ETFRN NEWS 31

About ETFRN
National Focal Points Directory
ETFRN Newsletter
ETFRN Workshops
ETFRN Publications

Q & A Service
Add links

Topics
Regions
EU Commission

Vacancies
Funding / Grants
Training Courses
Conference calendar

Search
Site map
Home

E-mail us

ETFRN-News is a publication of the European Tropical Forest Research Network that appears three times a year:
Editor: Willemine Brinkman
Guest Editor: Val Kapos
Editorial assistance:Evelyn Whyte

CONTENTS

Cover illustration: An example of a 'healthy' juniper woodland in the northern mountains of Oman. Due to widespread and extensive dieback, few such stands can now be found. Photograph by Martin Fisher.

ETFRN Coordination Unit
c/o The Tropenbos Foundation
P.O. Box 232
6700 AE Wageningen, The Netherlands
Tel.:+31 317 49 55 16
Fax:+31 317 49 55 21
E-mail: etfrn@etfrn.org

About ETFRN
National Focal Points Directory
ETFRN Newsletter
ETFRN Workshops
ETFRN Publications

Q & A Service
Add links

Topics
Regions
EU Commission

Vacancies
Funding / Grants
Training Courses
Conference calendar

Search
Site map
Home

E-mail us

ETFRN NEWS 31

Editorial

The issue of low forest cover (LFC) has been placed on the agenda of international processes, including the Intergovernmental Panel on Forests (IPF) and the Intergovernmental Forum on Forests (IFF), to highlight the distinct needs of countries with low forest cover, which differ from those of countries with ample forest resources. Much discussion has focused on how to define low forest cover. Both the IPF and IFF processes generated studies examining possible criteria for defining LFC. The most recent of these, (http://home.att.net/~gklund/LFCreport.html) was coordinated for IUFRO by Gyde Lund. It explored a number of possible criteria including the total amount of forest and other wooded land, in relation to the population, the land area and the potential forest cover. The conclusion was that the most useful definition would be based on a combination of forest cover per capita and current forest cover as compared to original or potential forest cover.

Depending on the thresholds used and the methods of combining these criteria larger or smaller numbers of countries are classed as having LFC. It is clear that there are at least two ways for countries to have low forest cover:

- They may be climatically unsuited to forest growth and therefore have never had much forest cover. The arid countries of the Middle East and Central Asia fall into this group. In some cases (like Oman) pressures are causing continued forest decline, while in others (Israel) forest has expanded through both afforestation and natural regeneration.
- They may have suitable climates to support more extensive forest cover but have lost a significant amount of forest. The countries include those in Europe, which lost a great deal of forest cover many centuries ago and some in the tropics, like the Philippines where population pressure and other causes of deforestation make forest loss a current and continuous process.

The definitions used are only a means to an end. The important issue is to identify the needs of countries with LFC. These are driven by the scarcity of forest resources and consequent need for enhanced provision of forest goods and services. These goods and services range from the provision of timber, fuels and non-timber forest products to the conservation of biodiversity and protection of soils and watersheds. Research is needed to:

- Find ways to enhance the supply of these goods and services - among other approaches this includes afforestation, forest restoration, the enhancement of the management and use of trees outside forests, and the efficient use of products from trees, including food;
- Identify methods of wise management of existing scarce forest resources;
- Identify components of those resources that require the greatest stewardship and conservation.

Although the focus in the international policy arena is on nations, many nations contain regions that are characterised by low forest cover and the management and conservation problems that go with them. The northeast of Brazil is one such region.

Val Kapos, UNEP, World Conservation Monitoring Centre, United Kingdom

We are grateful to Val Kapos for editing this issue of the ETFRN News. We look forward to receiving your contributions.

Themes and copy deadlines for the next issues:

Non Timber Forest Products, November 15, 2000
Forests and Water, March 15, 2001

We look forward to receiving your contributions.

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ETFRN Coordination Unit
c/o The Tropenbos Foundation
PO Box 232, 6700 AE Wageningen
The Netherlands
Tel: +31 317 413033
Fax: +31 317 412099
E-mail:etfrn@etfrn.org
Http://www.etfrn.org/etfrn/

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ETFRN NEWS 31

About ETFRN
National Focal Points Directory
ETFRN Newsletter
ETFRN Workshops
ETFRN Publications

Q & A Service
Add links

Topics
Regions
EU Commission

Vacancies
Funding / Grants
Training Courses
Conference calendar

Search
Site map
Home

E-mail us

ETFRN and EC News

EC News
ETFRN News

Message from the chairman

By Olavi Luukkanen

Some time ago I was shocked when watching a widely praised movie on tropical forests at a forest exhibition. In that mega-screen film, the rain forest was beautifully displayed with its thousands of life forms, and the spectators were thrilled when being as if lifted through the multiple canopies high above the forest, which looked like a magnificent green sea.

Suddenly the movie theatre was filled with the unbearable noise of power saws, trees (undisturbed for millions of years as an emotional voice explained) started falling down, and the forest animals screamed and dispersed in all directions. Soon another strange group of people was shown, consisting of brave biologists who landed with their spacecraft-like balloon in the canopy and started to explore its wonders.

What then was shocking? In this movie, almost nothing was mentioned of the hundreds of millions of people who live in or near the tropical forest and who need it for their daily well-being. A stereotypic view of the general public was strengthened according to which all tropical forests are rain forests, conservation (with Northern countries doing the job) is the only objective, and economic utilisation of forests only leads to destruction.

I believe ETFRN is able to promote a more diversified view of tropical forests and tropical forestry that also includes trees on drylands and in agricultural production systems. ETFRN is unique because it connects researchers and other specialists in Europe and provides contacts between them and the rest of the world. An important aim of ETFRN is to serve as a discussion forum; another is to function as an EU task force on matters related to tropical and subtropical forests.

It is hoped that the present issue of ETFRN News will contribute to the understanding of the complexity of matters handled under tropical forestry. Countries with low forest cover have too often been neglected in the global forest debate, unfortunately also because of a wrong perception of tropical forests that researchers sometimes help to strengthen. There are several good reasons for emphasising drylands and degraded forest lands in forest policy development. These reasons have repeatedly been mentioned in the post-UNCED processes, especially in reference to the global convention to combat desertification (UNCCD). They were also discussed at the recently held IUFRO World Conference in Kuala Lumpur.

Compared to humid tropical forests, on drylands and degraded forest lands there are fewer inherent conflicts between utilisation and conservation, since the main concern is people who live on that land and use its trees, and who are the best managers of that resource. Because of the widely accepted common objectives for dryland development, forest research on these lands can also easily contribute

to improved management. The present newsletter will give you examples.

Olavi Luukkanen, ETFRN Chairman, Professor of Tropical Silviculture, University of Helsinki

top of page

EC NEWS

By Willemine Brinkman

DG Research INCODEV forest research support opportunities: call for Accompanying measures proposals

The call for proposals under the INCODEV programme, announced in the previous issue of the ETFRN News, was closed on 15 September 2000. Under the INCODEV programme, which runs until 2002, the future opportunities for tropical forest research funding will be very limited. The call for proposals for shared cost and concerted actions to be published in March 2001 is expected to focus the rural urban interface, and on health issues.

The main opportunity for INCODEV support to tropical forest research now is the call for 'accompanying measures' proposals. The call text and all other documents required to prepare a proposal may be downloaded from the following page: http://www.cordis.lu/inco2/calls/199906.htm

Accompanying measures include workshops, seminars, studies, conference support and networking in order to establish the state of the art in subjects of particular interest; to disseminate results to scientists, decision makers or other appropriate parties; to evaluate and monitor research projects for quality control purposes; to condcut regional dialogues and priority setting; to coordinate research groups or to provide specific RTD training.

The next deadline for proposals under INCODEV 'Accompanying measures' is 15 November 2000. Please note that proposals should be received by the Commission on or before this date.

EU research programmes evaluated

An expert panel has assessed the EU research programmes carried out between 1995 and 1999.

The evaluation panel was composed of 11 high-level independent experts from 11 countries. It assessed the implementation and achievements of Community research and technological development (RTD) programmes over the period 1995-1999, and covers activities relating to the Third (1990-94), Fourth (1994-98) and Fifth (1998-2002) Framework Programmes.

The panel makes a plea to European leaders to make sure that RTD policies in the Member States reinforce rather than duplicate each other.

As part of the assessment, the panel sent a questionnaire to participants in Framework Programmes. From the 2275 responses received, the following results emerged:

- 70% of participants said that the benefits of participation outweighed the costs;
- 71% would not have undertaken the work in the absence of the Framework Programmes;
- 75% of industrial participants said that participation had improved their competitive position;
- 65 % thought the whole application process was too slow and/or costly;
- 35 % felt the accompanying documentation was inadequate or difficult to understand.

The full report is available on http://www.cordis.lu/fp5/5yr_reports.htm.

Tropical forest budget line

The Regulations governing the operation of the 'Tropical Forests' and 'Environment' budget lines, in

force from 1995 and 1997 respectively, expired at the end of 1999. New Regulations have recently been adopted by the European Parliament and the Council. The Commission could not commit any funds for new projects under these budget lines before the entry into force of the new Regulations.

The procedure for project submissions under the new Regulations has been changed. Projects must now be submitted in response to Calls for Proposals.

The Calls for Proposals will be published later in the year, and probably not before mid October, in the Official Journal of the European Communities and on the SCR web-site at the following address: http://europa.eu.int/comm/scr/index_en.htm (search under Calls for Proposals - Grants). The Calls for Proposals will provide applicants with all the necessary information for submitting financing requests under these budget lines.

Documents available on websites of DG Development and SCR

The DG Development and SCR websites contain a wealth of information on tropical forest projects and EC development policy. The following important documents can all be downloaded, often in different language versions.

The current EC development policy document on Forests is entitled 'Communication from the Commission to the Council and the European Parliament COM(1999)554: Forests and Development: the EC approach'. It may be found through the ‘search page' on the DG development website: http://europa.eu.int/comm/development/. To directly reach the english version of the communication, you may go to: http://www.europa.eu.int/comm/development/lex/en/com990554.pdf

EU Tropical Forestry Sourcebook (1998), published by the Overseas Development Institute (ODI) in London, United Kingdom with EC funds: http://europa.eu.int/comm/development/publicat/descript/en/pub455.htm.

EC guidelines for forest sector cooperation (1996): http://europa.eu.int/comm/development/forests/en/entc.htm.

The evaluation of the forestry component of EU programmes in developing countries - 07/1998 - ref. 951291, completed in 1998, is available on the website of the SCR Directorate at: http://europa.eu.int/comm/scr/evaluation/reports/multi/951291.pdf.

Finally, the website of the Tropical Forestry Projects information system (TROPICS), which was developed by ODI with EC funds, is: http://www.oneworld.org/odi/tropics/.

top of page

ETFRN NEWS

By Willemine Brinkman

Since 1 July 2000, a new funding phase has started for ETFRN. Many of the changes in approach, including a stronger emphasis on workshops and other ‘active networking mechanisms', had already started during the 6-month extension of the previous funding phase.

The following three workshops were organised between January and July 2000:

Workshop: ' Learning from resource users - a paradigm shift in tropical forestry?' The Austrian national focal point of ETFRN organised the above workshop in Vienna on April 28 and 29, 2000. A short report of the workshop was prepared by Dr Anna Lawrence, who acted as the workshop facilitator. This report was included in the Spring /Summer issue of the ETFRN News. Dr Lawrence will also edit selected papers presented at the workshop. These will be included in the resulting publication, which will appear as ETFRN Series nr 1.

Workshop: ' Developing needs-based inventory methods for non-timber forest products: application and development of current research to identify practical solutions for developing

countries.' Rome, Italy, 4-5 May 2000. This workshop was organised by the ETFRN Coordination Unit in collaboration with FAO and Ms Jenny Wong, with funding from the Forest Research Programme of the United Kingdom's Department for International Development (DFID-FRP). The workshop was attended by around 40 participants. In addition, many FAO staff attended parts of the meeting. Five participants from Asia and Latin America were sponsored by DFID-FRP, and 7 participants from Africa were sponsored by FAO. The workshop was chaired by Ms Jane Thornback, member of the ETFRN Steering and Executive Committees, and until February Madame Chairman of the Steering Committee. More information on the workshop is available on the ETFRN CU website. The draft proceedings will soon be posted on the site for comments and additions.

Workshop: 'Cultivating (in) Tropical Forests: the evolution and sustainability of intermediate systems between extractivism and plantations'. This workshop, organised by the EU-funded project FORESASIA and CIFOR, was co-funded by ETFRN. Ms Heidi Asbjoernsen, Focal point for Norway, represented ETFRN in the organising committee. She will also be involved in the production of the proceedings.

New ETFRN Information leaflet and ETFRN logo

A new ETFRN leaflet has been produced, listing the contact details for the ETFRN National Focal Points, and summarising ETFRN objectives, activities and services. A copy of the leaflet is inserted in this issue of the ETFRN News. Should you wish to receive additional copies, please contact the ETFRN Coordination Unit. In the course of the leaflet design process, the ETFRN logo was slightly restyled.

ETFRN Directory printed

The printed version of the ETFRN Directory of European Institutions involved in forest research in the tropics, subtropics and Mediterranean has been updated. All contact persons listed in the Directory should have received a copy. Copies were also distributed to partner networks in Africa and Asia and associated organisations such as FAO, CIFOR, IUFRO, CATIE. For a copy of the new paper version of the directory, please contact the ETFRN Coordination Unit. An up to date version of the directory is available on the ETFRN website at: http://www.etfrn.org/etfrn/network/dir.html

top of page

About ETFRN
National Focal Points Directory
ETFRN Newsletter
ETFRN Workshops
ETFRN Publications

Q & A Service
Add links

Topics
Regions
EU Commission

Vacancies
Funding / Grants
Training Courses
Conference calendar

Search
Site map
Home

E-mail us

ETFRN NEWS 31

Organisations - Institutions - Programmes

DEAD OR ALIVE? THE UNCERTAIN FUTURE OF THE ARABIAN JUNIPER WOODLANDS

by Martin Fisher

When one thinks of forests or woodlands the Arabian Peninsula is not an area that springs immediately to mind, though in fact the region is a land of many varied botanical landscapes (Ghazanfar & Fisher 1998), a number of which are wooded. On the great desert plains low density woodlands of *Acacia*, *Prosopis* and associated species can be found, but the most spectacular Arabian woodlands are those dominated by species of *Juniperus*. These can be seen at the higher altitudes of the northern mountains of Oman and atop the great mountain spine that runs from the southern Jordanian border to Aden's doorstep.

From the border with Jordan at about 29° latitude to Taif at about 22°, *Juniperus phoenicea* can be found, and it overlaps along about 30 km of the Taif escarpment with *Juniperus procera*, which occurs southwards into the mountains of Yemen. In the northern mountains of Oman only one species is found, *Juniperus excelsa* subsp. *polycarpos.* Though these juniper woodlands can be found at altitudes as low as 1200 m they generally occur above 2000 m. There is no upper tree line since the maximum altitude of the Arabian mountains is 3700 m. Elsewhere within their range these junipers grow as high as 4500 m. The density of the woodlands varies from a maximum of about 200 trees per hectare, in the very open juniper woodlands of Oman, to as high as 4000 per hectare in Saudi Arabia. The latter have the 'feel' of a forest, though the canopy is still relatively open, with good light penetration and a rich development of undergrowth.

Despite their differing densities and species compositions and the fact that in Saudi Arabia and Yemen the woodlands have been heavily impacted by human activities, juniper woodlands throughout the Peninsula have one thing in common: at the lower altitudes they are all exhibiting extensive dieback and there are few signs of regeneration. In some areas this is so extreme that the woodlands look like a bone-yard for trees.

Concern for this problem stimulated Drew Gardner and myself to carry out a detailed survey of the condition of the juniper woodlands in northern Oman. We mapped the distribution of the woodlands, noted the extent of dieback and carried out a detailed survey of one small area of woodland as a permanent monitoring site (Fisher & Gardner 1995; Gardner & Fisher 1996). I was also able to use the same techniques to survey the condition of the juniper woodland of Raydah Reserve in south-western Saudi Arabia (Fisher 1997).

The figure below speaks for itself - woodland condition declines with decreasing altitude in a similar way on the densely wooded slopes of Raydah Reserve and in the relatively more open woodlands of the northern mountains of Oman. Whatever is causing woodland dieback, its effects are reduced above an altitude of 2400-2500 m in both areas. There are also similarities between the two areas in the decline in the proportion of trees bearing berries and male cones, and the

increase in the proportion of dead trees, with decreasing altitude, with marked changes at 2400-2500 m. There is a similar pattern of poor tree condition, dieback, and low fruit production at lower altitudes on both sides of the Peninsula. The foliose lichens in Raydah, which give the forest an elfin-like appearance, are dependent for their existence on cloud moisture. The coincidence of the transition zone between healthy and unhealthy woodland with the lower altitudinal limit of the lichens suggests that woodland decline may be related in some way to climate.

What is causing this dieback? Could it be remedied or reversed? The answer to the second question will depend on the answer to the first. I have proposed four hypotheses for the decline of the Arabian juniper woodlands (Fisher 1997), all involving climate changes in one way or the other, but operative at different spatial and temporal scales. The four hypotheses are not necessarily mutually exclusive:

- (1) Overgrazing by domestic and/or feral livestock has altered local vegetation structure, causing woodland decline at lower altitudes through effects on microclimate.
- (2) The global temperature rise of the twentieth century is causing woodland decline through temperature-induced dieback at the lower juniper ecotone.
- (3) Dieback is caused by periodic droughts combined with long regeneration cycles, the effects of which are more marked at the lower, hotter elevations.
- (4) The present arid phase in the climate of Arabia, which began between 4000 and 6500 years ago, is still developing, causing woodland dieback through a long-term increase in aridity.

Long-term monitoring of tree growth and temperature along an altitudinal gradient across the dieback zone, ecological surveys of areas protected from grazing, and climate reconstruction using dendrochronology (Fisher 1994; Fisher & Gardner 1998) will all be required for satisfactory hypothesis testing.

Finally, is this dieback similar to that which is occurring in the juniper woodlands around the Mediterranean, in the Near East and in the beautiful woodlands of Baluchistan, or in these areas are anthropogenic influences the key factor? There is a need to take a broader geographical view of this widespread problem, and I invite all those who are working with Eurasian juniper woodlands to contact me. Perhaps we need to set up a working group to look into the problem - a good place to meet would be at the Second International Colloquium on *Juniperus thurifera,* being held over 17 - 22 April 2001 in Marrakesh (contact M. Mohammed Alifriqui, alifriqui@cybernet.net.ma, or see **http://www.multimania.com/thurifere/symposium.htm** for details) - let us see what we can do together.

