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# captive breeding of the LORD HOWE ISLAND WOODHEN . . . . . an endangered rail

By Glenn Lourie-Fraser  
N.S.W. Australia

## INTRODUCTION

The Lord Howe Island woodhen *Tricholimnas sylvestris* is an endangered flightless rail (family rallidae) endemic to the tiny southwest Pacific Island of the same name. This paper reports on an avicultural programme which recently commenced on the Island to provide captive-bred stock for rehabilitation of the species in the wild.

Lord Howe Island lies approximately 800km northeast of Sydney, New South Wales, Australia. The nearest land is the coastline of the Australian mainland, some 600km away. The island is small (9km long by 2km wide) and mountainous, and for the most part covered in sub-tropical rainforest. Mounts Lidbird and Gower dominate the landscape, and the 20 hectare plateau summit of the latter (altitude 866m) was the woodhen's last stronghold. The lowlands of the island are inhabited by some 250 people, many of whom are the direct descendents of the first settlers of 1833.

Previous ecological studies of the woodhen had shown the woodhen to be one of the world's rarest birds, with a total population in the wild of some 30 individuals (Disney 1974, Fullagar and Disney 1975, Miller and Kingston 1980). During May 1980 only fifteen individuals could be found. It has been ranked by the IUCN as an endangered species on its highest priority list (endangered genera and higher taxa). In mid-1980, an avicultural programme was embarked upon to assist with the conservation of the species on the island. I was appointed aviculturist and after the first season wish to report on progress to date, with details of methods employed and aspects of the bird's breeding biology not previously reported.

## DESCRIPTION AND HABITS

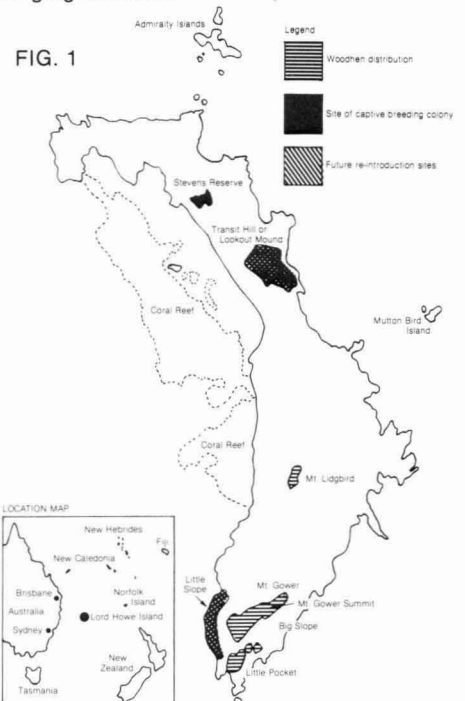
The woodhen's general colour is olive-brown, and wing feathers are chestnut coloured with black bars although this is not seen until the birds spread their wings. The bill is approximately 50mm long, slightly down curved and pinkish-grey in colour. The oldest birds sometimes have white ear coverts and occasionally, a grey nape. The iris in adults is bright red. The bantam-sized woodhen of Lord Howe Island are very alert and move quickly when disturbed but they can be attracted within a few feet by an unusual noise. Both members of a woodhen pair are extremely aggressive

when defending their territory assaulting the intruder mercilessly.

The woodhen's territorial call is high-pitched. Both birds of a territorial pair combine together in their challenging duet. Established pairs maintain a low 'bonking' contact call. Woodhen chicks, while growing, emit an incessant 'peeping'.

Although the birds spend most of their lives digging and scratching for insects and other invertebrate foods, they have never been observed scratching with their feet as does a chicken, or holding food items with their feet as do parrots. While scratching amongst the forest litter for invertebrates, they can move objects using the bill such as logs etc., equal to their own weight.

Lord Howe Island showing current woodhen distribution and the site of the captive breeding colony and re-introduction of free-ranging colonies.



Regarded as flightless, in captivity woodhen have been observed to jump vertically up to 1 1/2 metres entirely with the power in their legs and to skim the ground horizontally for 3 1/2 metres with their wings flapping and their legs dangling behind.

In 1837, woodhen were reported to be still common, but only sixteen years later were scarce and restricted in distribution due to the efforts of the first settlers who

arrived in 1833 and hunted birds for food.

Continuing human predation, coupled with the impact of introduced pigs, goats, cats and owls reduced the woodhen population still further. Woodhen were still regularly on the menu seventy years ago. Accounts from the island's senior citizens describe how at the turn of the century they, as children, used to knock stones or sticks together, as the banging would attract the birds. Once the birds were close, they would hit them on the head.

Some woodhen still persisted on the lowlands until the 1940's, but since then, there have been few reports below the summit and upper slopes of Mount Gower.

Control/eradication programmes on introduced predators and competitors have been undertaken in recent years in a bid to help the woodhen population. Pigs have been almost exterminated and the other animal populations greatly thinned. It is against this background of habitat rehabilitation that the captive propagation/release programme for the woodhen is being undertaken.

**INVESTIGATIONS—  
PAST AND PRESENT**

In 1969, Mr. H.J. de S. Disney, the then Curator of Birds at the Australian Museum began studies on the woodhen. Dr. P. Fullagar of the C.S.I.R.O. joined him in 1971 and results of their researches revealed that there were less than thirty woodhen on Mount Gower and possibly a few on Mount Lidgbird.

Their observations revealed that adults paired for life and, on the summit, each pair defended a territory of approximately 2 or 3 hectares. The population size remained almost constant; the number of young birds hatched and surviving each season was about equal to the number of adult deaths. Juvenile birds were forced out of the parents' territories during the winter months. All birds were caught and banded with aluminum serial numbered bands and, for easy identification, a unique sequence of coloured bands on the other leg e.g. yellow-red-green so that data sheets would be headed with the colour band sequence, followed by details. Many birds were banded as juveniles in their family groups, but were never seen again. It was surmised that these birds perished due to lack of suitable habitat.

In 1978, Dr. Ben Miller of the New South Wales National Parks and Wildlife Service spent two years on Lord Howe Island to make a full investigation into the problems limiting the woodhen population and what might be done to

help increase what still remained. He concluded that feral pigs were preventing the woodhen population descending from its mountaintop refuge, which was protected by a low cliffline and hence inaccessible to the pigs. Only this accident of topography had saved the woodhen population from extinction. Based on these findings, a pig eradication programme was commenced in 1979, and almost 200 pigs have been removed from the forests, with only one or two thought to remain. Miller and Dr. Tim Kingston of the Australian Museum (1980) examined a number of alternative sites on the island, with the view to re-establishment of additional woodhen populations and found that the food resource was adequate in most places. At one site, Little Slope, the food resource was extremely rich, and with an absence of pigs, goats and cats, there was no reason why restocking would not result in the foundation of a substantial wild population. Many areas of the native forest started to regenerate with strategies primarily addressed to woodhen.

**THE BREEDING PROGRAMME  
Costs and Source of Funds**

Before an attempt could be made to propagate the woodhen, long-term financial backing was sought from the National Parks and Wildlife Foundation which operates as a fund-raising trust by public and business donations for many wildlife projects in New South Wales. The National Parks and Wildlife Service undertook administration responsibilities and the Lord Howe Island Board (which is responsible for the administration of the island) assisted with rent subsidies and construction of facilities, use of vehicles and manpower, etc. As many of the administrating costs of the Service and the Board are hidden, the real final cost will be somewhat higher than the estimate provided below.

|                                       |          |
|---------------------------------------|----------|
|                                       | Aust. \$ |
| Investigative Study (2 years) . . . . | 62,000   |
| 5 year Breeding Programme . . . .     | 200,000  |
|                                       | 262,000  |

**Site and Construction**

The breeding complex was built on a specially selected reserve on the lowlands of the island in near-natural habitat of Banyan Fig (*Ficus columnaris*), Kentia Palm (*Howea forsterana*) and Blackbutt *Cryptocaria triplinervis* forest.

Construction of the 0.5 hectare breeding centre was completed in May 1980. The breeding aviaries are protected by a perimeter fence 225cm high comprising overlapping palings 200cm which supports an outward sloping tin guard of 25cm from which suspends

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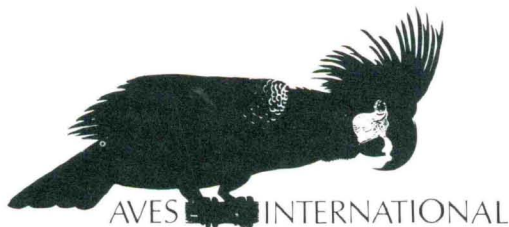


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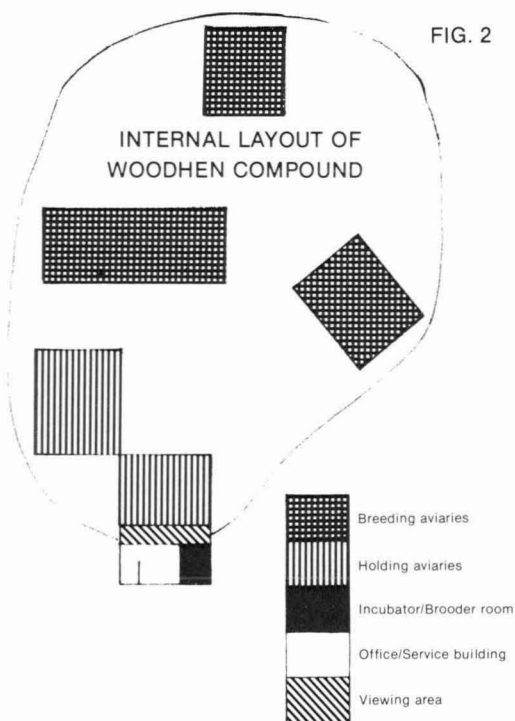
three strands of electric wiring to discourage animals climbing over the top from outside. To prevent animals burrowing under, a 45cm tin strip sits under the palings. This has proved an adequate protection against disturbance from cats, dogs, and humans.

