

Report to the Queensland Department of Environment on the feasibility of conducting field research on the Palm Cockatoo at Crater Mountain Wildlife Management Area in Papua New Guinea

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31 July 1997

SUMMARY

The Crater Mountain Wildlife Management Area was visited for 10 days in July 1997 to assess the feasibility of conducting research on Palm Cockatoos in the area and design an appropriate research project. As a result a study has been designed that should use the talents of existing staff and local landholders and distribute financial benefits from the project evenly through the community. Nesting and feeding records would be gathered by landholders and monitoring maintained under the supervision of Trained Local Observers. The results will be assembled on existing databases at Haia where they can be used for a Masters project by the field officer. It is also proposed that data on other large parrots be collected at the same time which can also be analysed by field officers or by outside researchers. A budget is presented with the hope this work can go forward in the near future. It is also recommended that the work is not administered by the Queensland Government but is taken on by either the Research and Conservation Foundation in Goroka or the Birds Australia Parrot Association.

INTRODUCTION

In 1996 a proposal was put forward to the Queensland Department of Environment by the World Parrot Trust and the Wildlife Conservation Society that research be conducted on the Palm Cockatoo. To this end a proposal was drawn up by ourselves to facilitate this research which was followed up in October 1996 by a visit by all concerned parties to the potential field study site at Iron Range, Cape York Peninsula. At this meeting it was decided to proceed in stages as money became available. Initially visits were to be made to the Iron Range and Weipa areas during the wet season to assess the level of Palm Cockatoo breeding activity. This was to be followed in July 1997 by a reconnaissance visit to the Crater Mountain Wildlife Management Area (CMWMA) in Papua New Guinea. The Wildlife Conservation Society already funds some research at Crater Mountain and is keen to encourage more. This report describes the findings of this reconnaissance trip (timetable described in Appendix 1). The report begins with short accounts describing the context under which any research would take place - the organisation of the CMWMA and the social and physical conditions pertaining in the area, the state of knowledge of the Palm Cockatoo in the CMWMA, as well as notes on other large parrots. The second section then draws on this background to present a research plan and the third section consists of the budget.

CONTEXT

Crater Mountain Wildlife Management Area

The CMWMA is a large area of high quality rainforest on the southern edge of the eastern highlands of Papua New Guinea south of Goroka. Four major villages occur within its boundaries Maimafu and Herowana in the north and east are owned by Gimi peoples, Haia and Wabo to the west and south by the Piotura. Management of the CMWMA is facilitated by the Research and Conservation Foundation, a Papua New Guinea based Foundation funded by Wildlife Conservation International and other international conservation funding bodies. The management aims to promote the concept of Integrated Conservation and Development. Landowners are encouraged to develop small businesses, such as tourism and artefact and coffee production, and

assist with research while at the same time agreeing to maintain the integrity of the overall ecosystem. Research is seen as a means of increasing cash flow to the CMWMA residents who help outside researchers as guides and carriers and also charge rent for use of land. Some people have also received basic training in biological research and become Trained Local Observers who receive higher rates of pay. Pay rates are fixed at meetings of representatives of all villages every two years.

In return for access to research money local land owners have set aside parts of their land as places where no hunting or gardening is to take place. There is also an education program that aims to persuade landholders to resist the short-term gains offered by large logging companies or miners seeking access to timber or minerals on the site in exchange for the long-term benefits that will arise from gradual development of local economic enterprises and support for research.

Most research has so far been based at the well-appointed if remote Crater Mountain Biological Research Station at Wara Sera, a day's walk east of Haia on Piotura land. Here some fundamental research on birds, frogs and plants has been carried out that has added greatly to the knowledge of the highly diverse mid-mountain ecosystem. Other research has involved researchers based at Herowana and, to a lesser extent, Maimafu, and there have also been extended expeditions to other parts of the CMWMA to undertake biological surveys.

