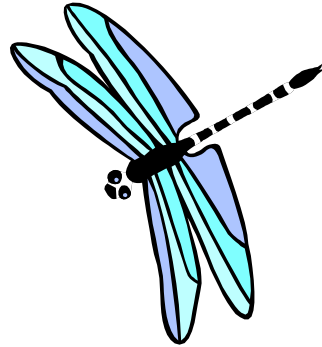


The New Guinea Tropical Ecology and Biodiversity Digest



May 1999

Issue 7

Please send all contributions and corrections to either the mail, fax, or email addresses listed below. Mail and fax submissions should be sent to both addresses as I could be in either USA or in PNG. The email address will be checked no matter where I am.

mail: Deb Wright, P.O. Box 15, Weikert PA, 17885-0015, USA AND Deb Wright, P.O. Box 1261, Goroka EHP, Papua New Guinea

fax: (1) 570-922-1152 AND c/o RCF (675) 732-1123 with attention Deb Wright

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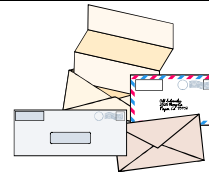
This issue we want to thank the Wildlife Conservation Society for providing financial support -- this is much appreciated! If you have internet access, the digest will soon be available on the web at: <http://www.wcs.org/png/>. If you want to look at it there and/or print out a hard copy from this site 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!

Of the 631 folks on the mailing directory 43% have internet access and 33% are now receiving the newsletter electronically (via email or the web).

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 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!

Where Space Matters

from Stewart Serawe, P.O. Box 112, Boroko NCD 111, PNG

I once witnessed a land dispute between a naturalized Papua New Guinea (PNG) citizen, Wally, and a national, Bomai. (These are not their real names). Both were arguing over a block of land north of Port Moresby. The argument

almost ended up in an exchange of fists. Bomai, supported by a horde of psyched-up nationals claimed native rights. Wally, on the other hand, alone and unrelenting, possessed legal

documents stating ownership. Threats and abuses were hurled from both sides, mostly from Bomai's corner.

The following events that set the stage for the above argument and which I was able to string together are quite as confusing as a jigsaw puzzle. Wally originally purchased the piece of land from a customary landowner. He then registered and obtained the necessary title from the Lands Department, completing the legal requirements. But before Wally could venture on to develop the land, he was called to Daru, Western Province, where his services were in urgent need.

A caretaker, Bal (also not his real name), who is known to Wally, was asked to temporarily live on the block of land until Wally returned. Apparently, he would be away for three years. However, after two years when Wally failed to keep in constant touch with Bal, he claimed the block of land thinking that Wally had deceased or gone finish, and put it on the market. This is when Bomai came into the picture, when he bought the block of land from Bal.

When Wally finally turned up, he discovered he was no longer the owner. He got furious. Yet Bomai doggedly refused to hand it over as he had bought it through a perfectly legal transaction. To make matters worse, Bal had fled to his home village probably financing his way with the money he obtained. This tussle has not been settled yet as both parties maintain that their actions were perfectly legal.

I have plenty of opportunities to observe, read, and hear countless reports of similar land disputes in PNG. Many of these have led to tribal wars resulting in loss of life and property, particularly houses, food crops and domesticated animals. Land is the lifeblood of many PNGers. One can throw his life on the line just to protect his land, however mere it may be!

I recently had the good fortune to observe a fascinating avian dispute in the Lakekamu Basin, Gulf Province. It was more like a land dispute with its own threats, abuses and punch-ups. It was equally noisy! This scene involved three species of parrots fighting over nesting holes in a single dead tree trunk. These were the Eclectus Parrot (*Eclectus roratus*), the Greater Streaked Lory (*Chalcopsitta scintillata*), and the Large Fig-Parrot (*Psittaculirostris desmarestii*). The last species is familiar to us but not often thought of as a fierce combatant because of its small size.

I see this battle as the classic model for all battles that have driven and shaped evolution of organisms during the several million years of life on Earth: the survival of the fittest!

The scene of fascinating beauty that greeted our group of young enthusiastic bird-lovers, aspiring biologists and environmental scientists greatly suggested an explosive battlefield involving parrots. Under the expert guidance of Dr. Andy Mack, an established ornithologist and senior ecologist with Conservation International (CI), we had set out to survey birds using the Rapid Assessment Program (RAP) near the newly established Ivimka Biological Research Station. The station is located in the sparsely inhabited Lakekamu Basin, "a 1700 sq. km expanse of lowland alluvial forest" (Beehler et al. 1995). The only access is by light aircraft to Tekadu Airstrip then an adventurous three hours' hike along the historic Bulldog Trail, built during the Second World War. Surrounded by gorgeous rainforest, bird-songs, clear streams, and clean air, one actually feels as though this was a piece of heaven on Earth.

The Lakekamu Basin is a high biodiversity hotspot deemed as a high priority area under the PNG Government's Conservation Needs Assessment (Beehler 1993). Dr. Bruce Beehler and others (1995) recorded 184 species of birds at three locations within the Basin and we recorded 128 species of birds near Ivimka alone during the survey. Also on the two month survey, our team found 22 species of fish representing 14 families, 72 species of amphibians and reptiles, about 128 species of ants belonging to 57 genera in all 7 of the ant subfamilies known to occur in PNG, 24 species of social wasps and bees, 24 mammal species from 8 families, and a total of about 450 plant species from about 123 families. This survey found many species never recorded before from within the Basin or from anywhere else in New Guinea (Mack 1998). The Basin is truly a tropical alluvial heaven blessed with a rich diversity of organisms.

But why did the parrots have to fight over nesting cavities? Were there too many parrots in the Basin and not enough trees suitable for nesting cavities? Was this particular tree strategically located near food sources? Or was it suitably located away from predators? Were the local people over-harvesting dead trees for fuel so that there were not enough suitable trees left for cavity nesting parrots? These are some of many questions that need to be investigated in future research.

The loser in this avian battle for nesting cavities was the beautiful Greater Streaked Lory. The Eclectus Parrot couple did not get physically involved in the battle because, although nesting in the same tree trunk, they were the biggest of the three species and could not be bothered by the other two species. However they did guard their interests; the female sat in the nest cavity while the male watched from a nearby tree branch. The winner, surprisingly, was the smallest of them all - the Large Fig-Parrot! It claimed the two remaining cavities by constantly pecking on the Greater Streaked Lory and annoying it as it unsuccessfully attempted to climb into one of the cavities. Only one couple of Large Fig-Parrots was using the two cavities, but they refused to give away one of the cavities to a species twice their size! The Greater Streaked Lory, poor fellow, had to go look somewhere else to raise its offspring this breeding season.

In Port Moresby where more and more people from across the country are migrating so they will have access to better government services and employment opportunities, population density has skyrocketed in the past twenty years. Land is now an expensive commodity and water and electricity supplies are insufficient as a result of high demands. Consequently, we find our three friends Wally, Bomai and Bal, involved in a confusing tussle over a block of land which the courts are still unable to solve. On the other hand, although there is a low human population density in the Lakekamu Basin, the parrots, and other wildlife, some of which are endemic to the area, are evidently competing for limited breeding space and resources. Industrial logging, mining and the replacement of natural resources by monocultures of oil palm are major threats (Beehler 1993). These fast money-making activities with short-term benefits have already crept well into the Lakekamu ICAD Project's margins. Hunting and gardening have also become increasing threats.

Government bodies and other organizations concerned with the conservation of natural resources should

open their eyes now. Otherwise the idea of shading the area covering Lakekamu Basin on the PNG map as a high priority Conservation Needs Assessment Area is only a farce. FSP, now re-named FPCD, are doing a great job on the ground in the field. Yet they need support technically and logistically. Over to you gentlemen... please help to save the unique wildlife and rainforest of the heavenly Lakekamu Basin.

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Community-Driven Biological Surveys Do Work!

from Larry Orsak

Biodiversity surveys in PNG happen now and again in different parts of the country and it is likely these activities will continue, if not increase, if PINBio gets off the ground. This essay describes a process of planning for biological surveys that seems to avoid a lot of problems that such surveys have faced in the past.

I started thinking about all this after several years of carrying out insect surveys in Madang with a team of "mangi binatang" school leavers, where we did a lot of collecting, mostly of butterflies and other insects. Through all those collections, in many villages, we never had a problem or misinterpretation with the landowners. This was in stark contrast with some experiences I had had with more formal biological surveys, including those arranged by PNG-NGOs. Why the difference?

First, there's now little doubt in my mind that even the 'difficult' landowners we've worked with, base their reactions on fairly simple assessments of our survey work. In essence: what do they feel the researchers are getting out of the survey versus what do they think *they're* getting out of it? Indeed, what DO landowners think they're getting out of these biological surveys? And what do they want to reap? Money? Work? Certainly money and jobs seem particularly prominent anytime I've been involved in big biological surveys. But ironically, when we carried out biodiversity surveys in Madang, apart from the first area we visited, no jobs were given and no money was paid as a result of these surveys. In fact, this was made very clear from the beginning. So what *were* people in the village getting out of what we were doing in those cases? They must have felt they were getting something else out of what we were doing. If not, we most certainly would have faced difficulties.

Let's analyse this further. During these small surveys, what we did never looked like a big production, big money programme. The school leavers did most of the work. Apart from the first survey in the Adelbert Mountains, we never needed carriers or other major village assistance, and we most certainly never used helicopters. Which begs this question again: what were the landowners getting out of our work that made them so receptive to what we were doing? The answer is: Information! This comprised 2 types: (1) information on interesting and unique species we were finding, and (2) information on wildlife (always insects or plants) that people could sell or farm if they wanted. A few times, the information we provided was in response to a specific community need. Invariably, these requests were related to trying to stop unsustainable industrial logging.

Probably the most important key to working collaboratively with communities was that *they* had asked us

to work on their land first, rather than *us* asking them. Sounds like a minor variation, but the results were dramatically different. More villages found out that we offered a service – biological survey. And they must have felt they got significant information out of that service, because they invited us to work on their land, and after the surveys were over, we didn't hear any complaints.

There's an important detail in all this – when I say people in the village asked us to carry out biological surveys on their land, this does *not* mean that we planted the idea into their head, and they responded with their request. *Nogat tru!* That is what the big biological surveys have often done in the name of "letting the people decide." In reality, it's nothing more than passive imposition of the survey on local communities. When that's the strategy, it's pretty hard for people to feel, deep down, that it was really *their* idea to have the scientists come survey. So my "lesson learned" is that there can be *no imposition, either passive or active*, on the communities in arranging biodiversity surveys on their land, if you want the highest guarantee of trouble-free results. I'm not so naïve to think that villages throughout PNG are so enamoured with biodiversity surveys that they'll contact us before we contact them. But we can make contact in a different way than how it tends to be done now. When we were carrying out our small biological surveys along the North Coast and in the Gogol Valley area, we didn't tell people what we were doing directly. Instead, people found out what we were doing through the educational materials we produced, talks at local schools, and via word-of-mouth from both the Papua New Guinean staff at CRI and the villagers we had already worked with. In time, our activities became fairly well known. Even when only a small fraction of people who had heard about our work came to invite us to go to their land, this still resulted in us doing 2-3 local surveys a year. It could have been even more than that, had we made a specific effort to develop this activity.

PNG is becoming increasingly information-starved. Villagers are usually smart enough to figure out if whoever is speaking to them is a much better resource person than themselves, or is someone who knows only a little bit more than they do. The latter, they often dismiss; the former, they are often attracted to. This is how "sources of information" fit into the big picture of PNG today, and shows more clearly how it can fit into the planning of biodiversity surveys.

You'll notice that our experiences in "pleasant biological surveying" concerned small-scale, limited activities. Does this have relevance to doing large-scale, multi-taxa biodiversity expeditions? Can such large-scale events become problem-free simply by being community-driven

mechanisms for acquiring information on the local plants and animals? I don't know. But I do know what 2 prerequisites would be, even for the large-scale expeditions. First, if we truly want biological surveys to be community driven, we can't put our fingers on a map and say, "that's where we will carry out the survey." If we do that, we automatically prevent the result from being community-driven. It's okay to select a general region as the survey focus, but beyond that, flexibility is the name of the game.

The second prerequisite is *time investment*. Researchers involved in biodiversity surveys need to tax themselves a considerable block of time to interact with local communities, both before the survey and afterwards. As a field biologist, you should plan on contributing a "time tax" to...

- get out information to the community related to the wildlife in that area, or on whatever other topics might stimulate community discussion, followed by a community request for a biological survey on their area.
- fully explain, *prior* to the biological survey, what the survey will or will not accomplish. If you don't sleep in the village so that you can story at length with people and provide followup discussions, forget it! If you can't speak either *tok pisin* or the local vernacular, *forget it!* Such things can't be compromised, if you want to effectively interact.
- develop, produce, and disseminate a villager-relevant, villager-absorptive permanent product that describes the results of the biological survey. The technical, English-as-a-first-language reports full of species lists that normally come out of these surveys are virtually useless as a transmitter of information to village communities. *Such reports are no longer sufficient.* A "time tax" block should be devoted to preparing a number of copies of a colour-illustrated, *tok pisin* language (or whatever is the local lingua franca) publication that is laminated or printed in such a way to guarantee a long shelf life, then presented both to local schools/churches, and local communities.
- personally present to the community the basic findings of the survey, after it is finished.