The initial concept of large open-topped enclosures proved unsatisfactory as, on the first night in it's breeding enclosures, a male woodhen was killed by a Tasmanian masked barn owl (*Tyto novaehollandiae*). This owl species had been introduced to the island in the 1920's in an effort to help control the increasing rat population. To eliminate further loss to owls, each aviary followed a basic format having galvanized iron or netted 150cm high sides with a flat or pitched roof, depending on location in an effort to minimize damage to trees. Solid galvanized iron sides face the other aviaries to reduce visual and some audible disturbances. The surface area of each aviary was approximately 100 square metres. The aviary adjoining the Service building (see Diagram) is fitted with a glass viewing strip which enables the public to view juvenile/non-breeding birds with minimal disturbance to them.

The Service building is divided into two rooms: one for preparing food also serving as an office area. An air conditioner maintains constant temperature of the Incubator/brooder room which is fitted with two incubators:

- The Domex 'forced draft'; and
- The Onslow 'still air'.

Refer to Figure 2 for general layout of aviaries and building.



## AVICULTURE

Aviculture's first knowledge of woodhen were during the 1830's. The following extract is from a letter to the Secretary of the Zoological Society of London by Dr. George Bennett F.Z.S. dated Sydney, June 15, 1969:

"... I recollect that in the year 1836 or 1837 the late Alexander Macleay, then Colonial Secretary of N.S.W., had several of these birds alive, which had been brought to him from Lord Howe's Island; and he at that time expressed an intention of sending them to the Linnean and Zoological Societies, but I am not aware whether they ever reached their destination. . . ."

The Zoological Society received a living specimen, however, no details of avicultural value are recorded. Nevertheless, the Zoological Society also received a live specimen of the New Caledonian woodhen (*Tricholimnas lafresnayanus*) (Verreaux and Des Murs), the only other member of the genus and now considered extinct, as shown by the following quote from the 'Proceedings of the Scientific Meetings of the Zoological Society of London'—June 24, 1869:

"... A New Caledonian Rail (*Ocydromus lafresnayanus*), presented to the Society by Dr. George Bennett, F.Z.S., of Sydney, and received, by the 'Parramatta' on the 10th inst. This very interesting bird, which had been sent to Dr. Bennett from New Caledonia, was little known in European collections, and had never previously been received alive. It was allied to the Weka Rail (*Ocydromus novae-zeelandiae*, but quite distinct specifically, if not generically. A more extended notice of this remarkable bird would be given whenever it died and so afforded the means of making a thorough examination of it. This it was impossible to effect while the bird was living. . . ."

In 1872, Bennett (in aviaries in Sydney) kept Lord Howe Island woodhen with the New Zealand Weka (*Gallirallus australis*) and the new Caledonian woodhen. He said that they were all excellent rat catchers. Regrettably, he made no mention of diets or aviary design.

I am not aware of any further attempts to introduce into captivity any member of the genus since these references of last century. Rails have seldom been held or maintained in captivity. However, the New Zealand Wildlife Service operates a breeding centre—The Mount Bruce Native Bird Reserve—for the captive propagation and reintroduction of New Zealand's endangered birdlife. For six and a half years, I was employed by the New Zealand Wildlife Service as an aviculturist during which time six species

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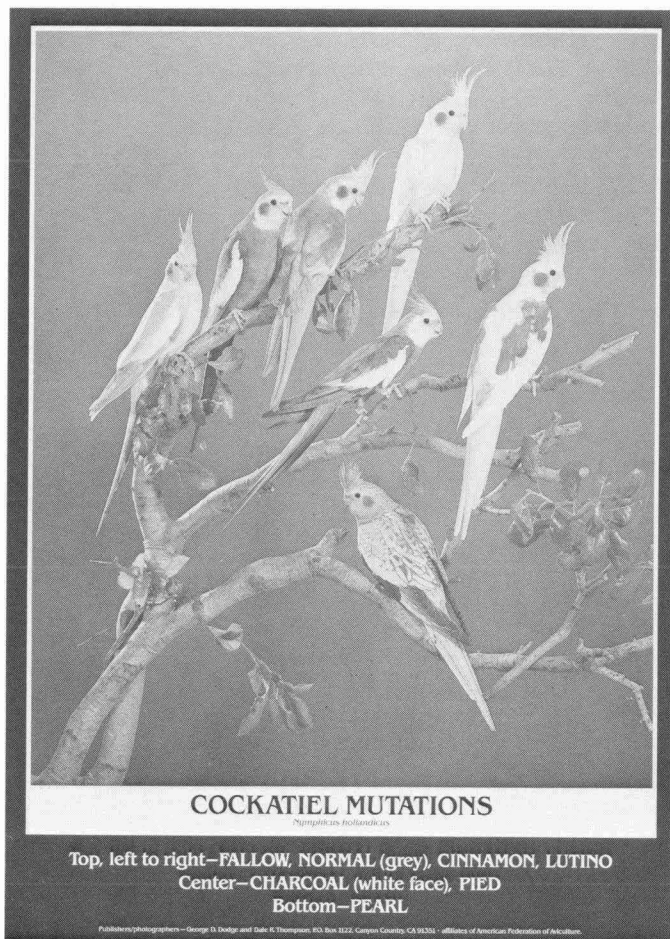
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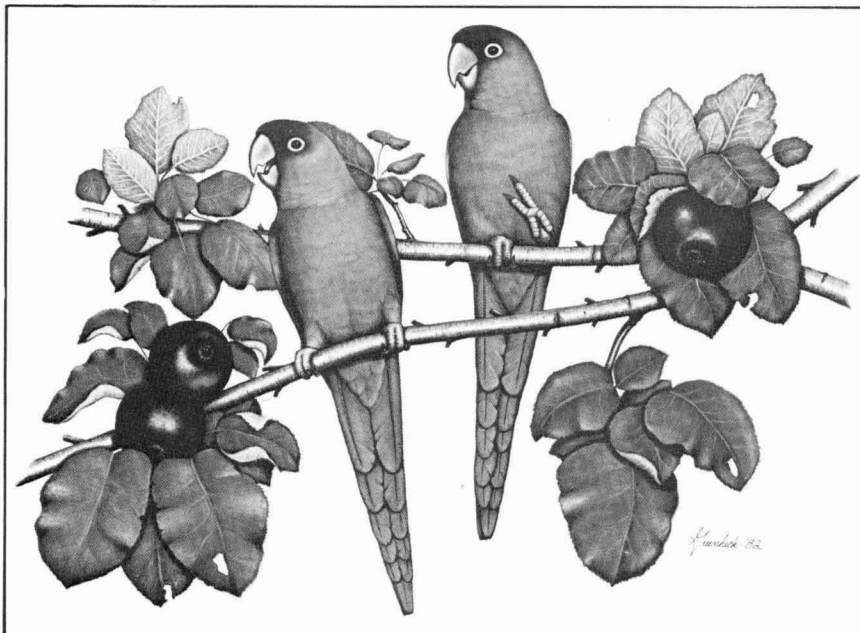
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of rail were bred.

With this background, I was seconded from the New Zealand Wildlife Service in late 1979 at the invitation of the New South Wales National Parks and Wildlife Service. My capacity as aviculturist was to oversee the captive management of the breeding programme.

**CAPTURE AND TRANSPORTATION**

In the weeks prior to the capture, only four wild breeding pairs could be found making it imperative that losses were not sustained during capture and transportation. Transfer of birds from the wild to the breeding facilities was carried out over two days in May 1980. Three pairs had previously been selected as desired foundation stock; each had produced offspring in the wild during the previous season and, hence, known to be fertile.

Territorial woodhen were known to challenge other woodhen in their territory. Birds were located and attracted by replay of a territorial woodhen call. Once the birds have been located, they are normally interested in finding the vocal intruder giving the capture-party time to erect a mist net along the ground so that the birds can be driven into the net.

At capture the birds were weighed to give a guide of initial condition and placed in acoustically shielded shock-proofed carrying crates. Transport was by helicopter to reduce confinement time from 4-6 hours by backpack, to 10-15 minutes. All birds arrived safely at the breeding centre. See appendix for measurements.

**CAPTIVE CONDITIONING**

Arrival coops were made of hessian walls about 180cm square with roofs of netting. The functions of arrival coops are:

- The birds have a small, clearly-defined area and settle more readily;
- Being in a small area, they are easier to observe (e.g. to see if they are accepting artificial food);
- Capture for regular monitoring of weight is less stressful;
- The hessian walls prevent the birds from injuring themselves until they become accustomed to the concept of an impenetrable barrier.

