The New Guinea Tropical Ecology and Biodiversity Digest

April 1998 Issue 5

(please send all contributions and corrections to: Deb Wright, P.O. Box 15, Weikert PA, 17885-0015, USA; fax: (1) 717-922-1152; email: "ddwright@ptd.net"-- thanks!)

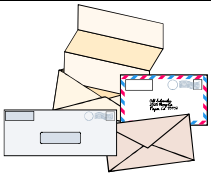
This issue we want to thank Conservation International and the Wildlife Conservation Society for providing xeroxing and mailing support -- this is much appreciated!

If you want to receive this newsletter on e-mail instead of in the mail (you could print out a hard copy and it would save us xeroxing and postage) (it is formatted in Word 97 for Windows 95) please send us a note saying that this is alright and include your current e-mail address. Thanks! Hopefully we will soon have the newsletter at a web site so you can look it up on the internet!

If you need back issues of the Digest, please let us know and we will mail them to you.

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!

Major Forest Fire Destruction in PNG During Drought

From Larry Orsak

Out-of-control fires were burning forest on the slopes of Mt. Giluwe and Mt. Wilhelm during late October into November 1997. Other major fires were outside of Mendi and above Tari, all related to the severe drought. There were also major fires at Mt. Susu Preserve (near Bulolo) and McAdam National Park (between Bulolo and Wau). Large areas of forest are likely to be destroyed before the drought ends, particularly in the highlands.

The effect on plant and animal populations is uncertain. The fires are undoubtedly worse than such a severe drought would have triggered in previous years, because there are more cleared margins next to forest, which favors the fire spreading into more forest, including normally unburnable closed canopy moist forests. For example, the Chevron pipeline right-of-way, although mostly abandoned with the vegetation being allowed to grow back, represents a new forest intrusion, and numerous fires have been set along this course. Once kunai grassland begins creeping up mountains, subsequent fires, through the updrafts they create, sweep into the undisturbed forest above them, and can completely destroy it. An example of this occurred during the 1987-88 drought, when a fire above Wau Ecology Institute and Kunai Creek, on the slopes of Mt. Kaindi, permanently destroyed a large tract of forest upslope.

New Guinea Conservation Projects

Updates anyone??

Fauna Malesiana Foundation

taken from the Fauna Malesiana newsletter

Fauna Malesiana (FM) is an international initiative to make the knowledge of animal diversity better accessible to both the scientific community and the general public. It was formed in 1995 and is designed to work closely with the efforts of others to stimulate studies of the biodiversity of Malesia (from Laos through the Solomons) and to disseminate the consequent results.

The FM Handbook and Field Guide Project is a major initiative to make taxonomic information from the region available to all interested parties. The Foundation gives grants to people compiling field guides for Malesian fauna. User-friendly field guides are crucial to generating interest in the wildlife of a region and are needed for many conservation initiatives (e.g., inventory and monitoring studies, ecotourism). In 1995 FM compiled two reports: one on the present world-wide activities on the preparation, production and accessibility of handbooks for the fauna of Malesia and the needs of potential users of identification guides and faunal revisions (report titled "Capturing Diversity"); and one on an overview of relavant written sources with a preliminary guide for scientists working in the region (titled "Reference Guide"). Three pilot field guides have been finished: a handbook to the families of Diptera in Malesia with an identification key and character descriptions for each family, a field guide to the pest Orthoptera of Indo-Malaya with a pictoral key, descriptions and distributional data, and a guide to the terrestrial mollusks of Bali. FM is currently taking applications from individuals interested in developing handbooks or field guides (paper and/or electronic) to a particular fauna of the Malesian region.

For more information or to start receiving the FM newsletter, contact Dr. Rene Dekker, National Museum of Natural History, P.O. Box 9517, 2300 RA Leiden, The Netherlands, email: dekker@nnm.nl

Pacific Heritage Foundation

from Timothy King, Acting Programme Coordinator for PHF

Pacific Heritage Foundation works to achieve its goal of preserving the natural heritage of the Pacific Region through the promotion of sustainable small scale income generation projects and associated education and awareness programmes. This approach ties together the aspirations of rural people with the protection of the environment. PHF currently has 12 Community based Ecological Sawmill Projects operating in PNG. These are located in the Bainings and WideBay areas of East New Britain, in New Ireland, and in the Sepik and Okapa districts on the mainland of PNG.

The work with our Community sawmill projects is supported and strengthened by 9 Community Women's Small Business Projects-- bakeries, sewing and poultry farming-- and our work promoting non-timber forest products.

PHF has a team of 4 District Extension Officers and more than 40 Networkers who provide a direct link into communities for our environmental conservation education and extension work.

In the area around Rabaul, PHF has a Volcano Rehabilitation Programme that concentrates on assisting displaced communities to revegetate their traditional lands. This year pioneer ground vegetation, shade trees and cash crops will be established on over 25 hectares of previously barren volcanic dust. In addition this programme is re-equipping schools and providing access to clean water supplies for communities affected by the 1994 eruptions.

PHF's Legal Desk now has a team of three lawyers who manage a busy caseload acting for rural communities and individuals in illegal logging claims (recently winning a K2.3 million judgement), actions for trespass and land rights disputes. This team also plays an important educational role in environmental law, land law, and human rights.

All our staff are involved in education and awareness programmes that use workshops, newsletters, discussion, radio programmes and the mass media to promote the aims of PHF.

For more information please contact: Timothy King, Acting Programme Coordinator, PHF, P.O. Box 546, Rabaul, East New Britain Province, Papua New Guinea.

Results of Biological Survey Shared with Villagers

from Larry Orsak

In July 1997, Lawong Balun and Larry Orsak visited several locations within the Kikori Basin (Gulf and Southern Highlands Provinces) and explained the results of the 1995 WWF biodiversity survey to resource owners. This was a WWF-Kikori ICDP (Integrated Conservation-Development Project) activity.

Research and Conservation Foundation

from Arlyne Johnson, Scientific Coordinator for RCF

In April 1998, the Research and Conservation Foundation of Papua New Guinea (RCF) will move to a new office located on Airport Road in Goroka. Mr. Mal Smith, owner of Pacific Helicopters in Goroka, has provided the office space for the Foundation. The British High Commission in PNG and Dr. Keyt Fisher of Christensen Research Institute were instrumental in arranging the donation of a vehicle to the Foundation to aid its work in scientific research and conservation in the Crater Mountain Wildlife Management Area (WMA).

RCF coordinates scientific research activity at four field sites in the Crater Mountain WMA which is located 75 kilometers south of Goroka. The RCF office in Goroka provides support services and orientation to scientists who are working in the WMA. The following table outlines some of the research being conducted in Crater Mountain WMA during 1998. For more information contact the Science Program Adviser, Research and Conservation Foundation, Box 1261, Goroka, EHP; Phone: (675) 732-3211; Fax: (675) 732-1123; Email: RCF@dg.com.pg

Research Activity in the Crater Mountain Wildlife Management Area: 1998

Project Title	Principle Scientists	Institution
Testing the effectiveness of conservation methods: WMA biological and socio-economic monitoring programme	Crater Mountain ICAD Project Staff	
1. Bird species richness: flyovers and counts	Biologists :	Research & Conservation Foundation
2. Wildlife harvest: captive and market sales	Robert Bino-Maimafu	
3. Plant harvest: house and artifact construction	Paul Igag - Haia	
4. Megafauna richness: diversity and abundance	John Ericho -Goroka	
5. Wildlife presence: incidental sightings	Business Officers	Research & Conservation Foundation
6. Frog species abundance	Paul Hukahu-Haia	
7. # of eco-enterprises	Sairen Onega-Herowana	
8. Trade store inventory / sales	Community Development	U.S. Peace Corps
9. Village market sales	Volunteers	
10. Cash crops sales	Maimafu	
11. Bride price composition: wildlife, cash, goods	Herowana	
12. Artifact Stores profit and loss	Haia	
13. Clan income from eco-enterprises	Resident Scientist	Wildlife Conservation Society
14. Research station profit and loss	David Bickford-Wara Sera	
15. Ecotourism profit and loss	Science Program Adviser	Wildlife Conservation Society
16. Landowner training and capacity	Arlyne Johnson-Goroka	
17. Visitor survey of WMA services		
18. WMA landowner committee minutes: resource management, business and women's committees		
Vegetation and Land Use Mapping of WMA	Dorian Beurton and Heike Weitzel	Univ. of Potsdam, East Germany
Medicinal plants of Gimi in WMA (Herowana and Maimafu) and Diet of Pitohoui "poisonous birds" (Haia)	Dr. Todd Capson	University of Utah, USA
Ecology of NG Harpy Eagle	Lloyd Kiff, Shawn Farry and Jeff Brown	Peregrine Fund, USA
Incentives for sustainable land use	Warren Greeves	ANU, Canberrra, AUS
Forest Use by Pawaian in WMA	David Ellis	Univ. of Kent, UK
Ecology of Palm Cockatoo	Dr. Stephen Garnett and Paul Igag	Birds Australia Parrot Association and Research and Conservation Foundation
Biological survey: birds, plants, mammals, herps and moths	Debra Wright	Wildlife Conservation Society, USA
Tree Kangaroo and Cuscus Census	Dr. Lisa Dabek, Will Betz Kasbeth Evei and Russel Terry	Univ. of Washington, USA; University of Papua New Guinea
The effect and delivery of conservation project to rural communities: WMA case study	Paige West	Rutgers University, USA
Plant taxonomy	Dr. Wayne Takeuchi	Botanical Research Institute of Texas, USA
Floral diversity and forest dynamics	Debra Wright	Wildlife Conservation Society, USA
Ant taxonomy	Dr. Roy Snelling	LA County Museum, USA
Frog Population Monitoring and Frog Parent Care	David Bickford	Univ. of Miami, USA / Wildlife Conservation Society, USA

