CHAPTER 12

Biodiversity Research Innovations II: Ethnobotanical and Ethnopharmacological Research

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INTRODUCTION

Ethnobotany can be defined as the botanical study of local people's perception of the cultural and botanical knowledge including, for example, the local names given to plants and the various ways in which plants are classified and used by the people.

Ethnoecology is increasingly used to refer to all studies describing local people's interaction with the natural environment, including ethnobiology, ethnobotany, ethnoentomology, and ethnozoology. Hence, ethnoecology is a very broad discipline.

Most ethnobotanical studies are carried out in rural areas, especially forested areas, studying how the people in these areas use the plant resources. This is mainly because forests have an abundant species diversity and are major conservation targets. However, ethnobotanical studies can be done in non-forested areas or in non-rural areas like the study of plants sold in urban markets.

Ethnobotany began largely with direct observations about the ways in which people used plants and consisted mainly of compiling lists of plants used. Today a much more scientific and quantitative approach has been adopted, studying ways in which people manage their plant resources. Ethnobotany should ideally be a collaborative venture between people in the local communities, including various experts and scientists in the fields of plant taxonomy, phytochemistry, economic botany, ecology, anthropology, sociology and many other fields. However, normally ethnobotanists carry out studies individually but such studies should be as broad as possible.

THE PEOPLE AND PLANTS INITIATIVE

This is a joint project of the World-Wide Fund for Nature (WWF),UNESCO and Royal Botanic Gardens, Kew (U.K.). The main objective of this project is to build up the capacity for work with the local communities on botanical aspects of conservation especially in countries with tropical forests. Demonstration projects are

run in several tropical countries including Uganda, i.e. Bwindi Impenetrable Forest in S.W. Uganda and the Rwenzori Mt. Forest National Park.

The interest is in learning about the local community knowledge about plants and the uses of plants by the local people. This includes finding out which groups of people use which species, in which quantities and for what use. Such studies can lead to the identification of conservation problems, e.g. where utilisation is greater than the rate of regrowth this indicates an over-exploitation and the danger of depletion of the plant resources. In the poorer countries, many people depend on collection of plants for food, construction, firewood, medicine, handcraft, etc. (see attached sheet). As the human population grows, the pressure on resources increases and today the availability of wild plant resources is decreasing.

Ethnobotanical surveys or inventories can assist the local people to assess their requirements for plants and defend them for the continued access to given areas of land or to suggest alternatives to the wild plants.

Local communities have a lot of knowledge about the local plants and other natural resources, especially those on which they directly depend. Much of this knowledge is getting lost as traditional cultures disappear. Ethnobotanists can thus be very useful in assisting to preserve this knowledge and return it to the local people.

DISCIPLINES THAT CONTRIBUTE TO ETHNOBOTANICAL STUDIES

The fields of study that contribute to analysing how humans interact with the plant world are: botany, some linguistics, anthropology, ethnopharmacology, ecology and economics. Techniques borrowed from the above fields can be combined to carry out a systematic survey of the traditional botanical knowledge in a single community or region.

There are four main interrelated undertakings in ethnobotany, i.e.:

1. Basic documentation of traditional botanical knowledge, i.e. *Basic Ethnobotany.*

2. Quantitative evaluation of the use and management of botanical resources, i.e. *Quantitative Ethnobotany.*

3. Experimental assessment of the benefits derived from plants both for subsistence and for commercial ends, i.e. *Experimental Ethnobotany.*

4. Applied projects that seek to maximise the value that local people attain from their ecological knowledge and resources.

Rapid Ethnobotanical Appraisal

At times it is necessary to make a rapid ethnobotanical study (rather than a long-term project) to gather data for example on minor forest products for an environmental impact statement, make a preliminary list of biological resources at particular sites or conduct an initial ethnobotanical inventory in several communities in order to decide whether it would be most interesting to carry out long-term research.

Studies that last for a few days have disadvantages of:

1. Not allowing a deep working relationship to develop between the ethnobotanist and the community;

2. Not being possible to document carefully the cultural and biological aspects of local knowledge, for there is little time to make voucher collections, transcribe local names or talk with a range of informants;

3. Not allowing the local people (the visits being short) to learn rigorous ethnobotanical methods that would allow them to manage more effectively resources in their own community.

However, there is always the urgency of making quick assessments of ecological knowledge and resources while rapidly teaching local people some of the basic techniques we employ.

Various methods have been improvised for making a fast low-cost assessment of the use of forest resources and many other aspects of community development. Techniques have been adopted from various disciplines and combined to form a collaborative approach called "Participatory Rural Appraisal (PRA)".

Such a study using PRA would, for example, last for a few days in which a multi-disciplinary team can carry out a rapid appraisal of, say, forest regeneration and harvesting of non-wood forest products, with the members of the community.