Of all researchers that I've seen working in PNG, overseas graduate students have been the best at paying this "time tax." Most outstanding of all the researchers I've known was bat biologist Nancy Irwin, who devoted 1-2 days per week teaching at local schools. Her "time tax" puts the rest of us to shame! More established researchers tend to spend a lot less time doing anything other than the actual field

research. As a result, increasingly in PNG, as communities become more empowered, they are likely to face problems. Or, if they finish their work and have left before the problems surface, those coming after them will suffer. In essence, if you don't pay the time tax, someone else will suffer the results of your lapse, somewhere down the line.

In biodiversity surveys I've been involved in over the last 5 years, I've noticed that Papua New Guinean biologists largely don't pay a "time tax" in preparing written results of survey but, they are and can be quite effective at doing the other ground work communications with villagers.

The large-scale biological surveys I've been involved in thus far, have been commendable in paying the "time tax" in pre-survey community meetings. But they haven't paid much "time tax" in post-survey meetings, and so far have paid zero "time tax" in preparing village-appropriate written products that describe the survey results. I stand among the accused.

Sometimes even all *that* investment won't stop misinterpretations and unhappiness within the local communities over the survey. Villagers are not only assessing "what we're getting out of the survey," but also, "what they [scientists] are getting out of the survey." They're comparing what rewards they see as going to each party as much as they're looking at the absolute rewards being gained. The use of helicopters automatically suggests considerable benefits accruing to visiting researchers. Fancy foods in the bush, while good for expatriate scientists' morale, adds to the perception. Use these things at your peril. Be forewarned: none of it goes unnoticed by members of the local community!

Biological surveys organised by Papua New Guinean biologists tend to go very smoothly but only *if* that biologist is not only actively involved in the survey work but also pays the pre-survey and post-survey "time tax." Our small-scale surveys in Madang always created an impression that relatively few benefits were going to us. Thus, the "time tax" we had to pay to achieve an acceptable balance was probably a lot lower than would probably need to be expended for larger, more involved expeditions.

To summarise. Paying a "time tax" to local community to explain what we're up to, when we want to carry out biodiversity surveys, seem to bring good payoffs in terms of the cooperation we then get from the communities on whose land we work. Even more importantly, a key to trouble-free surveys seems to be to create a situation where these biodiversity surveys are sensed by landowners as being community-driven, not just community-based. This is easier to do than it might sound, but the strategy has to be carefully implemented, and above all, it takes *time*.

Ah, my appetite is whetted now. When are we going to the bush again?



Marine Wildlife Management Areas on Northcoast Papua New Guinea: a marine conservation initiative by two coastal communities

from Aaron Jenkins

The North coast of Papua New Guinea is home to some of the world's richest coral reef ecosystems and is in serious need of conservation attention. Madang Lagoon, one of the more studied marine systems on the coast, is conservatively estimated to contain as many as 700 species of coral and 1000 + species of reef fishes. An amazing variety of new marine species have been discovered in and around Madang Lagoon in recent years, broadening our knowledge of fishes, soft and hard corals, nudibranchs, flat worms, polychete worms, seastars, featherstars, amphipods, and sea-cucumbers to name but a few. This rich biodiversity is being threatened by overfishing, the use of dynamite and cyanide, pollution, reef removal, sedimentation, and other anthropogenic factors increasing in tandem with a burgeoning population.

Currently the best conservation option available to Papua New Guinean reefowners is the establishment of Wildlife Management Areas (WMA's). These areas are overseen by locally elected committees and designed to promote the wise use and sustainable exploitability of their traditionally owned reefs. WMA's are basically restricted-use reserve areas with locally decided penalties for infractions. A group of local reefowners from Madang Lagoon, after noticing significant declines in local fish stocks, took the initiative and declared one of the islands in the Lagoon (Sinub Island) a Wildlife Management Area (WMA). I helped facilitate this process and collected community data on reef fish populations and benthic cover on Sinub and a control island (Wongad).

In Jan-Feb this year I resurveyed the Sinub Island WMA and Wongad island reef fish populations and benthic cover. Initial signs are positive with increases in fish populations and return of top level predators around the WMA. Significant local changes in fish community diversity and benthos in 1 year reveal the dynamic nature of coral reef ecosystems. I also collected baseline data for a newly

proposed WMA further up the north coast (Simbine Village). A detailed report will be available shortly on these two extremely rich areas of marine biodiversity.

The communities in charge of the two WMA's (Riwo and Simbine villages) are enthusiastic about the protection of their reefs and have been restricting use for about a year now. The completed paperwork for these WMA's has been submitted to the Department of Environment and Conservation for 84 hectares of reef (Sinub, 11.6, Simbine, 72.4). We are hoping for gazettal some time this year.

While marine reserves have gained considerable popularity in the last few decades and are recognized as vital to marine conservation, these areas are frequently being designated without scientific justification or recognition of socio-economically appropriate time scales. A comprehensive integrated conservation and development plan is needed for northcoast PNG. Technical and financial assistance are needed for socio-economic and biodiversity monitoring as well as community education. Another issue of major importance is the diversification of non-destructive economic opportunities. These WMA's could be the first in a network of several marine WMA's along the northcoast of PNG, providing an attractive range of possibilities including conserving biodiversity, protection of sensitive habitats, tourism, refuge for intensively fished target species and even enhancement of fisheries.

It is encouraging to note that a number of communities in Madang Lagoon have approached the Sinub WMA committee chairman in search of advice on how to go about setting up marine WMA's of their own. These two relatively small WMA's are examples of community-initiated marine conservation efforts and are attracting local attention. Hopefully other northcoast communities and supportive conservation NGO's will soon join their efforts.

This work was funded by the New England Biolabs Foundation.

El Nino Drought Destruction: The Death of Papua New Guinea's McAdam National Park

from Larry Orsak & Lawong Balun

We've waited for months hoping to see some article or *any* announcement of a tragic setback in people's uphill efforts to protect Papua New Guinea's remarkable biodiversity for future generations. Nothing apparently has appeared, so we're taking it upon ourselves to announce the death of McAdam National Park in Morobe Province. There are only a handful of national parks in PNG, so the loss is especially painful.

The ultimate cause of death was a massive fire during the El Nino drought months in September 1997. It started on the Bulolo end (from garden-making) and burned for weeks, generally consuming the leaf litter layers. The park is mostly an island of forest today, since much of the surrounding area has already become kunai grassland, coffee plantation, and non-native *Piper* scrub. The view from the Bulolo Gorge shows nearly 100% fire consumption, so the entire park of more than 1000 hectares has apparently been burned. For at least 12-15 years, the park has steadily been encroached by

gardens and coffee plots. These breaks in the canopy undoubtedly helped the flames repeatedly flare up.

Morobe Provincial officials recently embarked on a new tourism promotion. While we've missed any stories about the destruction of one of PNG's few national parks, we've seen several items about how much money tourists could bring to Morobe Province. Klinki Pines are thought to be the tallest tropical trees in the world, and the "world's tallest" of anything is effective tourist bait. McAdam had that potential because it was the best place in the world to see virgin stands of Klinki and Hoop Pine (*Araucaria*). This tourism potential was occasionally tapped by Bulolo's Pine Lodge Resort and Wau Ecology Institute. But it would be an obscenity now for the government or anyone else to promote McAdam National Park as home for the world's tallest tropical trees, for the tallest of them all is probably now a skeleton.

It's not just the world's tallest tropical trees that were special. It was also the fact that these trees were graced by

various species of some of the world's most spectacular birds, including about 10 bird-of-paradise species. And for those with more attention to detail, the bark of those trees were graced by one of the world's most remarkable stalk-eyed flies, a species whose eye stalks were several times the length of the rest of the body. It used to walk with a sense of purpose in shady, moist spots in the park.

The fire has opened fantastic opportunities for garden-making; the final solution to the park is now in progress. At this stage, it would take some effort to restore this protected area and there is no indication at all that any such interest exists. The PNG Office of Environment & Conservation has decentralised all national park management responsibilities and expenses to provincial governments who often have no significant source of revenue themselves. Thus, it can be stated with near certainty that the most beautiful piece of land on the long road between Lae and Wau is gone. But few will notice, since obviously no one cared enough to report the loss in the first place. We'll still be able to see Klinki pines in the backyards of Lae and in the monoculture plantations around Bulolo and Wau. They aren't the world's tallest trees, but we can still say they are, since at least they're the right species. We can see many of the larger creatures of McAdam in zoo cages here and there, so we don't have to think much that a native home is gone. Opportunities for fooling ourselves and denying the tragedy are endless. The zoos containing McAdam birds and animals, the tourism

promotion, and everything else that exploits the park's biodiversity would be great, worth supporting and above criticism *if people had put as much effort into protecting the roots of these benefits*. That is the greatest obscenity – reaping the rewards of McAdam's biodiversity while investing virtually nothing in its protection. We all share in the blame.

And yet, the local people will get one last short-term benefit from McAdam National Park's biodiversity. For the dead and weakened trees are now producing a phoenix of new life – millions of showy wood-boring beetles which are now breeding in the dying wood. The last gasp of McAdam before the termites commence? Hopefully all the village insect collectors around Bulolo will gather up the beetle bounty, and sell them to the nearby Insect Farming & Trading Agency. That way, overseas collectors can buy these beautiful specimens and be in awe of PNG's megadiversity, while remaining blissfully ignorant of the fact that the PNG splendour in their display cases were products of an even greater splendour being destroyed.

The death of McAdam National Park should *never* be blamed on lack of money. Lack of money is a lame excuse, not a valid reason. The real reason for McAdam National Park's loss was disinterest, inattention, and this intriguing prevailing attitude that it is possible to milk a biodiversity cash cow without ever having to feed it.

This biodiversity cash cow is dead. May you linger in our memories, McAdam National Park.

Indo-Pacific Conservation Alliance

from John Burke Burnett

The Indo-Pacific Conservation Alliance (IPCA) is a new non-profit scientific and educational organization dedicated to understanding and protecting the biodiversity of forest, freshwater, and marine ecosystems in the tropical Indo-Pacific region, through effective natural resource management and sustainable economic development. IPCA is based in Washington, D.C. and organized in collaborative association with scientists at The Bernice P. Bishop Museum (Honolulu), the Smithsonian Institution's National Museum of Natural History, and other scientific and conservation organizations. IPCA's directors include Dr. Allen Allison (Bishop), Dr. Bruce Beehler (Smithsonian/Counterpart International), John Burke Burnett (IPCA) and Dr. Dan Polhemus (Smithsonian Institution).

Biological diversity in the Indo-Pacific realm is both unsurpassed in richness and highly threatened. Effective conservation action to mitigate biodiversity loss in the region is rendered problematic by a lack of access to scientific information on species and ecosystems, and by insufficient understanding of how loss of this natural capital threatens a sustainable future for local peoples.

IPCA will fill this crucial gap by linking information and expertise on conservation science and related fields such as resource economics and sustainable agriculture, to the national and local policy contexts in which conservation and development planning decisions are made. This will provide tools to facilitate more practical and sound approaches to field conservation and natural resource management. The goal is to help governments and communities stabilize land-use patterns in a manner that meets both local needs and requirements for adequate preservation of biodiversity. This approach makes use of existing information and expertise that is currently

inaccessible, unapplied, or underutilized, yet critical for conservation to be successful.

IPCA will:

- *Mobilize* existing but currently unavailable scientific data and museum collections information on an area's biotic resources and *link* them to appropriate software and technology (ex. GIS) in order to make them widely available and accessible;
- *Commission and apply* economic resource studies and ecosystem valuation models, biological field surveys, and socio-economic studies to high biodiversity target watershed areas;
- *Empower* local community organizations to better manage their natural resources, through technical training and education;
- *Activate* scientific and other information to facilitate improved management of renewable resources and stabilization of land-use patterns, by enhancing the public policy and spatial planning contexts in which development and conservation decisions are made.

Watersheds form the core of IPCA's approach for focusing conservation action in the field. As discrete biogeographic and spatial units that include an integrated array of forest, freshwater, and coastal ecosystems, watersheds constitute an excellent basis for an environmental management unit that can effectively address various problems of conservation and sustainable development. Economic valuation studies that evaluate the opportunity costs of various land-use options in particular watersheds will be one product that will help catalyze focused conservation action.

IPCA's strategy is designed to maximize efficiencies and coordinate and leverage action to link conservation science with policy and field-based initiatives. In building bridges between science, the private sector, governments, NGOs, and local communities, IPCA hopes to help foster a better balance between development needs and conservation goals.

