

# **Integrating Local Epistemologies into the Research Process: The Evolution of Methods and Assumptions in a Research Project around Mt Cameroon**

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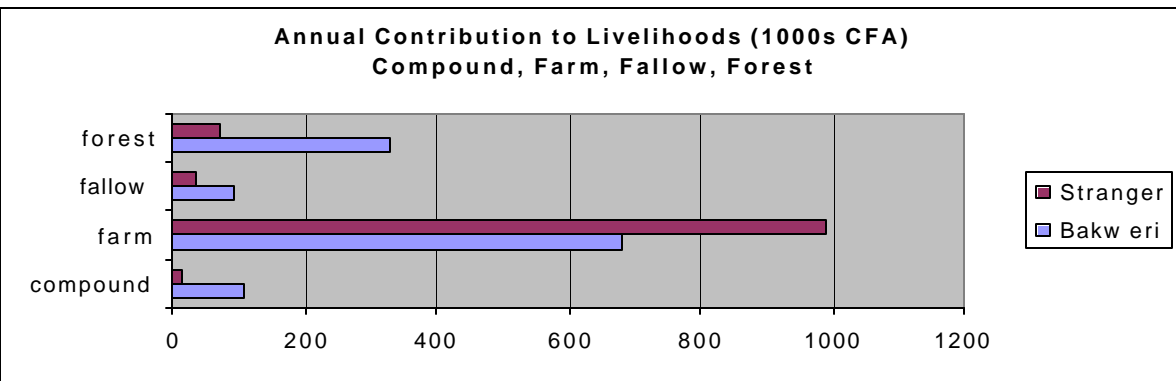
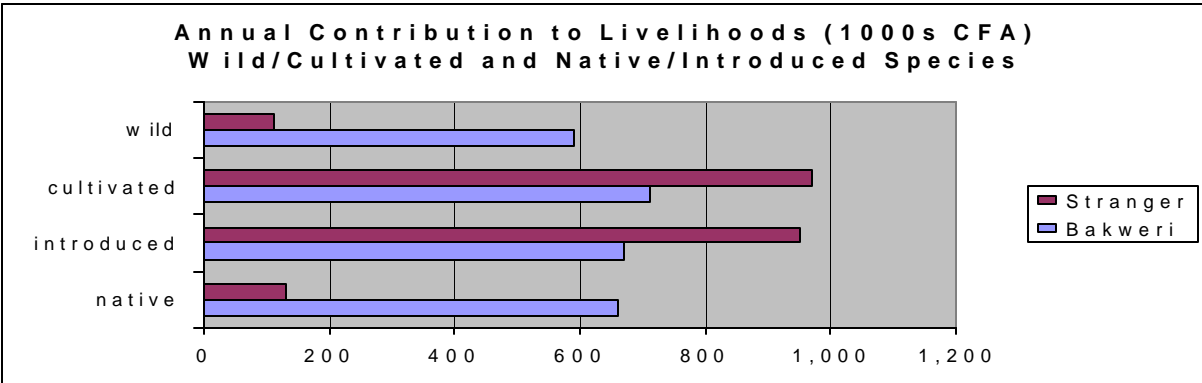
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## **Introduction**

Mount Cameroon is one of the most biologically diverse sites in Africa, a Pleistocene refugia and a biodiversity ‘hot spot’. The Bakweri people live on the slopes of Mount Cameroon, and have a long history of interaction with external groups, including European traders, missionaries, and German and English colonial administrations. In the late 1800s, Bakweri villages were relocated by the Germans following a series of battles, in order to establish the plantations that remain today, and are currently managed by the Cameroon Development Corporation (CDC). Boundaries between villages and plantations continue to be negotiated as part of what is called the “land question”, and in the last decade some villages have re-acquired marginal lands taken more than 100 years ago. Workers in the CDC plantations are primarily migrants from other parts of Cameroon, in particular North West and South West Provinces. Migrants from Cameroon and Nigeria also live as settlers and farm in the area, and a recent study estimated that the indigenous Bakweri population makes up less than a quarter of the roughly 250,000 people in the Mt Cameroon region. Although there is a clear division between ‘indigenous’ villagers and ‘strangers’ to whom they rent and sometimes sell land, within and between communities there is considerable heterogeneity.

