Psitta scene

News about parrot conservation, aviculture and welfare from The World Parrot Trust

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TRUST VET ASSISTS SURVIVAL OF WORLD'S RAREST PARROT

New clues to Echo Parakeet problem

By Paula Harris

When the World Parrot Trust was launched in 1989, our first priority was to help the world's rarest parrot, the Echo Parakeet, which still numbers less than 20 birds in the wild. With your generous donations, the Trust was proud to present the Echo Parakeet project with a badly needed four wheel drive vehicle to enable field researchers to reach the remote forest in which the parrot struggles to survive.

The World Parrot Trust has consistently provided funding for the Echo Parakeet and maintained close relations with the project's director, Carl Jones, and the Jersey Wildlife Preservation Trust, which finances and manages the project with the co-operation of the Mauritius government's Conservation Unit. Recently, the World Parrot Trust was invited to become a major partner in the Echo Parakeet project, contributing funds and parrot expertise to both the captive breeding programme and wild population management efforts. This new opportunity provides the World Parrot Trust with one of the greatest challenges in parrot conservation today.

The following story is drawn, in part, from a veterinary report by Andrew Greenwood, MA VetMB MIBiol MRCVS, a founder Trustee of the World Parrot Trust and a member of the International Zoo Veterinary Group. When the captive population of parrots became ill this spring, Andrew advised project staff in Mauritius by telephone and by fax. Subsequently, at the request of the Jersey Wildlife Preservation Trust, the World Parrot Trust sent Andrew to Mauritius to investigate tragic mortalities among the Echo Parakeets.

The world's rarest parrot shares its Indian Ocean island home with the world's rarest falcon, the Mauritius Kestrel, and the world's rarest pigeon, the Pink Pigeon. Along with eight other indigenous bird species, the Echo Parakeet has declined largely because of mass deforestation on the island and the introduction of rats, monkeys and mynah birds. Forests were felled first for sugar plantations and later for pine plantations, leaving only one area of indigenous forest along a mountainous ridge. This region, the Black River Gorges, has been designated as the first national park in Mauritius. Though now secure from further development, the forest is encroached upon by exotic flora which threatens to strangle the natural vegetation on which the parrots depend for food. Weeding campaigns conducted for several years to eliminate foreign plants have succeeded in creating a small, but fragile, haven for the parakeet.

Even if good foraging could be assured for the wild birds, their nest holes remain vulnerable. Rats and monkeys eat the Echos' eggs and young, while Indian mynah birds colonize the few available nest holes. Nature provides the final blow to the species. Cyclones regularly strike Mauritius, killing birds outright and stripping away vegetation so that the survivors have little or nothing to eat. Mauritius was once the home to six species of parrot, all of them unique to the island, but by the 1970's the Echo Parakeet was the only parrot species left apart from the introduced Ringnecks. Today the wild population is estimated at 16 to 20 birds.

"psittacine
(sit'ă sīn) Belonging or allied to the parrots; parrot-like"

Captive Breeding Setbacks

To ensure the survival of the species, Carl Jones began a programme to breed Echos in captivity, following similar procedures to those which had proved so successful with the Pink pigeon and the Mauritius kestrel. Jones and his team have learned from long experience that they can remove eggs from the nest of wild

Vet Andrew Greenwood in Mauritius

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CONTENTS:

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parakeets in the early stages of nesting and the pair will immediately nest again. Chicks are removed only when it is apparent that the nest is going to fail and the chicks would die if left in the wild. So a captive population of Echo Parakeets can be established without depleting numbers in the wild.

But efforts to keep and breed Echo Parakeets have proved frustrating. Since research on the Echo Parakeet began on Mauritius in 1974, twenty birds have been maintained in captivity. None of the birds have reached breeding age. Beginning in 1979, a colony of locally-captured Indian Ringneck parakeets has been maintained in Mauritius at the Mauritius government's Black River Aviaries to act as foster parents for Echo Parakeets and chicks. A serious research effort began in the 80's with the ringnecks proving singularly effective foster parents, hatching and rearing almost every Echo egg and chick they have been presented with as well as breeding and rearing their own young.