Contact Information: John Burke Burnett, Executive Director, Indo-Pacific Conservation Alliance, 1514 17th Street, NW, Suite 607, Washington, DC 20036-6224. Tel. 202-265-6529, Fax: 202-265-6529, Email: johnburkeburnett@email.msn.com. Website (available soon): <http://www.indopacific.org>

PNG BioNet/PINBio Workshop Held in Port Moresby

From Larry Orsak, WWF-Kikori Integrated Conservation-Development Project, and Simon Saulei, PNG Climate Change Assistance Project Coordinator

PINBio is an outgrowth of 2 UNDP environmental programmes, the *PNG Climate Change Enabling Activity Project* and the *Biodiversity Conservation and Resources Management* project (out of the old Conservation Resource Centre at Hohola). In 1998, the PNG Dept. of Environment & Conservation submitted a policy to establish and develop a conservation-based industry for PNG. This was approved by the National Executive Council (cabinet) on 5 November 1998 which directed, among other things, that DEC establish and co-ordinate the PNG Institute of Biodiversity (PINBio) and act as its secretariat. On 28-29 January 1999, a meeting was held in Moresby to discuss the PINBio concept and organisation. This was attended by 64 people representing 20 national institutions and government agencies, plus eight overseas missions and donors, and 5 NGOs.

PINBio is a Papua New Guinean-driven effort to strengthen efforts to conserve PNG's rich biological diversity, as well as to develop ways in which PNG can fully benefit from the resource. Under the PINBio framework, joint research activities would be developed in areas of biodiversity inventory, herbal medicine explorations, bio-prospecting, and development of biologically derived products. PINBio would also facilitate the creation of a national policy on bioprospecting. Specifically, PINBio would:

- promote a new awareness of the values of PNG's natural biodiversity; and
- promote the means for capturing those global values at the national and local levels, thus achieving the conservation of natural diversity, while improving the overall quality of life in PNG.

PINBio activities would include:

- Biodiversity inventory, emphasising inventory in protected areas (National Biodiversity Inventory)
- Investigations of sustainable uses of biodiversity, then promoting these uses (through biodiversity

prospecting, and development of carbon sinks/reservoirs)

- Organisation and administration of biodiversity information (Biodiversity Information Management)
- Training and infrastructure enhancement.

One of PNGBio's fundamental goals is to make sure that the information generated by the biodiversity inventories and other programmes reach intended users, and is directed towards improving society's awareness of PNG's exceptional biodiversity and its value. A PINBio Biodiversity Information Outreach Programme would carry out those activities.

With respect to biodiversity inventory, the PNG Forest Research Institute (FRI) and National Agricultural Research Institute (both intact at last look, despite severe government funding cuts) would serve as lead agencies. Collaborators would include UPNG and other relevant universities and colleges, the National Museum, DEC, National Research Institute, and relevant NGOs.

Meeting participants felt that the name PNG BioNet would more appropriately reflect an overall belief that the body should not so much be an organisation itself, but more like a network to coordinate networking between already existing bodies. The PINBio/PNG BioNet entity would have a Program/Project Steering Committee and a Coordinating Committee, to develop the various activities.

Who will fund PINBio/PNG BioNet? Foundations, bilateral/multilateral donors, carbon offset arrangements, and bioprospecting levies and agreements are all possibilities. NEC directed that DEC prepare a 3 year PIP (Public Investment Programme) submission to the government, but current fiscal realities makes this avenue less certain. Donor representation at the meeting included UNDP, WHO, UNESCO, JICA, AUSAID, New Zealand and British High Commissions, and the American Embassy.

New Ramsar site in Papua New Guinea

from Ed Colijn's newsletter, Source: RAMSAR-FORUM, X-URL: http://ramsar.org/w.n.png_site.htm

The Ramsar Convention Bureau is delighted to announce the designation of Papua New Guinea's second Wetland of International Importance, Lake Kutubu (4,924 hectares), the second largest lake in PNG and by all accounts one of the most important recent additions to the Ramsar List. Dr. Iamo Wari, Secretary of the Department of Environment and Conservation, describes Lake Kutubu as "a freshwater lake in limestone karst country in Papua New Guinea's Southern Highlands [at 800m above sea level]. It supports at least 10 endemic fish species, so the new Ramsar Criterion 4 (among others) has been applied in this case. The site boundary matches that of the Lake Kutubu Wildlife Management Area and thus the nomination has the support of

indigenous landowners who derive sustainable livelihoods from the wetlands. The site includes approximately 1,000 hectares of swamp forest, a wetland type subject to international concern during the devastating fires in Indonesia last year. The site boundary includes a large part of the lake's catchment, which at present is mostly under cover of upland tropical forest."

The lake's extraordinary level of endemism (10 of the 14 fish species found there are endemic to the lake itself) exceeds that of any other lake in the entire New Guinea-Australian region. The Ramsar Information Sheet notes that Lake Kutubu was one of the most inaccessible areas in the country, with access only by light aircraft or on foot until

recently. The development of oil and gas in the region has increased access with the development of road links and regular flights. Tourism, recreation, education and research, agricultural production and grazing, water supply, and fisheries production have not been developed -- the wetland area is pristine and the potential for such developments is high. All land in the Lake Kutubu catchment is under customary ownership. The RIS, compiled by staff of the WWF-USA's Kikori Integrated Conservation - Development Project, notes that two major cultural/language groups live in the area: the Foe, about 2,500 people, live in some 12 villages on the shores of the lake, and the Fasu people are spread widely to the west and southwest of the lake and own the land in which the oil fields are located. The villages around the lake

are principally sago subsistence agriculturist, with sago providing 75% of their food volume. There have been several attempts to introduce cash crops, such as cocoa and coffee, but with little success because of limited transportation. With improved transportation, increasing migration into the area may present threats to the ecological character of the site.

The preparations for this site designation benefited from financial assistance from the Ramsar Small Grants Fund and the coordinating efforts of Roger Jaensch, Manager of the Oceania Programme of Wetlands International - Asia Pacific. With the Tonda Wildlife Management Area, PNG's two Ramsar sites now cover 594,924 hectares, and the Convention's 935 sites worldwide cover a surface area of 69,864,955 hectares.

Conservation and Biodiversity Education Programme of the WWF Kikori Integrated Conservation-Development Project

from Larry Orsak

The last few months, we've been setting up a fairly intensive conservation and biodiversity education & training programme up at Moro. It is being designed to have application beyond the project itself, in promoting conservation messages.

The activities revolve around human, hardware and software resources. The hardware and software resources consist of a desktop publishing system, which includes a digital camera, colour printer, good scanner, and internet connection. All WWF staff at Kikori can access images and documents through the Chevron intra-net. The software we use is Kodak Picture Easy for quick processing and improvement of the digital photos, Adobe Photoshop for further image manipulation, and Microsoft Word, Dragon Speak Easy as an excellent voice recognition software that can effectively deal with melanesian tok pisin. It is a particularly intriguing "hi-tech" product, because it might truly become appropriate technology in PNG, where writing and typing is often a significant obstacle to Papua New Guineans getting down creative ideas and information on paper. Adobe Pagemaker serves as our desktop publishing programme.

Our human resources in developing project educational materials consist of the main project staff, as well as mobile team members who liaise directly with local communities of the Kikori Basin. Because desktop publishing in combination with a digital camera and the new, nearly automated flatbed scanners is so easy, a number of Papua New Guinean staff have gotten involved in it. Four staff have participated heavily in writing and translation, including Max Kuduk, Henry Tindipe, Waea Image, and Lawrence Kage. Greg Abare, Waea Image, Henry Tindipe, Joe Regis, and Kongol Pombreol have been most involved in the actual desktop publishing technology.

We'll be concentrating on producing A4 and A3 size posters, short leaflets of no more than 4-6 pages, with copious

colour pictures, and radio programmes as well as cassettes. More than a dozen leaflets have already been produced, both in English and tok pisin. Developing a library of project images that are saved onto CD-ROMs is the planned way of getting both images and actual educational material products out beyond the Project, so they can be utilised by other NGOs in PNG. Adobe Acrobat is the freeware reader that can be used by anyone to access and print Adobe Pagemaker files. The idea is to also put this information on the internet, again to make it widely accessible.

What is particularly good about low volume desktop publishing over commercial printing is that it allows different versions of the educational materials to be quickly and easily produced, to serve slightly different target audiences. Thus, we have some fisheries information that was written up for Lake Kutubu people. That same information could be quickly repackaged by using different pictures and slightly different text, to serve the people of Lake Murray, or other areas. We are strongly emphasising that apart from their use in schools and by NGOs, the printed materials are not to be stand-alone education devises. Instead, they're intended to reinforce and complement educational messages that first are presented verbally to the target audiences. Those verbal messages right now are in the form of village meetings, and we've started to produce and utilise large posters printed from a colour plotter, which contain selected images that also appear in the educational leaflets.

Anything the Project produces is available, on request, by writing either to myself or Greg Abare at this address: P.O. Box 11, Moro, Southern Highlands Province, PAPUA NEW GUINEA. My e-mail is LORS@chevron.com or madangunit@datec.com.pg. Greg Abare's e-mail is ABGR@chevron.com. A listing of materials produced so far is available on request.

Warangoi Landholders Win Victory in Supreme Court

from Max Henderson

Warangoi landholders had a win in the Papua New Guinea Supreme Court this week which will see them finally get the K2.3 million awarded to them by a lower court in 1997. This means that for the first time, Papua New Guinean landholders will be compensated for damage to their land by illegal logging as a result of a National Court order. The

money is damages and costs for trespass and breach of contract and will be paid by two logging companies and the State. It relates to an incident in 1993, when the Minister for Forests issued a timber licence to two logging companies in Warangoi, just one day before the new Forestry Act came into effect. The landholders already held 1999 year agricultural

leases for cocoa production, but the logging companies entered the land without consent, removed timber and caused damage. This was the first major action against illegal logging by the Pacific Heritage Foundation, together with the East New Britain Social Action Committee.

While the National Court found in favour of the landholders in 1997, all defendants appealed. In the Supreme Court this Wednesday, the landholders case was led by Sydney barrister James Sleight, who was assisted by ICRAF lawyer Annie Kajir and Gillian Maki of the Pacific Heritage Foundation. They were instructed by Brian Brunton of Greenpeace Pacific. Supreme Court Judges Salika, Sawong and Injia unanimously ruled that the appeals be struck out. They made this decision on the grounds that there had been an overall delay in bringing on the appeal, that the landholders had suffered prejudice because they did not receive the appellants written submissions as ordered, and that the landholders had been kept out of their judgement.

The Supreme Court decision comes as Papua New Guinea's forests are threatened as never before. The government is trying to open up as many as 17 new concessions and extend existing ones. The PNG Forest Authority has been subject to budget cuts and therefore cannot professionally manage the responsibilities now being placed upon it. Loggers have been given major tax concessions which is seeing profits from the industry leaving the country and leaving landowners with little to show for their destroyed forests.

For more information contact:
Gillian Maki at the Pacific Heritage Foundation
Phone: (675) 9821316, Fax 982-1317
or
Brian Brunton at Greenpeace Pacific
Phone/fax: (675) 3260560

PNG's Biodiversity Conservation Trust Fund Moves Towards Reality

from Larry Orsak

Papua New Guinea is establishing a Biodiversity Conservation Trust Fund. The planning process has already utilised funding from GEF (Global Environment Facility), administered through The Nature Conservancy. PNG staff (notably Wep Kanawi) and overseas personnel facilitated an extensive consultation process with PNG stakeholders, developing broad support for the concept. The Trust is being incorporated under PNG law as a legal entity. It is hoped that this Conservation Trust Fund (CTF) can really get off the ground towards the end of 1999. The goal is to create an endowment of approximately US\$30 million to reliably generate \$1.5-\$2 million in annual conservation grants, although an initial drawdown grant is close to being secured for the Fund's initial operations and grants. There are very promising indications that a large portion of this money can be secured within the next 6 years.

The goal of the CTF is to secure the protection of PNG's biological diversity, through sustainable development activities. This includes the conservation of significant natural habitat areas, and programs that strengthen the capacity of resource owners to conserve and sustainably manage their natural resources, plus projects that increase the database of

information needed to achieve biodiversity conservation (and sustainable resource management) and monitor the status of those activities.

There are strong mechanisms being put in place to ensure that the biodiversity conservation objective is, in fact, being met. There are no illusions that many people and groups will not speak "biodiversity conservation" in the name of getting funds.

A strong relationship between CTF and the Department of Environment & Conservation is envisioned, but CTF will nevertheless be a nongovernmental, independent body. CTF grants and grant-making will take advantage of, and help build the capacity of, NGOs who have a mission and proven experience in carrying out conservation activities in PNG.

The results so far in creating this body have been very encouraging. Fingers crossed, it will really get off the ground within the next year. Wep Kanawi, Director of the The Nature Conservancy's PNG office has played the primary role in getting the entity registered, meeting with stakeholders, and carrying out many other tasks necessary in getting this infrastructure established.

The Butterfly and the Forest in Madang Province, Papua New Guinea

from Hais Wasel

The Ohu Butterfly and Conservation Project is a community based project, based in Ohu Village, on the south coast of Madang Province. The project was started in 1992 after the logging took place in Madang Province in Transgogol region. The project also works closely with the WWF South Pacific Program based in Papua New Guinea. The project focus is to help the community not to lose their traditional knowledge about plants.

The aim of the Ohu Butterfly and Conservation project is to educate the resource owners, community schools, etc. to preserve the flora that butterflies and other insect species use. Most of the resources owners have very little knowledge about their own forest. Since the logging took place, this project has helped the community nearby to understand the importance of their forest so they are not foreigners in their own forest.