Mt Cameroon is a patchwork of habitats, land uses and stakeholders. Indigenous villages intensively exploit and control only a small portion of the area, but often hunt and collect products in the forest many kilometers from the village. Many of the groups and interests represented in the area have greater power to exploit and change the landscape than Bakweri communities. However, these communities make use of a wider range of species and habitats, in more diverse ways, than others, and maintain strong cultural ties to the landscape and the species contained within it (see charts below).

The project discussed in this paper examined a range of relationships between indigenous Bakweri communities and the environment. It integrated results from research in 4 indigenous villages on the southern slopes of Mt Cameroon; ‘stranger’ farmers from plantation camps and villages that farm in the 4 indigenous villages; and a once indigenous village, now largely made up of ‘stranger’ cocoa farmers, on the northern side of the mountain. Household and village-level results were then set within the broader economic, political, and social context of the region. Following is a brief discussion of the research process, in particular the ways that consultation and building of relationships with local communities, including integration of local epistemologies, led to an evolution in the research methodology and assumptions about local knowledge, use and management of species.



**Research Methods and Assumptions, and Relationships with Communities**

Research was undertaken between 1998-2002 and sought to address the following research questions: how do people use and value forest products, and what are the variations in use and management within communities by age, gender, occupation, and ethnic group? What are the differences in knowledge, use and management between indigenous communities and farmers recently arrived in the area (‘strangers’)? What is the role of a range of habitats (compound and village, farm, fallow, forest) in local livelihoods, which useful species are found in each, and which groups within the village rely most heavily on each habitat? How has knowledge, use and management of species and ecosystems changed over time?

The research project was designed based upon a few years’ experience living and working in the area, but was not ‘community-controlled’ research, in which communities are actively involved in the setting of objectives and design of the research project. The project sought to involve communities in all stages of the research process, however, and to integrate local concerns and priorities throughout. In an effort to work to what are current standards of best practice in research relationships with local groups, we sought to achieve what the International Society of Ethnobiology Code of Ethics terms a ‘dynamic interactive cycle’ of consultation, exchange, and sharing of data and benefits with communities.

*Evolution of methods in response to community priorities and epistemologies, and strengthening relationships between researchers and communities*

The research project began with a demographic survey of villages, and the compilation of a checklist of useful species (cultivated, wild, and those of intermediate status). The list grew to more than 400 species, based upon early free-listing exercises, participant observation, open-ended interviews, closer collaboration with healers, hunters and other users of a wide range of species and habitats, and ‘walks in the woods’ with community members during which collections of voucher specimens were made. During the early stages of the research, meetings were held in communities to inform them of the nature of the research, to discuss possible products and benefits for the village, and to get initial feedback on research design and objectives.

At this stage in the research process, communities were interested in the broad parameters of the research relationship: the need to provide informed consent, to clarify objectives of the research, and to identify benefits for individuals and communities (eg jobs, contribution to village development funds or schools, written materials based on research findings). Although communities had previously interacted with researchers and conservation projects, and so were well-versed in these kinds of relationships, they did not seek to adjust the research methodology, but they did seek to influence the type of products that would result – what is called ‘giving back’ of research results. In particular, community members were interested in manuals and materials that would help document and disseminate knowledge about useful species and community management of resources, which many felt was being ‘lost’. A number of individuals voiced support for materials and programs for local schools, which were often cited as the primary cause of children’s declining knowledge of plants and their more limited relationship to the forest (along with the arrival of [western] ‘civilization’).

Concerns voiced at this stage in the research process included having benefited little from other research projects and the need to know how knowledge that was documented would be used. In the early 1990s, an endemic species, *Ancistrocladus korupensis*, showed promise in the US National Cancer Institute anti-HIV research program. As news spread of this development, a perception spread throughout the country that outside researchers secretly collected medicinal plants worth a great deal of money. This was a modification of existing concerns that outsiders, including researchers, collect diamonds and minerals, spread poison, or otherwise are involved in things exploitative or harmful to communities. It was critical that transparency and on-going communication be well-established before research began, and continue throughout the course of the research.