For further information please contact:
Martin Fisher
Department of Biology
University of the South Pacific
PO Box 1168, Suva, Fiji
Tel: +679 212559, Fax: +679 315601
Email: martin.fisher@usp.ac.fj

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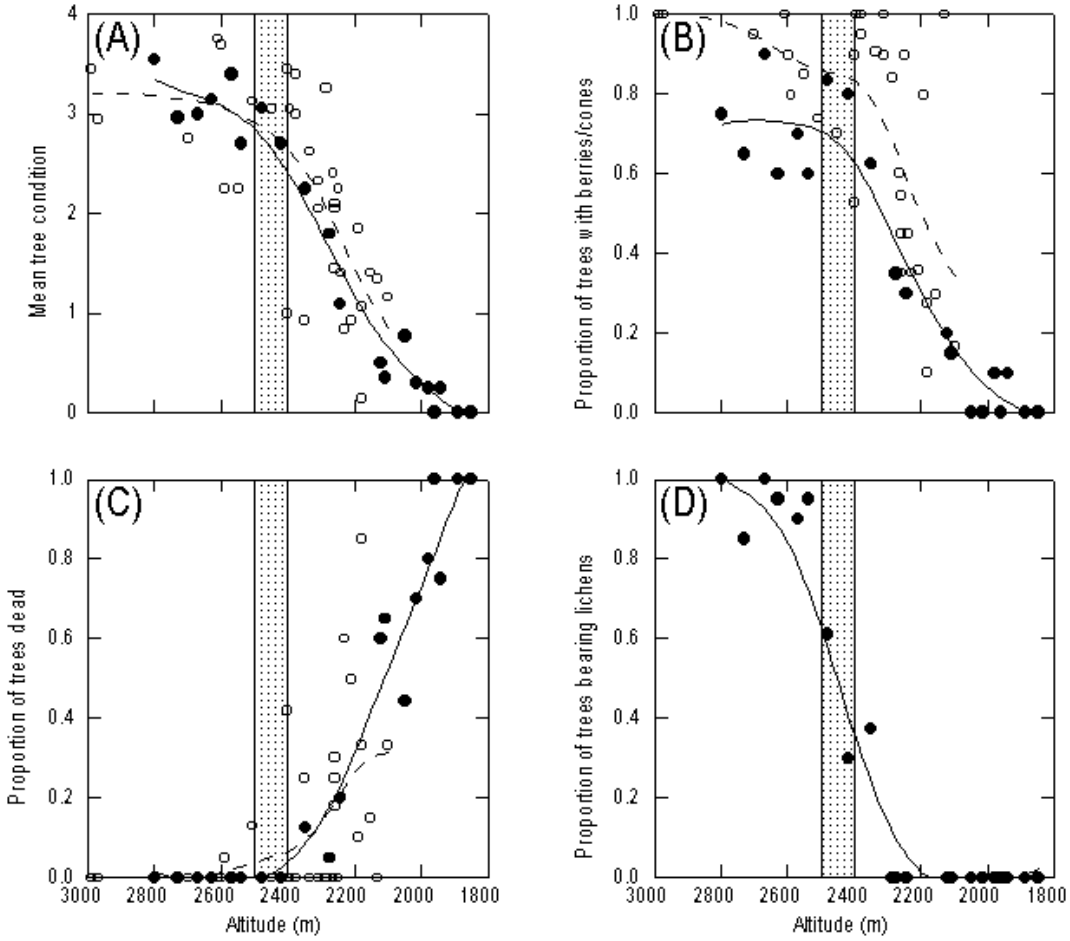

Figure Legend

Variation with altitude of (A) mean tree condition, (B) proportion of trees with berries and/or male cones, (C) proportion of trees dead, and (D) proportion of trees bearing foliose lichens in Raydah Reserve in the Asir Highlands of Saudi Arabia (closed dots and lines) and in the northern mountains of Oman (open dots and lines, extracted from Fig. 5 of Gardner & Fisher (1996)). Foliose lichens do not occur in the northern Oman mountains. The altitude axis is in descending order to emphasise the decline in tree condition with decreasing altitude. The shaded area indicates the zone of transition from a healthy to an unhealthy woodland.

top of page

CONSERVATION AND SUSTAINABLE USE OF MEDITERRANEAN FOREST IN ISRAEL

By M. Walczak

When Israel began its history as an independent state in 1948, the country had been nearly completely deforested as a result of extremely intensive use of land for agriculture and grazing. Most of the remaining small patches of forest had been planted during the British Mandate on Palestine, but a few were of unknown origin and were presumably remnants of natural forest. During the British Mandate most existing forest areas were declared reserves and protected by law.

The country experienced major changes during the first years after declaration of the State of Israel. Nearly all land became state-owned, the population density declined in previously densely populated areas, and breeding of black goats was made illegal. The resulting reduction of grazing and other pressures led to favourable conditions for vegetation regeneration throughout the country. Natural vegetation succession on the areas previously used as fields and pastures created a diverse and dynamic landscape where different vegetation formations, such as batha, garrigue and maquis and different plant communities developed according to climatic and edaphic conditions.

According to commonly accepted geobotanical classification, local maquis and forests in Israel can be grouped into four major types:

- Pine forest (*Pinion halepensis* alliance)
- Deciduous tabor oak forest (*Quercion ithaburensis* alliance)
- Evergreen oak maquis and forests (*Quercion calliprini* alliance)
- Carob-lentisk maquis (*Ceratonia - Pistacion* alliance)

Natural and semi-natural forests and woodlands cover a total area of approximately 80,000 ha, which constitutes more than 9% of the Mediterranean part of the country.

Changes in nature conservation policy - passive *vs.* active conservation

The first nature reserves were established in the late 1950's to protect the most valuable natural habitats and populations. At the beginning conservation was 'passive'; the protected areas were left without human interference to undergo spontaneous natural processes.

Scientific research on the resulting vegetation changes showed that the growing density of woody vegetation, particularly in the Mediterranean part of Israel, influenced not only the landscape, but also the biodiversity of plant communities. Earlier stages of vegetation succession, such as batha, were found to be more species-rich than dense garrigue or maquis. It became obvious that most of the species richness in Israel was related to disturbed areas rather than to spontaneously developed woodlands, and that active and controlled management is needed to halt biodiversity deterioration. Decisions to encourage grazing in open areas and in large parts of nature reserves followed. Despite the encouragement of grazing, the area of dense maquis is constantly growing. The accumulation of woody biomass increases the probability of wild fires.

As the time during which natural vegetation regeneration has occurred in Israel is rather short, it remains to be seen whether spontaneous regeneration of diversified, multi-storeyed, self-sustaining forest can actually take place under current conditions.

Forestry in the State of Israel

Forestry began to develop dynamically immediately after the establishment of the State of Israel. Afforestation programmes were based mainly on experiences in Central and Eastern Europe. Their declared purposes were mainly landscape modification, which remains relevant at present, and timber production, which proved to be unrealistic in the Israeli climate. Now the main use of forest is for recreation and leisure.

Planted forests in Israel cover about 90,000 ha, which is more than 10% of the Mediterranean part of the country.

Nature conservation problems caused by afforestation

Massive afforestation brought about many problems in the field of nature conservation, of which the most important are:

- Cultivation techniques, including the use of herbicides and other pest control agents, burning and ploughing reduce biodiversity and especially threaten rare species;
- Introduction of alien species, such as *Acacia saligna*, which can become invasive and threaten the local flora and vegetation;
- Widespread introduction of *Pinus halepensis*, a native species that had a limited distribution until 1948 and has since become invasive;
- Propagation for forest plantations of *Pinus halepensis* from seeds of foreign provenance threatens the local, remnant genotypes with extinction;
- *Pinus halepensis*, being a typical pioneer species dominates most areas of disturbance by fire and human activity and prevents the establishment of other woody species;
- Large areas of densely planted pine forests are highly flammable and increase the probability and intensity of wildfires, which threaten both planted forests and natural vegetation;
- Dense plantation in sub-optimal conditions results in weak trees that are vulnerable to pests and diseases. For example, *Pinus halepensis* is widely infested by an aphid, *Matsucoccus josephi,* which causes massive mortality*;*
- Growing use of native woody species for afforestation involves translocation of reproductive material around the country, and influences natural differences between populations growing in different conditions;
- Most pine forests deteriorate at the age of 30-40 years, and thus the goal of self-sustaining forests for leisure and recreation has not been achieved.

Administration, management and legal protection of forests and woodlands in Israel

The main administrative bodies involved in forestry and forest protection in Israel are:

The Jewish National Fund, responsible for afforestation and forest management;

Israel Nature and National Parks Protection Authority, manages nature reserves and National Parks and is responsible for nature protection all over the country.

The National masterplan for Forests and Afforestation, approved in 1996, grants certain areas a legal status as forested areas, including planted forests, natural woodlands and other open areas. Over 162,000 ha are designated by this plan for forest development. The Jewish National Fund is assigned to manage these areas as well as other planted forests.

Two main reasons cause the Israel Nature and National Parks Protection Authority to be involved in forestry policy and

practice. The first reason is its general responsibility for nature conservation in the country, and the second is the fact that many National Parks include planted and natural forests where management policy depends on INNPPA decisions.

Close professional collaboration between these two institutions has developed over the last two years. A joint team discusses mutual problems and conflicts. Joint scientific projects are undertaken to find answers to common questions and optimal solutions to shared problems.

For further information, please contact:

Dr Margareta Walczak
Nature and National Parks Protection Authority
Division of Science and Conservation
3 Am Ve'Olamo St.
95463 Jerusalem
ISRAEL
Tel: + 972-2-5005444 Fax: + 972-2-5005409

top of page

LOW FOREST COVER IN THE PHILIPPINES: FORCING ISSUES AND RESPONSES AT THE COUNTRY LEVEL

By Mark Mulligan

The Philippines is a country with low forest cover which has seen extensive deforestation in the last 100 years (see Walpole, this issue). As the ESSC study points out, these changes in forest cover have led to significant environmental and social impacts at the local, regional and country scales. A recent project (Monitoring Environmental Change In The Philippines, MAN/992/15, Dr. John Pitman), funded by the UK DFID through their Higher Education Links programme, has enabled long term field investigations on the hydrological impacts of land use change in the Philippine uplands at the plot and catchment scale. The project also employed GIS-based modelling approaches to analyse the dynamics of landscape sensitivity to land use change in the transition from high to low forest cover and in a changing climate.

Climate change and the Philippines

1998 was the warmest year this century in the Philippines (Hulme and Sheard, 1999) and, as in many countries, temperatures have been rising throughout the Philippines. Warming has occurred through all seasons, but particularly from June to August. The Philippines has also become drier with a 6% decline in rainfall this century (Hulme and Sheard, 1999). As a generally low lying country with more than 7000 islands, most of which are smaller than 1km, the Philippines is also very vulnerable to the 20-40 cm rise in sea level that has occurred since the 1960s.

According to their analysis of the MAGICC model, Hulme and Sheard (1999) indicate that, by 2080, temperature in the Philippines is expected to rise (relative to the 1961-90 average) by between 1.2 and 3.9 C depending on the CO_2 emissions scenario used and the model sensitivity. Under all scenarios warming is stronger in the north of the country, as is winter (Dec-Feb) drying whilst summer wetting (June-Aug) is highest in the south of the country.

Our own analysis of the results of greenhouse-sulphate integrations of three General Circulation Models (GCMs)[(1)], HADCM2, ECHAM and GFDL, indicates that annual average warming between the periods 1990-1999 and 2040-2049 ranges from 0.97 to 1.54C with rainfall reductions ranging from 43 168.5 mm/year.

Table 1 Temperature and rainfall change for the Mindanao grid cell of three GCMs between 1990-1999 and 2040-2049

Model	Temperature change (°C)	Rainfall change (mm/month)
ECHAM	+0.97	-11.6 (-139.6 mm/year)
HADCM2	+1.54	-14.0 (-168.5 mm/year)
GFDL	+1.25	-14.0 (-168.5 mm/year)

Hydrological Impacts of Climate Change

This climatic change is significant in its own right, but in combination with large scale forest loss which has rendered large areas hydrologically degraded, the impacts may be still more significant. Increased temperature and reduced rainfall will, almost certainly, reduce water resource availability for agriculture, river navigation and urban/industrial use whilst increasing the pollution load of the remaining water. At the same time, relatively inaccessible upland areas harbour the sparse remnants of the Philippine tropical montane cloud forest (TMCF) which is now threatened by the mining and agricultural frontier. Because of the unique ability of TMCF to scavenge water from passing cloud (Zadroga, 1981; Hamilton *et al.*, 1995), further damage to this forest will almost certainly combine with climate change to reduce water resource quantity and quality in the lowlands both seasonally and annually.

Landscape Sensitivity to Land Use Change in Tropical Montane Forests

Moreover it is clear from model experiments carried out with a distributed hydrological model developed within the context of this project, that the hydrological sensitivity to deforestation increases exponentially as catchments lose forest. In other words the hydrological impact of losing a unit (*eg.* hectare) of forest is much higher in a catchment with low forest cover than in a more heavily forested catchment. A series of experiments were carried out with a distributed hydrological model in a GIS environment calculating vertical and lateral fluxes of water at 25m spatial resolution on an hourly basis. The model was integrated for a full year using a scenario for land use change that totally deforested the catchment in 25 iterations. Catchment-scale totals of runoff and erosion were analysed for each iteration of the land use change model, and the hydrological sensitivities (change in runoff or in erosion per unit change in land use) were calculated.

The results were clear (Figure 1) , whether one went from forest to bare soil or forest to pasture, in the preliminary stages of deforestation the hydrological sensitivity to forest removal is low. However, once forest cover falls below 25% - connecting the network of deforested areas along flow paths - there is an exponential increase in the hydrological response to each unit of forest removed. In real terms this means an increase in hydrological extremes (flooding, drought), increased soil erosion, and hydrological and land degradation. Since the modelled catchments are composed of a number of smaller catchments and landscapes are constructed of inter-linking catchments, it is reasonable to suggest that this principle may hold at greater and lesser scales and that, as countries lose forest cover, their hydrological sensitivity to deforestation increases exponentially. The exact form of this relation will differ with catchment structure, geology and climate but the general principle: that connectivity of deforested areas along flow paths leads to increased sensitivity with deforestation is likely to hold throughout these environments. In the example shown sensitivity begins to increase sharply at 75% deforestation. According to the figures quoted by Walpole this issue, by 1999 the Philippines had only 18.3% forest cover remaining, placing the country very firmly in the zone of exponentially increasing hydrological impact. Will we see the exponential increase in hydrological response indicated by the models? We must hope not.

(1) The models were integrated with the IS92a emissions scenario - equivalent to 1% compound increase in CO2 emissions from 1990-2049 (Mulligan, 2000) and results extracted for the grid cell covering the large southern island of Mindanao.

For further information please contact:

Dr. Mark Mulligan
Environmental Monitoring and Modelling Research Group, Dept. of Geography
King's College London, Strand
London WC2R 2LS
United Kingdom
Tel: +44 20 78482280 Fax: +44 20 7848 2287
Email: mark.mulligan@kcl.ac.uk
http://www.kcl.ac.uk/geography
http://www.kcl.ac.uk/herb

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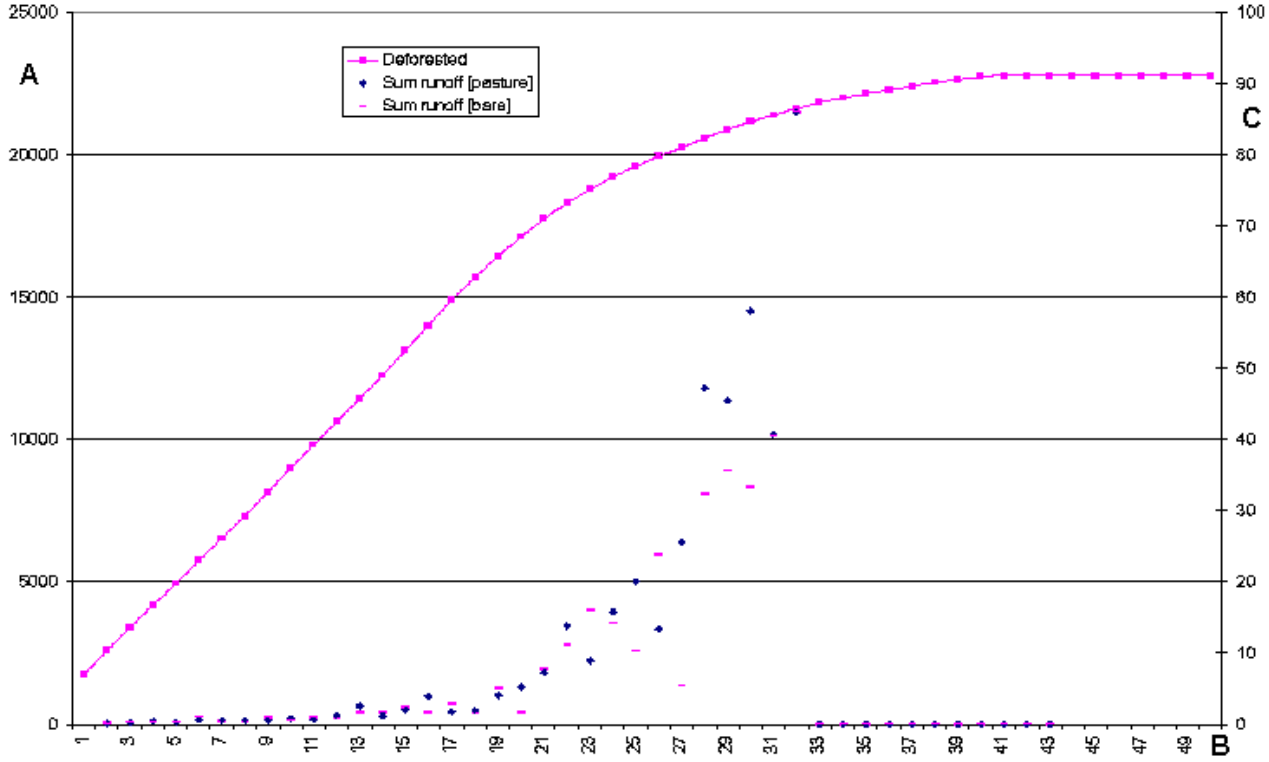
Figure 1. Hydrological sensitivity to deforestation



A: Number of cells deforested
B: Land use model Iteration
C: Runoff sensitivity (% chance in runoff/unit area deforested)

top of page

LOW FOREST COVER IN THE PHILIPPINES : ISSUES AND RESPONSES AT THE COMMUNITY LEVEL

By Peter Walpole

The Philippines is one of the most severely deforested countries in the tropics and most deforestation has happened in the last 40 years.

Estimates place forest cover in the Philippines in the year 1900 at 21 million hectares, covering 70 % of the total land area. By 1999, forests covered 5.5 million hectares; only 800,000 hectares of this was primary forest. As illegal logging continues, the remaining forest is endangered.

The destruction of the Philippine forest was the subject of a recent study (1999), *Decline of the Philippine Forest,* by the Institute of Environmental Science for Social Change (ESSC). This study traces the history of the decline, examines the causes and effects of deforestation, and discusses emerging perspectives. The study considers two possible Philippine scenarios for the year 2010. One assumes that meaningful steps will be taken to reverse the decline and offers some hope; the other scenario assumes that things will continue as in the past, and the outcome will be a continued national degradation of resources.

The Philippines is paying a high price for the destruction of its forests and a number of major problems confronting the nation can be traced directly to deforestation. Today, the country faces food insecurity due to soil erosion, which means depleted nutrients and low crop yield. In many provinces, at least 50% of the topsoil has been lost, and 70% of all croplands are vulnerable to erosion. The country's climatic conditions are such that typhoons sweep the country an average of 19 times a year. The topography is mainly uplands with a slope equal to or greater than 18% and these areas make up 52% of total land area. In the absence of forest cover and with frequent heavy typhoon rains, soil erosion, mass wasting, and landslides are induced.

The Philippines is facing water insecurity because of degraded and poorly managed watersheds. More than 57 % of the major watersheds are critically denuded, which means loss of water infiltration and slow recharging of water tables. Nationwide, water quality has deteriorated and cities like Manila, Cebu, Davao, and Baguio, are constantly facing water shortages. A country that once exported some of the finest woods in the world is now a net wood importer.

The decimation of the forest is a tragedy for indigenous peoples. Ethnic groups become forced to retreat into the interior and further impoverished. Government is doing little to raise these people above their subsistence level. Some have left

their lands, and the sight of indigenous peoples begging in city streets is not uncommon. They have lost their lands, and their culture has been degraded. With the destruction of indigenous cultures, the nation is losing a treasure that should be nurtured to enrich national cultural diversity.

This loss of cultural communities is closely linked to the loss of biodiversity. Tropical forests are rich in herbs, woody plants, birds, insects, and animal life. Destroying the forests means destroying the myriad creatures and flora on which the indigenous communities depend. Forest loss also means loss of forest products such as, rattan, resins, and gums, a source of livelihood for indigenous people. Wildlife is quickly disappearing and to date, the destruction of the ecosystems is taking a heavy toll on biodiversity: 18 species of fauna are already rare and endangered, while 43 species of birds are threatened with extinction.

The ESSC's response to these problems is multifaceted and flexible. However, in any approach, community management is central. This approach was discussed at such international conferences as the 1996 FAO Conference in Bangkok, the Intergovernmental Forum on Forests in New York in February 2000 (through the Working Group on Community Involvement in Forest Management), and at the World Bank Forest Policy Implementation Review and Strategy in Singapore in April 2000. A presentation on the role of indigenous peoples in watershed management was delivered to the House of Representatives of the Philippine Congress in December 1999.

