

COMMUNICATIONS - RESEARCH

Local medical research

The Transmara Western Group (TMWG), in cooperation with the Miot traditional herbalists of Kenya, is conducting intensive local research on endemic diseases: tuberculosis, Aids and malaria in humans; and theileriosis, anthrax and contagious pleural pneumonia in cattle. The project is being carried out in the Transmara and Bomet districts.

Elderly men and women are conducting the research. They have held several village workshops, which are generating new approaches and strategies for finding low-cost remedies for the above diseases.

In collaboration with Kenyatta National Hospital, TRAMED and RESPECT-International, TMWG has selected various herbal products which will be presented for scientific validation to Kenyatta National Hospital, RESPECT-International and ILCA.

Comments and suggestions regarding this research are most welcome. Please write to:

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The contribution of forest foods to the livelihoods of the Piaroa Amerindians of southern Venezuela.

This research was aimed at understanding and quantifying the value of gathered forest foods to the Piaroa Amerindians of southern Venezuela. This was done by documenting the extent to which wild plant and animal foods are harvested and contribute to household nutrition. A small Piaroa village (San Antonio) with 17 inhabitants and easy access to forest resources was compared with a larger Piaroa village (Limon) which has nearly 350 inhabitants and less access to forest resources. The aim was to analyze the effects that permanent settlement, population growth and deforestation have on the availability, use and management of forest foods.

Data were collected through direct observation, interviews, time-allocation studies and measurements of the amounts of wild forest products collected and eaten. Alternate months were spent in each village for a period of 13 consecutive months (in 1992-1993) so that seasonal variations could be observed and wild food harvesting could be placed in the context of agricultural production.

The Piaroa recognize, as edible, 131 wild plant species, 21 mammals, 25 birds, 57 fish, 15 reptiles, 2 amphibians, 13 anthropoids and 2 annelids. Despite the scarcity of forest resources and the permanence of the settlement, the larger village of Limon did not abandon the collection of wild plant foods, but maintained it in a manner similar to the smaller village of San Antonio. In Limon, the households included in the study collected 968 kilos of wild plant products over 71 days of direct observation, while in San Antonio the households collected 1,405 kilos over 87 days. Mature forests are farther from Limon than from San Antonio because of deforestation. As a result, Limon's villagers invest more time on average (181 person-minutes) in harvesting wild plant products than do the villagers of San Antonio (86 person-minutes). Both game and fish are difficult to find in Limon. Wild animals were hunted on 53% of days in San Antonio, but only 24% of days in Limon. Fish are also depleted in Limon; during the periods of observation, only 47 kilos were caught in Limon compared with 539 kilos in San Antonio. The households studied in both villages were observed to harvest wild plants and animals totalling 3,857 kilos. The marketable portion of this has a local value of US \$ 2,557. If extrapolated to a full year, and if the costs of labour and equipment are subtracted, the annual average value of the forest food harvest can be said to equal US \$ 3,299 per household.

Villagers of Limon often sell wild fruits in the local market. A day's collection of wild palm fruits (*Jessenia bataua*, *Oenocarpus bacaba* or *Euterpe precatoria*) nets an average of US \$ 9.88, whereas a day labourer working the same number of hours earns US \$ 7.62.

Forest foods also contribute to the livelihoods of the Piaroa in both villages by providing dietary nutrients, particularly protein and fats, which are not provided through agriculture alone. Seasonal changes in the availability of forest foods allow one product to be replaced by another, thus ensuring

that throughout the year there is always something available to eat. Access to a diversity of forest food resources adapted to different environmental conditions and available at distinct sites and times of the year reduce the risks associated with survival in marginal areas.

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Compatibility of governmental policy with traditional culture in forest management in Cameroon

This study has two main objectives:

- to reassert the status of traditional policy based on Bell's (1987) argument that 'Traditional structures were profoundly altered by external influence but they were hardly overthrown'. The concern here will be to investigate and codify the latent features of traditional policy. It might be necessary to compare traditional policy with government policy to show how ambiguous the latter is in terms of the way it is formulated, understood and enforced, and to prove that government policy is responsible for the high and increasing rate of deforestation which today stands at 0.8% per year in Cameroon;
- to identify the common ground on which the two policies converge, and the areas in which they diverge. The aim is to reconcile the differences between them so that a more appropriate policy emerges. This will improve the government's National Environmental Action Plan, which is currently undergoing formulation.