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 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!

Preliminary Report of the Marine RAP Survey of Milne Bay Province, Papua New Guinea

From Tim Werner

Introduction

This document is a brief summary of the recently completed MarineRAP survey of Milne Bay. Its purpose is to provide information for conservation activities before completion of the final RAP report, which is in preparation. Please regard scientific findings as preliminary--some are based on field observations that needed to be further researched back in the home institutions. For further information contact Tim Werner of Conservation International (CI) (see your directory).

Milne Bay Overview

Milne Bay has the largest maritime area of any of PNG's Provinces, and has most of the country's coral reefs. It has one of the lowest population densities in PNG, and, like in the rest of the country, its people are mostly subsistence farmers, fishermen, and hunters. Key industries include mining (Misima and Wapolu mines), agriculture (including oil palm), logging, and fishing. Prior to our RAP survey, the coral reefs of Milne Bay were never before biologically surveyed. The Provincial Government has expressed a keen interest in working with CI on marine conservation initiatives. Regionally, Milne Bay may be the last large region of pristine coral reefs remaining in the coral triangle.

MarineRAP Personnel

Tim Werner, Conservation Biology Department, CI (RAP Survey Team Leader)
Dr. Gerald Allen, Western Australian Museum (Fishes and Scientific Team Leader)
Dr. J.E.N. Veron, Australian Institute of Marine Science (Corals)
Dr. Fred Wells, Western Australian Museum (Mollusks)
Mr. David Tauna, Fisheries Officer, Samarai District, Milne Bay Province
Mr. Edward Kibikibi, Community Organizer, CI-PNG
Ms. Maureen Ewai, Marine Officer, CI-PNG
Mr. Gai Kula, Director, CI-PNG

Methodology

1. Select sites based on consultation of maps, literature, past visitors (especially underwater natural historians), scientists, and government officials.
2. At each site: Record diversity of indicator groups, characterize habitat, and make notes of environmental status.

Parallel to the scientific survey, CI-PNG staff carried out awareness activities with coastal communities in the province. The objectives of these activities were to inform villagers about the survey, to ensure their support for conducting the survey, to discuss and learn about village perspectives on key issues in marine resource exploitation and conservation, and to begin building a relationship with key communities as an initial step to longer term collaboration in conservation. A full report on the community activities is being prepared by Edward Kibikibi.

Results

The survey involved assessments of 53 sites visited over 22 days.

REEF CORALS: There are at least 375 species of reef corals found in Milne Bay, including as many as 15 species newly described during the RAP survey. (This is astounding, given that approximately 8 new reef coral species are described EVERY YEAR, and we got nearly double that figure in just three weeks). This is the highest recorded diversity of reef corals outside of the Philippines, and more species than are found on the Great Barrier Reef or in southern PNG.

FISHES: Approximately 850 species were recorded during the survey. Adding the "hidden" fauna, it is estimated that approximately 1000 species of reef fishes are found in Milne Bay. This establishes Milne Bay as the richest locality in PNG for reef fishes, and the second richest locality in the world. Probably three new species were recorded during our survey.

MOLLUSKS: The total is estimated at 1500 species. This is the greatest number of species for any locality. More than 600 species were recorded during the survey. This is more than has been recorded from any locality, except Madang (west of Milne Bay on PNG's north coast), but the Madang total resulted from a longer period of intensive surveying. There are an as yet unspecified number of new species.

OVERALL: Milne Bay is scenically beautiful, both above and below water. As would be predicted by the high species diversity, Milne Bay has an exceptionally high habitat diversity, ranging from oceanic atolls to muddly lagoons. In comparison with other areas of the coral triangle, Milne Bay is in much better shape. For example, it is one of the few areas of this region where a diver can still experience both large vertebrates and pristine coral reefs. There are still relatively low human pressures, though the threats have been mounting for some years. Some commercial resources, like giant clams, have already been extensively harvested in the region. Newer marketable species, like reef fishes, are currently targeted and need immediate management. Additional threats to coral reef biodiversity in Milne Bay include sedimentation by logging, dynamite and cyanide fishing, and unconfirmed reports of reef "vacuuming." Fortunately, in most areas people still seemed able to meet their immediate food needs with what these reefs can provide.

Tracing of Food Webs in Lake Murray (Study by CSIRO and Porgera Joint Venture)

From H. Matthew Kawei

A stable isotope trial study was designed and carried out in late 1996 to provide an indication of whether or not the technique could be used to trace food webs in Lake Murray. The technique was also examined for use in other habitats in the river system.

Stable isotope methods can provide an effective short-cut approach to traditional studies of food webs that use gut content analysis of all tropic levels. The isotopic composition of an organism's tissue integrates the isotopic composition of the foods it has consumed throughout its life, and thus stable isotope studies can achieve quantification of food webs with a much lower sampling effort than is required by traditional methods. Stable isotope studies can also overcome some of the disadvantages of traditional methods, including the inability to differentiate partially digested materials, and un-representativeness of sampling with respect to feeding. Samples to be analyzed include fish species from several presumed tropic levels and aquatic weeds.

If this preliminary investigation proves fruitful, it is recommended that the data be used to plan a more detailed spatial and temporal survey of fish in Lake Murray, targeting species that comprise the majority of the standing stock of fish in the lake. The survey would need to include potential primary production sources in each of the major habitats, the major groups of planktonic and benthic invertebrates that comprise the diets of the selected fish, and fish of different size classes from each species. Such a study would help to identify the key carbon pathways, the major species involved, the likely pathway of mercury biomagnificant, and it would measure the variability of these factors.

The importance of the leaf chewing insects in the lowland rainforest of Papua New Guinea

From John Auga, William K. Boen, Chris N. Dal, Markus I. Manumbor, and Kenneth S. Molem

Our rain forest has many thousands of insects and we want to know how many of them are feeding on different plants and how they live. Our study is to understand the insect ecology of tropical rainforest and assess which tree species are important in building up the local biodiversity of insects. We also wanted to find out how many insects feed on the tree species in the rainforest around Madang. Our project started in June 1994 by collecting insects on 15 species of *Ficus* (figs) from the family Moraceae. Many frugivorous vertebrates (e.g. bats, cuscus, bandicoots, birds) heavily rely on the *Ficus* trees for their food. Also people eat the young leaves as greens and the fruits. However, very few studies have been done on the insects herbivores associated with fig trees.

This study was carried out in the lowland rainforest and coastal areas at different locations around Madang. The research concentrates on the leaf chewing insects: beetles, caterpillars, grasshoppers and stick insects, and their feeding habits.

The study involves both field work and laboratory work. The insects are collected by hand from the studied host plants. Several collectors from several villages are helping us with massive collecting of insects in the lowland rainforest. Live insects are brought to the laboratory for feeding tests. Caterpillars are reared to adult moths. All the insects are tested to find out if they really feed on the plants; the ones that are not feeding are discarded. Those insects that are really feeding are then killed, mounted, labeled and dried in the electric drier. Using the reference collection which we built, and a computer database, we assign to each insect its code number, according to its species. This work is made easier by pictures of insects which we took with the video camera mounted on a microscope and stored as digital images in the computer. Later the insects are sent to the Bishop Museum (Honululu) to taxonomists for future identification and processing. All our results are entered in the computer files.