ESSC is the Secretariat of the Philippine Working Group (PWG) for national resource management. PWG activities are documented in the ESSC publication, *Forest People Facing Change.* This monograph gives a history of the PWG, discusses the philosophy guiding its approach, examines PWG strengths and weaknesses, documents field visits, and critiques PWG findings. PWG members represent a wide variety of disciplines and backgrounds; expertise is drawn from the academe, government, NGOs, and funding agencies. Each member is there in his/her own capacity and not as a representative of an agency. Members feel free to discuss, question, and examine any problem without being held responsible for what others have said in the past or the present limitations of policy. Starting in the outlying *sitios,* where marginalised communities live, the group works its way up through the municipal to the provincial level. The PWG, after witnessing how government policies are being implemented, has been effective in having the national government modify its policies.

To promote community based forest and resource management, ESSC developed community mapping to ensure community participation and the articulation of community views and concerns. How this works is explained in the book *Community Mapping Manual for Resource Management*, published in conjunction with the DENR. Apart from enabling communities to present their own views, it introduces indigenous communities to modern technology and basic scientific knowledge. Another manual for trainers is being prepared.

For ESSC, the relationship between culture and ecosystems is of critical importance and this relationship is discussed in three publications: *Philippine Culture and Ecosystems, Resource Conflict and Cultural Management in Southern Sierra Madre,* and *Mindoro in the Balance.*

ESSC promotes community based forest management (CBFM) and assisted natural regeneration (ANR). While CBFM has been successful over the past years, the present leadership of the Department of Environment and Natural Resources (DENR) seems more interested in experimenting with timber corridors. However, it does not make much sense to cut regenerating scrublands and then to replant the area with alien species when the condition of the scrublands can be improved by ANR.

In the Philippines, the promotion of CBFM, especially in degraded watershed areas, is imperative. People living in watersheds have a stake in improving them, and by so doing, contribute significantly to solving the water problem of the agricultural lowland communities and of our cities.

For further information please contact:

Peter Walpole (Environmental Science for Social Change)
1/F Manila Observatory Building
Ateneo University Campus
Loyola Heights, Quezon City
Philippines
Fax: +63-2 426-5958
Email: essc@pusit.admu.edu.ph

top of page

INSTITUTIONS AND NATURAL RESOURCES IN THE MIOMBO REGION

Adapted from *CIFOR/EC/SADC Miombo Woodlands Research Briefs*, Issue 5

Where to with institutional arrangements and governance structures?

This project brief is largely the result of work on the project "Management of Miombo Woodland" funded by the European Union's Action in Favour of Tropical Forests, and facilitated by the Center for International Forestry Research (CIFOR), the Institute of Environmental Studies, University of Zimbabwe, the Faculty of Forestry, Sokoine University of Agriculture, the

Forestry Commission (Zimbabwe) and the Forestry Research Institute of Malawi. Bruce Campbell and Frank Matose prepared the text, with assistance from Dennis Kayambazinthu and George Kajembe. Additional support, for work in a case study area in southern Zimbabwe, is acknowledged from the U.K. Department for International Development through its support to the Zimbabwe: Micro-catchment and Common Property Resources project, and from the Swiss Agency for Development and Cooperation for its support to the project Stakeholders and Biodiversity in the Forests of the Future.

Moving to community-based management

These are exciting times for natural resource management in Africa, as more and more emphasis is placed on community-based approaches. This emphasis is sometimes supported by national policy shifts and changes in legislation, as with the forest policy changes in Tanzania and Malawi, the wildlife policy changes in Zimbabwe and Namibia, and the water policy changes in Zimbabwe. In other cases, there may be on-the-ground experimentation with community-based natural resource management (CBNRM) even when national policies are not necessarily supportive (e.g. the experimentation with 'resource sharing' in the State Forests of Zimbabwe).

Success stories

Emerging results from Babati in Tanzania, suggest that the shift of control from central government to local communities has seen a turn around in the resource base, from degraded and overused woodland to regenerating woodland with a set of rules governing use.

From Zimbabwe, much has been heard of CAMPFIRE, and of the many CAMPFIRE schemes that exist today there are some clear success stories, where communities manage animal populations sustainably for the benefit of the households in the community. Money derived from management has been ploughed back into the development of schools, clinics and roads.

Are we being too accepting of the new approaches?

The number of success stories to date is very limited. But the wave of enthusiasm for CBNRM is immense. We contend that the CBNRM concept is being uncritically accepted. Our recent research has shown that it is extraordinarily difficult to implement management systems based on common pool resources [(1)] in the miombo region. Most CBNRM schemes are based on common pool resources. the institutional/governance barriers to CBNRM include: lack of an enabling policy environment; absence or weakness of legitimate local institutions; power struggles at the local level.

There are also economic and biophysical barriers to CBNRM that need attention, including the low value of many resources and the low growth rates, but these are not dealt with further here.

The institutional component of CBNRM

Institutional factors are arguably the most important factors in determining the success or failure of CBNRM schemes. We believe that all too often development practitioners assume the existence of functioning local institutions, and assume that all that is required is for the state to change its policies, by devolving power to communities.

Supportive policies

The degree of policy support for CBNRM varies widely amongst southern African countries. In addition, within a country some policies may be supportive of local control while others may not (e.g. compare the wildlife and forestry policies in Zimbabwe). For effective CBNRM, it is believed that most rights should be devolved to the lowest level. However, government should retain the right to intervene in cases where the actions of local stakeholders impinge negatively on external stakeholders (e.g. downstream impacts, impacts on unique ecosystems of national interest). In addition, it may not be possible to resolve all conflicts or problems at a local level, thus higher level governance systems are needed that provide protection to marginalised groups, provide a forum for conflict resolution, etc.

Questioning the strength of local institutions

In Tanzania and Zimbabwe, post-independence local structures were designed to represent a bottom-up approach to development, but were in essence conduits for channelling propaganda and development ideas from the state to the local level. Village Development Committees (VIDCOs), as they were called in Zimbabwe, largely failed in most parts of the country as a result of lack of local legitimacy and institutional overlap with the persisting traditional structures.

While local traditional structures have been important in regulating resource use in many countries, the fabric of rural society is undergoing rapid change, much of which is impinging negatively on traditional structures. The rapid changes have also seen a rise in individualism and reduced community-related activities (reciprocity, communal work parties). Such changes do not bode well for community-based institutions.

With the withdrawal of the state from local resource management (largely for financial reasons), local institutions do not have the necessary external support to mitigate future conflict and implement various development tasks.

We argue that the formal rule-based systems which form the cornerstones of the proposed common property systems are far removed from the current institutional systems, which are based on a complex of norm-based controls, the formulation

and enforcement of which are steeped in subtle and elaborate processes. Formalisation comes with costs (e.g. negotiating time to set up a formal system, costly monitoring systems, etc.) that may be too high relative to the benefits. If the state cannot afford the cost of resource management, why do we so readily assume that local communities are any better able to do so, or that the costs will be lower?

Power struggles at the local level

Despite the policy commitment to 'community-based' natural resource management, there is accumulating evidence that many of the so-called CBNRM programmes are not community-based at all, but represent instead a shift in the site of community-state conflicts to a more local level.

For example, in Zimbabwe there is growing concern over the effectiveness of the Rural District Councils in ensuring the participation of resource users in decision-making on resource utilisation and management issues, and, more especially, in returning benefits to local communities. In Zambia, local beneficiaries often fail to see any of the revenue flowing from natural resource management programmes, because traditional authorities continue to intercept and use these funds for their own agendas without any real opposition. Furthermore, in many countries there are still on-going power struggles between the traditional authorities and the structures of local government. A lack of clarity regarding the roles of these institutions in a range of issues, including land allocation and natural resource management, complicates and politicises the implementation of CBNRM, and results in competition for power, recognition and control that deflects the focus away from the real target of CBNRM initiatives, the local community itself.

What we presently call institutions are largely isolated practices by 'individual actors' whose concern for the larger community is rather questionable. Thus, sacred woodlands are often dominated by the desires of the 'traditional' elites; rich cattle owners dominate grazing schemes; and many CAMPFIRE schemes are dominated by the officials of the local councils.

Where to from here - social change?

Taking devolution further

There is the tendency, in the devolution thrust that is sweeping the region, to empower local councils rather than communities themselves. It is likely that natural resource management will be more effective if it takes place at a lower level. Lower level structures should have the authority from local councils to implement and enforce rules, and to manage resources.

Working with existing organisations

The literature is replete with examples of projects that establish committees to run projects, but which disappear subsequent to the closing of the project. A challenge is to work with local organisations, many of which may have agendas that are different from the task at hand.

Strengthening village and local governance

Implementation of a suite of organisation-building tools is needed to strengthen existing organisations, from financial skills to facilitation skills.

Promoting collaboration

Given the multiple stakeholders at the local level, it is necessary to promote collaboration, through holding joint workshops, developing joint visions, identifying and streamlining the roles and responsibilities of different organisations etc. In the Zimbabwean context it is particularly important to develop a working relationship between the traditional and administrative structures.

Recognising diversity and multiple interest groups

The "communities" in "community-based natural resource management" seldom exist in any simplistic sense. Internal differentiation in resource endowment within communities is the rule; thus it is necessary from the outset to use tools to identify the various groupings within communities. There are also numerous overlaps in membership of interest groups, often with conflicting and competing interests. Considerable effort needs to be made to understand the context of CBNRM schemes, as context is likely to determine the success or failure of particular schemes. A range of different institutional models for resource management is necessary to cater for the diversity of contexts.

Having effective facilitation

There are illustrative examples of cases where facilitation by external persons has made a significant and progressive change to how local people manage and use natural resources. However, it is widely recognised that the local community itself must take the lead in defining the local institutional arrangements.

Codification of local rules

There are many arguments for and against codifying local 'traditional' rules, but where there is justification for more intense management of resources, then codification could be initiated through stimulating local-level dialogue to identify relevant controls that may need to be "formalised". The tendency of formalisation to curtail dynamism needs to be guarded against.

Resource sharing and conflict management at the local level

A key challenge to managing common pool resources is the problem of defining boundaries among different user groups. It has been argued that it may well be better to accept 'diffuse and soft' boundaries as a 'given' and set out from there. Thus management may be better undertaken in a context of resource sharing and conflict resolution, rather than exclusion management. Dialogue should be initiated on resources to be included in inter-village charters of access.

Prospects

The challenge in the years to come will be to take the promise of CBNRM and turn it into reality. Success stories are emerging, but their numbers are equalled or outweighed by failures. The rhetoric of CBNRM is likely to fall foul of an uncritical approach. Through detailed understanding of particular CBNRM schemes we hope to identify the way forward for ensuring success.

(1) Common pool resources that are jointly used by a number of people - they include grazing, wildlife, woodland products such as fuelwood, mushrooms etc, boreholes, springs and rivers.

For further information please contact:

Dr. Godwin Kowero, Regional Coordinator
CIFOR Regional Office
c/o Institute of Environmental Studies
University of Zimbabwe
P.O. Box MP 167
Harare, Zimbabwe
Tel:+263-4-334835/335301/333077
Fax: +263-4-334834
E-mail: g.kowero@cgiar.org
http://www.cgiar.org/cifor

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top of page

TREES OUTSIDE FOREST

Since 1980, the FAO has published a report on the state of global forest resources every 10 years. The FAO inventories provide statistical data on the forest cover according to the FAO forest definition. At the present time, a Forest Resources Assessment, named FRA 2000, is being done. This project gives particular attention to forest resources situated outside the forests (TOF). This interest comes from the statement that the role and the products of trees situated outside the forest have been neglected in inventories until today. Trees outside forest include all trees on agricultural lands, on pasture lands, in orchards, in agroforestry systems, in windbreaks, in hedges, trees in urban areas or wood-lots of small areas, etc. Little information about trees outside forest is available. However, they are important in terms of rural development. Trees outside forest provide food and financial resources to people who manage them and harvest their products. Consequently, FAO and CIRAD have undertaken a general study on this subject to show the importance of trees outside forest, what is at stake, how they are managed and how they can be inventoried. The ecological, technical but also, legal, social and economical aspects will be detailed. Quantitative and qualitative data about trees outside forest will be analysed through numerous local situations in the world. This study will be published at the end of the year.

If you have some relevant information, please contact:

Mr Ronald Bellefontaine
CIRAD-Forêt, Programme Forêts Naturelles
BP 5035
34032 Montpellier Cedex 1, France
Tel: +33 4 67593789, Fax: +33 4 67593733
Email: ronald.bellefontaine@cirad.fr

top of page

A FOOD FOR ALL SEASONS

By Eileen M. O'Brien

'Marula' (*Sclerocarya birrea*) is a keystone tree species of Africa's semi-arid woodlands. Its edible vitamin-rich fruit and storable nut- like seed kernels, rich in proteins & lipids, have made it a traditional African 'wild' food for all seasons (probably throughout the course of human evolution). This, coupled with its medicinal value and its potential for economic development and domestication, have prompted a DFID-funded project at the University of Wales-Bangor, in collaboration with ICRAF and the University of Swaziland, to produce:

a monograph on *Sclerocarya birrea* synthesising all published data on the species (biological, ecological, economic, etc.); a distribution map; extension materials.

For further details please contact:

John B. Hall or Eileen M. O'Brien
SAFS
UWB
Bangor
Gwynedd LL57 2UW
Wales, United Kingdom
Email: j.b.hall@bangor.ac.uk
Email: e.m.obrien@bangor.ac.uk

top of page

BAOBAB : THE TREE THAT HIDES THE SCRUB

Adapted from *Coraf Action* no. 15

The Senegalese are falling back on wild plants, such as fruit from forest-tree species like the baobab (*Adansonia digitata*), because of the cereal deficit. As a result, the Centre National de Recherches Forestières (CNRF) of the Institut Sénégalais de Recherches Agricoles (ISRA) is planning to carry out research into the domestic production and development of certain fruit-bearing trees. The aims are to:

- make an inventory of available resources;
- create high-yielding hybrid varieties;
- put together technical itineraries;
- develop conservation and processing techniques for wild produce;
- disseminate research results.

These activities should encourage the development of products and by-products, and the creation of small and large-scale processing units.

Although the baobab is resistant to drought and strong winds, it does not grow in the desert or in humid forest zones. It flourishes in the scrub of semi-arid zones in Africa. In Senegal, this multipurpose species grows on light, sandy or calcareous soil and reaches a height of 30 meters or more.

It is eaten by humans and animals, and is used for medicinal and craft purposes and fishing, as well as in and around the home. It can be grafted and grown from stem cuttings. It also grows from seed that germinates 3-5 weeks after direct sowing. There are on average 2,200 seeds/kg. The seed contains more protein than groundnuts, and more lysine (an essential amino acid for growth) than leguminous plants. Seed is boiled in water for twenty-four hours then soaked in cold water for about twenty minutes.

Daily calcium requirements

The fruit pulp (breadfruit ripening between January and April in the Sahel zone) is very rich in glucides, calcium, phosphorous, potassium, glucose, vitamin B2 (riboflavin), vitamin PP (niacin), Vitamin B1 (thiamin), and even contains more vitamin C (ascorbic acid) than an orange.

The dried leaves are eaten or sold as they are, or as powder. They are rich in calcium, iron, protein, lipids, and vitamin A (see *Coraf Action* no. 14). An adult's daily calcium requirements can be provided by 33 g of dry matter. Young leaves are an important source of fodder.

For further information please contact:

Samba Arona Ndiaye Samba
CNRF
BP2312,
Dakar
Senegal
Fax: +221 832 9617
Email: bathie@syfed.refer.sn

top of page

REGIONAL PARTNERSHIP FOR ALBERTINE RIFT MONTANE FORESTS

Albertine Rift Montane Forests: a hotspot particularly threatened

by S Kanyamibwa and O Chantereau

The Albertine Rift (defined as the biogeographic region along the western branch of the African rift, covering western Uganda, eastern D.R. Congo, Rwanda, Burundi, western Tanzania to northern Zambia) covers one of the most important biogeographic regions of Africa as it combines a rich biodiversity and a backbone position in the biological and geological history of the continent. The Albertine Rift Montane Forests (ARMF) are recognised to be important in terms of biodiversity conservation mainly due to the abundance of endemic plants and animals. Furthermore the forests of the Albertine Rift play an important role in local and regional climate regulation and erosion control, as well as providing various resources to local communities. However, ARMF face serious threats resulting mainly from a high population pressure, political instability, limited knowledge on their status, and the lack of sound public awareness on the conservation and sustainable use of these forests.

ARCOS Special Focus: Albertine Rift Montane forests

Following the recognised need for a regional organisation, the Albertine Rift Conservation Society (ARCOS) was founded in 1995. ARCOS is the only regional conservation initiative with a focus on biodiversity conservation in the Albertine Rift. Its overall mission is to enhance biodiversity conservation and the sustainable use of natural resources of the Albertine Rift ecoregion through the promotion of collaborative conservation action, awareness raising and biodiversity information exchange in the region. Since 1999, a special focus was given to Albertine Rift montane forests, using important funding from the Tropical Rainforest Programme of the Netherlands Committee for IUCN. A pilot project on "Networking and awareness raising for the conservation and sustainable use of Albertine Rift montane forests" was implemented by ARCOS to: assess the status of these forests; enhance awareness and conservation values of montane forests in the Albertine Rift region; and build a regional mechanism for information exchange on the status and sustainable use of montane forests in the region.

The project achieved the following:

- initiation of a regional network of institutions and individuals interested in Albertine Rift montane forest conservation;
- production of key materials - Special issues of ARCOS newsletter ("Backbone" in Engish and "Le Pilier" in French), fact sheets and a Technical Report entitled *"Conservation Status of Albertine Rift Montane Forests: Preliminary Review"*;
- increased awareness of the conservation and sustainable use montane forests;
- networking, information exchange and communication among individuals and institutions involved in Albertine Rift

montane forest.

Promoting networking, information exchange, capacity-building and public awareness

The above project, ARCOS promoted the development of a network of individuals and institutions interested in ARMF conservation and strengthened the dialogue and collaboration among local conservation initiatives. This was particularly achieved through a regional priority-setting workshop on *"Promoting community-based conservation and regional information exchange in support of Albertine Rift montane forests"* facilitated by ARCOS from 13th to 15th July 1999.

The workshop was attended by over 40 participants, including representatives of key conservation institutions (NGOs, government, universities, research institutions, etc.) from each country of the region and of regional and international organisations operating in the region. It reviewed current regional and international initiatives as well as national initiatives including specific selected site-based conservation case studies. It also carried out an analysis of the current conservation status of the Albertine Rift montane forests, identified problems, constraints, opportunities and threats, and identified potential responses and actions. A bi-annual forum on Albertine Rift montane forests was set up by the participants, with a plan to meet every 2 years. The next Albertine Rift montane forest forum is planned for mid-2001.

ARCOS works closely with local NGOs, through technical assistance or helping them to access seed funding. The workshop budget for example provided a small grant to 3 local NGOs, for the implementation of micro-projects aimed at the integration of local communities in the conservation and sustainable use of natural resources in the region.

From regional priority-setting to site action

One of the recommendations from the July 1999 regional priority-setting workshop for ARMF was to explore possibilities for integrated conservation and development actions in sites which need most urgent actions such as Itombwe Montane forest. In collaboration with the Congolese Institute for Nature Conservation (ICCN), local NGOs and experts interested in the future of Itombwe, ARCOS agreed to set up an integrated conservation and development programme with the objective of maintaining the biological integrity of the Itombwe Mountains and a balance between human uses and ecosystems productivity. A feasibility study has been initiated to review and synthesise the findings and recommendations of previous studies and, most importantly, to update the knowledge of the status of this important but threatened forest through the discussion with local communities.

Needs for regional biodiversity assessment and monitoring

While the importance of the Albertine Rift montane forests and the threats facing them have been mentioned at various occasions, the exact status of these forests remain unknown.

ARCOS is planning to conduct a long-term programme aimed at the following:

- to review the knowledge on biodiversity and socio-economic aspects;
- to review biodiversity monitoring activities and information exchange and gaps;
- to review/build on priorities identified at the last July Workshop and identify or initiate specific priority actions (depending on funding); and
- to build an effective regional framework in terms of networking, capacity building, information exchange, etc.

