

The New Guinea Tropical Ecology and Biodiversity Digest



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Issue 12

The beautiful illustration above is one of several created by Benson, an artist from Goroka. These ink drawings have been made into postcards and notecards that can be purchased to support the Tree Kanagaroo Research Project. They are currently available at the Melanesian Art Gallery in Lae. For more information please contact Lisa Dabek, phone (1) 401-785-3510, fax (1) 401-941-3988, email ldabek@rwpzoo.org

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

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



Please note our web address



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

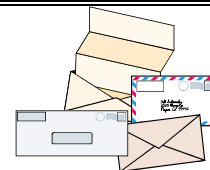
If you have internet access, the digest is available on the web at: <http://www.wcs.org/home/wild/Asia/686/>

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 Updates



Updates anyone??

Water hyacinth threatens 100,000 square kilometres of Indonesia wetlands

From Donna Luckman, WWF

WWF's Tropical Wetlands Oceania programme is to support efforts to eradicate the water hyacinth which threatens more than 100,000 square kilometres of wetlands in the Southern Papua region of Indonesia. As part of this effort, WWF staff undertook a four-week visit to affected districts to survey the distribution of water hyacinth and assess the need for biocontrol. It now seems that the water hyacinth is much more wide-spread than originally thought. The water hyacinth (*Eichhornia crassipes*) is a major threat to the biodiversity of wetlands in Southern Papua. A native of South America, water hyacinth grows so abundantly that it literally chokes the life out of tropical wetlands causing problems for wildlife and people alike.

Staff from WWF's Tropical Wetlands of Oceania programme and WWF's Sahul Bioregion recently travelled by car, motorbike and long boat to nine districts distributing awareness raising posters and stickers and discussing the water hyacinth problem with communities. Before the WWF team began its mission, communities along their itinerary were alerted by radio broadcasts about the initiative and even remote communities came to know where the WWF team would make scheduled stops. In each district, meetings were held with the district administration, church groups and the whole community to discuss the water hyacinth problem and how the biocontrol programme offers a solution to the problem. All districts were keen to take part in the programme which involves the setting up of breeding pools of the *Neochetina eichorniae* weevil. *Neochetina* is a native predator of water hyacinth in South America which eats its way through the weed, gradually reducing the area it covers. The villagers release the weevil into waterways infested with water hyacinth.

Working with Australia's Commonwealth Scientific Investigative Research Organisation and the Centre for Tropical Wetlands Management at the Northern Territory University, a training curriculum for the biocontrol programme has also been developed for local villagers. "During the the four- week trip it was disappointing to see how quickly water hyacinth has spread since its initial accidental introduction to Merauke in 1990. Virtually all waterways and wetlands visited were affected by the weed and those that are not yet affected soon will be if we don't act quickly" said Michele Bowe, WWF'S Tropical Wetlands Oceania Programme Manager who took part in the trip. "There are still another 10 districts to visit and it is quite likely the programme will need to cover the whole of greater Merauke - a vast area of over 117,000 square kilometres. We are currently deciding on our best strategy for undertaking the biocontrol work on such a vast scale."

Following the success of pilot training projects at Wasur National Park, Park staff are now releasing the biocontrol insect on a routine basis. Reduction of water hyacinth in Park wetlands indicates that the program has been a major success. Further training work and release of the weevil has now occurred in Timika, Kimaam and Bade on the south coast. WWF is now working to establish the program in other locations.

For further information contact Donna Luckman or Michele Bowe, WWF Tropical Wetlands of Oceania Programme, Tel. +61 (0)8 8941 7554, Fax. +61 (0)8 8941 6494, Email: dluckman@wwf.org.au or mbowe@wwf.org.au Publication: WWF & CTWM, Biological Control of Water Hyacinth, Nov 2000. (Copies in English and Indonesian)

Establishing Community-Based Marine Protected Areas in Milne Bay Province, Papua New Guinea

For a full copy of the paper, please contact Pamela Seeto, Conservation International-PNG, P.O. Box 106, Waigani, NCD, Papua New Guinea, Ph: (675) 323 1532, Fax: (675) 325 4234, Email: p.seeto@packfound.com

Abstract: Papua New Guinea is one of the world's biologically richest countries, with the most diverse assemblage of tropical marine ecosystems of any area of comparable size on Earth. Milne Bay, the largest maritime province in PNG, contributes greatly to this richness. Conservation International's (CI) Marine Rapid Assessment Program has determined Milne Bay's marine ecosystem to be one of the country's most important areas for marine and coastal biodiversity. Destructive fishing practices, land-based activities and over-exploitation of marine resources threaten this globally significant system, the resource benefits it provides, and the livelihoods of those communities who

depend upon them. It is therefore imperative to secure a representative sample of habitat and associated marine biodiversity in Milne Bay for its long-term conservation. To this end, CI will work to establish a network of community-based marine protected areas (MPAs) throughout a variety of habitats in Milne Bay. To do this, CI works closely with local communities, the private sector and the government in a collaborative and participatory process. This paper outlines the collaborative process used to conserve Milne Bay's biodiversity and achieve sustainable marine resource use. It highlights lessons learned and provides recommendations on how to establish networks of community-based MPAs.

One landscape, two lands: what the international border means for community-based natural resource conservation in southern New Guinea

For a copy of the full paper please contact the author: Michele Bowe Program Manager, Tropical Wetlands of Oceania Program, World Wide Fund for Nature Australia, P.O. Box 1268, Darwin, NT 0801, Australia

Abstract: This paper examines the differences of approach taken by the World Wide Fund for Nature (WWF) in its work on natural resource conservation in the Indonesian and Papua New Guinean parts of southern New Guinea. Since 1991 WWF has been working with local people and government agencies to assist in the development of natural resource management planning in two contiguous conservation areas: Wasur National Park in Indonesia and Tonda Wildlife Management Area in PNG. Although the two conservation areas protect a similar landscape with identical environmental problems, WWF's difference of approach in the two areas is dictated by the very different social, political and economic realities of the two countries.

Wasur National Park, situated in the Merauke Regency of West Papua / Irian Jaya is the management responsibility of the Indonesian Ministry of Forestry's Directorate of Protection and Nature Conservation (PKA). The Park covers the traditional lands of several indigenous groups – the Marind, Marori-Mengev, Yei and Kanum group of peoples. Currently indigenous communities have no legal role in the management of the Park. However WWF is working closely with a local NGO, several Traditional Community Associations and the Wasur Park Management Authority to develop a collaborative co-management model for the Park.

Contiguous to Wasur, across the international border in PNG, is the 590,000 ha Tonda Wildlife Management Area. The western part of Tonda covers land of the Kanum group of peoples and thus there are family ties and shared traditions with many of the Wasur residents. The WMA is managed by a Committee, which is comprised of locally elected landowners. The Committee's function is to develop rules that govern management and exploitation of wildlife, as well as decide on WMA boundaries. Committee members, WMA rules and

boundaries have legal status following publication in the National Gazette and therefore the traditional land and resource rights of local communities are fully recognised nationally and locally reflected in the management rules. The role of local indigenous communities in Tonda WMA seemingly represents the ideal in terms of locally owned and driven natural resource management policy. The twin realities of increasingly slim government support for WMAs and the strong connection of landownership and royalties from tourism and hunting as a revenue earner mean that there is often conflict in the community in terms of land disputes leading to disillusionment and occasional unrest.

While in theory Wasur lies far to the opposite end of the continuum of indigenous community input and legal involvement in natural resource management from Tonda, each model can valuably inform the other. Over the past three years WWF has placed considerable emphasis on cross-border collaboration as a means to solving a number of intractable environmental problems, including issues of weed invasion, exotic and feral animals, as well as fire management. These issues do not respect the political boundary and require a concerted effort on both sides to successfully tackle them. WWF's Tri-National Wetlands Program is emphasising cross-visits for community members and government officials to raise awareness of threats and different management styles, conducting joint training workshops and some collaborative research. At one end of the management authority and responsibility continuum Tonda is struggling for resources and government assistance in order operationalise the ideal, while at the other end the people of Wasur with ten years of resourcing and support still strive for autonomy and legal recognition. A practical reality would seem to contain elements of both models.

Update on Agarwood

From James Compton, Traffic

TRAFFIC Oceania and WWF South Pacific Programme, in collaboration with the Secretariat of the Convention on International Trade in Endangered Species (CITES), published a report *The Final Frontier: Towards Sustainable Management of Papua New Guinea's Agarwood Resource* in October 2001. The report, launched in conjunction with the PNG National Forest Service, was based on field surveys conducted in East Sepik province and marks the first step in getting to grips with the harvest of trees producing this non-timber forest product in PNG. It recommends several follow-up activities and advocates that further research addresses agarwood issues germane to the Indonesian province of West Papua (Irian Jaya) and links the New Guinea situation to the global trade in agarwood.

While there is significant potential in the sustainable development of agarwood as an eco-enterprise in New Guinea and other source areas, several challenges remain. The enigma of agarwood formation (it is found naturally in approximately 10-20% of mature trees in some species of the genera *Aquilaria* and *Gyrinops*) means that the *in-situ* management needs are somewhat unclear. At this stage, the work being conducted in New Guinea, while it has clear goals of

“sustainable management of harvest and trade” cannot provide definitive direction until a best practice model is developed. Botanical and forestry knowledge of agarwood-producing species in PNG and West Papua is relatively low. Therefore, the design of a ‘management plan’ would be best developed with the technical expertise of individuals with experience gleaned from other range states for agarwood-producing species. In addition, many of these range states have witnessed substantial over-harvest of agarwood in the past 30 years to satisfy increasing market demand.

Agarwood, eaglewood, gaharu and aloeswood are all names for the resinous, fragrant and highly valuable heartwood produced primarily by *Aquilaria* species, in the family Thymelaeaceae. Over 1000 tonnes of agarwood was reported in international trade in 1998 under the name *Aquilaria malaccensis* although there are 15 species in the genus and eight are known to produce agarwood. *Aquilaria malaccensis* is the only species listed on CITES Appendix II. Populations of eight *Aquilaria* species have declined to the point where they are categorised as threatened according to IUCN Red List Categories. Of these, six are considered at risk from over-exploitation for agarwood.

In PNG the gaharu resource is newly discovered and interest in the harvest and trade is still rising. At this stage, both under-exploited as well as unexploited stands of gaharu still exist. Villagers are still learning how to harvest agarwood and manage the trees. PNG therefore provides a unique opportunity to promote the establishment of a sustainable agarwood industry. Understanding of the dynamics of the trade and developing an appropriate regulatory framework at local community and national levels may still enable the sustainable management and conservation of viable populations, something that has not really been achieved in other agarwood source countries.