However, 12 of the 15 Echo Parakeets held in the aviaries since 1987 have died. Seven birds were alive in the spring of 1993, deriving from eggs and chicks taken in 1991/2. In April disease swept through the captive population leaving only 3 birds alive, one sub-adult pair and a juvenile. Eight of the deaths (67%) have occurred in April/May when the birds were aged 4 - 18 months.

Although veterinary investigations have been conducted in the past, results have been inconclusive. No data remain on the 4 chicks harvested in 1974-5. Scant information on captive Echos dating from 1987 mentions, but dismisses, the finding of a number of Gram negative bacteria isolated from dead parakeets, organisms which we now recognise as major pathogens of parrots. Gram negative bacteria are normally found in the gut of man and most animals and birds, especially carnivores, but are not normally present in any numbers in parrots. Healthy parrots can probably fight them off and do not become colonized unless there is an underlying dietary, immunity or disease problem or an overwhelming challenge with severe contamination.

Is Obesity a Mortality Factor?

Detailed data on birds lost before 1991 are not available. Seven parakeets were examined in 1991. A preliminary report on these birds ruled out any significant infectious or parasitic disease, but concentrated on the large fat stores present in the bodies. This led to a major change in the captive diet of the foster parents during the rearing period and of the weaned Echo chicks in an attempt to reduce a perceived obesity problem, but no further change in management took place.

Echo Parakeet at 48 days

Also to solve the obesity problem, the World Parrot Trust has funded research to create a better diet for the captive Echos. When St. Vincent parrots became obese at New York's Bronx Zoo, animal nutritionist Dr. Ellen Dierenfeld requested samples of the vegetation the wild birds ate in their native Caribbean forest. A detailed chemical analysis was made of each flower, leaf and fruit. Foodstuffs readily available to the zoo in North America were analysed and compared to native foods for vitamins, minerals and fibre content. A new diet, duplicating as closely as possible the foods the parrots selected for themselves naturally in the wild, was strictly administered to the parrots. Now the World Parrot Trust is funding a similar study for the captive Echo Parakeets. Samples of the indigenous plants eaten in the wild have been collected and shipped to Ellen Dierenfeld's New York laboratories for analysis.

Already the Echos are fed an almost entirely fruit, vegetable and leaf diet, but in spite of this the deaths have continued. Andrew Greenwood reports that the Echo Parakeet appears to be a rounded 'fat' bird, more closely resembling a pigeon in shape. Even the birds of the wild population which are foraging on native leaves and fruits have a similar appearance. A fresh look at the problems the Echos face in captivity was clearly needed.

World Parrot Trust Begins Investigations

The Trust's involvement with the captive Echo Parakeet mortality problems began in April 1993 when one bird died and others became sick with signs of vomiting and lethargy. Andrew's treatment, advised by fax and telephone, consisted of antibiotics and anti-emetics, such as were available in Mauritius. They seemed to hold the situation. One bird in which treatment produced no response died 9 days after the first, a third began feeding again after treatment but was later lost and a fourth appeared to have recovered well, but died suddenly from intussusception and intestinal prolapse. A fifth bird which was also ill and treated, recovered and remains alive.

A water sample from the aviary water system was reported to be grossly contaminated with coliform bacteria, and unfit for human consumption. Postmortem examinations were carried out by aviary staff, with the help of the Ministry of Agriculture's laboratory. Gross examination of the bodies showed only one bird to be in fat condition. Various bacteria were cultured during life and after death from this group of birds, including coliforms. Various tissues were collected, shipped to the UK under licence and submitted to Rest Associates for rapid histopathology. The findings may be summarised as haemorrhagic enteritis with secondary kidney damage. One bird had salmonella isolated at postmortem. At the same time as the parakeet deaths, several Rodrigues fruit bats and two Mauritius fodies also died in the aviaries. The deaths of the fodies appear unrelated to the Echos, but most of the dead bats were not examined.