For further information, please contact:

Principal Co-ordination:
c/o World Conservation Monitoring Centre,
219 Huntingdon Road,
Cambridge CB3 0DL
United Kingdom
Tel: + 44 1223 277314
Fax: + 44 1223 277136
Email: samk@wcmc.org.uk or

Regional Co-ordination:
c/o NatureUganda
83 Turfnell Drive
P.O. Box 27034
Kampala, Uganda
Tel: +256-41-530 700
Fax: +256 41 533 528/530134
Email: arcos.rc@imul.com
http://www.wcmc.org.uk/arcos

top of page

FOREST MANAGEMENT IN UGANDA

By Brian Kerr and Henry Osmaston

The Commonwealth Secretariat has in the recent past co-operated with the Uganda Forestry Department in the publication of two major texts. In 1997, *The Uganda Timber Users' Handbook* by Patrick Kityo and Robert Plumptre was published, followed in 1998 by A Nature Conservation Handbook for Forestry Professionals by Simon Grove. Following this co-operation it was suggested that there was an urgent need to collect and preserve some of the forestry publications from before independence, notably the working plans for individual forests and the Commonwealth Secretariat could assist in the reproduction of this material.

By the end of the 1960s Working Plans and Management Plans had been prepared for all gazetted forest reserves in Uganda, and in some cases these had passed through a series of revisions, usually after 5-10 year intervals. Each plan provided in Part I summary information about the forest such as the legal status, soils, present vegetation, and the management history. Part II outlined the future management and set down operational guidelines. Such plans range from a few pages to volumes in excess of 100 pages. These documents were normally duplicated and occasionally printed and distributed widely in Uganda. In many cases copies were lodged in the then Commonwealth Forestry Institute in Oxford.

These working plans are primary sources for the forest managers today and provide important information for researchers and conservationists. They are also interesting documents providing an insight into the vision of an earlier generation of forest officers. Unfortunately these working plan documents suffered badly in the period of civil unrest in Uganda and in one incident the entire head office stock of reports was stolen. There was also an erosion of reference material from the district offices.

Current management and research, both by the Forestry Department and others, are hampered by the lack of information embodied in these planning documents. In recent years a priority task for the Department has been to prepare revised plans for all the working forests in the country and these older documents provide an essential basis for this work.

Following a request from the Commissioner for Forestry, in 1998 a number of these plans were collected from sources in the UK, and eight of these have now been reprinted in facsimile form directly from the old copies. The eight plans reproduced in this series, which are listed below, range from the foolscap sized type and unbound material dated 1934 to plans printed by the Government Printers, Uganda in 1950. All the documents have been brought to a standard size and given a common cover. The original authors have been acknowledged on the title page.

List of Working Plans reprinted

- Budongo and Siba Forests, 1945-1954
- South Mengo Forests, 1948-1957
- Impenetrable Central Forest Reserve, Kigezi District, 1961-1971
- The Bugoma Forest, First Revision, 1960-70
- Bunyoro Forests, 1934
- South Mengo Forests, Mengo District, First Revision, 1961-1971
- Kalinzu Forest reserve, 1970-1980
- Ruwenzori Central Forest Reserves, First Revision, 1961-1971

There has been a limited print run.

For more information please contact:

Brian Kerr
Commonwealth Secretariat
Marlborough House, Pall Mall
London SW1Y 5HX
United Kingdom
Tel: +44 20 7747 6373 Fax: +44 20 7747 6307
Email: B.Kerr@commonwealth.int

top of page

IMPORTANT BIRD AREAS IN KENYA

By Leon Bennun

The first phase of the Kenyan Important Bird Areas programme is now complete with the publication of *Important Bird Areas in Kenya* (by Leon Bennun and Peter Njoroge; published by Nature Kenya, Nairobi, 1999; available in the UK from Natural History Book Services). IBAs are places of global importance for bird conservation (and usually for the conservation of other biodiversity too). They are identified by standard criteria based on the presence of species that are threatened, endemic, characteristic of particular biomes, or (for congregatory birds) occur in very large numbers.

Sixty IBAs have been identified in Kenya of which more than a third (22) are forests - demonstrating the biodiversity

significance of forested areas in this low forest-cover country. Almost all of these IBAs (20/22) are gazetted as protected areas, mainly Forest Reserves, but 77% (17/22) are nonetheless classed as severely or critically threatened. Clearly, formal gazettement does not guarantee adequate protection: most of these sites are threatened by encroachment, illegal logging and unsustainable use of forest products.

For each site the directory provides details of geography, biodiversity and conservation issues. It also presents the results of an analysis to set priorities for conservation action. Forest IBAs classed as 'Critical' include the montane forests of Mt. Kenya, Mt. Elgon and the Aberdares, Arabuko-Sokoke Forest, the tiny fragmented forests of the Taita Hills, the riparian forests of the lower Tana River, Kakamega and South Nandi Forests, and the forest remnants of the south Kenya coast.

For more information please contact:

Leon Bennun
Ornithology Department
National Museums of Kenya
P O Box 40658
Nairobi, Kenya
Tel: + 254 2 749986
Fax: +254 2 741049
http://www.museums.or.ke
Email: leon@africaonline.co.ke

top of page

STRATEGIC PRIVATE EFFORTS FOR THE CONSERVATION OF PARAGUYAN BIODIVERSITY

By J.L. Cartes

Paraguay is a landlocked republic, divided by the large Paraguay River into two distinct regions. The country is located in a transition zone among the important ecoregions of the Chaco, Cerrado, Pantanal and the Interior Atlantic Forest. Biological, cultural and landscape approaches to conservation strategies were adopted in the 1980s. Before that, protected areas were established for historical reasons, or according to the availability of state lands and decision-makers' interests.

In 1989, to complement the design of the protected system, and because 95% of the national territory is privately owned, a Program on Private Nature Reserves was begun as an initiative of a Paraguayan NGO, the Moisés Bertoni Foundation (FMB). The Interior Atlantic Forest, one the Paraguayan main ecosystem of humid subtropical forests, has been subject to strong deforestation pressure, and today only *ca.*2,000,000 hectares (Bozzano & Weik 1992) remain. The Program focused its efforts in the establishment of protected Areas in this ecosystem, but is also supporting private initiatives in other parts of the country.

In 1990, the first organised study for the effective conservation of biodiversity identified 23 high-priority areas in the Eastern Oriental Region of the country (Acevedo et al. 1990). Of these, three corresponded to Private Nature Reserves and one to a National Park. Six others belonged to other categories of protected area, and one of these was repealed by legal action of the people affected (Cerro Sarambí).

In co-operation with the Directorate of National Parks and Wildlife (DNPVS; the institution for the management of public protected areas), the National System of Protected Wild Areas (SINASIP) was finished in 1993. This was the first strategy for conservation areas at national level (DNPVS-FMB 1993). SINASIP had determined three subsystems of protected areas administration: (a) public administration; (b) areas under the administration of Itaipú Bi-national (hydroelectric dam); and (c) private administration. Within SINASIP, there are six Private Nature Reserves and 16 potential areas for conservation to be implemented by the DNPVS.

Until 1993, private nature reserves had developed quickly, with the incorporation of numerous private properties into the Program. These properties are evenly distributed both in the eastern as in the western regions of the country, and they are of high biological importance.

In 1994, law number 352 on Protected Wild Areas officially recognised all the subsystems of administration of protected areas considered in the SINASIP. However, it also established that the State could administer any one of them (including the private areas). This caused landowners to be very cautious, in some cases stopping implementation of protected areas on their lands. A new Resolution (079/2000) of the DNPVS (still to be validated by decree of the Presidency of the Republic) recognises this effect of law 352, and points to clear the need to declare protected areas under private domain.

Some landowners' interest in conserving their lands continued despite the lack of governmental support for private conservation. Two properties continued actively within FMB's program and facilitated the process of implementation of Private Nature Reserves. Most of the other properties within the system respected the zoning made by FMB and did not exploit the areas reserved for conservation. A few properties were forced to sell or "develop" (deforest) their areas.

This paper evaluates the general situation of these Private Nature Reserves and their contribution to the SINASIP in order to assess the strategic importance of Private Nature Reserves in Paraguay.

Analysis and Criteria

The three subsystems of the SINASIP were compared by, evaluating size, design, land tenure and legal situation, geographical location, ecosystems under protection, and infrastructure for each subsystem. Special consideration was given to Mbaracayú Forest Nature Reserve (RNBM), which is officially in the SINASIP Private Subsystem (the area belongs to Mbaracayú Foundation and is managed and operated by FMB). The RNBM is a unique case of administration where The Paraguayan State, The Nature Conservancy, the FMB and the World Bank are all involved (Gauto 1989). For this analysis the RNBM was considered as part of the Autarchic Subsystem, due to its perpetual protective status, conferred by its own law (112/91), which ratifies an International Agreement. This perpetuity distinguishes it from Private Nature Reserves, which by definition are neither perpetual nor created by law. The study was confined to the eastern region of the country, which holds the most threatened biodiversity at a global level (Dinerstein et al. 1995).

Details of the protected areas analysed are available from the authors.

Contribution of Private Nature Reserves to the Design of SINASIP.

The main criticisms of the Private Subsystem are, firstly, that these protected areas are restricted to the supposedly small size of private properties and, secondly, that their continuity is insecure. The total land areas in each subsystem are comparable (Table 1). Although it is true that landowners cannot protect such very large areas as some National Parks, their advantage resides in the unquestionable legal situation of land tenure. Landowners possess inalienable rights in the administration of their property. The same applies to areas managed by autarchic entities, and this is radically different from the Public Subsystem, where several areas are still in conflict with private ownership due to poorly defined limits, juridical litigation, incomplete expropriation, and other factors.

A real challenge for Private Nature Reserves(PNRs) is to guarantee their continuity through time. Of the 248,000 hectares proposed as PNRs, 20.5% have sofar been implemented in such a way that there are nolegal or technical constraints to their management. In this sense, the Private Subsystem has performed better than the Public Subsystem, which has only implemented 8.3% of the 408,270 hectares declared as protected areas (Table 1). However, this situation is expected to change due to the resources now available for public land administration. The only subsystem able to manage all its protected areas so far has been the Autarchic one.

Another important role of the Private Subsystem is in improving the geographical design of the SINASIP in relation to ecosystem fragmentation, especially in the Interior Atlantic Forest (IAF). The Private Subsystem decreases distances among neighbouring protected areas, and thus increases potential connections between them. If the average distance of each protected area from its four nearest neighbouring protected areas (one for each geographical quadrant) is calculated, the overall average for the whole system decreases from 65 km to 45 km when the private subsystem is included. This is of great importance to many of the most critical areas for conservation. For example, the proposed areas for San Rafael National Park and Mbaracayú Forest Nature Reserve are 47% closer to other protected areas when private reserves are included.

The so-called Autarchic Subsystem possesses the best resources and means for the administration of its areas. In the Public Subsystem, there is a serious lack of personnel and maintenance equipment. The National Report (DNPVS) mentions the need to hire at least 250 new officials and also points out that numerous public areas lack basic infrastructure. The Private Subsystem has the advantage of effective land management, although mechanisms to guarantee the existence of these reserves are still fragile, principally because of invasions by "landless" people. Many landowners maintain basic infrastructure in their properties and have personnel assigned to the protected area. Control measures in these private lands lack a legal framework, and therefore it is necessary to co-ordinate actions with forces of public order (e.g. police).

Contribution of Private Nature Reserves to biodiversity conservation.

Biodiversity and its conservation can be analysed based on the representation of both natural ecosystems and fauna inside the protected area network. Existing data on flora are inadequate in their coverage of protected areas and are thus not included in this analysis.

Eastern Paraguay has three main dominant landscapes: the Interior Atlantic Forest (originally of 80,000 km^2); the wetlands (originally *ca.* 61,000 km^2); and the Cerrado (originally *ca* 18,000 km^2).

Based on both nominally protected area and effective protection, the Autarchic Subsystem protects mainly IAF and a small area of wetlands (corresponding to Yacyretá). The Public Subsystem nominally protects an excellent representation, due to the careful prioritisation of areas, but has a low effectiveprotection in the IAF and the Cerrado, and no effectively protected wetlands. The Private Subsystem protects substantial amounts of IAF and wetlands, both nominally and effectively, but completely lacks effective protection of Cerrado, due to the desertion of the Pitanohaga PNR (Table 2).

Even the nominally protected areas contain a poor representation of the original extent of these ecosystems, except for Cerrado, where 15% of the original extent is nominally protected. This is drastically reduced when only the areas under effective protection are considered. The Private Subsystem together with the Autarchic one represents the largest effort in the protection of IAF, the most threatened ecosystem.

Scientific studies of the fauna protected in the different subsystems are still incomplete, but some studies comparing the

subsystems do exist. Yanosky (1998) reported that Private Areas (in this case including the RNBM) have the highest degree of vertebrate representation at the national level (Table 3). Lowen *et al.* (1996) proposed the designation of 30 priority areas for the conservation of birds, of which 7 are PNRs. Thirty-nine percent (39%) of nationally threatened and 66% of globally threatened mammal species in Paraguay are represented in PNRs (Cartes et al 1998).

Conclusions

This analysis has demonstrated the advantages of developing private conservation models in Paraguay. It is difficult to see how else a country where 95% of the land is privately owned could implement a protected areas system strong enough to adequately conserve its natural heritage.

Adequate conservation of the country's biodiversity will only be achieved when the SINASIP is implemented in an effective way, including all the components planned in 1994. The Public Subsystem areas should focus its efforts in the consolidation of those areas already legally established but not effectively implemented, and should strengthen the management of, at least, the largest protected areas (Ypoa, Paso Bravo and San Rafael National Parks).

The inclusion of the Private conservation Subsystem within the SINASIP appears to have a high positive impact in the general design of the protected areas network. The precarious situation of the Public Subsystem and the lack of state resources point to the need to strengthen the private sector. The Private Subsystem has not really been supported within government initiatives, principally because of ambiguity in the interpretation of laws and decrees concerning protected areas. There is an evident need for the development of mechanisms and extra-governmental incentives to motivate landowners to conserve nature. The new conservation easements based on the opportunities given by the legal code help to develop these incentives.

There is also an urgent need for the National Authority for protected areas management and administration (DPNVS, Law 352/94) to be more open to current initiatives. It took six years for this Authority to recognise the importance of the implementation of the Private Reserve System. An update of the Strategic Plan of the SINASIP was recently presented (Ferreiro 1999), wherein the importance of these private PNRs is recognised. The same Strategic Plan highlights the need to include the protected areas of the country within sustainable development models, which is in turn hard to achieve due to the inadequacy of Wildlife Law 96/92. The modification of this law will help the development of incentives and models of alternative uses of biodiversity, either for local communities or for private conservation areas.

In terms of costs and opportunities, the development of private models of conservation is strategic and of high-priority. Private conservation is a valid way to improve the design of the reserve network, to conserving biodiversity of national and global importance, and to develop models within the sustainable use framework.

Acknowledgements

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For further information please contact:

Jose L Cartes
Programa de Apoyo a Inciativas Privadas
Fundación Moisés Bertoni
C.C. 714
Asunción
Paraguay
Tel: +595 21 608740/600855 Fax: +595 21 608741
Email: paip@pla.net.py

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Table 1. Land area (ha) included within the three SINASIP subsystems in Eastern Paraguay. Nominal Land Area is the total area designated as protected in each category, and effective protection is the protected land area in which land tenure and administration lack technical/legal constraints.

Subsystem	Nominal land area	Effective Protection
Autarchic-RNBM	104,750	104,750
Public	408,270	33,970
Private	248,480	51,000

Table 2. Ecosystem representation (in hectares) in the three subsystems of protected areas analysed.

Nominal protected areas			
	AF	*Wetlands*	*Cerrado*
Autarchic-RNBM	98,610	6,140	0
Public	139,200	146,000	120,570
Private	68,900	20,200	159,380
TOTAL	*306,710*	*172,340*	*279,950*
Effective protected areas			
Autarchic-RNBM	98,610	6,140	0
Public	23,700	0	10,270
Private	36,000	15,000	0
TOTAL	*158,310*	*21,140*	*10,270*

Table 3. Vertebrate species richness in the different subsystems at the national level (Yanosky 1998)

Subsystem	Priority areas	Public	Private	Autarchic
Species richness	438	735	819	738

top of page

PLANTAS DO NORDESTE: BREJOS AND CAATINGAS

RESEARCH ON THE BIODIVERSITY OF FOREST ECOSYSTEMS OF THE SEMI-ARID REGION OF NORTHEAST BRAZIL

by S Mayo

Since 1993, the Plantas do Nordeste Programme, based in Recife, Brazil, has been carrying out biodiversity inventory

work on forests of Northeast Brazil, focussing on two of the major ecosystems of the region, the Brejo forests and the Caatingas.

The Brejos of Northeast Brazil

Brejo forests are moist, mainly evergreen, tropical forests which occur on the windward slopes of plateaux within the semi-arid interior, the so-called "Drought Polygon". Vegetationally they are considered to be part of the Atlantic Forest biome of Brazil, but until the PNE project of 1993-1998, no systematic survey of their composition had been made and little was known of their flora.

Brejo forests occur in many parts of NE Brazil, mainly in the states of Bahia, Pernambuco, Paraíba and Ceará, forming a scattered mosaic of forest islands that are thought to represent relicts of more widespread moist evergreen forest during mesic periods of the past million years or so.

Although their total area is tiny in comparison to the caatingas (see below) the Brejo forests are very significant socio-economically and have played a crucial role in the history and agricultural economy of NE Brazil. Their favourable microclimate and permanent water courses favoured the cultivation of cash and export crops such as coffee and sugar cane, their tall forests provided valuable timber for construction, and these factors promoted the growth of towns that became politically and economically important, e.g. Areia in the state of Paraíba. During the periodic catastrophic droughts that have characterized the history of NE Brazil, the Brejos became temporary refuges for the people of the caatingas, who were forced from their homes by hunger. Some of these migrations had far-reaching effects in other parts of Brazil; terrible droughts around the end of the nineteenth century in the state of Ceará swelled the population of rubber tappers in Amazonia. More recently the same factors contributed to the mass migration of northeasterners to the major cities elsewhere in Brazil, such as Sao Paulo and Brasilia.

The Brejo forest project undertaken by PNE focussed on the state of Pernambuco. It was financed by the UK government's Darwin Initiative, with training grants from Brazil's National Council for Scientific and Technological Development (CNPq), and implemented by the Botany Department of the Federal Rural University of Pernambuco, in collaboration with the Botany Department of the Federal University of Pernambuco, the Royal Botanic Gardens, Kew, and the Empresa Pernambucana de Pesquisa Agropecuaria (IPA).

The aims of this project were threefold:

- to locate more precisely the remaining areas of Brejo forest;
- to make an inventory of their vascular plant species;
- to produce a report which highlights the present condition of, and threats to the survival of the forests.

The field programme took place over a period of four years. During this time it was possible to survey relatively comprehensively three areas (Buique, Serra Negra de Floresta and Brejo dos Cavalos), and make less complete surveys of 7 others (Taquaritinga do Norte, São Vicente Ferrer, Pesqueira, Serra Negra de Bezerros, Bonito, Brejo Madre de Deus, Ibimirim).

A total of 956 species of vascular plants were recorded and identified by taxonomic specialists during the period of the project. Many other collections made still await more complete identification, so the eventual inventory total will certainly be higher.

The species identifications in the published checklist were prepared with the help of 105 specialist taxonomists, and the identification process was also supported in various ways by the Herbarium of the Royal Botanic Gardens, Kew. These measures helped to ensure reliability of the species identifications, which is very important in biodiversity projects.

Besides the new inventory data, the project also provided a large amount of training for botanists in Pernambuco at undergraduate and postgraduate levels. The botany departments of the two federal universities of Pernambuco were actively involved in the field programme, and many students received training in field techniques and plant identification. The project provided an important support for postgraduate students and made possible a range of thesis research on forest composition and taxonomy of the Brejo forest flora.