Social organisation

Social organisation differs between the Gimi and Piotura people but at Haia, where it is proposed this project initially be based, people are divided into approximately ten 'haus lains', each with traditional lands. Within each haus lain there are a variable number of clans who have direct ownership of the land. Traditionally the different clans and haus lains have been rivals and so rarely did they come together amicably that they have different accents. However this neat hierarchical description in fact simplifies a far more fluid and evolving social structure that is complicated by marriage across haus lain boundaries, polygamy and changes that have resulted from people coming together to live in the one village. The majority of Piotura people divide their time between Haia and their traditional lands where they have gardens and from which much of their food is derived. Some people come to Haia rarely, others, particularly people who own the Haia village land, are present all the time. The food from gardens is supplemented by hunting in areas not set aside for conservation. The species most sought after are pigs and cassowaries as these can be used for both food and trade. Palm Cockatoos are sometimes hunted for food and Pesquet's Parrot for trade, particularly as part of a bride price.

The village, Haia, is a recent phenomenon, having been constructed at the behest of missionaries who came to the area in 1973. Haia now boasts an airstrip, a medical aid post, a school, a family of missionaries, an anthropologist, and two RCF employees. These are the field co-ordinator, Paul Igag, who helps organise research based at the village, and the enterprise co-ordinator, Paul Hukahu, who assists villagers with commercial development.

There are two major issues relating to the social organisation are the equitable distribution of moneys coming into CMWMA among haus lains and the disparity in the price of some goods, principally bride prices, between CMWMA and surrounding regions such as Karamui. In the last few years the bride price is said to have increased from 10 kina to up to 2000 kina.

Physical conditions

Overall the CMWMA extends from over 3,000 m at the top of Crater Mountain to about 100 m at Wabo. Haia is at 800 m. Most of the area is covered in continuous rainforest with the canopy broken only by scattered gardens, cliffs along the fringes of the Crater Mountain massif and vigorous, boulder-filled streams. Rainfall is from 6.5 to 8 m a year. This rain is spread through the year but some periods are cloudier than others - in the 10 days I was there the sun was seen only on the first day and the full moon was glimpsed but once. As with any young and active landscape, hills are steep and landslides common. The physical conditions have two consequences for research.

First access to CMWMA is unreliable. Although planes are scheduled to fly in three times a week, this schedule seems rarely to be achieved. Visitors can therefore be stranded in Goroka or marooned in the CMWMA. Visitors are ill-advised to make short, precisely timed visits and the region does not lend itself to the transient research visit. Rather effective research is only achieved by long periods of residence. As an aid to CMWMA visitors, we would recommend that the flight records of MAF and SDA be examined to determine the number of successful landings/month at each of the CMWMA airstrips. This is probably a better indicator of the probability of getting in and out within a reasonable time frame than overall rainfall and could also facilitate planning of travel by CMWMA residents.

The second consequence of the physical conditions is for the nature of the research that can be undertaken. All travel within the CMWMA is by foot. Tracks alternate between steep slippery hills, muddy flats which are sometimes spanned by slender slippery logs and rivers filled with rushing water and smooth, round, slippery boulders. Progress, particularly for visitors, tends to be slow - the 10 km trip from Haia to Wara Sera, for instance, taking a full nine hours. Difficulties of movement tend to ensure the type of research undertaken is relatively sedentary. For instance the birds that have been studied in detail at Wara Sera, the cassowaries and megapodes, are largely terrestrial. Work on plants, frogs, tree-kangaroos and birds communities using mist-nets also requires relatively little travel and can be carried out by a few professional biologists based in one area. To collect an adequate amount of useful data on birds with large home ranges, such as the large parrots, will require a different approach.

Biology of the Palm Cockatoo in the CMWMA

The following notes are a combination of personal observations and accounts provided by local residents, some of which require further investigation.