When the Trust sent Andrew Greenwood to Mauritius at the end of May, all deaths, except among the bats, had ceased and no parakeets remained on treatment. At the Black River Aviaries he approached the parakeet problem as a typical avicultural or zoo site investigation. He often conducts

this kind of study when aviculturists are experiencing unusual losses or reproductive failure among their stock. He assesses all aspects of the husbandry and management of the aviary, collects samples of known quality and origin and correlates this information with clinical, postmortem and other laboratory findings. At Black River he collected fresh faecal samples from 6 Ringneck aviaries and from the surviving Echo parakeets for culture. He also blood sampled six individual Ringnecks and sent the samples for virological investigation at the University of Giessen in Germany.

Evidence Suggests Disease

After a thorough on-site investigation of the Echo Parakeets in captivity and in the wild and receipt of postmortem and clinical examination results, Andrew is convinced that the parakeet problem is a disease which must be tackled if the species is to be saved.

Faecal samples from the pair of Echo Parakeets and two of the 6 pairs of Ringnecks contained a number of Gram negative bacteria. All 6 Ringnecks were negative for Psittacine herpesvirus, but all were positive to polyomavirus, a highly contagious virus which only affects the chicks. Typically, chicks may die at a young age or simply be very difficult to rear, with repeated bacterial infections and poor growth rate. Also the results indicate that psittacine polyomavirus is present and active within the group, as it has been passed from parents to offspring.

The facilities at Black River Aviaries are about to be greatly improved by the construction of the new aviary block where parakeets will be kept separate from other species and have a large flight cage. The present facilities have served the Mauritius Kestrel and Pink Pigeon captive breeding programmes well, but parrot species are extremely sensitive to disease and the Echo Parakeets will require a much more rigorously controlled environment.

Fighting Disease on Several Fronts

Andrew made various hygiene recommendations designed to minimise the bacterial load to which the parakeets are subjected. All parrots are highly susceptible to infection with Gram negative bacteria, especially if stressed by other means, and such bacteria are regularly present as a result of contamination by humans as well as pest species. The obvious peak of mortality among Echo Parakeets in April may be associated with some heavy environmental contamination at that time of year, perhaps water-borne.

He also advised keepers of the possibility of transmission of disease between aviaries on their shoes, clothes and implements (so called fomite spread). Keepers should have no contact with domestic poultry or other birds outside their work and poultry must be excluded from the immediate environs of the aviary, as poultry diseases are present on the island.

Despite the excellent results achieved by the Ringnecks as foster parents, the presence of polyomavirus infection in this group is potentially extremely serious. Andrew suggested that consideration may need to be given to phasing out Ringneck fostering. They could be replaced with artificial incubation and hand-rearing or, eventually, by Echo Parakeets as foster parents if and when pairs are established. Or a newly established Ringneck group either from within or outside the island (preferably within) could be used after testing them during a quarantine period for all available parrot diseases.

Routine monthly faecal samples need to be collected from all parakeets (Echos and Ringnecks) and submitted for Gram stain, culture and sensitivity and parasite examinations. Andrew would like to see a Mauritius government vet selected for specialized avian pathology in a U.K. laboratory.

Monitoring Wild Populations

In any situation where highly endangered species are being managed and manipulated, as much as possible needs to be known about their disease status in the wild and that of any closely-related species present. Almost no work seems to have been done on this aspect of Mauritius wildlife, yet the presence of introduced Ringneck parakeets presents an obvious disease threat to Echos. Field research is conducted year round on the wild population, so it would be quite easy for fieldworkers to collect fresh faecal samples from wild Echos and submit them for regular analyses. The same could be done for Ringnecks if a regular feeding station or foraging area can be established for them. An alternative would be to capture some wild birds and blood sample them intensively prior to re-release. This would allow further tests for blood parasites and psittacine beak and feather disease.

Other species, such as doves and passerines, may also present a threat to parakeets, as well as to Pink Pigeons and fodies, by transmitting virus diseases such as avian pox, or parasites. Their disease status needs to be studied, particularly with regard to the risks introduced by supplementary feeding in the wild.

