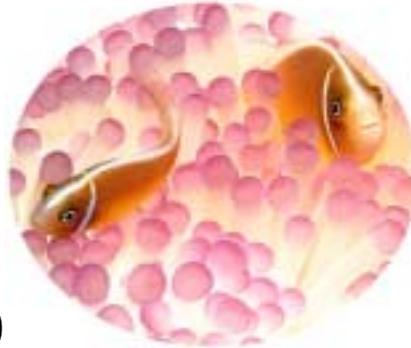


The New Guinea Tropical Ecology and Biodiversity Digest



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Issue 10

Please send all contributions and corrections to either the mail, fax, or email address listed below.

mail: Deb Wright, P.O. Box 277, Goroka EHP, Papua New Guinea, fax: (675) 732-2461, email: dwright@wcs.org



Please note our new web address!!



This issue we want to thank the Wildlife Conservation Society for providing financial support -- this is much appreciated!

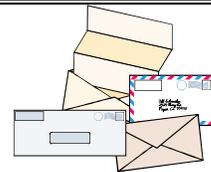
If you have internet access, the digest is available on the web at: <http://www.wcs.org/pngcp.html>

If you want to look at it there and/or print out a hard copy from this site that would save us xeroxing and postage. Please send a note saying that this is fine for you and include your current e-mail address; I will send you an email announcement whenever a new issue comes out so you can check the web site. Thanks!

If you need back issues of the Digest, please let us know and we will mail them to you (or you can download them from the web site).

We try to get a new issue out every six months so the information stays relatively up-to-date. Please don't forget to send in any information you can contribute!

Editorials and Letters



Anybody want to expound on his or her thoughts or solicit opinions about something? Please send in anything that you would like to see appear here! Opinions are from the author and don't necessarily reflect those of the editor or WCS.



New Guinea Conservation Projects



Updates anyone??

Tree Kangaroo Conservation

From Lisa Dabek

The Tree Kangaroo Conservation Program (TKCP) is in its fifth year of population studies and conservation work in Papua New Guinea under the direction of Dr. Lisa Dabek, Director of Conservation and Research at Roger Williams Park Zoo (Rhode Island, USA), and Southampton University graduate student William Betz, who spends up to six months

each year conducting tree kangaroo population sampling of three species of tree kangaroos: Matschie's (*Dendrolagus matschiei*) in two field-sites in the Huon Peninsula of NE PNG and Doria's (*D. dorianus*), and Goodfellow's (*D. goodfellowi*) at one site in Crater Mountain in the Eastern Highlands. Betz and Dabek are assisted in this work by University of Papua New Guinea (UPNG) graduate Kasbeth Evei, local landowners, students from UPNG, and foreign volunteers. The program's work also includes research on tree kangaroo food plant identification and tree kangaroo genetics, landowner interviews to learn more about the animals' natural history, and conservation education for the local villagers.

Conservation education has always been an important part of the TKCP because education is a key component in the conservation of threatened tree kangaroos and their rainforest habitat. To meet this need, the TKCP established the "Community Conservation Education in Papua New Guinea Villages" project in 1999. Debbie Williamson, a middle school teacher from Federal Way, Washington (USA) joined the project as education coordinator. After giving presentations in two community schools (Teptep Village and Keweng Village) on the Huon Peninsula, Dabek and Williamson interviewed teachers about the needs of their schools. With illiteracy rates over 50% and severe cuts in national education funding, the teachers identified basic literacy support as a primary need for their schools. Working with the teachers, Dabek and Williamson determined that the education project must incorporate general literacy and a conservation focus.

To meet the basic literacy goals, the project presented the schools with national curriculum textbooks, donated library books, and school supplies in August and September of 2000. Students in the Federal Way School District who approached local businesses and organizations like the Rotary Club collected many of these supplies. Additional funding for the project comes from zoos in the United States. To address the conservation education goals, Becky Rose of Columbus Zoo designed a tree kangaroo coloring book and is now beginning a new activity book about the flora and fauna of PNG, which will have an accompanying activities kit. The project education team conducted teacher training and presented lessons in the two community schools while establishing a new connection with the community school in the village of Isan.

An important component of the project is the exchange of ideas about conservation ecology between students in PNG and the Federal Way School District to promote global environmental awareness. The students in each country have been educating each other about conservation issues focusing on local flora and fauna by way of assigned drawing, written descriptions, and photographs. This exchange will serve as a model for further PNG/US exchanges with more schools including Providence, Rhode Island, USA. If anyone is interested in learning more about this project, please contact Debbie Williamson (debwilliam1@home.com) or Lisa Dabek (LDabek@rwpzoo.org).

Gauging the effect of unsustainable harvest and trade on PNG's wild species

From James Compton

TRAFFIC Oceania reinvigorated relationships with many of its old contacts in PNG during a short reconnaissance visit in October 2000 to discuss wildlife trade issues. To enhance this contact base, TRAFFIC would be interested to hear from other conservation organisations or individuals about any wildlife harvest and trade activities currently occurring from New Guinea. These may include freshwater turtles, exotic birds, reptiles, small mammals, insects, live reef fish, coral and marine invertebrates such as Giant Clam.

The TRAFFIC Network, a joint programme of WWF and IUCN, consists of 22 offices around the world working "to ensure that trade in wild plants and animals is not a threat to the conservation of nature". From its office in Sydney, TRAFFIC Oceania has regional responsibility for Australia, PNG, NZ, Fiji, Vanuatu and other island nations and territories of the South Pacific. TRAFFIC works in close co-operation with the Secretariat of the Convention on International Trade in Endangered Species (CITES).

Much of TRAFFIC's planned work in PNG will be done in support of the efforts by PNG's Office of Environment and Conservation. The focal point for monitoring wildlife trade at OEC is Mr Barnabus Wilmott, Manager of the Wildlife Enforcement Branch, who is also responsible for the issuing of permits for CITES-listed species being exported from PNG.

Given the current review of PNG forest policy and natural resource management, TRAFFIC is particularly interested in identifying key partnerships and opportunities towards better control of the trade in threatened tree species.

Species that fall under this category include *Araucaria spp* and *Agathis spp* pine species, *Diospyris spp* (Ebony), *Santalum spp* (Sandalwood), *Terminalia spp* (Okari), *Pterocarpus indicus* (Rosewood), *Intsia bijuga* (Kwila). Trade in one species of the Thymeleaceae family, *Aquilaria sp.*, also known as Eaglewood or Agarwood, is provoking considerable interest at present in PNG. TRAFFIC has recently released a report **Heart of the Matter: Agarwood Use and Trade, and CITES implementation for *Aquilaria malaccensis*** – which analyses the global trade in this species. PNG's recent entry into the global trade necessitates a follow-up project, and TRAFFIC Oceania is planning to work on analysis of this trade in conjunction with WWF, the National Forest Authority and the OEC. Any information, anecdotal or otherwise, on the Eaglewood trade would be much appreciated, as would other wildlife trade observations or suggestions of collaborative interest. Please contact James Compton in Sydney, Tim Dawson and Ruth Konia at WWF-PNG in Port Moresby, or Barnabus Wilmott at the OEC:

TRAFFIC Oceania, PO Box 528, Sydney NSW 2001 Australia. Phone: 61-2-9280-1671, Fax: 61-2-9212-1794; email: jcompton@traffico.org

WWF Papua New Guinea, PO Box 8280, Boroko NCD, Port Moresby. Phone: 323-9855, Fax: 325-3224; email: wfpng@dg.com.pg Contact: Tim Dawson or Ruth Konia. Office of Environment and Conservation, PO Box 6601, Boroko NCD, Port Moresby. Phone: 325-0195, Fax: 325-0182. Contact: Barnabus Wilmott.

Harvesting, buying and exporting of clam meat by Nako Fisheries

From Brian Brunton: Extracts from a report on a visit to Alotau Inspection Surveillance and Licensing Office on 4 May 2000
by Jon Timothy, Principal Fisheries Inspector, National Fisheries Authority

Nako Fisheries, through Ruben Nigu, confirmed buying and exporting clam meat. Village fishermen do all the fishing, This authority to buy an export clam meat was given to the company by the Department of Environment and Conservation. In order to verify the statement by Nako Fisheries, I took some time to check with Department of Environment and Conservation. Mr Veari Kula, senior Enforcement Officer, confirmed that under CITES arrangement giant clam can be commercially harvested from a ranch or farm. Nako Fisheries was given the authority to harvest and export clam meat on the understanding that the clams would come from a farm. Environment and Conservation has now issued a ban on clam exports under CITES after learning that Nako Fisheries was exporting clam meat from the wild. Mr. Kula also mentioned that a letter has been sent to National Fisheries Authority by Environment and Conservation recommending that NFA immediately develop a management plan for giant clam so that proper legal controls can be imposed and controlled by the appropriate authorities... From my findings and assessments of the

harvesting and exporting of giant clam meat by Nako Fisheries, I have come to the conclusion that Environment and Conservation issued a clearance to Nako Fisheries by mistake. Environment and Conservation issued the clearance on the understanding that Nako fisheries had a giant clam farm, from which the meat could be harvested and exported. Some points to note with regard to the export of the clam muscle. Clam muscle has always been referred in the documents as scallop and noted as farm reared. I had raised this matter with Nako Fisheries that it was misleading information about the product. Neil Stanton of Nako assured me that it was the preferred name by the consumers.

Statistics from the National Fisheries Authority, Milne Bay:
Export Figures in kilograms for Clam Muscles:

1997 : 10,650 kg worth K209,463

1998 : 13,560 kg worth K103,65

1999 : 7,000 kg (Jan to August) worth K221,337

Current Research Updates



If you have recently finished work or are currently doing a project, please send a summary for inclusion in the next newsletter--
thanks! Remember that research articles should still be submitted to journals for publication. We just want to print a summary of your work to let people know what is going on without having to wait for the lag-time involved in regular journal publications and so that summaries of all current work in NG can be found in one location. We want to make it easy for everyone to keep informed about all of the current research in New Guinea, so please send your information!

Management Recommendations for Three Species of Megapode in Papua New Guinea

From J. Ross Sinclair

This paper presents the management recommendations generated from a 15-month study of 3 species of megapode birds (also called scrubfowl or *Wailfaol* - Galliformes; Megapodiidae) in the Crater Mountain Wildlife Management Area (hereafter referred to as Crater Mt) in the eastern highlands of PNG. In July this year I presented the results of my research to landowners in Crater Mt and talked with them about the management recommendations (Research & Conservation Foundation 2000a and 2000b). Results are presented here because the information may be of use to people working with landowners who wish to better manage mound-building megapodes. The data on which these recommendations are based will be presented in several forthcoming papers.

Introduction

In PNG megapodes constitute 25% of the genera of birds identified as being economically important (Beehler 1993) and conservation and development projects are being designed with megapode eggs proposed as an extractive forest product. Despite this, there are no recent conservation plans for megapodes in PNG, nor recent data upon which to design them, and resource users have no management prescriptions other than what is termed traditional ecological knowledge (Berkes et al. 1995).

The present study was conducted at three sites in Crater Mt, which is a 2600 km² area of rain forest ranging from 100 m a.s.l. on the banks of the Purari River to 3000 m on the upper slopes of the Crater Mt volcano. About 2000 people live within the area and are primarily hunters, gatherers and small-scale gardeners (Johnson 1996).

In the lower montane rain forests of Crater Mt, and elsewhere in PNG, the Wattled Brush-turkey (*Aepyodius arfakianus*), Brown-collared Talegalla (*Talegalla jobiensis*) and New Guinea Megapode (*Megapodius decollatus*) are sympatric. These megapodes are mound builders with the *Aepyodius* and *Talegalla* genera endemic to New Guinea and surrounding islands.

My research involved observations of megapode behaviour at mounds, investigation of selection of mounds-sites, and measurement of the physical characteristics of mounds.

Behaviour and ecology of megapodes at Crater Mt

Megapodes do not incubate their eggs using body heat and do not care for their young. The three species occurring in Crater Mt incubate their eggs in mounds of decaying organic material, which they rake together on the forest floor.

With the assistance of the local Pawaiian people and expatriate assistants, I made behavioural observations at

mounds of the three species, measured environmental variables (eg. canopy cover, number of trees in different size classes, etc.) at mound sites and random points, radio-tracked adult NG Megapodes, and collected data on the physical characteristics and occupancy of incubation mounds. A summary of this research was presented in the *Megapode Newsletter* (Sinclair 1997) and is briefly outlined below.

We found NG Megapodes to be monogamous with each pair using a single mound but with some mounds being used by more than one pair. Male Wattled Brush-turkeys were found to be polygynous and maintained the mound without assistance from the female, which visited the mound to copulate and/or lay. Brown-collared Talegallas used mounds abandoned by Brush-turkeys, and also used mounds concurrently with NG megapodes, although they build their own mounds as well. The intra- and inter-specific use of mounds by more than one pair was not the simple host-parasite relationship previously believed. Observations of Talegalla behaviour did not appear to fit into existing categories of megapode mating-systems.

In the study of mound sites and random points we found the following: (1) sites selected for incubation mounds by the three species differ significantly from random points, (2) mound sites of Talegallas did not differ from those of the other two species, (3) mound sites of Brush-turkeys and NG Megapodes differed significantly at the two locations these species co-occur.

NG Megapodes had no distinct breeding season while Brush-turkeys and Talegallas breed seasonally. The timing of breeding of Brush-turkeys and Talegallas is likely to be related to the behavioural ecology of these species rather than the ecological requirements of mounds, which appear to be satisfied throughout the year. Megapodes manipulate the environment to produce incubation mounds significantly warmer than the surrounding area, thermally independent of it, and made from material that differs from that which merely falls on the mound and decays. Data from mounds support the following predictions from a model for temperature regulation in mounds (Seymour 1985, Seymour & Bradford 1992): (1) there is a critical mass needed for mounds to heat to incubation temperatures, (2) mounds are stable homeotherms, (3) mounds reach an equilibrium core temperature which is unaffected by daily changes in ambient air temperature, and (4) mounds with different thermal conductivities differ in size. Mounds of the NG Megapode and Talegalla were similar and differed from those of the Wattled Brush-turkey in terms of size, composition, temperature profiles and the location of eggs. Brush-turkeys build new mounds each season, which are the smallest in the study and comprised of fresh litter, whereas those of NG Megapodes and Talegallas are bigger and maintained for longer periods resulting in lower organic content.

Management Recommendations

In most developed countries, when making management recommendations from research such as mine, it is usual for the report to be forwarded to managers in the government agency responsible for managing the species or reserve in which they occur. These managers are often well-educated professionals proficient at assimilating technical information and formulating action plans. In most cases, the author of the technical report and the manager share more or

less the same conservation ethic (Berkes et al. 1995). In PNG the situation is somewhat different.