The woodhen captured represented three of the four known breeding pairs. All birds showed various amounts of stress and, as expected, all birds' weights dropped during captive conditioning. I have found that younger birds settle and accept captivity more readily than older birds and this was also the case with woodhen.

The 'Summit' pair were the only birds

of known age; the female approximately eighteen months and the male approximately two and a half years. In their first breeding season in the wild they had produced one chick. This pair needed no special conditioning as they readily accepted their diet and surroundings and after fourteen days were ready for release into their breeding enclosure.

The 'Pocket' pair, of unknown age but thought to have been five or six years, progressed steadily until Day 14 when both birds' weights fell sharply. This was thought to be due to the small arrival coop, which was consequently doubled in size, after which their weights stabilized. This pair was released into its breeding aviary on Day 17—the male at 50 gms below capture weight and the female 65 gms down on capture weight. During the same night, the male was killed by an owl. This stressed the female further and would account for her continuing decline in weight. Her condition remained low until she was remated eight weeks later.

It has been observed that white ear-coverts appear at the age of seven years. The 'Old Pair's' exact age was unknown, however, the male had these white coverts suggesting that it was an old bird. This can be considered a major factor in the pair's reluctance to settle and accept artificial food. During the first four days in captivity, both birds sustained a 15% loss of their capture weights. The male dropped from 540 gms to 460 gms and the female from 410 gms to 350 gms. Force feeding, three times daily, in the arrival coop for the next six days failed to induce the birds to forage for themselves so, at Day 10, they were brought indoors into the service room. By this time, the most advanced (Summit) pair had begun calling and this placed an additional stress on the Old pair, who were still losing condition. Inside the Service room, the Old pair were housed in a coop of solid sides (dimensions 150 cm x 75 cm x 58 cm) with a netting top to prevent them escaping. Weight loss by this time was 17% for the male and 20% for the female.

By Day 4 in the service room, both birds were observed tentatively pecking at the feed trays and their weights began to stabilize. At this time, force feeding was reduced to once daily. Weights remained stable until Day 10 when the male fell a further 20 gms (- 120 from capture weight) and the female 10 gms (- 70 from capture weight). This further decline in body condition, a combination of boredom and stress from limited confinement in their coop indicated the appropriate time had come for release in-

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to their permanent aviary. The body weights then increased markedly and within two weeks, both birds had passed their capture weights—male + 5 gms of capture weight and the female + 25 gms.

Following the initial capture, two other young unpaired males were brought into captivity as possible mates for the widowed female. Both birds settled readily and posed no problems in captive conditioning. After several unsuccessful attempts at pairing, the first male was released. However, the second male readily paired with the widowed female.

#### DIETS AND FEEDING REGIMES

Formulation of a suitable diet for the birds was made from the following ingredients:

- poultry layer pellets;
- 'Whiskettes' cat food (a high protein feed from a variety of fish and meats in dry, biscuit form);
- matured cheddar cheese (grated);
- cottage cheese;
- madera cake;
- an occasional complete raw egg;
- laboratory-bred, new-born mice (*Mus musculus*);
- mealworms (*Tenebrio molitor*);
- woodgrubs (family *Cerambycidae*);
- and
- other invertebrates.

All birds were regularly weighed and diet quantities increased or decreased until birds maintained the required weights, which are approximately 50 grams heavier than capture, as the birds were caught in early winter in trim condition. The amounts of food consumed by individual birds is known to vary considerably from season to season (i.e. winter or breeding season). Woodhen were found to have a tendency to overeat during the non-breeding season therefore, I ceased feeding them raw eggs, wood grubs and cottage cheese. Cheddar cheese is given in a reduced quantity. Madera cake and steak strips were subsequently eliminated as they nutritionally duplicated cheaper and more readily accessible food items.

Poultry pellets; grated cheese; 'Whiskettes' (blended to a powder and soaked in water to form a paste); and, mealworms are the daily basic diet and approximate amounts per adult bird were:

#### Non-breeding season:

- poultry pellets 5 gms;
- grated cheese 5 gms;
- mealworms 5 gms; and
- 'Whiskettes' 20 gms.

#### Breeding season:

- poultry pellets 5 gms;

- grated cheese 10 gms;
- mealworms 10 gms;
- 'Whiskettes' 20 gms;
- cottage cheese 10 gms;
- raw egg once weekly per pair; and
- baby mice, two every three days.

Two or three wood grubs per bird are fed late morning and mid-afternoon for 8-10 days before laying. The birds also forage in the leaf litter of their aviaries for naturally occurring invertebrates. The birds are fed at the same time each day so as to establish a routine.

#### BREEDING

Investigations in the wild had found woodhen to be extremely secretive during breeding (Miller, Disney pers. comm.). Only a few nests have ever been found by biologists and inspection is thought to have resulted in desertion of two of these. This secretive behaviour compared with that of Buff Wekas at Mount Bruce which would smash and eat their eggs if they suspected detection. A clutch in the wild of 1-4 eggs has been reported for woodhen.

In captivity, the first attempt at nest building was atypical of what was to become normal breeding sequences in captivity probably because the females came into breeding condition before the males. The females initiated nest building and tried to encourage the males to join in nesting activities by dropping nesting materials at their feet and nestling themselves against the chest of their mates. However, during the first nest-building period, the females did almost all the nest building (i.e. selection of nest site and building of the nest). Once the eggs were laid, both birds incubated alternately for periods of twenty minutes to two and a half hours. The eggs were collected at fourteen days and found to be infertile; the nests were then broken up, and new sites prepared.

During the following days, after the first nest had been broken up, the males took a more active interest in the nest building. The male initiated much of the nest building and copulations.

To help stimulate copulation and nest building, woodgrubs were fed late morning and mid-afternoon for 8-10 days before egg laying. The male offers a grub to the female by calling her to him. This pre-copulatory activity is similar to domestic fowls in which the rooster finds a small morsel and offers it to a hen. The female woodhen feed ravenously in the days just prior to and during egg laying.

In the prelude to copulation, the male and less often the female, gives an intimate, beckoning 'weep-weep' call; the male walks in step behind the female who then postures (sometimes crouching

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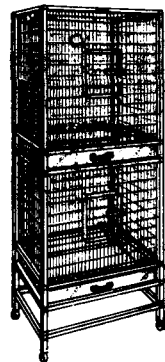
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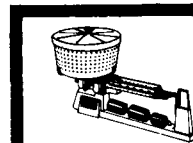
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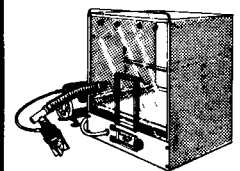
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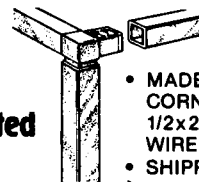
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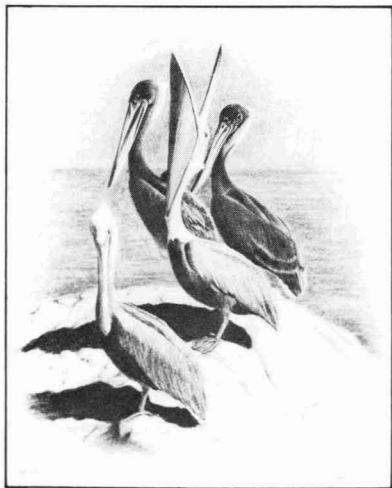
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and sometimes standing); the male mounts and, balancing, makes cloacal contact with wings fluttering then dismounts. Both birds stand side-by-side or face-to-face while the male gives a low 'boonk' call. Sometimes, this is followed by mutual preening or resumption of nest-building. Copulation itself takes approximately fifteen seconds.

In the wild, wooden nests have been found in thick clumps of fern, under a fallen log, or down a burrow—some-where that is quite dark and sheltered. To try to duplicate this in the aviary, triangular nest boxes (350mm x 400mm) with solid backs were provided in the aviaries and to enhance their natural appearance they were covered with rotting logs, palm fronds, etc.

**THE NEST**

A typical wooden nest bowl is 100mm-120mm in diameter, approximately 25mm deep and lined with fine, dry leaf litter. The bird tends to fill the whole box with nesting material. The base of the nest bowl is usually 75mm above the ground. Both birds bring nesting material to the site. I have observed both sexes participate in nest building. Several trial nests are also built.

The 'Old' pair tended to reject artificial sites and use more natural ones, such as under a pile of palm fronds. The birds were left to incubate their own eggs for the first fourteen days then the eggs were collected and artificially incubated for the last six days before hatching. After collection of eggs from the nest, re-nesting occurred in approximately fourteen days. The parent birds re-nested up to seven times in the six-month breeding season.

**EGGS**

Wooden eggs are dull white with minute dots and large irregular shaped markings of light chestnut red and faint, steel-grey blue more or less scattered over the surface of the shell predominating

towards the larger end. The average size of thirty-three eggs is 46.9mm x 33.4mm and approximately 28.7gms fresh, about the size of a bantam egg. Clutches range from 1-4, with eggs laid on alternate days; some evidence exists of daily laying in some cases.

