

SCIENTIFIC NEWS

Sabah expedition of the Tree Flora of Sabah and Sarawak Project

A botanical expedition organized and sponsored by the Tree Flora of Sabah and Sarawak Project was conducted between 4—14 April, 1994, at Bukit Tawai, Telupid, central Sabah.

Bukit Tawai is 1258 m high and located in the Bukit Tawai Forest Reserve, c. 5° 30' 30" N, 117° 3' 30" E. The Reserve covers 22,697 ha and has been gazetted as a Protection Forest Reserve. The site is one of a number of ultramafic peaks scattered across the northern and eastern parts of Sabah, making an 'ultramafic zone' which represents a belt of slightly acidic, serpentinized substrates with a high magnesium / calcium ratio and often substantial concentrations of nickel. From the air, the forest on ultramafic substrates is characteristically dense with small-crowned trees, and the flora is known to be peculiar when compared with the more familiar and extensive forests on sandstone in Borneo.

The base camp was established at the confluence of the Meliau River with a smaller, unnamed river draining the Bukit Tawai ridges. Between the base camp (alt. c. 150 m) and the summit of Bukit Tawai, some 5.5 km apart as the crow flies, there is plenty of forest to explore, which can be characterized in three categories, viz. the lowland forest between 150—350 m, the hill forest at 400—600 m, and the summit or ridge-top vegetation between 800—1258 m. The Tawai area has not been intensively collected and its location on ultramafic substrate made it extremely interesting, with the prospect of documenting many taxa which are either rare or endemic.

Participants were R. Banka (UPM), A. Berhaman (SAN), O. Bojo (UNIMAS), E. Campbell-Gasis, R.C.K. Chung (KEP), T.K.T. Fathahi (KEP), R. George (SAR), L. Madani (SAN), K. Mat Salleh (UKMS), A. Noorsiha (KEP), B. Perumal (WWF-Malaysia), K. Saleh (KEP), C. Shirarend (B), E. Soepadmo (KEP), J.B. Sugau (SAN), D. Sundaling (SAN), J. Tangah (SAN), C. Tawan (UNIMAS), R. Wise (OFI, U.K.), K.M. Wong (SAN), and A. Zainuddin Ibrahim (UKMB). Assisting them were the staff of the Forest Research Centre at Sandakan, with L. Sibuat as expedition chronicler.

For collecting botanists organized themselves into five field groups. Each group collected along different paths or directions as far as possible, but only three groups reached the summit, which otherwise was daunting in the physical effort required for the (minimum) 5 hour continuous climb.

Lowland forest on ultramafic. This type is found on undulating lands around the base camp, valley bottoms, and in the area stretching from the base camp to the waterfalls. Most parts outside the Reserve has been logged as is evident from the presence of old and new networks of logging trails and the abundance of various pioneer species such as *Alphitonia excelsa*, bamboos, *Dillenia borneensis*, *Euodia glabra*, *Macaranga* spp., *Mallotus* spp., *Melastoma malabathricum*, *Trema cannabina*, and *T. tomentosa*, *Uncaria cordata*, and many others. Among the dipterocarps found in patches of less disturbed and undisturbed

forest stands were *Anisoptera reticulata*, *Dipterocarpus acutangulus*, *D. confertus*, *D. geniculatus*, *D. grandiflorus*, *D. lowii*, *Hopea beccariana*, *H. ferruginea*, *Shorea agami*, *S. ovata*, *Vatica mangachapoi*, *V. micrantha*, and a few others.

Other medium-sized and large trees ('emergents') encountered included *Gluta oba* and *Melanorrhoea wallichii* (Anacardiaceae), *Canarium decumanum*, *Dacryodes rostrata*, and *Santiria laevigata* (Burseraceae), *Gymnostoma sumatrana* (Casuarinaceae), *Bhesa paniculata* (Celastraceae), *Calophyllum* spp., *Garcinia* spp., and *Mesua macrantha* (Clusiaceae), *Weinmannia blumei* (Cunoniaceae), *Elatiospermum tapos*, *Pimelodendron griffithianum* (Euphorbiaceae), *Engelhardia serrata* (Juglandaceae), *Beilschmiedia* sp. and *Cryptocarya* sp. (Lauraceae), *Koompassia malaccensis* (Leguminosae), *Horsfieldia* spp. and *Myristica* spp. (Myristicaceae), at least 20 different species of *Syzygium* (Myrtaceae), *Xanthophyllum* sp. (Polygalaceae), *Ganua kingiana*, *Madhuca* sp., and *Palaquium beccarianum* (Sapotaceae), *Heritiera simplicifolia*, *Scaphium macropodum*, and *Sterculia* sp. (Sterculiaceae), and several others.