The study will be limited to the forest sector. Although the destruction of the world's forests is fast becoming a global problem, the study will be focused on policies that are formulated and operate within the country, i.e. are based on local and national institutions and organizations. Cameroon's forest covers 70% of the National Territory. It ranks third in Africa as an exporter of tropical wood, after Zaire and Gabon. Tropical wood is therefore a valuable resource for sustainable development.

Since the study aims to explain the relationship, or compatibility, between modern and traditional policy, a case study strategy is expected to provide information on how each policy is constructed. Consequently, a multi-case study will not only describe the policy-making process but will also illustrate how each policy is consistent with the management of forests in different parts of the country.

Data collection will include face-to-face interviews (unstructured and structured) and questionnaires.

The primary source of data will be individuals and groups. Additional data will be obtained from secondary sources. Government records, archives and publications will be used, as well as interpretation and analysis of relevant statutory and regulatory instruments in force in Cameroon. Public and private libraries, church missions, botanic gardens and national parks will be visited as part of the literature review and study of the situation in the wilderness.

Playing the role of a non-participant observer, the researcher has an on-the-spot view of how forest dwellers and outsiders manage the forest. As a participant-observer, he shares in the dynamics of groups involved in forest management. The result of all of this will be to obtain empirical data that will answer the questions posed by the study. At the end of the study it is expected that enough information will have been generated to produce a comprehensive document that can persuade the Cameroon government to rethink its environmental policy options regarding forest management.

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GIS for biodiversity conservation and sustainable development

Xishuangbanna (Dai Autonomous Prefecture) is located in the most southern part of China's Yunnan Province, which shares borders with Burma and Laos. A three-year project 'GIS for biodiversity conservation and sustainable development', funded by IDRC, was officially launched in November 1994.

The project involves key Chinese institutions at various levels, such as the Secretariat of the

Xishuangbanna Biosphere Reserve Management Bureau, the Chinese National Committee for Man and the Biosphere, and the Institute of Ecology and Geobotany at the Yunnan University. The project's main objectives are to determine how modern technology and GIS can be used to improve Reserve management, and to investigate indigenous knowledge and its potential relevance for management activities.

The three main tasks for the first year are:

- to construct a database needed for a GIS;
- to conduct research on *Villous ammomum*, a plant used for medicinal and other purposes that is grown extensively on forest land in Mengyang, one of the five areas that make up the Reserve;
- to conduct research on traditional patterns of land use in indigenous communities (Jinuo, Yi, Bulang and Dai) within the boundaries of the Mengyang area of the Reserve.

As to indigenous knowledge and development, many traditional practices of Xishuangbanna's indigenous communities have been recognized by researchers as making positive contributions to conservation ideals. However, the gap between researchers and management is often wide. It is hoped that through this project, which involves close cooperation between researchers and Reserve management, this positive recognition may be translated into improved management.

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Traditional veterinary medicine: gathering base-line information

Traditional medicine is practised almost everywhere in Ethiopia. Because the peoples of sub-Saharan Africa continue to be unable to afford orthodox medical services, many experts are recommending traditional medicine as an alternative. The traditional practices and medicinal agents that are available should be developed and used in combination with sound pharmacological procedures.

The knowledge that underlies indigenous beliefs regarding animal health is also important when development programmes are being introduced. Ethnoveterinary Research and Development (ERD), or Veterinary Anthropology, is a new field that has emerged from these ideas. Studies within this field should start from properly collected base-line information.

Few reports have been published on traditional medicinal plants in Ethiopia; most such reports are on human medicine. There is a lack of data on traditional veterinary practices, veterinary medical beliefs and medicinal plants or agents. Information about these beliefs, practices and agents should be gathered from all over the country, so that they can then be evaluated, improved and utilized along sound lines.

The objectives of this study are:

- to collect baseline information on traditional veterinary practices and indigenous veterinary medical beliefs;
- to identify and characterize medicinal plants or agents that are of veterinary importance;
- to establish a garden of medicinal plants for further experimental work and for exhibition.