The third pair had the poorest fertility which was considered to be unacceptably low for our purposes. Three possible reasons for this are:

- (i) The male was introduced after the commencement of the breeding season;
- (ii) The male was only one year old;
- (iii) The male rapidly became obese gaining 70% of his capture weight during the season.

**INCUBATION**

Natural incubation normally began with laying of the last egg. Both male and female birds share this duty and generally, the pair take a few days to settle into a regular time pattern of approximately two hour intervals. It is not known which of the pair incubates at night, however, woodhens are crepuscular and may, in fact, continue to incubate alternately through the night.

Satisfactory hatchings are achieved from fourteen days in both types of incubator. The eggs are placed on their sides and they are rolled alternately 180° every six hours with relative humidity around 70% and air temperature of 99.5°F. Once pipped, the humidity is raised to maximum. It must be stressed that these hatchings are from eggs removed from fourteen days of natural incubation and full-term incubation has not yet been achieved. Incubation in captivity is twenty days (14 natural, 6 artificial).

**CHICKS' GROWTH AND DEVELOPMENT**

The first chick hatched on August 19, 1980, ninety-two days after capture of the parents. The parents were the troublesome Old Pair. Eggs laid by the second pair at the same time died as full-

Results of eggs laid:

|                        | EGGS LAID | NO. OF CLUTCHES | INFERTILE | FERTILE | DEAD EMBRYO | HATCHED | NO. RAISED |
|------------------------|-----------|-----------------|-----------|---------|-------------|---------|------------|
| 1st Pair — Old Pair    | 4         | 2               | 3         | 1       | —           | 1       | 1          |
| 2nd Pair — Summit Pair | 17        | 7               | 4         | 13      | 5           | 8       | 8          |
| 3rd Pair — Pocket Pair | 22        | 6               | 16        | 6       | 2           | 4       | 4          |
| Totals                 | 43        | 15              | 23        | 20      | 7           | 13      | 13         |

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| Blue Mealy (P)             | 28's (M)                      |
| Blue Mealy (E)             | Barnard (M)                   |
| Stanley (P)                | Barnard (E)                   |
| *Turquoise (E)             | Crimson-wing (M)              |
| Many-colored (P)           | Rock Pebblar (M)              |
| Red Rump Normal/Normal (P) | M = mature E = egg-laying     |
| Red Rump Normal/Yellow (P) | P = producers                 |

#### PARAKEETS, ROSELLAS (Singles only)

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| Stanley Rosella  | Red Rump (Yellow) |
| *Scarlet-chested | Barraband         |
| *Turquoise       | Rock Pebblar      |

*\*Endangered species permit required*

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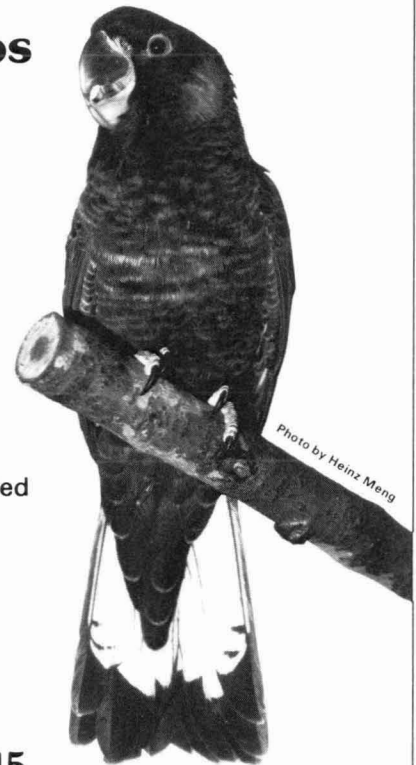
### \*1983 Breeding Inventory:

- White-tailed Black Cockatoos  
*(Calyptorhynchus funereus baudinii)*
- Slender-billed Cockatoos  
*(Cacatua tenuirostris)*
- Greater Sulphur-crested Cockatoos  
*(C. galerita galerita)*
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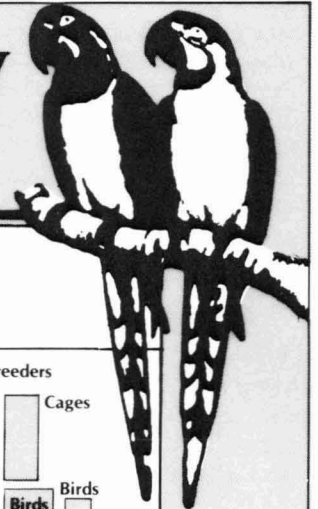
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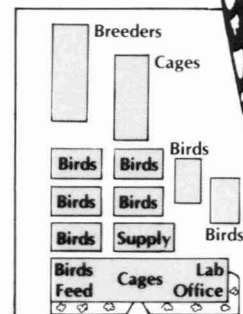
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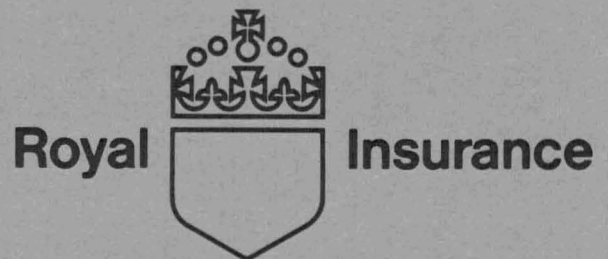
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Phone: (     ) \_\_\_\_\_

Location of Birds (if different from mailing address): \_\_\_\_\_

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1) Are you involved with birds?

- Personal Pets/Breeding Hobby
- Financially Substantiating Breeding Hobby
- Commercial

2) Are premises occupied day and night where birds are located?

- Yes
- No

3) If no, explain \_\_\_\_\_

4) Do you transport birds regularly?

- Yes
- No

5) If yes, explain \_\_\_\_\_

6) Have you had any losses in the past three years (whether covered by insurance or not)?

- Yes
- No

7) If yes, explain \_\_\_\_\_

8) Describe type of aviary and/or cage construction, location and general security: \_\_\_\_\_

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| Species | Name or ID # | Sex if known | Description (color, character, talent, etc.) | Value |
|---------|--------------|--------------|--|-------|
|         |              |              |  |       |

**GROUPS OR COLONIES**

| Species | Description (color, normal, mutation, etc.) | Individual Value Max \$300 | Total Group Value |
|---------|---|----------------------------|-------------------|
|         |   |                            |                   |

**MAIL TO:** George L. Brown, Insurance Agency, 30131 Town Center Drive, Suite 275, Laguna Niguel, CA 92677





*Threat posture of male woodhen.*

*Wild pair of Woodhen.*



*View of Lord Howe Island*



Photos by Glenn L. Fraser

term embryos (i.e. failed to hatch).

Newly hatched chicks are sooty black with dark irises and legs; the only speck of white is the egg-tooth. They are initially kept warm in the heated brooder-room with a light bulb and hiding places made of fibre tunnels or small cardboard boxes. A chick grows quickly. For the first two weeks of life, the chicks are fed hourly by tweezers on their natural food of grubs, worms and arthropods collected from natural forest litter. The chicks began drinking water at four days of age.

Artificial food was provided from six days and the chicks are encouraged to start feeding themselves from this time. To try to provide enough grubs for a growing chick at this stage was almost impossible due to their insatiable appetites. With the growing interest after the first hatching, the Lord Howe Islanders came to the rescue by raiding their gardens for insects.

Although after only one breeding season our data are incomplete, the following average growth information is established and is not segregated into sexes, however as a general rule, maximum size are males while the smallest tend to be females.

Sexing woodhens by measurement was not possible at hatching, however, by twelve days, the males had generally gained slightly more weight and more length in the tarsus (leg). The single most important sexing feature is the culmen (bill) which is the last characteristic to grow, but sex could usually be determined successfully before this time by general body size and behavioural traits, males becoming aggressive.

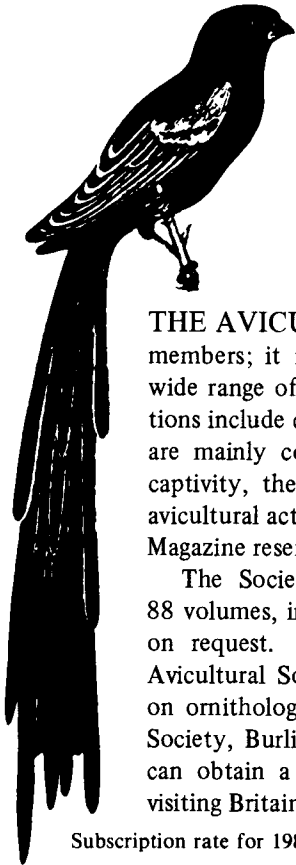
The majority of the thirteen hand-raised woodhen chicks' tarsuses were shorter than the wild bird average. Next season, the chicks will be fed a larger quantity of earthworms during the first fourteen days—the period of greatest growth—in an effort to increase tarsus length.