Ohu Butterfly and Conservation has run several workshops such as Butterfly and Conservation Management Training. It has also assisted three villages along the Mount Adelbert range in Madang to preserve traditional knowledge and useful plants in that area.

Ohu Butterfly and Conservation project has done research in useful medicinal plants and is helping the community to write a Vernacular Dictionary on useful medicinal plants of the Ohu people. This medicinal plant Dictionary will in the future help the community in using plants to treat minor illnesses.

The Ohu Butterfly and Conservation project has educated the local community on how to manage the forest and earn income from the forest. Projects like butterfly farming and eco-tourism will help the community to protect their forest and use the forest in a sustainable way to earn

income. The medicinal plant dictionary will help local people if the drug supply in hospital aid posts runs out. Thanks to the WWF in providing technical support and assisting Hais Wasel

in carrying out the research project on medicinal plants in Ohu Village, Madang Province, Papua New Guinea.



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!

Plant Research by Biodiversity Research Pty Ltd

from Topul Rali

Biodiversity Research Pty Ltd conducts original research on the chemistry of the flora of PNG. In 1997 and 1998 we have conducted a thorough inventory of plants within the Central Province of PNG and have built a data base of plants which we have collected and identified. At present this stands close to 700 species. Some of these species are very rare and are located only in particular habitats.

In the past two years we have witnessed logging companies who have completely destroyed virgin forests. We are convinced that soon there will no longer be any forests left in Central Province and that all forests in PNG are threatened. This is contrary to beliefs that forests in PNG are still intact. We think otherwise from widespread ecological damage we have observed in the field.

In our floral inventory of Central Province, we have also documented plants used as traditional medicines and have mapped current plant distribution. We have photographed all plant species encountered, over 1000 plant photographs with their habitats. In collaboration with UKFSP, we have tried to

develop alternative incomes for rural people of PNG by looking specifically at non-timber products. Our research currently is looking at several plant species as potential sources of new plant oils. Research is currently in place where we hope to have each oil profiled through GC-MS studies and toxicity studies conducted in collaboration with overseas universities.

We are happy to conduct research for or in collaboration with others in the following fields of interest: medicinal plants; herbal products and cultivation; plant seed collection and analysis; plant leaf and bark oil analysis; the chemistry of butterflies, frogs, leeches, snakes and spiders; and conservation strategies by education to villages where unique flora and fauna are found. We would love to hear from researchers who may want to collaborate with us. Please contact Dr. Topul Rali, Biodiversity Research, P.O. Box 24, University Post Office, NCD, PNG, phone/fax: (675) 326-0104.

A Rare Birdwing Butterfly Common in the Kikori Basin

from Larry Orsak

The tailed birdwing *Ornithoptera meridionalis* is considered a rare butterfly indeed, an opinion reinforced by its placement a couple years back on the U.S. Fish & Wildlife Service's Endangered Species List. Yet, in the Kikori Basin of PNG, we are getting a different picture.

The Basin is characterised by its huge expanse of nearly impenetrable limestone karst country. PNG's only known oil fields have created a few intrusions, and there are scattered villages. We've found *O. meridionalis* in nearly all these places from near sea level to at least 600 metres elevation. However, it is also found off the karst, on clay soils on the lower slopes of giant extinct Mt. Bosavi, where the butterfly's caterpillars utilise a distinctive, apparently undescribed *Aristolochia* foodplant species.

The butterfly is never common, but it is repeatedly, almost regularly picked up at these sites. Why so widespread here? The answer probably lies in the microhabitat typically preferred by *Aristolochia* foodplants of the rarer birdwings. They're found in relatively undisturbed forest, where the canopy tends to be high. But the foodplant vines grow in well-drained spots in otherwise wet country (on top, or slightly downslope from razorback ridges are especially favoured). The particular foodplant individuals favoured by

egg-laying females are invariably the shorter ones growing in recently formed tree gaps. In essence, shorter foodplant vines produce more prolific growth in a given period than taller ones, and growth is most prolific when the vine's head is in the sun, and it's feet are wet. Tree gaps are ideal for fitting the sun requirements – not big holes in the forest (because then the microhabitat starts becoming too sunny and open for these birdwings, and sometimes for the foodplants too). In other words, these rare butterflies breed in disturbed sites situated in the midst of undisturbed forest. Sound like a rare combination? That's the source of birdwing rarity!

The karst country of the Kikori Basin is dramatic terrain from the air. Innumerable hillocks rise from the landscape almost in checkerboard fashion, punctuated by steep dropoffs and sinkholes. In short, it's the kind of natural habitat where you're likely to find myriad tree gaps and well drained slopes perfect for prolifically growing *Aristolochia* vines.

Most of the Kikori Basin is covered by forests undisturbed by human inhabitation. But *O. meridionalis* has been found most commonly around Mt. Bosavi in areas occupied by higher-than-normal human populations. People have gravitated to these slopes because of the more fertile soil.

You can see the dramatic change in gardening activities from the air as the soils change. Yet, the gardens even there tend to be patchy and small, thus possibly increasing, rather than reducing, microhabitats ideal for *Aristolochia* growth and rare birdwing breeding.

Let me offer a statement that sounds like heresy from a conservationist lepidopterist: Logging – small-scale, community-based wokabout somilling – might actually favour these birdwings. The critical factor, of course, would be the size of the tree gaps.

It is virtually guaranteed that you'll see *O. meridionalis* at many sites in the Kikori Basin. But try and collect a specimen, and you'll be lucky indeed to net even a

low-flying female. Hence, specimens in museum collections are scarce, which in turn, leads to assessments of extreme scarcity. Toss in an awareness that industrial logging is rampant in PNG's lowlands, and *O. meridionalis* easily looks like a species that could be headed for extinction.

But it's not. Despite the concern of the U.S. Fish & Wildlife Service, here on the ground we know that *O. meridionalis* in PNG flies nearly everywhere *polis motu* is spoken, from Gulf Province to the southwest, arching over and all the way around the eastern end of the island, then on the north side going at least as far west as the Mt. Victory area of Collingwood Bay (Oro Province). But getting specimens to verify its abundance... aye, that's the rub!

New Fish Discoveries in Lake Kutubu

from Aaron Jenkins

The full paper from this abstract should be published soon. References are included for anyone interested. Congrats to WWF-Kikori and Wetlands International for obtaining Ramsar designation for Lake Kutubu. It is truly a natural resource of global significance. These recent discoveries add to an already impressive list of endemic fishes from the lake.

Jenkins*, A.P., Buston, P.M.** and G. R. Allen*. 1998. Two new species of freshwater gudgeons (Eleotrididae: *Mogurnda*) from Lake Kutubu, Papua New Guinea. Ichthyol. Explor. Freshwaters. (in press)

*Department of Aquatic Zoology, Western Australian Museum, Francis Street, Perth, WA 6000, Australia.

** Cornell University, Section of Neurobiology and Behavior, Seeley G. Mudd Hall, Ithaca, NY 14853, USA.

The eleotrid fish genus *Mogurnda* Gill contains small benthic fishes inhabiting a variety of freshwater environments in Australia and New Guinea. The group contains at least five Australian representatives and sixteen species that have thus far been recorded from New Guinea (Allen, 1989; Allen, 1991; Allen & Hoese, 1991; Allen & Renyaan, 1996; Allen & Jenkins, 1998). Nearly half the New Guinea species are endemic to Lake Kutubu, Papua New Guinea (Allen & Hoese, 1986). The remaining species are widely distributed throughout most of the mainland, but appear to be absent on the Vogelkop Peninsula at the western extremity of the island.

This paper describes two new species of *Mogurnda* that were collected by the first and second authors on a recent expedition to Lake Kutubu, Papua New Guinea. *Mogurnda maccuneae*, new species, is most similar to *M. furva* (Allen & Hoese 1991) also from Lake Kutubu. *Mogurnda maccuneae* differs primarily in having a more deeply concave snout profile, a duck-bill shaped mouth, pale grey body coloration and fewer vertebrae. *Mogurnda mosa*, new species, is also closely allied to *M. furva* (Allen & Hoese 1991) and also has major vertebral, body shape and coloration differences. It has a body depth at anal fin origin that is greater than the body depth at pelvic fin origin which differs from all, as yet described, members of the genus. Coloration differs from

other members of the genus with dark brown to dusky on dorsal two thirds of body and pale tan on ventral third with faint midlateral stripe from upper edge of operculum to base of caudal fin.

A revised key is presented for the seven species of *Mogurnda* endemic to Lake Kutubu.

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Bird's Head Plant Project

from Marcel Polak

In the framework of the flora project in the northeastern Bird's Head, a joint project of Bogor, Manokwari and Kew herbaria, a plant collections database for that area was established by Bob Johns and his colleagues from Kew. Information stored in the database concerns collector(s), collection number, identification, locality, and altitude (for part of the collections). The data were brought together in two checklists (Coode et al. 1997, Johns et al. 1997), which were distributed to the relevant herbaria. In the framework of the ISIR Programme at Leiden University (see NG TE & BD

issue 5) , a similar database was constructed for collections from the central Bird's Head (mainly Ayamaru Lakes area). In the course of the botanical diversity subproject, Marcel Polak and his colleagues Wim Vink, Ed de Vogel, and Colin Ridsdale have integrated the databases, added many data, and carried out thorough editing (still on its way). Now the database contains some 18.500 records and covers the entire Bird's Head peninsula (the surrounding islands have been excluded because of time constraints). By the end of this year the data should be available for those interested. People

interested in obtaining information / data now, should contact Marcel Polak (see below). All those specialists who haven't been consulted for up to date information concerning collections belonging to their group(s), and are willing to share their knowledge, please get in touch with Marcel Polak.

For more information, contact: Marcel Polak, Rijksherbarium / Hortus Botanicus, ISIR Programme, P.O.Box 9514, 2300 RA Leiden, The Netherlands, Tel: + 71 5273585, Fax: + 71 5273511, Email: polak@rhbcml.leidenuniv.nl

References:

- Coode, M.J.E., S.C. Hinchcliffe & J. Marsden, 1997. The study of the flora and vegetation of the N.E. Kepala Burung (Vogelkop), Irian Jaya, Indonesia.
- Johns, R.J., P.J. Edwards & D. Kowalska, 1997. Checklist of flowering plants. Royal Botanic Gardens Kew. A checklist of the ferns, fern allies, and Gymnosperms of the N.E. Kepala Burung (Vogelkop), Irian Jaya, Indonesia. Royal Botanic Gardens Kew.

Harpy Eagle Report from the Field

report compiled from verbal communication with Mark Watson by Andrew Mack

Mark Watson, an Oxford student under supervision of Ian Newton and Chris Perrins, is in Papua New Guinea beginning a study of the New Guinea Harpy Eagle (*Harpyopsis novaeguineae*). He has been working in the Crater Mountain Wildlife Management Area in conjunction with the Research and Conservation Foundation and is also surveying Mt. Giluwe and sites on the Huon Peninsula. His 1998-1999 field session will be the preliminary for a longer term project if adequate nesting pairs can be located.

So far his fieldwork has been very successful given the rarity and secretiveness of this New Guinea endemic. Mark has located two territorial pairs and found inactive nests. Some nest sites have old bones under them, enabling identification of past prey items. Mark has recorded vocalizations, including some that have not previously been described in the ornithological literature. Additional potential nest sites are currently under investigation and it is anticipated nesting activity will begin sometime in the second or third quarter of 1999. If so, the project will be well-positioned to gather some of the first field data on one of the world's most poorly-known large raptors.

The field study Mark is developing is a collaborative effort with the landowners of the Crater Mountain WMA. Landowners are sharing their extensive knowledge of these birds, a species that figures prominently in traditional lore throughout New Guinea. The long-term project he plans to

develop will utilize Trained Local Observers from the Crater area to monitor nests throughout the 2600 km² management area simultaneously. Mark will oversee the work of the research team to ensure data are collected in a standardized manner.

Besides the value of this study to basic knowledge of New Guinea's unique biota, it is hoped the study will have direct conservation applications. Harpy Eagles are hunted in many parts of New Guinea for traditional purposes. With better natural history data, it might be possible to manage forests and Harpy use in ways that will ensure the long-term viability of Harpy populations. This study is sponsored financially by The Peregrine Fund and the San Diego Zoological Society. The Research and Conservation Foundation in Goroka is a partner in the study and provides considerable logistical support.

[Note from A. Mack: Mark has amassed a great deal of new data on this species from a wide range of sources. If readers of this note have unpublished observational data they would like to contribute to the study they should write to Mark Watson, c/o RCF, P.O. Box 1261, Goroka, EHP, PNG. Data on when active nests have been observed, diet, behavior, etc. can all prove useful in filling-in the many gaps in our knowledge. Any contributions will be properly acknowledged in publications of research findings.]

New Owlet Nightjar!

from Thane Pratt

Look for the following paper soon in the Auk journal:

Pratt, T. K. 2000. Evidence for a previously unrecognized species of owlet-nightjar. Auk. In press.

Crater Mountain update

from Janine Watson

The Crater Mountain Wildlife Management Area (CMWMA) is a spectacular destination which boasts incredibly diverse flora and fauna and ranges in elevation from 50m on the Purari River to 3 100m on the summit of Crater Mountain. The CMWMA is situated in the Highlands of PNG and spans remote regions of three provinces: Eastern Highlands, Simbu and Gulf Provinces. Large areas of undisturbed bush are home to a number of species of which very little is known, making Crater Mountain an exciting research destination.