After completing research on Moraceae in 1996, the project was extended to carry out the same research, this time on another 15 tree species from the family Euphorbiaceae. The selected Euphorbiaceae species range from shrubs to trees; some of them grow along the river side, some along the sea coast, but most of them were found in the secondary (disturbed) or primary (undisturbed) rainforest.

Not only do we collect insects, but we also do experiments which can help us in the interpretation of our results. For example, we record when each tree produces young leaves and when they are mature, the amount of latex produced, leaf palatability, etc. Several species of *Ficus* and Euphorbiaceae turned out to have a lot of latex, which may be important to defend the tree from insect herbivores. One experiment studies how a weevil species feeds on different trees, some of which have a lot of latex in the leaves. In another experiment, we pin termites onto the leaves of *Ficus* and Euphorb trees and after 30 minutes we count how many of them were eaten by ants or other predators.

During the study of these 30 species of trees and shrubs we collected and tested for feeding by a total of 13,634 beetles from 265 species, 14,587 moths and butterflies from 241 species, and 1,615 grasshoppers and stick insects from 103 species. Some of the interesting results we found were that some of the Euphorbiaceae trees had a lot of beetles feeding on the foliage but very few caterpillars, some had a lot of caterpillars and not so many beetles. We found that many insects feed on several different species of *Ficus*. Very few species of insects are specialized on certain trees. The most common insects can feed on more than one species of *Ficus*. From Euphorbiaceae, we collected many new species of insects which we did not find on *Ficus*.

We are taking part in this research as taxonomists and are working together with biologists Yves Basset, Scott Miller and Vojtech Novotny. Our project will be continuing for another 3 years and we shall study 15 new species of trees, all from the family Rubiaceae.

For more information contact: John, William, Chris, Markus and Kenneth at Insect Ecology Project, PO Box 1170, Madang, Papua New Guinea, phone/fax +675 852 1587, e-mail binatangi@compuserve.com; Internet site www.bishop.hawaii.org/bishop/natsci/ng/ngecol.html .

Crayfish Survey of Mt. Bosavi Region

From Larry Orsak

Dr. Chris Austin (Deakin University, Warmambool, Victoria, Australia) visited the Kikori ICAD (World Wildlife Fund USA) in November 1997, surveying the Mt. Bosavi area for crayfish species, with an eye to possibly developing this as a "conservation through development" incentive for these remote people. He found a new species of burrowing crayfish in the process. He plans to come back to continue his work in January 1998.

NG Harpy Eagle (*Harpyopsis novaeguineae*) sighting

from Paul Igag of RCF

This sighting was incidental. An adult bird was seen flying away with the parts of a tree cuscus (Sebi in Pawaia language) and returning to the prey site to carry some more away, possibly to a nest. The sighting was by 3 Pawaian women who were on their way to their garden NE of Haia village. The 3 women who saw the bird on its return tracked it up the hillside and found the bird perched on the forest floor with the last remains of prey before it. Upon their presence the bird flew off with the remains of the tree cuscus.

Two feathers were collected by the 3 women at the site were the NG Harpy Eagle was seen with the dead cuscus. The feathers collected are 1. Breast feather, which has long thin rachis and barbs, without interlocking barbs and is white in colour, 2. Possibly a covet feather of primary flight feathers which has tapered barbs on one side which indicate the outer most covet feather of the regimes (preserved).

I was informed about the sighting the next morning and we returned to the area by noon. Most of evidence of the killing was destroyed from the last night's rain and the ants from the forest floor had already started the decomposition process on the only remains which were bits and pieces of the guts. I managed to collect all that was left-- fur, bits of guts and a piece of bone possibly from the skull (all preserved). I also examined the gut contents of the cuscus which were largely vegetative remains (leaves and fruits).

The tree on which the cuscus was captured by the Harpy Eagle was identified as *Elmerillia tsiampacca* in the Magnoliaceae family ("Ouu" or "Powari" in Pawaian language). It was covered with epiphytes and a few lianas. It also had two short broken-off branches with holes in the ends (possibly hideouts the cuscus used).

Observations of Juvenile Birds, Mammals and Reptiles

from Paul Igag of RCF

Local Haia village knowledge states that November to late March is the time of year most avian species breed (Haia is located within the Crater Mountain WMA). This statement seems justified because I have observed several species of birds with juvenile plumage then. In addition, during this time period juvenile mammals were brought into the village for captivity and wild juvenile reptiles were found around the village of Haia.

During this period I observed two juvenile Twany Honey Eaters (*Xanthotis flaviventer*) and two juvenile Crested Hawks (*Aviceda subcristata*) from the wild. Also during this time period juvenile Vulturine Parrots (*Psittrichas fulgidus*), Sulphur Crested Cockatoos (*Cacatua Galerita*), Blyth's Hornbills (*Rhytocerus plicatus*), and Dwarf cassowary (*Casuarius benettii*) chicks were captured and held captive in the village by locals. A juvenile Goodfellow's tree kangaroo (*Dendrolagus goodfellowii*) was also held captive during this time. From November to late March, I observed three young varanid lizards (*Varanus prasinus*), and one juvenile Kondra Python (*Morelia viridis*) in the wild.

Of all the captive fauna the young Cockatoos and Cassowaries had the largest captivity percentage in the village. This is because these species command high value outside of Crater Mountain Wildlife Management Area for traditional ceremonies. The beautiful red and black feathers of the Vulturine Parrots and the modified crown feathers of the sulphur crested cockatoo are used in making elegant head dress for traditional dance while the cassowaries are used for bride price payment and peace settlement between clans. In major towns the cockatoos command high value as pets.

Moth Surveys for the Kikori Basin

From Larry Orsak

A long-term assessment of the moths of the Kikori Basin began in July and centered at elevations from 700-1400 meters, within the Chevron Kutubu oil field area. Some 1,000 macrolepidoptera species have already been collected from here, and the likely total will probably exceed 2,000. It is hoped that long-term assessments of moth diversity at selected sites can be carried out in the future. Bishop Museum is assisting with supplies, and the survey is sponsored by the WWF-Kikori ICDP.

Why is the World's Largest Butterfly so Rare? Plant-Butterfly Interaction Assessments on the Managalase Plateau

From Larry Orsak

Drs. Simon Saulei and Larry Orsak have been contracted to carry out an assessment of plant-insect interactions for the world's largest butterfly, Queen Alexandra's Birdwing (*Ornithoptera alexandrae*) near Afore on the Managalase Plateau (Oro Province). This is part of the Oro Conservation Project, and Saulei and Orsak are working in conjunction with Chris Mercer, Tom Vigas, and other staff of the project. The aim is to understand more fully how the butterfly selects specific *Aristolochia* individual vines for egg-laying, and to quantify the "ideal" microhabitat for *Aristolochia* growth. These data will be applied towards management programs for the butterfly.

Growing PNG's Protected Birdwings: High Mortality Rates Show the Feasibility of Sustainable Harvesting and Caged-Rearing of Caterpillars

From Larry Orsak

Conservation Melanesia awarded a grant to the Christensen Research Institute for nearby villagers to monitor the plant-insect interactions of the once-lost, possibly-endangered Madang Paradise Birdwing Butterfly (*Ornithoptera paradisea paradisea*). This follows the productive research of visiting CRI fellow Dr. Brian Fletcher. Since Larry Orsak left CRI in July 1997, villagers have continued monitoring at Kau Wildlife Area, but Orsak now funds them.

The findings so far show that the butterflies utilize no more than 5% of the food-plant (*Aristolochia schlecteri*) vines. Food-plant vines often die back and seemingly disappear, but then later reappear. Few of the caterpillars found by villagers survive to adulthood (when watched but not removed by the villagers). There is high mortality in the first half of the caterpillar stage, probably due to spider, ant, and other invertebrate predation. Occasionally, caterpillars completely devour the food-plant before reaching maturity. This may also be a source of mortality (starvation if this happens).

These findings probably hold true, in general, for the more localized and rare protected birdwing species in New Guinea. The high caterpillar mortality rate means that villagers could remove a portion of the caterpillars and probably not affect the population, if the predators on these rare birdwings are generalists and would eat other things if the number of birdwing caterpillars decreases artificially. The removed caterpillars could be raised in cages, with a portion of the resulting butterflies released (females are in less demand by overseas collectors than males) and a portion retained for selling to the Insect Farming and Trading Agency (PNG University of Technology).