#### REMARKS

Day

- 0 Hatching. Average 20 gms (Maximum 21.5 gms and Minimum 17 gms).
- 1 Average loss during the first day was 1.2 gms (Maximum 2.9 gms and minimum 0.5 gms) due to reabsorption of the yoke sack, desiccation and first defaecation in the absence of external food or water. Hourly feeding by tweezers is initiated from 6am to 10pm daily of invertebrates (mainly amphipods and isopods) and earth-





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President - Dr. Jean Delacour

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worms.

- 4 Chick begins drinking water.
- 6 Chick tentatively starts to peck at food items provided—poultry pellets; small grated cheese; 'Whiskettes' (ground and soaked as for adults); and mealworms.
- 12 Pin feathers start to appear.
- 14 Brown ear-coverts visible.
- 16 Breaking into feather. Chick moved to a bigger coop, with natural leaf litter to exercise toes and legs, still within the brooder room.
- 18 Fully feathered and preening using oil gland. Given first bath.
- 25 Ready to be moved outside depending on the weather.
- 65 Chicks are almost fully grown. Iris turning from dark grey to a light red.
- 100 Iris fully red. Some sexually distinguishing behaviour—the males may fight amongst themselves while female siblings can be maintained together without aggressive behaviour. Also, when another chick is introduced it will be attacked without hesitation.
- 150 The juvenile bird ceases to grow any further.

### CAPTIVE BIRDS RELEASED

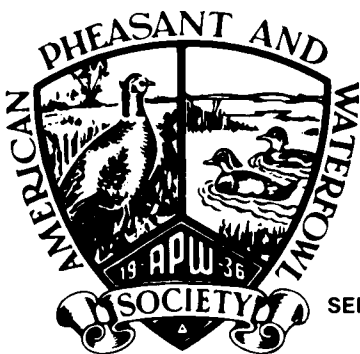
The Old pair's fertility deteriorated as the breeding season progressed and only two clutches were laid; the first clutch was of three infertile eggs and the second consisted of one fertile egg which later hatched. However, the pair continued to build nests, copulate and incubate empty nests. While this rate is adequate in the wild, they were considered 'spent' breeders. With limited resources of aviary space, time and personnel etc., it was felt it would be more beneficial if they were placed back into the wild and not retained as possible foster parents. After 215 days in captivity, the old pair were liberated at 15 gms above their capture weights in an area on the foothills of Mount Lidgbird. Efforts to relocate these birds were unsuccessful.

The other wild-caught bird released during this season was the male which could not be paired with the widowed female. After being held for only two months, he was released at Salmon Beach where he had been initially captured.

Four captive-bred birds were selected for liberation in mid-May 1981 on the Little Slope of Mount Gower, an area which supported over forty woodhen in 1914. The area is essentially land-locked by sheer cliffs and sea and is predator-free except for owls and crow-like currawongs (*Strepera graculina crissalis*).

To enable the juvenile woodhen time

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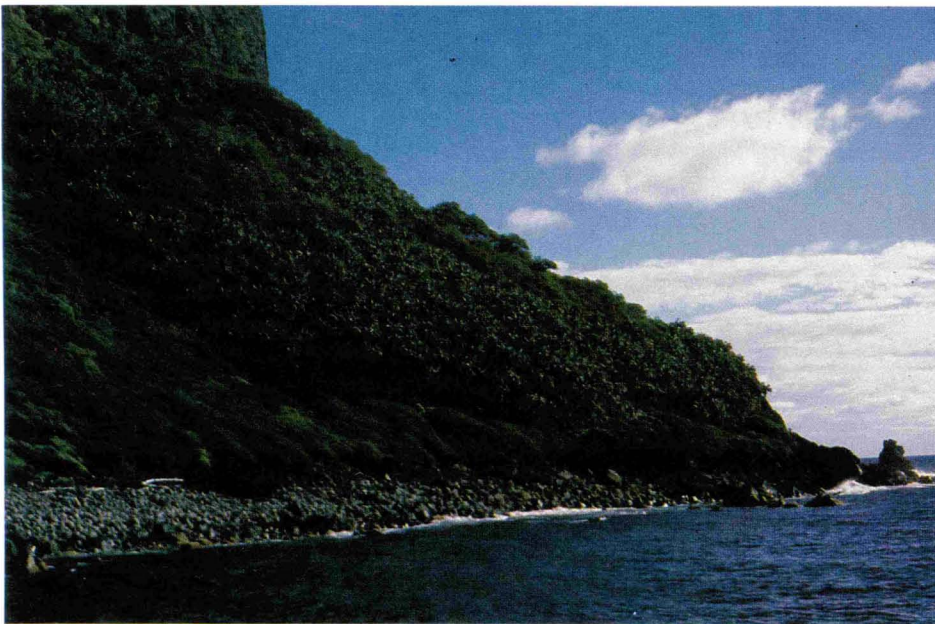
*9-day old chick being weighed.*

|                        | ORIGINAL TOTAL | DEATHS | RELEASED | SINGLE BIRDS HELD | BREEDING STOCK HELD |
|------------------------|----------------|--------|----------|-------------------|---------------------|
| Wild Birds             | 8              | 1      | 3        | —                 | 4                   |
| Captive-bred Juveniles | 13             | —      | 4        | 3                 | 6                   |
| Totals                 | 21             | 1      | 7        | 3                 | 10                  |

to settle and become acquainted with the environment of the release area, the 'gentle release' method of liberation was used with the birds spending fourteen days in coops constructed on Little Slope before being set free. These four juvenile birds have unique colour coded band sequences for easy identification. There have been resightings since the release was made which is extremely encouraging, however, discussion on this aspect is beyond the scope of the present paper.

### CONCLUSION

The first twelve months of the captive breeding programme have been very successful. Eight birds (3 female and 5 male) had been removed from the wild and seven released back (four captive-bred). The potential breeding of the captive colony has been now increased to five pairs, and three spare females. First year females have bred in the wild. There are no observations of a year old male woodhen paired in the wild, however, successful pairing of a first year male with a mature female was achieved in captivity. Three pair of hand-raised Woodhen are expected to breed in 1981/82 season, producing the F1 generation. ●



*Little Slope release area.*



*Release of 'Old' pair.*

### APPENDIX

The measurements of the six birds captured for the breeding program are within the normal range:

#### MALES:

CULMEN—54.0mm 55.4mm 56.0mm  
TARSUS—57.0mm 53.2mm 55.2mm

#### FEMALES:

CULMEN—48.9mm 47.0mm 50.0mm  
TARSUS—52.1mm 49.2mm 51.7mm

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### ACKNOWLEDGEMENTS

Gratitude is due to Mr. A.G. Caley who was contacted by the New South Wales Government for six months to assist in the project.

My special thanks to Mr. G. Phipps, Dr. B. Miller, Dr. K. Mullette, Mr. H.J. Des Disney and Dr. P. Fullagar for constructive criticism, and the New South Wales National Parks and Wildlife Service for use of distribution and location maps.

### FOOTNOTE:

These notes, with modification, follow the text of a lecture presented to the American Federation of Aviculture's 9th Annual Convention in San Diego, California August 1981.

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LOVEBIRD BABIES, peachface lutino, albino, green splits, blue, cherry, silver, pied, blue masked. PARAKEETS, English, American. No shipping. Rita Siedler, 1717 Burry Circle, Crest Hill, Illinois 60435, ph (815) 723-6793.

BEE POLLEN: high grade, a complete balanced food, UPS prepaid. 1 lb. \$6.50, 2 lbs. \$12.75, 4 lbs. \$24. Write for bulk prices. Send check or money order to: BEE POLLEN, c/o Jim Woodward, Rt. 3, Box 27, Winn- sboro, LA 71295. ph (318) 435-4625.

WANTED—MACAW AND PARROT FEATHERS—CASH FOR FEATHERS dropped by your birds when they moult. Scarlet macaw center tail feather \$3.00 ea., wing feathers 25¢ ea. We are prepared to buy in any quantity. More information & detailed price list on request. The Feather Merchant, 1350 Chaney St., El Cajon, CA. 92020, (619) 442-2224.

POLLEN: Mother Nature's conditioning food. Powder (birds only) \$4.50 per lb. Pellets (birds & people) \$5.50 per lb., \$5 per lb. for 5 lbs. or over, plus shipping. Follow UPS charts. Add 1 lb. for shipping container. Jim Ford, Dept. D, 7160 S. Brookhill Drive, Salt Lake City, UT 84121. (801) 943-7618.

MACAWS—Scarlet \$950. Blue & gold \$375. COCKA- TOOS—Moluccan \$450. Umbrella \$375. Goffin's \$200. Herds of Birds, (213) 994-5215.

SMITTY'S TURQUOISINE AVIARIES - now tak- ing orders for 1983 hatch. Specializing in Grass parakeets. Blue scarlet \$650 ea., Split blue scarlet \$350 ea., Scarlets sexed \$125 ea., Scarlets unsexed \$100 ea., Turquoisines \$100 ea., Bourke's \$60 ea., Yellow Bourke's \$250 ea., Split yellow Bourke's \$150 ea., Rosy Bourke's \$650 ea., Split rosy Bourke's \$350 ea., Elegants \$100 ea., Blue wings \$175 ea. Ralph V. Smith, P.O. Box 27, Calimesa, CA 92320. ph (714) 795-7272.