The study is being carried out in central Ethiopia (i.e. in and around Addis Ababa, Nazareth and Debre Zeit) with the help of frequent field visits. During these visits interviews are conducted with traditional healers who are consulted on matters of animal health, with ordinary people (farmers) willing to communicate what they understand of animal diseases, and with the veterinary specialists who deliver each of the modern treatment options available in the area. Questionnaires have been prepared which elicit detailed information regarding medicinal plants or agents and the way they are used. Species of plants that are claimed to have medicinal properties are appropriately sampled for identification at the Biology Department of Addis Ababa University. Cuttings are taken for the medicinal plant garden. The study is funded by the Ethiopian Science and Technology Commission (ESTC), and will be carried out between November 1994 and November 1995.

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The role of farmers' knowledge in the information system for perennial grasses

Farmers in the upland areas of the Murray Darling Basin in southeastern Australia have initiated a research and extension programme to develop low-input, persistent and palatable perennial grasses in an attempt to tackle some of the land degradation problems they are facing. Catchments in the project area are characterized by hill country with shallow, erodible soils of low fertility and moderate to high acidity. Agricultural land use in these areas is predominantly sheep and cattle grazing (wool, lambs, beef and dairy) with some cropping. The increasing urgency of the need to deal with dryland salinity was the catalyst for land managers to call for making use of knowledge gained from R&D on both local and introduced perennial grasses.

Grasslands in the project area can play an important role in reducing the effects of these land degradation processes. Nevertheless, recent surveys suggest that only about half the project area is covered by perennial pastures. Given the input requirements and lack of persistence of some of the perennial grasses that have been introduced in certain environments, farmers expressed the need for useful (i.e., palatable to livestock) perennial grasses which, with minimal inputs, will persist on hill country.

The Community Grasses Project was initiated in 1993 and has brought together farmers, researchers and extension agents (both government and community) from across the region. The aim is to develop strategies for evaluating grasses on farms, to collect and distribute seed, and to fund joint trials.

The Community Grasses Project started to gather information from farmers who have experienced both successes and failures with perennial grasses, and to collate and disseminate this information. Semi-structured interviews have taken place with land managers in two regions within the project area. They were asked to relate their experiences with establishing and managing perennial grasses within farm and local community contexts.

The research is also aimed at identifying technical issues that require attention, processes that would make it easier for farmers to share information with each other, and potential for learning opportunities. Of particular interest is the role that farmers' knowledge and the exchange of information among farmers could play within participatory programmes such as those that have been established for landcare and for specific types of agricultural production (e.g., beef, dairy and sheep).

The landcare approach in Australia accommodates many of the criticisms of the technology-transfer approach to extension. In contrast to extension agents engaged in technology transfer, landcare groups seek broad community participation in development activities and group decision-making. A fundamental assumption underlying the landcare approach is that processes of group interaction and group problem-solving will draw upon farmers' knowledge, and thus enhance the outcomes of land management, research and extension.

These issues will be explored by way of participant observation and workshops with groups in the project area that represent landcare, the farm industry and extension. Researchers and extension agents involved in pasture or land management projects will also be interviewed to determine the value they place on farmers' knowledge and the extent to which farmers participate in the research and extension that takes place within institutional frameworks.

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Fishing, farming and rubber-tapping: The Upper Juruá Extractive Reserve in Acre (Brazil)

One of the challenges in contemporary ecological studies is to examine both biological and cultural diversity, to draw associations between the various factors, and on the basis of these associations to involve local people in the local management of conservation areas.

In recent years, management studies have incorporated the idea of sustainability, which is generally defined as the use of ecological systems in a manner that satisfies current needs without compromising

the needs or options of future generations (Huntley et al., 1992:8). Academic research in interdisciplinary areas such as ethnobiology has helped to demonstrate the value of the knowledge of local people. Examples of local management by traditional peoples (Gadgil et al., 1993) have also shown the great potential of local populations for setting conservation processes in motion. Local knowledge of the relationships between humans and natural resources, and of methods for protecting the environment while using natural resources, represents a new perspective for scientists and institutions (Kessler et al., 1992:221/224). In Brazil, Extractive Reserves that have been established in the Amazon represent a mandate to conserve resources in a sustainable manner, and to involve the local population in this effort.

The Extractive Reserve of the Upper Juruá, Acre, with 500 hectares, is home to some 860 families of rubber-tappers and small farmers. It was created in February 1990, and is surrounded by indigenous reserves. It is managed by the ASAREAJ (Association of Rubber-Tappers and Farmers of the Extractive Reserve of the Upper Juruá--Associação dos seringueiros e agricultores da Reserva Extrativista do Alto Juruá) and by the CNS (National Rubber-Tapper Council--Conselho Nacional dos Seringueiros) (ASAREAJ, 1993).