Palm Cockatoos, known in the Piotura language as 'Mitoio' after their call, appear to be patchily distributed through the CMWMA below about 1500 m. They are rarely seen in Haia itself as a result of hunting, although I saw one about 1 km south, but may still occur in Herowana. In fact I saw or heard birds only a few times during my stay but, given the amount of country I had to cover, that is not surprising and is not an indication of their abundance. There should certainly be enough in the area to allow adequate data collection.

The patchy distribution is also likely to be reflected in the dispersion of nests. I saw two nests, both within a kilometre of one another. Both were in the dead remains of the host tree of strangler figs. Another old nest a kilometre away had been cut down to remove the hornbill occupying it at the time. One nest was climbed by my guides, Stiben and Heroape Turoi, and found to contain fresh small sticks on a platform a metre below the entrance but no birds were seen near it in the evening. The

other had produced chicks in May 1995 and June 1996 and Pero Turoi saw a pair of birds perched nearby the evening we were there, one of which added fresh sticks.

There was considerable knowledge of food types taken by Palm Cockatoos and four were seen. These, listed by their Ptotura names, were as follows
Ti a *Terminalia* sp., the fruit are known as Okari nuts in pidgin. Several people describe how Palm Cockatoos knock these fruit to the ground where they are eaten by cassowaries. The cassowaries then digest the flesh and pass the seed. Palm Cockatoos then fly down to the cassowary droppings and extract the kernels from the seed. Mack and Wright (1996, *Emu* 96, p 97) were apparently told that the Palm Cockatoo is the 'brother' of the cassowary. Our informants, after much puzzled discussion of this quote, corrected us - the Palm Cockatoo is in fact the 'nephew' of the cassowary! The fruits weigh about 225 g (206-250, n=7) and measure 93 x 72 x 55 mm. They have an average kernel weight of 23 g (20-26, n=5), about 10% of fruit weight, so offer a relatively enormous return on the investment in opening them. However people like eating ti too and most fruit found on the forest floor had already been split and eaten by people. The kernel is extremely oily and has the flavour of creamy fresh peanuts. Only one small fruit was seen that was said to have been knocked down by a Palm Cockatoo. However the tree does also occur away from the well-frequented paths where I saw them and was common from Haia to Wabo. It is not known whether the cockatoos also feed on the fruit in situ but it is larger than any other single fruit the birds are known to eat.

We've possibly *Cerbera floribunda* mentioned by Wright and Mack (*Emu* 96, p100, AM#1). A tall simple-leaved rainforest tree that produces a large elliptical blue drupe of about 95 g (66-126, n=7) with dimensions 76 x 49 x 41 mm. The single kernel is about 14g, 15% of total fruit weight which the cockatoos extracted by removing one end of the fruit. We've that I was assured had been foraged by Palm Cockatoos were found at several sites in the Taido area and the fruit was also found on the forest floor at several sites between Haia and Wabo. It is not traditionally eaten by people and the one I tasted was particularly bitter.

Pio another tall simple-leaved tree that produced a smaller round green fruit. This fruit dehisces along four lines of cleavage revealing four rows of four to five shiny black seeds to each of which is attached a large, brilliant orange aril. Fruit weighed 76 g (55, 103) and measured 59 x 47 x 47 mm. Each seed weighed about 0.18 g (0.97 x 0.55 x 0.54 mm) with the aril weighing a third as much. This is not a traditional food but the aril has an oily flavour with the sweet subtle aftertaste of globe artichokes. It was so oily that it could be spread like butter. The name Pio apparently refers to at least six unrelated trees which share the habit of dehiscing along three to six lines of cleavage so is not very useful for identification.

Sewe another *Terminalia* sp. (possibly AM#240 in Mack and Wright *Emu* 96, p100) that the cockatoos had been eating just south of the Wara Pio. The fruit of this species is smaller than that of Ti and the cockatoos had apparently been extracting the kernels in the canopy.

Misoape also told me the cockatoos eat fruits ('arbo') of another *Terminalia* Ju'u as well as fruits of the Oo, which are produced at a different time of year, the Pene and the Jeud.