Identification: Herbarium specimens collected in East Sepik and Sandaun Provinces, from agarwood-producing trees, have been identified as *Gyrinops ledermannii* Domke on the basis of flowering and fruiting material. At present, there are three agarwood-producing species known from New Guinea; *Aquilaria filaria*, *Gyrinops versteegii* and *G. ledermannii*. The former two are only recorded from West Papua (Indonesia), however it is conceivable that these two species also occur in PNG and that there are more agarwood-producing species than is presently known. Further surveys and herbarium specimens of gaharu-producing plants are needed from New Guinea and nearby islands to establish the identity and distribution of the species involved.

Taxonomy: The recording of another *Gyrinops* species that produces gaharu emphasises the need for further taxonomic research into the relationship between *Aquilaria* and *Gyrinops*. These are closely related genera and only able to be consistently distinguished on the basis of a single character. In *Aquilaria* the number of stamens is twice the number of the petals (ie. 10) while in *Gyrinops* there are equal numbers of stamens as petals (ie. 5).

Geographical and Ecological Distribution: The occurrence of *Gyrinops ledermannii* has only been confirmed from Sandaun and East Sepik Provinces. Anecdotal information from villagers and buyers indicates the possible occurrence of agarwood-producing species in other provinces of Papua New Guinea.

Gyrinops ledermannii has been observed as a mid-canopy tree species in lowland forests on mountains, hills and slopes probably below 1000 m altitude and in flat areas with a seasonally high water table but not inundated for long periods. Soils are usually sticky yellow to red clays, with a thin humus layer and often with a dense surface root mat. Distribution of plants in the forest appears to be strongly clumped with often a very high but localised density of trees.

Harvest and Trade Dynamics: Substantial Agarwood trade from Papua New Guinea began around 1997 in Sandaun Province. Trade from East Sepik Province began in 1998. Early Asian buyers to visit the villages taught villagers to identify trees and techniques to harvest and clean agarwood.

Agarwood normally forms where the tree has sustained damage, either in the roots, the branches or in the trunk. Villagers were told to cut out small amounts of the darker, resinous wood using their knives, but leave the tree standing. Only if there were large amounts of agarwood in the heartwood were they told to cut the tree down. In practice, villagers find these techniques time consuming and physically demanding, and trees are often chopped down to check the trunk, branches and roots.

Grading gaharu is a complicated process of evaluating the size, colour, odour, weight and flammability of the wood. Application of grade codes (Super A, A, B, C, D, E) also varies between buyers.

Asian buyers are mostly based in Vanimo, though several have been reported to buy in Wewak when there is demand. Most Asian buyers have PNG nationals working for them who are sent as 'agents' out to the village communities to assay and purchase gaharu. In the villages the prices paid in Kina per gram or kilogram, but buyers are paying the equivalent of up to USD450 per kilo for A class agarwood.

Regulatory Environment and Government

Institutions: At present, the PNG Forest Authority has specified that the following documents need to be obtained in order to legally trade in Eaglewood (agarwood) from PNG:

- 1) Certificate of Company Registration;
- 2) Forest Industry Participant Certificate;
- 3) Timber License (plus PGK50,000 bond);
- 4) Export License (for each shipment).

Conservation status: *Gyrinops ledermannii* does appear to be under significant threat at the population level from felling by villagers in their efforts to harvest gaharu. The volume of trade is certainly much greater than that being recorded at present. Further data is required to enable confident application of an IUCN conservation category for *Gyrinops ledermannii*.

Recommended actions: Cooperation is needed between the stakeholders to develop management programs for harvesting and trade in agarwood, including further engagement with community groups in the decision-making and management process. At the national level, co-operation has begun with the establishment of the Inter-Agency Committee, comprising representatives from the PNG National Forest Service, PNG Forest Research Institute, PNG Office of Environment and Conservation and the PNG Internal Revenue Commission.

National and regional management plans need to be developed that provide for the development of best practice harvesting guidelines, grading guidelines, and the development of a business enterprise model to promote the independence of local communities and resource owners.

Awareness raising and training materials need to be developed and should be targeted at different groups including landowners, traders, government officials and other commercial operations. Until more knowledge is available on the management needs of the species being harvested, the focus should be on promoting less destructive harvesting, the conservation of immature trees, and planting regimes.

Research is necessary for the development of a conservation and management strategy that incorporates both *in-situ* and *ex-situ* goals. This includes research into the species biology and ecology, agarwood formation, fungal pathology and propagation techniques. Research into techniques for villagers to undertake propagation of seedlings, enrichment planting and the establishment of woodlots is also needed to ensure future access to an agarwood resource. Further field surveys in PNG are currently being planned by Australia's CSIRO in conjunction with FRI.

As part of a national management strategy, a strong legislative framework is required to control and monitor harvesting and trade in agarwood.

For more information, contact Tim Dawson, WWF's Sustainable Forest Management co-ordinator for PNG tdawson@wwfpacific.org.pg, Or James Compton at TRAFFIC Oceania jcompton@traffic.org

The PDF version of the report can be downloaded from www.traffic.org

Wildlife Conservation Society's Asian Coral Reef Conservation Program

From William Kiene, WCS Marine Program

Summary: The Wildlife Conservation Society's Asian Coral Reef Program is studying the ecological status of coral reefs of Papua New Guinea and Indonesia. It's goals are to 1) rapidly assemble key indicators of coral reef health, 2) identify the management strategies associated with marine protected areas and fisheries, and 3) determine how socio-economic and cultural practices influence resource extraction and its sustainability. By combining a suite of ecological and socio-economic measures, the program seeks to 4) define the human factors that promote or inhibit the conservation of the region's coral reefs.

During the initial three months (October - December 2001), the program has developed an appropriate set of survey techniques and trained three PNG staff assistants in these methods. At the end of this period, the field team has gathered socio-economic information at 4 villages and ecological data at 21 coral reef sites within the influence of these villages.

Papua New Guinea's social structure allows for local ownership of coral reefs and their resources. As a result, local traditions govern how coral reefs are used and protected. Our initial results have identified a range of extraction and management practices that may have had a significant impact on reef fish and invertebrate populations. In certain areas of intensive fishing, where the market for reef fish and invertebrates extends beyond local consumption, reef

resources are depleted and reef condition is diminished. Where traditional management systems close reef areas to fishing, and demand for fish is local, coral reef ecosystems are relatively intact.

Communicating our purpose and results to the local communities has become an important part of our procedures. Together with our village surveys, our discussions with village leaders and others have given us valuable insights into the needs and desires of the local people that depend on coral reefs. We have found a great deal of potential for helping the people of PNG to understand their marine resources. While providing an in-depth assessment of regional coral reef management and condition, our program also seeks to assist local communities to formulate options as they make decisions about their coral reefs and their economic future.

Researchers: **Error! Reference source not found.;** Josh Cinner, Fisheries and Socio-Economic Specialist; Tracy Clark, Coral Reef Benthic Invertebrate Specialist; Michael Marnane, Coral Reef Fishes Specialist.

PNG Staff: John Ben, Socio-Economic Assistant; Ian Liviko, Coral Reef Fishes Assistant; Ruby Yamuna, Coral Reef Benthic Invertebrate Assistant.

Initial Project Duration: October 2001 – March 2003.

For more information or for a copy of the full report, please contact Bill Kiene on wkiene@wcs.org

Kikori Integrated Conservation and Development Project Quarterly Report 1 Jul-30 Sep 2001

From Max Kuduk

Project Goal and Objectives: The goal of the project is to contribute to the conservation of the biodiversity of the Kikori Basin. Under the goal, there are four objectives: To build community capacity to make sound natural resource management decisions, To assist groups to benefit from community-operated sustainable eco-enterprises, To assist community groups to implement sustainable resource management, and To contribute to the enabling environment for biodiversity conservation in the Kikori catchment.

Executive Summary:

Project staff conducted radio-tracking of the White-bellied Mosaic-tailed Rat (*Melomys leucogaster*) at Iviri eco-forestry area during August. A primary objective of the radio-tracking study was to determine the home range of this species. The aim was to determine if this species moves over a large enough area to make it a sensitive enough indicator of impacts of eco-forestry when only a small number of trees are being removed per hectare.

The project produced a list of all the science reports that have come out from the project to date. A total of 54 reports were recorded including all published and unpublished reports of the biodiversity surveys conducted in the project area since the inception of the project, and other research and conservation science study reports.

The project received the results of water quality testing done in May by a Brisbane laboratory on water

samples collected from Lake Kutubu after reports of localised fish die-off. The results indicated no sign of pollution from the substances tested for. The Conservation Science Coordinator produced and distributed a report to respective stakeholders, particularly landowners.

The project received the report from botanists at Kew Garden on the palm survey conducted in November last year. Fifty-five species of palms were recorded. Significant findings included: at least two undescribed species of palm; the first collection of the palm *Calamus altiscandens* since 1939 which was previously only known from the *holotype* collection in that year by Brass; the extension of the distribution of *Pinanga punicea* by 200km to the west (it was previously only known from Western Province); a high diversity of *Heterospatha* species with three species growing symmetrically.

The project produced two desktop published reports of the Mt. Sisa biodiversity survey conducted in 1999. The report on the mammal component found that forty species of mammals were recorded from the higher altitude forests above 2000m including the new species of *Murexia*. The report of the moth survey found that Mt. Sisa supports a rich and diverse moth fauna, and individual sites had a highly endemic moth fauna restricted to each site. There was little overlap in species between sites. A total of 812 species of moth were recorded.

Permanent one hectare monitoring plots at Iviri eco-forestry area established in 1998 were re-surveyed in August to monitor changes in mammal and plant communities. Small mammals were re-trapped which resulted in 171 captures of 99 marked individuals of *Melomys leucogaster*. Forty-six bats of three species were also captured.

Iviri Timbers sawmill personnel have begun establishing a village-based forest nursery to raise seedlings of *Xylocarpus granatum* (Mangrove Cedar) for reforestation. Project staff visited the site and offered advice on the layout design and general management of the nursery.

The Masters student being jointly sponsored by the project and Conservation Melanesia, continues his research on comparison of regeneration in natural gaps, gaps created by eco-forestry and closed forest. Project staff continued to provide on-going assistance during the quarter.

Project staff visited Fogomaiyu village and made an assessment of the vanilla cuttings distributed by the project for planting in July. The vanilla cuttings planted in two separate blocks adjacent to each other are growing well.

Project staff met and made arrangements with the Bismarck Ramu Group to collaborate to produce educational awareness radio programmes. Copies of the first six audio tapes were presented to Bismarck Ramu Group.

The project management made a decision to put on hold all activities regarding the project's assistance to Darkend Lumber group for the time being. Since most clan groups have signed either the Forest Management Agreement (FMA) or the Supplementary FMA, the project is unable to assist them with their planned eco-forestry activities, as they no longer retain tenure over their forest resources.

Personnel from Papua New Guinea Forest Authority and Office of Environment and Conservation carried out separate investigations to look into the issue of harvesting of the mangroves in the lower Kikori area. The officers visited Kikori Pacific's central processing facilities at Kikori and Iviri Timbers sawmill site. They visited the sites where the logs have been harvested and were quite impressed with good forestry practices of the operations.

