

# FIELD WORK ON THE ECHO PARAKEET (*Psittacula eques*)

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The Echo Parakeet from Mauritius is often regarded as the rarest and most threatened of all the parrots, regrettably there are today several other contenders for this title. Efforts to try and save this species date back to the early 1970's but it is only in the last few years that we have had the resources to make a reasonable attempt at saving it.

In the last article (*Psittascene*) we described a little about our work and how field workers live year around in the forest habitat of the parakeet. Here we give further details of our work and provide some details on the ecology and life history of this, one of the world's rarest and most endangered birds.

Mauritius is 1,865 sq. km. and has a population of over a million people. The island is well developed and little remains of the native

forest which once covered the entire island. The only sizeable remnant left is to be found in and around the Black River Gorges where the parakeets are to be found. The parakeets have a range of about 60 sq. km. but most of their time is spent in an area less than half this size centred on the Macchabe Forest.

## Population biology

In the early 1970's there were about 50 parakeets but they declined rapidly as a result of forest destruction in the mid 1970's. In the early 1980's the population was critically endangered with little or no breeding. The population at this time was thought to be less than 15 and for several years we knew of less than ten birds. During the second half of the 1980's the

population has shown a slight recovery with some breeding. A total of 16 young have been produced in the last 4 seasons since 1987/88, and 7 of these were reared in captivity from harvested eggs and young.

There were four known pairs during the 1990/91 season. One pair prospected a cavity but progressed no further, another pair laid a clutch of two eggs which were taken by rats and the remaining two birds produced five fledglings, two of which were brought into captivity. At the end of the 1990/91 season there were between 15-20 birds in the wild but with a highly skewed sex ratio in favour of males of about 3 or 4:1. This imbalance has been observed since at least 1974 and it's cause is unknown. Curiously the sex ratio of young harvested for captive breeding has been the other way and out of 11 birds the ratio was 3:8.

## Nesting Biology

Pairs of Echo Parakeets can be seen together throughout the year often in association with spare males. Established pairs frequent the same areas of forest year around although these areas are apparently not vigorously defended. The four pairs of parakeets have however widely spaced themselves in the Macchabe Forest.

The parakeet nests in hollows in the large, often dying, emergent trees. The position of the next hollow does not seem to be very important and the six hollows we have studied were 4.6 – 15.2 metres above the forest floor. It has often been said that nest cavity openings face north-west, to face away from the south-easterly trade winds but the directions these cavities faced were apparently random.

The cavity is often modified by the female who chews at the rotten wood on the inside to make it the correct size and shuffles around to make a nest scrape towards the rear. While modifying the cavity she may throw out wood dust and chippings. Six cavities have been measured. Two of these were horizontal and the others were vertical. The length/depth of these cavities varied between 45 and 80 cm and the internal diameter varied from 17.5 – 35 cm average about 24 – 25 cm. The entrance hole was 6.5 – 12 cm wide.

Eggs have been laid between October and December. The eggs are white and rounded, and of the 14 that have been measured the sizes were 29.4 – 33.8 x 23.0 – 26.8mm.

The fresh weights for three typical eggs were 10.6, 11.8 and 11.9g. Clutch size has been recorded in five cases and was 2, 2, 2, 3, and 3 eggs. Out of 12 eggs (5 clutches) 10 are known to have been fertile. The incubation period has been calculated from field observations and from harvested wild eggs to be 21 – 24 days. Brood size in the nest or at fledging has been recorded on 7 occasions and was 1, 2, 2, 2, 3 and 3. Fledging periods have been calculated from seven young that have been reared in captivity and it ranges from 48 - 59 days (average 55 days). A baby reared in the wild fledged at about 51 days.

We do not want to damage the wild population by harvesting eggs and young for our captive breeding project. However on at least two occasions when eggs or young have been harvested, there is good circumstantial evidence that the adult birds recycled. In future we intend to take eggs from pairs that have laid early in the season to encourage them to lay replacement clutches. Captive Echo Parakeets have not done as well in captivity as we had hoped, and until we have their management well worked out we will refrain from taking young when we feel there is little likelihood of the parents recycling.

Nesting Echo Parakeets differ from Ring-necked Parakeets in that they develop a thick dark grey-green down over their body when they are about two weeks old. In Ring-necked parakeets this down is not as dense, is shorter and a mid-grey. At fledging Echo Parakeets have an orange bill which changes to black between their third and fourth month. Females retain the dark bill but in males the upper mandible changes to red when they are a year or older.

## Conservation Management

The conservation of the parakeet in the wild has included the provision of nest boxes, supplemental feeding, and the control of predators around nest-sites. Further to this we have been lobbying for the protection of its habitat, all of which will probably be included within the boundaries of Mauritius' first national park.

Without management the extinction of the parakeet in the wild is probably inevitable because the native forest is being degraded by exotic weeds. These exotics are greatly simplifying the forest and rendering it unsuitable for the parakeet and most of the other native birds. To counter this we



Forest scene on Mauritius.

have experimental plots of forest that are kept free of weeds. Not surprisingly these areas are favoured by the parakeets as feeding and roost sites and once a pair nested just outside the plot. It is hoped that in the national park large areas of forest will be weeded.