The cockatoos are said to be present throughout the year and sometimes gather in small groups to roost. Two behavioural differences with the Australian population were noted. First no-one I spoke to had any knowledge of the drumming on hollow logs recorded in Australia. Also the Crater Mountain birds are said to roost in a manner quite unlike any other bird, and unlike the Palm Cockatoos in Australia which

roost normally in trees. Paul and I were shown on three occasions sites where our guides said they had seen birds roosting. These consisted of straight slender saplings which had been broken off half way to the canopy where less than 5 cm in diameter. The bark near the top of each appeared worn while beneath one there were fresh droppings, a single grey feather that could have come from the throat of a Palm Cockatoo and a freshly cut spray of leaves that could have been trimmed from the roost tree. To roost on these stems the cockatoo apparently plants the tip of the beak in the end of the stem and hangs. Our informants described how the cockatoo shuffles all night against the stem but is truly suspended from its upper mandible because, when a breeze comes, the body of the cockatoo is blown out from the stem. Sadly I did not witness this behaviour but I have left a 25 kina reward with Paul Igag for whoever manages to show him a Palm Cockatoo roosting in this manner.

Although ostensibly a protected species within the CMWMA hunting still continues when the opportunity presents itself. Both chicks produced from the active nest near Taído were killed. In each case the young cockatoo was seen at the mouth of the nest which then fledged prematurely when the nest tree was beaten and was caught, killed and eaten. The scarcity of cockatoos around Haia village is also attributed to hunting, the hunters shooting Palm Cockatoos using bows and arrows after building platforms and hides beside known roost sites.

Other large parrot species

Apart from the widespread and common Sulphur-crested Cockatoo *Cacatua galerita*, two less well known large parrot species are resident in the CMWMA, Eclectus Parrots *Eclectus roratus* and Pesquet's Parrot *Psittichas fulgidus*.

Eclectus Parrots ('Anari') were common in all areas visited and were seen both in the understorey and in the canopy. Nests are apparently known, although I saw none, and my informant, Timoti, told me how some clutches have two males, some two females and some one of each sex. Nests are apparently used repeatedly.

Pesquet's Parrots ('Kavare') I heard at Taído (Paul saw four) and at three other widely separated sites within the CMWMA. Like Palm Cockatoos they are patchily distributed. I was told by Timoti that Pesquet's Parrot excavates its own nest each year in a rotten tree trunk and that, as the young matures in the nest, it fills the hollow with chewed shavings from the inside of the nest until, at fledging time, the floor is level with the entrance. Supposedly it was about fledging time when I was there. At that time the parrots are said to feed on the small red fruit of a climbing Pandanus. Some of the fruit is knocked down where it is also eaten by bandicoots and cassowaries. A young Pesquet's Parrot was captive in Haia where it was raised from a small chick on sweet potato and little else. Pesquet's Parrots are an important part of the bride price and so probably face hunting pressure but I was assured they are still relatively common.

RESEARCH PROPOSAL

Overview For effective conservation management of Palm Cockatoos it is necessary to obtain some basic biological data on breeding and ecology. This can be obtained from Crater Mountain Wildlife Management Area by drawing on local knowledge and experience. The same knowledge and experience could, at the same time, be used to obtain useful data on Eclectus and Pesquet's Parrots, two other species which are being hunted or traded extensively and whose natural history is little known. Once collected the data could be the basis of a Masters thesis by Paul Igag or could

contribute to existing research by outside researchers such as Rob Heinsohn (Eclectus Parrot) or Greg Pryor (Pesquet's Parrot).

Data collection Data would be collected on breeding and feeding.