The understorey trees and shrubs consist mainly of species of the Annonaceae, Euphorbiaceae, Rubiaceae, and several others. Palms, except for a few species of rattans, were rare. Common woody climbers included *Ampelocissus ochracea*, *Bauhinia kockiana*, *Gnetum* spp., *Uncaria cordata*, *U. callophylla*, and several others. Herbaceous and epiphytic plants are generally sparse and scattered.

The forest at the lower parts of the mountain along the southwest ridge was dominated by small-crowned trees, characteristic of forest on ultramafic soil, and greatly resembled the structure of some types of tropical heath (or kerangas) forest.

Forest along river-banks. The Meliau River is filled with rounded and smooth stones and boulders. The water is clear and swift. At the lower part the bank is generally gentle, but at the upper part often steep and bordered by large boulders. The Myrtaceae were represented by a conspicuous *Tristaniopsis* species and many species of *Syzygium*. *Buchanania arborescens* (Anacardiaceae), *Dillenia luzonensis* (Dilleniaceae, a new record for Borneo), and *Ternstroemia aneura* (Theaceae) were also common. Other common trees and shrubs include *Adinandra verrucosa* (Theaceae), *Artocarpus dadah* (Moraceae), *Glochidion* sp. (Euphorbiaceae), and *Guioa bijuga* (Sapindaceae). Among the rare but interesting trees and shrubs were *Radermachera pinnata* (Bignoniaceae) and *Scaevola micrantha* (Goodeniaceae). On the banks which apparently are frequently swept by rushing flood water following thunderstorms, a number of typical rheophytic plants were observed. Among these were species of *Aglaiia*, *Antidesma*, *Ficus*, *Ixora*, a few sedges, and the rare *Phyllanthus lamprophylla* (Euphorbiaceae), a species restricted to ultramafic sites in Sabah.

Hill forest. This forest type was observed along the trails leading to an unnamed hill located about 2 km due East of the base camp and en route to Bukit Talibu and Bukit Tawai up to about 600 m. In structure and floristic composition the hill forest was very similar to the lowland forest, but the size and height of the trees decreased with increasing altitude. *Dipterocarpus acutangulus*, *D. lowii*, *Heritiera simplicifolia*, *Hopea ferruginea*, *Shorea*

faguetiana, *S. kunstleri*, *S. monticola*, *S. ovata*, *S. platyclados*, and 5 species of *Syzygium* were the co-dominants. Understorey trees were mainly composed of species of the Annonaceae, Burseraceae (*Canarium*, *Dacryodes*, and *Santiria*), Clusiaceae (*Calophyllum*, *Garcinia*), Euphorbiaceae, Lauraceae, Meliaceae (*Aglaia*), and Myristicaceae. Above 600 m, but below 800 m, the forest changed in stature where the size (diameter and height) of trees decreased and dipterocarps became rare. In this forest the tree stands become dense, and the co-dominance consisted of *Calophyllum* spp., *Ceuthostoma terminale* (a species endemic to Sabah and confined to ultramafic substrates), *Dacrydium gibbsiae*, *Falcatifolium falciforme*, *Gymnostoma sumatrana*, *Syzygium* spp., *Tristaniopsis* sp., *Ternstroemia* sp., and *Tetractomia* sp. Past the middle portion, at around 800 m, a clambering bamboo (found to be an undescribed *Racemobambos*, and which prevented Wong from going faster!) was common in the understorey, often forming thickets. Among the rare species were *Borneodendron aenigmaticum* (Euphorbiaceae, with a highly unusual red sap!), which grows to quite a large tree.

Forest on ridges and summits of Bukit Tawai. Above 800 m, but below 1000 m, pole-like forest developed on ridge-tops, similar in structure and physiognomy to that of typical upper montane forest on non-ultramafic substrates. Common in this forest were species of *Beilschmiedia* and *Cinnamomum* (Lauraceae), *Dacrydium gibbsiae*, *Falcatifolium falciforme*, and *Podocarpus gibbsii* (Podocarpaceae), *Elaeocarpus* (Elaeocarpaceae), *Calophyllum*, *Garcinia* (Clusiaceae), *Lithocarpus* (Fagaceae), *Schima wallichii* (Theaceae), *Tetractomia tetrandra* (Rutaceae), *Syzygium*, *Tristaniopsis* (Myrtaceae). Mosses abound on the ground, tree trunks, and branches. Among the undergrowth herbaceous plants observed were species of *Begonia*, *Chasalia*, *Didymocarpus*, *Hedyotis*, and others.