WANTED: We are a mail order company looking for a few more quality lines to add to our inventory. In- terested in nutritional supplies, books, "parrotfalia." Quality products only please. We pride ourselves on the best. Our mailings and customers are coast to coast in Canada. Please send price list and descrip- tion to R. Moroz, 3253 33rd Street West, Saskatoon, Sask., Canada S7L 4R1.

CLASSIC DESIGNED BIRD PERCHES AND STANDS. Tabletop and hanging models in two sizes. Larger Parrot stands, \$45.00 each. Smaller Cockatiel/Lovebird stands, \$29.95 each. All constructed with hardwood dowels, two removable feed cups, anodized aluminum trays. Send S.A.S.E. for illustrated brochure. Orders shipped freight collect. Send check to: Bird Things, Co., 920 W. Carmen Avenue, Chicago, Ill. 60640.

GRAND ECLECTUS, big, beautiful hand-fed babies \$2,500 per pair, singles also available. Call (707) 526-7111 (Santa Rosa, CA, area)

WANTED: 100 good breeding pairs each: cockatiels, finches, lovebirds & canaries in May 83. Send info to: Gem State Bird Farms, Box 125, Middleton, Idaho. (208) 585-3125.

POLLEN—NATURE'S MIRACLE FOOD... is a natural and often necessary part of a healthy bird's diet, especially at breeding time... and your bird's health is your greatest pleasure and investment. We supply pollen guaranteed to be fresh and of the highest quality. One lb. w/info sheet \$12. Five lbs. \$53. Sample w/info sheet \$1, all post paid. Kawana Honey, 2100-W Kawana Springs Route, Santa Rosa, CA 95404. (707) 528-4377

TALLWOOD AVIARY SUPPLY  
SILVER FLIGHT balanced diets - Aviary supplies. Write for prices. UPS delivered. 10537 Steel Trace Court, Charlotte, N.C. 28210.

COCKATIELS: lutinos, lutino pearls, pearls, pearl peds, green pearl peds, cinnamons, cinnamon pearls, cin- namon pearl peds, cinnamon peds, fallows, splits of most mutations. Also, Golden mantled rosellas. Some breeders available. Will ship. Double Grove Aviary, (213) 919-5989.

BABY SCARLET MACAWS hatched in our aviaries! Our chicks are hand fed from day 1 and have strongly imprinted on people. These chicks absolutely adore people and crave at- tention. Color photos sent upon request. Avicultural Research, Dr. Steve Volk or Lisa Volk, 4614 Fairmount, Kansas City, Missouri 64112, (816) 753-1976.

BIRD BELT BUCKLES handcrafted in solid brass. Budgie, Finch, Macaw, Cockatoo and Pheasant. \$15 + \$2 postage and handling. If ordering more than one, pay only \$14 + \$2 postage for each additional buckle. Send to T. & M. Mulrone, 4689 Winnebago Avenue, San Diego, CA 92117. Enquiries welcome.

FOR SALE: one male Leadbeater cockatoo \$4,500. One pair Goffin cockatoos \$600. Sun conures, one female, two males, \$900. One male Greenwing macaw \$600. Two pair Senegals \$200. Three pair Yellow faced parrots \$600. One female Rose breasted (proven breeder) \$2,000. All birds S/S and in captivity 4 to 8 years. Excellent breeding stock. Ann Nothaft, 110 Jamaica Ave., Medford, NY 11763. Phone (516) 289-1413.

HOFFMAN'S AVIARY, 4000 birds, over 200 different types to choose from. Visitors welcome. Call (704) 867-8629 or send SASE to Hoffman's Aviary, Rt. 1, Box 201, Kings Mountain, NC 28086.

NATIONAL PARROT ASSOCIATION, organiz- ing now to educate and entertain hobbyists, collectors, fanciers of parrots, macaws, cockatoos, cockatiels, conures, budgies, etc. Bi-monthly newsletter featuring information we can all use. Member articles. Recognized experts. Photos, Q's & A's, classified listings and more. If interested in joining or con- tributing, write: National Parrot Association, 8 North Hoffman Lane, Hauppauge, NY 11788.

SPRING-SUMMER HATCH. Hand fed and hand tamed from hatching: Triton & Moluccan cockatoos, Hyacinth macaw, Bare-eyed and Rose breasted cockatoos. Also available—28's, Sun conures, and Blue rosellas. FEATHER HOLLOW RANCH, P.O. Box 6391, Woodland Hills, CA 91365. Phone (213) 340-5086.

3 BOOKS—The Cordon Bleu, The Fire Finch, Green Singing Finch. Each covers complete step-by-step care and breeding instructions for cage or aviary. \$5.00 each. (Please specify) Postpaid - handfeeding baby finches, formula and easy-to-follow directions, \$2.50. Gretchen Barker, 7837 Gladstone, White City, Oregon 97503.

Own inexpensive HAND-FED BIRDS THAT CAN TALK! We have Alexander and Indian ringnecks, moustache parakeets, cockatiels and budgies. Hatched in our home. References given. PARROT PALS (517) 835-1652, Michigan.

COCKATOOS: Umbrellas, Moluccans, Lesser sulphurs. ASIAN: Emerald collared, Long tailed, Hanging parrots, Fig parrots, Amboina kings, others on request. Call or write to: Zoological Park For The Birds, 1775 N. Rancho Dr., Las Vegas, NV 89106. Pat Dingle (702) 647-4685.

"ALL-IN-ONE" calcium/mineral/grit blocks—still the best! Regular large 50¢, small 25¢. New! Extra hard for big birds. 65¢ minimum order 12 pieces postpaid! 48 states. Send check to: GOLDEN WEST BIRD FARM, Rt. 2, Box 64, McMinnville, Oregon 97128.

NEW!!! A TOY THAT PREVENTS BOREDOM & pro- vides your conure or parrot with calcium, minerals, grit & a beak conditioner! "All-in-one" block n'chain with a snap. (xtra durable) \$3.95 each. Replacement blocks 65¢ each. Minimum order 2 toys, or 6 blocks—if ordered separately. Send check to: GOLDEN WEST BIRD FARM, Rt. 2, Box 64, McMinn- ville, Oregon 97128.



# CLASSIFIED ADS

**CLASSIFIED RATES** — \$5.00 minimum charge for 4 lines of type (average 7 words per line). Additional charge of 9¢ per word for ad running over 28 words. (28 words to include name, address and phone.) All copy to be **RECEIVED BY 10th** day of month preceding publication. One inch boxed ad - 58 word maximum — \$12.00.

**BIRDS OF ALL TYPES**—Hoffman's Aviary, Rt. 1, Box 201, Kings Mountain, NC 28086. phone (704) 867-8629.

**EXCEPTIONAL HANDFED TAME BABIES:** Yellow napes, Blue fronts, Chattering lory. Very young Orange-wings, Green-wings, Mynah. Handfed baby macaws and cockatoos on order only. Breeders. (813) 872-0681.

**1982 BABIES—SUPERTAME - HAND RAISED:** MACAWS - Scarlet, Blue & Gold, Military, Green Wing, Catalina, Yellow Collar, Noble, Severe. COCKATOOS - Umbrella, Mollucan, Triton, Citron. AMAZONS - Blue Front, Double Yellow, Yellow Nape, Hispanolan, Red Head, Spectacle. CONURES - Sun, Jenday, Gold Cap, Austral, Slenderbill. We raise 16 different species of conures. CAIQUE - White Belly. RINGNECKS - Alexanderine - Indian, Lutino and Blue plus splits. COCKATIELS - All ACS banded - Normals, Lutinos, Pies, Pearls, Cinnamon, Cinnamon Pearl, Cinnamon Pied, Albino Pearl - ALSO DOMESTIC RAISED SURGICALLY SEXED PAIRS AVAILABLE - Will consider trade. TUWANA AVIARIES, 3986 10th Ave. N., Lake Worth, Fla. 33463 (SASE) (305-968-4214 or 967-0346).

**NEW PARAKEET and COCKATIEL JEWELRY** now available in pins, and earrings—wire or stud styles for pierced ears only. Pins - \$5 each, Earrings - \$10 per pair. Keet colors, blue-white, green-yellow, turquoise-yellow. Cockatiel colors, albino, normal. Please specify colors and earring backs. Also available in attractive solid brass, PAPERWEIGHTS \$19.50 each, and BELT BUCKLES \$19.50, with your choice of birds. Write for catalog sheet of birds available. Calif. res. add 6% tax. Send to AFA, P.O. Box 1568, Redondo Beach, CA 90278. (213) 372-2988.

**EXTRA BREEDING STOCK**—Mature, surgically sexed and beautiful condition. Female Blue & Gold Macaw \$650. Citron Crested Cockatoo Pair, large \$1300. Tres Marias Amazons pair \$1500. 2 extra males \$575 ea. A. Chandler (213) 454-6971.

**FOR TRADE:** Pearly conures (*Pyrrhura perlata*) Surgically sexed pairs from the only two unrelated breeding pairs in the USA. For other rare psittacines, *Pyrrhura*, etc., VOREN'S AVIARIES, (305) 793-5528 (Florida).