The report on the current conservation status of the forests found that the current level of protection of most areas is precarious at best and often lacking. Follow-on studies are urgently needed to establish more clearly how local communities interact with and impact on the forest ecosystem and what kinds of sustainable use could be developed to help protect them more effectively. There is a growing consciousness in the region of the importance of preserving Brejo forests as resources for tourism, leisure, biodiversity and education. With the first major baseline study now complete, Plantas do Nordeste aims to promote follow-up action which can turn these aspirations into more concrete measures, in collaboration with local NGOs and government agencies.

Contacts:

Plantas do Nordeste Biodiversity Subprogramme:

Dr. Simon Mayo

Royal Botanic Gardens Kew
Richmond
Surrey TW9 3AE
United Kingdom
Email: s.mayo@rbgkew.org.uk

or Dr. Regina Barbosa,
Email mregina@dse.ufpb.br

Brejos Project:

Dr. Margaret Sales
Dept de Biologia
Universidade Federal Rural de Pernambuco
Email: mfsales@zaz.com.br

top of page

THE CAATINGAS OF NORTHEAST BRAZIL: IS A GOVERNMENT CONSERVATION POLICY FOR THE AREA NOW IN SIGHT?

By R Allkin, M Rodal, A Figuereido and J Virginio

Biologists are showing increasing interest in the deciduous thorn forests of semi-arid Northeastern Brazil, known as Caatinga. The Caatingas occupy about 834,666 km^2 in an area known as the Drought Polygon, which includes ten of the northeastern States of Brazil from Northern Minas Gerais to Ceará and Rio Grande do Norte. It is the predominant vegetation type in at least five of these states: Pernambuco, Paraiba, Ceará, Rio Grande do Norte and Bahia. The area, which contains over 40 million inhabitants, is of considerable economic importance for Brazil. The unstable long-term climatic patterns in the area, which produce unpredictable rainfall, combined with lack of co-ordinated land management and wholesale destruction of native vegetation have resulted in severe problems of erosion for local farmers. This has produced a drought economy, relying more on disaster funding from Federal sources to ameliorate the worst of the effects of drought, than on enlightened control and management of land-use.

Biologists familiar with the area have long argued, with little response from official quarters, that inappropriate land use, aggravated by removal of the native vegetation, is largely responsible for the present problems. Native caatinga vegetation shows considerable diversity both in physiognomy and species composition, ranging over a wide diversity of soil types. Dominant plant species include spiny Acacias, Mimosas and other Leguminosae, Anacardiaceae, Euphorbiaceae, and a great variety of cacti and spiny Bromeliaceae. There are also many species that are of potential and actual economic importance for local communities, providing a wide range of products, including:

- timber for building, fenceposts and firewood;
- commercially exploited fruits such as the Umbú, *Spondias tuberosa*;
- many valuable nectar sources for honey;
- fibres;
- a wide range of proven or potentially valuable medicines.

However, for many years the caatinga has been largely neglected by biologists, many of whom have been more interested in the richer humid rainforests of the Amazon and Atlantic Brazil. Some biologists have viewed the caatinga as a secondary vegetation, resulting from human settlement and disturbance. Recent studies, however are providing increasing evidence of the caatinga as a centre of biodiversity with many endemic species and even genera of plants and animals.

To date Plantas do Nordeste (PNE) has provided students and funds for two projects studying the Biodiversity of Caatinga: one in Pernambuco run by Dr. Mari Rodal of the Federal Rural University in Recife (Email: rodal@truenet.com.br) and the other run by Prof. Angelica Figuereido, from the Federal University of Ceará in Fortaleza, (Email: angelica@ufc.br) which ultimately aims to cover the States of Ceará, Rio Grande de Norte e Piauí. The latter project ("Caatingas and Carrasco") received funding from Souza Cruz, and in addition to producing systematic and ecological information has provided environmental education materials for use in the municipalities where the studies were carried out.

At a recent workshop on the Caatinga held in Petrolina, Pernambuco, scientists and others with an interest in the Caatinga, from many parts of Brazil, assembled to propose a list of priority areas for conservation. The meeting was organised by Biodiversitas jointly with Conservation International and the Federal University of Pernambuco, under the aegis of the Brazilian Ministry of the Environment. A strong botanical contingent was co-ordinated by Plantas do Nordeste with the participation of more than 25 of the more senior and active botanists in the region, representing at least six of the nine states. This group, collaborating and sharing data through the PNE program, was able to provide a firm foundation of data to support the conservation proposals, with preliminary evidence showing that over 300 species and 18 genera of plants are endemic to the caatinga and in danger of extinction.

The starting point for each botanist involved was a draft species checklist provided by PNE through its Information Centre

(CNIP - the Northeast Centre of Plant Information, based at the Federal University of Pernambuco in Recife - see next article). All new data being gathered on the plant species of the caatinga, their distribution and utilisation, is also being accumulated and co-ordinated by CNIP, thus helping botanists over a wide region share their data, avoid duplication and present their information in a comparable manner.

PNE is also actively involved in disseminating information and developing projects in the area, both to demonstrate the importance of the caatinga flora as a rich source of biological diversity, and to investigate the appropriate and sustainable use of caatinga species. Projects include such topics as medicinal plants, forage plants of the caatinga, field guides for identification of caatinga species, floristic survey and conservation of caatinga species. A new study on the sustainable use of caatinga species as fuelwood, in relation to annual growth rates, is also being planned by PNE, in collaboration with the Jodrell Laboratory at the U.K.´s Royal Botanic Gardens Kew.

The workshop showed the benefits of collaboration among the botanists of the region and the benefits from co-ordinating and sharing information. CNIP will further ensure maximum benefits are obtained from the analysis and dissemination of this information, to help maintain the diversity of caatinga vegetation and better provide for the beleaguered communities who strive to maintain a livelihood in the area.

For further details of the results of the Petrolina Workshop please contact:

Jair Virginio, Coordinator,
Association Plantas do Nordeste
Av. General San Martin
1371 - Bloco 7 - Sala 5 - Bongi
50761-000 Recife PE
Brazil
Tel/Fax: +55 81 446 1486
Email: jair@elogica.com.br

top of page

PLANTAS DO NORDESTE: SUBPROGRAMME FOR INFORMATION, DISSEMINATION AND TRAINING (SIDT)

by Dr R Allkin and Dr E Sampaio

Plantas do Nordeste (PNE) - see previous article on Brejos and Caatinga forests - is taking an innovative approach to the organisation, exchange and delivery of information about plant biodiversity. Scientists that are generating new information about the plants of the region and their use and management are in partnership with those dealing directly with local communities and striving to benefit them through alternative and more sustainable use of their plant resources.

SIDT currently has a five-year project (1998 - 2002), funded by the UK Government's Department for International Development, which has created three new units to implement the programme:

- A **plant information centre** (Centro Nordestino de Informações sobre Plantas - CNIP) in the Federal University of Pernambuco, Recife.

CNIP is creating a regional documentation centre serving scientists, foresters and agronomists. It is further responsible for gathering and cataloguing available knowledge, in a series of databases, and then disseminating this to intermediate or technical audiences. It is also helping those working in PNE projects that are generating new knowledge to manage the results of their research more effectively through adopting good data management practises.

CNIP's website at: http://www.cnip.org.br has publicised PNE and its work, published databases in a searchable format and improved communication among those working in the project and yet who are spread widely.

- **A community extension unit** ("Plantas Nativas"') in the Recife Headquarters of AS-PTA (a Brazilian national development NGO) in collaboration with other partner NGOs.

The most critical role for ASPTA during the initial stages was to come to understand and document the most urgent needs of rural communities for information about the plants to which they have access: What would have most impact on their quality of life? Which trees are seen to be of most importance? They have approached this using participatory methodologies to provide a diagnostic rural appraisal of the information needs and priorities. The objective is to ensure the demand-led nature of the information services provided by SIDT. In the longer term, having the answers to these questions will facilitate the design of new information services better fitted to meeting real needs and of new research or development projects designed to fill gaps in our knowledge and address the communities priorities.

ASPTA have established pilot projects working directly with farmers to promote and assess the farmers' use of the results from previous PNE initiatives. These include promoting medicinal plant gardens and field visits involving exchanges with researchers or community members that have implemented forage development schemes.

ASPTA is disseminating information about plants to PNE's priority target users in poor rural communities and intermediary agencies who work with them through radio programs, leaflets, newsletters and broad sheets using simple language and

presenting relevant information.

- An **information repatriation unit** in the Royal Botanic Gardens Kew, London is:

- collating information and documents about the plants of Northeast Brazil from the library, collections, experts and databases within Kew Gardens and other European institutes. This includes electronically stored data and images.
- supporting Brazilian visitors and staff at Kew that work with data about the plants of Northeast Brazil.

One of the Information Dissemination programme's roles is to multiply up successful experiences from PNE projects (which may affect directly only a few communities close to the research institute involved) so that many more communities benefit throughout NE Brazil.

An example PNE project developed techniques for improving meat and milk yields for small holders through more sustainable and effective use of caatinga. Brazilian development officers have shown that, farmers can use a combination of techniques to manage the caatinga (e.g. the re-introduction of species, coppicing, pruning and pollarding). This management can make subtle but sustainable changes to its species composition, thereby improving the quality of the fodder available and the continuity of supply during the dry season. They have also identified herb species of high potential for use as ground cover during the wet season.

In another PNE project many of the 600 species recorded as being used for medicinal purposes locally have been tested in the laboratory for genuine pharmacological activity and been checked for deleterious side effects. Prof. Matos, a Brazilian chemist, has built up a store of knowledge, which has provided the basis for books, web publications (through CNIP) and leaflets (in collaboration with ASPTA). These promote and describe the appropriate use of 50 of these species that have been shown to be effective and safe. Prof. Matos has also worked to promote the safe use of medicinal plant remedies through establishing "living pharmacies" in those communities for whom medicines from the chemist's shop are simply too expensive. Medicinal plant gardens with selected and approved plants are established and members of the community taught how to care for these plants and how to produce teas, lotions and pills of greater efficacy. In some "favela" (slum) communities, children and adults are trained to grow the plants and produce remedies, and have been able to generate some income by selling products in wealthier neighbourhoods. Pharmacists working in hospices that care for malnourished mothers and run on shoestring budgets are using living pharmacies with success and significantly reducing the sums spent on medicines.

Until recently, the results from these and other successful PNE projects have had impact only in those communities participating in the trials. There are obviously many more people that could be benefiting. ASPTA are selecting and adapting the accumulated knowledge for wider application within rural poor communities within the region. AS-PTA benefits from having partners in an extensive network of NGOs and grass-roots organisations (farmer co-operatives, church representatives' etc.) and can thus ultimately reach many more communities.

Other NGOs are testing PNE leaflets and publications, adapting ideas, from PNE projects and from other people's experiences working with native plants elsewhere, for use in the communities in which they work. Exchange visits between active communities have been arranged, initiatives from within those communities recognised and disseminated through simple newsletters. Radio is also being explored as a medium to promote techniques such as those employed in "living pharmacies" or forest management.

The partnership between those generating scientific and technical knowledge and those applying such information in practical development projects is already proving highly rewarding both in terms of well-targeted products and of innovative approaches to handling and presenting information. Whilst data on the rich biodiversity of the caatinga is being collated for the benefit of future generations, poor rural communities are already benefiting from knowledge gathered elsewhere, within the region or beyond, to unlock the potential of at least a few of the plants growing in the region.

For more details of the Information subprogramme please contact:

Coordinator:

Dr. Everardo Sampaio
DEN-UFPE
Av. Prof. Luis Freire 1000
Refice, PE
Brazil 50740-540
Tel: +81 271 8252 Fax: +81 2718250
Email: esampaio@npd.ufpe.br

or

Dr. Bob Allkin
Centro Nordestino de Informacoes sobre Plantas
SIDT/PNE
Dep. Botânica, CCB
Universidade Federal de Pernambuco

Recife, PE, Brazil CEP 50.670-420
Tel/Fax: +55 81 271 4451 or +55 81 453 2782
Email: tco@cnip.org.br
http://www.cnip.org.br

top of page

ETFRN NEWS 31

About ETFRN
National Focal Points Directory
ETFRN Newsletter
ETFRN Workshops
ETFRN Publications

Q & A Service
Add links

Topics
Regions
EU Commission

Vacancies
Funding / Grants
Training Courses
Conference calendar

Search
Site map
Home

E-mail us

Research Cooperation Sought

TREES OUTSIDE FOREST

FAO and CIRAD are involved in a broad study on the importance of tree resources outside forest areas. This study will provide inputs to FAO's Forest Resource Assessment 2000. Both FAO and CIRAD would very much appreciate receiving relevant information on this subject. Please see page 20 for further details.

STICKY SAPOTACEAE

I am planning to collect samples from the African dryland Sapotaceae species - Vitellaria paradoxa - in order to age trees and observe climatic effects on growth. The main problem is that the latex in the outer bark of live trees can clog up the borer. I have heard that removing a portion of bark can help in the procedure and was wondering if anyone had any other experience with this family. I was also wondering if there is anyone out there who might be willing to run a 'free' carbon dating test before I attempt to obtain funds for further dating studies. Suggestions for other sources of funding for continued research on this fascinating tree species would also be welcomed.

Please contact:
Peter Lovett
The Shea Project COVOL Uganda,
PO Box 833 Lira, Uganda
Tel: +256 473 20151
Email: lovett@africaonline.co.ug

Source: Forest Information Update No. 22, 10 July 2000

PLANTATION MAPS WANTED

I am trying to obtain global and/or regional maps of forest plantation coverage. Ultimately, I am interested in putting together a global map, so if one does not already exist, I would be interested in regional maps from all parts of the globe. In essence, I am trying to develop a way to merge geographic information on forest plantations with a 3-D global tropospheric chemistry model to determine interactions between increased plantation establishment and effects on the oxidative power of the troposphere. Can anyone help point me to some resources in this regard?

Please contact:
Professor Russ Monson
University of Colorado
Department of EPO Biology
Campus Box 334
Ramaley N122 Boulder, CO 80309-0334
USA
Tel: +1 303 492 6319
Fax: +1 303 492 8699
Email: Russell.Monson@colorado.edu,

http://spot.colorado.edu/~monsonr/

Source: Forest Information Update No. 22, 10 July 2000

BAMBOO AND COCONUT WOOD CONSULTANTS WANTED

We are in need of consultants with expertise in both Bamboo and Coconut wood. The site locations involve both the Philippines and Indonesia. If you are interested or know of someone who may be, please contact:

Leonard Hintz
Tel: +1 310 459 5780
Fax: +1 310 459 8601
Email: lhintz@earthlink.net
Source: Forest Information Update No. 22, 10 July 2000

INFORMATION REQUEST : HEVEA CULTIVATION

I am trying to find out more about the environmental effects of hevea cultivation and would be very thankful for any information concerning the cultivation of hevea, specifically: biodiversity and soil effects of smallholder rubber plantations? monocultures (biodiversity-, soil-, social- effects)? destruction of native forests for new hevea plantation? sprays (health of cultivators)? burning? social conflicts?

Carlo Wiegand
WWF Schweiz
Hohlstr. 110
Postfach 8010
Zürich
Switzerland
Tel. +41 31 297 23 25
Carlo.Wiegand@wwf.ch

top of page

About ETFRN
National Focal Points Directory
ETFRN Newsletter
ETFRN Workshops
ETFRN Publications

Q & A Service
Add links

Topics
Regions
EU Commission

Vacancies
Funding / Grants
Training Courses
Conference calendar

Search
Site map
Home

E-mail us

ETFRN NEWS 31

Internet Features

By Jelle Maas

Low Forest Cover Countries

Definitions of Low Forest Cover are presented in the paper '*Definition of Low Forest Cover (LFC)*', developed by UNEP and IUFRO, and coordinated by Gyde Lund. The paper is available at **http://home.att.net/~gklund/LFCreport.html**.

The Global Land Cover Facility of the University of Maryland (**http://glcf.umiacs.umd.edu/**) provides the opportunity to estimate current forest and treeland cover by using remote sensing tools.

Information on environmental legislation and policies in Tunisia is given at **http://www.tunisiaonline.com/html/environment.html**.

http://www.arab.net/ provides access to numerous links and information to countries like Algeria, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Saudi Arabia, Somalia, Syria, Tunisia, United Arab Emirates and Yemen. All countries with less than 10% forest cover. Other similar sources of information are **http://www.raitnet.net/raitnet/index.htm** and **http://www.africaonline.com/**.

The Regional Wood Energy Development Programme in Asia (**http://www.rwedp.org/ index.html**) provides information on forest cover and wood resources in low forest cover countries like Bangladesh and Pakistan.

Also Australia can be considered as a low forest cover country with less than 10% of its area under forest cover. Some interesting sites on Australia's forest resources are:

- The Australian Environmental Database at **http://www.paradigm4.com.au/acid/acidgrn.htm#DATA**
- Cooperative Research Centre for Tropical Rainforest Ecology and Management at **http://www.tld.edu.au/netshare/rainforestCRC/intro.htm**
- Commonwealth Scientific and Industrial Research Organisation Forestry and Forest Products at **http://www.ffp.csiro.au/**

The University of Stellenbosch in South Africa (**http://www.sun.ac.za/**) has several departments devoted to natural resource research such as the department of Forest Science and the department of nature conservation.

The aim of the Institute for Commercial Forestry Research (ICFR at **http://www.icfrnet.unp.ac.za/**) is to serve the South African forestry industry by undertaking relevant research with the objective of supplying commercial timber producers with information required to optimise the beneficial use of forestry resources in South Africa.

The Tropical Silviculture Unit of the University of Helsinki is involved in organising a workshop on dry-

land rehabilitation in Sudan from 27 October to 4 November 2000. The Tropical Silviculture Unit is the Finnish National Focal Point for ETFRN. Information on the workshop is available on the Tropical Silviculture Unit's website: **http://honeybee.helsinki.fi/tropic/**. The website also provides information on research projects in a number of low forest cover countries includingTanzania, Sudan, and China. The Unit is also involved in research projects in Costa Rica, Indonesia and Ghana.

Other

Forest Flash is a Swiss initiative to promote the exchange of information on the interactions between People, Trees and Forests. The site contains interactive databases on events, literature and personal contributions in German, French and English. **http://forestflash.intercooperation.ch/**.

The World Resource Institute, a non profit organization based in Washington DC, has put the forests on the web. At **http://www.globalforestwatch.org/** an overview is given of the current situation of the world"s forests. Global Forest Watch is a unique combination of satellite imagery, geographic information systems (GIS), mapping software, the Internet and on-the-ground observation.

The Patagonian Andes Forest Research and Extension Center (CIEFAP) is a public, regional institution, devoted to the study of Forestry based in Argentina. At its website (**http://www.ciefap.org.ar/english.htm**) details can be found on its activities and objectives.

The Climate Change Secretariat recently launched their ‘public' library website. The objective of the website is to link users of climate change information to resource providers. A key new feature are the links to the websites of all those involved in the UNFCCC process including: Parties of the Convention, Observer States, Accredited NGOs, IGOs and UN and specialized agencies. Of special interest is the link to online resources such as: glossaries, newsletters, annual reports, full-text documents, climate change search engines and many other electronic tools. To locate the Library website, go to the UNFCCC website at: **http://www.unfccc.int** and click on ‘Resources'.

Source: Forest Information Update, 26 June 2000

ATROFI is a meta-database of historical tropical and sub-tropical forest inventory datasets held in the UK that has been developed under a DFID Forest Research Programme project (R7277). The database contains basic information of the location, extent and protocols used in each inventory along with contact details of the data holders and owners. The intention is to make historical (1950s to 1990s) forest datasets available to researchers and others interested in tropical forests. The following data types are included:

- Volume functions for natural forest and plantation species
- Repeated permanent plot data for natural forest and plantations
- One-off inventory data for natural forest

ATROFI is available at: **http://www.atrofi-uk.com**

Source: S107 Tropical Silviculture Newsletter, May-June 2000

Top of page

About ETFRN
National Focal Points Directory
ETFRN Newsletter
ETFRN Workshops
ETFRN Publications

Q & A Service
Add links

Topics
Regions
EU Commission

Vacancies
Funding / Grants
Training Courses
Conference calendar

Search
Site map
Home

E-mail us

ETFRN NEWS 31

Funding

INTERNATIONAL PLANT GENETIC RESOURCES INSTITUTE
VAVILOV-FRANKEL FELLOWSHIPS 2001

IPGRI has established the Vavilov-Frankel Fellowship Fund to commemorate the unique contributions to plant science by Academician Nikolai Ivanovich Vavilov and Sir Otto Frankel. The Fund aims to encourage the conservation and use of plant genetic resources in developing countries through awarding Fellowships to outstanding young researchers.