Two New Mammals for New Guinea

In 1997 Garrick Hitchcock collected the first specimen of a Spectacled Hare-wallaby, *Lagorchestes conspicillatus*, from New Guinea (see Science in New Guinea 23:47-51). Up until this collection the species was only known from the northern Australian grasslands. During a recent trip to the Bensbach/Torassi River area in the Western Province of PNG, Garrick collected specimens of the False Water-rat, *Xeromys myoides*. This is another new record for New Guinea; before this collection the species was only known from the coastal and mangroves areas of northeastern Australia. You will be able to find more details in an upcoming issue of Science in New Guinea, or by contacting Garrick (see your directory).

Research on the Bird's Head Peninsula in Irian Jaya, Indonesia

from Marcel Polak

The ISIR Programme:

ISIR stands for: The Irian Jaya Studies - a Programme for Interdisciplinary Research. The programme was initiated by the Department of Languages and Cultures of Southeast Asia and Oceania, Leiden University, The Netherlands. It started January 1993, duration 7 years. The project is designed, in the first place, to increase and integrate knowledge of languages, cultures, botanical richness, and geographic and tectonic speciation of the Bird's Head area and its populations, and secondly, to provide a substantial contribution to Indonesian studies and New Guinea studies. Disciplines involved are: anthropology, archaeology, botany and ethnobotany, demography, development administration, geology, and linguistics. For further general information check the ISIR web site: http://iias.leidenuniv.nl/host/isir, or contact the programme coordinator Dr. J. Miedema, Projects Division, DSALCUL, Leiden University, Nonnesteeg 1-3, 2311 VJ Leiden, The Netherlands.

The Botany Subprogramme:

In the framework of the Botany Subprogramme two projects are carried out: one ethnobotanical study and one botanical diversity study. Fieldwork for both studies was carried out near the village of Ayawasi (1.14 S, 132.12 E, alt. 450 m a.s.l.) in the centre of the Bird's Head peninsula, NE of the Ayamaru lakes. The area is dominated by a karst landscape of low limestone hills (c. 50-100 m high), often forming ridges, separated by depressions. During the fieldwork c. 2200 general collections were made by the various botanists involved.

The ethnobotanical study focuses on the use and classification of plants by the local Maybrat people, and on the perception of the role which plants play in various aspects of their life. The botanical diversity study focuses on the species

composition of primary and secondary forest and its relation to the underlying substratum. Plots of 0.1 ha have been laid out in various landscape units (basically limestone hills and flat to slightly undulating areas) on various soils. An inventory has been made of all plants with a dbh of 10 cm or more. In 22 plots c. 2000 plants were included in the survey, representing c. 400 species belonging to c. 155 genera in c. 65 families. In general, the forest on the limestone hills was less species rich than the forest in the more flat areas, and usually individuals of a few species formed a large part of the vegetation on these hills. Hardly any overlap in species composition occurred with the forest on the more flat terrain. Several new species have been discovered, and several others rediscovered, i.e. they had not been collected since their original description. The most species-rich plant families in the plots are Myrtaceae (mainly Syzygium spp.), Lauraceae, Meliaceae and Euphorbiaceae.

For more general information on the Botany Subprogramme please contact its coordinator Dr. E.F. de Vogel at the Rijksherbarium, P.O. Box 9514, 2300 RA Leiden, The Netherlands. E-mail address: devogel@rulrhb.leidenuniv.nl.

For more information on the ethnobotany project contact Ms. W. Av, at the same postal address. For more detailed information on the botanical diversity study contact Marcel Polak at the same postal address, or by e-mail at: polak@rulrhb.leidenuniv.nl

Funds for local research into the New Guinea Harpy Eagle

from the Research and Conservation Foundation of PNG

Within the Crater Mountain Wildlife Management Area (CMWMA), about 25 minutes by light aircraft from Goroka, an innovative research program is under-way in order to find out more about Papua New Guinea's largest birds of prey.

The US-based Peregrine Fund is donating 2000K to support the research project which utilises local landowners from the CMWMA to research the New Guinea Harpy Eagle. The CMWMA is a protected area of around 3 000 square kilometres and provides the perfect opportunity for the bird to be studied in its natural habitat.

The Peregrine Fund is involved in conservation-oriented research into birds of prey in at least 18 countries across the world and is very keen to find out more about the New Guinea Harpy Eagle.

After a number of visits to the CMWMA, scientists from the Peregrine Fund realised that the best method for observing these birds would be to engage locals to conduct on-going research. Although there is very little scientific knowledge of the life cycle of the New Guinea Harpy Eagle, the land owners within the CMWMA understand a great deal about its habits and daily movements.

Under the plan, locals will be trained in the methods of bird observation and paid a small wage for their time. The Research and Conservation Foundation (RCF) of PNG who help landowners to manage the CMWMA will train locals in the various bird watching and data entry techniques required for such a study.

RCF Field Biologist, Mr Robert Bino, will be involved in this training and points out the value of such projects to the long-term conservation of local flora and fauna. " I will help landowners to construct hides from which to observe the birds with the minimum interference, and forms have been devised which will be used by local observers to record various data such as calling, sitting and feeding habits. We are particularly interested in nesting couples so we can find out more about the life cycle of the bird. Projects such as these foster pride among locals in the natural resources of the CMWMA. The project also goes a step further by offering some practical incentives such as a small wage and practical skills in bird observation which can be used again in the future," Mr. Bino explained.

With so little known about the New Guinea Harpy Eagle, this research project represents an important step in the documentation and subsequent preservation of this spectacular bird.

Australian Institute of Marine Sciences TROPICS Project

taken from the web site

The Tropical River-Ocean Processes in Coastal Settings (TROPICS) Project will be carried out by Australian, US and Indonesian scientists. Field operations for this project will be conducted from 1997 through 2000. The goal of the project is to determine the processes that control the dispersal of wet tropical riverine dissolved and particulate material into the coastal ocean, and how these processes affect estuarine, deltaic, coastal, shelf and slope productivity, marine resources, and sustainable development options. The northern coast of PNG and Irian Jaya delivers riverine material directly to deep waters of the Bismark Sea, with little coastal shelf environment. On the north side of New Guinea the Sepik (PNG) and Mamberamo (Indonesia) Rivers and their sea deposition areas will be investigated. On the southern coast, although the same mountains are being drained, rivers discharge into broad swampy alluvial plains, long estuaries, and a broad, shallow continental shelf. On the south side of New Guinea the Fly and Purari Rivers (PNG), the mangrove-lined Bay of Bintuni (Indonesia), and the Digul River (Indonesia) will be investigated. For more information please contact Dr. Gregg Brunskill, Fax: (61) 77-72-5852, Email: g.brunskill@aims.gov.au, or check out the internet site: http://www.aims.gov.au/pages/research/projects/project05/tropics/tropics.html

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.

Job Opening

The Wildlife Conservation Society is hiring a resident scientist for Papua New Guinea (PNG). This is a research position, ideal for graduate students or post-docs. The resident scientist will live at the Crater Mountain Biological Research Station within the Crater Mountain Wildlife Management Area in Papua New Guinea. The station is an eight-hour hike from the nearest grass landing strip but also has a helipad in case of emergencies. The station is in direct radio contact with the helicopter company and with the Research and Conservation Foundation of PNG, which oversees the Crater Mountain Integrated Conservation and Development Project. Job duties include 30% work for the conservation project (visiting villages, interacting with local people) and 70% your own research. The resident scientist has an initiation period from October through December to learn the local language (a pidgin English) and to get accustomed to the area, people, and job duties; during this period the new person will overlap with the previous resident scientist. The job runs from January to January and has the potential to be renewed for up to three years. During the initiation period expenses are paid, and during the job period expenses are paid plus the resident scientist gets a stipend. The amount of the stipend depends on previous experience, graduate degrees and research budget.

For further information contact Debra Wright, P.O. Box 15, Weikert PA 17885, USA, email: ddwright@ptd.net.

Applications are due by 1 July 1998 and a decision will be made by 1 August 1998 (this will give the new resident scientist two months to purchase supplies, get a visa, etc., before leaving for PNG). To apply include a cover letter explaining why you want the job, a proposal of the research you will carry out while in the position including budget, and your curriculum vitae. Send two copies, one to Debra Wright at the address above, and one to Joshua Ginsberg, Director of Asian Programs, Wildlife Conservation Society, 2300 Southern Blvd., Bronx NY 10460-1099, USA.

Position Available

taken from Ed Colijn's email news server

The International Secretariat of World Wide Fund For Nature, the world's largest and most experienced independent conservation organization is seeking to recruit a REGIONAL DIRECTOR for the WWF Asia/Pacific Programme.