Breeding. Local landholders would be paid a fee for each active Palm Cockatoo, Eclectus or Pesquet's Parrot nest that they find. They would then be paid a guide's daily fee to return to those nests in the company of a Trained Local Observer. The Trained Local Observer would describe the nest and its setting and, where possible, details of nest contents and the level of cockatoo/parrot activity at the nest. If young are present in the nest and it is climbable, it would be visited by the landowner and the TLO every fortnight to record growth rates of young. Before fledging is due, Paul Igag would visit the nest site to band the chick and take any extra measurements necessary. Banding would enable the collection of data on longevity and movements. As prominent and oft-hunted birds some of this data would be collected passively. Further information would require a greater commitment to studying particular subpopulations than is currently envisaged.

Feeding. On each visit to the nesting area the local landholder/TLO would also be expected to collect samples of the food being eaten by the birds being studied. Samples would consist of leaves, discarded food fragments and 20 whole uneaten fruits of each food tree type. On subsequent visits the same trees would be visited to check whether they still had fruit. These samples would be returned to Paul who would make a specimen for identification by the herbarium and take measurements of the fruit. Paul would also record other instances of each food type as they are encountered round the CMWMA. Transport permitting a sample would be sent to Goroka for freezing and from there to New York for analysis in the Bronx Zoo. For some species this may not be necessary because this would already have been done by Debra Wright.

Data storage Data would be kept on one of four databases set up at Haia on Microsoft Access. The data collected would be as follows

Breeding parrot species, parrot species number, nem bilong haus lain, haus lain number, nem bilong clan, clan number, nest name, nest number [parrot species # + haus lain # + clan # + nest #], ples nem, locality description, easting, northing, altitude, finder, responsible TLO, nem bilong diwai, tree genus, tree species, tree height, tree girth, tree health [score 1-4], slope, nest aspect, distance to new garden, distance to old garden, nest height, nest aspect, nest entrance width, nest entrance length, nest depth, nest base width, nest base length, hollow type [trunk, branch], hollow health [live, dead], entrance site [side, end], hollow origin [e.g. broken trunk, branch scar, dead fig host etc.], nest history [description of former use of hollow], nest attempt number [nest # + year(last 2 digits) + attempt # for year], year, date found, number of eggs hatched, hatch date, number of chicks fledged, fledge date, reason for egg failure, reason for chick failure, right leg band no./colours, left leg band no./colour, whether blood sample taken, number of males, number of females, distance to nearest active nest.

Growth nest name, nest number, date of visit, contents of nest [sticks, egg, chick].
If sticks then stick size [large, small], stick freshness [new, mouldy], trimmings freshness [freshly cut sprays of leaves on ground, old trimmings, no trimmings].

If egg number of eggs, freshness of eggs [white, nest-stained].

If chick then number of chick, weight, wing cord length, tail length, culmen length, plumage descriptions for head, mantle, wings, throat, breast, belly, notes on health.

Food parrot species, date, food type (fruit, kernel, flower, leaves, insects), tok ples nem bilong kaikai, genus, species, ples nem, locality description, easting, northing, altitude, distance to new garden, distance to old garden, tree height, tree girth, is food present?, fruit colour, fruit description, leaf description, kernel description [appearance, flavour etc.], aril description.

Fruit tok ples nem bilong kaikai, date, fruit weight, fruit length, fruit width, fruit breadth, kernel weight, kernel length, kernel width, kernel breadth, number of kernels/fruit, aril weight, aril length, aril width, aril breadth.

Data analysis

From these databases it should be possible to extract the following information for each parrot species

Breeding characteristics of nest trees and nests, breeding dispersion, density, season, frequency and success as well as growth rates of chicks. This can be compared with similar data being collected for the same species in Australia and with related species. Feeding range, abundance, dispersion, seasonality, physical characteristics and possibly nutritional content of food types.

This in turn could lead to recommendations on tolerable levels of harvest for each species, core habitat requirements, logging prescriptions in relation to nest hollow availability and recommendations for captive breeding.

It is intended that data on the Palm Cockatoo would be analysed by Paul Igag as part of a Masters thesis at an Australian university. Other data could be made available to Greg Pryor, Rob Heinsohn or other interested parrot researchers.