The Fellowships will enable the applicants to carry out relevant, innovative research outside their own country for a period of between three months to one year. The research should have a clear benefit to the home country, preferably in areas of the applicant's future research. Awards can be held concurrently with other sources of support.

In 2001, a total of US$50,000 will be made available for awards. The maximum award per Fellow will be US$25,000 which is intended to cover travel, stipend, bench fees, equipment, conference participation or any other appropriate use. Such research should be linked to innovative topics related to the conservation and use of plant genetic resources such as new conservation technologies and strategies, socioeconomic and human aspects of conservation and use, germplasm management, forest genetic resources, policy development, genetic erosion assessment and mitigation and conservation and utilization of specific crops. It is unlikely that work purely on plant breeding or molecular characterization would be selected. Fellows are encouraged to present the results of their research at an international conference. This can take place within one year of termination of the Fellowship.

Applications for the year 2001 are invited from developing-country nationals, aged 35 or under, holding a masters degree (or equivalent) and/or doctorate in a relevant subject area. Application forms in English, French and Spanish may be obtained from:

Vavilov-Frankel Fellowships
IPGRI
Via delle Sette Chiese 142
00145 Rome, Italy
Fax:+ 39 0657 50309
Email: e.clancy@cgiar.org
http://www.ipgri.cgiar.org/training/ vavilov.htm

and should be returned to IPGRI, Rome. Applications can be sent by mail, fax or email. Applications must be received at IPGRI by 15 November 2000. Applications must be in English, French or Spanish and should include a covering letter, completed application form, full curriculum vitae, research proposal (maximum 1000 words which should include a clear statement of objectives, methodology, materials and justification) and letter of acceptance from the proposed host institute. The successful applicants will be informed by 31 March 2001 and are required to take up their Fellowships before 31 December 2001.

Source: Plant Genetic Resources Newsletter, no 122, 2000

About ETFRN
National Focal Points Directory
ETFRN Newsletter
ETFRN Workshops
ETFRN Publications

Q & A Service
Add links

Topics
Regions
EU Commission

Vacancies
Funding / Grants
Training Courses
Conference calendar

Search
Site map
Home

E-mail us

ETFRN NEWS 31

Other News

FORESTRY RESEARCH NETWORK FOR SUB-SAHARAN AFRICA LAUNCHED

The Forestry Research Network for sub-Saharan Africa, FORNESSA, was formally inaugurated in Accra, Ghana on 7 July 2000, after a long period of preparatory work and sustained effort by FAO, IUFRO and national research institutions in Africa.

25 participants, representing sub-regional forestry research networks (AFORNET, AFREA, CORAF-Forêt, and SADC-FSTCU-Forestry Research Committee) and a number of international forestry research networks, organizations/institutions and partners (CIFOR, ETFRN, FAO, IUFRO, AAS, IPGRI, CIRAD-Forêt, and EC) attended the inauguration.

In its current form, FORNESSA is a federation of forestry research institutions from 41 sub-Saharan African countries, members of the following three sub-regional forestry research networks:

- AFREA, the Association of Forestry Research Institutions of Eastern Africa, with membership in 10 countries.
- CORAF-Forêt, the network of the West and Central African Council for Agricultural Research and Development, with 20 member institutions.
- SADC-FSTCU-Forest Research, representing research institutions in the 14 SADC states.

The meeting defined goal, objectives and major activities for FORNESSA and made important practical recommendations for an efficient coordination of FORNESSA programme of activities.

The goal of FORNESSA is to strengthen forestry research in sub-Saharan Africa for greater impact on management and conservation of forests and tree resources for sustainable development.

FORNESSA's major objectives are:

- Support sub-regional networks in sub-Saharan Africa in strengthening the capacity of their forestry research institutions.
- Foster regional co-operation in forestry research in the region.

- Articulate and advocate African forestry research agenda and development issues in global fora.

FORNESSA main activities:

- Assess the needs and forestry research capacities in the region.
- Support and promote sub-regional forestry research networks.
- Promote the development and exchange of scientific and technical forest-related information.
- Promote capacity building in strategic areas of forestry research such as database development, maintenance and utilization.

The meeting finally recommended that the FORNESSA structure include a Steering Committee, with a Chairperson, a Secretary, 2-4 members from the component sub-regional networks, and representatives from partner organizations such as FAO, IUFRO, ETFRN and forestry-related CGIAR Centers. The meeting also recommended

that: (1) Paul Konuche, Director of Kenya Forestry Research Institute (KEFRI), serve as FORNESSA interim Chairman; (2) Atse M. Yapi, IUFRO-SPDC Deputy Coordinator for Africa, as the interim Secretary; and (3) the FORNESSA Secretariat be located at the IUFRO-SPDC DCA Office in Accra at the FAO Regional Office for Africa. Regional and international networks, organizations and institutions present at the meeting shared in the FORNESSA goal, objectives and activities; and pledged their support to nurturing FORNESSA into maturity.

Dr. Paul Konuche (Chairman)
Director
Kenyan Forestry Research Institute
PO Box 20412 Nairobi, KENYA
Tel: +254 154 32841, Fax: +254 154 32844
Email: kefri@arcc.or.ke

Dr Atse M Yapi (Secretary)
Deputy Coordinator for Africa
IUFRO-SPDC
PO Box 1628 Accra, GHANA
Tel: +233 21 7010930 Ext. 3195
Fax: +233 21 7010934/44
Email: Atse.Yapi@fao.org

top of page

WORKSHOP: MANAGEMENT OF TREES FOR FARMLAND REHABILITATION AND DEVELOPMENT
(KHARTOUM AND CENTRAL REGION, SUDAN, 27 OCTOBER - 4 NOVEMBER 2000; POST-WORKSHOP TOUR 4-7 NOVEMBER)

The organisers of this workshop are the Tropical Silviculture Unit (TSU) at University of Helsinki, Finland, leading Sudanese institutions, as well as the Technical Centre for Agricultural and Rural Cooperation (CTA, Wageningen), the International Foundation for Science (IFS, Stockholm), and DFID Forestry Research Programme, in collaboration with other international organisations. The first part of the workshop will be held in Khartoum, and the second part consists of visits to field sites in the Central Region. A separate post-workshop tour to Jebel Marra is also offered from 4-7 November 2000.

Following introductions by international and Sudanese keynote speakers, the workshop will discuss and compare the various agroforestry and forestry options available for dryland rehabilitation. It will also highlight the ongoing practical field work and research on natural and planted trees in agricultural

and forestry production systems in the Sudan. The workshop is aimed for persons already working on tropical drylands within the framework of forest management, farmland rehabilitation, agricultural or forestry extension, or related research. Participants are invited to prepare abstracts or full papers on their ongoing work for distribution during the workshop; accepted abstracts will also be published in the proceedings.

Additional information is available from the University of Helsinki/Tropical Silviculture Unit website at:

http://honeybee.helsinki.fi/tropic and all further inquiries should be addressed to:

Professor Olavi Luukkanen
Tropical Silviculture Unit
PO Box 28
FI-00014 University of Helsinki,
Finland
Tel: +358-9-19158643
Fax: +358-9-19158646
Email: Olavi.Luukkanen@helsinki.fi

top of page

AMERICAN REGIONAL TRAINING WORKSHOP

To improve the sustainable management and conservation of biodiversity through appropriate use of forest genetic resources, IPGRI (International Plant Genetic Resources Institute), with economic and technical support from the Danida Forest Seed Centre (DFSC), began developing the project, "Effective conservation, use of intermediate and recalcitrant seeds of tropical forests" in 1995. The project has been executed with the participation of various countries in Latin America, Asia, Africa and Europe.

The objective of the project is to define appropriate methods for drying and storing recalcitrant and intermediate seeds of priority forest species in the tropics. Up to the present more than 30 species have been worked on worldwide.

As part of the second phase of this project, a training workshop on 'Protocols for evaluating recalcitrant seeds' was held at the Tree Seed Bank of CATIE (Tropical Agricultural Research and Education Center), 15-19 May 2000. The training was given by Dorthe Joeker and Sigrid Diklev of DFSC with contributions from Dr Erick N. Ericksen of the University of Copenhagen and Jack Vozzo of the US Forest Service. Participants in the workshop included technicians from: EMBRAPA, Brazil; CONIF, Colombia; ESNACIFOR, Honduras; BASFOR, Bolivia; and technicians and students from CATIE, Costa Rica. We are grateful to IPGRI and its representative, Dr Eshan Dulloo for his participation and for the support of the Tree Seed Bank at CATIE in holding this event.

Similar workshops have been held in Africa and Asia.

For further information about the results, request the project newsletter from:

DFSC
Krogerupvej 21
DK-3050 Humlebaek
Denmark
Email: dfsc@dfsc.dk

top of page

AVAILABILITY OF TREE SEEDS ON THE INTERNET

Since 1992, the Tropical Agricultural Research and Education Center (CATIE), through the project on tree seeds (PROSEFOR) and with the support of DANIDA, has been helping the six countries of Central America and the Dominican Republic to ensure adequate supplies of seeds of priority tree

species with material of high genetic and physiological quality.

Today the countries can draw on more than 300 officially registered sources of tree seeds with active technical management and on seedbanks operating with greater efficiency to provide better service to their users.

In 1998 PROSEFOR and the CATIE Seedbank initiated the development of a database which contains detailed information on each forestry and agroforestry species available and the data of the companies which distribute them. This database, which was developed using Visual Fox, one of the most powerful and versatile languages, offers the producers and users of tree seeds an easier and more powerful tool that can serve as a means to commercialise seeds, exchange information and consult.

The database functions in the following way: a) it is possible to obtain information on the existence of seeds of a particular species using either the common name or the scientific name of the species; or (b) if the species desired is unknown ,it is possible to carry out an advanced search indicating site conditions and the uses for which a species is to be planted (timber, forage, ornamental, etc.) The database is also able to access other databases of tree seeds.

Currently, the database contains information from more than 10 seedbanks and companies supplying tree seeds, and data on more than 100 species, which are updated directly by the users on the Internet.

We invite you, as a producer and distributor of tree seeds to benefit from this service. Visit the database at the following address: **Http://www.catie.ac.cr/proyectos/prosefor/base/semillas.htm**.

If you are interested in incorporating information on the seeds that your company distributes, contact us at: wvasquez@catie.ac.cr; bsf@catie.ac.cr and we will assign you a user ID and password.

top of page

FORESTRY COMPENDIUM GLOBAL MODULE

A unique guide to the characteristics and silviculture of tree species. The Forestry Compendium concept includes species data sheets (prepared by experts worldwide), pictures, maps, bibliographies, abstracts, a glossary and user notepads. In addition, there is an interactive guide to species selection based on site characteristics, management objectives and end products. The species selection guide is of particular interest to those involved in the choice of species to be included in trials undertaken during planning of forestry plantations and other land-use systems involving woody species.

The Global Module of the Forestry Compendium contains information on over 1200 tree and shrub species of interest for plantation forestry and/or regeneration (e.g. in natural forest) and multipurpose species for agroforestry. Comprehensive worldwide coverage - includes tropical/subtropical species (~2/3 content) and temperate/boreal species (~1/3 content). Besides expanding the number of species covered in Module 1 of the Compendium, the Global Module also contains updated data for the bibliographic database, FAO statistics on land use and forest products and the World Bank demographic data for countries, and data on pests and diseases.

The Forestry Compendium acts as a key information resource:

- as an operational tool to aid decision making by forest managers and field workers, providing information on the characteristics of individual species and a guide to species conforming to various site management/use requirements
- as a ready-reference guide for researchers, forest planners and policy makers
- as an educational and training tool for teachers, students and extensionists.

Download a demo!

A guided tour demonstrating the features of the Forestry Compendium can be downloaded from **http://tree.cabweb.org/efctext.htm**

PRICES:

US $100 to institutions in Developing or Recently Developed Countries
(http://Compendium/fcdev.htm) and to individuals, content contributors, authors, and students anywhere.
US $600 to institutions in developed countries; and all corporate organizations worldwide.
There is a lower rate for some countries - contact CABI to see if your country qualifies.
The prices stated above are for stand-alone usage. Local area networking surcharges are available on application.
Postage by airmail or courier is included in the price.

Forestry Compendium Global Module can be ordered from either of the following CABI Publishing addresses:

CABI Publishing
CAB International,
Wallingford,
Oxon, OX10 8DE, United Kingdom
Tel: +44 1491 832111,
Fax: +44 1491 829292
Email: publishing@cabi.org
Internet: http://www.cabi.org

CABI Publishing
CAB International
10 East 40th Street, Suite 3203
New York, NY 10016, USA
Tel: +1 212 481 7018
Toll free: +1 800 528 4841
Fax: +1 212 686 7993
Email: cabi-nao@cabi.org
Internet: http://www.cabi.org

top of page

AFFORESTATION/SOIL CULTIVATION RESEARCH

The "VH Mulcher" is a hydraulic powered (low rpm, high torque) excavator cultivating attachment or "giant roto-tiller for forest applications".It has been proven successful in greatly assisting early rapid growth in Canadian conditions and is very robust. Eight year Survival and Growth research (available on request) was completed by the British Columbia, Canada, Ministry of Forests over a native nonimproved *Pinus contorta* plantation in a central interior location. We are seeking additional co-operators willing to establish research in Tropical and Subtropical regions and share costs. Description of the machine and methods can be found at **http://www.vhmulcher.com** or by contacting:

Tim C Van Horlick
West-Northwest Forestry Ltd
370 Armour Place
Kamloops, B.C.
Canada, V2H 1L2
Tel: +1 250 578 6966
Fax: +1 250 5786967
Email: Tim@vhmulcher.com

top of page

GIVING VALUE TO NATURAL RESOURCES: A NEW FRAMEWORK FOR MANAGERS

How best can the value of natural resources be decided? Both market and non-market approaches

are currently in use. Yet few assess the relative values of different uses of natural resources. Research by the School of Public Policy at the University of Birmingham has devised a 'decision framework', tested in India and Ghana, to facilitate natural resource decision-making and management in areas where demands for natural resources may come into conflict between 'urban' and 'rural' uses.

For further information, please contact:

Fiona Nunan
International Development Department
School of Public Policy
University of Birmingham
Edgbaston, Birmingham B15 2TT
United Kingdom
Tel: +44 121 414 7257
Fax: +44 121 414 4989
Email: f.s.nunan@bham.ac.uk
Source: ID21 News Issue No. 42

top of page

HEART OF THE MATTER: AGARWOOD USE AND TRADE AND CITES IMPLEMENTATION FOR AQUILARIA MALACCENSIS

Angela Barden, Noorainie Awang Anak, Teresa Mulliken and Michael Song

Agarwood is just one of the many names for the resinous, fragrant and highly valuable heartwood produced by *Aquilaria malaccensis* and other species of the Indomalesian tree genus *Aquilaria*. Agarwood has been used for medicinal purposes for thousands of years in, for example, Ayurvedic, Tibetan and traditional East Asian medicine. Use of agarwood for the production of perfume and incense (often used in association with certain religious practices) has an equally long history. Agarwood chips can sell for several hundred to several thousand US dollars per kilogramme. Indonesia and Malaysia supply the largest quantities of agarwood in international trade, with other countries such as Vietnam also exporting significant amounts.

Unfortunately, with demand for agarwood for these and other uses remaining strong today, there is concern that wild populations of *Aquilaria malaccensis* and other *Aquilaria* species are being over-harvested. Eight species are currently considered threatened according to IUCN Red List Categories, exploitation specifically highlighted as a threat for six of these. Conservation concerns prompted the listing of *A. malaccensis* in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in 1995.

This report analyses the implementation of the CITES listing and reviews available information on the wider trade in agarwood. Available data on international trade volumes (approximately 700 t reported in 1997) are provided, harvest and trade controls in key range countries documented, and actions proposed to address issues such as over-exploitation and illegal trade. A need for better information on the biology and status of those *Aquilaria* spp. in trade and the flow of benefits resulting from exploitation of these species is highlighted, as are more effective harvest and trade controls. The report calls for the convening of a stakeholders' workshop to facilitate cooperation in further examining these issues and identifying actions necessary to secure the future of this important biological, economic and cultural resource.

The report and executive summary are available in both PDF and printed formats. The PDF versions can be downloaded from http://www.traffic.org/news/agarwood. To order a printed copy, please contact your nearest TRAFFIC office or TRAFFIC International.

TRAFFIC International
219c Huntingdon Road
Cambridge CB3 0DL
United Kingdom

Email: traffic@trafficint.org
Http://www.traffic.org

TRAFFIC is a joint programme of IUCN-The World Conservation Union and WWF-World Wide Fund for Nature. It aims to help ensure that trade in wild plants and animals is not a threat to the conservation of nature.

top of page

REPORT ON THE INTERNATIONAL RATTAN WORKSHOP

1 - 3 February 2000

Limbe Botanic Garden, Cameroon

by Brendan Jaff, Workshop Facilitator

Introduction

Rattans are climbing palms found in the lowland tropical forests of the Old World. The flexible stems are used for the manufacture of baskets, furniture, and other woven products. The international rattan trade is currently worth some US$6.5 million per annum. Although the majority of this trade is concentrated in SE Asia, the rattans of Africa are also an important forest resource and play an important role in indigenous subsistence strategies.

Until very recently, very little was known about the rattans of Africa. Despite this, and with the growing focus on such high value non-timber forest products, rattans have recently been identified by many governments and bilateral development agencies, as a high priority resource with the potential to contribute to the conservation of forests of west and Central Africa through sustainable development. However, this development has been constrained by the lack of basic knowledge on taxonomy, ecology and the utilisation of these species. Recent attempts by workers across Africa to address this basic shortfall in information has resulted in the initial background information surrounding the biological and social aspects of the rattan sector in Africa now available.

The primary objectives of this international seminar were to:

Bring together the current experts concerned with rattan research and development in Africa; Present and disseminate the current state of the knowledge of the rattan sector in key areas on the continent;

Make recommendations and draw up an appropriate strategy by which rattans can meaningfully contribute to the sustainable development of the forests of West and Central Africa.

The workshop, which was held at the Limbe Botanic Garden, Cameroon; from the 1st-3rd February 2000, brought together a total of 29 participants from throughout the forest regions of Africa, including representatives from Cameroon, Ghana, the Democratic Republic of Congo, Gabon and Zambia.

Workshop Procedure

The workshop started with Dr. Nouhou Ndam the conservator of the Limbe Botanic Garden welcoming all participants to the Botanic Garden. He briefly presented the history of the Garden and its role in the conservation of the biodiversity of Mount Cameroon and the Central and West Africa as a whole. He also thanked the African Rattan Research Programme for having chosen the Limbe Botanic Garden as the venue for such an important workshop; and invited other institutions and programmes to also use the facilities of the Garden.

Following Dr. Ndam, Mr. Terry Sunderland the Principal Investigator of the African Rattan Research Programme also welcomed all participants. He briefly presented the progress of the Programme, the rationale and the way forward for the rattan sector in Africa and itís potential to contribute to conservation and development. Following Mr Terry Sunderland, Mr Brendan Jaff, the facilitator of the workshop presented the workshop objectives, Programme, accompanying working schedule and

logistical information.

Following the opening of the workshop a series of papers were presented. The papers were based on the following themes:

Biology, Ecology and Cultivation
Social, marketing and Management

Summary of recommendations on rattan research and development

The following 7 key recommendations on African Rattan Research and Development were formulated:

1. The African Rattan Research Programme with the collaboration of other research programmes, projects and institutions should create a formal African Rattan Network in order to facilitate exchange of experiences, ensure meaningful collaborative research, avoid duplication of research, thereby contributing to the sustainable use of African Rattan.

2. Review the legal aspects governing Non-Timber Forest Forest Products including Rattans; key aspects include: resource tenure, ownership, harvesting licenses and quotas. The review should consider possibilities of involving NGOs and the local communities via its institutions in the implementation of the law.