Due to the small number of birds and their general inaccessibility in the dense forest and deep gorges it has been difficult to implement some of the management we would desire.

In some cases it has taken years to get our first modest results.

We have placed many nest-boxes in the forest but to date have never had one used by an Echo Parakeet. With the benefit of hindsight the boxes were too deep and sometimes placed in inappropriate areas. In 1989 we decided to use hollow logs instead of boxes and nine hollow logs were placed in areas where the adult pairs were prospecting. It now seems that these were also too deep and perhaps too narrow as well. We are using hollowed logs within the size range of the cavities we have seen the wild parakeets using.

It might appear to be a very straight forward operation to place a few nest boxes or logs up in trees but we can assure readers that it is far from easy. Often the suitable trees are on the sides of ravines, a long hike from any track. The logs we use weigh about 20 kg, and to haul them up into trees takes much brute force and skill. It often takes a whole day to put one box or log in a tree. To cut down on expenses we build ladders out of guava poles and fix these to the trunks of trees.

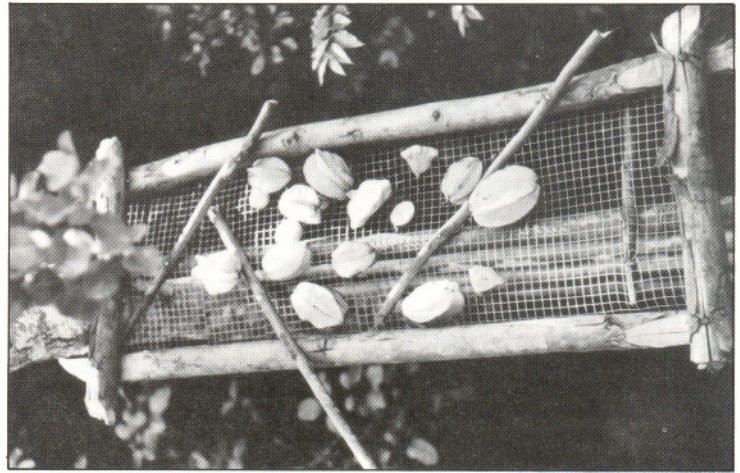
These sometimes reach up into the canopy 15 or 20 metres. The ladders can be very dangerous because they rot during the hot wet summer months. Field-workers have fallen out of trees but it is lucky we have not had a serious accident. With the increased level of funding that we now have, life is easier, and safer,

with a four wheel drive vehicle to get around in and we borrow aluminium extension ladders to get to most of our nest-logs to service them.

Black Rats are a big problem; they compete with parakeets for native fruits and for the food we put out for them, they take over cavities and nest-boxes and they are predators of parakeet eggs. To try and minimise the impact of rats we poison them in nesting and feeding areas.

For several years it has been realised that there are seasonal food shortages. To try and help the birds over these lean periods we have set up feeding stations in the forest. Supplemental feeding was first attempted in 1979 when a platform was built in the forest and seeds and fruits were put out on it. The only species we succeeded in feeding were the ubiquitous Mynahs, Red-whiskered Bulbuls and Black Rats. The parakeets flew past and ignored all these alien foods that they did not recognise. Later we tried other ways of feeding the birds but with little success.

In 1984 Don Merton got the parakeets to sample chillies threaded onto cotton and strewn over the bushes in which they were feeding so they looked like native fruits. One of the big problems in getting the birds to accept supplemental food is to find areas where they are feeding so they can find the food we are providing them with. During January 1987 we discovered that most, if not all of the parakeets were feeding on star fruit which was growing wild in the Black River Gorge. Kirsty Swinnerton was able to get the parakeets to take grapes, chillies and other foods that were hung out for them in the star fruit trees. This work went well but we were unable to develop it because to do the job adequately and to keep the monkeys from getting the food before the parakeets, Kirsty has to camp near



*Overhead view of supplementary feeding tray.*

the food trees on a small plateau several hundred feet up the side of the gorge. This was totally impractical for more than a few days at a time.

The real break through has come this year. Wire feeding baskets have been placed up in trees within an area frequented by a group of birds. After much perseverance three birds have been encouraged to feed daily upon the food we provide them with. They have sampled apples, green beans and acorn squash but they are very choosy and feed preferentially upon star fruit. Fortunately star fruit is grown commercially on Mauritius and we are able to provide it for at least six months of the year, but are now looking into the possibility of importing star fruit so that it can be available for the parakeets all year around.

There has been a conservation project on the endangered birds of Mauritius since 1973. There have been some tremendous successes with the captive breeding and restoration of the Pink Pigeon and Mauritius Kestrel populations. The sceptics of captive breeding often point out that working with one or a few species does nothing to save

the habitat in which those species are found. One of the very positive results from our work on Mauritius is that the Government has increasingly realised that it must look after the habitat so that the birds can be looked after in their proper environment and there will always be somewhere to release captive produced birds back into.

The area in and around the Black River Gorges is being designated as Mauritius' first national park. The park, which is to be funded by international organisations, is to be set up with the primary aim of conservation. However to secure the future of the Echo Parakeet and the other rare birds of Mauritius we are also going to need to continue "hands on" conservation for many years.

### **Acknowledgements**

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