The project assisted with travel arrangements for three Bosavi leaders to attend the Bosavi-Bamu Network

Planning Workshop. Project staff also attended this meeting. With partner organisations, Environmental Law Centre, Greenpeace, Ecoseeds and Bismarck Ramu Group, a plan was developed to strengthen 'conservation and development' work in the Bosavi-Bamu areas.

This past quarter the project produced and printed an additional eight mini-posters in *Tok Pisin*. More than 100 mini-posters have been laminated, trimmed, and sorted into their respective categories.

Consultant Laina Pangasa completed a report on his work on training community development workers with KORA over the past six months. He began another three-month assignment to conduct community development workers training in Bosavi. He will spend a month each in Didesa, Fogomaiyu, and Musula conducting this training.

Since its inception, the Kikori Project has been a WWF-US project. In order to achieve greater regional integration within the WWF South Pacific Programme, the WWF network agreed last year that Phase 3 of the project will be a WWF South Pacific project. The project is working with the WWF network to complete all transition steps by next quarter.

At the end of September a change in management of Kikori project was effected. Dan McCall, the Project's Manager who has worked with the project since September 1997, left to take up an assignment as Conservation Manager for WWF PNG's programme and is now based at Port Moresby. Effective 1 October 2001, Max Kuduk took up the Project Manager position. Tanya Leary, the former Conservation Science Coordinator also left to take up a Project Manager position in Australia. The project staff are very grateful for their leadership, which has contributed much to the success of our work during their years of work here. We wish both Dan and Tanya all the best in their endeavours.

The project has completed its move to CDI's Moro 2 Camp. Until new email connections are established, staff continue to use their former email addresses. The new contacts are as follows: phone (675) 278 6638 / (675) 278 6217, and fax: (675) 278 6203.

Kikori Integrated Conservation and Development Project Quarterly Report 1 Oct-31 Dec 2001

From Max Kuduk

Executive Summary:

Dr. Steve Richards, a frog biologist and honorary curator from South Australian Museum conducted frogs and reptiles survey around Kutubu/Moro, Gobe and Kikori areas between the 18th October and the 2nd November 2001. A total of 62 different kinds of frogs and 29 reptiles from the three areas surveyed were collected. At least 15 of the frog species may be new to science, and may only occur here.

The moth consultant, Andrew Kinibel finished making corrections to the list of the moth database. He also wrote a short article on mimicking moths known from the project area.

The Forest Ecologist identified 99 plant specimens from CFI Plots at Darkend Lumber eco-forestry area to species names at the Lae Herbarium between 1 – 10 October 2001. The data has been entered into the Projects Plant Database.

The four permanent monitoring plots at Iviri eco-forestry area established in 1998 were re-surveyed in November/December to monitor changes in mammal and plant communities. Small mammals were re-trapped from the permanent one-hectare plots and there were a total of 98 individual captures of rats (*Melomys leucogaster*), one *Uromys caudimaculatus* (Mottle - tailed Giant), and 26 individuals of three different species of bats were caught and identified.

Biatus Bito, the Masters student being jointly sponsored by WWF and Conservation Melanesia (CM), left the project on the 21st December 2001 after completing his 18 months field work on comparing regeneration in natural gaps, gaps created by eco-forestry and closed forest. During this quarter, he completed a chapter on seed dispersal, soil seed bank, seed dormancy and seed predation. He also completed the final enumerations at his study sites in Sirebi and

continued editing parts of his thesis on literature review, methodology and data analysing.

The Forest Ecologist completed a draft copy of the report titled "Species composition and structure of one hectare logged forest in the mature mangrove forest of Kikori, Gulf Province, PNG".

Consultant, Chris Dal completed work on preparation and registration of mammal specimens collected from the Kikori project area at the National Museum and UPNG mini-museum. A total of 72 specimens were registered.

Conservation Science Officer conducted the second planning workshop of the proposed Wiroro-Makrosen WMA at Fogomaiyu for the Furidiki Kamano clan and other landowning clans who did not attend the Iwatubu workshop, which was held in April. At least 40 people attended the workshop from Fogomaiyu and Seane Falls villages.

Conservation Science Officer and David Ani, the Chairman of the Lake Kutubu WMA, visited nine villages around Lake Kutubu on the 10th October 2001 to investigate and collect information about the reported presence of European Carp (aka Common Carp) in the lake. Most of the people interviewed have not actually seen the fish, but some claim they are commonly found at Soro Creek.

The Conservation Science staff accompanied Chevron Community Affairs Lands officers on two visits to assess impacts of sedimentation by landslides at Moran-Sisibia road and investigate fish die-off at Otomo Creek.

Kevin O'Regan and Pascalis Pisiai (KPL), Amos Ona (Project's Eco-forestry officer), Glen Pip (Business Development Officer - Gobe Petroleum Development Project) and Jason Patau (a Gobe small sawmill operator) made a joint visit to Samberigi road to investigate the timber species found in the area. If the proposed road construction extension goes ahead, the potential of salvage logging seems possible.

A consultant, Mr. John Wilmot engaged by Office of Environment and Conservation (OEC) visited Kikori area between 16th and 18th October 2001 to complete the investigations and report on the issues of mangrove logging. He met and held discussions with WWF staff, Kevin O'Regan of Kikori Pacific Ltd (KPL) and Mara Akaro of Iviri mills. He was taken on visits to the KPL central processing facility at Kikori, the Iviri mill site and also visited the sites where trees had been harvested. He will submit a report with recommendations to the OEC for further deliberations.

WWF staff and Chevron Community Affairs jointly

provided logistical support and facilitated a visit for four ChevronTexaco Auditors to Lake Kutubu and Tubo Lodge. Conservation Science Officer accompanied Chevron CA Liaison Officer, Joe Paro, Lake Kutubu WMA Chairman, David Ani and Stanley Wabi, Tubo Lodge representative and community leader on the tour.

Kikori Pacific Ltd has lodged an application for a Timber Authority (TA) with the Papua New Guinea Forest Authority to operate in the lower Turama area.

Community Outreach Officer and Consultant Lucy Yomil facilitated a 3 day Gender Workshop in Fogomaiyu, Mt. Bosavi. The workshop was conducted from the 15-17 October 2001. The objective of the workshop was to promote Gender Awareness and Personal Reflection on individual attitudes and behaviors. To challenge and change towards achieving gender sensitivity in community conservation work, their communities and families. The workshop was attended by a total of 64 participants including 28 females.

The Education Officer conducted awareness activities amongst the Lake Kutubu communities from the 16-18 October, based out at Tubo Lodge. He presented the results of the Training Needs Analysis the staff and Management of Tubo Lodge. The purpose of this activity was to report back to Tubo staff the results of the previously conducted Training Needs Analysis conducted last quarter.

The Education Officer carried out awareness around the Lake Kutubu area. Videotapes and radio programmes produced by the project (programmes 1 and 3) were played to packed audiences at Yo'obo and Tugiri villages and after which the issues were processed. One hundred educational mini-posters on Kikori Basin Nature Resources and Confusions in Development were also left in each community.

Consultant Laina Pangasa returned to the project starting September 2001. The purpose of Laina's return was to complete the Community Development training he had started within Bosavi during his previous contract with the project. Laina spent a month each in Didesa, Fogomaiyu and Musula conducting Community Development training. Laina submitted a report on completion of his contract.

Consultant Martin Kasbal has been engaged to categorize and sort projects digital images.

Dr. Larry Orsak has been engaged to complete production of a number of documents on eco-enterprises and education.

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!

Foraging Behaviour, Den Sites and Movement of the Long-beaked Echidna, (*Zaglossus bruijnii*) in the Crater Mountain Wildlife Management Area, Papua New Guinea

Muse D. Opiang, Honors student at UPNG

The long-beaked echidna is only found in New Guinea and is IUCN listed as a critically endangered species. The long-beaked echidna, which had roamed the earth with the Dinosaurs, is the oldest surviving mammal and very little is known about this elusive monotreme. The survival of this animal is threatened by the lost of habitat and hunting pressure.

The ground breaking study of the long-beaked echidna is a project of Zoological Parks and Garden Board of Victoria (ZPGB) and Wildlife Conservation Society (WCS). The pilot study was conducted between August and September 2001 as my PET project while working with Research and Conservation Foundation of PNG (RCF). The project commenced in March 2001 with full funding from ZPGB. The purpose of the pilot project was to determine the difficulties, the practicalities and possibilities of obtaining quality data to effectively study its ecology.

Here is an abstract of the preliminary report that I presented at Healesville Sanctuary, Melbourne Zoo, and Melbourne National Museum.

Abstract

Nine long-beak echidnas were caught between August and 2000 and May and July 2001 in the Crater Mountain Wildlife Management Area in Chimbu Province, Papua New Guinea. Seventy percent were captured when found foraging at night and 30% were tracked to their den sites by following tracks from fresh feeding signs. I never found echidnas foraging in daylight and found no animal with eggs or pouch young. Mean juvenile mass was 4kg and adult mass was 6.5kg. Mass was positively correlated with head body length, but not with snout length or longest hind claw length. One animal gained an average of 0.8 g/day over a four-month period.

The first three echidnas captured (2000) were not radio-tracked. Of the 6 tracked animals, three were never heard again after being released and two dislodged their transmitters after 5 and 51 days respectively. I followed one animal for 42 days until the transmitter started emitting a steady signal and then presumably quit. The last animal has

been tracked 22 August through 24 October 2001 and still has a working transmitter. The straight-line distance moved by echidnas in a single night ranged from 44 to 821 meters a night. The largest home range found was roughly 44 ha over a 7-week period.

Animals used the same den site for 1-20 consecutive days (though typically 1-4 days). One animal was underground for 20 days and burrowed 6 meters horizontally during this time and lost an average of 25g/day. The 22 den sites located had from 1 to 6 entrances (mean of 2). Echidnas showed no preference for canopy cover, entrance compass direction, shrub canopy or soil type, but did seem to avoid flat ground and stony areas for den placement.

This study would be greatly enhanced by having a method for sex determination in the wild, temperature sensitive transmitters that will not dislodge from the animal, microchip for long term identification of the animal and receivers that are reliable under remote field conditions.

This project is the first study of the long-beaked echidna and my sponsors, ZPGB and WCS have jointly pledged to support this project through my PHD. This study will be one of few high tech projects ever carried out in PNG by a PNG scientist. It is a challenge to me and is also a motivation to young PNG Biologists to study and do research in our own land.