An Extractive Reserve is based on the idea that resources must be managed locally. To put this challenging idea into practice, a project is being conducted that involves researchers from two Brazilian universities (State University of Campinas--UNICAMP and University of Sao Paulo--USP). The project is associated with CNS and ASAREAJ, and supported by the MacArthur Foundation. It includes sub-projects on biological diversity, socioeconomics, the creation of a forest encyclopedia and zoning (Cunha, Brown and Almeida, 1993).

Research on ethno-ecology and fishing includes examination of the relationship between humans and fish (Begossi and Amaral, 1993), as well as the collection of local knowledge about fish, their uses as food and medicine, and the taboos associated with them. More than 100 interviews with local families have been conducted along the rivers Juruá, Tejo, Bagé, Sao Joao and Breu. The first results are from the Juruá River area and the rubber-tapping area along the Tejo River. Crops that are cultivated include manioc, beans, maize and tobacco. Families raise chickens, pigs, cattle and a few goats and sheep. Family houses are scattered along the rivers. Both fishing and hunting are subsistence activities, and the main fishing technologies make use of cast nets, and hooks and lines.

Fish are being collected and classified. The effort will result in a catalogue of Upper Juruá fish, including the uses to which various species are put, and the taboos associated with them. The fish have been identified by Oswaldo T. Oyakawa and are deposited at the Zoological Museum of the University of Sao Paulo, Brazil.

For more information, please contact:

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Indigenous knowledge of the ecological conditions under which medicinal plants grow

Research has been conducted in a number of countries on local herbalists' knowledge of medicinal plants, and many studies have been published. This research project, being carried out in Kenya, deals not with the herbalists' knowledge of medicinal plants as such, or with the healing capacity of the plants, but with the herbalists' knowledge of the ecological conditions under which the medicinal plants grow. The main aim of the research is to preserve possibly unique indigenous knowledge which might disappear if it is not documented. Research questions include:

- How much do herbalists know of the ecological conditions (soil, water, land form, climate, vegetation structure, etc.) under which plants grow, particularly local medicinal plants?
- How does this knowledge compare with western-based landscape-ecological knowledge? Is the indigenous concept of the plants' ecosystems the same but more restricted? Or is it the same but wider, including natural parameters not known or recognized in western-based science? Or are other types of knowledge involved--of the supernatural, for example?

- Is the type of knowledge dependent on:
 - different landscape-ecological zones (forest, savannah, etc.);
 - the way of life of the people involved (e.g. agriculture, pastoralism);
 - their tribal background;
 - gender?
- When people have shifted from their traditional homeland to occupy new territory, to what degree is their ecological knowledge adapted to accommodate the new ecological conditions?
- How is their ecological knowledge adapted to accommodate new diseases which were unknown to their teachers?

The research is presently being carried out by two staff members of the Moi University. The approach demands considerable caution because the herbalists' knowledge is their source of income and therefore jealously guarded. It is clear that the quality and quantity of information depends on the trust the herbalists have in the integrity and good intentions of the researchers.

The research therefore started by focusing on the village where one of the staff members was born and grew up, so that the researchers did not come into the community as strangers. Even so, during the first meetings with the three *daktari* of the village, progress was slow. The researchers could win their trust only by stressing time and again that they are not interested in their knowledge of plants and diseases, but only in their knowledge of where and how the plants grow. When trust was established, *daktari* took them out to show them the plants and tell them about ecological conditions in the field. In future, other villages will be approached in the same way, i.e. through staff members of the university. Use of the local language is necessary in order not to miss out on possible subtleties in the local classifications. Up to now the research has concentrated on the first research question: 'How much do herbalists know of the ecology of medicinal plants?' The first contacts are promising, but certainly not conclusive. The cultural gap between indigenous and western-based knowledge is vast and it is very difficult to ask the right questions, even when the research is carried out in an atmosphere of open-mindedness and willingness to understand each other. Also, research progress is slow because the *daktari* have many patients, and it is difficult to match their schedules with those of the researchers.

Anyone who could help the researchers with advice or information is kindly requested to contact: Prof. P.D. Jungerius, School of Environment Studies, Moi University P.O. Box 3900, Eldoret, Kenya.

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