In PNG 98% of land is in customary ownership with the decisions on land-use practices made at the family or clan level (Marat 1991). Customary land tenure precludes the establishment of large state-owned national parks (King 1989, Marat 1991). Wildlife Management Areas, such as Crater Mt, have been established under the administration of landowner committees to offer some protection to areas of high conservation value (Eaton 1986). In these areas, local people make the rules and enforce them, and can change the rules at any time they see fit (Johnson 1996). In the case of the Crater Mt Wildlife Management Area, most of the people making management decisions are illiterate, and certainly no committee member could read and understand the papers from which these recommendations are drawn. Furthermore, to people in Crater Mt the term conservation is meaningless other than being part of the name of organisations that come and work with them. Their conservation ethic is about sustained use for human benefit (Berkes et al. 1995), where sustainability has primarily been achieved through very low population densities (there are about 600 Pawaiian people in the southern half of the 2600 km² area – Johnson 1996) and population growth is now undermining that sustainability (McCallum & Sekhran 1996).

Resource management in Crater Mt

In the management of Crater Mt each clan has a nominated representative on village committees, which are charged with making and enforcing the rules of the wildlife management area (Johnson 1996). In terms of management, the committees make rules regarding resource use (e.g. “No-one can hunt with a home-made shotgun or unregistered shotgun” – Johnson 1996). Furthermore, each clan has designated an area in which it will not hunt wildlife or cut trees. For a detailed description of the project see Johnson (1996).

When landowners do not have the technical skills to assimilate information that may be of benefit to them, government organisations such as the PNG Office of Environment and Conservation may fulfil that role. Unfortunately, this organisation has very limited resources available for such purposes and there is no political will to change this situation (McCallum & Sekhran 1996). If landowners in Crater Mt are to benefit from the results of my research, it will not be from reading this paper but by means being developed by groups working in the area (eg. Research & Conservation Foundation of PNG [RCF]). It is beyond the scope of this paper to detail this process, but it is important to note that this paper serves primarily to document some basic management prescriptions and suggest areas for future research. The results and recommendations have been presented to landowners in a different form (see RCF 2000a, 2000b), and this will continue in the future (see below).

Traditional ecological knowledge is an attribute of societies with historical continuity in resource-use practices (Williams & Baines 1993). The possession of traditional ecological knowledge does not necessarily lead to societies living in harmony with the surrounding environment (Berkes et al. 1995), but when it does result in management practices they are based on long-term observation and in the form of management prescriptions (Williams & Baines 1993) (e.g. no trees are cut at Penia in Crater Mt to ensure good hunting at

the site – Luke Topolu pers. comm.). Furthermore, interest in ‘conservation’ is maintained if local people have at least an expectation of future benefits (Berkes et al. 1995). Fortunately, people in Crater Mt already recognise they benefit from megapodes as the collection of eggs is common place (JRS pers. obs.) and some community members have also witnessed what they believe to be an increase in the megapode population surrounding the Crater Mt Biological Research Station (CMBRS) in the 10 years this has been a reserve area (Luke Topolu pers. comm.).

To successfully incorporate results of research into the management practices of people such as those in Crater Mt, we must generate simple management prescriptions that are understood by local people and that they feel will benefit them now or in the future (Berkes et al. 1995). Recommending simple management prescriptions when there is very limited information is not the usual *modus operandi* of wildlife researchers.

Threats to megapodes in Crater Mt

Despite Crater Mt being gazetted as a Wildlife Management Area, presently a large multinational mining company is prospecting within its boundaries and part of the area is included in a logging concession (Johnson 1996). However, at present, the main modification to habitat in Crater Mt is the cutting of forest on relatively flat sites for gardens (JRS pers. obs.) and removal of understorey trees for fuelwood and a few canopy trees for construction of houses (Mack & Wright 1996). These modifications were at low levels in the past but the human population in Crater Mt is in a rapid growth phase (Johnson 1996) and there has been a noticeable although unquantified increase in the areas under cultivation in the past 10 years (Andrew Mack pers. comm.).

The increases in habitat modification, which will result from both extractive industry and human population growth, have the potential to impact on megapodes. The results of my research suggest that, among other things, the removal of large trees and changes to the micro-climate of the mound site may be detrimental to megapodes.

Research needs for megapode management in Crater Mt

More than anything else, the present study reveals how little we know about megapodes in PNG, and how wrong we were in what we thought we knew. For example, in Crater Mt *Megapodius* are not parasites on mounds of other species as suggested by some authors, and *Talegalla* are not as obviously monogamous as believed.

If landowners in Crater Mt and elsewhere are to effectively manage megapodes in the long-term, they will need to know much more about megapodes than is presently known. I therefore recommend further research be undertaken to answer the following questions:

- (1) Are there critical levels of environmental variables which affect the function of the mound as an egg incubator? This could be addressed by further development of the Seymour Model (Seymour 1985, Seymour & Bradford 1992) for temperature regulation in mounds (Sinclair 2000) or by using the habitat modification presently underway in Crater Mt and throughout the range of the megapode family as ‘natural experiments’.
- (2) What are the effects of disturbance by harvesters at mounds in terms of egg viability and site fidelity of the three species of megapode? Data from temperature loggers I put in mounds suggest that leaving mounds open

may affect egg viability after excavations (Sinclair 2000). In the CMBRS several mounds were abandoned following severe disturbance by pigs (JRS unpubl. data). When pigs dig for eggs they leave the mound open in a similar fashion to human harvesters. People leave the mounds open because they believe they have collected all the eggs in the mound, but this is not always the case (JRS pers. obs.). When we excavated mounds we closed them afterwards and there was no abandonment of mounds, nor was there after the numerous visits by monitor lizards (*Varanus* sp) which leave small holes in mounds (JRS unpubl. data). These observations suggest that harvesters may be causing the unnecessary abandonment of mounds or loss of eggs, but further research is required.

- (3) What is the performance of megapodes (e.g. animal condition, number of fledglings produced) in habitat with varying levels of modification? In areas where Pawaiian people of Crater Mt have been living, the forest is modified as described above, and Mack and Wright (1996) found lower capture rates of birds at CMBRS than did Bell (1982) elsewhere in PNG (although these authors did not report bird condition).
- (4) Can we develop models for harvesting of eggs and adult megapodes to estimate sustainable levels? Given that megapodes are an important resource for landowners in Crater Mt (JRS pers. obs.), they are excellent species for which to introduce the concept of harvest management to local people. Information on harvest rates, egg production and egg predation would be relatively easy to gather in Crater Mt (JRS unpubl. data). However, other parameters that may be important (e.g. juvenile and adult mortality) will need to be studied before models can be developed.
- (5) Given the lack of data on megapodes used to make the management recommendations detailed below, attention should be given to designing and testing monitoring protocols for megapodes. This monitoring should be both inside and outside reserve areas, and where both managed harvests and *ad libitum* harvests are undertaken.

Recommendations for managing megapodes

Management is required for the conservation of megapodes, and we must make recommendations if the limited information we have suggests this is needed, while at the same time acknowledging that further research needs to be undertaken.

In terms of landowner management the important results of my study and the recommendations they generate are as follows:

- (1) There is evidence of patchy distribution of megapodes in Crater Mt with no NG Megapodes found at one of the three study sites despite all sites being within the same altitudinal range (Sinclair 2000). If an objective of reserve areas in Crater Mt is to protect megapodes, I recommend:
 - *Reserve areas are located at sites where NG Megapodes, Wattled Brush-turkeys and Brown-collared Talegallas co-occur*
- (2) There is evidence that species use different habitats for mound sites with, for example, mounds of NG Megapodes on less steep sites than those of Brush-turkeys

(Sinclair 2000). If an objective of reserve areas is to protect megapodes, I recommend:

- **Reserve areas should include a range of habitat types including both steep (> 20°) and flat areas (< 20°) of unmodified forest**

- (3) Sites of incubation mounds differ from random points. The forest at mound sites is relatively undisturbed primary forest and mound sites may need a closed canopy to maintain favourable incubation conditions (Sinclair 2000). If landowners wish to continue to harvest from mounds in the future, I recommend:

- **Gardens are not established within 100 m of mounds.**
- **No trees at all are cut within 20 m of a mound.**
- **Areas in which harvests of megapode eggs are desired in the future should be excluded from logging concessions.**

Furthermore, given that most megapode activity at mounds is in the morning, and that Brush-turkeys at least readily desert mounds if disturbed (Sinclair 2000), I recommend:

- **Egg collectors visit mounds only in the afternoon.**

- (4) From temperature loggers buried in mounds excavated by megapodes and egg harvesters, it appears that humans and birds have a similar effect on the temperature of the mound provided the mound is closed after the excavation (Sinclair 2000). When the mound is left open, as is the normal practice of egg collectors in Crater Mt, mounds cool rapidly and take a long time to recover (Sinclair 2000) which could result in increased egg mortality when not all the eggs have been found. Moreover, leaving a mound uncovered may lead to abandonment of some mounds (Sinclair 2000). I recommend:

- **Egg collectors close mounds after excavating them.**

- (5) As with most species of megapode, the potential exists for over-harvesting of eggs in Crater Mt especially as the human population expands rapidly. Given this, and that Wattled Brush-turkeys may experience greater impacts than other species due to a shorter breeding season and lower concentration of eggs in some mounds (Sinclair 2000), I recommend:

- **Egg collectors visit Wattled Brush-turkeys mounds only once per season**
- **Egg collectors visit NG Megapode mounds not more than three times per year.**

Dissemination of recommendations to Crater Mt residents

During a short visit to Haia in Crater Mt in June 2000, I had two meetings with landowners and spoke at the community school. Landowners were very receptive to the two management prescriptions I chose to discuss – if landowners want continued harvesting from a mound, close it after harvesting eggs and don't cut trees close to the mound. Although I wasn't able to get to the other villages in Crater Mt, the RCF Tok Pisin newsletter Kreta Nius that goes to landowners, ran an article detailing these recommendations (RCF 2000b).

These meetings were a very rewarding experience not only because landowners seemed supportive of the recommendations, but also because some of the results of my research answered questions people had wondered about for a

long time (eg. Why do some brush-turkey mounds have many eggs and others only a few? - Successful brush-turkey males attract many females to their mounds and therefore have many eggs in them, while unsuccessful ones attract few females and get few eggs). The Pawaiians and I share a curiosity about megapodes, and after 15 months of them willingly sharing their observations with me, I was able to share my observations with them. More than merely satisfying some of their curiosity, I think such meetings serve to re-enforce what we have in common, to promote the understanding of the purpose and process of research, and in the case of such things as megapodes, to demonstrate why we need to undertake research.

The broad results from my research and recommendations detailed here have been given to RCF which intends to include them in the proposed Natural Resource Management Plan for the Crater Mountain Wildlife Management Area and incorporate them into the bi-monthly management committee meetings in Crater Mt (Robert Bino pers. comm.). The recommendations may also be used as a management practice commitment from landholders in exchange for one of RCF's major development incentives (Robert Bino pers. comm.).

RCF operates a Conservation Education Program to train PNG teachers and teacher trainees in the use of the Wildlife Conservation Society-designed conservation curricula. They also run the Conservation Education Resource Centre where they lead students in activities that feature local animals and their conservation. RCF is in the process of redesigning teacher manuals and students' activities to include PNG animals, issues affecting them and recommendations for their conservation. The recommendations and results reported here will be incorporated in these materials and programmes that will eventually go to teachers and pupils in six PNG provinces (Janine Watson, pers. comm.).

Conclusions

The recommendations contained in this paper are the first for any of the 12 species of megapode in New Guinea and surrounding islands in recent times. Some of these recommendations are, unfortunately, based on limited data and include an unhealthy but perhaps necessary level of speculation. I hope that in the future we will not need to speculate, but can make recommendations to landowners based on a healthy body of megapode research.

Acknowledgements

The Wildlife Conservation Society and the PNG Biological Foundation funded this work. I thank the Haia Landowner Committee for permission to work in the Crater Mt and the Pawaiian people for their great assistance and much kindness (my local assistants are too numerous to name but Luke Topolu, Joe Moai, Timoti Mai and San Japadi were especially helpful). I thank Josh Kemp, Jackie Fanning, Andrea Goodman, Amanda Redmayne and Zac Smith for help with fieldwork. I thank the technical staff at the Zoology Department, University of Otago and Debra Wright, Andrew Mack and Ian Jamieson for their guidance. The Christensen Research Institute and RCF provided sponsorship in PNG.

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The Tenkile Tree Kangaroo Project

From Gary Slater

The Scott's Tree Kangaroo (*Dendrolagus scottae*), or Tenkile as it is known locally, was only discovered in 1989. This Critically Endangered species faces possible extinction within the next few years. Now restricted to as little as 20-30 square kilometres of the Torricelli Mountain Range in north-western

PNG, its distribution appears to have been reduced by as much as 75%, confining it to the southern face of Mount Sumoro. It is thought that population numbers may now be as few as 100 individuals. Although its habitat remains relatively unspoiled, local hunting pressure on tree-kangaroos has had dire consequences, including the disappearance of the Critically Endangered Golden-mantled Tree-kangaroo, *Dendrolagus goodfellowi pulcherrimus* from this area more than 60 years ago (Flannery *et al*, 1996).

In August-September 1998, a Conservation Assessment and Management Plan for the Tree-kangaroos of Papua New Guinea and Population and Habitat Viability Assessment for Matschie's Tree-kangaroo was undertaken at Unitech in Lae, PNG. This led to the production of a Draft Action Plan to Protect Tenkile. It was considered that, without immediate action, this species may become extinct within two years. Fortunately, local villagers are aware of the need to conserve the Tenkile and have requested assistance to ensure the species' long-term survival. A team visited the area to assess the situation in July 1999 and established a moratorium

on hunting that was endorsed by thirteen villages in the Tenkile range area.

A Recovery Plan for the species was drawn up in May 2000 and circulated to experts, local authorities and interested bodies for endorsement. This was followed by the formation of a recovery team, which held its first meeting in Port Moresby in August. Key outcomes from the Recovery Team meeting included: a timetable for key events over the next 12 months, funding arrangements and new applications for funding, ideas for community development options, and planning for a research centre for the Torricelli Mountains in Lumi. A team of advisers, on which the recovery team can draw upon for expertise in different areas, has been invited to participate in the recovery project. This list was quite extensive and will be enlarged as more experts are identified. A new NGO will be established to undertake the project. The NGO will be called the Tenkile Conservation Alliance. The alliance emphasizes the role of the community and their needs as a major component of the recovery process. The field station project is under-way with a site identified and in-principle approval given by local authorities. Costs are being compiled and funding is being sought. Funding has been secured for a local biologist and two assistants for the next two years.