**BOOK—GREY-CHEEKED PARAKEET**, is now available. It contains information on diet and breeding. Send \$4 to Nancy Ruffalo, P.O. Box 2481, Capistrano Beach, CA 92624. (price includes postage)

**HAND RAISED BABIES:** Red sided Eclectus, Sun conures, Blue head Pionus, African greys, Citrons, Kakariris. O'Nita Buchwald, (713) 337-2781 or David Gresser, (713) 868-4596. Houston, TX area.

**BABY TRITON COCKATOOS**, Bare-eyed cockatoos bred at home and hand fed. Also Blue & gold macaws, African greys. Super tame pets. Charley Osterbrink, NIGHT FLIGHT FARM, Box 142, Nesbit, MS 38651. Phone (601) 368-7972.

**FEATHERPICKERS**—Greater Sulphur Crested Cockatoos Galerita/Galerita Hen, super tame and good talker, does NOT like other birds, excellent pet \$950. GALERITA/TRITON, male, semi-tame \$400. A. Chandler (213) 454-6971.

**BABY SUN CONURES** and baby crimson Rosellas. Beautiful hand fed babies. Lakeview Birds, Chicago, Illinois (312) 477-2739.

**ROSELLAS:** Stanley rosellas proven breeders \$250 pair. BOURKE'S: \$50 each or \$90 pair. Atkinson Aviaries, (209) 887-3665 (California).

**M/F PAIR MOLUCCAN COCKATOOS**—breeding age, roost in nest barrel. No room, must sell. \$900 pair or best offer. Bill Wegner, 3 Ann St., New Paltz, NY 12561 Phone (914) 255-1445.

**CINNAMON PEACH FACE**, unsexed, 6 months old, \$75 each. Other mutations available. Will ship two or more. Phil Ryan, 3831 Whitehall, Dallas, TX 75229. Phone (214) 353-9462.

**ROSE-BREADED COCKATOOS**—Hand-fed, domestic-raised, tame babies. Taking orders for summer delivery. Sexed young birds from unrelated pairs available late summer and fall. Gail Worth, Aves International, 2808 Oregon Court—Unit L8, Torrance, CA 90503, (213) 541-1180.

**PANGEA PARROT CIRCUS**—traveling circus for any special event. Has performed for hundreds of school assemblies, Lion Country Safari, and Knott's Berry Farm. Parrot taming, training and props (jeeps, scooters, etc.) also available. Gene Owens, (714) 735-5985 (California).

**DIAMOND SPARROWS, MASKED GRASS FINCHES.** All birds outdoor aviary raised by own parents. Top quality. Contact Gene Fetter, phone (415) 566-3262. San Francisco.

**JIM HAYWARD'S PORTRAITS OF EXOTIC BIRDS**, Psittacines a speciality. Commissions for paintings of the species of your choice invited. Prices by negotiation. Jim Hayward, CARTERTON BREEDING AVIARIES, (breeders of Psittacine birds), Carterton, Oxford, England. Phone Carterton 841736—cable—'Parrots' Oxford.

**TURQUOISINES & SCARLET CHESTED**—limited number unrelated pairs. Not equipped to ship. R.T. Longbotham, La Habra, California. Phone (213) 691-6675.

**FREE INFORMATION** on control of bacteria, pollen and bird dust. Prevent inhalation problems in lungs and sinuses. ECOLOGY AIR, 67 Wilson Drive, Worthington, Ohio 43085. Phone (614) 888-7824.

**HYACINTH MACAWS** to zebra finches. Hoffman's Aviary, Rt. 1, Box 201, Kings Mountain, NC 28086. or call (704) 867-8629.

Move forces **SALE OF ENTIRE STOCK** of exhibition Budgerigars. Champion stock of top national bloodlines. '76-'82 banded, 30 hens, 30 cocks including top bench winners. All must go. Will ship freight collect from Spokane, Washington airport. Priced from \$50-\$150. Discount for purchases of 10 or more. Ken Boardman, (509) 466-6022.

'82 **HANDFED GRAND ECLECTUS**, males, females. From our outdoor aviary breeders. Fabulous colors and size. One breeding pair Yellow collared macaws \$350. Female Noble macaw \$200. **WANTED:** female Hahn macaw. Heinz F. Wissen, P.O. Box 5483, San Mateo, CA 94402. Phone (415) 345-5068.

**1982 HATCH**—male Princess of Wales, male Scarlet chested parakeets, Yellow fronted Kakariris. Hand fed cockatiels. Call Linda, (415) 835-4499. San Francisco area.

**RAINBOW GOULDIAN FINCHES**—Lady Gouldian finches. All normal colors. All ages. Beautiful young pairs ready for breeding. One free Society finch with purchase of pair. Discounts on orders of more than five pairs. Breeding advice free. Inquiries welcome. Phone (703) 356-4605 Washington DC area.

**CAIQUES:** black-headed, two. Surgically sexed males. Healthy, beautiful feather. Have been in captivity for 5 years. \$350 for both or make offer. (808) 841-1216 (Hawaii).

**LOST:** African grey Congo parrot, 14 years old, light grey with bright red tail feathers. Has a new growth mark at end of upper back, resulting from damage done in his active youth. Tends to pull his feathers out if you change his or your habits. His vocabulary: "Gabriel, get over here, hey, hello, wolf whistles, laughs, barks like small dog," will dance up and down if you clap hands to music. Likes to ring his bell to let you know he wants to go to sleep. Likes to be covered at night. **PLEASE HELP ME FIND MY SPECIAL PET "GRABRIEL."** Call Joe Wilson, San Diego, (619) 233-5598. Gabriel was stolen January 21, 1983.

**BABY TRITON COCKATOO**, hand fed, very large, already talking. **BABY TRES MARIAS**, hand fed, talking. A. Chandler, (213) 454-6971 LA area.

**TRITON COCKATOOS** tame pair \$3,600. Single female \$1,800. Potomac, MD area (301) 983-9112 or 598-6391.

**WANTED:** male Salvin's Amazon (*Amazona autumnalis salvini*) Must be in excellent health. Call B. Milam (408) 425-0945 Santa Cruz, CA area.

**ILLINOIS AVIARY**—domestic bred hand fed African grey parrots \$800, and Moluccan cockatoos \$1,800. Call (312) 428-8218. **SCARLET FEATHERS**, Barrington, IL.

**VET. CLINIC** is seeking quality products for resale to clients. Manufacturers and suppliers are invited to send info. to Sally Hannameyer, 200 Hannameyer, 200 W. 70th St., #10 H, NY, NY 10023.

**COCKATOO BABIES**, 1983 hatch. Moluccan and Greater sulphur crested—hand raised with TLC from day one! These babies are the ultimate! "STARSIGN" Kim and Patty Knoblauch, (304) 725-5601 or (304) 725-7300, Charles Town, West Virginia area.

**FOR SALE**, surgically sexed Moluccan cockatoos, pairs and two mature males, or will trade for young female Grand Eclectus. Phone (201) 748-6884. Bloomfield, NJ area.

**SURGICALLY SEXED** plain colored Amazon, tame, mature hen in excellent health. Must sell this rare species to experienced breeder. Will ship. (303) 652-2661. Beaks 'N' Tiques, P.O. Box 232, Niwot, CO 80544.



WANTED: 2 s/s female Blue Crowned Conures (*A. acuticaudata acuticaudata* only) or trade one s/s male for one s/s female. (714) 734-9712, days and weekends.

WANTED: 2 show quality male English budgies carrying cinnamon. (714) 734-9712, days and weekends.

FOR SALE: Old English Game Bantams, some show quality, 16 oz. tops. Steady, energy-efficient incubators for parrot and game bird eggs. (714) 734-9712, days and weekends.

BOOK—BIRDS OF PREY (Southern California), 8½" x 11" field guide. Covers 12 common frequently seen birds of prey—most birds throughout State. 20 color pictures, juvenile & adult. Written in simple terms for non-bird person. Send \$12 p.p. to: North County Rehabilitation Center for Birds of Prey, Rt. 5, Box 164, Cordrey, Dr., Escondido, CA 92025.

TAME BABY TOCO TOUCAN born 2/82. Never caged, in beautiful feather. Phone or write for photos. Forester Wulff, 8408 Harker Dr., Potomac, MD 20854. Phone (301) 983-9112.

PERIMETER SECURITY ALARMS. Wholesale prices, dependable and 100% guaranteed. Save your birds and keep them at home. Write or call for full info. Free literature. Forester Wulff, 8408 Harker Dr., Potomac, MD 20854. Phone (301) 983-9112.

CONGO AFRICAN GREY PARROTS—1983 BABIES Mrs. Lee Howells (619) 727-5972. (CA) Trades considered.

HAND-FED, DOMESTIC-RAISED BABIES. Amazon Parrots, African Greys, Lories, Eclectus, Cockatoos, Macaws, Pionus Parrots, Conures, and others. Some young, sexed birds from unrelated pairs available. Call or write for species availability and price list. Gail Worth, Aves International, 2808 Oregon Court—Unit L8, Torrance, CA 90503, (213) 541-1180.

