405
under licence from Gerber Products Co. USA

Orlux products Orlux NV
20 Verbindings Street
8710
Ooigem
Belgium
Tel +32 (0) 56/66 60 38
Fax + 32 (0) 56/66 3003

Incubators -

Multiplo - Electric incubator
Manufactured by Multiplo. Pty. Ltd.
Sydney, NSW.
Patent number 11820/33

Cocoon - Coccon Brooder
manufactured by Dominion Incubators Ltd.
P.O Box 566,
Hamilton , New Zealand.

REFERENCES

1. Shepherd, Mark. 1994 " Aviculture in Australia - Keeping and breeding aviary birds ".
Reed Books.

2. Crome, Francis & Shields, James 1992. "Parrots and Pigeons of Australia". The National Photographic Index of Australian Wildlife.
3. Forshaw, Joseph 1992. "Australian Parrots". Ure Publishing.
4. Jordan, Rick 1989. "Parrot Incubation Procedures ". Black Cockatoo Press.
5. Voren, Howard & Jorden, Rick 1992. " Parrots - Hand feeding and Nursery Management ". Osborne Editions International Pty Limited.
6. Romer, Liz & Spittall, Desmond . "Coxen's Fig Parrot Recovery Plan" Currumbin Sanctuary.
7. Wilkinson, Shaun "My experiences with the breeding of Fig Parrots" Lory Lore Avian Breeding Centre.
8. de Ruiter, Maarten "Notes on keeping Fig-parrots" Australian Aviculture May 1998.
9. Doole, John 1993 "Fig Parrots - An Overview" 4th Canadian Parrot Symposium.
10. Neufeld, Laurel 1993 " The Double-eyed Fig Parrot" 4th Canadian Parrot Symposium.
11. Doole, John 1994 - Notes
12. Muller, M. & Neumann, N. " Keeping & Breeding Fig Parrots of the Genus *Psittaculirostris* at Vogelpark Walsrode" Avicultural Magazine Vol 104 No. 2 1998.