To support Tree Kangaroo Conservation in general the Recovery Team is working with the Australian Rice-growers Cooperative. One of the Cooperative's biggest markets is PNG, where rice is sold under the TruKai brand name. The Team is working towards having Collector cards inserted into rice packets. The first series of Collector Cards

might be pieces of cardboard (or plastic style Pokemon cards) with a painting of a Tree-kangaroo on one side and a distribution map or text in Pidgin on the reverse.

The Tenkile conservation effort will be a long-term community development and research project. There are many organisations already lending support; however, this is a new and developing project so there are many opportunities for organisations as the recovery plan progresses.

For further information on the project or for a copy of the Recovery Plan, please contact Gary Slater, Manager Conservation & Research Zoological Parks and Gardens Board, PO Box 74 Parkville, 3052, Victoria, Australia Phone: (61) 03 9285 9362, Fax: (61) 03 0285 9346, Email: gslater@zoo.org.au

Cuscus and Ringtails at Mt. Stolle Wildlife Management Area

From Suzette Stephens

In August Suzette Stephens and Leo Salas completed a year of fieldwork at Mt. Stolle Wildlife Management Area (WMA), Sandaun Province as part of their doctoral research at the University of Massachusetts. The WMA is the only protected reserve in the Telefomin region, which has the highest diversity of mammals in Australasia. The WMA spans from 1400m to 2800 m elevation and encompasses primary mid-montane cloud forest to alpine scrubland. Leo conducted extensive hunting surveys in the local communities and did some follow-up work on his studies of mountain cuscuses (*Phalanger carmelitae*), silky cuscuses (*P. sericeus*) and coppery ringtails (*Pseudochirops cupreus*), which took place between 1995 and 1998. Suzette studied the ecology of painted ringtails (*Pseudochirulus forbesi*), an arboreal, nocturnal marsupial that had never been systematically studied.

Leo's work resulted in some very interesting findings about human hunting patterns of arboreal animals. He determined the most heavily hunted species, their frequency of being hunted, the hunting effort expended and the methods used. His results will be useful to conservation plans throughout New Guinea. Leo also measured the tree fall rate in plots that he had delineated in 1997. As a result of his work, the WMA now has a list 180 tree species and their relative abundances. Voucher specimens of these species have been deposited at the National Herbarium in Lae and the Harvard Herbarium in Cambridge, Massachusetts, USA.

During Suzette's study she was able to document some basic elements of the ecology of painted ringtails. The study was designed to yield results comparable to those of Leo's study of some of the WMA's 9-12 species of cuscuses and ringtails. Suzette studied the diet, activity patterns, survival rates, causes of mortality, behavior and sleeping tree selection of painted ringtails. She also collected DNA in the hope of learning more about their breeding system. This species is almost entirely folivorous although it also eats bark. It remains unclear exactly what the animals are obtaining from the bark, so scrapings were collected for analysis.

Together, Suzette and Leo have compiled lists of birds and mammals that can be found around the research

station. The list of animals has grown to include 76 bird species and at least 35 mammal species. Many of the mammals on the list represent either new altitudinal records or new records for the province. Many mammal species were collected and deposited at the National Museum and Art Gallery.

The station house at the WMA had not received external support since it was built in 1992 by Ok Tedi Mining Ltd. It is a duplex-style house with 2 kitchens, 2 toilets and 2 showers. Although it is a very comfortable place to do research, it was showing signs of wear due to the especially humid environment. Throughout the year Leo and Suzette were able to make several much-needed improvements to the station including painting the station house inside and out, rebuilding the front steps of the station house, putting new permanent signage on trails, clearing trees around all three houses, making a new covered plant drying platform that can accommodate 4 plant presses, reinforcing one of the assistants' houses, making furniture and removing rubbish by helicopter. The inventory list of the station's supplies and equipment was also updated for the reference of future researchers.

Suzette and Leo have been the sole long-term researchers at the station since 1995 so the community was concerned about who would come next. Fortunately, in July Dr. Andrew Mack of WCS visited the station to reiterate institutional support. His visit served as a bridge between the end of our dissertation research at the station and the arrival of new researchers to come. We shared information with him about the protected area to ensure that other researchers know how to travel to the station, how to hire assistants and what to bring. We discussed how the station is managed and what improvements could be made to both the station and the wildlife management area. WCS's in-country support will surely bode well for this remote yet valuable reserve's future. Any inquiries about the reserve and how to travel to Mt. Stolle should be addressed to Dr. Mack at P.O. Box 277, Goroka EHP, amack@wcs.org

Using Indigenous Knowledge to Conserve the Headwaters of the Strickland River

from William H. Thomas

Since 1989, I have been recording the traditional knowledge of the people living at the headwaters of the Strickland River in PNG's Central Range. The 1993 Conservation Needs assessment described this area as "a wilderness with a low human population" (Swartzendruber 1993). This is the homeland of the Hewa, a group of swidden horticulturalists who are scattered throughout the mountainous terrain bordered by the Southern Highlands, Enga and the

Sepik lowlands. There are no roads through this region and the first airstrip was cleared at Wanakipa in 1992. Therefore, the Hewa remain isolated and offer a good opportunity to explore the relationship between traditional lifestyles and biodiversity conservation in New Guinea.

My objective is to determine the compatibility of traditional life with modern conservation. Although we have not yet unlocked the conservation potential of traditional

lifestyles, my association with the Hewa leads me to believe that they are capable of producing more than just inventories of birds and plants. The Hewa know the preferred habitats for each bird and understand the effect of gardening and other activities on an area's species composition. Since birds are also the primary agents of seed dispersal in these forests, any human activity that alters the forest will directly impact avian diversity and therefore the conservation of biodiversity. With this in mind, I have recorded their traditional knowledge of the effect of human activity on birds, hoping to get a glimpse of tradition's potential to conserve biodiversity.

Like western ornithologists, the Hewa associate some species exclusively with the primary forest and others with the various stages of grassland and regeneration. To date, I have recorded 128 Hewa categories of birds that correspond to 171 species. According to the Hewa, cutting the primary forest will eliminate 56 species of birds, or roughly 33 per cent of the species found here. The Hewa also predict that shortening the fallow periods of their garden plots to less than the customary 20-25 years will result in the loss of another 42 bird species

(25%). The details of this study will be published elsewhere. They will provide data on species interaction, the cultural components that contribute to the sustainability of current land use activities, as well as the linkage between plants that humans rely upon and birds found exclusively in the primary forest.

My informants are providing insights into their impact on this environment that will increase the value of traditional knowledge to conservationists. The Hewa paint a realistic picture of the future for biodiversity should they lose their mobility or experience a population boom. While their traditions may not provide an easy "blueprint" for the conservation of these lands, their knowledge of ecological processes is a starting point. Given the predictive value of traditional knowledge, I think that it can empower the Hewa and provide a solid foundation for conservation of this area.

Literature Cited

Swartzendruber, J.F. 1993 Papua New Guinea Conservation Needs Assessment. USAID: Washington D.C.

Research on the impacts of portable sawmills

From Howard Rogers

The Pacific Biological Foundation has awarded a research grant to Dr Howard Rogers from Southern Cross University (Australia) for a three year project to study the impacts of portable sawmill logging operations on forest structure and regeneration in the lowland forests of West New Britain. The research will occur in collaboration with the European Union portable sawmill project at Kimbe. The project aims to quantify the response of lowland forests to

different intensities of harvesting. Data will be collected on the damage and mortality to the residuals, the composition and growth rate of the regeneration, and the stand growth response. The results will be used to formulate practical silvicultural recommendations for different harvesting strategies. It is hoped this project will ultimately help PNG foresters to manage for ecological sustainability.

Flora of Mt. Jaya Project

From Tim Utteridge

I am a plant systematist, studying plant groups from the Malesian region and am particularly interested in describing new species ('charting the biosphere'), and trying to promote basic morphological taxonomic work. I am also interested in plant reproduction, particularly the expression of morphological differences between sexes of dioecious taxa. The plant groups I am interested in are Maesaceae (formerly Myrsinaceae), Icacinaceae, which are lowland groups, and Pittsoporaceae, which is a lowland to subalpine group.

In New Guinea I have done fieldwork in Madang and Southern Highlands in PNG and have twice visited the Freeport Concession area in Irian. I am currently working at the Royal Botanic Gardens Kew in the United Kingdom on a Checklist of the Alpine and Subalpine flora of Mt Jaya (i.e., the Freeport area). I have a contract till Feb 2002 after which the checklist should be published.

The WWF-workshop "Rapid Biodiversity Survey Planning within the Context of Eco-region Based Conservation for the Sahul Bioregion"

Workshop organised by WWF Sahul, this summary from Marcel Polak

This workshop was held in Sentani/Jayapura, Papua, Indonesia from 28-30 August. The participants came from many different organisations, such as conservation NGOs (WWF, Conservation International, Yahli) and governmental bodies (regional planning office, environmental control, forestry), and included scientific flora and fauna experts from both Indonesian and foreign institutes.

The island of New Guinea represents the largest remaining tropical natural ecosystem area. Until recently, its biodiversity was protected through its isolation, but that situation is rapidly changing. A large scale protection approach (in time and space) is required because of the scale of the threats, and because of the biological inter-relatedness between small components, for example, between lowland

forest areas and montane forest areas which influence the hydrological balance of the lowland forest.

This new WWF approach is called Eco-region-Based Conservation (ERBC). An eco-region is defined as a 'relatively large unit of land or water that contains a distinct assemblage of natural communities sharing a large majority of species, dynamics, and environmental conditions'. For Papua province fourteen eco-regions have been defined: twelve terrestrial and two marine. These ecoregions are:

1. Vogelkop Montane Rain Forest
2. West-Irian Lowland Rain Forest
3. Southern New Guinea Peat and Freshwater Swamp Forest
4. New Guinea Mangroves
5. Southern New Guinea Lowland Rain Forest
6. Trans-Fly Savannah and Grassland

7. Cenderawasih Bay Rain Forest
8. Northern New Guinea Peat and Freshwater Swamp Forest
9. Northern New Guinea Lowland Rain Forest
10. Maoke Range Montane Rain Forest
11. Maoke Range Alpine Meadows
12. Central Range Montane Rain Forest
13. Northern Marine System
14. Southern Marine System

One of the requirements for the ERBC approach in Papua is support by scientific, spatially positioned biological data. However, such data are often scattered over a large number of sources, many often hard to access. The assistance of specialists in various biological disciplines is needed to help solve this problem. Even after such data have been made accessible, many areas will still remain for which very limited data or no data at all are available. To obtain additionally required data in an efficient way, a priority system for Rapid Biological Surveys (RBS) needs to be established.

The main objectives of the 3-day workshop were:

1. To develop a Rapid Biodiversity Survey design based on the eco-regional approach for the Papua Province, including a timeframe and budget which would be linked to such a design;
2. To identify priority survey areas and to determine expertise requirements as well as applicable methodology; and
3. To identify respective stakeholders and/or persons who will be involved in the proposed surveys.

The Programme

WWF Sahul director Rumansara opened the workshop with an explanation of the new ERBC approach, since most participants were not familiar with this concept. The next step was a division of the group into four subgroups to discuss the biodiversity of the Papuan eco-regions. One group was based on GIS and databases, and three were based on major ecosystems: terrestrial, marine and coastal, and freshwater. The first discussion group concentrated on technical aspects such as the present availability of hardware and software, the requirements for biological data to be used in GIS, as well as the institutional framework. In the three ecosystem-oriented groups discussions were held about the present general knowledge for the 14 eco-regions in terms of species diversity, distribution and endemism, breeding areas, migration routes, and threats.

On the second day, each of the four groups of the previous day presented their findings to the other participants, followed by a discussion of the results. Subsequently, the group was divided in seven groups: six were based on a taxonomic group (plants, fishes and corals, reptiles and amphibians, birds, mammals, and insects), and one dealt with introduced species. The taxonomic groups used two matrices to steer the discussion. One matrix dealt with biodiversity itself and the threats for biodiversity, and the other matrix dealt with secondary data availability, procedures for primary data collection, and potential stakeholders for the respective groups.

On the third day, each of the seven mentioned groups presented the results of the group discussion, which were commented upon by the others. After that the participants were divided again, this time over three groups: Terrestrial ecosystems, Freshwater ecosystems, and Marine ecosystems.

Within these groups, a compilation was made of the insights formed during the earlier exercises, in order to create recommendations for WWF Sahul concerning the areas and plant/animal groups to be prioritized for RBS/conservation in the near future. This exercise included the preparation of estimated required inputs for an RBS in the prioritized areas, in terms of time, personnel, and finances. Finally, on the last day, a questionnaire was handed out to the participants to check if the goals of the organisers and the expectations of the participants had been met.

The major results/conclusions from the workshop were as follows:

* Although it is clear that our understanding of the biological diversity of Papua is still limited, in particular when considering the huge size of the area, a lot of data has been compiled, or at least the major data sources to facilitate future accessibility.

* We need to do our best to improve on the information status, and create a central point where all information will be further compiled from the obtained sources, and stored to make it accessible for the appropriate parties. This concerns both direct biological data, as well as spatial information of importance for use in GIS. As long as the data remain incomplete, we will have to concentrate on the information already available for some groups on aspects like endemism, threats, and indicator properties.

* In order to make the Rapid Biodiversity Survey an effective means for WWF to obtain its conservation goals, it was recommended to create a central point, for example at Universitas Cenderawasih, which receives a certain degree of authority to arrange all the paperwork necessary to carry out RBS in Papua. This centre would thus function as a link between the effectors of the RBS and the governmental organisations in charge of the issuing of permits.

* During every phase of the RBS process, from the preparation through to the actual RBS itself, constant attention is required for the involvement of the local population in the prioritised areas.

* The RBS process should include a training component in Papua for Papuan students, in order to strengthen the present limited local human resources base for RBS. A local affiliation is expected to result in a more effective network between WWF Sahul and external parties.

* The priority area for the action plans of WWF Sahul for the year 2001-2002 should be the Bird's Head (Vogelkop) Peninsula, in particular the Bintuni Bay area (the neck, so to say), followed by the islands to the west of the Bird's Head Peninsula. The Bintuni area is of biological, conservation and economical importance, and immediate threats exist from LPG and timber exploitation projects. For the longer term, the Mamberano area is envisaged to receive more attention as well. WWF Papua should start as soon as possible with the preparation of the RBS in the Bintuni Bay area, using the recommendations of the discussion groups.