Based near Geneva in Switzerland, the Regional Director will be a committed conservationist with a proven track record in managing and funding of large multi-donor conservation programmes. S/he will assume responsibility for WWF's Asia/Pacific regional conservation programme and guide the work of a competent team of headquarters and decentralized, field-based staff. In cooperation with the relevant WWF National Organizations and Programme Offices, s/he will also coordinate all WWF conservation programme activities in the Asia/Pacific region.

Essentials for this position include:

* a minimum of 10 years' experience in conservation, natural resource management or development work in Asia;
* a good understanding of community-based natural resource management, protected areas management, and species conservation.
* a sound experience of strategic planning, programme design and implementation, as well as monitoring and evaluation;
* familiarity with modern methods of participatory programme development and the use of logical frameworks for planning;
* excellent human resource management skills;
* good presentation and communications skills in English;
* a willingness to travel frequently within Asia and to other international destinations.

Please send your CV and covering letter before 8 May 1998 to:

The Human Resources Department
WWF International
Av. du Mont-Blanc, 1196 Gland,
Switzerland
Fax +41 22 364 7850;
E-mail:<mfuhrer@wwfnet.org>

Research visas for PNG

taken from Ed Colijn's email news server

Source: Australian Anthropological Society Discussion Group
Wed, 1 Apr 1998

It appears that some colleagues in Australia are still unaware of current procedures for obtaining research visas for research in Papua New Guinea. The confusion has arisen following the agreement struck between the National Research Institute and the National Cultural Commission regarding the location of the former Institute of PNG Studies (Box 1432 Boroko) at the end of 1995. Under the terms of this agreement, IPNGS was transferred from NRI to NCC, BUT the function of authorizing the issue of research visas was retained by NRI. Unfortunately, the Executive Director of NCC has instructed staff of IPNGS to continue with the process of authorizing the issue of visas and collection of fees from foreign researchers, in breach of this agreement.

Most foreign researchers are now aware of the fact that all applications for research visas now need to be directed to:
HOD Social and Cultural Studies [or] Research Visa Liaison Officer,
National Research Institute,
P.O. Box 5854, Boroko - NCD
(or to fax number shown below).

If applications are directed to other bodies, and if the Migration Department sees fit to issue the visas, the net result is simply that the PNG government will no longer be able to monitor the conduct of research through a single institution. The database on such activities, for which NRI is now the responsible body, will be incomplete, and problems will then arise in our relationship with provincial governments.

Although we are taking steps to remedy the faults in our relationships with other bureaucratic agencies, we hope that you will appreciate the difficulty of accomplishing the desired result in our current political system. Your own cooperation would therefore be greatly appreciated.

Cheers,
Colin Filer
cfiler@global.net.pg
office fax: 675-326-0213
home phone: 675-323-5601

International Symposium on the Biogeography of SE Asia 2000

taken from the Fauna Malesiana Newsletter

The National Natuurhistorisch Museum, the Rijksherbarium/Hortus Boranicus and the Netherlands Research School of Sedimentary Geology are organizing an international symposium on the biogeography of SE Asia to be held 4-9 June 2000, in Leiden, The Netherlands. The meeting will cover all aspects of historical biogeography of the area, including geological developments, paleoclimatology, marine and terrestrial life (plants and animals). Methodology, applied biogeography and conservation will also be discussed.

For further information and to be included in the mailing list for further announcements, please contact: Rienk de Jong, National Museum of Natural History, Department of Entomology, P.O. Box 9517, NL-2300 RA Leiden, The Netherlands, phone: (31) 71-516-2652, fax: (31) 71-513-3344, email: jong@nnm.nl

Wanted: High Elevation Plants

from Bian Tan

I am **Bian Tan**, Plant Collections Manager at Strybing Arboretum in San Francisco, California, USA. Our unique coastal climate allows us to grow plants from high elevation tropical mountains. We already have a good collection of cloud forest plants from the New World, mainly from Chiapas, Mexico, but also from Oaxaca, Guatemala, Ecuador, and Costa Rica. Due to occasional light frost during some of our winters, these cloud forest plants must be collected from above 7,000 ft (2100 m) elevation in order to ensure some level of cold hardiness in our climate here.

I have been actively trying to collect plants- trees, shrubs, herbs, vines, ferns- from the Old World Tropics, and have made collecting trips to Peninsular Malaysia and Indonesia in the last two years. I would like to collect from other countries with high mountains, such as the Philippines and New Guinea.

The main function of our collections is educational, although we are also introducing new species to local horticulture, and growing some rare and endangered plants. The plantings are meant to be a representation of typical habitat, and the New World Cloud Forest collection after 10 years is beginning to look more like a jungle.

I would be interested in communicating with other botanists or researchers working in cloud forest above 7,000 ft elevation for potential collaborations. (see Bian Tan in your directory for contact information).

New Guinea Biological Society Meeting

The annual meeting is scheduled for this August and is supposed to be held at Timika, Irian Jaya. No one is yet certain about the dates, costs, etc. For more up-to-date information when it becomes available please contact: Samuel Renyann, P.O. Box 344 Abepura, Jayapura, Irian Jaya 99351, Indonesia, Phone/Fax: (62) 967-83-436, or James Menzies, Biology Department, University of Papua New Guinea, Box 320, University PO, Papua New Guinea, Phone: (675) 326-7109 or 7655 or 7210, Fax: (675) 326-7187 or 326-0369.

Free Filariasis Prevention Program

Smithkline Beecham drug company and the World Health Organization (WHO) have developed a program to eliminate lymphatic filariasis by the year 2020 (see newsletter Issue 4 for more info on this disease). Recent research has shown that when Smithkline Beecham's drug albendazole is administered at the same time as diethylcarbamazine (DEC) or ivermectin the efficiency of the drugs is enhanced (they work better). Albendazole also eliminates gastrointestinal parasites, like hookworm, at the same time it helps to treat filariasis. WHO will administer the program through the Ministry of Health in all countries where filariasis is found. Through these ministries, albendazole and DEC or ivermectin will be administered annually to the 1.1 billion people worldwide who are exposed to the parasite. Four to five years of this annual treatment has been shown to be 99% effective against the parasite. The program will continue for 20 years in an attempt to ensure world-wide elimination of the disease. For more information please contact the WHO point person for the program in Geneva: Dr. Eric Ottesen, phone: (41) 22-791-3225, email: ottesene@who.ch

Christensen Research Institute

from Matthew Jebb

The former CRI has been taken on by PNG University of Technology. Scientists will still be able to use the laboratory, accomodation, diving equipment and vehicles. For more information or to use the facilities, please contact Philip Siaguru at PNG University of Technology (see your directory for address).

Relocations

from Larry Orsak

Karol Kisakou (formerly of RCF) and Max Kuduk (formerly of FRI) are now with the Kamiali Project of the Village Development Trust in Lae. For more details on this project see Newsletter Issue 3.

Larry Orsak (formerly of CRI) will continue his conservation and biodiversity research in PNG, in association with various projects (WWF-Kikori Project, Ramu ICAD). Several of the mangi binatang (trained moth collectors/taxonomists) are currently working with him, and long-range plans for developing a comprehensive conservation education operation are being worked out in collaboration with several PNG NGOs.

National Science Foundation Project Re-Funded

From Larry Orsak

Three years of full support have been awarded by the National Science Foundation for an ongoing project on tropical insect herbivory. Principal investigators are Yves Basset, Vojtech Novotny, Scott Miller, Allen Allison and Larry Orsak. The project and its mangi binatang school leaver participants (see leaf-chewing insect article under Research Updates above) have changed location from the Christensen Research Institute to a new house and lab space across the Nagada Harbour from CRI, near the Kristen Press. The project will increase its activities in 1998 thanks to the new funding.

Figs of Madang

from George Weiblen

Figs are rich in species and play major ecological roles in the forests of Madang Province, Papua New Guinea. I have documented 57 fig species that were collected in Madang Province between 1992 and 1997, and there may be more to discover. Due to the large number of species around Madang, a field guide with descriptions and illustrations will be helpful for studying the ecology of these remarkable species. For each species, I have prepared a short field description with information on the habitats where they grow, their local "tok ples" names and uses, and a list of recent collections. My collections from other areas within PNG including East New Britain, Morobe, and Western Provinces are also included. "Tok ples" names can be used to find the species around villages where the following languages are spoken: Ohu (Amele language), Baitabag (Nobanob language), Riwo (Dedaged language), Salemben (Amben language), and Kaironk (Kalam language). I hope that the guide can be expanded to include more information and better serve researchers and future generations in Madang.