First, the participants select several 100 m^2 plots showing various degrees of protection from deforestation. An inventory of the trees in each plot is made

determining the species and recording the size of each individual. In such a study, local and non-locals with strong ties to the forest can identify hundreds of productive species and how they are used as sources of foods, medicines, fibre, construction materials, gums, dyes, tannins, etc.

By use of secondary data and local resource persons, such information can be documented in the case study sites. Lists are made for all products used for home consumption or sale. Data is collected on harvesting seasons and volumes and determine the parts of the plants used, determine scientific names (Latin) and, where possible, get an idea of the market prices of the items. PRA borrows many of its tools from traditional disciplines, e.g. rural sociology, anthropology, ecology and economics. However, it is different from academic research in that:

1. Local people are full participants in the study but not objects of investigation;

2. Local people take part in the design of the study, data collection, analysis of the findings and discussions of how the results can be applied for the benefit of the community;

3. Outsiders in the research team have a variety of academic backgrounds, ensuring a multi-disciplinary perspective;

4. The relationship between all participants, local and outsiders, is egalitarian, avoiding the hierarchial or top-down approach common to much research;

5. Techniques can be carried out in a short time and do not require tools, for the participants are seeking a sketch of local conditions rather than an in-depth study;

6. A small group of local people is selected for preliminary interview in a semi-structured way, covering a wide range of topics, allowing a comprehensive view of how the community works as a whole;

7. Measurements are qualitative rather than quantitative and a few statistical tools are used in the interpretation of the results;

8. Emphasis is on highly visual techniques that the community members can carry out amongst themselves often in collaboration with outside researchers, e.g. sketching maps to show local classification of ecological

zones, making pie-charts that represent activities or drawing calenders which show seasonal variation in climate;

9. Analysis of the data is carried out in the community which allows participants to modify their methods on the spot and fill in any data which are missing after the initial field work;

10. It is a cost-effective approach enabling the accomplishment of a lot in a few days, including write-up of the final results and recommendations;

11. It allows flexibility, allowing the approach to be adapted to the very diverse cultural and ecological conditions under which ethnobotanists work.

When planning a rapid ethnobotanical assessment one needs to:

1. Prepare before field work: get secondary information – maps, floras, faunas, vegetation analysis, census statistics, reports on forest use. Whenever possible, the people should participate in the collection of the secondary sources of information;

2. Form a multi-disciplinary team – linguist familiar with the local language, botanist, anthropologist and other researchers who have worked in the area;

3. Ensure community participation – seek full co-operation and permission of local authorities who would recommend the local experts;

4. Be selective in choice of techniques – concentrate on methods that will yield the required information in the appraisal;

5. Do everything systematically – the appraisal should produce data which others who wish to conduct a thorough study can use and add to them. Maps of sites visited, names of the local people who participated, accurate identification of biological species encountered, sample questions used in the semi-structured interviews. Conclusions, drawings, charts or graphics created in the study should be presented in the final report written in an accessible style to a wide range of people, including the local participants.

LONG-TERM ETHNOBOTANICAL STUDIES

After carrying out a rapid appraisal one may continue research for a long period, i.e. a few weeks, season(s) or several years. In such a study, more rigorous research methods are applied. Staying in the field for a long period allows working with the local people to record ecological knowledge in a variety of social contexts, e.g. community festivals, ritual occasions and seasonal farming activities.

The minimum standards considered in a long-term ethnobotanical study are:

1. Collection of specimens of all species represented in the study, their identification and final deposition in an herbarium, museum, seed bank or similar facility. Detailed notes on specimens should be supplied on the labels (sample of label).

2. All local categories of plants should be identified and information collected on distribution, use and management of the corresponding botanical species. The cultural information should be confirmed in discussions with a cross-section of community members including: rich and poor, young and old, men and women, etc. of various ages, education, occupation, language and other personal data of the study participants.

3. All local plant names should be accurately transcribed and the names may be recorded on a tape so that other researchers can review their accuracy.

4. Each plant or animal population sampled for analysis in a lab or research centre should have a voucher specimen.

5. The local perception and classification of various aspects of nature should be recorded, e.g. concepts of vegetational communities, soil types, geographical landmarks, climatic zones and seasons.

6. The economic value of biological resources should be estimated. Prices and availability of plant and animal products sold in rural markets, time spent by people in harvesting the resources, estimated cost of transporting the products to the markets should be recorded.

7. The data should be analysed using standard data analysis methods, e.g standard computer packages, e.g. SPSS, Minitab, Flance, Excel etc. and presented appropriately.

ETHNOPHARMACOLOGICAL AND ETHNOPHARMACEUTICAL RESEARCH

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