At the summit area stunted vegetation of not higher than 2 m developed. Structurally and physiognomically the vegetation resembled the elfin forest of much higher mountains on non-ultramafic substrates. Plants found here included species of *Calophyllum*, *Ceuthostoma terminale*, *Dacrydium gibbsiae*, *Elaeocarpus*, *Falcatifolium falciforme*, *Garcinia*, *Ilex*, *Myrica esculenta*, *Nepenthes*, *Podocarpus gibbsii*, *Rhododendron*, *Symplocos*, *Syzygium*, *Talauma*, and several others.

At the summit itself, an undescribed species of *Lithocarpus* was found, which Sugau and Berhaman brought back to the great relish of Soepadmo (who was responsible for revising the Fagaceae for Flora Malesiana). This new oak was later drawn at base camp by Wise, who had joined the expedition to assist with illustrations and to observe plant life in the field. Her incredible efficiency with pencil and art pad attracted much attention, as she went through one drawing after another.

Botanical specimens. Botanically the expedition was a great success, and a total of 1296 numbers were collected. Although a number are potentially new to science, many require further comparative work to demonstrate their novelty. There were, however, several that could be recognized instantly as undescribed, including those mentioned above and a species of *Porterandia* (Rubiaceae).

Field trip to the Lesser Sunda Islands

Staff from the Darwin Herbarium (DNA) provided the botanical services for a flora survey on a new ore body on Wetar Island, about 55 km north of East Timor. There is an existing mine at Lerokis, c. 3 km inland on the northern side of Wetar where gold, silver, and barite are extracted. The new deposit is at Kali Kuning, 1.6 km inland and about 3.5 km east of Lerokis, in rugged terrain at about 150—250 m elevation.

The field work, undertaken 10—14th May, 1993, aimed to compile a baseline flora survey and description of the vegetation prior to mining activity. In addition to the set of specimens at DNA, duplicate sets of specimens have been distributed to BO and L.

Although the survey was confined to the small area of the ore body and of limited duration, 235 species of plants in 75 families were recorded. This survey has added considerably to the number of plant species known from Wetar. The collections included an undescribed species of *Acacia*, found on the peak to the west of the ore body (and also present at Lerokis), and a few new records for the region. The vegetation formations encountered in the survey were Strand, Gallery Forest, *Eucalyptus alba* Woodland, and *Eucalyptus urophylla* Woodland. The latter formation was only present on a small outcrop above the ore body. It contained the most interesting species observed during the study. The shrub, grass, and forb species showed distinctive Australian elements, including for instance *Gompholobium subulatum*. The latter, mentioned in previous reports as aff. *Dillwynia*, appears to be a new generic record for Malesia.

A report of the survey (The vegetation and floristics of Kali Kuning River, Wetar Island, Indonesia by G.J. Leach & C.R. Dunlop) was prepared for the mining company and copies have been deposited at BO and L. The species list is available from the authors in spreadsheet format. — G.J. Leach.

The Bukidnons of Mindanao: Their Ethnobotany and Conservation Management

A small tribal community (Tala-andig) in Central Bukidnon has been the focus of an ethnobotanical research project which also included insights into the native's brief history, folklore, values, traditions, arts and beliefs.

A number of wild plants were found to be of cultural significance. About 15 important ethno-medicinal plants were collected and documented. Further chemical and pharmaceutical studies are required for their contents and efficacy. Some wild plants reported as edible are significant as they serve for subsistence in times of emergency.

Two economically important wild species, *Fimbristylis globulosa*, locally known as Sud-sod or Tikog and *Cephalostachyum mindorense* locally known as bagtok were found to be almost disappearing. The two species provide the material for the weaving industry - bags, mats, doilies, decors, etc., and bamboo craft. As they are becoming almost depleted, the cottage industries in the area have been crippled.

In view of the findings, plans have been made for a massive domestication of the two

species with the support of the National Research Council of the Philippines and the Department of Science and Technology. During the last quarter of 1994 the NM-DOST GIA Project was implemented. A large scale plantation of these two species, is being put up. At the same time, experimental studies are conducted to determine the necessary deepness of water and the fertilizer rates for Sud-sod.