Acknowledgments

I would like to acknowledge and thank the Zoological Parks and Garden Board of Victoria and Wildlife Conservation Society for aiding this research. I especially thank Garry Slater, Dr. Peter Temple-Smith and WCS for making funds available. I thank Gary Slater and Jennifer Kingston for training in the field and Andrew Mack and Debra Wright for help with data analysis and writing. I am also grateful to Dr. Peggy Rismiller for teaching me new techniques at Healesville Sanctuary and to the monotreme keepers at Healesville Sanctuary for letting us use their animals for training.

Dispersion, habitat use, hunting behaviour, vocalizations and conservation status of the New Guinea Harpy Eagle (*Harpyopsis novaeguineae*)

Mark Watson, *The Game Conservancy Trust, Fordingbridge, Hampshire, SP6 1EH U.K.*

and Smith Asoyama, *Herowana Village, c/o Research and Conservation Foundation. Box 1261, Goroka, EHP, PNG*

Abstract--We studied dispersion, habitat use, hunting behavior, vocalizations and conservation status of the New Guinea Harpy Eagle (*Harpyopsis novaeguineae*) from December 1998 to October 1999 in Crater Mountain Wildlife Management Area (CMWMA), Eastern Highlands Province, Papua New Guinea. From territory mapping it was estimated that mean home range size was 13.0 km²/pair (n=5, SD=3.9). However, one pair was followed on 42 d over 4 mo and was only ever recorded in an area of 0.25 km². We observed the male hunting in this area 6 d for a total of 510 min. A small sample of prey items included ground-dwelling species such as forest wallaby (*Dorcopsulus* sp.), juvenile Dwarf

Cassowary (*Casuarius bennetti*), New Guinea Megapode (*Megapodius decollatus*) and an arboreal marsupial. Eagles called mainly by day, near sunup. Spectrogram analysis revealed two main types of call. A continuous, low frequency call was used to advertise territory and for contact between mates over distances <2 km. A higher frequency, chicken-like call was used in interactions between individuals that were close to each other and during hunting, perhaps as a stimulus or lure for prey. In contrast to the rest of the Highlands, eagles were protected from hunting inside CMWMA under agreements between villagers and international conservation organizations. The Peregrine Fund funded this research.

IPCA set to begin biological survey with BP in Papua

From INCL: Indo-Pacific Conservation News, Vol. 2 (1), January 2002

IPCA is set to carry out full scale rapid biological assessment of the new British Petroleum (BP) natural gas project areas in Tangguh, Papua, Indonesia. The Tangguh project, with an estimated cost of at least \$2 billion, will be one of BP's global flagship projects. Our survey, which is set to begin in early February 2002, will be a joint effort between IPCA, BP, and P.T. Hatfindo Prima, an affiliate of Hatfield Associates, a Canadian consulting firm. When fully operational in 2006, the liquefied natural gas (LNG) facilities of Tangguh will produce approximately 7 million tons of LNG per year. BP indicates that among its top priorities is to improve health and education services for nearby villages and 7,000 people directly affected by the project, as well as to have as small a "footprint" on local rainforest and mangrove habitat as possible.

This survey follows a site visit to Tangguh by Burke Burnett, IPCA Executive Director, in March 2001. His report to BP highlighted the urgent need for this survey, in order to better understand the biodiversity of Tangguh and how it will be affected by changing land uses both on-site and in adjacent areas that have been converted to oil palm plantations by companies unrelated to BP. The Bomberai Peninsula where Tangguh is located is, like much of Papua, poorly understood and under-documented scientifically. Our survey will address BP's need to document the flora and fauna of Tangguh, while also providing critical data that conservation science requires to plan and manage sustainable development and conservation initiatives in Papua. IPCA believes that this sort of project illustrates how "win-win" solutions can result when scientists and conservation organizations work in partnership with responsible corporations.

Our research teams are composed of expert international and Indonesian scientists. Participating biologists include Dr. Wayne Takeuchi (PNG Forest Research Institute), R. Maturbongs (University of Papua), Dr. Vojtech Novotny (Smithsonian), M. Amir (LIPI - Indonesian Institute of Sciences), Dr. Scott Miller (Smithsonian), Dr. Gerald Allen (West Australian Museum), Mr. Samuel Renyaan (Cenderawasih University), Dr. Allen Allison (Bishop Museum), Dr. Helen Kurniati (LIPI), Dr. Bas van Balen (Wageningen University), Dr. James Menzies (University of Adelaide), and others. The combined local and international experience encourages two-way transfer of scientific and local knowledge between local and international scientists. The survey will also support the broader endeavor of documenting Papua's flora and fauna for purposes of conservation biology and natural resource management in the province.

The Indo-Pacific Conservation Alliance (IPCA) is a non-profit scientific and educational organization dedicated to the study and conservation of the native ecosystems of the tropical Indo-Pacific region and support for traditional peoples in their stewardship of these globally significant natural resources.

To subscribe to the IPCA newsletter or for more information please contact: Indo-Pacific Conservation Alliance, 1620-D Belmont Street, NW, Washington, DC 20009, Tel. 202-939-9773, Fax 202-265-1169, Email: info@indopacific.org or burnett@indopacific.org In Indonesia, Tel: 021-780-0050, Email: ipcaindo@rad.net.id, WWW: <http://www.indopacific.org>

Investigating large scale vegetation change in the Transfly

From Michele Bowe, WWF

Over the past forty years the savanna landscapes of the Transfly in Indonesia and Papua New Guinea have dramatically changed. The encroachment of Melaleuca trees across large areas of seasonally flooded grassland is turning what were once rich and diverse wetlands into a monoculture of melaleuca scrub.

World Wide Fund for Nature (WWF) in collaboration with researchers from the Northern Territory University are undertaking comprehensive vegetation mapping of the Transfly region. Aerial photographs taken over the last forty years and satellite imagery taken at intervals of 10 years are used to create a series of maps of the Transfly area. By comparing these maps we can determine the temporal and spatial vegetation changes that have occurred.

WWF is also working with local communities, especially older villagers who remembered a time when the grasslands were still open. Anecdotal information from villagers about fire management and the numbers of introduced species during their lifetimes is critically important information that will help us understand what factors may be causing the change.

Preliminary research suggests that two main reasons for this Melaleuca invasion are Rusa Deer (*Cervus timorensis*)

and changes in the way people use fire over the landscape. Traditionally people practice burning early in the dry season to protect important resources from late hot season fires, by progressively burning on a small-scale to create a mosaic patchwork effect of vegetation. In more recent years, hot fires burn large tracts of land later in the season. The Rusa Deer since they were introduced about sixty years ago, have thrived in the Transfly area where there is an abundance of palatable grasses. According to local communities, there has also been a drastic reduction in some species of wetland grasses notably *Phragmites karka* and *Eleocharis* spp. Researchers believe that the reduction in these grasses in conjunction with changes in the use of fire has led to the encroachment of melaleuca.

By combining local information on changes to vegetation and fire practise over time with current maps of vegetation cover information we can build a better understanding of the extent of the Melaleuca weed problem and start to develop management solutions in conjunction with local communities.

For further information contact: Michele Bowe, WWF Tropical Wetlands of Oceania Program Manager, mbowe@wwf.org.au or Ph: +61 (0)8 8941 7554

Nature's Nutrition: Minerals in Native Fruits Eaten by Birds of Paradise

Ellen S. Dierenfeld, Department of Wildlife Nutrition, Wildlife Conservation Society;

Paul Zabarauskas, Department of Ornithology, Wildlife Conservation Society;

& Peter Clark, Director, The Rainforest Habitat

Samples of 7 fruits fed to captive birds of paradise at The Rainforest Habitat in Lae, PNG, were preserved in ethanol and analyzed through the Wildlife Nutrition Laboratory (Wildlife Conservation Society, Bronx, NY). Macromineral concentrations listed below (% dry matter basis) confirm high levels of calcium, and Ca:P ratios in figs (*Ficus* spp.) compared with other fruits, as has been reported in other studies (O'Brien et al., 1998). The bioavailability of any of these minerals, however, remains unknown at this time. Nonetheless, some interesting observations can be made, even on these limited samples, and speculations on nutritional value are possible. Differences between the two banana samples (*Musa* spp.), particularly regarding Ca and Mg content, are striking, and can have very different consequences on the health of animals consuming these fruits.

One meets known Ca requirements for avian species (0.5 to 1.2%), with the exception of laying poultry ($\geq 2.0\%$) while the other appears deficient and contains an inverse Ca:P ratio. Optimally, avian diets should contain a ratio of available Ca and P of approximately 2:1 for maintenance (up to 4:1 when other nutrients are in balance), this can rise to 7:1 during active laying periods. Phosphorus requirements established for avian species range from 0.3 to 0.6%, only *Ficus* spp. would appear adequate in that nutrient. High levels of dietary magnesium can interfere with Ca availability, thus values for the second banana variety may be better suited for meeting needs of the birds of paradise at various physiological stages, if mineral interactions are factored into the equation. Mg requirements established for avian species are generally $< 0.06\%$, with tolerance up to 1% of dietary dry matter. Most of these fruits, then would appear adequate for Mg, but Na requirements would not be met by fruit (0.05% for maintenance, 0.1 and 0.2% for growth and reproduction), and must be supplied from other sources.

Domestically-cultivated bananas, figs, and guava (*Psidium* spp.) fed as fruit substitutes to birds of paradise outside PNG, in general, contain substantially less Ca, K, and P compared with the native fruits analyzed (see Table 2).

Trace element composition of native fruits is found in Table 3. Not listed in the table are values for Co (all < 0.10 $\mu\text{g/g}$), or Se (all < 0.025 $\mu\text{g/g}$ with the exception of the second *Musa* spp (0.04 $\mu\text{g/g}$). Chromium requirements have not been established for avian species, but the disparity seen suggests wide differences in soil composition and/or fruit species' tolerance to uptake/metabolism of this mineral. Cr

Table 1. Macrominerals in locally-collected fruits fed to captive birds of paradise in Papua, New Guinea.

Species	Ca	K	Mg	Na	P	Ca:P
	←----- % of dry matter -----→					
<i>Ficus sp3</i>	1.37	2.06	0.37	0.005	0.40	3.43
<i>Ficus sp4</i>	1.18	3.14	0.37	0.003	0.27	4.37
<i>Musa spp1</i>	0.06	1.24	0.09	<0.001	0.11	0.55
<i>Musa spp2</i>	0.97	0.75	0.38	0.02	0.10	9.70
<i>Pandanus julianettii</i>	0.92	0.76	0.05	<0.001	0.12	7.67
<i>Psidium guajava</i>	0.10	1.33	0.03	0.002	0.15	0.67
<i>Tectoma sp.</i>	0.03	1.66	0.05	<0.001	0.17	0.18

has also been shown to interfere with Fe absorption, so may be a means of "safeguarding" against excess dietary Fe (Stearns, 2000). Further, Cr may be important in carbohydrate metabolism of frugivorous species as has been indicated in human studies; further investigation may be valuable.