If you are interested in receiving an unpublished draft of the guide or would like to make suggestions, please write to: George Weiblen, The Harvard University Herbaria, 22 Divinity Avenue, Cambridge, Massachusetts, 02138, USA.

Frogs at Crater Mountain

from David Bickford

After more than two years of field work in the rainforests of Papua New Guinea, I saw the largest changes in frog populations during October - December, 1997. This coincided with the severe El Nino Southern Oscillation (ENSO) event which caused unprecedented low rainfall, bush fires, and crop failure in Papua New Guinea. My team (expatriot students and local villagers) and I compared our data collected from 1995-97 (check Froglog Number 23,

August, 1997) to the data we collected during the ENSO period. There was an order of magnitude difference between the number of direct developing microhylid frog egg clutches found in plots between normal rainfall periods and the ENSO drought. There were many other impacts of the ENSO conditions on frogs as well. I will present these data and their conservation implications at this year's Society for Conservation Biology meetings in Sydney, Australia. This work on long-term frog monitoring has been supported by the Wildlife Conservation Society, and the University of Miami's Tropical Biology Fellowship. I am currently the Resident Scientist for the Wildlife Conservation Society and the Research and Conservation Foundation of PNG, working primarily with local landowners to develop, initiate, and maintain a monitoring program designed to test the effectiveness (is biodiversity being conserved?) of community-based enterprises which give the local people alternatives to large-scale logging and other short-term and ecologically unsound choices. Check out my web page at http://fig.cox.miami.edu/~bickford for more information and neat pictures.

Diamond Plans Bird Transect Work in Kikori Basin

from Larry Orsak

Dr. Jared Diamond of the University of California, Los Angeles, is planning a month-long elevational transect bird survey in the Kikori Basin of Gulf and Southern Highlands Provinces for May 1998. Tentatively, this will be carried out along the Chevron oil pipeline. Following the pipeline and roads associated with the petroleum project, undisturbed forests from 20-1400 m elevation can be assessed. An extensive 1995 biodiversity assessment found the area to be exceptionally rich in species for many groups.

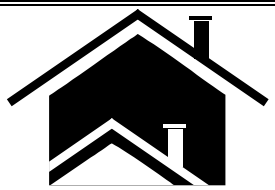
New Weekly Email Newsletter about Indonesia/New Guinea

Every week Ed Colijn is sending press releases and updates about environmental issues, conservation and research in Indonesian and Papua New Guinea via email to interested people. Talk about being kept up to date on what's happening!!! This is a wonderful service for all of us. Ed also has a website called the Indonesian Nature Conservation Database http://www.bart.nl/~edcolijn/ where he posts these news updates. You can contact Ed and get on the email list at email: edcolijn@bart.nl

More Internet sites to check out: (this section aided by Ed Colijn's news server)

Computer Guide to Borneo Trees (many are shared with NG): http://django.harvard.edu/users/jjarvie/Borneo.htm (for more information contact Jim Jarvie in your directory)
LucID Program for creating interactive computer keys to any type of organism: www.ctpm.uq.edu.au (for more information contact David Yeates in your directory)
Gary Dodson's research on antlered flies (he's in your directory): www.bsu.edu/bio/faculty/dodres
Information on botanical publications including Flora Malesiana: **Rijksherbarium/HortusBotanicus**
Australian Bat Society: http://batcall.csu.edu.au/batcall/abs/welcome.htm
Coral Reef News (Reefnet): http://www.reefnet.org
Operation Wallacea: http://www.operationwallacea.org.uk/
The Indonesian Wetland Database has been updated and now includes an extensive bibliography: http://www.wetlands.or.id/wdbsites.htm
A new addition to the WCMC site, with data on the Threatened Plants of the World: http://www.wcmc.org.uk/species/plants/index.html

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. If you want to send some pictures too, we can scan them into the newsletter. Thanks!

The Ivimka Research Station in the Lakekamu Basin, Gulf Province

from CI and FSP

A research facility is now open and available for visiting scientists in the Lakekamu Basin in Gulf Province, Papua New Guinea. The Ivimka Research Station (IRS) is about 10 km south of the Tekadu Airstrip, an easy walk along the old Bulldog Road. Tekadu is accessible via commercial flights from Wau. The IRS is situated on a hill at

the edge of the vast Lakekamu Basin, comprised of lowland alluvial rainforest. To the north and west of the station hill forest is readily accessible. There are many hectares of pristine lowland and hill forest presenting numerous research opportunities.

The area has been the subject of extensive field work by Dr. Bruce Beehler and more recently Conservation International conducted a rapid assessment survey at this site. The scientific results of the rapid assessment will be summarized in this newsletter in the next issue. Generally the researchers have found this to be an area of high biodiversity and minimal human disturbance.

The research station is a 12 X 12 m house, on ~1.5 m stilts, with a tin roof and a 2 X 12 m veranda. The house, but not the veranda, is fully screened and it can be locked for safe storage of field supplies.

There is a 3 X 5 m storage room in the center of the house, which separates the two bedrooms each of which has sufficient floor space for six single mosquito nets and personal gear storage for the occupants of those nets. Scientific gear and foodstuffs can be locked in the storage room, and field gear can be stashed beneath the house. As yet, there are no bunks so the sleeping capacity of the station is about 12-15 by its floor space.

The house has four 200 L drums which hold rain water for drinking, cooking and washing. Water can be drawn from the drums by a tap which is located in the kitchen area of the house. The kitchen is stocked with sufficient cookware and utensils for 30 people. It includes a propane range, but propane is sometimes in short supply. Visitors who wish to have the convenience of propane should bring in their own supply of cylinders from the depot in Wau.

A photovoltaic system provides 12V DC and 120V AC, the latter through a 100 W inverter. Current is available for continuous, sustained use during daylight hours only, and loads probably should not exceed approximately 1.5 Amperes. There are two 12V DC fluorescent fixtures to supplement the kerosene lanterns at night, but they must be used sparingly so as not to draw down the storage cells. A high frequency radio is also powered by a photovoltaic system, and it is used to call Northcoast Aviation in Wau, the FSP office in Port Moresby, and to speak with other users of the informal conservation communications net in PNG (including Crater Mountain, UNDP and GTZ).

Just to the north of the station house, there is a 3 X 3 m permanent shade-cloth house for insect- and plant-rearing. The inside of the shade house is visible from the station, and so is well suited for making behavioral observations of captive organisms. A small collection of scientific references is available in the station library, which also includes a small collection of novels. The station has a variety of scientific equipment and tools, including tree-climbing equipment, mist-nets and bird-banding gear. There are many kilometers of mapped trails to assist research, as well as two permanent hectare plots, banded birds and other baseline studies that help facilitate new research projects.

Thomas Paka is the Lakekamu contact person in Port Moresby. Any prospective visitors to Ivimka should communicate with him at: P.O. Box 1119, Boroko, NCD, PNG, (675) 325-8470 (phone), (675)325-2670 (fax).

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?

Bat Lyssavirus (relative of rabies)

In June 1996 this new virus was discovered in Australian bats. It is a member of the lyssavirus group and is a close relative of the common rabies virus. In November 1996 a human bat handler from Queensland became ill with numbness and weakness in her left arm, then developed encephalitis which resulted in coma and death within 20 days. She had contracted the bat lyssavirus. Both insectivorous (echolocator) and fruit eating (flying fox) bats from four states in Australia (Queensland, New South Wales, Northern Territory and Victoria) have been found with the virus. It is unknown if the virus occurs in New Guinea, but since the same bat speices do occur in Australia and New Guinea, we should assume the virus also does. The same vaccine used for classical rabies protects against the Australian bat lyssavirus. Therefore, if you will be handling bats you should get a rabies vaccination (three intramuscular shots in the shoulder, each of 1 ml rabies vaccine, over a four week period-- one shot on days 0, 7, and 28), and make sure your rabies vaccine titer is adequate to protect you (people usually need a booster shot of rabies vaccine every three years following initial vaccination). If you are bitten or scratched by a bat you should immediately scrub the area with lots of soap and water. If you suspect the bat that bit or scratched you was diseased and you don't have a rabies vaccination, you should get a post-exposure treatment for rabies (one shot of -- 20 international units per kg body mass-- of rabies immunoglobulin) at the same time as the first shot of a five shot series of rabies vaccine (intramuscular shots in the shoulder of 1 ml rabies vaccine on day 1, 3, 7, 14, and 28).