Reporting

Reports during data collection would be produced every three months. They would consist of a two page summary of work undertaken, the problems encountered, the solutions attempted and the money expended. Appended would be a printout of all data obtained over the previous three months which would ensure a copy of the data is held outside the CMWMA. Reports during the analysis stage would be produced through whichever university Paul Igag undertakes his MSc.

Paul should be able to undertake an MSc at Charles Sturt University in Albury under the co-supervision of Dr Ian Taylor and myself. Ian has extensive experience with both supervision of students with a non-English speaking background and of ornithological research. Another advantage of Charles Sturt University is that Paul could work alongside Harry Sekoulas, Director of the Wau Ecology Institute, who is currently undertaking a PhD there.

Budget

The budget for this project is in draft form until new pay rates are agreed within the CMWMA but the figures assume that the daily rate for a guide will increase from K5.00 to K6.00. The budget consists of two major elements, the collection of nesting/feeding data and the costs associated with a Masters Degree by Paul Igag.

Data collection

100 nests/year @ K92.40/nest
K9240 p.a.

[Costs per nest

Finders reward K6.60 (K6.00 to finder, K0.60 to landowners committee)

Cost per nest visit

landholder K6.60 (K6.00 to finder, K0.60 to landowners committee)

TLO K7.70 (K7.00 to TLO, 0.70 to landowners committee)

Estimated number of visits/nest 6

Total cost/nest = K6.60 + (K6.60+K7.70) x 6 = K92.40]

transport of food samples to New York K1000 p.a.

discs, stationery etc. K250 p.a.

administration fee: to be negotiated with RCF. This project requires a major commitment from RCF employee Paul Igag but also provides benefits both for Paul, by giving him the opportunity to undertake an MSc, and for the CMWMA by distributing benefits from the project widely through the community. I am uncertain what RCF policy would be in this case or of its effects on the budget.

Education costs

About K35,000 p.a. but Paul should apply as soon as possible to the Australian High Commission in Port Moresby for a scholarship through AusAid. AusAid would pay for tuition fees of about \$14,000 per year, an establishment fee of \$1,500, a stipend of \$14,000 per year if he goes alone to Australia or \$20,000 per year if he takes his family, and two return airfares.

Timetable

Data collection would take place for two years from the time money became available. Full analysis and publication of the results would then take a further year after data collection ceased.

Administration

Until now the Palm Cockatoo project has been administered by the Far Northern Region of the Queensland Department of Environment. From discussions with Departmental staff in Cairns it seems that this is no longer considered appropriate. Palm Cockatoos on Cape York Peninsula have a high priority only so far as they are indicators of appropriate fire management on the fringes of rainforest. Palm Cockatoos in New Guinea have no priority at all. The following alternatives are therefore offered for consideration by the funding agencies

- i. funds for the New Guinea side of the project are sent directly to RCF in Papua New Guinea with the Australian side of the project continuing under the auspices of the Queensland Government.
- ii. funds for the New Guinea side of the project are administered by an Australasian NGO such as the Birds Australia Parrot Association. These will then be paid to RCF for work in New Guinea or to Australian institutions as necessary to cover course fees etc.

RECOMMENDATIONS

1. That over the next three years a project be undertaken at Crater Mountain Wildlife Management Area on Palm Cockatoos and, if there are sufficient funds, on Eclectus and Pesquet's Parrots.
2. That the project be run by RCF Field Co-ordinator Paul Igag as part of a Masters degree at Charles Sturt University.
3. That Paul apply for a scholarship through the Australian High Commission as soon as possible.
4. That field data be collected by CMWMA landholders in association with Trained Local Observers.
5. That administration of the project be taken on by the Research and Conservation Foundation or the Birds Australia Parrot Association and no longer be the responsibility of the Queensland Department of Environment.