With the present project an indigenous community will be playing a role in the management of natural resources system that will maintain biological diversity and conservation processes. The project is an off-shoot of ethnobotanical studies conducted in Bukidnon and supported by the National Research Council of the Philippines. — R. M. del Rosario

Dipterocarp Manual

Dr. M.F. Newman is presently employed on a 3-year project (1993–1996) to produce a Manual of Dipterocarps for foresters. It is funded by the Overseas Development Administration of the British government, and run by ABW Associates Ltd. at the Royal Botanic Garden, Edinburgh. He aims to produce a set of manuals which will allow foresters to identify commercial dipterocarps to species level using simple field characters. The main focus is Indonesia, because for Malaysia, Singapore, and Brunei already several manuals are available, i.e. Symington's Foresters' Manual, Ashton's Manual, and Wood & Meijer's 'Dipterocarps of Sabah'. Once the species has been named foresters will be able to use the literature on sustainable forestry techniques in a way that is impossible at present with reliance on non-standard vernacular names.

As Malaysia and Brunei have already been covered, Newman is concentrating on western Indonesia, principally Kalimantan and Sumatra. He intends to treat the following 145 species which are judged to be the most valuable dipterocarps in the timber market at present.

Anisoptera		10 species
Shorea	red meranti	69
	yellow meranti	35
	white meranti	21
Parashorea		10

Ashton's taxonomy is generally accepted. All species and subspecies will be described in the DELTA format using Pankhurst's DEDIT editor. The final manuals will appear both in printed form and as on-line identification systems suitable for computers already used by logging camps. It may not be long before hand-held computers become sturdy enough to allow on-line identification in the forest.

Alongside the DELTA data files a database is being built up in Pankhurst's PANDORA system. This contains information on all names in the Dipterocarpoideae, herbarium specimens used in the project, and also all the collections at E. From this one can derive various

types of report on nomenclature, and create distribution maps, checklists, etc. It is intended to have the PANDORA files available through Internet.

While the taxonomic descriptions are made by Newman, Mr. P.F. Burgess will prepare descriptions of the timber, wood anatomy, and silviculture of the species. Dr. T.C. Whitmore will collate data on ecology. The draft text will be checked by experts on the family.

A brochure is currently being prepared. This will describe the project and will also include a sample manual covering the island of Singapore (20 spp which reach timber size). This pilot treatment will be widely circulated during 1995 for comments to discover the way potential users would like to see the data published. There will be demonstrations at the Flora Malesiana Symposium and IUFRO World Congress. The flexibility of the DELTA will allow local manuals to be produced when required, for example, by logging companies or aid projects. Anyone interested in receiving a copy of the brochure and pilot treatment should contact Dr. Newman at the Royal Botanic Garden, 20A Inverleith Row, Edinburgh EH3 5LR, U.K. Fax (44) 131 552 0382.

Botanical research in Metropolitan Manila

Phytogeographic studies of bryophytes. A phytogeographical study is made of the bryophytes of the six cities and eleven municipalities of Metropolitan Manila. The collection of bryophyte specimens covers all kinds of possible habitats: parks, roadsides, gardens, old walls, ruins, trees, etc. In order to describe and explain the distribution pattern of the bryophyte flora in relation to ecological factors particular attention is given to geography, topography, geology, soil zones, climate, and vegetation type. Each species will be grouped by its floristic elements and its affinities to those of the adjacent provinces and adjacent countries will be determined. — L. M. Valerio.

The Student's Handbook of Metro Manila mosses, liverworts and hornworts. Dr. R.M. del Rosario (PNH) is working on a 'Student's handbook of Metro Manila mosses, liverworts, and hornworts' in collaboration with Dr. B.O. van Zanten (GRO). It contains 44 taxa: 34 mosses, 9 liverworts, and 1 hornwort. It is intended primarily for use as an introductory, university-level course for Biology majors and for the enthusiasts who would like to identify the bryophytes along roadsides, in gardens, on concrete walls, and in parks within Metropolitan Manila. — R. M. del Rosario.

Pollen Morphology of Allergenic Plants Found in Las Pinas, Metro Manila. Dr. L.J. Bulalacao (PNH) is working on a research project 'Pollen grains of the Philippines: indigenous and endemic types', funded by the National Research Council of the Philippines. This project has described the pollen morphology (including polarity, symmetry, shape, size, kind of aperture, and wall ornamentation) of gymnosperms (8 families, 11 genera, and 21 species), monocots (13 families, 92 genera, and 145 species) and dicots (23 families, 128

genera, and 2223 species).