The next few years of the research project included expansion of the checklist through the above-cited methods. Although the number of species ‘new’ to the researchers clearly diminished over time, as did ‘new’ uses of known species, expansion of the checklist continued throughout the course of the project. This ‘list’ – for much of the history of economic botany the sole product of the research process - was developed primarily to provide a solid baseline of information on useful species upon which other qualitative and quantitative elements of the research process could build. The primary interests of the researchers were not a list of what is used, but diversity and change in use within and between communities. Given concerns expressed by the community, and wider responsibilities of researchers to avoid publication of knowledge and uses

which are not widely and commonly known, a comprehensive list of species and their uses will not be published by researchers, but will be available to communities.

As research continued, semi-structured interviews and open-ended conversations were held to address topics like resource use and management, attitudes towards resource rights and conservation, and changes in knowledge and use over time. Ethnobiological artifact interviews were used to collect information on baskets, kitchen tools, mats, and other household objects. At the household level, a range of resource-specific (eg mushrooms, wrapper leaves, wild vegetables, yams, and fish) and resource rights surveys, as well as daily household surveys of all products harvested or bought were undertaken. For the latter survey, in 5 villages, 118 households were interviewed for five consecutive days, every other month, over the course of a year (May 2000 – 2001). With a total of 118 households included in the study, multiplied by 30 days across the year, a total of 3540 day surveys were administered, and 8779 records of food, medicine, construction and other products harvested and bought were made for all villages.

Structured interviews at the field level included ‘tree trails’ (a more structured version of the ‘walk in the woods’), which drew out differences in knowledge of names, uses, management and ecology of species within and between villages. Surveys were also taken of timber and non-timber forest products retained or planted on cocoa farms, which are primarily farmed by ‘stranger’ farmers and are a source of products found more commonly in the compounds, subsistence farms, and fallow of indigenous farmers. Surveys of compounds in indigenous villages identified useful species retained or planted, their origin and value to households. During the course of the research it became clear that the value of species from different habitats cannot be based on trips to those areas alone. Many compounds, and to a lesser extent cocoa farms, reflect a dynamic process of species retention and planting. Often-used species are brought in from farms, fallow and forest, exotics are introduced, medicinal weeds protected, and new plantings made in light of changing circumstances (eg certain plants for protection from witchcraft, medicinal plants that treat a chronic problem, or address illnesses suffered by children). Vegetation sampling to determine species dominance, density, and frequency across areas managed by communities, and which allow for comparison of results with other regions, were originally included in the research design. In the end, the need to address a wide range of uses and issues that arose during the course of the research, and resulting limits on time and resources, meant that this component of the research was put on hold.

As the research progressed and better integrated local cultural and social norms and feedback from communities, limitations in the ways we sought to study knowledge and use became apparent. Methods from the ethnobiology (and related disciplines) ‘toolbox’ decided upon prior to initiating research were fine-tuned and some were discarded as unworkable. For example, wealth ranking made many individuals uncomfortable, and fed into existing suspicion and uncertainty about our intentions. We relied initially, therefore, on a few individuals with whom we had better relationships to provide general parameters of household wealth in villages, and then abandoned this approach and used data generated from the household surveys to get at the same figures. Meetings, a common tool in more rapid assessments of community use and management of resources, are important for informing and building community trust, and establishing groundwork for further research. However, as numerous commentators have reported, they provide a forum for the more extroverted, and usually male, at the expense of the

more retiring, and often female, in a group. They are also a poor place to collect information that is not widely and commonly known, and to tease out within-group variations in perspective, knowledge and use. At the same time, reliance on a few individuals as informants often produces a skewed picture, and we found no more effective approach than intensive collaboration with a wide range of individuals and households, using a layering of different methods, over time.

Ranking of species to indicate value is another tool commonly employed in ethnobiology and related disciplines, particularly in research seeking to quantify results. However, we experienced significant problems with this approach. Given the seasonal change and diversity that characterize indigenous communities' livelihoods and relationships to species, it was often difficult to pinpoint the criteria used at any given time (eg cash income or the arrival of anticipated seasonal vegetables and fruits or a medicine to treat a problem of immediate concern). It became clear that each individual has their own criteria for selecting a value, which might be quite different from criteria used by others in the community, and which could vary by day or month. Ranking did tease out crude clusters of value for species with very similar uses, but this could also be done through a range of alternative routes, and ranking inadequately refined distinctions within these clusters of value. Since it seemed likely to distort our conclusions, we discontinued the use of rankings as a way of understanding local values for useful species.