The results of the workshop are currently being processed to produce symposium proceedings. For further information on the workshop and its results, please contact WWF Sahul, Jl. Angkasa Indah II / 10, Jayapura, Papua, Indonesia. Phone: (62) 967-542-765 Fax: 542-529.

Rapid Assessment Program Survey Training in the Cyclops and Mamberamo

From Debbie Gowensmith

Nearly four weeks of in-the-field scientific training has prepared a group of biologists in Papua to put science to work for conservation. The training course began in the Cyclops Mountains and culminated in a two-week survey in the Mamberamo region, where scientists found a diverse forest supporting many significant species.

The training course focused on scientific methods used to rapidly assess the biodiversity of forests. Currently, Papua is so poorly known scientifically that decision-makers lack sound information with which to make conservation decisions. In fact, scientists attending the 1997 Irian Jaya Biodiversity Conservation Priority-Setting Workshop identified at least 17 areas in Papua urgently needing further scientific study. "We had an obligation to increase the skills of local biologists so they'd be able to carry out scientific surveys," says Suer Suryadi, manager of Conservation International's (CI) Papua program.

Twenty-three participants, many from UNCEN and local NGOs, joined expert biologists at a research station in the Cyclops Mountains near Yongsu from 19-30 August; then six participants were chosen to work alongside the experts in an intensive training survey near Dabra in the Mamberamo region from 1-15 September. CI's Papua program, Indonesia program, and Rapid Assessment Program (Washington, D.C.); Cenderawasih University (UNCEN); West Papua Environmental Foundation (YALI); and Dewan Adat Mamberamo Raya (DAMR) worked together to coordinate the course. Funding was provided by the Smart Family Foundation, the MacArthur Foundation, and USAID. A number of well-known researchers dedicated their time and energy to conduct the RAP training: Dr. Gerald Allen (a Papua fisheries expert and author of *Freshwater Fishes of New Guinea*), Dr. Bruce Beehler (author of *Birds of New Guinea*), Dr. Djoko Iskandar (of the Bandung Institute of Technology and author of *Turtles and Crocodiles of Insular Southeast Asia and New Guinea*) as well as other experts from CI, the Indonesian Institute of Sciences, the Smithsonian Institution, James Cook University and the University of Papua New Guinea.

During the survey in the Mamberamo region, the experts and six chosen participants worked side-by-side with local community members. They spent the bulk of their time in the field, practicing rapid-survey methods and experiencing true fieldwork conditions. Paulus Boli, a lecturer from the UNCEN – Manokwari, participated in both portions of the training. "We learned how the experts do their job in the field. We imitated them and now can practice those methods in other projects for conservation," says Mr. Boli. The participants and experts will continue to work together for the next year to write a preliminary report (available December 2000) and a final report (available October 2001).

The scientists found healthy forest and good diversity in the Mamberamo region. The herpetology team discovered six frog species previously unknown to science—four Microhylidae species and two Hylidae species—including a large, bright green tree frog. Finding such a distinct undescribed species indicates just how poorly known this area is. The Giant Sail-Fin Lizard was discovered in New Guinea

for the first time. The team also encountered the *Crocodylus noveaeguinea* and the giant soft-shelled turtle, two important resources for the local communities.

Almost half of the 140 birds recorded during the survey are endemic to New Guinea, meaning they're found nowhere else in the world. The bird species sited include Birds of Paradise (the Lesser, the King, the Twelve-Wired, the Jobi Manucode, the Glossy-Mantled Manucode, and the Riflebird); Bowerbirds; Catbirds; globally threatened species such as the Salvadori's Fig Parrot, Crown Pigeon, and Northern Cassowary; and the Bat Hawk, which is a new record for Papua.

The ichthyologists found for the first time since the 1930s the *Gobius tigrellus*. This small goby was previously known from only 10 specimens collected from the Mamberamo by the Archbold Expedition in 1939. Unfortunately, six introduced fish species were also found to be present in the Mamberamo; introduced species generally have negatively impacted native fish populations wherever they have been released.

Aquatic insects, however, seem to indicate that the river system is still healthy overall. During the survey, a swarm of mayflies hatched, coating the river's surface. Because mayfly eggs incubate in the river bottom, their abundance generally means that toxic chemicals are not present in river-bottom soils. At least 17 species of aquatic insects that are new to science were recorded, and an additional 19 species require further study to clarify whether they are new to science.

The plant team also discovered several species that are likely new to science, including one species of ginger that is waxy green. At least 250 species of trees measuring more than 10 cm DBH (diameter at breast height) were recorded for a one-hectare plot, and at least 100 flowering or fruiting species were collected.

Elymmian paradoxa, a butterfly before found only in eastern Papua New Guinea, was discovered in the Cyclops Mountains, and preliminary results indicate that several other species were found that the participating scientists have never before seen in Papua.

Difficult survey conditions limited the results for mammals. However, the mammalogists suggest that bandicoots could be reared instead of hunted, providing a consistent and relatively inexpensive protein source for local residents.

"Considering the very short time we had in Mamberamo, we found a great deal of significant species there—new species, new records for the area, and many species found nowhere else in the entire world," said Stephen Richards, team leader for the training and scientific survey. "This suggests that additional research is needed and that the Mamberamo region is biologically important. The area's biological diversity needs to be taken into account in decision-making."

For further information, please contact Suer Suryadi, Papua Program Manager, Conservation International, Email: ci-irian@jayapura.wasantara.net.id

A Biological Assessment of the Wapoga River Area of Northwestern Irian Jaya, Indonesia

Andrew L. Mack and LeeAnne Alonso, Editors, CI Rapid Assessment Program

Irian Jaya, located in the eastern part of Indonesia's territory with a total area of 416,000 km², may contribute up to 50% of Indonesia's biodiversity. However, there is a lack of comprehensive multi-disciplinary research that explores and describes the biological resources of Irian Jaya. Conservation International seeks to fill this gap by conducting a series of rapid biological assessments in Irian Jaya.

From 31 March through 2 May 1998, a Rapid Assessment Program (RAP) expedition surveyed five sites in the vicinity of the Siewa and Wapoga Rivers (designated as the Wapoga River Area of northwestern Irian Jaya in this report), in the District of Paniai which lies between 3° 02.202' S, 136° 22.515' E and 3° 08.687' S, 136° 33.412' E. Surveys were conducted in a diversity of habitat types (lowland forest to high cloud forest) at a range of elevations from sea level up to 1890 m above sea level.

The Wapoga River was chosen because it was identified in the CI sponsored Irian Jaya Biodiversity Conservation Priority-Setting Workshop (1997) as an area where ecological and bio-geographic data are particularly inadequate. One goal of the survey was to provide data on the biota of an area that has remained virtually unexplored by biologists. Results from the RAP expedition provide scientific information on the rich diversity of the terrestrial and freshwater aquatic flora and fauna of this area. Policy makers, conservationists, researchers, NGOs, and local people may use this information to integrate their conservation and development activities.

The Wapoga River Area is a large area of pristine forest, with very little evidence of human disturbance. Few such areas remain in New Guinea or throughout the world's tropical areas. RAP scientists discovered many new species of frogs, aquatic insects, ants, fishes, lizards and plants, highlighting the importance of this area for biodiversity

conservation and illustrating our limited knowledge of the flora and fauna of Irian Jaya. Numerous range extensions and new records for Irian Jaya were found among aquatic insects, ants, frogs, and birds. Strong populations of several frog species that are in decline in other parts of the world were found during the RAP survey. The unique species composition of the Wapoga River Area suggests that the area straddles the boundary of two bio-geographical sub-provinces and as such may constitute a unique zoogeographical zone.

In total the RAP recorded more than 430 species of plants (5 new to science), 80 species of Heteroptera (true bugs) (36 new to science), 25 species of Zygoptera (dragonflies and damselflies) (2 new to science), 196 species of ants (17 new to science), 46 species of fish (3 new to science), 47 species of frogs (29 new to science), 25 species of reptiles (2 new to science), 213 species of birds and 11 species of mammals.

We trust that this RAP expedition will serve as a model for future collaborations between industry and conservation/academic institutions. The pristine nature of the Wapoga River Area makes it an ideal location for future studies. Much more research is needed on all taxonomic groups to complete our knowledge of the high diversity of the Wapoga River Area and to determine the types of conservation activities needed to preserve its unique biota. Efforts should be made to limit human impacts and to prevent the introduction of exotic species into the area. RAP herpetologists recommend future monitoring of several frog populations to provide insight into the potential cause and solutions of their decline in other parts of the world.

For a full copy of the RAP report, please contact Patti Gleason, Conservation International, 2501 M Street NW, Washington D.C. 20037 USA, Fax: (1) 202-887-5188, Email: p.gleason@conservation.org

Batrachotoxin alkaloids from passerine birds: A second toxic bird genus (Ifrita kowaldi) from New Guinea

Abstract from an article in the Proceedings of the National Academy of Sciences, USA, 17 Oct 2000
J. P. Dumbacher, T. F. Spande, J. W. Daly

Molecular Genetics Laboratory, National Zoological Park, Smithsonian Institution, 3001 Connecticut Avenue NW, Washington, DC 20008; and Laboratory of Bioorganic Chemistry, Room 1A-15, Building 8, National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health, Bethesda, MD 20892-0820

Batrachotoxins, including many congeners not previously described, were detected, and relative amounts were measured by using HPLC-mass spectrometry, in five species of New Guinean birds of the genus Pitohui as well as a species of a second toxic bird genus, *Ifrita kowaldi*. The alkaloids, identified in feathers and skin, were batrachotoxinin-A cis-crotonate (1), an allylically rearranged 16-acetate (2), which can form from 1 by sigmatropic rearrangement under basic conditions, batrachotoxinin-A and an isomer (3 and 3a, respectively), batrachotoxin (4), batrachotoxinin-A 3'-hydroxypentanoate (5),

homobatrachotoxin (6), and mono- and dihydroxylated derivatives of homobatrachotoxin. The highest levels of batrachotoxins were generally present in the contour feathers of belly, breast, or legs in Pitohui dichrous, Pitohui kirhocephalus, and *Ifrita kowaldi*. Lesser amounts are found in head, back, tail, and wing feathers. Batrachotoxin (4) and homobatrachotoxin (6) were found only in feathers and not in skin. The levels of batrachotoxins varied widely for different populations of Pitohui and *Ifrita*, a result compatible with the hypothesis that these birds are sequestering toxins from a dietary source.

Announcements and Requests

This section is for anyone to use. You can send in announcements (for example, to advertise an upcoming meeting). You can also send in any requests for information that you think other newsletter recipients could help with (for example, if you are writing a paper about forest structure and want to find out who is currently working in this area or who you could collaborate with or exchange info with). Please send any announcements or information requests to Deb.

Needed: New Guinea *Metrosideros* locality information

We need to find precise localities for *Metrosideros* (*Mearnsia*) *ramiflora* or *Metrosideros* (*Mearnsia*) *scandens* so we can collect some specimens for phylogenetic DNA work. If you know where these species can be found, please contact Tony Whitaker, whitaker@ts.co.nz

Metrosideros has two sub-genera: *Metrosideros* and *Mearnsia*. The four PNG species are all in the sub-genus *Mearnsia* and our research on that section has not yet been completed because we have so far only managed to get material from one of the PNG taxa, *M. cordata*. *Mearnsia*

extends from NZ (7 spp.) through NC (9 spp.) to PNG (4 spp.), the Solomons (1 sp.) and the Philippines (1 sp.), with one outlier in S Africa. Clearly there is an interesting biogeographic/evolutionary story in *Mearnsia*, so it will be exciting if we can get the PNG material to complete the picture. The 4th PNG species, *M. ovata*, has an extremely limited range near Port Moresby which does not overlap with the other two species we are missing; hence we have decided to spend our efforts in pursuing the two co-occurring species.

Wanted: Information on Bowerbirds

Clifford Frith and Dawn Frith are in the advanced stages of writing a major work on the biology (and other aspects) of the bowerbirds. They are eager to include ANY unpublished information on any and all species. Of particular interest are data on nesting seasonality/biology (clutch/brood size, nest sites, incubation/nestling periods etc.), diet and foraging, distribution, behaviour etc. etc. Each and every contribution will be fully/appropriately credited and

acknowledged. Please consider this opportunity to have any unpublished or in press information appear in a most appropriate work ("The Bowerbirds: Ptilonorhynchidae", a forthcoming volume in the Oxford University Press "Bird Families of the World" series).

Kindly forward your information or questions just asap to the Friths at: PO Box 581, Malanda, Queensland, Australia, 4885. email: friths@internetnorth.com.au or Fax: 07 40 968 316.

Wanted: Dung Beetles from New Guinea

I am a PhD student in the Department of Zoology & Entomology at the University of Queensland, Brisbane, Australia. Under the supervision of Dr. David Yeates and Prof. Craig Moritz, I am studying the dung beetle genera *Temnoplectron* and *Amphistomus*, looking at speciation patterns in the rainforests of Australia and New Guinea.

Previous studies of the biogeography of the tropical rainforests of northern Australia and New Guinea have emphasised vertebrates and plants. However, invertebrate phylogenies tend to be biogeographically informative on a much finer scale. The few available phylogenies of Australian tropical rainforest species strongly suggest refugial isolation and allopatric divergence between populations. While for many vertebrates this isolation was more likely to cause extinctions, for invertebrates, the isolation was more likely to result in speciation.

Preliminary molecular data, using the mitochondrial gene cytochrome oxidase I (COI), has produced phylogenies somewhat different to those obtained from morphology (Reid & Storey, in prep). However, at this stage no specimens from New Guinea have been sequenced. To complete the study I require specimens from New Guinea, but unfortunately I am unable to get to New Guinea for field work. The beetles are relatively easy to catch with dung baited pitfall traps. If there is anyone who could help me by collecting specimens, it would be much appreciated, and I would be willing to negotiate payment for these specimens. For further information, please contact: Karen Bell, Dept. of Zoology & Entomology, University of Queensland, St. Lucia, Australia, Ph: (07) 3365 2493, Fax: (07) 3365 8515, email: kbell@zen.uq.edu.au

Wanted: Help with Master's Program

I am planning to enter a Master's Program either at the University of Technology in PNG, or at a University overseas in 2-3 years time. I am seeking assistance with information and/or funding to pursue this. My thesis topic will be "Succession and regeneration in gaps created by

portable sawmill operations." If you can assist in any way, please contact Dobon Taksey, FPCD Eco-Forestry Program, P.O. Box 297, Madang MP, PNG, Phone: (675) 852-3536, Fax: (675) 852-2718, email: growecoforest@datec.com.pg

National Herbarium of the Netherlands

From Marcel Polak

For those who have not yet heard the news, the major Dutch scientific herbaria have fused to form the National Herbarium of the Netherlands (NHN), with three branches in Leiden, Utrecht and Wageningen. Therefore, the former

'Rijksherbarium' in Leiden has now become the Leiden branch of the National Herbarium of the Netherlands. More details can be found on the Leiden website <http://nhncml.leidenuniv.nl/rhb/#NHN>

The Indonesian Nature Conservation Newsletter (INCL)

The INCL is a non-profit internet e-mail list for announcements and news about topics related to nature conservation in Indonesia. Messages appear in digest format and are sent out once a week in the following formats:

1. English language issue with announcements and press clippings in plain text format (about 100 kB/week)
2. The above in HTML format

3. Bahasa Indonesia issue with announcements and press clippings in plain text format (about 150 kB/week)
4. The above in HTML format

To subscribe or if you have questions or contributions for inclusion: please send an e-mail to Muchamad Muchtar (ngo-move@indo.net.id) or Ed Colijn (edcolijn@bart.nl).