Cu requirement in avian species is < 8 $\mu\text{g/g}$, and does not appear excessive in any of the fruits analyzed (some possibly deficient). Mn requirements of birds varies widely due to bioavailability of this mineral, and analysis reveals little about the value of that food as a manganese source. Se requirements (<0.2 $\mu\text{g/g}$) may not be met on a fruit-based diet, but are highly dependent upon the vitamin E and overall antioxidant content of ingredients, which were not evaluated in this study. Few E or C deficiencies in frugivorous birds have been reported in the literature. While many frugivorous species do not have the ability to synthesize vitamin C, presumably they meet requirements through dietary sources. It is likely that the dietary requirement for Se is low for frugivores, as antioxidants work synergistically to mitigate oxidative damage in vivo, and thus may "spare" the dietary requirements of each other. Zn requirements of avian species are <70 $\mu\text{g/g}$ during all stages of life; these data suggest that diets containing <50 $\mu\text{g/g}$ may be adequate. High dietary Zn increases the requirement for Se, Cu, and Fe – thus interactions and balances among minerals must be considered.

Iron, however, deserves somewhat greater attention in the nutrition of birds of paradise, since iron storage disorders are a primary health syndrome in captive birds (Dierenfeld et al., 1994). Studies with caged birds (European starling, *Sturnus vulgaris*) have shown diets containing >200 $\mu\text{g/g}$ Fe can lead to increased hepatic deposition of Fe; high liver concentrations of iron were not found in bird samples *in situ*, and low-iron diets have been developed for feeding frugivorous species. Native fruits examined (Table 3) were, indeed, low in Fe (avian requirements 50-120 mg/kg) with the exception of one of the *Musa* samples. The contribution of dietary Fe content to the captive syndrome remains controversial, and clearly other factors including stress, tannins that may bind iron, pH, and interactions with other dietary constituents are important (Klasing, 1998).

Domestic fruits (figs, bananas, and guava, USDA database) contain ranges for trace elements similar to those of PNG fruits reported here. Nonetheless, data on mineral content of native foods can provide valuable guidelines for the development of optimal diets, and is to be encouraged.

Table 2. Macromineral content of domestic cultivars of *Ficus*, *Musa*, and *Psidium* spp. fed to birds of paradise in the United States (data from USDA Table of Food Composition).

Domestic species	Ca	K	Mg	Na	P	Ca:P
	←----- % of dry matter -----→					
<i>Fig</i>	0.17	1.11	0.08	0.0	0.07	2.43
<i>Banana</i>	0.02	1.54	0.11	0.0	0.08	0.25
<i>Guava</i>	0.14	2.04	0.07	0.02	0.18	0.78

Table 3. Macrominerals in locally-collected fruits fed to captive birds of paradise in Papua, New Guinea.

Species	Cr	Cu	Fe	Mn	Zn
	←----- µg/g dry matter -----→				
<i>Ficus sp3</i>	<0.20	7.60	40.1	15.6	33.2
<i>Ficus sp4</i>	0.73	16.10	52.0	15.3	45.4
<i>Musa spp</i>	<0.20	<0.10	29.8	10.9	7.1
<i>Musa spp</i>	25.6	7.64	1890	84.2	38.6
<i>Pandanus julianettii</i>	0.8	9.61	26.0	8.0	18.8
<i>Psidium guajava</i>	<0.20	4.01	30.9	4.5	10.6
<i>Tectoma sp.</i>	0.87	0.93	25.5	2.3	29.6

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Mistletoe—A Keystone Resource in Forests and Woodlands Worldwide

Watson, D.M. 2001. *Annual Review of Ecology and Systematics* 32:219-49

Abstract: Mistletoes are a diverse group of parasitic plants with a worldwide distribution. The hemiparasitic growth form is critical to understanding their biology, buffering variation in resource availability that constrains the distribution and growth of most plants. This is manifested in many aspects of mistletoe life history, including extended phenologies, abundant and high-quality fruits and nectar, and few chemical or structural defenses. Most mistletoe species rely on animals for both pollination and fruit dispersal, and this leads to a broad range of mistletoe-animal interactions. In this review, I summarize research on mistletoe biology and synthesize results from studies of mistletoe-animal interactions. I consolidate records of mistletoe-vertebrate interactions, incorporating species from 97 vertebrate families recorded as consuming mistletoe and from 50 using mistletoe

as nesting sites. There is widespread support for regarding mistletoe as a keystone resource, and all quantitative data are consistent with mistletoe functioning as a determinant of alpha diversity. Manipulative experiments are highlighted as a key priority, and six explicit predictions are provided to guide future experimental research.

The largest gaps in the worldwide database were from New Guinea. If anyone has any information about mistletoes in NG, or their interactions with vertebrates, especially feeding and nesting records, please contact David M. Watson, The Johnstone Centre and Environmental Studies Unit, Charles Sturt University, Bathurst NSW 2795, Australia, email: dwatson@csu.edu.au

Birds Sighted on Buka and Bougainville

From Phil Gregory, Sicklebill Safaris

From August 30 – 4 September 2001 Chris Eastwood and I made a trip to these islands, long off the route for birders due to the civil war, which has put them off-limits since 1989. Andy Anderson made a brief Buka trip in 1999, and was here the week before us, but no other birders have visited here for many years. However, Don Hadden is the resident birder, teaching with the NZ Aid program, and he and his wife Llane (of *Cichlornis (Megalurulus) llanae* fame) were kind enough to host us at Arawa. Happily a peace process is now in place, and the long task of rebuilding from the ruins can begin, though the mountain areas are still firmly off limits and are likely to be so for some time. Bougainville is now an autonomous province of Papua New Guinea, with a

referendum about independence scheduled for sometime in the future.

Buka is the small island that lies off the north west tip of Bougainville, and which has escaped the devastation wrought on the towns and infrastructure of the main island. It is a useful birding destination in its own right, with many Solomon Islands species, which are currently not accessible there due to the political and social problems besetting that country. Our brief look on Buka consisted of a morning and a part of two afternoons around Buka town and about 5km inland along the main road. We also had a careful check of the airstrip area for **Buff-bellied Mannikins**, but failed to locate any.

The following species were noted: Solomon's and Bismarck endemics are in bold type Lesser Frigatebird 18, Great Frigatebird 1, Intermediate Egret 1, Pacific Black Duck, Glossy Ibis 2 by the airstrip Aug 31- a new bird for Buka it seems, Osprey 3, **Sanford's Sea-Eagle** 1, Variable Goshawk 1, **Pied Goshawk** 1, Brahminy Kite, **Melanesian Scrubfowl** heard, Bush-hen heard, Grey-tailed Tattler, Common Sandpiper, Whimbrel, Turnstone, Crested Tern, **Solomon's Cockatoo**, Eclectus Parrot, **Cardinal Lory** very common, Red-flanked Lorikeet, Rainbow Lorikeet, **Green Pygmy-Parrot** 1, Nicobar Pigeon 2 imm, **Red-knobbed Imperial-Pigeon**, **Grey (Island) Imperial-Pigeon** quite common, Claret-breasted Fruit-Dove, Moustached Tree-swift, Uniform Swiftlet, Pacific Swallow, Blyth's Hornbill 2, Sacred Kingfisher, Collared Kingfisher heard in mangroves, Yellow-bellied Sunbird, **Midget Flowerpecker**, **Solomon's Satin Flycatcher**, **Bougainville Monarch** 1 male, **Red-naped Myzomela** singles on two dates only, Willie-wagtail, **Yellow-throated White-eye** common, Cicadabird 1m and 1 f, White-bellied Cuckoo-shrike, **Long-tailed Myna** 20+, Singing Starling 5, **Brown-winged Starling** 2 and a nest by the Lodge, Metallic Starling 20. 46 species total.

We traveled by PMV from Buka, after crossing the narrow Buka Strait that separates the two islands, taking about 4 hours to reach Arawa on pretty reasonable gravel roads. Arawa is a simply a shell, burnt out and destroyed by the Bougainville Revolutionary Army in their scorched earth policy, obliterating all traces of the Panguna mine infrastructure including such things as schools, hospitals, electricity, water supplies, banking, postal services etc. A sad sight indeed, though the UN and NZ aid have reconnected a water system and supply power for about 4 hours a day to the people dwelling in the surviving houses. Two guest houses now operate as well and signs of recovery are evident. We encountered no animosity, people were friendly and interested in what we were doing, and now again have some hope for the future.

We added a few species by coming down to Arawa, including the almost mythical **Woodford's Rail** which is quite common in the environs of the town and can be seen scuttling across the main road north. The long grass everywhere may have helped the survival of this species, which is listed as vulnerable in Threatened Birds of the World (BirdLife International 2001) and of which there have been very few sightings until Don found them commonly here. We saw 9 birds one day, including a pair with two juveniles out by the Arawa airstrip. I saw 4 on the return car ride to Buka, including two quite well north between Wakunai and Tinputz. The plumage was entirely black, with a pale bill and legs almost whitish in colour, and the eye was reddish. The birds often ran across the road with wings upraised, and we saw them foraging along the banks of the main river in town and coming out on the shingle banks in the water.

Sanford's Sea-Eagle was elusive, and one we particularly wanted after just a glimpse on Buka. Fortunately we eventually did see a single bird out by the airstrip, and had scope views of it perched for a while. **Bougainville Monarch** was sparse but not uncommon in the understorey of forest, and we heard the **Solomon's Boobook** out in the same area on a night foray. **Bougainville Crow** was very scarce, we saw just

5 birds in total north of the Arawa/Panguna road junction. Good news was that Common Myna is down to a single pair and we had to twitch this for our PNG list in the ruins of the petrol station in Arawa, where it was formerly common. Hopefully it will die-out soon!

Bougainville species: Wedge-tailed Shearwater 1 off Kieta, Reef Heron 1, Pacific Black Duck, Little Pied Cormorant, Osprey, **Sanford's Sea-Eagle** 1, Variable Goshawk 1, Brahminy Kite, **Melanesian Scrubfowl**, Bush-hen heard, Purple Swamphen, Grey-tailed Tattler 3, Terek Sandpiper 1, Common Sandpiper 12, Whimbrel, Turnstone, Pacific Golden Plover 15, Lesser Sand Plover 3, Crested Tern, **Solomon's Cockatoo**, Eclectus Parrot, **Cardinal Lory** very common, Red-flanked Lorikeet, Rainbow Lorikeet, **Duchess Lorikeet** 2, **Red-knobbed Imperial-Pigeon**, **Grey (Island) Imperial-Pigeon** quite common, Claret-breasted Fruit-Dove 7, Superb Fruit-Dove 5, **Mackinlay's Cuckoo-Dove** 5, Solomon's Boobook 3 heard, Moustached Tree-swift, Uniform Swiftlet, **White-rumped Swiftlet**, Pacific Swallow, Blyth's Hornbill 2, Collared Kingfisher, **Ultramarine Kingfisher** 4, Brush Cuckoo 1 (very distinctive song, quite unlike Australian or NG birds and quite richly coloured beneath), Koel sp. heard (Asian?), Yellow-bellied Sunbird, **Midget Flowerpecker**, **Solomon's Satin Flycatcher**, **Bougainville Monarch** 5, Willie-wagtail, **Cockerell's Fantail** 4, **Yellow-throated White-eye** common, Australian Reed Warbler many heard and one seen at Kieta, Cicadabird 1m and 1 f, White-bellied Cuckoo-shrike, Black-faced Cuckoo-shrike 5, **Solomon's Black-bellied Cuckoo-shrike** 2, **Long-tailed Myna** 20+, Singing Starling 5, **Brown-winged Starling** 8, Metallic Starling, Common Myna 2. 58 total species.