Research carried out across the area is an integral part of the Crater Mountain Integrated Conservation and Development (ICAD) Project which is managed by the Research and Conservation Foundation of PNG (RCF). The RCF is a conservation organization that recognizes the beauty

of the ICAD process in achieving conservation in PNG and therefore RCF strives to link Conservation and Development in all the activities it undertakes. A number of achievements in this area have been made over the past months and following is a brief outline of these:

Research Internships begin

In November 1998 the first round of Field Research Internship recipients arrived in the CMWMA. Six students from 2nd and 4th year Biology at the University of PNG completed five weeks of training in ecology and biological field studies. Three students worked with Paul Igag in Haia and three with Robert Bino in Maimafu to learn more about methods utilized by RCF Field Staff to collect biological data. The training also involved Paul and Robert working closely with the students in designing and collecting field data for

their individual projects of interest. RCF plans to continue this activity in the future so that more students have the opportunity to receive this type of practical field training which is essential for them to become effective biologists working for conservation.

Crater Mountain Surveys complete

The last in a series of five CMWMA Biological Surveys were completed earlier this year. The surveys spanned a range of elevations within the CMWMA and were conducted in order to find out which plants and animals live in the different habitats and elevations of the area. The surveys were largely conducted by Andy Mack, ecologist with Conservation International (CI); Deb Wright, Ecologist with the Wildlife Conservation Society (WCS); and David Bickford, WCS sponsored scientist. Representatives from other projects such as the Lakekamu Basin ICAD Project also took part at various stages in order to exchange techniques with principal researchers. The surveys were also an important training opportunity for both UPNG students and CMWMA Trained Local Observers (TLOs) who attended various surveys to gain further skills such as trapping, mist-netting, setting up transects and preserving specimens. The surveys covered a range from 120 metres at Soo'bo near Wabo to 2,800 metres at the summit area of Crater Mountain. The results will represent a significant contribution to the understanding of the distribution of plants and animals in Crater Mountain.

Locals take on frog monitoring

In a ground-breaking research initiative landowners from the CMWMA are independently taking on a long-term frog monitoring project. This is the first time that landowners without formal training have been engaged to independently take on such a project. After providing almost 4 years of training and guidance, David Bickford, WCS sponsored Principal Researcher on the project, is confident that with his departure from PNG landowners will be capable of independently conducting the long-term monitoring. This project, conducted in and around the Wara Sera Research Station located in the center of the CMWMA, is a definite success for the ICAD (Integrated Conservation and Development) process. The project, which will continue for many years, will provide important scientific data essential for conservation while providing both skill training and a small long-term income for the local people. David also points out that those involved have developed an understanding of the

importance of such research to conservation across the board. "The locals involved have grown to realise how frogs are at risk due to issues such as global warming and pollution and they now understand how frogs can act as an indicator of the general state of the environment," he explained. A research roster has been drawn up for the next 13 months and a lead local researcher allocated for one week each month. The surveys will provide an index which scientists and landowners alike can use to compare over time.

Crater Mountain Landowners study tour

A group of landowners from the CMWMA recently took part in a study tour designed to shed more light on the research process. A number of Crater Mountain Landowners have had many years experience working with visiting scientists in the field, however, many do not understand the overall process – why do scientists take specimens and where do these specimens end up? Dr Deb Wright, WCS Ecologist, organized the tour for 17 landowners from the villages of Herowana and Maimafu. "While conducting research in the CMWMA many landowners have asked me what scientists do with the specimens they take. Many believe we sell them for high prices," explained Deb. The landowners began their tour in Lae where they visited the Rainforest Habitat and the Forestry Research Institute (FRI) where guest speakers such as Robert Kiapranis, Head of the Herbarium Section, explained how specimens are preserved and showed landowners FRI's large collection of plants which includes orchids from Haia and Herowana. The tour then continued on to Port Moresby where Landowners visited the UPNG Natural Resources Center which has plant, mammal, and insect collections from across PNG. The afternoon was then spent at the National Museum looking at the natural history displays and going 'behind the scenes' to the collections area. Here participants saw various collections including birds, mammals and frogs from the CMWMA. Again, this helped convince landowners that specimens taken are not sold by the researcher but preserved for future generations to see. The final day of the tour was spent at the RCF Goroka office where staff spoke about their particular roles within the organization. John Ericho, General manager, spoke to landowners about various matters such as fund raising and responded to landowners' questions on strategies to deal with the current mining threats particularly in the Maimafu area.

Update on Tree Kangaroo Project

from Lisa Dabek

Principle Activities/Accomplishments of 1998

- Population census of Goodfellow's and Doria's tree kangaroos using Distance Sampling in the Crater Mountain Wildlife Management Area.
- Continued population census of Matschie's tree kangaroos using Distance Sampling at the Dedawang Field Site and in other areas in the Keweng 1 region of the Huon Peninsula.
- Landowner interviews in the Teptep and Nankina regions of the Huon Peninsula.
- Continued Matschie's tree kangaroo food plant collection at the Denawang field site on the Huon Peninsula.
- Evaluation of additional potential field sites in the Keweng 1 region on the Huon Peninsula.
- Evaluation of a potential field site in the Cromwell Mountains on the Huon Peninsula.
- Further discussions with landowners about Matschie's tree kangaroo distribution and natural history.
- An agreement with other landowners from Keweng 1 village on the Huon Peninsula to designate portions of communal lands as no-hunting zones for research and to conserve wildlife.
- A pilot test of Trailmaster® wildlife monitors and cameras at the Dendawang site on the Huon Peninsula and at Crater Mountain.
- Participation in the C.B.S.G. Tree Kangaroo CAMP/PHVA Workshop in Lae.

For more detailed information, please contact Dr. Lisa Dabek and William Betz at the Conservation and Research

Department, Roger Williams Park Zoo, 1000 Elmwood Avenue, Providence, Rhode Island 02907 USA, email:

ldabek@worldnet.att.net

Orchids on CD-ROM

from Ed de Vogel

André Schuiteman and I (Ed de Vogel) are involved in a project to put all New Guinea orchids on CD-ROM. An identification key to the 133 genera and diagnoses of all genera are ready, and an interactive multi-access key is in the process of construction. Towards the end of the year we plan to have a CD-ROM ready with this information and in addition diagnoses of all sections, scores of pencil drawings, colour illustrations and a checklist of all species (about 2500). The project has funding for 3 years by the Cheng-Kim Loke Foundation in Singapore, The Papua New Guinea Biological Foundation and Australia Pacific Science Foundation in

Australia, the Van Tienhoven Foundation in The Netherlands, as well as from the National Herbarium of The Netherlands and ETI, University of Amsterdam. Royal Botanic Gardens in Kew and Edinburgh Botanic Gardens are partners in the project. Ten of the best photographers of Southeast Asian orchids have already agreed to use this programme to publish their colour slides. Our main goal is to put all existing knowledge on New Guinea orchids together. Currently this knowledge is scattered in more or less obscure to virtually unavailable publications. More news will follow towards the end of this year.

Designation of the National Capital District Botanic Gardens as a Scientific Authority on Orchids

from Larry Orsak

The following information appeared in the new PNG orchid journal *Lasianthera*, Volume 1 (1) 1996: On 26 June 1996, then Conservator of Fauna, Iamo Ila, declared as part of the overall CITES convention implementations, that the National Capital District Botanical Gardens be declared a PNG Scientific Authority on orchids. In this capacity, the gardens would serve as the official undertaker of the identification of specimens, and the

institution would liaise with overseas scientists and institutions in this capacity. Overseas orchid researchers can apparently also become associated (for their research visas) with the National Capital District Botanic Gardens (however, Forest Research Institute is still the institution with which most overseas botanists affiliate in obtaining their research visas to do field work in PNG).



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.

Codan Radio for Sale

HF SSB transceiver, type 8525 R.F.D.S., 52 channels of 99 hooked up. In new condition with full literature, wiring, etc. Give away cash price of Australian \$1500. Complete automatic tuning antenna system series 8550, requiring repair,

and its controller unit given freely to purchaser. Please contact: Cliff and Dawn Frith at P.O. Box 581, Malanda, QLD 4885 Australia, fax: (61) 70-96-8316.

Radio Transmitters for Sale (164 mHz):

from Ross Sinclair

We have 30 unused two-stage radio transmitters with mortality switches (lateral mercury switch) set to 15 hours inactivity on backpack mounts for birds (3mm harness tubes front and rear) for sale. The transmitters are set at a slow pulse rate of 30ppm with a life of 16 months (the mortality switch changes the pulse to 60ppm). They have antenna length of 220mm and 1.5/46-9 gauge, with C7PN batteries. They have frequencies of MXT 164.020, 040, up to 164.600. They were built by Sirtrak Ltd., Private Bag, Goddards Lane, Havelock North, New Zealand, phone: (64) 6-877-7736, fax: (64) 6-877-5422 (attention Kevin Lay quote job number 9804044). They cost NZD\$278.40 each.

We also have 2 unused single-stage 40 ppm CE399 cell non-latching transmitters for gluing onto chicks (wt 1.9 g). Frequencies also in the 164 mHz range.

We have a half-whip antenna with 3db gain and coaxial cable (parts CD28-41-50 and MBC-00-51) with BNC connector for Telonics TR2 receivers. It cost NZD\$115 and was also built by Sirtrak.

If anyone is interested in this telemetry gear, please make an offer to: George Rankine, WWF, P.O. Box 21, Gizo, Solomon Islands, phone: (677) 60-191, fax: (677) 60-294, email: wwf@welkam.solomon.com.sb

Papua New Guinea Biological Foundation Grants

from Barry Filshie

GRANTS

PNGBF invites applications for grants for the support of projects in any branch of biology that will be of value to the Papua New Guinea.

GUIDELINES FOR INTENDING APPLICANTS

- Preference is given to projects that are likely to produce benefits within a few years.
- PNGBF makes grants on an annual basis and is unlikely to make grants for a project for more than three years.
- Assistance is usually in the form of grants-in-aid for operating expenses, including the purchase of equipment and the salaries of national assistants. Grants are not usually made for the salaries of research workers, for studies leading to a higher degree, or for overseas travel.

APPLICATION PROCEDURES

If you work for an organisation, e.g. University, Government Department, Institute or Company, your application should be forwarded through the administrative head of the organisation whose approval will be required before a grant is made.

The cover sheet for your application should show:

- Your name.
- Name of organisation and department, if applicable.
- Title and expected duration of project.
- Total sum requested (in Kina or Australian dollars).
- Personnel to be engaged in project, whether to be supported by the grant or not.
- A brief outline of the project (length not to exceed the remaining part of the page).

The application proper should contain the following information:

- A short description of the project, its practical objectives, methods to be used, and expected application of the results.
- An itemised dissection of the grant sought for each year of the project, subdivided into salaries, equipment, maintenance and travel at current costs. The Foundation makes supplementary grants to cover inescapable cost increases during the life of the project.
- A summary of expected expenditure on the project from other sources.
- The names of two referees who can comment on your experience and capacity to carry out the project.
- Your qualifications, a list of any publications or other evidence of capacity to carry out the project and a short list of key references in the proposed field of investigation.
- The names of other granting bodies (if any) to which this or related projects have been submitted and the results of such applications.

REPORTS

Recipients of grants are required to make concise reports on their projects to the Foundation during and at the end of the support period.

ADDRESS FOR APPLICATIONS

Applications should be forwarded to:

Dr. B. K. Filshie, Executive Secretary Research Committee, Papua New Guinea Biological Foundation, PO Box 164 Curtin ACT 2605, Australia, Fax: (02) 6281 3593

Ralph Brown Expedition Award

From Ed Colijn's newsletter

The Royal Geographical Society (with The Institute of British Geographers) is calling for applications for the 1999 Ralph Brown Expedition Award. This annual award of GBP15,000 is given to the leader of a research expedition concerned with rivers, coastal or inland wetlands or the shallow (less than 200m) marine environment. The project can be located anywhere in the world and should be of value to the host country and, where possible, to the local community. The applicant may be from any nation, and strong preference will be given to teams including host country nationals. The deadline for applications is 30 November.

The RGS also administers:

- the Whitley Award Scheme for Nature Conservation with GBP100,000 granted annually to "long-term and

pragmatic" conservation projects. Application deadline 30 November.

- expedition research grants of 500 to 3000 GBP for expeditions with members over 19 and with at least one third of them British (deadlines 25 January and 25 August).
- the Gilchrist expedition award for expeditions with mainly British members - a biennial award of GBP10,000 in even numbered years (application deadline - early 2000).

For detailed guidelines and how to apply please email Louise Rettie at grants@rgs.org

Request for information on Long-beaked Echidnas and bush meat surveys

Larry Perry would like to know if anyone has undertaken bush meat surveys, and if so, how they worked or didn't work out, and what results are likely to become available from them.

He would also like to start a register of all sightings or confirmed reports of *Zaglossus* (Long-beaked Echidna) in

NG. Perhaps anyone that has a report could contact Larry with as much or as little detail as they have.