Non-Wood Forest Products Newsletter (NWFP-Digest-L)

This list is for information related to any aspect of non-wood forest products. The sponsor for this non-profit email newsletter is: Non-Wood Forest Products Programme, Forestry Department, FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy, Fax: +39-06-570-55618, Web site NWFP programme: <http://www.fao.org/forestry/FOP/FOPW/NWFP/nwfp-e.stm>

To join the list, please send an e-mail to: mailserv@mailserv.fao.org with the message: subscribe NWFP-Digest-L

To make a contribution once on the list, please send an e-mail to the following address: NWFP-Digest-L@mailserv.fao.org

Iko-Forestri Nius

The Papua New Guinea Eco-Forestry Forum produces Iko-Forestri Nius, the Eco-Forestry Newsletter for Papua New Guinea. A recent special edition of the newsletter (September 2000) covers many aspects of Non-Timber Forest Products.

For more information, please contact: Papua New Guinea Eco-Forestry Forum, PO Box 590, Kimbe, West New Britain Province, Papua New Guinea, E-mail: teff@global.net.pg

PNG BIRD SOCIETY Rarities Committee—Unusual Record Report Form

From Phil Gregory

This form is intended to aid observers in the preparation of a submission for a major rarity in New Guinea, and to help document records of unusual species. Please complete all

sections ensuring that you attach all relevant information including copies of your notes, photographs or other supportive material. (PLEASE USE BLACK INK).

Full Name:	
Address:	Phone No:
	Fax/Email:
Species Name:	Scientific Name:
Date(s) and time(s) of observation:	
How long did you watch the bird(s)?	
First and last date of occurrence:	
Distance to bird:	
Site Location (please give GPS reading if available)	
HABITAT (DESCRIBE HABITAT IN WHICH THE BIRD WAS SEEN, TOGETHER WITH ANY NEIGHBOURING HABITATS):	
Sighting conditions (weather, visibility, light conditions etc.):	
Optical aids used:	
To your knowledge, is the species seen frequently at this site?	

Did you use a field guide? (or any other references for help with identification).
Were other observers present Do any of the other observers disagree with your identification, if so, who? (please give names, addresses and phone numbers)?
How confident are you of your identification? , e.g. 70%, 100%. If not 100%, why not?
Other details: e.g. Do you have historical and or anecdotal information/comments relating to the prior occurrence/status of the species within or near this location? <i>If more space is needed for any section, please attach with your notes.</i>
Physical Description of Bird - Please describe only what you saw: (1) No. of individuals present (living or dead); (2) age (adult, juvenile, immature) and sex; (3) size and shape; (4) plumage colour and pattern (including any details of moult); (5) colour of bill, eyes and legs/feet; (6) calls; (7) behaviour, movements, flight pattern, and anything else that might help to identify the bird e.g. feeding, interactions with other birds, describe where the bird was – on ground, in canopy, flying etc. Were comparisons made with other species? <i>Please also state whether you saw the complete bird or only part of it?</i> (e.g. upper/lower/front/rear of bird). <i>(Attach a description and where possible a copy your field notes)</i>
Other species with which you think it might be confused and how these were eliminated? <i>(Please append your comments / views following your description)</i>
Was the description written from notes and/or sketches made (tick box): <input type="checkbox"/> during the observation or; <input type="checkbox"/> shortly after the observation or; <input type="checkbox"/> from memory?
Please indicate supportive evidence available. Was the bird: photographed, <input type="checkbox"/> taped or <input type="checkbox"/> video taped? If yes to any of these, by whom?
What experience have you had with the species in question? (Did you know it was a Rare bird when you first saw it?)

Signature: _____

Date: _____

Please forward all material to: The Secretary, PNGBS Rarities Committee, P.O. Box 387, Kuranda 4872, Queensland, Australia

Needed: Coral Reef Educational Materials

From the INCL newsletter

Two of five main programs of the Indonesian Coral Reef Foundation TERANGI focus on the increase of public awareness and training/education regarding management and wise use of coral reef resources. Therefore, we began more than a year ago to search for appropriate books, publications, training manuals and audiovisual material in order to carry out education and public awareness activities focusing on general reef ecology, the values and threats of coral reefs, as well as on community based CR management. In agreement with the authors, some of the materials, including two videos, a book, a monitoring manual and an educational flipchart are currently being translated or adapted for the use in Indonesia.

During this process it became apparent, that in line with the "ICRI (International Coral Reef Initiative) - CALL TO ACTION" in Dumaguete in the Philippines in 1995, the "Year of the Reef" in 1997 and the "ICRI Reaffirmation of the Call to Action and Framework for Action" on the "ITMEMS-International Tropical Marine Ecosystems Management Symposium" in Townsville in 1998, many new and creative media have been developed in order to communicate coral reef related issues to a wider public in general and to several target groups in schools, Universities and Government Institutions in particular. Nevertheless, when asked for recommended

publications by other institutions, many national and international NGOs and donor agencies stated, that they found it difficult to keep track with new releases. Many were surprised to find out, that they were not aware of several new and valuable existing media.

In order to support and strengthen the national and international mechanisms for gathering and sharing educational information and expertise on the sustainable management of coral reefs and related ecosystems, Johns Hopkins Universities Center for Communication Programs decided to fund TERANGI's efforts regarding the development of an educational coral reef media database within the framework of the JHU-CCP Coral Reef Public Awareness Project within the Indonesian COREMAP (Coral Reef Rehabilitation and Management) Program.

It is planned to collect information on as many existing media as possible, including books or educational booklets, training manuals, school project documentation, Posters, games, audiovisual material, educational slide collections, interactive CD-ROMs and websites. These will be categorized regarding subject, target group etc. and entered into a clearing house database, which will be made available to interested stakeholders on CD-ROM and on the Internet.

We have sent out more than 800 letters and e-mails asking for information on existing educational media on coral reef issues. Surprisingly, the turnout has been much lower than expected: We have only received 35 replies: five institutions filled out the media information form and 7 institutions sent material, in all resulting in 12 entries in the database, of which 5 are from Oman.

Since we would like to include the efforts and products of as many institutions and individuals as possible in this database, we would be very appreciative if those of you who have produced material or who know about available media on coral reef education would contact us or fill out the form below.

Through this database we hope to facilitate communication among institutions and projects by providing contact addresses of authors and distributors together with information on content, intended target groups, specific use categories, age classes, etc. We hope that this approach will benefit international stakeholders in coral reef management and education projects as well as Indonesian efforts to increase awareness and to build capacity for coral reef management and conservation. Again, the database will be made available to all interested stakeholders on CD-ROM and on the Internet.

We would really appreciate it if you could spend a few minutes of your time to support this effort with information on educational media on coral reefs.

Thank you, Marlina Purwadi and Jan Henning Steffen, PhD, Program for Marine Science and Education, TERANGI The Indonesian Coral Reef Foundation

Database Form

Please fill out the form below to help us describe your product in the database. Please make copies of the form in case you have produced several coral reef education media. You can e-mail the form(s) to terangi@cbn.net.id or fax it to +62-21 717 93372 or send it by mail to Yayasan TERANGI, PO BOX 4346, JKTM 12700, Jakarta - Indonesia

- If you send a sample of your material you don't need to fill out the form(s).

- In case you are sending any product please notify us by short email, fax or letter to enable us to check with the post office in case there is a delay with its arrival.

If you are not sure, whether your material fits the database, below you will find a short summary to identify the kind of product the database would like to list: We are looking for materials for coral reef educational efforts, which are often, but not necessarily elementary-school-based (for example in regard to outreach work in coastal communities). Defining the target group categories, we asked ourselves the following questions: How do we educate children, students and adults about coral reef issues and what do we consider to be essential "coral reef knowledge" for each target group? We would also like to list more advanced education and training manuals on reef conservation and management for specific target groups, such as university students and field staff of coral reef conservation projects.

General Information:

Your Name:

Institution:

Kind of Material:

(For example Book, Journal, Report, News Letter, Article

Magazine, Fact Sheet, Audio Visual, Poster, Web Site, Educational game)

For Printed Materials:

Title:

Author/ Institution:

Publisher:

Year:

Language:

Total Pages:

Volume:

ISSN Number:

For Audio-Visual Materials:

Duration: __ minutes

Kind of Audio-Visual: (mark appropriate category)

1. Video
2. CD-ROM
3. Audio-Cassette
4. VCD
5. ____

For Visual Material: (mark appropriate category)

1. Flip Chart
2. Poster
3. Educational Brochure
4. Slide Collection
5. __

For Web Sites:

Web Address:

Type of Information:

For all material types:

Category: (mark appropriate categories)

1. Public Awareness
2. Coral Monitoring
3. Coral Reef Ecology
4. Coral Reef Invertebrate
5. Coral Reef Fishes
6. Coral Taxonomy
7. Coral Reef Management
8. Coral Reef Status
9. ____

Potential User : (mark appropriate category)

1. Teacher/Lecturer
2. NGO
3. General
4. Student (a. kindergarten b. elementary c. high school d. college)
5. ____

Abstract/Summary:

Key Words:

Please characterize/evaluate the material in your words: (if applicable)

What you will send: (mark the appropriate category)

1. You will send this form to TERANGI
2. You will send a sample of the material and would like us to send it back to you
3. You will send a sample of the material and you agree that it will become part of a non-profit Clearing House Library

Where and how can interested parties access or order the Material?

Institution: Contact person: Division: Address: Country: Zip: Tel: Fax: Email: Web-site:

FUNDING OPPORTUNITIES AND JOBS

Christensen Fellowships for Honors Thesis Field Work

If you are a graduate from the biology, forestry, or environmental sciences programs at University of PNG, PNG University of Technology, University of Goroka, or Bulolo University College and wish to pursue an Honors degree, you may apply for funding to do your field research under the supervision of Drs. Andrew Mack and Debra Wright.

To apply, please send your name, address, phone and fax numbers, email address, your college transcript, at least

two letters of recommendation from faculty members, and a letter or proposal with ideas for your research. We will help you with your proposal and with your research, but we do expect you to come up with an initial idea.

Please send these application materials at any time to: Andrew Mack and Debra Wright, P.O. Box 277, Goroka EHP, Papua New Guinea, fax: (675) 732-2461. Applications and questions can also be emailed to: dwright@wcs.org

JOB OFFER: Community Conservation Officer - Tenkile Conservation Alliance

The Tenkile Conservation Alliance has been established to save the Tenkile (Scotts Tree Kangaroo) from imminent extinction. The Tenkile, of which there are an estimated 100 animals remaining in the Torricelli Mountains of the North Coast Ranges of PNG, is one of PNGs most endangered animals. A panel of interested experts has been formed to devise ways to immediately halt the decline in this species.

The Program seeks motivated individuals to act as the front line liaison officer dealing with communities in the Lumi area to formulate a program that abates the threats faced by this animal. The project aims to maintain a presence in the Lumi area and surrounding villages so as to raise awareness of the Tenkile plight and encourage the enforcement of the hunting moratorium.

Initially the successful candidate will undergo rigorous orientation to the program and issues involved.

The Contract

- Two (2) year fixed term contract with potential for extension.
- Salary, paid fortnightly, will be up to \$14,000 kina p.a. including domestic market allowance.
- A monthly food/accommodation allowance will be provided.
- Travel and field related expenses will be provided.
- Field and research equipment will be provided.
- Four weeks annual leave per year.
- Government listed Public Holidays.
- 10 days sick leave entitlement.
- A three-month probationary period will apply.
- Leave fares to place of employment after 18 months and on termination.
- Regular visits to closest major centre for business purposes and personal reprovisioning will be negotiated on appointment.
- Initially only single accommodation can be provided, this may change to include married accommodation as the project develops.

Qualifications

- Be a PNG National.
- Tertiary Qualifications in relevant field (community development, biology, environmental science or equivalent)

Duties include;

- Establish a guiding community conservation committee represented by all landowner stakeholders in the area to discuss and formulate plans for Tenkile conservation.

- Liaise with the local community for the site preparation of the field station.
- Oversee the construction and upkeep of the site including the Haus Win.
- Disseminate information and education materials on the Tenkile and general conservation issues.
- Develop and maintain communications – IRT, Provincial Government, NGOs, church and other stakeholders.
- Interview signatories to the 1998 hunting moratorium to determine current views and success or otherwise of hunting moratorium.
- If required negotiate a further hunting moratorium with villages.
- Search key hunting areas, collect evidence of tree kangaroos and note location using GIS.
- Obtain blood, fecal, hair samples from animals residing in villages to assist in DNA investigations.
- Supervision of local staff and project visitors.
- Possible husbandry of captive Tenkile.
- Deliver regular reports to the Recovery Team.

Skills and Abilities Required

- Bilingual in English and Pidgin (desirable)
- Motor Vehicle and/or Motor cycle drivers license
- Computer skills
- Basic accounting/bookkeeping.
- Ability to undertake basic data collection and work with scientists.
- Written and verbal communication skills.
- Presentation skills.
- Report writing skills
- Supervisory and or management skills.

Experience

- Previous experience for extended periods in the field.
- Previous experience in working with or establishing field projects.
- Previous experience in working in and engaging village communities.
- Previous experience in local staff supervision.

Desirables

- Previously worked with NGO community or relevant government department.
- Post graduate qualifications.
- Experience with Integrated Conservation and Development Programs in PNG.
- Knowledge of conservation issues and endangered species program.

- Ability to provide care for captive Tenkile (may be required).

Other

- The person needs to be physically fit and healthy.
- The person needs to be practical and able to problem solve using lateral thinking.
- Willing to spend long periods working in the Lumi area and surrounding villages.