The Collared type Kingfishers here are very like Sacred in plumage, only more intensely coloured, with intermediate sized bills. Very vocal and showing signs of breeding activity. The total trip list was some 67 species.

We had only been at Don and Llane's house in Arawa some 5 minutes when Don's collector John appeared down from the mountains with live specimens of some species destined for the American Museum of Natural History. The following were taken at 1500m, and were duly photographed, measured and described:

Yellow-bibbed Fruit-Dove 1, Bronze Ground-Dove 1, Brush Cuckoo 1 which I initially thought was a Fan-tailed as it was so rufous beneath, Island Leaf Warbler, **Grey-throated White-eye** 1, **Red-naped Myzomela** 1 f, **Hooded Whistler** 1 female, **Bougainville Thicketbird** 1 presumed immature and presumably this species- heavy black streaks on breast, faint rufous supercilium, broad dark eyestripe extending onto ear coverts, narrow dark malar stripe and broader pale moustachial. A short orangey gape suggested an immature, but there were no wing bars or obvious feather scaling. John has also brought in two specimens of the legendary **Odedi** bird, which was known by its call from the montane areas but remained unseen. It appears to be a small warbler type along the lines of Shade Warbler or similar, but awaits formal naming.

Thanks to Don and Llane Hadden for their hospitality, and to Chris Eastwood for accompanying me on this scouting trip. Phil Gregory, Cassowary House, Kuranda, Queensland, Australia, September 2001.

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.

PNG National Museum

Dr. Frank Bonaccorso has accepted the position of Director at the Lube Foundation effective 15 July 2002. After that date he can be contacted at The Lube Foundation, 1308 NW 192 Ave, Gainesville, FL 32609. Phone 352 485 1250 or Fax 485 2656. He served for seven years as

Chief Curator of Natural History at the Papua New Guinea National Museum & Art Gallery. As occasion presents he will continue to conduct field research on pteropodid bats in PNG. Current email: bonafrank@global.net.pg will work through mid-June.

Longterm NG Researchers Gone

From Robin Hide

Some NG specialists may not have heard that two longterm researchers, who both made major contributions to New Guinea environmental knowledge, recently died.

David Holdsworth (in August) who published over 50 papers on PNG medicinal plants between 1970 and 1993 (brief obituary in PROSEA Newsletter No. 27, Oct 2001).

John Saunders (in November), a forester/vegetation specialist, who did many seasons of field work in the 1960s working on the CSIRO PNG Land surveys (eg. Lands of the

Goroka-Mount Hagen area, Lands of the Wewak-Lower Sepik area, etc, etc). Later he was a longterm member, specialising in airphoto interpretation, of the CSIRO team that in the 1980s produced the PNGRIS (Papua New Guinea Resource Information System) database, work that culminated most recently (1993-95) in the publication of his maps of PNG agricultural land use and forest resources, and of forest resources and vegetation.

The World's Most Elusive Harrier? Feather Needed.

From Rob Simmons

The Papuan Harrier is confined to PNG and almost nothing is known of its biology or ecology. In the recently completed Harriers of the World by Oxford University Press (2000), Professor Michael Wink and I put together an evolutionary tree of 14 of the world's 16 harriers. Two are still missing from this group: the Pied Harrier of Mongolia and Russia, and probably the world's most elusive harrier, the Papuan Harrier. We have no idea if this bird is a good species but present (morphological) evidence suggests that it is.

We need a large recent feather or a blood sample (stored in EDTA which we can supply) from this bird in order to sequence its DNA and add it to our evolutionary tree.

If you have access to a recent specimen or know of live birds from which a feather might be taken, please write to me at the address below. If you can lead me to securing tissue from these species I will send a free copy of the new harrier book to you and a full acknowledgement will appear in the paper which appears when we have all 16 species.

I look forward to hearing from you. Dr Rob Simmons, National Biodiversity Programme, Directorate of Environmental Affairs, Ministry of Environment & Tourism, Private Bag 13306, Windhoek, NAMIBIA, Fax: (264) 61-240339 (at DEA) 237552 (at Schubert House), Tel: (264) 61-249015 (at DEA) 237553 (at Schubert House), e-mail: harrier@iafrica.com.na

Request for information on Introduced fish species in southern New Guinea

WWF is working in southern New Guinea in two conservation areas – Wasur National Park in Papua, Indonesia and the contiguous Tonda Wildlife Management Area in Papua New Guinea. The two areas share many common problems in relation to exotic species. We are looking for information from anyone who may have done research on the impacts of four exotic fish species on native fish stocks in New Guinea. There are two species of major concern – the Climbing Perch (*Anabas testudineus*) and Striped Snakehead (*Channa striata*) – in addition to Talapia (*Oreochromis mozambicus*) and the Walking Catfish (*Clarias batrachus*). Striped Snakehead is the

most recent introduction, first occurring in Merauke around five years ago, it has spread rapidly through Wasur and was seen for the first time in Tonda last year. There is much anecdotal information that this species is having a heavy toll on native fish numbers. If anyone has information on current or previous research into these fish species in New Guinea, including control programs, I would be very pleased to hear from you. Please contact Michele Bowe, WWF Tropical Wetlands of Oceania Program Manager, PO Box 1268, Darwin, NT 0801, Australia. Ph. + 61 889 41 7554; Fax + 61 889 41 6494; email: mbowe@darwin.wwf.org.au

Metrosideros Update

From Tony Whitaker

You probably recall that after our visit to PNG last February just one species of *Metrosideros* remained that had not been sampled for the project? This was *M. ovata* from high in the Ekuti and Owen Stanley mountains. Around the middle of the year we started planning for a trip to the Bulldog Track, where it crosses the Ekuti Range west of Wau, to search for it. However, before we got very far with preparations we were contacted by Michael Lovave who works at the FRI herbarium at Lae. Michael had seen the article on our visit to Western and Sandaun Provinces in the 'PNG Newsletter' and offered to help with the collection of *M. ovata* as his field work often took him to the mountains around Wau. After some discussion to be sure Michael knew what to look for (we sent him a painting like that you printed

in the newsletter ... see below) and how to process and ship specimens, he got the job instead of us ... damn!

Michael went up the Bulldog Track in mid-January. Apparently local people recognised the plant from the painting and were able to direct him to some plants with relative ease. The specimens had a difficult journey back to NZ by courier and by the time it got here about 75% of the sample was rotted. However, there was enough live tissue left to extract material for PCR treatment and we are expecting the DNA results from the sequencer any day now. It will be exciting to see how the last of the PNG species fits into the picture, and now it will be possible to complete the publications relating to the *Mearnsia* sub-genus. We'll keep you posted on how it all goes. Michael has proved to be an excellent contact and a wonderful help.

FUNDING OPPORTUNITIES AND JOBS

Note: Many of the following opportunities are sourced from INCL

The Pacific Biological Foundation (PBF): Information for Applicants

This Foundation supports activities designed to protect, conserve or manage important components of the natural environment, such as plants, forests, animals, soils, water and climates. In the words of one of the initial donors, the Foundation encourages scientific studies which will help "to beautify our environment".

In seeking to achieve this ideal, the PBF provides support, on a competitive basis, for three types of activity.

- The top priority is to encourage high quality research carried out by scientists in national or state institutions, and universities.
- Periodically, capital grants may be made to help finance equipment or facilities, which are needed to encourage relevant studies by either scientists or the general community.
- Occasional support may also be given to such activities as training, publications or conferences.

The Foundation seeks to complement, rather than compete with, other funding bodies. Experience has shown that modest support can be particularly effective if used as "seed money" to initiate projects, which may subsequently expand and attract major funding from other sources.

Foundation grants have also supported specific components of large projects financed primarily by other agencies.

Typically the PBF provides grants up to approximately A\$15,000 per year for a maximum of three years.

The PBF is intended to support research workers and institutions in developing countries of the southwest Pacific region. PBF grants may be made either directly to institutions in those countries, or to institutions in scientifically advanced countries (including Australia) to support collaborative activities with individuals or institutions in the developing countries.

Grants are made in six-monthly instalments, and payments are dependent upon the receipt of satisfactory, six-monthly reports and annual financial statements.

Administrative overheads are not funded.

Further information and application forms may be obtained from: Dr Barry K Filshie, Executive Secretary Research Committee, PO Box 9154, Port Macquarie NSW 2444 Australia, Phone: (61) 2-6582-7813, Fax: (61) 2-6582-7814, E-Mail: bfilshie@apscience.org.au

Ramsar Small Grants Fund for Wetland Conservation and Wise Use (SGF)

The Wetland Conservation Fund (subsequently renamed the Ramsar Small Grants Fund for Wetland Conservation and Wise Use (SGF)) was created in 1990 in order to provide assistance for wetland conservation and wise use initiatives in developing countries and (since 1996) countries with economies in transition. Its allocations are not intended to support major projects traditionally covered by larger funding agencies.

The wise use concept has been defined as "the sustainable utilisation of wetlands for the benefit of

humankind and compatible with the maintenance of the natural properties of the ecosystem". The SGF Operational Guidelines for the Triennium 2000-2002 put emphasis on the implementation of the Ramsar Strategic Plan 1997-2002, and project proposals must demonstrate the potential to assist in fulfilling specific Strategic Plan objectives.

All of the required forms for applying to the Small Grants Fund are included in the Operational Guidelines at http://ramsar.org/key_sgf_index.htm

BP Conservation Programme Grants

From BirdLife International, December 17, 2001

The BP conservation programme, a partnership between BirdLife International, Fauna & Flora International and the multinational corporation, BP, has recently re-

launched the website at <http://www.bp.com/conservation>. The programme aims to provide support to student-led conservation projects world-wide through training and

funding. £125,000 of grants are given annually in April to between twenty and twenty-five student teams, studying species or habitats of international conservation concern. Training workshops in all aspects of conservation projects have been run in Malaysia, Indonesia and the UK over the last year.