Please contact Larry Perry at 62 Calvert Street, Marrickville NSW 2204, Australia, email:

lperry01@postoffice.csu.edu.au

Help Needed to Identify Mammal Hair

Anibal Rodriguez, Department of Anthropology, American Museum of Natural History, is searching for an expert whom he may contact for assistance in identifying

mammal hair from his New Guinea artifacts. Please contact Clare and Anibal at: bone@amnh.org

1999 Nov/Dec Christensen Biological Training Course open for Applications

During this year's course, students will act as a proposal review committee and will select the best of a group of sample proposals. Students will then become researchers and will carry out these field projects, analyze the data, and write up the results with help from the instructors. Students will then become the proposal board again and will evaluate project success.

The course will be held during the University break from mid-November to mid-December 1999 and it will be conducted at the Wara Sera Research Station in Crater Mountain. Instructors will include Andrew Mack, Debra Wright and Ed Scholes. All expenses including transportation from Port Moresby will be paid. Student performance will be graded and there is no tuition.

The course is open to all third and fourth year students in biology, forestry, or environmental sciences at

University of PNG, PNG University of Technology, University of Goroka, and Bulolo University College or to graduates from these programs. It is also open to people in biology-related professions.

To apply for this course, please send your name, address, phone and fax numbers, your college transcript, at least one letter of recommendation from a faculty member, and a letter stating why you wish to take the course and what you plan for your future career.

Send these application materials no later than **15 August 1999** to: Andy Mack, P.O. Box 15, Weikert PA 17885 USA, fax: (1) 570-922-1152. Please send a second copy of your application to: Deb Wright, P.O. Box 1261, Goroka EHP, Papua New Guinea, fax: (675) 732-1123. Questions can be emailed to: ddwright@ptd.net or amack@ptd.net

Christensen Fellowships for Honors Thesis Field Work

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

To apply, please send your name, address, phone and fax numbers, your college transcript, at least two letters of recommendation from faculty members, and a letter or

proposal with ideas for your research. We will help you with your proposal and with your research, but we do expect you to come up with an initial idea.

Please send these application materials no later than **1 July 1999** to: Andy Mack, P.O. Box 15, Weikert PA 17885 USA, fax: (1) 570-922-1152. Please send a second copy of your application to: Deb Wright, P.O. Box 1261, Goroka EHP, Papua New Guinea, fax: (675) 732-1123. Questions can be emailed to: ddwright@ptd.net or amack@ptd.net

Slugs Needed

from Lester Seri, PNG DEC

Gary M. Barker is working on the molecular systematics of Athoracophoridae (leaf-veined slugs) and needs specimens from the field for his research. He has been working on a revision of the family for the past 15 years with museum material and with his field collections from New Zealand and Australia. This group of molluscs is restricted to the SW Pacific (NG and off shore islands, eastern Australia,

New Caledonia, Vanuatu, New Zealand and subantarctic islands). If you can help, please contact Gary Barker, Scientist/Programme Leader, Biodiversity & Conservation Group, Landcare Research New Zealand Limited, Private Bag 3127, Hamilton, New Zealand, phone: (64) 7-838-4441, fax: (64) 7-838-4442.

Symposium on the Biogeography of Southeast Asia 2000

from the Fauna Malesiana Newsletter and Ed Colijn's electronic newsletter

This symposium on all aspects of the biogeography of Southeast Asia will be held 4-9 June 2000 in Leiden, the Netherlands. The symposium aims at an integration of geological and biological information. There will also be sessions on applied biogeography (biodiversity information, conservation, etc.) and on methodology in geological, paleontological and biogeographical research.

A flyer is available from the address below. The final announcement, with forms for registration and abstract, will

appear in September/October this year. If you are interested contact:

Dr. Rienk de Jong
National Museum of Natural History
Department of Entomology
P.O. Box 9517
NL-2300 RA Leiden, the Netherlands
phone: (31) 71 568 76 52
fax: (31) 71 568 76 66
e-mail: jong@naturalis.nnm.nl

Seeking Job

Simon Jennings is an experienced conservation project manager looking for short term consultancy or long term project management work. His experience to date has been in tropical forest and savanna systems in Africa, but he is

interested in gaining experience in other regions, particularly in south east Asia. If you are aware of any opportunities, please check his career summary at

<http://www.jenningserv.freesev.co.uk> and contact him at simon@jenninsev.freesev.co.uk

DEC phone numbers and contacts

from Larry Orsak

The PNG Department of Environment & Conservation is now housed at Somare Haus, fully occupying the 4th-7th floors. Somare Haus is located across the street from the National Archives and next door to the old Australian High Commission building. All this is only about 5 minutes walk from where they were located, in the Central Government Office Building.

Mick Raga is the man to seek for approving wildlife export permits.

As with all PNG government departments, there is an expected massive retrenchment of staff, and the Department, sadly, is likely to be much shrunken by the end of this year.

DEC's mailing address is the same: P.O. Box 6601, Boroko, NCD 111

Here are some new phone numbers and faxes for DEC people:

DEC Fax: (675) 325 0187

DEC Secretary (Dr. Wari Iamo): (675) 325 0180

Director, Nature Conservation: (675) 325 0195 (Mick Raga reachable at this number)

Director, Corporate Service (675) 325 0184

Director, Field & Supplies Services: (675) 325 0198

Blue Sea Charters

from Lorraine Dempster

Blue Sea Charters is a new dive liveaboard business operating out of Madang. MV Moonlighting, a Grand Banks 50, is run by Lorraine Dempster and Tony Collins. Both operators are keen on reef conservation and biodiversity sustainability. Charters for scientific studies on reef and marine life are very welcome and are given special rates. MV Moonlighting sleeps 6 guests in one twin-berthed cabin with

private ensuite and two twin-berthed cabins with share facilities. She has a very comfortable saloon with TV, video and stereo. A desalinator provides unlimited fresh water. For further information please contact Blue Sea Charters, PO Box 494, Madang, PNG. Ph: +61-145130880, Fax: +675-8522300
Email: info@blueseacharters.com

Lasianthera-- The Scientific Journal for the Orchidaceae of Papua New Guinea

from Larry Orsak

Lasianthera, which commenced publication in 1996 and now has 3 issues to its credit, reports on original research within the family Orchidaceae, with emphasis on the orchids of PNG and surrounding regions. Disciplines covered in published papers are systematics, physiology, cytology, anatomy and morphology, physiology, pollination biology, ecology, hybridisation and evolution. The price for one

volume, purchased at the National Capital District Botanic Gardens shop, is K5 (about US \$2.25), but overseas subscriptions undoubtedly run more. For more information, please contact the editor:

Mr. Justin Tkatchenko, Curator of the National Capital Botanical Gardens, P.O. Box 7270, Boroko, NCD, Papua New Guinea.

Internet Sites to Check Out:

The PNG National Research Institute is now online at <http://www.nri.org.pg>. This site lists lots of publications that are available for order and tells you how to obtain a database of all social and environmental research conducted in PNG. It also has PNG research visa information.

The web site at <http://www.bishop.hawaii.org/bishop/natsci/ng/ngecol.html> now includes over 1000 images of New Guinea insects as well as information on entomological and ecological research in New Guinea.

The website at <http://rulrhb.leidenuniv.nl/> for Rijksherbarium / Hortus Botanicus at Leiden University has an online searchable catalogue of type specimens including digital images of the herbarium sheets. This site also lists publications available from Leiden and includes the Table of Contents from 1996 onwards for *Blumea*, a botanical journal with articles about NG plant taxonomy and geography. In August 1996 a 2 year project started aimed at preparing a computerised catalogue of the type specimens present in the Dutch herbaria at Amsterdam (AMD), Leiden (L), Utrecht (U) and Wageningen (WAG). The latter three herbaria are currently involved in a merger to form the National Herbarium of the Netherlands. Besides data entry, the project also included making digitised images of the type specimens. At the onset of the project the number of type specimens kept in these herbaria was estimated at 55,000, most of which (45,000) are being kept in Leiden. The project was funded by the Netherlands Organisation for Scientific Research (N.W.O.: Nederlandse Organisatie voor Wetenschappelijk Onderzoek) and carried out in collaboration with ETI, the Expert Center for Taxonomic Identification. The project not only aimed at making a computerised catalogue but also making the catalogue available for access via internet and offering the possibility to distribute (part of) the data on CD-ROM. At present the database holds information for about 40,000 collections. Just take a "walk" at the website yourself, and try some searching options. Take a look at what *Rhododendron wrightianum* from New Guinea looks like, for example, or which type collections from a particular area we have (there are some 2.500 entries for PNG).

The website at <http://www.rbgsvd.gov.au/rbg/sci/systematics/ngkeys/ngintro/keys.htm> is a compilation of existing keys to NG plant groups including ferns, dicots, monocots, orchids and gymnosperms. All families are not yet complete, but the site is extremely useful. This citable website is authored by Barry J. Conn and Robyn M. Barker.

The Mamberamo Information Center (MIC) in Jakarta, Indonesia, will keep you informed of the latest developments on various activities of the Mamberamo River Project in Irian Jaya, Indonesia. Check out their home page: <http://www.geocities.com/TheTropics/Island/4175/>

Lorraine Dempster has left Unitech and has started a dive liveaboard charter business in Madang. If anyone wants to carry out a study on the reefs on the north coast of PNG, consider contacting Lorraine (see directory). Check out her web sites at <http://www.blueseacharters.com> or <http://www.diveworld.com/boats/pacific/papua/moonlight/home.htm>

Interactive key of bornean trees: <http://django.harvard.edu/users/jjarvie/English/Borneng.htm>

Bibliography of entomological papers for PNG: <http://www.bishop.hawaii.org/bishop/natsci/ng/NGBIB3.htm>

Keys to plant families through flowers: <http://biodiversity.uno.edu/delta/angio/www/intro.htm>

Virtual library for botany: <http://www.helsinki.fi/kmus/botflor.htm>

Interactive keys to Australian tropical rainforest flora:

<http://www.latrobe.edu.au/www/botany/rainforests/keys/keys.html>

Biodiversity and biological collection server: <http://biodiversity.uno.edu/>



Research Stations

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!

Mahonia Na Dari Research and Conservation Centre

from Mr. Shannon Seeto

Background Information

New Britain is a mountainous volcanic island located NE of the island of New Guinea, its 36,520 sq km extending in a 490 km crescent. The island is generally about 50-80 km wide, with the highest point at 2,438 m and is divided into two provinces. The narrow Willaumez Peninsula projects out over 50 km due North on the West New Britain mainland. Kimbe Bay is a large, wide bay located on the North coast of New Britain adjacent to this Peninsula.

In 1994 the West New Britain Provincial Government and the West New Britain Tourist Bureau requested The Nature Conservancy to conduct a Rapid Ecological Assessment (REA) of the marine environment of Kimbe Bay, with a focus on coral reefs. The Government and Bureau are committed to a program of sensitive and sustainable tourism development for the province and recognize the need for a long term management plan for the reefs and waters of Kimbe Bay, which have high potential for marine based eco-tourism.

During the REA 78 sites were visited. The total fish fauna was estimated to consist of 860 species. Three new fish species were detected, a wrasse (*cirrhilabrus*) and two gobies (*trimma* and *vanderhorsita*). 345 species of stony corals (excluding soft coral, gorgonians, and black coral) were also counted.

Kimbe Bay is an ideal location for long range biological studies. Due to the combination of a rich and varied fish fauna, well developed coral reefs and spectacular, relatively pristine marine environment, Kimbe Bay is deserving of special conservation efforts in order to ensure the long term protection of its unique ecosystem.

Overall, Kimbe Bay supports a diverse range of coral reef habitats with stunning topography in many places. Many of the offshore reefs rise up from very deep waters and

visibility is often very good. There was a high to very high level of coral cover and/or coral diversity on many reefs.

The principle objectives of the research and conservation center are to increase our understanding of the marine ecosystem throughout Papua New Guinea and foster sustainable use of our marine resources. While providing a basis for conservation of the coral reefs ecosystem in Kimbe Bay and other areas throughout Papua New Guinea.

In conjunction with the research and conservation center, we will provide support for development of resource management at a local level, and also meet the needs for a village based education program with initiatives in all aspects of environmental science.

General Information

Mahonia na Dari Research and Conservation Center is a small permanent facility set in attractive park like grounds on the western shore of Kimbe Bay. The facility is 10 km from Kimbe, the provincial capital of West New Britain, and is adjacent to the world famous Walindi Plantation dive resort. The facilities consist of a main building containing office, library/lounge, microscope/dark room, dry lab and wet lab with limited air conditioning and two two-bedroom accommodation units sleeping up to 8 guests. Additional accommodation is also available on demand. Two 5.5 m Yamaha skiffs with twin outboard motors and radios are available for research work.

Reservations

All intending research scientists and guests are requested to provide the following information in order to confirm a reservation at the research facility:

- Name
- Contacts: Phone, fax and e-mail
- Institutional affiliation
- Proposed dates of arrival/departure

- Intending researchers are required to provide a short 1-2 page proposal of the research they intend to do, particularly where this involves manipulative research
- Each proposal will be assessed preceding confirmation of the reservation.

These details may be faxed to The Manager, Mahonia na Dari Research and Conservation Center, Fax (675) 983 5638.