JOB OFFER: UNDP Programme Assistant

The United Nations Development Programme is seeking suitably qualified applicants for a Programme Assistant position in the Port Moresby Office. The Programme Assistant will assist the Environmental Programme Manager on a day to day basis.

Duties and responsibilities

1. Provide administrative and logistical backstopping to the UNDP office and project partners
2. Monitor project progress and budgets, liaise with project staff and other stakeholders to ensure project co-ordination, meeting of deadlines, timely and professional delivery of outputs, etc.
3. Convening and organizing meetings and workshops, serve as rapporteur, and disseminate minutes of meetings
4. Preparation of inputs to proposals, including Terms of Reference, Budgets, work plans and other required documentation and inputs
5. Correspondence, filing and reporting, expenditure control

Applications

- Applications, in writing, must demonstrate that they meet the essential requirements of the position.
- Applications should be addressed to The Director, the Rainforest Habitat, c/- UDC PMB Unitech, Lae. PNG. Applications close 5pm Friday 17th November 2000.
- Further information on the position can be obtained by contacting The Director – the Rainforest Habitat ph/fax 475-7839 e-mail habitat@datec.com.pg

6. Assist in activities related to the preparation of proposals, leveraging of co-financing, project monitoring and co-ordination, etc.
7. Other duties as required

Qualifications

1. Degree in administration/management or equivalent, with at least 5 years professional experience in project management
2. Administrative and executive secretarial skill
3. Experience in drafting correspondence, and preparing proposals, project reports, evaluations and analyses
4. Excellent writing and communication skills
5. Dedication, orderliness and ability to work hard and efficiently
6. Computer literacy: Word, Excel, e-mail, internet use, schedulers
7. Familiarity with conservation projects desirable

Salary and benefits will be commensurate with qualification and experience.

Please contact: Tormod V. Burkey, Environment Programme Manager, UNDP, Telephone: 321 2877; e-mail: tormod.burkey@undp.org.pg

International Master of Science Programme in Biodiversity

From the INCL newsletter

The purpose of this international programme is to enable students to acquire sufficient competence and skill to carry out advanced assessment, analysis, and management of biological diversity in order to design safeguarding programmes in their native countries. The course will provide an up-to-date and appropriate training for biologists and biodiversity managers from Africa, Asia, eastern Europe and Sweden. The course is arranged by The Swedish Biodiversity Centre (CBM) and is part of The Linnaeus Initiative for Biodiversity - an educational and research programme to help safeguard domesticated and wild biodiversity.

The Curriculum

The course represents a training programme with emphasis on an interdisciplinary approach to conservation and sustainable use of biodiversity. In addition, it emphasizes the importance of the relationships between biodiversity and human societies (traditional and modern). Thus, the course will particularly emphasize social, legal and political aspects of the subject, but ecology, genetics and systematics will also be important ingredients.

The course covers 40 credits of a Master of Science paper (based on a research project) plus another 40 credits. It will require two years of study. The research project may be carried out either in Sweden, or preferably in the student's own country. Supervision of research projects should be organized

under a Swedish supervisor, and a supervisor from the student's country.

Based on the Convention on Biological Diversity, the Programme deals with two different branches within the field of biodiversity:

- 1) the wild fauna and flora and their habitats and
- 2) the domesticated biodiversity.

To optimize specialist and educational capacity at different governmental institutions and universities, the course will be sequentially located at three different universities. Included will be field excursions and visits to government agencies and other bodies.

The Participants

The target groups for the course will mainly be professionally active university teachers, systematists, ecologists, geneticists, nature conservationists and biodiversity managers in the Third World, Eastern Europe and Sweden.

The basic qualifications for the course are fluency in the English language and a Bachelor of Science degree or equivalent degree specialising in biology, ecology, genetics or nature conservation, including their domesticated plant and animal equivalences, and with a good average score.

Expenses for travel, food and housing for non-Swedish students will be covered by grants. Participants will also receive a book allowance.

To Apply

Submit the following items:

A three-page curriculum vitae, which should include a description of your current and past positions, relevant professional experience, and educational background as well as witnessed photocopies of diplomas or certificates (be sure to include your e-mail address and/or fax number). Also include the names, addresses, telephone and FAX numbers, and e-mail addresses of two references.

A two-page statement of interest, discussing why you would like to attend the programme, aspects of biodiversity of interest to you, which variant - domesticated or wild biodiversity - you would prefer, and how you intend to implement your training when you return home after the programme.

A description of at least four subjects or problems from your own country to be used in seminar discussions or individual projects during the first year.

A three-page suggestion of a research project, preferably from your own country, for the Master of Science paper during the second year.

Applications for the 2001 - 2003 Course (lectures 3 Sep. 2001-10 June 2002) must be received by 31 Jan. 2001. Although we accept submissions by e-mail or fax, we require that subsequently papers be sent to us by ordinary mail.

Submit applications to:

Dr. Börge Pettersson.
Swedish Biodiversity Centre
Box 7007
S-750 07 UPPSALA
Sweden
Tel: + 46 18 672744
Fax: + 46 18 673537

If you have questions about courses or about other subjects concerning the Centre's educational programme, please contact the person responsible for the course or the centres Director of studies Mats Höggren, + 46-18-67 13 93.

CONFERENCES AND MEETINGS

Fifth Flora Malesiana Symposium

From Marcel Polak

The fifth Flora Malesiana Symposium and associated workshops will be held in Sydney/Cairns, Australia in

September 2001. More details can be found at: <http://plantnet.rbgsyd.gov.au/fm/fm.html>

Resource Tenure, Forest Management, and Conflict Resolution: Perspectives from Borneo and New Guinea

A symposium sponsored by The Resource Management in Asia-Pacific Project, Australian National University, 9-11 April 2001, Australian National University, Canberra, Australia:

http://rspas.anu.edu.au/rmap/Pages/Workshop/Conf_01.html

Borneo and New Guinea are two of the world's largest islands. Their forests are also home to a significant proportion of the world's terrestrial biodiversity. But this natural legacy is threatened by a mass of internal and external pressures for 'development'. The traditional or indigenous inhabitants of both islands are engaged in negotiation or conflict with various external agencies, which have an interest in the exploitation, destruction, management or conservation of this landscape.

This conference will seek to establish a comparative understanding of the way that local custom relating to the ownership and use of land and natural resources has been, and is still being, shaped by different combinations of national and transnational forces, and to assess the extent to which local custom can still form the basis for community-based or community-driven forms of resource management or sustainable development.

Specific attention will be paid to the way in which the contest over natural resources, especially forest resources, is played out differently in the three national jurisdictions of Malaysia, Indonesia and Papua New Guinea. In the case of Borneo, the contrast will be drawn between the Malaysian states of Sarawak and Sabah and the Indonesian provinces of Kalimantan. In the case of New Guinea, the contrast will be drawn between the Indonesian province of Papua/Irian Jaya and the independent state of Papua New Guinea. This comparative approach is intended to foster dialogue between experts and practitioners whose primary field of knowledge

and experience is limited to the specific resource tenure and forest policy regimes associated with only one of these three national jurisdictions.

The immediate aim of the conference is to facilitate an exchange of ideas about the role of local custom and local communities in the management of forest resources under different legal and political regimes. But this discussion of current policy and practice is also meant to initiate a programme of research involving a network of regional institutions, for which separate funding will be sought by the conference organisers, in active consultation with prospective participants, during the period of preparation for the meeting.

The conference will be divided into three parts:

- The first two sessions, on the morning of Day 1, will be devoted to a general review of the pre-colonial and colonial history of human settlement and resource management in each of the two island realms. This overview of general historical trajectories will set the stage for subsequent discussion of the recent past, the present and the future.
- The main part of the conference, from lunch on Day 1 to lunch on Day 3, will comprise eight sessions in which different aspects of the main conference theme are addressed by panels of four speakers, each of whom will speak for a maximum of 15 minutes, and each of whom will normally be expected to focus on one of four political spaces -- Sarawak/Sabah, Kalimantan, Papua (Irian Jaya), and Papua New Guinea. A period of half an hour will be left for general discussion in each session.
- The final afternoon of the conference will be devoted to the detailed design of a research project which seeks to address some of the major issues arising from the

preceding discussion, to establish a network of institutional partnerships for this purpose, and to make provision for further meetings to be held within the region. For this purpose, conference participants will initially break out into four workshops, one for each of the four political spaces mentioned above, and will then reconvene for a final plenary discussion of proposed activities and their coordination.

Call for papers

The conference committee welcomes proposals for contributions to the eight panel sessions, which will form the main part of the conference. The organisers have produced a list of twelve questions in order to guide the selection of topics for individual papers dealing with one or other of the political spaces mentioned above. Depending on the nature of the response, some of these questions will be amalgamated or deleted in order to arrive at the final list of topics for the eight panel sessions.

1. How can the establishment and management of protected forest areas or permanent forest estates take adequate account of customary use and tenure rights?
2. How can the clearance of forested areas for large-scale infrastructural or agricultural development take adequate account of customary use and tenure rights?
3. How can national laws or international conventions make 'custom' into a more effective instrument of forest management or conservation?
4. Where do gender equity issues begin and end in the realm of resource tenure and forest management?
5. How can local communities control or influence the practice of illegal logging within or across state boundaries?
6. How can community-based forest management practices be reconciled with integrated land use planning practices on the part of local or provincial government agencies?
7. What is and should be the relationship between 'scientific' and community-based forest management practices?
8. What are the opportunities and constraints involved in the 'co-management' of forest resources by local communities and external agencies?
9. Does the World Bank's new (2000) forest policy have a better chance of protecting natural tropical forests than its previous (1991) forest policy?

10. What more can the donor community do for the protection of tropical forests by dealing with 'civil society' rather than with governments?
11. What can market instruments do to achieve genuine environmental justice and authentic community participation in the management of forest resources?
12. When, where and how does the promotion of small-scale commercial activities serve to promote the sustainability of natural forest resources?

Costs of travel, accommodation and registration

The organisers are aware that many potential participants from Malaysia, Indonesia and Papua New Guinea will not be able to meet the cost of travel to Canberra and accommodation at the Australian National University. Some funding has already been set aside to cover the costs of citizens of these three countries who will be presenting papers at the conference. The organisers are actively seeking additional funds to raise the level of participation from these three countries. **Potential participants from Malaysia, Indonesia and Papua New Guinea are encouraged to send in their 'Expression of Interest' forms as soon as possible, and to indicate clearly if they will not be able to attend unless the organisers subsidise their costs.** In any allocation of limited funds for participants from these three countries, first preference will be given to those who are presenting papers, and to those from academic, 'civil society', or non-government organisations.

The conference registration fee will be set at the modest level of 50 Australian dollars (25 dollars for students), payable at the time of registration. As a further measure of affirmative action, **no registration fees will be charged to participants bearing a Malaysian, Indonesian or Papua New Guinean passport.**

Further information regarding options for accommodation at the Australian National University will be provided to those who express an interest in attending the conference.

Any enquiries about the conference should be sent to the Conference Administrator, Karen Fisher at rmap@coombs.anu.edu.au

Asian Wetland Symposium 2001 - First Announcement

From the INCL newsletter

Date: August 27-29, 2001

Place: Penang, Malaysia

Co-organisers: Ministry of Science, Technology and Environment (MOSTE) Malaysia; Ramsar Center Japan; Universiti Sains Malaysia; Wetlands International - Asia Pacific

An Invitation

The Asian Wetland Symposium 2001: Bringing Partnerships into Good Practice (hereinafter referred to as AWS2001) will be held in Penang, Malaysia on August 27-29, 2001. The organisers are honoured to invite everyone engaged in and interested in wetlands science, research, conservation, wise use, management, awareness/education and policy especially focusing on wetlands, their resources and biodiversity in the Asia and Pacific region to participate in this meeting from all

over the world.

Objectives

The primary aim of the Symposium is to provide a discussion/dissemination forum for wetland scholars, experts, promoters, managers and citizens to share and exchange their knowledge, experiences, expertise and new perspectives in creating a sustainable society in the Asia Pacific region. In order to achieve this goal, the following objectives have been identified:

1. To review and discuss the trend and emerging issues in the wise use of wetlands, their resources and biodiversity in the Asia and Pacific region, especially in the last decade since the Asian Wetland Symposium 1992, Otsu/Kushiro, Japan.
2. To formulate new guidelines and recommendations of best practices in wetland management and conservation in the

region.

3. To explore new ways for developing a strategic partnership (between GOs, NGOs, media, private sectors, universities and research organisations) for collaboration and building regional capacity on wetland conservation.

4. To enhance public awareness on importance of wetlands, their resources and biodiversity in the region.

5. To empower local people/communities on wise use of wetlands, their resources and biodiversity in the region.

Expected Outputs

1. Clarifying wetland issues in Asia to be addressed through a regional study.

2. Public Awareness on importance of wetlands in the region.

3. Active and effective human and organisational networking on wetland conservation in the region.

4. Publication of Proceedings of AWS2001 and other related documents/papers.

5. Regional contribution to the 8th Conference of the Contracting Parties to the Ramsar Convention (CoP8) which will be held in 2002, in Spain.

Session Themes (provisional)

i) Public awareness/education

ii) Best practices of wetland management

iii) Strategic partnership on wetland conservation

iv) Empowerment of local people/communities

v) Biodiversity and wetlands

Call for Papers

You are invited to submit an abstract on any subject on wetlands, their resources and biodiversity related to the above themes and region.

For further information and registration form, please contact:

AWS2001 Secretariat (Japan):

Reiko Nakamura

Ramsar Center Japan

2-10-3 Minamikugahara, Ota-ku, Tokyo

146-0084 Japan

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or the AWS2001 Secretariat (Malaysia):

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4th South and South East Asian Countries Non-Timber Forest Products Network (SEANN) Workshop

From the INCL newsletter

The 4th South and South East Asian countries Non-Timber Forest Products Network (SEANN) Workshop will held in Manila, 19-21 March 2001. The workshop is being organized by various Philippines institutions and the Centre of Minor Forest Products for Rural Development and Environmental Conservation (India). The organizers are planning to invite participants from ASEAN and other Asian countries, and international organizations.

For more information, please contact:

Ramon A. Razal

Associate Professor and Director

Training Center for Tropical Resources and Ecosystems Sustainability and

Chair, Organizing Committee for the 4th SEANN Workshop

University of the Philippines Los Banos College of Forestry and Natural Resources

College, Laguna 4031, Philippines

Email: trees@calamba.laguna.net

Papuan Pasts: Investigations into the Cultural, Linguistic and Biological History of the Papuan Speaking Peoples

November 27-30, 2000, Research School of Pacific & Asian Studies, Australian National University

This aim of this conference is to bring together scholars from various disciplines - principally archaeology, linguistics, biological anthropology, cultural anthropology and the environmental sciences - to examine questions about the prehistory of the indigenous peoples of Melanesia and eastern Indonesia who speak Papuan (non-Austronesian) languages.