Symptoms: if this disease follows the same course as classical rabies, once you show symptoms the disease cannot be treated and it is fatal

References:

http://www.ah.csiro.au/newsline/Factsheets/lyssavirus.htm
http://www.dpie.gov.au/ocvo/issues/oiejan17.html
http://www.apha.org/news/publications/ccdm/rabies.html

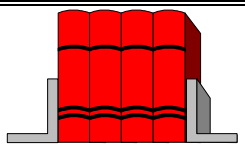
Japanese Encephalitis

Two cases of Japanese encephalitis (JE) have recently been confirmed from the North Fly District in the Western Province of PNG. Blood sera has tested positive for antibodies against Japanese encephalitis in the Daru area of Western Province (21% of all sera), the Upper Fly region (24% positive in 1993 up from 8% in 1990-1991), the Kareema region of Gulf Province, and Lake Kutubu in Southern Highlands Province. No JE viral activity has yet been detected in northern or eastern PNG. Three cases have also been confirmed from an Australian island in the Torres Strait with two fatalities. The disease seems to be spreading in New Guinea.

Japanese encephalitis is a viral infection of the brain that is transmitted through *Culex* mosquito bites (active late afternoon and early evening). Encephalitis means a swelling of the brain. It occurs in Southeast Asia and the Pacific region. There are 40-50,000 serious cases reported annually worldwide and it is fatal in 10-40% of these cases (those that develop serious encephalitis) and results in brain damage in another 30%. Pigs are the main viral host. The incubation period is 6-8 days; most infected people don't even know they have the disease (their immune system handles it); some people show mild flu-like symptoms of fever, chills, aches, headache. But some people develop serious symptoms of nausea, vomiting, diarrhea, mental changes and coma. This disease can be mistaken for cerebral malaria. There is no treatment for the disease once it is contracted. Anyone staying over 30 days in risk area should consider getting a vaccination of JE-Vax (especially if you will be in the area during the rainy season when there are more mosquitos). The vaccine is 85% protective against the illness. The vaccination is given in three shots over a 30 day period (days 0, 7, and 30). You need a booster every two to three years. You can get a shorter series (days 0, 7, and 14) but protection and duration of the vaccine are not as good as with the longer series. Although severe reactions to the vaccine are rare (0.1%), the vaccine can cause severe delayed allergic reactions (hives and swelling of the throat, especially in people with insect or food allergies), so anyone getting the vaccine should be near a health care center for at least three days after the last shot. You should not get the vaccine if you are very ill, have heart, kidney or liver disorders, have cancer, are pregnant, or have many allergies. Recently a much less expensive vaccine for JE has been developed in China by US and China researchers (1996 Lancet 347:1583-1586, 1570). Two doses of the new vaccine (SA14-14-2) given one year apart are effective in preventing the disease. This cheaper vaccine may enable large scale vaccination programs that have been impossible with the more expensive vaccine.

Symptoms: fever, headache, stiff neck, disorientation, seizures, coma

References: Dr. Stephen Flew and Dr. John Mackenzie in Ed Colijn's email newsletter
http://www.travelhealth.com/je.htm
http://www.cdc.gov/travel/jenceph.htm
document # 220200 from the CDC
http://cceb.med.upenn.edu/pages/hennessy/jenews.htm



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. Ed Colijn's news server aided this section quite a bit.

From The JICA Expert's Office, Biodiversity Conservation Project, P.O. Box 253, Bogor 16002, Indonesia, phone/fax: (62) 0251-314-921 or The Research and Development Center for Biology, The Indonesian Institute of Science (LIPI), P.O. Box 208, Jl. Ir. H. Juanda No. 18, Bogor 16002, Indonesia, Fax: (62) 0251-325-854, email: herbogor@server.indo.net.id:

1997. Research and Conservation of Biodiversity in Indonesia: Volume I. General Review of the Project.

1997. Research and Conservation of Biodiversity in Indonesia: Volume II. The Inventory of Natural Resources in Gunung Halimun National Park.

From A.A. Balkema Publishers, P.O. Box 1675, 3000 BR Rotterdam, Netherlands (cost L45/Hfl. 135) , or Old Post Road, Brookfield VT 05036-9704, USA (cost $70):

Bartstra, G.J., editor. 1997. Bird's Head Approaches. 258 pages. Volume includes archeological, botanical, and geological papers concerning the Bird's Head Peninsula of Irian Jaya.

From Conservation Breeding Specialist Group, IUCN-The World Conservation Union, 12101 Johnny Cake Ridge Road Apple Valley, MN 55124-8151 USA, Phone: (1) 612-431-9325, Fax: (1) 612-432-2757, Email: cbsg@epx.cis.umn.edu (cost US$35 each book includes postage, checks payable to CBSG; Funds may be wired to First Bank NA ABA No. 091000022, for credit to CSBG Account No. 1100 1210 1736; or use Visa or Mastercard):

Frith, C.B. and B. Beehler. 1998. Birds of Paradise. The first comprehensive, up-to-date monograph on the behaviour, biology, ecology, biogeograpaphy and natural history of the most ornate and dramatic group of birds on earth. Following the other volumes in the series the illustrations are first-rate. The 12 colour plates depict all 42 species, while the line drawings illustrate many behavioural traits never before recorded.

1998. Plant Diversity in Malesia III. Proceedings of the Third International Flora Malesiana Symposium 1995. Kew RBG. Contains information not only of relevance to Flora Malesiana but also to other major flora projects. A wide range of topics are covered, from cladistics to ethnobotany and phytogeography, together with reports on progress in this and other floras.

Sterly, J. 1997. Simbu Plant-Lore: Plants Used by the People in the Central Highlands of New Guinea. Dietrich Reimer Verlag, Germany. Between 1971 and 1984, the author spent nearly five years in the Highlands of Papua New Guinea, studying the agriculture of the Simbu people, and collecting more than than 1900 botanical specimens, the local lore of which he documented in detail.

From UMI Dissertation Services, 300 North Zeeb Road, P.O. Box 1346, Ann Arbor MI 48104, USA, phone (1) 800-521-0600, fax (1) 313-997-4652 (you can order any dissertation from a USA university this way by listing author, title, and university; cost about US$30; you can also do this online at http://wwwlib.umi.com/dxweb):

Dumbacher, J. 1997. PhD Dissertation. The ecology and evolution of chemical defense in the avian genus *Pitohui*. The University of Chicago.

From Pacific Heritage Foundation, P.O. Box 546, Rabaul, East New Britain Province, Papua New Guinea, phone: (675) 982-1294, fax: (675) 982-1381:

Membership fee includes regular mailings of pertinent information (PNG citizen- K10, Personal- K25 or US$15, or Stg. 10 or A$25, Corporate- K100).

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From the Fauna Malesiana Foundation, c/o Rene Dekker (editor), National Museum of Natural History, P.O. Box 9517, 2300 RA Leiden, The Netherlands, phone (31) 71-516-2622, fax (31) 71-513-3344:

Fauna Malesiana Newsletter (started in April 1996). This publication comes out twice yearly and subscription is free to interested parties (see article above under Conservation Project heading).

Additional books that can be ordered through the publisher and/or ISBN number:

Allen, G.R. 1996. Tropical Reef Fishes. Periplus Nature Guides. Periplus Editions, Singapore. ISBN 962-593-152-X.

Coates, B.J. and K.D. Bishop. 1997. A guide to the Birds of Wallacea. Dove Publications, Alderley. ISBN 0-9590257-3-1.

Kitchener, D.J. and A. Suyanto (eds.). 1996. Proceedings of the First International Conference on East Indonesian-Australian Vertebrate Fauna, Manado, Indonesia, November 22-26, 1994. Western Australian Museum, Perth. ISBN 0-7309-7040-X.

O'Shea, M. 1996. A Guide to the Snakes of Papua New Guinea. Beaumont Publishing, Singapore. ISBN 981-00-7836-6.

Sekhran, N. and S. Miller (eds.). 1996. Papua New Guinea Country Study on Biological Diversity. The Department of Environment and Conservation, PNG. Colorcraft Ltd., Hong Kong. ISBN 9980-85-111-2.

Tomascik, T., A.J. Mah, A. Nontji and M.K. Moosa. 1997. The Ecology of the Indonesian Seas. Part I. The Ecology of Indonesia Series, Vol. VII. Periplus Editions, Singapore. ISBN 962-593-078-7.

Tomascik, T., A.J. Mah, A. Nontji and M.K. Moosa. 1997. The Ecology of the Indonesian Seas. Part II. The Ecology of Indonesia Series, Vol. VIII. Periplus Editions, Singapore. ISBN 962-593-163-5.

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).

Richard Zweifel-- Publications on NG and Australian reptiles and amphibians

Zweifel, R.G. 1956. Results of the Archbold Expeditions. No. 72. Microhylid frogs from New Guinea, with descriptions of new species. American Museum Novitates 1766:1-49.