The new website includes the application form and guidelines, programme news, project summaries and photos,

International courses on wetland management and restoration

Every year since 1994, the Institute for Inland Water Management and Waste Water Treatment (RIZA), part of the Ministry of Transport, Public Works and Water Management in The Netherlands, has hosted the International Course in Wetland Management at the Wetlands Advisory and Training Centre (WATC) in Lelystad. Over the past few years, RIZA has also hosted a separate International Course on Wetland Restoration. Both 4-6 week, certificate-granting courses are organized according to approved Ramsar Convention principles and guidelines (the Ramsar Secretary General

news on the projects as well as helpful links and guides for planning and leading a conservation project. There is also a notice board where relevant NGOs, students and Universities are invited to post useful information including project ideas and requests for partners.

For any more information, comments or additions, please contact Paul Mathew, the BP Conservation Programme Officer, at mathewp1@bp.com

serves as chair of the Advisory Board), and many graduates from 40 countries have returned to their own countries with a thorough experience of the Convention's work both in theory and practice.

Adobe PDF versions of the informative brochures and application forms for both courses are available at http://ramsar.org/about_watc_courses.htm

Further information should be sought from WATC (not from the Ramsar Bureau), at Tel: +31 320 298346, Fax: +31 320 298339, Email: watc@riza.rws.minvenw.nl

Seacology grants

Are you working with an island community that requires funding for a marine conservation project?

A call for proposals is being made by Seacology, the world's premier NGO that exclusively aims to protect the environments or cultures of islands throughout the world. Grants in the range of \$2,000 to \$35,000 are available for selected marine conservation projects in Indonesia, Philippines, Thailand, Malaysia and Papua New Guinea where both the local environment is protected and islanders receive some tangible benefit for doing so. Preference will be given to projects that result in mutually beneficial trade-offs, environmentally sustainable micro-enterprises and marine

preservation projects. Please note that Seacology does not fund salaries, academic programs or basic research.

A brief proposal can be submitted by e-mail and should contain the following information: a description of the island; the problem addressed; the proposed solution; a description of how the local island population is involved with project implementation; a budget; and three references.

For further information, please contact Arnaz Mehta, Seacology, SE Asia Representative, Email: arnaz@manado.wasantara.net.id WWW: <http://www.seacology.org>

CONFERENCES AND MEETINGS

Fourth New Guinea Biology Conference

AUGUST 20-22, 2002

UNIVERSITAS CENDERAWASIH, JAYAPURA, PAPUA-INDONESIA

You are hereby invited to attend the above conference and participate by submitting a paper or poster. Dead line for registration and submitting abstract is July 30, 2002. Please direct all Biocon IV inquiries to : Dr. Rosye H.R. Tanjung, FMIPA – Biologi, Universitas Cenderawasih, Kampus Waena – Jayapura, Papua – Indonesia, Phone: (62) (967) 572 115, email hefmyca@yahoo.com or mipaceni@jayapura.wasantara.net.id

The theme for this meeting is *working together for better biological resources management*. This meeting focuses on three groups of topic areas : plant science, animal science and ethno biology in New Guinea.

Deadline for registration and submission of abstract is July 30, 2002.

Maximum number of words is 250 for the abstract or approximately 2500 characters, including the title, author(s) names and affiliation. Please note the title is bold, affiliation and scientific names are in italics, and that the name of the person presenting the paper is underlined.

Abstract submitted on computer diskette must be in Microsoft Word. Abstract submitted by email must be unencoded as a Microsoft Word file.

Presentations will be scheduled at 25 minute intervals. Speakers should give a 20 minutes presentation allowing 2-4 minutes for discussion.

Registration fees :

Non members and reguler members: Rp. 100, 000

Uncen lectures: Rp. 50, 000

Uncen students: Rp. 20, 000

Abstract fee: Rp. 25,000/paper

Payment can be made by bank transfer : Dr. Rosye Hefmi Tanjung, Bank Mandiri – Kantor kas Uncen, Jayapura – Papua – Indonesia, No. 154-0090011200 or payment can be made at the registration desk.

A registration and information desk will be open at the secretariat for the duration of the meeting from August 20 – 22 from 8 AM to 4 PM. You can register for the meeting and pick up the program book.

Second International Tropical Marine Ecosystems Management Symposium

Manila, Philippines 25-28 November, 2002

Organized by the: International Coral Reef Initiative (ICRI) and Department of Environment and Natural Resources (DENR)

Tropical marine ecosystems are under increasing pressure from many sources, including coastal land use and development, pollution, unsustainable fishing and tourism and the impacts of global climate change. Therefore, effective management that promotes sustainable use of marine resources is essential. The 2nd International Tropical Marine Ecosystems Management Symposium (2nd ITMEMS) will provide an opportunity for managers to engage in multidisciplinary discussions and sharing of experiences and lessons learned to identify gaps and priorities for future management action. The output and recommendations from the symposium will be disseminated through the partners of ICRI (including member countries, the International Coral Reef Action Network, IUCN, UNEP, WWF, the World Bank, donor agencies, etc.) and considered in the implementation of management programs for tropical ecosystems at local, national, regional and global levels.

The 2nd ITMEMS will be conducted through a number of concurrent workshops that address the topics listed below. Each workshop will start with presentations of exemplary case studies that illustrate relevant experiences and lessons learned either by their successes or, equally important, their inadequacies. These will form as bases for subsequent facilitated discussions that aim to achieve clear recommendations and priorities for the management of tropical ecosystems in the future. The results of each workshop will then be reported to all participants and discussed in plenary sessions. The number of participants in each workshop group will be limited to approximately 20.

Preliminary topics for workshop sessions:

- co-management and social impacts of marine and coastal management;
- economic benefits of conservation and sustainable use;
- the role of the private sector in protection and management;
- the role of protected areas and management;
- monitoring to facilitate successful management;

- management to mitigate the effects of climate change;
- dissemination of information for coastal and marine management;
- targeted research for management support;
- securing sustainable funding for management;
- restoration and rehabilitation of damaged ecosystems; and
- achieving sustainable fisheries.

The Organising Committee welcomes nominations of case studies (deadline 30th of April, 2002) that effectively illustrate relevant experiences and lessons learned in each of the topics. In addition, we are aiming to present examples from throughout the world and those of which have been implemented on a range of geographic scales from local to global. Also, feel free to contribute comments on the preliminary selection of topics and suggestions for the inclusion of additional topics. Case studies that facilitate the achievement of the goals of the symposium most effectively will then be invited for oral presentation.

Cost of registration will be announced closer to the event.

Please fax an indication of interest form to: ICRI Secretariat: +63 2 928 1225 / +63 2 926 2693 or e-mail to: secretariat@icriforum.org or olof.linden@cordio.org International Coral Reef Initiative (ICRI), Joint Philippine-Sweden Secretariat, 2nd/F FASPO Bldg., Department of Environment and Natural Resources (DENR), Visayas Ave., Diliman, Quezon City, 1101, Philippines.

Please include the following :

Name: _____

Affiliation/Institution: _____

Address: _____

Email: _____

Topics of Most Interest (feel free to list more than one): _____

Suggestion for Additional Topics: _____

Suggestion for Case Studies: _____

INTERNET SITES TO CHECK OUT:

(Thanks to the INCL for many of these resources)

Biodiversity links

Check out <http://www.gbif.net/linkfram.htm> for lots of links to sites with information about biodiversity resources.

PNG Eco-Forestry Forum

The PNG Eco-Forestry Forum is pleased to announce that our web site has been updated and modified so that many Forum publications are now available on-line.

Publications that can be downloaded as Acrobat files include all back issues of Iko-Forestri Nius, the Small Scale Sawmilling Information Pack and recent NGO Submissions to the Government.

We have also recently added a new section on Forest Certification.

Website: www.ecoforestry.org.pg

Tenkile Alliance Webpages

You may like to have a look at the recently launched web page for the Tenkile Conservation Alliance Inc., a not for profit association established in Papua New Guinea to support the conservation of Scott's Tree Kangaroo, Tenkile, and its environment in the Torricelli Mountains on the north coast of

PNG. Put it in your bookmarks www.tenkile.org and pass on to others who maybe interested.

Dugong - Status Report and Action Plans for countries and territories

This report is available on <http://www.unep.org/dewa/pdf/DUGONG.pdf> and is written by Marsh, H., Penrose, H., Eros, C. and J. HUGUES, Action Plan Coordinator - IUCN/SSC Sirenia Specialist Group.

The dugong (*Dugong dugon*) is the only herbivorous mammal that is strictly marine, and is the only extant species in the Family Dugongidae. It is listed as vulnerable to extinction at a global scale by The World Conservation Union (IUCN). The dugong has a large range that spans some 37 countries and territories and includes tropical and subtropical coastal and island waters from East Africa to Vanuatu, between about 26° north and south of the Equator.

The purpose of this document is to present a global overview of the status of the dugong and its management in the various countries in its range. We aimed to provide comparative information that will enable individual countries

to develop their own, more detailed, conservation plans. This document contains information on dugong distribution and abundance, threatening processes, legislation, and existing and suggested research and management initiatives for 37 countries and territories in the dugong's known range. The report is organised in a geographical sequence from the Western Indian Ocean region, through to the South West Pacific. Chapter One introduces the Dugong; Chapter 2 comprises information on East Africa, the Red Sea and the Arabian Gulf. Chapter 3 discusses India and Sri Lanka; Chapter 4 presents data from Southeast Asia including Japan, Taiwan, China, the Philippines, Vietnam, Cambodia and Thailand; Malaysia, Singapore and Indonesia; Chapter 5 discusses Palau, Papua New Guinea, the Solomon Islands, New Caledonia and Vanuatu; and Chapter 6 presents information from Australia.

Reefs at Risk in Southeast Asia

Parts of this report by Laretta Burke, Elizabeth Selig, and Mark Spalding, World Resource Institute, are available at

http://www.wri.org/wri/reefsatrisk/reefriskseasia_toc.html

The heavy reliance on marine resources across Southeast Asia has resulted in the overexploitation and degradation of many coral reefs, particularly those near major population centers. The main threats include overfishing, destructive fishing practices, and sedimentation and pollution from land-based sources. Human activities now threaten an estimated 88 percent of Southeast Asia's coral reefs, jeopardizing their biological and economic value to society. For 50 percent of these reefs, the level of threat is "high" or "very high." Only 12 percent of reefs are at low risk. The Reefs at Risk project estimates that about 64 percent of the region's reefs are threatened by overfishing, and 56 percent are threatened by destructive fishing techniques. In addition, dredging, landfilling, mining of sand and coral, coastal construction, discharge of sewage and other activities associated with coastal development threaten about 25 percent of the region's coral reefs. Sediment and pollution from deforestation and agricultural activities threaten an estimated 20 percent of the region's reefs.

PNG Eco-Forestry Forum—New Forest Resources Report

PNG's forest resources are almost finished as far as commercial logging goes. That is the conclusion in a devastating new report published this week.

The report shows that PNG has already lost most of its high commercial value forests, and that most current logging operations are operating on an unsustainable basis.