3. Disseminate existing information on African rattan via the production of various publications for the use of different target groups; including researchers, local communities and policy makers.

4. Taking into account existing information, conduct complementary and collaborative research on the Biology, Ecology, Cultivation, Social, Marketing and Management of African rattan. Collaborative regional research programmes should be encouraged so as to generate rich and comparative information.

5. Support the development/transfer of appropriate technology for the harvesting, processing and transformation of African rattans, aimed at increasing the quality of finished products, adding value and reducing the cost of production; this calls for meaningful collaboration between government, the private sector and researchers.

6. Support the establishment of an appropriate funding mechanism aimed at encouraging rattan research and development related initiatives at community level; including the creation of nurseries, plantation establishment, harvesters union creation, marketing co-operatives amongst others.

7. Improve the Marketing Strategy of African rattans with the involvement of all stakeholders based on existing information and taking into account the Asian experience

Field Trip

On the third day of the workshop, participantsvisited the recently established rattan silvicultural trial plot located in Mabeta Moliwe. The rattan has been planted in an obsolete old rubber plantation. Mr. Nkefor Joseph of the Limbe Botanic Garden explained the plot establishment and maintenance techniques. This initiative is jointly supported by the African Rattan Research Programme, Limbe Botanic Garden and the Cameroon Development Corporation.

top of page

FOREST ECOSYSTEM RESEARCH IN EUROPE

The database of the European Forest Ecosystem Network (EFERN) has recently been fully revised and updated.

The database gives an overview on the different aspects of forest ecosystem research carried out in 38 European countries including research at universities, federal forest research institutes, and other

research organisations.

The database has been developed in the frame of the EU-funded concerted action EFERN S6. It is free and shall remain free as common property of the scientific community.

Check out this most comprehensive information resource concerning research units, scientists, and research projects in Europe and discover a useful tool for your work.

http://efern.boku.ac.at/ecosys/database.search

We kindly ask you and all relevant persons in your Research Unit to submit ongoing projects related to forest ecosystem research at your institute to the EFERN database. All that is requested for the database is: title of project, keywords, contact person and (if existing) link to the project homepage. All data-entry and data-updating easily can be done over the web:

http://ifff.boku.ac.at/efern/dataentry.html

The value of this database is dependent on the involvement of people dealing with forest ecosystem research all over Europe. You are welcome to benefit from this communication tool by using it and by contributing to the EFERN database.

Dr. Roland Berger
EFERN Co-ordination
Institute for Forest Entomology, Pathology & Protection
University for Agricultural Sciences, Vienna
Hasenauerstrasse 38
1190, Vienna
Tel: +43-1-3686352-0
Fax: +43-1-3686352-97
Email: rberger@ento.boku.ac.at
http://IFFF.boku.ac.at/efern

top of page

NEW FPEG WEBSITE : ODI'S FOREST POLICY AND ENVIRONMENT GROUP PUTS RESEARCH PAPERS ONLINE

We would like to draw your attention to the Overseas Development Institute's (ODI) Forest Policy and Environment Group's (FPEG) new website at: **www.odifpeg.org.uk**. The site contains a wealth of information on forestry-related issues, and includes the latest research papers by FPEG Research Fellows, as well as a searchable database of all of FPEG's Rural Development Forestry Network (RDFN) papers, which are published in English, French and Spanish.

The site is still expanding, and will soon provide access to much of the ODI library's collection of forestry grey literature. Together, the RDFN papers and the grey literature archive contain a wealth of information on the social and economic aspects of forestry in the last 15 years. The materials chart the development of people-oriented forestry from both the donor and the host country perspectives, combining project-level experience and policy-level insights in all regions of the world (but with a clear focus on developing countries).

The website also has an extensive links section, with descriptions of many of the Internet's most important forestry websites, and an Online Noticeboard. The information available on this site is likely to be of interest to a wide range of people interested in forestry issues or working in the forestry or rural development fields.

top of page

UPDATE ON TEAK 2000

AVINA Foundation has agreed to support the development of a TEAK 2000 association in Central

America.

AVINA sees itself as investing in leadership for sustainable development, mostly in Latin America. It places particular emphasis on the following general areas: business, communications, educational, grassroots and institutional leadership. In addition, leadership for nature conservation is supported by the foundation.

AVINA places equal importance on the developmental and environmental aspects of sustainable development. Its support for TEAK 2000 will ensure the development of a growers' association in Central America, with a small secretariat in Panama. Work to put this in place will begin in October 2000.

A grower association is also being established in Ecuador and another in Thailand. There is strong interest amongst the private sector for another association in Ghana.

At the same time the International Federation of Tropical Hardwood Growers' Associations is being established to guide and support the work of these and any other regional associations that are formed.

The Federation will be responsible for drawing up best practice guidelines and developing a mechanism to ensure their application amongst grower associations worldwide. It will be responsible for bringing together growers and interested investors. The international office will also provide the necessary support to the regional associations and establish the necessary links between these and international donor and other organisations.

It is hoped to convene a meeting of international growers and investors, possibly early in the new year.

For further information, please contact:

Raymond M. Keogh
International Co-ordinator, TEAK 2000
27 Loreto Grange
Bray
County Wicklow
Ireland
Tel. + 353-1-2864697
Fax. + 353-1-2861188
Email: rmkeogh@teak2000.iol.ie

top of page

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Regions
EU Commission

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Funding / Grants
Training Courses
Conference calendar

Search
Site map
Home

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ETFRN NEWS 31

Publications

By Peter Sips

AGROFORESTRY PARKLANDS IN SUB-SAHARAN AFRICA

J-M. Boffa (1999)

Agroforestry parklands, traditional agroforestry systems in the Sudano-Sahelian region are among the most widespread agroforestry systems in African countries south to the Sahara. This conservation guide attempts to present the current state of knowledge on agroforestry parkland systems. The document first provides a thorough description of their distribution and diversity and discusses different ways of classifying them. It also presents data on current trends in parkland development and assesses determining factors. It synthesises the experience relating to biophysical, socio-economic and policy aspects of their management. The book examines the strengths and limitations of institutional arrangements and reviews the production, use and marketing of parkland products with an emphasis on local benefits. Also overall costs and benefits of parkland agroforestry are evaluated. The guide identifies crucial research needs and promising ways for further promoting their management, conservation, and development.

ISBN: 92-5-104376-0. 230 pages. FAO Conservation Guide no. 34. Orders: Ms. M. Gauthier, Forest Conservation, Research and Education Service, Forest Resources Division, Forestry Department, FAO, Via delle Terme di Caracalla, 00100 Rome, Italy,

Tel: +39-06-570-54341, Email: michelle.gauthier@fao.org

VOICES FROM THE FOREST

Voices from the Forest is the bulletin of the Non-Timber Forest Products (NTFPs) exchange programme Southeast Asia. The programme has been initiated by the Dutch NGO's ProFound, Both Ends and NC-IUCN. The programme, which started in 1999, has stakeholders in the Phillippines, Malaysia and Indonesia. It is financed through NC-IUCN's Tropical Rainforest Programme for small-scale projects in tropical rainforests. The bulletin, which is published on the internet, has appeared 3 times now. The latest issue has been published in April this year. The bulletin contains exchange news, articles, and book reviews on NTFPs. You can visit the bulletin at: http://www.ntfp.org/voices.

THE OVERSTORY

The Overstory is an email journal focussing on design concepts for tropical agricultural systems integrating trees and other perennial plants. It is published twice a month and is meant for agroforestry practitioners, researchers, professionals and others interested in the subject. Recent issues covered topics like: multipurpose windbreaks, tree domestication, live fences, agroforestry resources, vegetative erosion barriers, farm forestry, and the agroforestry library. For information check their website at http://www.agroforester.com/overstorey/overstorey.html.

FOREST GENETIC RESOURCES

This FAO news bulletin is published once a year. Its main goal is to broaden the insight in forest genetic resources and contribute to the conservation, improvement and sustainable use of these resources. The last two issues of the bulletin (no. 26, 1998 and no. 27, 1999) contain various articles on the management of forest genetic resources (e.g. on national conservation and gene management

programmes, and tree improvement strategies). They also report on the various (regional) country-driven, action-oriented workshops that are organised by FAO. Workshops were held on countries of dry-zone sub-Saharan Africa and on South Pacific countries and territories. The bulletin also includes news on new and ongoing projects and programmes and recent publications and an overview of recent literature. Visit the Forest Genetic Resources homepage at: http://www.fao.org/forestry/for/form/fogenres/homepage/fogene-e.stm.

HUMEDALES DE LA RAAS

This thematic series on the autonomous region of South Nicaragua is published by PROCODEFOR, the forest conservation and development project, which is financed by the Nicaraguan and Netherlands' governments. The project's fields of activity are: protection of biodiversity and protected areas, environmental education, forest sector development and agroforestry, infrastructural development, capacity building and local organization.

The first two issues of this newsletter-like series, published in September and December 1999, are respectively on the extension and importance of wetlands and mangroves and the protection of the caiman.

For more information contact:

The Editor, Milton Castrillo,
Apdo. Postal 43, Bluefields,
RAAS, Nicaragua
Email: procodef@ibw.com.ni

'INTERNALISING THE EXTERNALITIES' OF TROPICAL FORESTRY : A REVIEW OF INNOVATIVE FINANCING AND INCENTIVE MECHANISMS

Michael Richards (1999)

In order to give value to forests associated with e.g. environmental functions and biodiversity, rather than the timber exploitation or deforestation, the report assesses the potential and limitations of a range of innovative financial incentive mechanisms. These mechanisms are classified in four main approaches: the fiscal or transfer payments approach; market-based solutions based on forestry's public good values; the channelling of international financial flows towards sustainable forestry; and the property rights approach.

The author argues that efforts to increase the incentives for sustainable forestry must be accompanied by effective (national or international) regulation or control and also be complemented by policy measures to make forest-degrading activities less profitable. The report, written for a wide audience, for instance deals with instruments like carbon offset trading, timber certification, transferable development rights, debt-for-nature swaps.

European Union Tropical Forestry Paper 1. ISBN: 085003-4027. 38pp.

Orders:
ODI, 111 Westminster Road, London SE1 7JD, United Kingdom
Tel: +44 20 73931600, *Fax:+44 207393-1699, Email: forestry@odi.org.uk*
http://www.odifpeg.org.uk

Also available in Spanish: 'Internalización de las Externalodades' de la Forestería Tropical: Estudio de los Mecanismos Innovadores de Financiación e Incenrtivación. ISBN: 085003-4701

PRINCIPLES AND PRACTICE OF FOREST CO-MANAGEMENT: EVIDENCE FROM WEST-CENTRAL AFRICA

David Brown (1999)

Forest co-management, or forest management involving local communities and the state, is now

(becoming) an important principle of tropical forest policy and practice, and a major component of most international forestry aid programmes. The paper focuses on attempts to promote community involvement in tropical moist forest areas in sub-Saharan Africa. This proves to be a challenging task due to factors like the heterogeneity of the human population, the complex structures of resource control, the fact that forests are looked upon more as agricultural expansion zone than a resource to be conserved.

Using case studies from the high forest zones of Ghana and Cameroon, the paper reviews the ambiguities in the classical model of forest co-management, examines attempts to re-create traditional resource management systems and to ally community management with other forms of land use. Forest co-management strategies are weighed against alternative options to improve husbandry of the resource and increase public accountability.

European Union Tropical Forestry Paper 2. ISBN: 085003-4043. 34 pp.

Orders:
ODI, 111 Westminster Road, London SE1 7JD, United Kingdom
Tel: +44 20 73931600, Fax:+44 20 7393 1699, Email: forestry@odi.org.uk
http://www.odifpeg.org/uk

Also available in French: Principes et Practique de cogestion forestière: temoignages d'Afrique de l'Ouest. ISBN: 085003-4728.

FORESTRY ISSUES IN THE GUIANA SHIELD REGION: A PERSPECTIVE ON GUYANA AND SURINAME

Philippa Haden (1999)

Market pressure in the Guiana Shield Region, one of the few still unfragmented blocks of tropical forest on earth, may have fallen dramatically due largely due to the Asian economic crisis but has not been averted. This paper reviews the context of the forest sector developments in especially Guyana and Suriname, the biological importance of the region and opportunities for donor consideration. Within the framework of the "Informal donor coordination meeting on forestry issues in the Guiana Shield region", held in Brussels in 1998, it indicates opportunities for and threats to the sector and identifies key areas for future donor support. Some priority areas for donor support in Guyana and Suriname are institutional strengthening, development of alternatives to deforestation and land rights of local people.

European Union Tropical Forestry Paper 3. ISBN: 085003-4035. 22 pp.

Orders: ODI, 111 Westminster Road, London SE1 7JD, United Kingdom
Tel: +44 20 7393 1600, Fax: +44 20 7393 1699, Email: forestry@odi.org.uk
http://www.oneworld.org/odi/

Also available in Spanish: Cuestiones Forestales en la Región del Escudo de las Guyanas: una Perspectiva sobre Guyana y Surinam. ISBN: 085003-4736

GETTING AID DELIVERY RIGHT: HOST COUNTRY, DONOR AND INTERNATIONAL COMPLEMENTARITY FOR GREATER FOREST SECTOR AID EFFECTIVENESS

David Brown, Michael Richards, Kate Schreckenberg, Gill Shepherd and Sandrine Tiller (Forest Policy and Environment Group) (1999)

This study considers the implications for aid delivery of the rapidly changing international context of development assistance to the forest sector. It reviews the growing pressures to pool resources in support of forest development programmes due to shifting donor goals widening national and international constituencies, and reductions in the capacity of national forestry services.

The study focuses on the implications for aid effectiveness of changing aid agents, decentralisation of both donors and recipient delivery systems, growing capacity for institutional learning and of attempts

to promote broad national ownership of aid processes.

European Union Tropical Forestry Paper 4. ISBN: 085003-4744. 38 pp.

Orders: ODI, 111 Westminster Road, London SE1 7JD, United Kingdom
Tel: +44 20 7393 1600, Fax: +44 20 7393 1699, Email: forestry@odi.org.uk
http://www.oneworld.org/odi/

THE USE OF ECONOMICS TO ASSESS STAKEHOLDER INCENTIVES IN PARTICIPATORY FOREST MANAGEMENT : A REVIEW

Jonathan Davies and Michael Richards (1999)

This paper examines existing and emerging economic methodologies in terms of their potential and limitations to assess stakeholder incentives in participatory forest management. The authors propose five hypotheses to explain why more economic analysis has not been carries out. The paper explores the debate between two schools of opinion as regards the application of economics to community-level forestry. It considers the case for 'participatory economic analysis' which attempts to bring together the qualitative and quantitative approaches. The paper also intends to explain economic concepts and jargons as clearly as possible for the non-economist reader.

European Union Tropical Forestry Paper 5. ISBN: 085003-4760. 46 pp.

Orders: ODI, 111 Westminster Road, London SE1 7JD, United Kingdom
Tel: +44 20 7393 1600, Fax: +44 20 7393 1699, Email: forestry@odi.org.uk
http://www.oneworld.org/odi/

CUTTING THE TREE TO KEEP THE FOREST. AN OVERVIEW OF LESSONS LEARNED FROM COMMUNITY-BASED SUSTAINABLE FORESTRY PROGRAMMES WITH EMPHASIS ON THE PRODUCTION AND MARKETING OF TIMBER

Flip van Helden and Jochem Schneemann (2000)

The brochure explores the different development and business strategies followed within community-based forestry programs. It reviews the skills needed and the selection of and links established with the local communities. It also discusses timber production, marketing, forest management and certification issues. Furthermore, the publication looks at issues of financial sustainability and the basic economic data needed for management and production decisions, reviews lessons learned and provides recommendations.

24 pp. ICCO, PO Box 151, 3700 AD Zeist, the Netherlands. Tel: +31-30-692 7816, Fax: +31-30-692 5614, Email: forest@icco.nl

DESIGN WORKSHOP FOR A PROGRAMME ON PARTICIPATORY FOREST MANAGEMENT IN THE INSULAR CARIBBEAN, 26-27 AUGUST 1999, GRENADA : WORKSHOP REPORT

Conference on participation in forest management in the Insular Caribbean. 25 August 1999, Grenada.

Caribbean Natural Resources Institute/European Commission/DFID (2000)

The European Commission sponsors the 3-year programme "Building Capacity for Participatory Forest Management in the Insular Caribbean" of the Caribbean Natural Resources Institute (CANARI). The programme includes three main components:

- development of improved national policy and institutional frameworks for participatory and collaborative forest management;
- strengthening of the capacity of forest institutions and organisations to participate in the design and implementation of effective and equitable forest management strategies;

- testing and refining approaches to participatory forest management in a range of countries and situations.

As part of the 3-year programme (and sponsored by DFID as part of a 4-year programme involving training, grant facilities, and documentation of experiences) CANARI and the Grenada Ministry of Agriculture organised a conference and a workshop (on the design of a programme) on participatory forest management in the Insular Caribbean. Both the workshop and the conference were intended to discuss specific issues, strategies and activities to be addressed by the programme. The workshop resulted in conclusions and recommendations on topics like project vision, project objectives, project approach, policy and institutional reviews, capacity building, research, multiplier strategy, evaluation and project oversight.

For more information contact: Yves Renard, Executive Director CANARI, PO Box VF 383, Vieux-Fort, St. Lucia. Tel: +758-454-6060, Fax: +758-454-5188, Email: yr@candw.lc

GLOBAL FOREST INFORMATION SERVICE

Papers presented at the Global Forest Information Service Side Event, 3rd session of the UN Intergovernmental Forum on Forests (IFF 3). Geneva, Switzerland, 3-14 May 1999.

This publication contains 3 papers. The first paper focuses on the Global Forest Information Services (GFIS) and creating a common vision. The paper describes the establishment of IUFRO's GFIS Task Force, its activities and visions for the creation and establishment of an Internet-based data service on forest information. The second GFIS Task Force paper addresses the technical concepts and options for the implementation of the Internet based GFIS. The third paper addresses the need for access globally to the latest available scientific information on forests and their management. The paper elaborates on the particular needs of the ACP countries and linkages with other efforts. In this respect also ETFRN is mentioned.

IUFRO Occasional Paper no. 12. Orders: IUFRO Secretariat, Seckendorff-Gudent-Weg 8, A-1131 Wien, Austria. Tel: +43-1877-0151, Fax: +43-1877-9355, Email: iufro@forvie.ac.at

COMMUNITIES AND FOREST MANAGEMENT IN SOUTHEAST ASIA. A REGIONAL PROFILE OF THE WORKING GROUP ON COMMUNITY INVOLVEMENT IN FOREST MANAGEMENT

Mark Poffenberger (ed.)

This publication is part of the regional profile series which aims to communicate community involvement in forest management between regions, targeting diverse audiences including international policy makers and national planners responsible for shaping forest management policies and strategies, as well as the forestry practitioners and development specialists who implement them. This regional profile focuses on Cambodia, Indonesia, Laos, Philippines, Thailand, and Vietnam. The report provides, and tries to synthesise, information regarding the past, present and future role of forest communities in the sustainable use of the natural environment in Southeast Asia. The publication is divided in 6 part. In part 1 the issues currently confronting the natural forests and the people who live in them and depend on them are highlighted. The history of forest use in the region is reviewed in part 2, whereas part 3 describes the forest types and their specific challenges in the region. In part 4 an overview is given of the relationship between governments and forest communities, of laws, policies and development programmes that affect them, and also how policies are changing in the region. Part 5 provides 6 case studies illustrating a wide variety of contemporary community forest management practices and the problems faced by local residents. The positive roles governments, NGOs, development agencies, and the private sector can play in supporting a transition to participatory forest stewardship in the region are identified in part 6.

Regional Profile Series. Orders: Asia Forest Network, M. Poffenberger, 1345 Milvia Street, Berkeley, CA 94709-1934, USA. Tel: +(510)-524-3084; Fax: +(510)-524-1615, Email: mpoffen@aol.com or IUCN, S. Rietbergen, Rue Mauverney 28, 1196 Gland, Switzerland, Tel: +41-22-999-0001; Fax: +41-22-999-0025; Email: spr@hq.iucn.org

ESTUDIOS EN LA AMAZONICA COLOMBIANA (STUDIES ON THE COLOMBIAN AMAZONIA)

No. 16: Sistemas agroforestales en el Guaviare. Evaluación biofísica y socioeconómica de algunos casos en el área de colonización (Traditional agroforestry systems in Guaviare)

Beatriz Elena López Rojas and HernánDarío Rincón Henao (1999)

This study evaluates several examples of agroforestry practices established by settlers in the Guaviare region. The main aspects analysed are: the forms of use and management of agroforestry systems; their biophysical characterisation; and the socio-cultural and economic benefits of the different systems .