Zweifel, R.G. 1956. Notes on microhylid frogs, genus *Cophixalus*, from New Guinea. American Museum Novitates 1785:1-8.

Zweifel, R.G. 1958. Results of the Archbold Expeditions. No. 78. Frogs of the Papuan hylid genus *Nyctimystes*. American Museum Novitates 1896:1-51.

Zweifel, R.G. 1960. A new mycrohylid frog from the Adelbert Mountains of New Guinea. American Museum Novitates 2012:1-7.

Zweifel, R.G. 1960. Results of the 1958-1959 Gilliard New Britain Expedition. 3. Notes on the frogs of New Britain. American Museum Novitates 2023:1-27.
Zweifel, R.G. 1962. Results of the Archbold Expeditions. No. 83. Frogs of the microhylid genus *Cophixalus* from the mountains of New Guinea. American Museum Novitates 2087:1-26.
Zweifel, R.G. 1962. A systematic review of the microhylid frogs of Australia. American Museum Novitates 2113:1-40.
Zweifel, R.G. 1963. Results of the Archbold Expeditions. No. 84. New microhylid frogs (*Baragenys* [sic] and *Cophixalus*) from the Louisiade Archipelago, New Guinea. American Museum Novitates 2141:1-10.
Zweifel, R.G. 1965. Revisionary notes on Australian microhylid frogs of the genus *Spenophryne*. American Museum Novitates 2214:1-9.
Zweifel, R.G. 1966. A new lizard of the genus *Tribolonotus* (Scincidae) from New Britain. American Museum Novitates 2264:1-12.
Zweifel, R.G. 1966. *Cornufer unicolor* Tschudi 1838 (Amphibia Salientia); request for suppression under the plenary powers Z.N. (S.) 1749. Bulletin of Zoological Nomenclature 23(4):167-168.
Zweifel, R.G. 1967. Identity of the frog *Cornufer unicolor* and application of the generic name *Cornufer*. Copeia 1:117-121.
Zweifel, R.G. 1968. Reply to comments on the proposed suppression of *Cornufer unicolor* Tschudi, 1838 (Amphibia) Z.N. (S.) 1749. Bulletin of Zoological Nomenclature 24(6):328.
Zweifel, R.G. 1969. Frogs of the genus *Platymantis* (Ranidae) in New Guinea, with the description of a new species. American Museum Novitates 2374:1-19.
Zweifel, R.G. and F. Parker. 1969. A new species of microhylid frog (genus *Cophixalus*) from Australia. American Museum Novitates 2390:1-10.
Cole, C.J. and R.G. Zweifel. 1971. Chromosomes of a New Guinean microhylid frog, *Cophixalus riparius* Zweifel. Herpetological Review 3(1):15-16.
Zweifel, R.G. 1971. Results of the Archbold Expeditions. No. 96. Relationships and distribution of *Genyophryne thomsoni*, a microhylid frog of New Guinea. American Museum Novitates 2469:1-13.
Zweifel, R.G. 1972. Results of the Archbold Expeditions. No. 97. A revision of the frogs of the subfamily Asterophryinae family Microhylidae. Bulletin of the American Museum of Natural History 148(3):411-546.
Zweifel, R.G. 1972. A new scincid lizard of the genus *Leiolopisma* from New Guinea. Zoologishe Mededelingen 47(43):530-539.
Zweifel, R.G. 1972. A review of the frog genus *Lechriodus* (Leptodactylidae) of New Guinea and Australia. American Museum Novitates 2507:1-41.
Zweifel, R.G. 1972. *Batrachopsis* Boulenger, 1882, and *Lechriodus* Boulenger, 1882 (Amphibia, Salientia): request for designation of a type-species. Z.N. (S.) 1991. Bulletin of Zoological Nomenclature 29(3):147-148.
Menzies, J.I. and R.G. Zweifel. 1974. Systematics of *Litoria arfakiana* of New Guinea and sibling species (Salientia, Hylidae). American Museum Novitates 2558:1-16.
Zweifel, R.G. 1975. Two new frogs of the genus *Platymantis* (Ranidae) from New Britain. American Museum Novitates 2582:1-7.
Zweifel, R.G. 1976. Herpetological expedition to New Guinea. National Geographic Society Research Reports, 1968 Projects. National Geographic Society, Washington D.C., pp. 503-510.
Menzies, J.I. and Zweifel, R.G. 1976. Specific identity of specimens in the type series of the Papuan hylid frog, *Litoria arfakiana*. Annali Museo Civico Storia Naturale Genova 81:17-21.
Zweifel, R.G. and F. Parker. 1977. A new species of frog from Australia (Microhylidae, *Cophixalus*). American Museum Novitates 2614:1-10.
Dessauer, H.C., D.F. Gartside and R.G. Zweifel. 1977. Protein electrophoresis and the systematics of some New Guinea hylid frogs (genus *Litoria*). Systematic Zoology 26(4):426-436.
Zweifel, R.G. 1979. Variation in the scincid lizard *Lipinia noctua* and notes on other *Lipinia* from the New Guinea region. American Museum Novitates 2676:1-21.
Zweifel, R.G. 1979. A new cryptic species of microhylid frog (genus *Cophixalus*) from Papua New Guinea, with notes on related forms. American Museum Novitates 2678:1-14.
Menzies, J.I., M.J. Tyler and R.G. Zweifel. 1980. *Cophixalus* Boettger, 1892 (Amphibia, Salientia): Proposed designation of type species under the plenary powers. Z.N. (S.) 2298. Bulletin of Zoological Nomenclature 36(4):231-235.
Zweifel, R.G. and M.J. Tyler. 1982. Amphibia of New Guinea. Pp. 759-801 *in* J.L. Gressit (ed.), Biogeography and Ecology of New Guinea. W. Junk, The Hague, Boston and London. 2 Volumes.
Zweifel, R.G. and A. Allison. 1982. A new montane microhylid frog from Papua New Guinea, and comments on the status of the genus *Aphantophryne*. American Museum Novitates 2723:1-14.
Zweifel, R.G. 1983. Two new hylid frogs from Papua New Guinea and a discussion of the *Nyctimystes papua* species group. American Museum Novitates 2759:21.
Zweifel, R.G. 1985. Asterophryinae. Pp. 349-355 *in* Darrel R. Frost (ed.), Amphibian species of the world. Allen Press and Association Systematics Collections, Lawrence, Kansas.
Zweifel, R.G. 1985. Genyophryinae. Pp. 363-374 *in* Darrel R. Frost (ed.), Amphibian species of the world. Allen Press and Association Systematics Collections, Lawrence, Kansas.
Zweifel, R.G. 1985. Australian frogs of the family Microhylidae. Bulletin of the American Museum of Natural History 182(3):265-388.
Zweifel, R.G. and F. Parker. 1989. New species of microhylid frogs from the Owen Stanley Mountains of Papua New Guinea and resurrection of the genus *Aphantophryne*. American Museum Novitates 2954:1-20.
Burton, T.C. and R.G. Zweifel. 1995. A new genus of genyophrynine microhylid frogs from New Guinea. American Museum Novitates 3129:1-7.

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Alam, K., K. Gawi, J. Kola, F.K. Griffin, and I. Burrows. Phenolic compounds of seaweeds from Papua New Guinea: their determination and microbial activity. Page 75.
Leary, T. and L. Seri. An annotated checklist of mammals recorded in the Kikori River Basin, Papua New Guinea. Page 79.
Alam, K., K. Gawi, and W.I. Benko. Determination of iodine in seaweeds and seagrass from Papua New Guinea by the indirect atomic absorbtion method. Page 101.

Paratropica (Journal of Forestry Research)

This journal is published in Manokwari, Irian Jaya, Indonesia (ISSN: 0854-1795). Articles are written in Bahasa, but include English abstracts. For more information or to subscribe to the journal write to: Ir. Pudja Mardi Utomo (editor), Balia Penelitian Kehutanan Manokwari, Kotak Pos 159, Manokwari 98301, Irian Jaya, Indonesia. Thanks to Marcel Polak who sent xeroxes of the table of contents from each issue!

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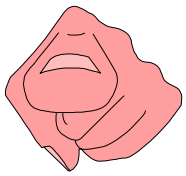

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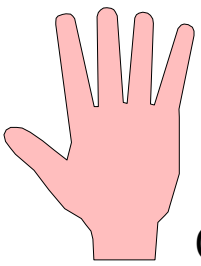

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Sampai jumpa lagi!