"This report gives us the first clear picture of what is happening to our forests and shows us the truth behind industry claims that the logging industry is in decline", says the PNG Eco-Forestry Forum. "The decline is not because of high taxes or low prices, but because the overseas loggers are cutting in an unsustainable way and using up the forest areas in just a few years".

"The logging industry has already finished most of our high value forest in the New Guinea island region and what we have left is only the low volume and inaccessible forests of Western and West Sepik Provinces."

The report, "PNG Forest resources and the Log Export Industry" is based on official but unpublished Government data. The report assesses the amount of forest resources in PNG and the impact of commercial logging as well as the future for the log export industry.

The report has found that PNG has about 26 million hectares of forest and some 11 million hectares of this is suitable for commercial logging. But with 7 million hectares already allocated, the best forests have already gone.

The report also highlights that most logging concessions only last 11 or 12 years, not the 40 years that is specified in logging agreements. This means that most operations that started in the early 1990's will finish in the next few years.

The report also concludes that even if another 2.5 million hectares of new concessions are handed out to logging companies, log exports will not rise above their current levels.

Copies of the Report can be obtained from the PNG Eco-Forestry Forum or downloaded from their website at www.ecoforestry.org.pg

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.

The Rainforest Habitat

Situated on the University of Technology campus in Lae, the Rainforest Habitat holds Papua New Guinea's largest zoological collection. Notable is the largest collection of Birds of Paradise currently held anywhere in the world, some hundred specimens of fifteen different species. Other animals of note include tree-kangaroos, cassowaries, reptiles, Long-

nosed Echidnas, and around seventy species of birds. A complete list is available at the Rainforest Habitat website www.habitat.f2s.com

Owned by the University, the Rainforest Habitat has responsibilities in both the education and research fields and works in collaboration with many overseas and local

specialists. Notable to date in education is the work carried out with the introduction of environmental education into the primary school curriculum of Morobe Province, this with the help of the Wildlife Conservation Society of New York, the New Zealand High Commission, BP PNG and Research and Conservation Foundation of PNG. Research projects include the work on halting the imminent extinction of Scott's tree-kangaroo with the Tenkile Conservation Alliance, climate history studies, the Lake Wanam rainbowfish, animal breeding and insect life histories.

The Rainforest Habitat (RFH) also owns the Insect Farming and Trading Agency at Bulolo in the Morobe highlands. This agency was established by the PNG government in 1978 and currently handles the purchase, export and overseas sale of ranched and collected insects from over 1500 village insect farmers throughout the country.

People interested in wildlife or environmental research are invited to contact the Rainforest Habitat for possibilities of collaboration. Although there are no laboratory facilities as such at the RFH, there is a fully accredited analytical laboratory at the University.

Accommodation is available at the RFH in the form of a twelve-person dormitory that also has an attached air-conditioned classroom capable of seating up to thirty.

These facilities are available for hire for accommodation or to hold courses. Larger numbers of visitors can be accommodated on mattresses in the classroom (for example with the case of visiting students). Currently rates are K66 (inc tax) per night for individual rooms and K44 for twin share rooms. This price includes washing of laundry but not ironing.

Cooking facilities are available or meals can be negotiated with the RFH. There is a cable TV in the lounge and communications including phone, fax and e-mail can be arranged at the nearby office. A copier is available.

The centre is set within the RFH grounds so security is good. Full time security officers patrol the area and the building itself is very secure.

Anyone interested in visiting or working with the Rainforest Habitat should contact the manager for more information.

Contact details: Peter Clark, Manager, Ph/fax (675) 4757839
E-mail habitat@datec.net.pg Website www.habitat.f2s.com

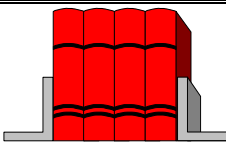
For visitors the Rainforest Habitat is open from 10am to 4pm everyday of the year except Good Friday and Xmas Day.

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, Typhus and Tuberculosis.



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.

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

The Indonesian Nature Conservation newsLetter (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 to the journal Science in New Guinea, contact Ray Kumar, fax: (675) 326-0369 or email: rav.kumar@upng.ac.pg

Soon from Larry Orsak, WWF Kikori ICDP, P.O. Box 842, Port Moresby NCD, Papua New Guinea, Email: larry@datec.net.pg

Amongst other things, up here at Moro, one of the former CRI 'mangi binatang' and I are finalizing a CD-catalogue of the KICDP's posters and leaflets which we plan to distribute to all the NGOs we can think of, along with a complete hard copy, in a couple more months. I'm also writing a manual for 'community entry' for Conservation Melanesia which we hope to finalise by mid-year and get published!

Download from the Biodiversity Support Program website <http://www.bsponline.org/bsp/publications/>

Adaptive Management: A Tool for Conservation Practitioners by Nick Salafsky, Richard Margoluis, and Kent Redford. 2001. 102 pp.

Adaptive management is growing in popularity as a concept in conservation circles. The purpose of our research was to determine how to make adaptive management a practical tool for conservation practitioners around the world. We first reviewed related concepts in fields including science and philosophy, social learning, business management, professional practice, and ecosystem management to create a research framework. We then field-tested this framework by visiting conservation projects in Zambia, Papua New Guinea, and British Columbia that all use some elements of an adaptive management approach. Our research revealed that adaptive management must be done by project managers themselves and requires establishing a clear purpose, developing an explicit model of the project site, selecting actions that maximize results and learning, developing and implementing a monitoring plan to test assumptions, analyzing data, communicating results, and then using these results to adapt and learn.

From the Society for Conservation Biology:

The Society for Conservation Biology, the only international organization of conservation professionals and publishers of the leading journal of conservation-"Conservation Biology"-is offering membership for 2002 at highly discounted rates for people in developing countries: only \$25 for electronic access to the journal and its archives (paper subscriptions are also discounted). At their website, <http://Conservationbiology.org>, you can learn more details, see a sample issue of Conservation Biology electronically, and enroll in SCB via the internet. For information about the Society for Conservation Biology's current efforts to form Sections in Asia and other continents see <http://www.conbio.org/SCB/Activities/Sections/>

Recent Publications to look for:

The Alfred Russel Wallace Reader - A Selection of Writings from the Field, Edited by Jane R Camerini, December 2001. Johns Hopkins UP, USA.

A biography interleaved with Wallace's own writing.

Loggers and Degradation in the Asia-Pacific - Corporations and Environmental Management, Peter Dauvergne, September 2001. CUP.

Examines why and how loggers in the Asia-Pacific have resisted and ignored calls for environmental reforms.

Orchids of Southeast Asia, Major electronic work (CD-ROM) covering 8000 orchid species of Southeast Asia. - Volume 1: Orchids of New Guinea - Illustrated Checklist and Genera Ed de Vogel and Andre Schuiteman, 2001. Rijksherbarium, Netherlands.

Consists of descriptions of all 132 New Guinea orchid genera and a checklist of all 3000 orchid taxa occurring in New Guinea, complete with the synonymy, indicating the types and where they are located, the distribution of the taxa, and including concise cultivation notes. It is illustrated by nearly 1000 colour photographs and over 1000 digitised flower analyses in pencil from the archives of JJ Smith.

Microchiropteran Bats, Hutson, A.M., S.P. Mickleburgh and P.A. Racey, 2001. IUCN.

Covers the conservation priorities for the 834 species of Microchiroptera.

Soft Corals and Sea Fans, Fabricius, K. and P. Alderslade, 2001. AIMS, Australia.

Covers over 90 genera known from the warm shallow waters of the Central and Western Pacific, the Indian Ocean, and the Red Sea.

Genera Euphorbiacearum, Alan Radcliffe-Smith, 2001. Kew RBG.

Account of the sixth largest family of the Angiosperms.

Faunal and floral migrations and evolution in SE Asia-Australasia, Metcalfe, I., J.M.B. Smith, M. Morwood and I. Davidson, 2001. Balkema, Netherlands.

**From Andrew Isles Natural History Books, Rear of 115-117 Greville Street, (PO Box 2305), Prahran 3181, Australia, Phone [61] (03) 9510 5750 4 lines, Fax [61] (03) 9529 1256, Email to: books@AndrewIsles.com
Search our online catalogue: www.AndrewIsles.com/search.htm**

[1261] Henty, E. E., editor. Handbooks of the flora of Papua New Guinea, volume two. Melbourne: 1981. Dustwrapper, 276 pp., line drawings. AU\$20.00

[1257] Womersley, John S., editor. Handbooks of the flora of Papua New Guinea, Volume one. Melbourne: 1978. Dustwrapper, 278 pp., line drawings. AU\$20.00

[9085] Conn, Barry J., editor. Handbooks of the flora of Papua New Guinea, volume three. Melbourne: 1995. Dustwrapper, 292 pp., line drawings. AU\$20.00

[9040] Flannery, Tim. *Mammals of New Guinea*. Chatswood: (1995 revised and updated edition). Quarto, dustwrapper, 568 pp., colour photographs, maps. Was AU\$75.00. AU\$30.00

[2365] Flannery, Tim. *Mammals of the South-West Pacific and Moluccan Islands*. Chatswood: 1995. Quarto, dustwrapper, 464 pp., colour photographs. This book covers 230 indigenous species of mammals, which have been located on over 250 islands. There are species accounts, focussing on living native species, with introduced and prehistorically extinct species dealt with separately. Was AU\$80.00. AU\$30.00

Scientific Literature



If you haven't sent your publication list in yet (your papers about New Guinea), please send these citations to Debra 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).

Amphibians- from James Menzies

Menzies, J.I. The jaw, shoulder and hyoid muscles of *Oreophryne* and *Albericus* (Anura: Microhylidae) of New Guinea. *Science in New Guinea* 26, 3-26.

Sent in from Robin Hide from Web of Science search for papua/irian 2001-2002

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For copies of any of the following papers please contact Max Kuduk mkud@chevrontexaco.com
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Contributions in Natural History of the Papua New Guinea National Museum & Art Gallery

Any prospective author that acknowledges the PNG National Museum for assistance of any kind in a biological sciences publication (logistical, visa acquisition, use of laboratory space, use of collections, collaboration with staff) is requested to use a Contributions Series number assigned by the Chief Curator of Natural History. Please request a number from Frank Bonaccorso when your manuscript is near submission (supply title, authors, journal of submission). When publication occurs please send 3 copies of reprints to the Chief Curator for reprint/library collections. Your cooperation helps us to continue to offer services to scientists from outside the Museum and to justify our existence and budget. Thank you.

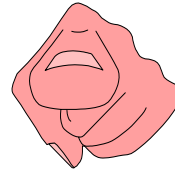
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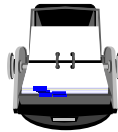
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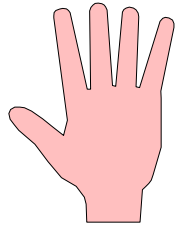
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