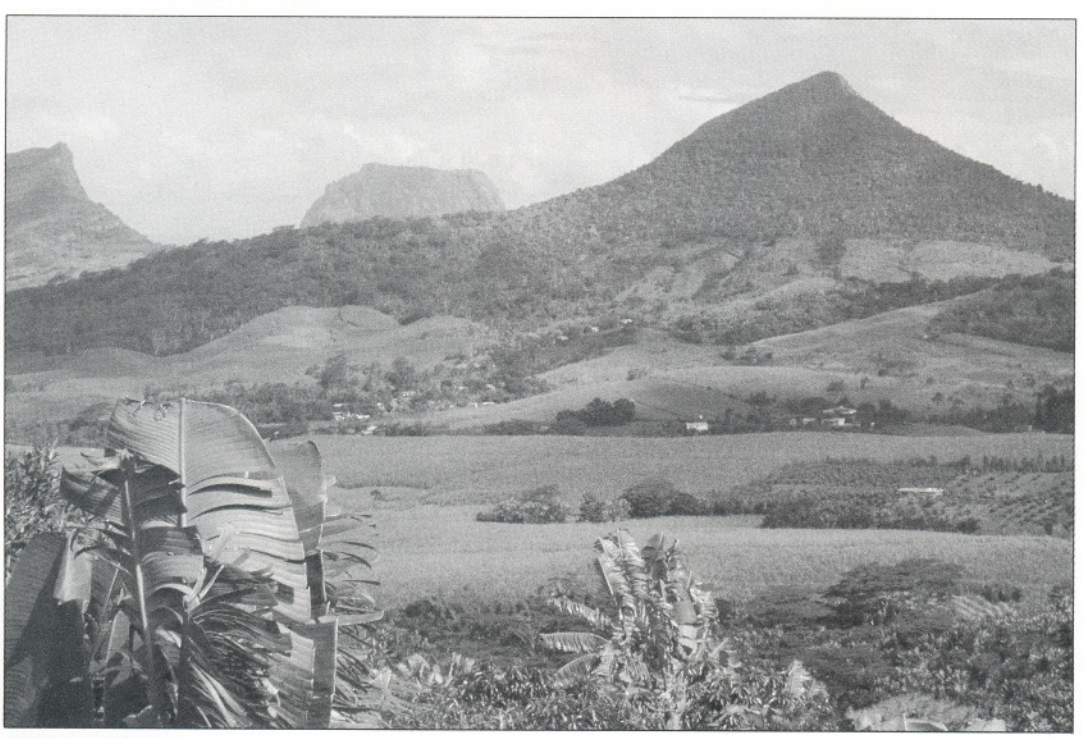
Lab Tests Continue

Histological sections from the four dead Echo parakeets have been submitted to the University of Georgia for DNA probe and immunofluorescence tests for the presence of polyomavirus, to see if this may have played any part in the losses. Blood smears from the captive Ringnecks have been submitted for examination for haematozoa, which was negative . Andrew is also considering the possibility of low-grade zinc toxicity from galvanised aviary wire and discussing a study of existing material from the Mascarenes' Reference Collection with the Leeds Metal Reference Laboratory.

Andrew is also anxious to re-examine the management records, postmortem reports and material from previous years, particularly as polyomavirus testing was not then available. Reviewing this material in the light of the current findings and with modern techniques could be extremely important to the success of the captive breeding programme for the Echo Parakeets.

The World Parrot Trust is committed to pursuing its investigations into the cause of mortality among the captive population of Echo Parakeets. In Mauritius some of Andrew's recommendations have already been implemented and others are underway. The three remaining birds are well now, but the mysterious disease must be identified and eliminated before spring returns, bringing with it the possibility of additional losses. Veterinary science is pitted against a seasonal time bomb in the fight to help save the world's rarest parrot from extinction.

The World Parrot Trust is grateful to British Airways Assisting Nature Conservation for flying Andrew Greenwood to Mauritius to conduct his vital investigations.



Mauritius Landscape