Acknowledgements

For the success of this trip I am indebted to Paul Igag of Haia. Apart from being terrific company, he was also instrumental in introducing me to the social and physical terrain of the WMA and so laying the foundations for the recommendations in this report. At the Crater Mountain Biological Research Station David Bickford was a beacon of kindness and hospitality in the constant drizzling mist and without his blue braces I would have had difficulty leaving Crater Mountain at all. Others at Haia who helped were Enterprise Co-ordinator Paul Hukahu and my guides and carriers Stiben, Hoape, Pero and Surape Turoi, John Hoae, Nuaio Mirao, Peau Maiapi, Misoape Helikope, Seria Have and Helikope Maniai. Misoape, with assistance from Hemisiai So'onai and Danial Epeae, took responsibility for getting me to Baimuru where I was taken in hand by Philip Taudevin and Brian Watkins. Before I left for Crater, Arlyne Johnson emailed invaluable advice before I left Australia, Karol Kisokau and Doreen Iga discussed relevant issues while I was in Port Moresby and in Goroka John Ericho, Robert Bino and Mike Volunteer [what IS your surname Mike?] were wonderfully patient and helpful as I performed the usual airline gymnastics before finally leaving town. In Cairns Lindsay and Jean Delzoppo and Geoff Kelly and Jenny Lecussan were delightful hosts and I also held constructive discussions with Cliff and Dawn Frith, Leasia Felderhof and Daryn Storch.

Appendix 1. Log of visit by Stephen Garnett to Papua New Guinea, July 1997.

Day Place Activity
(July 1997)

- 5 Melbourne-Cairns Discussed project with Acting Regional Director (Far Northern Region), Queensland Department of Environment.
- 6 Cairns-Port Moresby Discussed project with Manager of Conservation Strategy (Far Northern Region), Queensland Department of Environment and PNG ornithological researchers Cliff and Dawn Frith.
- 7 Port-Moresby-Goroka Discussed educational and organisational arrangements with Karol Kisokau and Doreen Iga at RCF Port Moresby office.
- 8 Goroka Discussed organisational arrangements with John Ericho and Robert Bino at Goroka office of RCF. Bought supplies.
- 9 Goroka Attempted to reach Haia with MAF but turned back as a result of bad weather.
- 10 Goroka-Haia Flew to Haia with SDA. Paul Igag organised meeting with local people with a knowledge and interest in Palm Cockatoos and other large parrots.

Went into the field to look at likely habitat in the afternoon. Saw one Palm Cockatoo, numerous Eclectus Parrots and lorikeets.

11 Haia-Taïdo Walked with Paul Igag and local land owners to land of Jena Clan and searched for roosting Palm Cockatoo.

12 Taïdo Wandered round Jena land, visiting two past nest sites of Palm Cockatoos and collecting fruit of three food plants for measurement. Developed with Paul the framework of the project described in this report.

13 Taïdo-Wara Sera Walked to Wara O'o and thence to Crater Mountain Biological Research Station at Wara Sera.

14 Wara Sera Discussed research project with David Bickford

15 Wara Sera-Haia Returned to Haia.

16 Haia Visited resident anthropologist David Ellis. Waiting for plane.

17 Haia In absence of plane worked with Paul Igag to set up databases on Haia RCF computer to which nesting and feeding details of large parrots can easily be added.

18 Haia Finished setting up databases and organised alternative plans for departure.

19 Haia-Soraii Walked to bush hut at Soraii. Saw two other Palm Cockatoo food plants en route and again attempted to find roosting Palm Cockatoos.

20 Soraii-Wabo Walked and canoed to Wabo where organised canoe for following day.

21 Wabo-Baimuru Travelled by motor canoe to camp near Baimuru.

22 Baimuru-Port Moresby Reached Baimuru where discussed project with local businessman Philip Taudevin.

23 Port Moresby-Cairns Presented brief summary of proposed project to Karol Kisokau and Doreen Iga at RCF Port Moresby office.

24 Cairns-Kangaroo Island Discussed project with Acting Director of Conservation Strategy (Far Northern Region), Queensland Department of Environment.