Questions posed by the distribution of language stocks provide one jumping off point for discussion. The 800 Papuan languages present in Melanesia and in the Timor-Halmahera region fall into more than a dozen distinct genetic stocks and isolates, some of which probably derive from very early human settlement of Melanesia. Within the last few millennia one of these stocks, the Trans New Guinea (TNG) Phylum, has undergone a spectacular expansion of its range. Speakers of TNG languages now occupy most of the inhabited regions of New Guinea and are also present in Timor, Alor and Pantar. What

forces triggered this linguistic expansion? Could it have been associated with the development of root crop agriculture?

Why did the TNG expansion not extend to certain regions of New Guinea (much of the Sepik and Ramu basins, parts of the Gulf Province and most of the Bird's Head) or to Island Melanesia? What stories do other disciplines tell about human populations and cultures in New Guinea and Island Melanesia before the arrival of Austronesian speakers in the 4th millennium BP?

The conference is sponsored by the Division of Society and Environment, Research School of Pacific and Asian Studies, ANU. There will be about 27 invited papers, and comments from a panel including two Papua New Guinean scholars. The main sessions will be open to attendance by the public. For further information contact Andrew Pawley, Dept. Linguistics RSPAS, ANU, Canberra ACT 0200; email: apawley@coombs.anu.edu.au; ph. 2649-0028 or 6249-2279, or look up the conference Web site: <http://rspas.anu.edu.au/linguistics/PapuanPasts/> with link to Abstracts at

<http://rspas.anu.edu.au/linguistics/PapuanPasts/abstracts.html>

INTERNET SITES TO CHECK OUT:

(Thanks to the INCL for many of these resources)

World Resources Report

The report, World Resources 2000-2001: People and Ecosystems, The Fraying Web of Life, was released today by the United Nations Development Programme (UNDP), UNEP, the World Bank and the World Resources Institute (WRI). Over 175 scientists contributed to this global research effort, which took more than two years to complete. The report examines coastal, forest, grassland, and freshwater and agricultural ecosystems. It grades their health on the basis of their ability to produce the goods and services that the world currently relies on. These include production of food, provision of pure and sufficient water, storage of atmospheric carbon, maintenance of biodiversity and provision of recreation and tourism opportunities. "For too long we have focused on how much we can take from our ecosystems, with little attention to the services that they provide," said Thomas Johansson, Director of UNDP's Energy and Atmosphere Programme. "Ecosystems provide essential services like climate control and nutrient recycling that we cannot replace at any reasonable price." The report contains case studies from all over the world on how people are acting to reverse the damage to their ecosystems. For more information see <http://www.wri.org/wri/wr2000/>

Freshwater Systems

The PAGE report on freshwater systems (<http://www.wri.org/wri/wr2000>) is the first of five technical reports that will be released in the next six months. Other reports will cover agroecosystems, coastal areas, forests, and grasslands. Taken together, these reports are the first such comprehensive assessment of the state of the world's ecosystems. For more information, visit WRI's Website at: <http://www.wri.org/wri/media/>

The Entomological Bibliography of New Guinea

The Entomological Bibliography of New Guinea including the Solomon Islands (10,500 citations) has been updated and moved to a new searchable interface at: <http://entomology.si.edu:591/entomology/NewGuineaBib/search.html>

The bibliography is a "work in progress" still under editing and development. This version combines the original bibliography of some 7100 citations through 1967, published by Gressitt and Szent-Ivany in 1968 by Bishop Museum as Pacific Insects Monograph 18, and a supplement, compiled by Scott Miller and colleagues, including some 3400 citations since 1967. Please see the online introduction for further information and acknowledgements. Note that the keywords and abstracts often include the names of vertebrate and plant hosts. Various projects and individuals have contributed toward this interim product, which supports the insect ecology research funded by the U.S. National Science Foundation, amongst others. The citations are also being added to Ecoport (<http://www.ecoport.org>). Additions and corrections are welcomed.

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Papua New Guinea Eco-Forestry Forum

We now have a web site for the PNG Eco-Forestry Forum at www.ecoforestry.org.pg. This is a new initiative and we welcome your constructive comments and suggestions on the future development of the site. The current plan is that the site will be updated monthly. For more information, please contact: Mr. Timothy King, Coordinator, Papua New Guinea Eco-Forestry Forum, PO Box 590, Kimbe, West New Britain Province, Papua New Guinea, Fax: (675) 983 5852, E-mail: teff@global.net.pg

Forest Carbon

Projects implemented as part of the Clean Development Mechanism (CDM) of the Kyoto Protocol will have the dual mandate of reducing greenhouse gas emissions and contributing to sustainable development. It is not yet clear what, if any, forestry activities will be eligible for CDM. Nor is it known what rules will guide the implementation of CDM projects. These decisions have important implications for people who live in and around forests in developing countries.

Suitably designed CDM forestry projects can significantly benefit local communities by supplementing and diversifying income, increasing access to forest goods and services, improving land productivity, developing the local knowledge base and local institutions and increasing the energy efficiency of using forest products. In some cases there will be trade-offs between the amount of greenhouse gas reductions sought and direct benefits to local livelihoods. Without adequate safeguards, some CDM activities could have negative effects on local people, such as denying them access to resources they depend on for their livelihood. Pro-active efforts will be needed in some cases to ensure that community-based CDM forestry projects and local land uses can compete effectively in carbon trading markets with projects managed by large-scale operators. As this policy brief describes, however, CDM guidelines can be designed to not only minimize the likelihood of negative effects on local communities but to directly improve their livelihoods while achieving net greenhouse gas emissions reductions.

Proposed measures include:

- . Explicitly including forest management and agroforestry in the CDM
- . Implementing social impact assessments for all CDM projects
- . Providing incentives for projects with multiple benefits
- . Approving tonne-year carbon accounting
- . Reducing transactions costs of community-based projects
- . Building capacity at local, national and international levels

For more information see: Capturing the value of forest carbon for local livelihoods: Opportunities under the Clean Development Mechanism, Center for International Forestry Research, Bogor, Indonesia, May 2000

http://www.cifor.cgiar.org/publications/pdf_files/Carbon.pdf

The International Plant Names Index

URL: <http://www.ipni.org/>

The International Plant Names Index (IPNI) is a database of the names and associated basic bibliographical details of all seed plants. Its goal is to eliminate the need for repeated

reference to primary sources for basic bibliographic information about plant names. The data are freely available and are gradually being standardized and checked. IPNI will be a dynamic resource, depending on direct contributions by all members of the botanical community. IPNI is the product of a collaboration between The Royal Botanic Gardens, Kew, The Harvard University Herbaria, and the Australian National Herbarium.

Study of Non-Tarif Measures in the Forest Products Sector

APEC - Committee on Trade and Investment, 14 June 2000
URL:

<http://www1.apecsec.org.sg/download/evsl/ForestPdtStudy.pdf>

This draft report has been prepared for the APEC Region Secretariat's project CTI 17/99T and is entitled "Study of Non-Tarif Measures in the Forest Products Sector". Its objectives are to provide:

- . a comprehensive account of non-tarif measures and other policies impeding or distorting trade in forest products;
- . an identification of the most frequently used measures and policies, and;
- . a qualitative and quantitative analysis of the impact of the measures and policies on trade and, where applicable, a broader analysis of the policy goals underlying these measures and policies and of the economic and environmental costs and benefits stemming from their application.

United Nations Program on Forests

We would like to introduce you to a new web site developed by PROFOR, the Programme on Forests at the United Nations Development Programme (UNDP).

PROFOR was established in 1997 in response to the proposals for action of the Commission on Sustainable Development's, Intergovernmental Panel on Forests (IPF) to promote sustainable forest management (SFM) and related public and private sector partnerships and thus enhance forests' contribution to the livelihoods of the poor. PROFOR's collaborative work, particularly with Interagency Task Force on Forests (ITFF) members, responds to IPF proposals, specifically number 17, which encourages countries to develop and implement national forest programmes (nfps) and to use nfps as a basis to improve cooperation in the forest sector. PROFOR operates simultaneously in two spheres: at the country level to assist the development of national strategies for SFM through its contribution to nfp processes - with a particular focus on the development of integrated forest financing strategies; and at the international level to advance

the development of policy and financing instruments as elements of national and international strategies to support SFM. PROFOR also contributes to establishing the foundations for forest partnership arrangements as a vehicle to coordinate sectoral support.

By collating and reviewing existing information and analysing its own field level and thematic work - as well as that of others - PROFOR works to improve worldwide understanding of best practice to achieve SFM and poverty alleviation. The primary audience for the knowledge generated by PROFOR includes its national partners, donor agencies, governments, non-governmental and community-based organizations, researchers and the private sector.

PROFOR has recently developed a website aimed at building awareness on the role of forests in international processes, disseminating lessons on various thematic areas through an array of technical publications, and in time, to provide a forum for interactive collaboration amongst its partner countries and resource persons.

To find out more about PROFOR login at
<http://www.undp.org/seed/forest>

As the new UN Forum on Forests begins to function, and with the inception phase of PROFOR ending in December 2000, new working arrangements are being devised for PROFOR in collaboration with all partners, particularly ITFF members. The website will keep up to date on the latest developments.

We welcome any feedback and suggestions on the website as we work to make it a dynamic and interactive learning mechanism. Regards, Ralph Schmidt, PROFOR Director

Others:

<http://www.pngvillage.com/>
<http://www.geocities.com/TheTropics/Paradise/4163/home.html>

Biodiversity:

<http://www.sciencemag.org/feature/data/biodiversity2000.shl>

Global Biodiversity Information Facility (GBIF):

<http://www.nsf.gov/od/lpa/news/press/00/pr0067.htm>

The IUCN World Commission on Protected Areas has launched a website on Monitoring the Effectiveness of Protected Area

Management:

<http://wcpa.iucn.org/taskforce/effect/mgteffect.html>

The IUCN 2000 Red List of Endangered Species:

<http://www.redlist.org/>

Research Sites



This section is for contributions describing research facilities in New Guinea. If you have information about a place where researchers are welcome to come and work, please send a summary. Include the location, altitude, available facilities, logistics of getting there, and a contact name, address and fax number. Thanks!

Research facilities we have covered in past issues include: Crater Mountain Biological Research Station, Motupore Island Research Department, Ivimka Research Station, Mekil Research Station, Mahonia Na Dari Research and Conservation Centre, Kamiali Training Centre and Guest House, PNG National Museum and Art Gallery, and the Natural Science Resource Center of UPNG.

Diseases you should know about

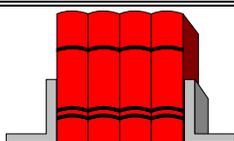


This section is to make sure that we are all aware of the various diseases we need to look out for in New Guinea. Many diseases you would not get in town, but only by working in the forest or in a village, and doctors might not be able to diagnose these diseases easily. If you know about a disease that we should be aware of, PLEASE send in a description, or at least the name of the disease, so we can look up information on it to include in a future issue of this newsletter—thank you! Folks at the Institute of Medical Research—can you help us?

Diseases we have covered in past issues include: Ross River Virus, Barmah Forest Virus, Filariasis, Dengue Virus, Murray Valley Encephalitis Virus, Bat Lyssavirus, Japanese Encephalitis, Malaria, Typhoid Fever and Typhus.

Nature Medicine is doing a free "special focus" on malaria, so if you want to check it out, the URL is:

http://www.nature.com/nm/special_focus/malaria/



Available Publications and Items

If you know about any books or items we should know about, please send the details! To order the following publications, use the addresses in bold.

From Pat Gleason, Conservation International, Washington Office, email: p.Gleason@conservation.org

A biological assessment of the Wapoga River area of northwestern Irian Jaya, Indonesia. 2000. Edited by Andrew L. Mack and LeeAnne E. Alonso. Washington, DC : Conservation International, Center for Applied Biodiversity Science, Dept. of Conservation Biology.

From The Publication Department of the National Herbarium of the Netherlands, P.O.Box 9514, 2300 RA Leiden, The Netherlands, fax (+31) 71 527 3511, email: zoelen@nhn.leidenuniv.nl

W.J.J.O de Wilde, 2000. Myristicaceae. Flora Malesiana Ser. I, vol. 14.

For those who are nuts upon nutmegs, there is now the latest volume of the Flora Malesiana series, 634 pages dealing with the 335 Malesian species of the *Myristicaceae* or *nutmeg* family. Anyone working in the rainforest will have encountered representatives from this fascinating family of trees, varying from small understorey treelets to buttressed emergents. Some New Guinean Myristicas are even myrmecophilous, with part of the twigs thickened and ant-inhabited. The book starts with a general part which deals with aspects like vegetative anatomy, distribution, dispersal, chemotaxonomy. After this the flora treatment follows, with descriptions and both general and regional identification keys. The text is accompanied by nearly 100 line drawings and 4 pages with colour photographs.

Of the nutmeg family, 133 species occur in New Guinea. Most species (99) belong to the genus *Myristica*, to which also the true nutmeg (and mace), *Myristica fragrans*, from the Moluccas belongs. Another 30 species belong to the genus *Horsfieldia*, and the remaining species belong to the genera *Endocomia* (1 sp.), *Gymnacranthera* (1 sp.), *Knema* (1 sp., the genus reaches its eastern limit in the Vogelkop), and *Paramyristica* (genus containing only 1 sp., which is endemic to the Sepik area). The price of the book is about US\$ 75 (depending on exchange rates), including tax and bank costs, excluding shipment costs.

From the Species Survival Commission, Tel: +41 22 9990001 , Fax: +41 22 9990015 , Email: alk@iucn.org

The 2000 IUCN Red List of Threatened Species - the most authoritative and comprehensive assessment ever produced of the status of the world's plants and animals - is about to be released. The Red List, a flagship product of IUCN - The World Conservation Union, is compiled by the Species Survival Commission (SSC) - some 7,000 volunteer species experts working in almost every country in the world. It has produced some alarming new facts about the decline of the world's species including the number of known extinctions that have taken place. The Red List reveals the countries with the most threatened species, identifies the habitats that have the most threatened mammals and birds, and highlights the most significant threats.

Over 18,000 species of animals and plants are included in the Red List according to their risk of extinction. A species is classified as threatened if it meets strict scientific criteria for inclusion in one of three categories: Critically Endangered, Endangered or Vulnerable. Over 4,000 species included in the Red List will soon move into the threatened categories unless urgent action is taken to stop their rapid population declines. For the first time, the 2000 Red List is being produced on CD-ROM. The Analysis has been published as a booklet, and the entire "searchable" Red List is housed on a designated website that will be accessible from the launch day. This is also the first time that all animal and plant assessments have been combined in a single list.