No. 18: Arponeros de la trampa del sol. Sustentabilidad de la pesca comercial en el medio río Caquetá (Harpooners of the trap of the sun. Sustainability of commercial fishing in the Middle Caquetá River)

Carlos Alberto Rodríquez F. (1999)

This multi-disciplinary study provides multi-annual data on the seasonality and cycles that steer the behaviour of both fishes and fishers. It includes chapters on historical, social, cultural, economic, biological and ecological aspects of commercial fishery in the Middle Caquetá River by the indigenous population and colonists. The study aims to contribute to a sustainable fish resource use and management.

No. 19: Flórula de la meseta de arenisca de la cominidad de Monschoa. (Florula of the sandstone plateau of the community of Monochoa)

María Victoria Arbeláez and Ricardo Callejas (1999)

The sandstone plateaus in the Amazon are characterised by extreme soil and microclimate conditions, drought and inundation and shortage of nutrients. However, the biological diversity of non-timber plants is considerable. This book presents data on the taxonomy and ecology of the savanna vegetation and provides insight in the use of plants by indigenous communities.

No. 20: Las anonáceas de la región de Araracuara. (Annonaceae in the Araracuara Region)

José Murilla-A. and Diego Restrepo (2000)

The Annonaceae is one of the main families in the Araracuara Region. This study provides taxonomic data, notes on distribution and uses and offers keys and illustrations. The study includes several species new to science.

No. 16: ISBN: 958-9365-06X, 208 pp. No. 18: ISBN: 958-9365-086, 204 pp. No. 19: ISBN:958-9365-094, 296 pp. No, 20: ISBN: 958-9365-116, 220 pp. Orders: Tropenbos-Colombia programme, Carrera 21 no. 39-35, Santafé de Bogotá, D.C. - Colombia. Email: ftropenb@colomsat.net.co

CÁC CHI HO LAN (ORCHIDACEAE) CUA THÁI LAN, LAO, CAMPUCHIA VA VIET NAM (ORCHID GENERA OF THAILAND, LAOS, CAMBODIA AND VIETNAM)

A. Schuiteman and E.F. de Vogel (2000)

This books records the orchids of Thailand, Laos, Cambodia and Vietnam. This part of Southeast Asia is extremely diverse in its geography, ecology and culture, and equally divers in orchids, numbering about 1400 species and 174 genera. Until recently information on the orchids of the four countries was scattered in a large number of publications which were either very expensive or out of print. The authors of this book primarily intend to provide a basic tool to residents of the four countries. The book provides a general description, information on the distribution, habitat and notes on the 1400 species. It also includes a key and 136 full colour plates.

ISBN: 90-71236-412. 192 pp. Vietnamese-English edition. National Herbarium Netherlands, Leiden University Branch, PO Box 9514, 2300 RA Leiden, The Netherlands.

THE RIGHT CONDITIONS. THE WORLD BANK, STRUCTURAL ADJUSTMENT AND FOREST POLICY REFORM

F.J. Seymour and N.K. Dubash (2000)

Over the last decade the World Bank has been criticised for the negative impacts of its involvement in the forestry sector and its promotion of structural adjustment. Taking the intersection of these two issues as a starting point the authors try to provide insight into what extent, and under what conditions the World Bank can be an effective proponent of forest policy reform through adjustment lending. In this respect the report focuses on the 4 cases where the World Bank has explicitly linked forest policy reform conditions in adjustment lending operations. The cases involve Papua New Guinea, Cameroon, Indonesia, and Kenya. The four chapters on these cases offer background information, elaborate on the adjustment lending, the role of other stakeholders, and strong conclusions. In a final chapter the report draws recommendations and several outspoken conclusions on the positive and negative effects and the potential of the World Bank's involvement in these countries and in forest sector reforms in general. Conclusions are both operational and strategic, including adaptations within the World Bank itself (in terms of e.g. know how and budgeting) and policy adjustment (in terms of e.g. governance issues).

ISBN: 156973-4240. 156 pages. World Resources Institute, 10 G Street NE, Suite 800, Washington, DC 20002 USA. http://www.wri.org/wri/

ENVIRONMENTALLY SOUND FOREST INFRASTRUCTURE DEVELOPMENT AND HARVESTING IN BHUTAN

Norbert Winkler (1999)

The Third Forestry Development Project in Eastern Bhutan was seized as opportunity to review the impact of road construction and cable logging on the forest environment. The study compares the environmental impact of the different phases of the traditional road construction by bulldozers with environmentally friendly road construction by excavator. The study also provides information on the environmental impact of long-distance cable crane logging, the common harvesting technique in Bhutan now and in the future, in the traditional clear-felling system as well as in a modified technique

Forest Harvesting Case-Study no. 12. ISSN: 1014-9945. 72 pp. FAO, Vialle delle Terme di Caracalla, 00100 Rome, Italy. Tel: +39 06 57051, Fax: +39 06 57053152

JOINT FOREST MANAGEMENT: POLICY, PRACTICE AND PROSPECTS

Arvind Khare et al (2000)

The third volume in the well presented policy that works for forests and people series is a country study on India. In recent years India's forest policy has opened up to different actors, resulting in a change for forest management between government and communities and the regeneration of considerable areas of forest. However, the debate on who's paying, who's benefiting, and whether good forestry is practised is lively. In 6 chapters the book describes in detail the forests and people in India, the development of India's forest policy (including the legacy of colonial forestry), the powers over policy and the effects on forests. It reveals the favoured forest industries and the protectionist agenda, seeking to lock away forests from people's use. It elaborates on the dilemmas and prospects of joint forest management in India. The authors draw conclusions and give recommendations amongst others on policy processes and the need to keep negotiating, on policy signals pointing the right way with respects to e.g. community rights and the removal of monopolies, on practical programmes focussing on real motivation and livelihoods, and on good information fuelling good policy and practice.

Policy that works for forests and people series no. 3. India country study. 142 pp. ISSN: 1028-8228. Orders: WWF-India, 172-B Lodi Estate, Max Mueller Marg, Lodi Estate, New Delhi 110 003, India. Tel: +91-11-462 2972/469 1761, Fax: +91-11-462 6837, Email: fwl@wwfind.ernet.in

or at IIED, 3 Endsleigh Street, London, WC1H 0DD, UK. Tel: +44-20-7388 2117, Fax: +44-20-7388

2826, Email: bookshop@iied.org

MOUNTAINS OF THE WORLD. MOUNTAIN FORESTS AND SUSTAINABLE DEVELOPMENT

Mountain Agenda (Martin Price, Thomas Kohler and Ted Wachs (eds.) (2000)

Mountain Agenda, an informal working group, strives to enhance the position of mountains on the global environmental agenda. To do so, this document was prepared for the 2000 spring session of the Commission on Sustainable Development. The document describes the key issues in mountain forestry, like multifunctionality, the freshwater balance, natural hazards, biodiversity hotspots and climate change. Eleven case studies describe local and regional experiences with mountain forests and forestry. Case studies include e.g. collaborative management of walnut-fruit forests in Southern Kyrgyzstan, the conflict between forest conservation and hydropower in Bhutan, the management of temperate rainforest in Canada, and mountain forest policy trends in Switzerland. The document closes with a call to join forces to achieve new policies in mountain forest management and creating opportunities for multifunctional, protection biased forest management.

ISBN: 390-6151-484. 42 pp. Orders: Mountain Agenda, Centre for Development and Environment, Institute of Geopraphy, University of Berne, Hallerstrasse 12, CH-3012 Berne, Switzerland, Fax: +41-31-631 8544, Email: agenda@giub.unibe.ch

SEGUNDO SIMPOSIO SOBRE AVANCES EN LA PRODUCION DE SEMILLAS FORESTALES EN AMÉRICA LATINA. SANTO DOMINGO, RÉPUBLICA DOMINICANA, 18-22 DE OCTUBRE, 1999

R. Salazar (ed.) (2000)

The proceedings of the second seminar on advances in forest seeds production (PROSEFOR) in Latin America is grouped around 5 themes: phenology of forest species; seed production and genetic improvement; collection and treatment of forest seeds; germination and growth of forest seeds; and political and market aspects of forest seeds. The proceedings include 49 papers in Spanish. The PROSEFOR project, financed by Denmark and executed by CATIE, aims to promote and improve the capacity and technical assistance of forestry institutes in Central America, Panama and the Dominican Republic. It's general objective is to improve the physical and genetic quality of seeds and guarantee reforestation projects in the region.

312 pp. Orders: CATIE/PROSEFOR, 137-7170 Turrialba, Costa Rica. Email: arodrigu@catie.ac.cr

INCREASED INVESTMENT AND TRADE BY TRANSNATIONAL LOGGING COMPANIES IN AFRICA, THE CARIBBEAN AND THE PACIFIC: IMPLICATIONS FOR THE SUSTAINABLE MANAGEMENT AND CONSERVATION OF TROPICAL FORESTS

Nigel Sizer and Dominiek Plouvier (2000)

This book presents an alarming assessment of the increased logging activities in the former ACP colonies by transnational companies, focussing on the most forest-rich countries of the Congo Basin, the South Pacific and the Caribbean. The findings of the study are ground for great concern. Analysis shows that, in addition to the longstanding activities of European, Japanese and North American companies, a new group of investors, mostly from Southeast Asia, is rapidly expanding in the world's last remaining tropical forests. The book contains two parts. In part one wide ranging conclusions and recommendations to governments, development agencies, citizens and investors are given, aiming to address the various economic, environmental and social problems associated with the identified trends. Part two gives an overview of the state of the forests in ACP countries, the (EC) policy on forests in ACP countries, a brief overview of (Asian) transnational logging companies, European investments in ACP countries, and case studies on e.g. Cameroon, Gabon, and Congo, Belize and Suriname, and Papua New Guinea.

122 pages. WWF-Belgium/WRI/WWF-International. Orders: WWF-Belgium, Chée de Waterloo 608, B-1050 Bruxelles, Tel: +32-2340-0999, Fax: +32-2340-0938, Email: tropicalforest@wwf.be

PLANTES UTILES DES HAUTES TERRES DE MADAGASCAR

Jean-Marie Samyn (1999)

This attractive booklet presents a description and full colour photographs of 75 multiple use plants (of which 34 are endemic) of the higher grounds of Madagascar. For each plant spp. Is given (in French) a botanical description, information on habitat and the plant's principle uses. Use categories included are: medicinal, food, agriculture, art, traditional and other.

82 pages. Orders: Koeltz Scientific Books (Germany) - http:www.krypto.ch/ or Krypto, International booksellers for botany and natural sciences (Teufen-Switzerland). There is also a limited stock available from: Intercooperation, Maulbeerstrasse 10, CH-3001 Bern, Switzerland, Tel: +41-31-382 0861, Fax: +41-31-382 3605, Email: kbaertschi@intercoop.ch

DECENTRALIZATION AND DEVOLUTION OF FOREST MANAGEMENT IN ASIA AND THE PACIFIC

Thomas Enters, Patrick B. Durst and Michael Victor (eds.) (2000)

This book contains the proceedings of the "International Seminar on decentralization and devolution of forest management in Asia and the Pacific" (Davao City, Philippines, 1998). Main objectives of the seminar were to:

- critically review decentralization and devolution experience in forest management;
- discuss emerging issues associated with different approaches to adaptive forest management;
- identify and analyse constraints and opportunities in recent efforts;
- examine gaps between policy and implementation in the field; and
- explore how pilot efforts can be scaled up.

During the seminar it became clear that decentralisation and devolution are two very distinct processes. Many of the papers indicate the need for a greater understanding of how these policies are implemented at the local level and how they affect local forest management efforts. Apart from human and financial resources the seminar also pointed out that reluctance within forest and other government bureaucracies to relinquish control is an important factor in the slow acceptance of decentralised forest management policies. However, along with the increasing democratisation throughout the region alliances among local organisations and networks are created and efforts undertaken to strengthen local decision making.

ISBN: 974-7946-02-5. 236 pages. RECOFTC Report no. 18/RAP Publication 2000/1. Orders: Regional Forestry Officer, FAO Regional Office for Asia and the Pacific, Maliwan Mansion, 39 Phra Athit Road, Bangkok 10200, Thailand, Tel: +66-2-281-7844, Fax: +66-2-280-0445, Email: patrick.durst@fao.org or to RECOFTC, Kasetsart University, PO Box 1111, Bangkok 10903, Thailand, Tel: +66-2-940-5700, Fax: +66-2-561-4880, Email: ftcsss@nontri.ku.ac.th.

ASIA-PACIFIC FORESTRY COMMISSION:

THE FIRST FIFTY YEARS

Jörg Balsiger (2000)

This book offers insight into the first fifty years of the FAO Asia-Pacific Forestry Commission. Following history the book describes the Inaugural Session, the period 1950-1960 (moving forestry to a regional plan), the period 1960-1970 (changing forestry priorities), the nineties (on the pursuit of sustainable development), and the constraints and opportunities for 2000 onwards.

ISBN: 974-7946-01-7. 88 pages. RAP Publication 2000/02Orders: Regional Forestry Officer, FAO Regional Office for Asia and the Pacific, Maliwan Mansion, 39 Phra Athit Road, Bangkok 10200, Thailand, Tel: +66-2-281-7844, Fax: +66-2-280-0445

FORMULATION AND IMPLEMENTATION OF NATIONAL FOREST PROGRAMMES. VOLUME III: INTERNATIONAL EXPERIENCES

P. Glück, G. Oesten, H, Schanz and K-R. Volz (eds.) (1999)

These are the proceedings of the international seminar held in Freiburg, Germany from 18-20 May 1998. The book contains ten papers of which 8 are focussed on tropical forest countries. These include the development, planning and implementation of a national forest programme in Ecuador, Ethiopia, and Indonesia, the planning and implementation process of national forest development programmes in Malaysia; a case study on Tanzania; forest policies and the convention on biological diversity in Thailand; forest management planning in a historical perspective in Uganda; and the role of consensus building in the national forest programme in Vietnam. The international seminar was organised in order to analyse the characteristics, limits and possibilities of national forest programmes from a scientific point of view and to identify further research needs. Given the long tradition and solid experience in the formulation and implementation of national forest programmes, in this volume the South is consulting the North, an interesting switch to the predominant flow of technical developing consultation.

ISBN: 952-9844-69-7. 144 pages. EFI Proceedings No. 30. ISSN: 1237-8801. Orders: EFI, Torikatu 34, FIN-801000 Joensuu, Finland, Tel: +358-13-252 020, Fax: +358-13-124 393, Email: publications@efi.fi

INVESTIGATIONS ON TREE SPECIES SUITABLE FOR THE RECULTIVATION OF DEGRADED LAND AREAS IN CENTRAL AMAZONIA

Bauch, J., Dünisch, O. and L. Gasparotto (eds.) (1999)

This publication is the result of a Brazilian-German research cooperation on growth and wood formation of native tree species of Central Amazonia, which is part is the SHIFT-project, Studies on Human Impact on Forests and Floodplains in the Tropics. The main goal of the project is the development of sustainable land use systems in the amazon region, and especially the recultivation of degraded lands.

To study the influence of the management of degraded areas on growth and wood formation, investigations on the relationship between environmental input and tree growth were carried out in three different plantation systems, namely monoculture system, mixed culture system, and enrichment of a 25-year old secondary forest. Main interest was focussed on the Meliaceae family, including Swietenia and Carapa. The publication provides insight into the research results of various researchers on 8 different native tree species. These include the development of tree height and diameter, water and nutrient supply, biomass production and growth dynamics, wood characteristics and root structure.

Mitteilungen der Bundesforschungsanstalt für Forst- und Holzwirtschaft Hamburg. Nr. 193. ISSN: 0368-8798. 138 Pp. Orders: Kommissionsverlag Max Wiedebusch, Dammtorstrasse 20, 20354 Hamburg, Germany Price: DM 52

Tel: +49 40 345001, Fax: +49 40 3480117, Email: info@wiedebusch.de

AN OVERVIEW OF LOGGING IN CAMEROON

Hutter, C. (ed.) (2000)

This report is one of the first products of Global Forest Watch (GFW), an alliance between initiator World Resources Institute (WRI) and NGOs and local leaders from forested countries all over the world. GFW links satellite images with on-the-ground investigations by local groups, and uses the Internet to make the information widely available. The publication therefore can be downloaded free of charge.

The publication assesses the development of logging in Cameroon. It provides information on how much forest remains and on how these forests are valued in terms of wood products, biodiversity, and ecosystem services. It describes how forest development is evolving and who is logging Cameroon's forests. Furthermore, it elaborates on how forest development is legislated and regulated and how compliance may align with existing legislation.

Some of the key findings are on forest cover (the most recent forest cover data are ten years old); concession areas (abandoned, current, and future concessions cover 76% of the total, protected and unprotected, forest area); concession holders (almost a third of the logging concessions is retained by three, partially or wholly financed by French interests, parent groups); economic importance (Cameroon ranks among the world's top five tropical log exporters); biodiversity (bushmeat hunting poses a key treat to the country's biodiversity); and forestry legislation (compliance with the 1994 forest law is problematic).

68 Pp. ISBN: 1-56973-437-2 (English), 1-56973-438-0 (French). Orders: Global Forest Watch, c/o World Resource Institute, 10 G Street, NE, Washington, DC 200002, USA, phone: +1-202-729 7694, Fax: +1-202-729 7686, http://www.wri.org/wri/

LONGTERM STUDIES IN GERMAN FOREST RESERVES IN THE PROVINCE OF HESSE - FIRST REPORT ON THE FAUNA PUBLISHED

Flechtner, G., Dorow, W. H. O. & Kopelke

The government of Hesse established 30 forest reserves („Naturwaldreservate") to study the biodiversity and succession in a long term project. Most of these areas consist of a totally protected reserve, where any cultivation was stopped and a comparison area with usual management. The Forschungsinstitut und Naturmuseum Senckenberg/Frankfurt am Main took over the zoology part in 1990. Two reserves are surveyed for two years at a time with a broad set of different types of traps and hand collecting. All catches are sorted to order and preserved in the museum collection. For several groups (Lumbricidae, Araneae, Opiliones, Heteroptera, Hymenoptera: Aculeata, Macrolepidoptera, Coleoptera, Aves, Mammalia: Rodentia, Insectivora) as a standard extensive reports are written focussing on the qualitative aspect of the reserves inventory. Further groups are studied if honorary cooperators are available.

The first report was now presented to the public by the Minister for environmental affairs, Wilhelm Dietzel. It deals with a beech forest in the mountainous area of the Vogelsberg. Here in addition chapters on Auchenorrhyncha, Psylloidea and Mecoptera were written, for several other orders species lists were compiled.

2328 species were determined, including one species new for Germany, 40 new for Hesse, and 138 new for the Vogelsberg region. 105 species are listed in the Red Data Book of German animals. Approximately 4500 species, i. e., about 10 % of the German fauna, inhabit the nature reserve with an area of only 73,7 ha. The study shows that many more species inhabit Central European forests than scientists have so far assumed.

The study is only available in the German language. J.-P. Naturwaldreservate in Hessen No. 5/2.1. Niddahänge östlich Rudingshain. Zoologische Untersuchungen 1990-1992. Mitteilungen der Hessischen Landesforstverwaltung Band 32: 1-746. ISBN: 3-89051-224-0. The first part of the study, comprising 746 pages, is available for 45,00 DM + postage at: Forschungsinstitut Senckenberg, Abt. Schriftentausch. Senckenberganlage 25, 60325 Frankfurt am Main, Germany.

Email: wdorow@sng.uni-frankfurt.de; http://senckenberg.uni-frankfurt.de/fis/pro1.htm

The second part, comprising 550 pages the Coleoptera, Vertebrata and the species list, will be published soon. Price and address for orders are the same as for part 1.

Top of page