Permits and Visa Requirements

All persons intending to carry out research work in Papua New Guinea are required to obtain a research permit and visa through their local Papua New Guinea Embassy or consulate. Additional information on the process for obtaining visas and permits is available from the Manager if needed.

Bench Fees

Researchers are advised that the cost of using the facility is US\$40.00 per day/per person. Inclusive services are:

- Full use of facility with the exception of phone/fax, which is on a user pays basis. Standard Telecom charges apply and all phone/fax accounts are payable on departure.
- Use of a research vessel and boatman free of charge to and from the many nearshore reefs between Numando and Sandy Island, approximately 5 km along the coast in both directions. Researchers who wish to do research beyond this area will need to negotiate additional fuel costs with the manager, which will be payable on departure.

Tanks, weights and air will be available for researchers at the facility.

Arrival Procedure

All researchers will be met at the Hoskins airport providing flight details have been given when booking the research station. The trip from the airport to the research station is approximately 40 minutes drive.

Accommodation and Meals

Accommodation will be on a shared room (2 persons) basis (unless single rooms are available) in a self-contained, well appointed bungalow constructed in traditional style. Each

bungalow has two bedrooms, lounge, kitchen, bathroom, laundry and deck. Cooking and laundry facilities are provided, as is bed linen and cooking and eating utensils. Meals can be catered by arrangement with the Manager, or researchers can eat at nearby Walindi Resort.

Health

Malaria is common in this area and it is advisable to consult your doctor and take the recommended medication required for your stay in the country.

Diver's insurance is strongly recommended because there is no decompression facility in Papua New Guinea. We *highly recommend* (if diving) to use DAN (Divers Alert Network) insurance which includes Medivac and travel insurance and is a proven performer in PNG.

Diving and flying: We strongly recommend that researchers plan a 24 hour interval between diving and their departure by air.

Power

Electric power at the center is 240 volts provided through diesel generators. It is advisable to bring a quality surge protector for laptop computers or other electronic devices.

Payment:

Method of payment to the research center is by cash, credit card, traveler's cheque, or prior-approved university purchase order. All other options must be approved at time of booking.

Additional Information

For additional information please contact The Manager, Mahonia Na Dari Research And Conservation Center:

Mr Shannon Seeto

Manager, Mahonia na Dari

P.O. Box 4

Kimbe , West New Britain

Papua New Guinea

Ph (675) 983-5441 Fax (675) 983-5638

E-mail 104471.3713@compuserve.com

About Using Research Facilities at Jais Aben in Madang

from Charlie Edmunds, Manager for Jais Aben Resort, PO Box 105, Madang, Papua New Guinea, Phone: (675) 852-3311, Fax: (675) 852-3560, E-mail: jaisaben@global.net.pg

Jais Aben is administering the buildings that formerly housed the Christensen Research Institute and is offering services to aid researchers.

Visas – at this time we assist with the arrangement of research visas through the University of Technology in Lae. This may not always be the case, however, and intending visitors should check well in advance.

Confirming the present cost structure; all figures are in PNG Kina, Per Day:

- Accommodation, Single or Twin Share, Per Person (room cleaned daily, sheets changed weekly, towel changed every third day) 30.00
- Meals, Three Meals Daily, Per Person 30.00
- Bench Fees, Lab Access, Power, Equipment as available, Per Person 15.00 (max 30.00 per day for research team)
- Boats, Open Banana Boat, Fuel, Boat Crew 25.00
- Dive Tanks, Airfills, Weights, Per Person (see notes) 16.00
- Dive Equipment, BCD, Regulator, Gauges, Per Person (see notes) 40.00

- Town Trips, Scheduled Times, Return, Per Person 6.00
- Field Trips, As Arranged, Return, Per Person (see notes) 6.00

Notes:

Diving

* Service provided is compressed air diving only. Enriched air or mixed gases diving is not provided.

* Dive charges include K1.00 per airfill levy paid to Melanesian Hyperbaric Services for access to the recompression chamber and hyperbaric treatment if required. The chamber is based in Port Moresby and has a permanent staff on hand for immediate response. Payment of this levy is compulsory with all airfills. The levy goes towards the cost of maintaining the chamber only, it does not indemnify against costs of using the chamber, nor evacuation costs.

* Divers must provide proof of competency and have relevant medical/evacuation insurance. I suggest that divers inquire with DAN (Divers Alert Network) about membership & DAN's "Travel Assist" plan. The organization provides worldwide coverage for divers.

* Equipment hire does not include mask, snorkel or fins. Charges for equipment hire are per day, however, there is a maximum of three chargeable days per month for continuous long-term hire, and conditions apply.

Field Trip Transport

* Transport needs may differ for each individual. The fee indicated is an example of the cost researchers should expect for transport to and from a research site close to the resort, e.g. Kau Conservation Area, Baitabag. The transport schedule would be as required for the individual.

Meals

* Meals may be provided in the research facilities or via the Jais Aben Resort restaurant at our discretion. Visitors with special dietary needs should advise us in advance.

Waiver

* Services and costs of services may change from time to time without notice. Responsibility to obtain up to date information rests with the intending visitor.

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 and Malaria.

Typhoid Fever

source: <http://www.cdc.gov/ncidod/diseases/bacter/typhoid.htm>

Typhoid fever is a life-threatening illness caused by the bacterium *Salmonella* Typhi. Typhoid fever affects about 12.5 million persons each year. Typhoid fever can be prevented and can usually be treated with antibiotics.

How is typhoid fever spread?

Salmonella Typhi lives only in humans. Persons with typhoid fever carry the bacteria in their bloodstream and intestinal tract. In addition, a small number of persons, called carriers, recover from typhoid fever but continue to carry the bacteria. Both ill persons and carriers shed *S. Typhi* in their feces (stool).

You can get typhoid fever if you eat food or drink beverages that have been handled by a person who is shedding *S. Typhi* or if sewage contaminated with *S. Typhi* bacteria gets into the water you use for drinking or washing food. Therefore, typhoid fever is more common in areas of the world where handwashing is less frequent and water is likely to be contaminated with sewage.

Once *S. Typhi* bacteria are eaten or drunk, they multiply and spread into the bloodstream. The body reacts with fever and other signs and symptoms.

Where in the world do you get typhoid fever?

Typhoid fever is common in most parts of the world except in industrialized regions such as the United States, Canada, western Europe, Australia, and Japan. It is common in New Guinea.

How can you avoid typhoid fever?

Two basic actions can protect you from typhoid fever:

- Avoid risky foods and drinks.
- Get vaccinated against typhoid fever.

It may surprise you, but watching what you eat and drink is as important as being vaccinated. This is because the vaccines are not completely effective. Avoiding risky foods will also help protect you from other illnesses, including diarrhea, cholera, dysentery, and hepatitis A.

"Boil it, cook it, peel it, or forget it"

- If you drink water, buy it bottled or bring it to a rolling boil for 1 minute before you drink it. Bottled carbonated water is safer than uncarbonated water.
- Ask for drinks without ice unless the ice is made from bottled or boiled water. Avoid popsicles and flavored ices that may have been made with contaminated water.
- Eat foods that have been thoroughly cooked and that are still hot and steaming.
- Avoid raw vegetables and fruits that cannot be peeled. Vegetables like lettuce are easily contaminated and are very hard to wash well.
- When you eat raw fruit or vegetables that can be peeled, peel them yourself. (Wash your hands with soap first.) Do not eat the peelings.
- Avoid foods and beverages from street vendors. It is difficult for food to be kept clean on the street, and many people get sick from food bought from street vendors.

Getting vaccinated

If you are in a country where typhoid is common, you should

consider being vaccinated against typhoid. Visit a doctor or travel clinic to discuss your vaccination options.

Remember that you will need to complete your vaccination at least 1 week before you travel to an infected area so that the vaccine has time to take effect. Typhoid vaccines lose effectiveness after several years; if you were vaccinated in the past, check with your doctor to see if it is time for a booster

Typhoid fever vaccine information

Vaccine name	How given	Number of doses necessary	Time between doses	Total time needed to set aside for vaccination	Minimum age for vaccination	Booster needed every
Ty21a (Vivotif Berna, Swiss Serum and Vaccine Institute)	1 capsule by mouth	4	2 days	2 weeks	6 years	5 years
ViCPS (Typhim Vi, Pasteur Merieux)	Injection	1	-	1 week	2 years	2 years
Inactivated Typhoid Vaccine (Wyeth-Ayerst)	Injection	2 (1 if it is a booster dose)	4 weeks	5 weeks	6 months	3 years

vaccination. Taking antibiotics will not prevent typhoid fever; they only help treat it.

The chart below provides basic information on typhoid vaccines that are available.

What are the signs and symptoms of typhoid fever?

Persons with typhoid fever usually have a sustained fever as high as 103° to 104° F (39° to 40° C). They may also feel weak, or have stomach pains, headache, or loss of appetite. In some cases, patients have a rash of flat, rose-colored spots. The only way to know for sure if an illness is typhoid fever is to have samples of stool or blood tested for the presence of *S. Typhi*.

What do you do if you think you have typhoid fever?

If you suspect you have typhoid fever, see a doctor immediately.

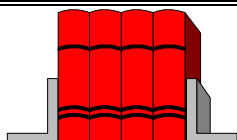
You will probably be given an antibiotic to treat the disease. Three commonly prescribed antibiotics are ampicillin, trimethoprim-sulfamethoxazole, and ciprofloxacin. Persons given antibiotics usually begin to feel better within 2 to 3 days, and deaths rarely occur. However, persons who do not get treatment may continue to have fever for weeks or months, and as many as 20% may die from complications of the infection.

Typhoid fever's danger doesn't end when symptoms disappear.

Even if your symptoms seem to go away, you may still be carrying *S. Typhi*. If so, the illness could return, or you could pass the disease to other people. In fact, if you work at a job where you handle food or care for small children, you may be barred legally from going back to work until a doctor has determined that you no longer carry any typhoid bacteria.

If you are being treated for typhoid fever, it is important to do the following:

- Keep taking the prescribed antibiotics for as long as the doctor has asked you to take them.
- Wash your hands carefully with soap and water after using the bathroom, and do not prepare or serve food for other people. This will lower the chance that you will pass the infection on to someone else.
- Have your doctor perform a series of stool cultures to ensure that no *S. Typhi* bacteria remain in your body.



Available Publications and Items

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

From CSIRO Publishing, P.O. Box 1139, Collingwood, Victoria 3066, Australia, phone: (61) 39-662-7666, fax: (61) 39-662-7555, email: sales@publish.csiro.au

Hyland, B.P.M., T. Wiffin, D.C. Christophel, B. Gray, R.W. Elick and A.J. Ford. 1998. Australian Tropical Rainforest Trees and Shrubs: An interactive identification system for trees and shrubs. CD-rom and manual. ISBN: 0-643-06047-2. Aust\$130.00.

From Conservation International, 2501 M Street NW, Suite 200, Washington D.C., USA, phone: (1) 202-429-5660, fax: (1) 202-887-0193, web: www.conservation.com

Mack, A. L. (editor) 1998. Rapid Assessment Survey of the Lakekamu Basin, Papua New Guinea. RAP Working Paper No. 9. Conservation International, Washington, D.C. 187 pp.

From IIED at email: bookshop@iied.org for 25 pounds, or from National Research Institute by contacting Publication Sales Coordinator, National Research Institute, P.O. Box 5854, Boroko NCD 111, Papua New Guinea, fax: (675) 326-0213, email: nri@global.net.pg for 36 Kina:

Flier, Colin and Nikhil Sekhran. 1998. Loggers, Donors and Resource Owners: Papua New Guinea Country Study That Works for Forests and People. IIED Series 2. NRI Monograph No. 34.

Also From NRI by contacting the Publication Sales Coordinator listed above:

van Helden, F. 1998. Between Cash and Conviction: The Social Context of the Bismarck-Ramu Integrated Conservation and Development Project. NRI Monograph No. 33. 45 Kina.

Filer, C. (editor). 1997. The Political Economy of Forest Management in Papua New Guinea. NRI Monograph No. 32. 39.50 Kina.

Larmour, P. (editor). 1992. Customary Land Tenure: Registration and Decentralisation in Papua New Guinea. NRI Monograph No. 29. 12.75 Kina.

From Michael Schneider, Bulolo University College, P.O. Box 92, Bulolo 423, Morobe Province, PNG, phone: (675) 474-5226, fax: (675) 474-5311, email: mfschneider@hotmail.com

Schneider, M.F. 1999. Entomology- A Textbook for Students, Agriculturalists and Foresters in Papua New Guinea. Bulolo University College, Training Manual No. 19. ISBN 9980-85-259-3. 312 pages, 11 colour plates.

Features of this book:

- the first Entomology book produced for PNG
- addresses students as well as professionals of science, agriculture and forestry
- most examples taken from PNG's insect fauna
- more than 60 pages on insect orders
- includes eleven colour plates
- more than 220 figures illustrating the text
- further reading suggestions for each chapter
- includes about 350 references
- more than 1,200 terms explained in the glossary
- cross-references and index included for the reader's convenience
- comprehensive list of forest insect pests of PNG
- includes appropriate, low-ecological impact control measures for forest insect pests

Schneider, M.F. 1999. Key to Forest Insect Pests of Papua New Guinea. Internet version and interactive CD-ROM. ISBN 9980-85-260-7.