Red Lored Amazon Male \$300; AUSTRALIANS: Blue Rosella hen \$150, Young Blues \$125, Scarlet Chested Parakeet males \$125, Young Scarlets \$100, Yellow Bourkes \$275, Split Yellows \$100; ASIANS: Lutino Ringnecks \$350, Poss. Split Blue Hen \$100, Moustache \$125; HANDFED'S: Umbrella Cockatoo, Red Masked Conures \$150, Moustache \$150; LOVEBIRDS: Peachface Mutations—Lutino & Albino only \$80, Cherryheads \$30, Masked—Blue, etc.; Cockatiels: Cuban Olive Finch \$200 pr. D. Cavender—MOCTEZUMA BIRD GARDENS, P.O. Box 1973, Escondido, CA 92025. Will ship. Trades considered. (619) 741-3421.

CANADA BREEDER, captive raised birds, highest quality. Bourke's (normal, yellow, rosy). Turquosines, Splendids (normal, pastel blue). Elegants, large Cockatiels (pied, cinnamon, pearl, pearl-pied, normal, lutino, cinnamon-pearl, fallow). Large English Budgies, Rock pebbliers, Princess of Wales, Twenty eights, Conures, Cockatoos, Amazons (double yellow) Kakariries (yellow, and red fronted). All birds are guaranteed to be in the best of health and condition. R. Moroz, 3253 33rd Street West, Saskatoon, Sask., Canada S7L 4R1.

DECORATIVE MANZANITA HARDWOOD PERCHES 36" long. Medium diameter for parrots—12 for \$25, large diameter for macaws—10 for \$25, extra large diameter—6 for \$25. All orders shipped freight collect. California residents add 6% sales tax. Send check with order to LAURA'S BIRDS, 5693 Happy Valley Road, Anderson, CA 96007. Phone (916) 357-3100.

PSITTACINES AND SOFTBILLS—Imported and domestic-raised stock. Sexed pairs available of many species. Call or write for current price list. Laparoscopy sexing available. Gail Worth, Aves International, 2808 Oregon Court—Unit L8, Torrance, CA 90503, (213) 541-1180.

4000 BIRDS to choose from, over 200 different types: macaws, cockatoos, Amazons, cockatiels, conures, parakeets, finches, canaries, toucans, lories, quail, doves, lovebirds, mynahs, rosellas. Visitors welcome. Send SASE for price list. Hoffman's Aviary, Rt. 1, Box 201, Kings Mountain, NC 28086. Call (704) 867-8629.

FOR SALE: PAIR TRITON COCKATOOS, anxious to breed, no room. \$2,500 for the pair. Charles Carlin, 701-703 North Daniel Street, Arlington, VA 22201. Phone (703) 527-6565.

FOR SALE: OWL FINCHES, outdoor aviary raised. FOR TRADE: male Blue crown hanging parrot for female. Julie Frericks, (213) 377-1589. L.A. area.

Selling out private MACAW COLLECTION. All birds surgically sexed and acclimated to outdoors. Excellent breeding prospects and proven pairs. Fresno, CA area, (209) 266-5467 mornings and weekends.

BOOKS BY FORSHAW & COOPER: Australian Parrots, 2nd edition, 1980, 2 volumes, folio, full leather, mint condition, signed limited, \$2,100. Trade edition, signed Cooper \$150. First edition, 1969, \$550. Parrots of the World, 1st edition 1973, signed Cooper, \$600. 2nd (revised) edition, signed Cooper, \$100. Birds of Paradise & Bower Birds, signed Cooper, \$200. Airmail postage included if order exceeds \$300. Near offers considered. Many other collectors' items, old and new. Genuine inquiries welcome. N. Livanos, P.O. Box 831, Newcastle, N.S.W., 2300, Australia.

HATCHING EGGS: Quail—Red 25 for \$20, White Bobwhite 25 for \$27.50, Silver Bobwhite 25 for \$35, Barred Bobwhite 25 for \$27.50, Gamble 25 for \$18.75, Blue Scale 25 for \$26.25. Chuckars—Regular 25 for \$18.75, Albino 25 for \$52, Blue 25 for \$52. Bantams—Buff Cochin, Frizzle, Mille Fleur, Silver Sebright 12 for \$10.50, Porcelain D'Uccle, White silkie 12 for \$11.70, assorted 12 for \$8.50, 48 for \$22.35. Pheasants—Woolley Ringneck 12 for \$40, Black Mutant 12 for \$23. Above prices are postpaid and insured. SASE for complete list. We sell at our farm, over 40 varieties of birds, including ornamental pheasants, peafowl, budgerigars, cockatiels, Button quail. PIERCE'S GAME FARM, Rt. 5, Dept. W, Princeton, IL 61356 PH. (815) 699-2638.

SUN & JENDAY CONURES 3 weeks old \$175 each. Fertile eggs, Sun or Jenday \$100. Lovebirds, blue peachfaced, blue masked, peachfaced, peachfaced heavy pied, Fischer's, black masked, 3 weeks old, you finish handfeeding, \$35. Fertile eggs from above lovebirds \$25 each. Buddy Martin, c/o Jungle Bush Aviary, 204 So. Schuyler, Bradley, Illinois 60915. Phone (815) 939-2732 after 5 p.m.

AUSTRALIAN FINCHES: Owls \$120 pr., Diamond sparrows \$100 pr., Heck's shafttails \$70 pr. All birds bred here in my aviary. Micky Senior (206) 745-4310, evenings & weekends (Seattle, WA)

SELLING OUT: super tame Moluccan, hand fed Lessers, proven pair of Red rumps, and Diamond doves, Mitered conures. Babies and others. Low prices. GREG'S BIRDS, 2455 Longmeadow NW., Grand Rapids, MI 49504. (616) 453-2839.

HOFFMAN'S AVIARY, Rt. 1, Box 201, Kings Mountain, NC 28086 or call (704) 867-8629.

ADORABLE BABY Goffin and Umbrella cockatoos. Hand raised in a loving environment. Will consider trades for other cockatoos. Call or send S.A.S.E., Don Cole, 1126 Bidwell Ave., Chico, CA 95926. Phone (916) 342-9490.

AFRICAN GREY BABIES, hand raised and closed banded. Also Mealy Rosellas and Cockatiels. Excess breeders: Red Vented and Lesser Sulphur Crested Cockatoos, Yellow Nape, Hispanol and Blue Crown Amazons. All S/S males and tame. Terry & Beth Veraldo (201) 447-3378.

QUEEN OF BAVARIA CONURES—'82 English bred, firm cash offers invited. Amboina kings '82 English bred, \$450 each. Booking now for 1983; Queens, Amboinas, Derbyans, pure bred yellow Rosellas, mutant Peachface and Ringnecks and others from our hardy long established strains. CARTERTON BREEDING AVIARIES (Jim & Pearl Hayward), Carterton, Oxford, England. Phone, Carterton 841736—cable—'Parrots' Oxford.

PERCHES, made of all cypress w/bark—3/4" to 2" thickness. Lengths: 18½", 19½", 20", 21", 22", other lengths if asked for, \$2 each. Perches for tops of cages, 2" x 20" w/screw bolts for cages, \$4 each. Same perch w/plastic cups, \$9.50 each. 4" wood block toy w/chain, \$2. Minimum order \$10. Money order, please add 15% for postage & handling. Send to JACK'S WOODCRAFT, P.O. Box 16595, West Palm Beach, FL 33416.

BAMBOO BIRD CAGES—great for finches, canaries, plants, etc. 3 stories high. Easily assembled. \$15 plus \$2.50 postage and handling. Chesapeake International, 1623 Pleasant Plains Road, Annapolis, Maryland, 21401.

TAKING ORDERS FOR '83 HATCH—Moustache, Alexandrine, Ringnecks (normal and lutino), Sun, Jenday, Gold caps, Dusky head, and Nanday conures. Quakers, Senegals, Turquoisines, Red rumps (yellow and normal), hybrid macaws (blue & gold/greenwing). All babies are handfed and given T.L.C. in our home. BIRD BARN, Grants Pass, OR Phone (503) 476-5904.

DOMESTICALLY BRED in our aviaries, hand raised and imprinted in our home. Super tame baby Hyacinth macaws, Scarlet macaws, African greys, Blue front, yellow front, and Double yellow head Amazons. Sun, Jenday, Gold capped, and Maroon belly conures. VOREN'S AVIARIES, P.O. Box 152, Loxahatchee, FL 33470. Phone (305) 793-5528.

DOMESTICALLY BRED in our aviaries, hand raised and imprinted in our home, super tame baby Sun Conures. Also older sexed pairs and quantity prices available. VOREN'S AVIARIES, (305) 793-5528 (Florida).

HAND RAISED BABY Orange cheeked Amazons, \$350. Super tame. VOREN'S AVIARIES, (305) 793-5528 (Florida)

COCKATOOS: pairs & singles—G. eleonoras, Citrons, Lesser sulphurs, Umbrella crested Moluccans, mature and young available. Also MACAWS: Hyacinth, Blue and gold, Greenwing, some pairs available. Domestically raised Hyacinth, Greenwing, Blue & gold, Military macaws. Grand Eclectus, Congo African greys, Double yellow head Amazons, and much more! CRITTERS CORNER, 428 Blossom Hill Road, San Jose, CA 95123. Phone (408) 578-4414.