For Metro Manila, allergenic monad pollen grains were found mostly in the Amaranthaceae, Compositae, Gramineae, and Myrtaceae. Tetrads and polyads were mostly found in the Leguminosae. Nineteen species belonging to nine families were investigated. Nine belonged to the Gramineae: *Chloris barbata*, *Cynodon dactylon*, *Dactyloctenium aegyptium*, *Imperata cylindrica*, *Oryza sativa*, *Paspalum conjugatum*, *Pennisetum polystachion*, *Saccharum spontaneum* ssp *indicum*, and *Zea mays*. Two species belonged to the Leguminosae Mimosoideae, *Leucaena leucocephala* and *Mimosa pudica*. Two Compositae were *Tithonia diversifolia* and *Tridax procumbens*. The following families had one species each: Amaranthaceae (*Amaranthus spinosus*), Casuarinaceae (*Casuarina equisetifolia*), Lauraceae (*Persea americana*), Myrtaceae (*Syzygium samarangense*), Palmae (*Cocos nucifera*), and Tiliaceae (*Muntingia calabura*).

Furthermore, the distribution of allergy-provoking species in the area has been analyzed by comparing the results of quantitative studies on the vegetation of Las Pinas conducted in 1984 and 1994. The flowering period of the species mentioned above were taken into consideration, correlating them with the data on the quantity and type of pollen collected by the Durham sampler and Burkard 7-day recording volumetric trap placed in selected sites, including a hospital. Some proposals and comments on the ways of managing the public and private green areas in Las Pinas are included. — L.J. Bulalacao.

Resource ecological assessment of Manila Bay: mangrove, beach flora and cliffs vegetation studies. 298.655 ha were found to be occupied by mangrove trees. Twenty-five species of flowering plants belonging to 14 families were identified. *Avicennia officinalis* mostly occurred in the area of Cavite. *Rhizophora mucronata* was found dominating areas of Bataan, Bulacan, and Pampanga. Mixtures of *Avicennia*, *Sonneratia*, *Rhizophora*, and some *Aegiceras* were found in the coastal areas of Metro Manila. *Rhizophora mucronata* contributed the highest rate in litter production. The beach flora of Ternate, Cavite, Metro Manila, and some spots on the Bataan side contained 44 families with 116 species of flowering plants. The cliff vegetation was found concentrated at the Corregidor Islands. Hundred tons of artificial litter production was also discovered in Samal, Bataan. Branches of *Cocos nucifera* were planted at fathom depth around 500 ha. in the basin for trapping of *Acetes erythreus* or Alamang. More than 400 ha were also recorded as a plantation of *Nypa fruticans* at Paombong, Bulacan. — W.F. Vendivil.

Lichens as indicators of environmental change in Thailand

A three and a half year research programme at the Natural History Museum London (BM), on lichens as indicators of environmental change in tropical forests of Thailand has been funded by the Leverhulme Trust for two research fellows (P.A. Wolseley & Dr. B. Aguirre-Hudson) from 1990—1994. Following preliminary collection in lowland evergreen and dry dipterocarp forests and montane forests, plots have been established in seasonal

forests in Huay Kha Khaeng Wildlife Sanctuary, Doi Suthep Pui National Park and Doi Inthanon National Park. One plot coincides with a Smithsonian 50 ha plot in Huay Kha Khaeng, and others coincide with locations of research projects going on at Chiang Mai University or with those of the Royal Forestry Department Thailand (BKF). Workshops have been run at Chiang Mai University both for international and local students, and as part of the M.Sc. in Environmental Risk Assessment attended by participants from many southeast Asian countries. A Bibliography is already published (Aguirre-Hudson & Wolseley), and a checklist, including many new records from over 6000 specimens, is in preparation (Aguirre-Hudson & Wolseley). Collections will be available for further study at the Natural History Museum, the Bangkok Herbarium at the Royal Forestry Department (BKF), and Chiang Mai University. Other results will be published in *Global Ecology and Biogeography Letters* and in the *Journal of Biogeography* (i.e. ecological papers with lists of species; Wolseley & Aguirre-Hudson). A macrolichen generic key and field key to characteristic and indicator epiphytic lichens in Thailand has been tested with students, and which we hope to combine with a simplified monitoring method so that it can be used in Thailand and other regions of southeast Asia. — P.A. Wolseley, Leverhulme Research Fellow.