Dobunaba, J. and M.F. Schneider. 1999. Portraits of PNG's Insects- A Pictorial Catalogue. Internet version and interactive CD-ROM. Contains approximately 3000 brilliant images of insects of various orders. ISBN 9980-85-261-5

From the Conservation Resource Centre (now disbanded) and available from the PNG Climate Change Enabling Activity Project, P.O. Box 165, Waigani, NCD, PNG:

Saulei, S. M. & J.-A. Ellis (1998) The Motupore Conference: ICAD Practitioners' Views from the Field. A Report of the Presentations of the Second ICAD Conference, Motupore Island (UPNG), Papua New Guinea 1-5 September 1997. Dept. Environment & conservation, Papua New Guinea/United Nations Development Programme PNG/93/G31, Waigani, NCD. 224 pages.

From the Centre for Conservation Biology, University of Queensland, Australia 4072 Australia, phone: (61) 7-3365-2527, fax: (61) 7-3365-4828, email: ccbinfo@ccb.uq.edu.au

Conservation outside Nature Reserves. \$(A)40, 540 pages. This book is the end product of a conference in 1996 to explore ways of protecting biological diversity while achieving primary production. Contributions examine economic incentives to landholders, stakeholder empowerment, government policies, legislative and planning initiatives and the on-ground ecological aspects of maintaining viable ecosystems. All chapters have been peer reviewed.

Conservation through Sustainable Use of Wildlife. \$(A)50, 362 pages. This book is the end product of a conference in 1994 that explored the practicalities of this topic. In addition to peer reviewed scientific chapters, the outcomes of the workshops and plenary sessions are included to allow judgements and opinions to be placed on record.

From the Forest Biology Branch of the PNG Forest Research Institute, P.O. Box 314, Lae, Morobe Province, PNG:

Henty, E.E. 1969. A Manual of New Guinea Grasses. Botany Bulletin No. 1. K5.00 (in stock).

Womersley, J.S. 1976. Plant Collecting for Anthropologists, Geographers and Ecologists in Papua New Guinea. Botany Bulletin No. 2. K5.00 (in stock).

Hoft, R. 1992. Plants of New Guinea and Solomon Islands. Dictionary of the Genera and Families of Flowering Plants and Ferns. Revision of Botany Bulletin No. 7. K15.00 (in stock).

Henty, E.E. and G.H. Pritchard. 1982. Weeds of New Guinea and their Control. Botany Bulletin No. 7. K9.00 (in stock)

Percival, M. and J.S. Womersley. 1975. Floristics and Ecology of Mangrove Vegetation of Papua New Guinea. Botany Bulletin No. 8. Soft Cover K8.00 (in stock) Hard Cover K12.00 (in stock).

Stevens, P.F. and J.F. Veldkamp. 1980. Report of Mt. Sucking in 1972. Botany Bulletin No. 10. K2.50 (in stock).

Verdcourt, B. 1979. A Manual of New Guinea Legumes. Botany Bulletin No. 11. K20.00 (in stock).

Henty, E.E. 1980. Harmful Plants in Papua New Guinea. Botany Bulletin No. 12. K9.00 (in stock).

Peekel, P.G. Translated by E.E. Henty. 1984. Flora of Bismark Archipelago for Naturalists. K25.00 (in stock).

Borrell, O.W. 1989. An Annotated Checklist of the Flora of Kairiru Island. K25.00 (in stock).

Havel, J.J. 1975. Training Manual for the Forestry College. Volume 3. Forest Botany Part 2. Botanical Taxonomy. K10.00 (out of stock).

Department of Forest. 1964. Manual of the Forest Trees in Papua New Guinea. Part. 4. Anacardiaceae. K2.50 (in stock).

Womersley, J.S. and J.B. McAdam. 1975. The Forests and Forest Conditions of the Territories of Papua New Guinea, Volume 1. K2.50 (in stock).

Womersley, J.S. 1978. Handbooks of the Flora of Papua New Guinea, Volume 1. K10.00 (in stock). (Volumes 2 and 3 available from Melbourne University Press)

Eddowes, P.J. 1977. Commercial timbers of Papua New Guinea. (Properties of wood was the old version, it has been

- re-edited and is now Commercial timbers) K20.00 (in stock).
- Oteng-Amoako, A.A. 1990. Macroscopic Wood Identification Manual for Papua New Guinea Timbers. K8.00 (out of stock).
- Hawkins, B.T. and A. Ray. 1975. Light Timber Framing for Papua New Guinea (CSIRO). K5.00 (in stock).
- Forest Products Research Centre, P.O. Box 1358, Boroko, PNG. 1982, 4th Edition. Manual of Rural Wood Preservation. K5.00 (in stock).
- Forest Products Research Centre, P.O. Box 1358, Boroko, PNG. A review by Peter Lattery. 1978. Pole Buildings in Papua New Guinea. K5.00 (in stock).
- Zieck, J.F.U. 1975. Copal Industry in Papua New Guinea. K5.00.
- Phillips, F.H. and A.F. Logan. The Pulping and Papermaking Potential of Tropical Hardwoods. IV. K4.00 (out of stock).
- Zieck, J.F.U. 1983. Massory Bark in Papua New Guinea. K4.00 (out of stock).
- Powter, A. 1976. Papua New Guinea Shake and Shingle Manual. K4.00 (in stock).
- Levy, C.R. 1975. The Introduction of Wood Preservation into Papua New Guinea and it's effect on the Rural Economy. K4.00 (out of stock).
- Gamsler, M. and C.H. Hardwood. Charcoal Production and Use in Papua New Guinea. K5.00 (in stock).
- Oteng-Amoako, A.A. 1992. Photomicrographic Atlas of Papua New Guinea timbers with IAWA Microscopic Hardwood Identification Features. K10.00 (in stock).
- Gardner, M.J. and A. Tagamasu. Report on the Seminar on the Development of Coconut Timber Use. K5.00 (in stock).
- Bolza, E. and N.H. Kloot. 1976. Properties and uses of 175 Timber Species from Papua New Guinea and West Irian. K5.00 (out of stock).
- Bolza, E. 1975. The Mechanical Properties of 81 New Guinea Timbers. K5.00 (in stock).
- Levy, C.R. 1975. The introduction of Wood Preservation into Papua New Guinea and it's effect on the Rural Economy. K5.00 (in stock).
- Konabe, Chawi and Cherla B. Sastry. 22-26 July, 1991. Proceedings of National Rattan Workshop held at PNG Forest Institute LAE Papua New Guinea. K15.00 (in stock).
- Also timber hand samples on sale for K1.00.

From The Information Officer, WCMC, 219 Huntingdon Road, Cambridge CB3 0DL, UK, Tel: +44 1223 277314, Fax: +44 1223 277136, Email: info@wcmc.org.uk

MacKinnon, John, editor. Protected Areas Systems Review of the Indo-Malayan Realm. The World Bank, 1997 ISBN: 962-85152-1-7. Prepared on behalf of the World Bank by The World Conservation Monitoring Centre and the Asian Bureau for Conservation (ABC).

This report documents the growth and changing character of the protected areas systems of the Indo-Malayan Realm over the ten year period 1986-1996 and updated the previous review published by IUCN 1986. In addition, the report provides specific suggestions on how the present approaches and initiatives relating to protected areas management could be improved throughout the Realm.

The report makes specific suggestions at the country and bio-unit levels on priorities for future investments and institutional development. A wide range of national and international interventions are needed. Perhaps most importantly, the report highlights the urgent need to develop the human resources capacity to implement and manage national protected areas systems. Program to provide practical training and equipment for on the ground managers and scientists are the utmost priority.

The report is available for no cost other than that to cover the postage and packaging. The costs associated with this are: United Kingdom £5, EC Airmail £6, Airmail (not EC) £15, Surface (not EC) £6

Scientific Literature



If you haven't sent your publication list in yet (your papers about New Guinea), please send these citations to Deb so we can include them in a future issue. It doesn't matter if you have one paper, or 30 papers-- the rest of us want to know about it! We would really like to know what you have found out about New Guinea; that is the purpose for this newsletter—to share information. If you have more than one page of citations, please send your list on disk (preferably 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).

Raffles Bulletin of Zoology (Journal of SE Asian Zoology)

X-URL: <http://www.science.nus.edu.sg/%7Ewebdbs/Raffles/index.html>

Blumea (Journal of SE Asian Plant Taxonomy and Geography)

X-URL: <http://rulrhh.leidenuniv.nl/www/pubs/blumea/index.html>

Chris Austin-- Publications on reptiles

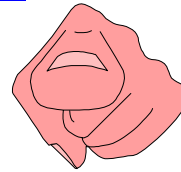
Austin, C.C. 1999. Lizards took express train to Polynesia. Nature 397:113-114.

Saint, K.M., C.C. Austin, S.C. Donnellan and M.N. Hutchinson. 1998. C-mos, a nuclear marker useful for squamate phylogenetic analysis. Molecular Phylogenetics and Evolution 10:259-263.

Austin, C.C. 1998. Phylogenetic relationships of *Lipinia* (Scincidae) from New Guinea based on DNA sequence variation from the mitochondrial 12S rRNA and nuclear c-mos genes. Hamadryad 23:93-102.

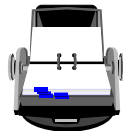
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- Homburger, D. G. 1980. Functional morphology and evolution of the feeding apparatus in parrots, with special reference to the Pesquet's Parrot, *Psittichas fulgidus* (Lesson). Pp. 471-485 in Conservation of New World Parrots, R. F. Pasquier (editor). International Council for Bird Preservation Technical Paper No. 1. Smithsonian Institution Press, Washington D. C.
- Schodde, R. and L. Christidis (conveners). 1991. Origins and evolution of the Australasian avifauna. Symposium 2. Acta XX Congressus Internationalis Ornithologici. New Zealand Ornithological Congress Trust Board, P.O. Box 12397, Wellington, New Zealand.
- Hope, G. 1998. Early fire and forest change in the Baliem Valley, Irian Jaya, Indonesia. Journal of Biogeography 25: 453-61
- Hedemark, M., S. Hamilton and W. Takeuchi. Report on the First Bismarck-Ramu Biological Survey with Sociological and Logistical Comments. PNG Biodiversity Conservation and Resource Management Programme.
X-URL: <http://ww3.datec.com.pg/crc/ramu/>
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- Miedema, J., Ode, C. and Dam, R.A.C. (eds) 1998. Perspectives on the Bird's Head of Irian Jaya, Indonesia: Proceedings of the Conference Leiden, 13-17 October 1997. Rodopi (the publisher), Amsterdam.
- Aplin, K. 1998. Vertebrate Zoogeography of the Bird's Head, Irian Jaya, Indonesia. Pp 803-890 in: Miedema, J., Ode, C. and Dam, R.A.C. (eds) 1998. Perspectives on the Bird's Head of Irian Jaya, Indonesia: Proceedings of the Conference Leiden, 13-17 October 1997. Rodopi, Amsterdam.
- Pasveer, J.M. and Aplin, K. 1998. Late Pleistocene to modern vertebrate faunal succession and environmental change in lowland New Guinea: Evidence from the Bird's Head of Irian Jaya, Indonesia. Pp. 891-930 in: Miedema, J., Ode, C. and Dam, R.A.C. (eds) 1998. Perspectives on the Bird's Head of Irian Jaya, Indonesia: Proceedings of the Conference Leiden, 13-17 October 1997. Rodopi, Amsterdam.
- Hall, R. and J. D. Holloway (eds). 1998. Biogeography and Geological Evolution of SE Asia. Backhuys Publ., Leiden. ISBN 90-73348-97-8 (422 pp.). Dfl 280.00; US\$148.00
- Boomgaard, P., F. Colombijn and D. Henley (eds). 1998. Paper Landscapes. Explorations in the environmental history of Indonesia. Verhandelingen KITLV 178. ISBN 90-6718-124-2 (425 pp.). Dfl 60.00; email: kitlvpress@rullet.leidenuniv.nl



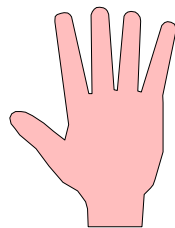
We Want You!

To make this newsletter more useful, we want YOUR contribution! Please send changes or additions to the mailing list. Please send a paragraph to introduce yourself and tell us what your interests are. Please send a list of any publications you have about New Guinea. Please send a paragraph about any recent research or work you have done in New Guinea. Please send editorials, letters, announcements, etc. In other words, send anything of interest to your fellow researchers and conservationists-- share with us! We want this to be YOUR newsletter!-- Think of us as just the compilers! (Send all this good stuff to Deb Wright at the addresses/numbers listed on the first page of this newsletter)



Our Current Mailing List

Included with this issue of the Digest, you will find the 1999 mailing directory. We hope this will facilitate communication between all of us. Please help us by sending the names and addresses of anyone else who would like to get a copy of the Digest. Also, please check your address, phone, fax, and e-mail. If anything is wrong, please drop us a line so we can correct it. If you would rather not receive the newsletter, please let us know so we can save the paper and postage. Thanks!



Goodbye until next time!

Lukim yu bihain!

Sampai jumpa lagi!