From the IUCN Publications Unit, 219c Huntingdon Road, Cambridge, CB3 0DL, UK, Tel: (44) (0) 1223 277894 Fax: (44) (0) 1223 277175 , Email: info@books.iucn.org

Parrots - Status Survey and Conservation Action Plan 2000-2004

The first ever Action Plan that aims to save the many parrot species threatened with extinction has been published after more than five years of research involving hundreds of scientists, organisations, and volunteers around the world. Of the 330 known parrot species, 94 are listed in the 1996 IUCN Red List of Threatened Animals and the proportion of threatened parrot species (28%) is now one of the highest for any major family of birds. For centuries parrots have been kept as pets because of their beauty, charm, hardiness, and supposed ability to talk. This has led to hundreds of thousands of birds being taken from the wild every year around the world; no other group of birds has been subjected to greater exploitation. Between 1990 and 1994 nearly two million parrots were traded on the world market.

The long-awaited publication *Parrots: Status Survey and Conservation Action Plan* provides background on threats facing the survival of parrots, descriptive species accounts, over 50 distribution maps and photographs, and clear recommendations on conservation action.

Edited by Noel Snyder, Philip McGowan, James Gilardi and Alejandro Grajal, this is the 54th Action Plan to be released by the IUCN Species Survival Commission. The Plan has been produced through the cooperation of a range of organisations including IUCN - The World Conservation Union, the World Parrot Trust and BirdLife International.

Although trade is the biggest threat to parrots, there are many others. Predation by introduced species, habitat loss, fragmentation, and degradation, and shooting for food are currently pushing many species towards extinction. The Parrot Action Plan recommends increasing the current knowledge of parrots, raising public awareness of the threats that face them, and preventing illegal trapping and trade, whilst recognising the complex biological, social, political, and economic factors that surround parrot conservation. "In an unprecedented spirit of co-operation among the world's field experts, this Action Plan reflects state-of-the-art knowledge of the threatened parrots of the world. The Plan provides valuable insight for everyone from government officials to conservationists to parrot fanciers, it is a "must-have" for anyone interested in the conservation of parrots around the world" says Dr Alejandro Grajal.

For further information contact: Director World Parrot Trust, UK, Tel: (44) (0)1736 753365 Fax: (44) (0)1736 756438 , Email: worldparrottrust@compuserve.com Website: <http://www.worldparrottrust.org>

From the World Biodiversity Database, CD-ROM, ETI, Netherlands, URL: <http://www.eti.uva.nl/>

1) JWA Ridder-Numan, 2000. Caesalpinioideae of South-East Asia

The Leguminosae are one of the most important plant families: many species are used as food, green manure or timber. This CD-ROM holds a detailed information system covering all 247 species of the Caesalpinioideae, native and cultivated, in the Flora Malesiana region. Based on Flora Malesiana Vol. 12.2 by Ding Hou, K. Larsen and S.S. Larsen, this work is much extended with over 1000 illustrations, full descriptions, information on uses, habitat, ecology, and distribution for each taxon (including the Mimosoideae genera). Identification is facilitated by two types of computer assisted keys: a dichotomous key to all caesalpinoid species (and the mimosoid genera) and several multi-access keys: one to the genera and species of the Caesalpinioideae, and five to the species in each of the larger groups. An innovative diagnostic system allows complex searches on distribution, uses and habitat. An interactive geographic information system presents distribution data and supports geographic comparisons. A literature database with ca. 200 references and a hyperlinked illustrated glossary to more than 750 botanical terms are part of the system. This CD-ROM is a taxonomic reference work that belongs in every scientific library on plants in SE Asia.

2) Plant Resources of South-East Asia - Edible Fruits and Nuts

This unique interactive CD-ROM testifies to the great wealth and diversity of edible fruits and nuts in South-East Asia, and is produced by ETI and PROSEA.

From ITB - Department of Biology, Email: biology@bi.itb.ac.id

Djoko Iskandar, June 2000. Turtles and Crocodiles of Insular Southeast Asia and New Guinea

From the Chelonian Research Foundation <http://www.chelonian.org/crm/mono2.shtml>

Asian Turtle Trade: Proceedings of a Workshop on Conservation and Trade of Freshwater Turtles and Tortoises in Asia—Phnom Penh, Cambodia 1-4 December 1999. Chelonian Research Monographs, Number 2, 2000. Published by the Chelonian Research Foundation, in association with WCS, TRAFFIC, WWF, Kadoorie Farm and Botanic Gardens and the US Fish and Wildlife Service.

The report, consisting of proceedings from The Workshop on Trade in Tortoises and Freshwater Turtles in Asia, held last year in Phnom Penh, Cambodia, documents the threats facing the species and recommends actions to address the growing crisis. Organized by TRAFFIC, WCS and WWF, the workshop, brought together over 40 regional turtle experts from 16 countries, primarily within East, South and Southeast Asia. According to the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group, as well as the Asian Turtle Trade Working Group, of the 90 species of Asian freshwater turtles and tortoises, 74 per cent are considered threatened. Over half of Asian freshwater turtle and tortoise species are endangered, including 18 critically endangered species, and one that is already extinct: the Yunnan box turtle *Cuora yunnanensis*. According to scientists, this animal probably vanished decades ago but has only now been formally declared extinct.

The workshop participants urged that all currently recognized turtle species native to Asia be listed in Appendix II of CITES (Convention on International Trade of Endangered Species) and that some species be transferred to Appendix I of CITES, which would prohibit all international trade in the species. A proposal to regulate the trade in all nine species of Asian

box turtles under Appendix II of CITES was adopted at the recent meeting of the Conference of the Parties to CITES, held last April. Appendix II listing of a species requires that international trade be regulated through a system of permits. In addition, a resolution was adopted recognizing that an increasing number of freshwater turtle and tortoise species are threatened by trade, especially in Asia. The resolution called for increased efforts to work cooperatively to control illegal trade and take steps to ensure the trade is sustainable. The resolution also called on the CITES Secretariat to host a workshop to further explore the threats posed by trade and work towards solutions that ensure the conservation of the species.

From the World Bank main webpage at: <http://www.worldbank.org>

- Select Topics and Sectors, - Select Environment, - Select Key Topics, - Select Biodiversity Conservation, - Select Forest Management

Putz, F.E., K.H. Redford, J.G. Robinson, R. Fimbel, and G.M. Blate, September 2000. Biodiversity Conservation in the Context of Tropical Forest Management. Environment Department Papers No 75, Biodiversity Series-Impact Studies 1, The World Bank, Washington D.C. 80 pages.

Unfortunately, due to the complexities hidden under the seemingly simple rubrics logging and biodiversity, the answer to the question "Is logging compatible with biodiversity protection?" can only be the very unsatisfying "It depends." The paper does not conclude with uncritical support for sustainable forest management of timber as a conservation strategy. Such an endorsement is unwarranted given widespread illegal logging in the tropics, widespread frontier logging and logging of areas of high priority for biodiversity protection, the persistence of poor logging practices despite substantial efforts in research and training, and the generally slow rate at which most loggers are transforming themselves from timber exploiters into forest managers. Nevertheless, even harshly treated forests maintain more biodiversity than oil palm plantations, cattle pastures, or cornfields. From a biodiversity maintenance perspective, natural forest management is preferable to virtually all land-use practices other than complete protection. Forests that are carefully managed for timber will not replace protected areas as storehouses of biodiversity, but they can be an integral component of a conservation strategy that encompasses a larger portion of the landscape than is likely to be set aside for strict protection.

From the World Bank main webpage at: <http://www.worldbank.org>

- Select Topics and Sectors, - Select Environment, - Select Key Topics, - Select Biodiversity Conservation, - Select Hunting
Bennett, E.L. and Robinson, J.G., September 2000. Hunting of Wildlife in Tropical Forests: Implications for Biodiversity and Forest Peoples Environment. Department Papers No 76, Biodiversity Series-Impact Studies 2, The World Bank, Washington D.C. 41 pages.

The international community has often responded to the steady loss of tropical forests by adopting policies that promote sustainable use of such forests as a conservation tool. Protecting forests alone is not enough since overhunting in many tropical countries is seriously depleting populations of many forest animals (the "empty forest" phenomenon). Loss of wildlife threatens survival of the whole forest ecosystem as crucial pollinators, dispersers and browsers are lost, thereby reducing species diversity and curbing the ability of the forest to maintain itself, and to regenerate after disturbance. It also adversely affects rural communities who rely on forest wildlife for food, income and their culture. Wild meat provides more than 50 percent of the protein for many tropical forest peoples, and is often a mainstay of their subsistence and cash economy. People have hunted wildlife ever since they first inhabited tropical forests some 40,000 years ago. Today, however, such hunting is rarely sustainable.

From the South Pacific Regional Environmental Programme, P.O. Box 240, Samoa, phone: (685) 21-929, fax: (685) 20-231, email: IRC@sprep.org.ws

Invasive species in the Pacific: a technical review and draft regional strategy. 2000. Editor Greg Sherley. SPREP, Apia, Samoa. 190 pages. ISBN: 982-04-0214-X

Scientific Literature



If you haven't sent your publication list in yet (your papers about New Guinea), please send these citations to Deb so we can include them in a future issue. It doesn't matter if you have one paper, or 30 papers-- the rest of us want to know about it! We would really like to know what you have found out about New Guinea; that is the purpose for this newsletter—to share information. If you have more than one page of citations, please send your list on disk or by email (preferably in Word) if possible-- thanks! In addition, don't forget that we offer a reference-finding service for those of us without inter-library loan. If you need a particular reference and cannot find it or do not have access to it, please write and we will see if we can find it for you and send it to you. (Not just the citations in the newsletter, you can request any citation).

Biogeography—from Michael Heads

Craw, R., J. Grehan and M. Heads. 1999. *Panbiogeography: Tracking the History of Life*. Oxford University Press, New York.

This book includes maps of dozens of taxa with New Guinea representatives.

Heads, M. 1999. Vicariance biogeography and terrane tectonics in the South Pacific: an analysis of the genus *Abrotanella* (Compositae), with a new species from New Zealand. *Biological Journal of the Linnean Society* 67:391-432.

Gazetteers-- from Robin Hide

Gazetteer of some 18,600 PNG placenames on the Web: www.calle.com/world/papuanewguinea/index.html
This page has had some problems with its altitude calculations, but it gives easy (and free) access via the Web.

Also useful for web-based locating of PNG (and other) place names is:

<http://uk2.multimap.com/map/browse.cgi?gwidth=500&gheight=250&coordsys=WGS84&client=M4&db=w3&scale=10000000&g.x=445&g.y=133>

Serious researchers should know that the PNG National Mapping Bureau (NMB) has a larger, more elaborate digitized Gazetteer (based on the original 1974 hardcopy version), and associated digital map information for GIS, that institutions or well funded research projects might want to obtain in CD ROM format.

This Gazetteer is described on the NMB Website:

<http://www.datec.com.pg/nmb/default.html>

The Gazetteer was produced from the 1:100,000 mapping program which was in effect from the late 1960's until the early 1980's. The Gazetteer data includes approximately 32,400 point locations for over 124 different types of features. Approximately half of these features are infrastructure and half topographical. The infrastructure features are almost 20 years out of date and are currently in the process of being updated by GPS. This includes village, school, health facility, airstrip and road positions. The topographical feature information will not be updated as it is not likely to change significantly over time and is still considered useful for most mapping purposes.

Other digital PNG place name indexes:

While latitudes/longitudes link names to locations in the Gazetteers mentioned above, researchers may want to locate a place in terms of its position in the administrative/census hierarchy of province/district/census division, etc. The hard copy sources of such information include the census data listings put out by the PNG National Statistical Office (see for instance the provincial pamphlets for the 1980 and 1990 census results: note that there were changes between these censuses), or the earlier Provincial Data System booklets, or the Village Directories (see refs in 3. below). However, two national level PNG databases (at least: in addition, some Provinces, such as New Ireland and Madang, also have provincial computerised databases) contain such information in digital format (either for the 1980 census or for both years).

The first is PNGRIS (PNG Resource Information System, which is not widely available outside the country (both years). In addition to the digital format, there is also a hardcopy alphabetical listing of the 1980 village data (name, province,

The original Gazetteer is currently being transferred into Microsoft Access format and will be linked to Mapinfo for graphical output. The database will include: updated infrastructure position information (where available), existing topographical information, 1:500,000 TPC digital map base data, 1990 Census data, 1990 Provincial, District and Census Division Boundaries.

The new updated version resulting from the current fieldwork associated with the 2000 Census should be available in about November 2000. It will be available on CD ROM through The National Mapping Bureau PO Box 296, Waigani, NCD, Papua New Guinea, Phone 327 6466, Fax 327 6460. The costs I've been quoted recently are (all in PNG Kina):

Item	All of PNG	Single Province
Gazetteer 98	500	100
Admin. Boundaries	250	75
Roads (GPS data)	250	100
Airstrips (GPS data)	250	75
TPC Mapdata	2500	250

district, census division) from the database though copies are not easily available (Cuddy 1987, see below).

The second is MASP (Mapping Agricultural Systems), the provincial output of which is partly available on the Web: see

<http://rspas.anu.edu.au/imp/development/masp/index.html>

To access: click on <Click here to see our Working Papers> Select province required from <Select from Masp Working Papers by Province>

After <submit> - either download the pdf file on <Introduction and structure of MASP workingpapers,> or choose directly either

<Village Listing in Alphabetical Order for (chosen) Province.

<Village Listing in Agricultural System Order for (chosen) Province.

These list all the rural villages/census units of a Province used in the 1980 census, and also show the census codes for their location by district, and census division.. At present, the listing gives only the code numbers for district and census division etc. The names should be posted later.

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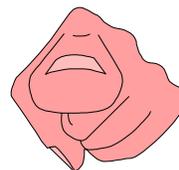
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Our Current Mailing List

Included with this issue of the Digest, you will find updates for the 2000 Mailing Directory. We hope this will facilitate communication between all of us. Please help us by sending the names and addresses of anyone else who would like to get a copy of the Digest. Also, please check your address, phone, fax, and e-mail. If anything is wrong, please drop us a line so we can correct it. If you would rather not receive the newsletter, please let us know so we can save the paper and postage. If you have email or internet service, please let us know if you would like to get the newsletter via email, or if you would like to get an announcement via email when a new issue is posted on the web and you can look at it there. These options will save us paper and postage. Thanks!



Goodbye until next time!

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