Australian Flora Malesiana participants

Initiated by Dr. A. Hay, the growing body of Australian collaborators in the FM network have organized themselves in an informal working group. This is a marvelous initiative which we hope will enhance mutual communication and collaboration, and especially the chances of finding extra funding.

European Union network Biodiversity in the Indo-Pacific region

Apocynaceae. Dr. D.J. Middleton (TCD) has completed his revisions of the genera *Ichnocarpus* (including most species of *Papuechites*), *Aganosma*, and *Anondendron*, which enabled the final preparation of the Apocynaceae for the Flora of Thailand. The revision of *Ichnocarpus* is published in *Blumea*; all but one species of *Papuechites* has been transferred to *Ichnocarpus*. Revisions of the closely related genera *Aganonerion*, *Parameria*, and *Urceola* are currently under way and complete revisions of *Carruthersia* and *Delphyodon* are planned for the near future. The intention is then to complete the remaining genera of the Apocynoideae for the Flora Malesiana area, beginning with *Parsonsia*.

Asclepiadaceae. Ms. J. Schneidt (ABD) focuses on a taxonomic revision of the genus *Tylophora* (Asclepiadaceae) for Flora Malesiana, including an examination of the biodiversity and ecology of its representatives in Borneo. She started her research with exploring characters from both living and herbarium material for their taxonomic usefulness, includ-

ing macromorphological as well as ultrastructural characters (by using electron microscopy).

Cunoniaceae. Dr. H.C. Fortune Hopkins (P) started a study of Malesian and Pacific *Weinmannia* species. She started her project concentrating on species delimitation and infraspecific variation. So far she has reviewed the literature on the taxonomy and anatomy, and gained an overview of the genus in the region from herbarium material. She has commenced macromorphological work on specimens from New Caledonia, Vanuatu, and New Zealand, to characterize differences between taxa, and to look at variation in leaf morphology in relation to ecology and geographical distribution.

Euphorbiaceae. Dr. S. Dressler (L, formerly BHU) embarked on his study of *Briedelia* and *Cleistanthus*. He has screened the relevant taxonomic literature and compiled a database of the basic taxonomic information. Some nomenclatural problems have been solved. He has started his morphological studies on *Briedelia* and has provisionally revised the herbarium material from Western Malasia.

Dr. P. Hoffmann (K, formerly BHU) started her revision for Flora Malesiana of the complex genus *Antidesma* with a literature survey of basic taxonomic information. Recently she carried out the first macromorphological character analysis.

Melastomataceae. Mrs. N. Cellinese (JBG) recently started a study of the systematics and phylogeny of the *Sonerila*-generic group with special focus on flower and fruit characters of the Bornean representatives. First she will collect the basic taxonomic information available in the literature, and a preliminary survey of systematically informative characters and of the biological function of the characteristic flowers and capsule.

Nepenthaceae. Dr. J.T. Mullins (RNG) will study the molecular evolution of *Nepenthes* in the Indo-Pacific region to produce a sectional-level classification within a phylogenetic framework. He will employ morphological and molecular data in a cladistic analysis. So far he has collected all necessary and major literature on the genus and added this information to a database (in collaboration with Dr. M. Jebb [TCD] and Dr. M. Cheek [K], who treat the family for Flora Malesiana). Further collaboration is sought with Dr. M. Chase (K) for advancement of the molecular analyses. Necessary preparations are currently being made to cultivate plants in Reading (including CITES-licenses) and contacts developed within Europe and the Indo-Pacific region to obtain the essential living material from botanic gardens and private growers.

Verbenaceae. Mr. R.P.J. de Kok (OXF) has embarked on a revision of *Faradaya* and *Oxera*. He will also revise the genera for the Flore de la Nouvelle-Caledonie.

So far he has collected the existing literature on the two genera and drafted a preliminary survey of the genus *Oxera*. Fieldwork in New Caledonia has been carried out in co-operation with ORSTOM, forest services and other relevant organizations in New Caledonia.

During this field trip, sugar contents and scents of flowers as well as samples for DNA extraction of *Oxera* were collected for further analysis. Observations on possible pollinators have been documented.

Zingiberaceae. Ms. R.J. Searle has been appointed in AAU since 1-12-1994 to revise the genus *Kaempferia* (Zingiberaceae) in Southeast Asia.