A final example of how methods were forced to adapt to local conditions, and feedback from communities, is the use of herbarium specimens in interviews about useful plant species. Ethnobotanical researchers often collect plants in the field and bring them back to the village, or use pressed plant specimens as the basis for discussions in villages. This approach is less time-consuming than field interviews, ensures proper botanical identification, and can allow a larger number of species and individuals to be included in the study, particularly elderly individuals who may find it difficult to make it out to the forest. However, as a number of researchers have noted, problems with this method include difficulty in recognizing small parts of larger trees or shrubs, and identifying pressed and flattened specimens which lack original color and smell and are deprived of morphological, ecological, and architectural characters used in identification. We found that older individuals, particularly those with no schooling, had an extremely difficult time identifying species from pressed specimens; it was often the most knowledgeable individuals, in fact, who could identify the fewest species in this way. Most individuals wanted to pick up, touch, and smell the specimens. Species with very distinctive leaves tended to be easier to identify (eg *Aframomum flavum* - manjueli, *Megaphrynium macrostachyum* - ngongo, and *Pneumatopteris afra* - njombi), although some with distinctive-shaped leaves, but which were quite succulent (eg *Solanecio biafrae* - kalavanje) were often not identified from the dried specimen. This approach was dropped in favor of the more labor- and time-intensive tree trails, which we situated in proximity to villages to allow older or unwell individuals to participate.

#### *Evolution of assumptions about use, knowledge, and management*

Over the course of 5 years, it became increasingly clear what common sense would suggest: the better-developed our relationship with communities and individuals, and the more trust established; the more we knew about local cultural, economic and social conditions, and the resources under study; and the more communities' experiences and perspectives were integrated into our methods and assumptions, the more sound the data generated. This was the case for

quantitative as well as qualitative data gathering. Surveys proved far more effective, for example, when designed and executed based on an already well-established understanding of local perceptions and conditions, and not as a way, in part, to elicit this understanding in the researcher. Things that were initially 'invisible' (eg mushrooms), under-estimated (eg fish in diets), or off-limits due to secrecy (eg 'country fashion' medicine), often proved to be the best indicators of diversity and change in peoples' relationship to their environment.

Throughout the research process, we regularly revised our assumptions about communities' knowledge, use and management of resources. For example, categories of use emerged which were previously buried within our standard list of 'useful' categories. 'Country fashion' medicine, for example, fits within the broad 'medicine' and 'protection' (from witchcraft and evil spirits) categories. However, it is viewed locally as distinctive from most medicinal plant use, involves unique diagnostic and healing practices, and is undertaken by specialists, each of whom treats a very narrow set of illnesses and conditions, many unknown to western medicine. 'Country fashion' also involves the use of a core group of species, many weedy or common herb species (eg *Commelina* spp. - esa-koka, *Adenostemma* sp. - efanja, *Plectranthus insignis* - nameove). Although it took a great deal of time to fully grasp the role of 'country fashion', it is an extremely important part of traditional medicine, and elites from the cities will regularly travel to their villages for treatments.

Other important use categories were initially over-looked or inadequately addressed not because they are complex or secret, like country fashion, but because their importance in community life is declining. These include species used in games, dance, and to make musical instruments, as well as household products like bowls, mats, and baskets. Knowledge of these uses in older individuals, and some on-going use, persists and attention to these categories yielded some of the best indicators of change in community relationships to species and their environment.

Groups of useful species also emerged during the course of the study which we had considered of minor importance, but we came to see were commonly used and highly valued. A number of mushroom species, for example, are seasonally used to supplement diets, and serve as a substitute for increasingly rare bushmeat, or expensive fish. One species - 'lewu' (*Letinus tuber-regium*) - is a core ingredient in all powder (*mbwelli*) mixtures used in country fashion medicine, and is highly prized. Struck by the importance of this category of products to many households, three years into the study we undertook a survey directed towards mushroom consumption and preference, and did preliminary field collections to identify the useful species. It became clear that a core group of mushrooms continue to be widely known and used, but the full spectrum of edible and medicinal mushrooms are known by few, primarily older, individuals.

In another example, although significant consumption of fish was apparent throughout the research it was by analyzing household surveys undertaken over the course of a year that the dramatic role of fish in local diets became apparent. The average household spends on average 29,000 CFA per year on fish, around a quarter of annual expenditures on food. Fish is by far the most commonly purchased product, and that on which the most money is spent. This was the case in villages 800 m above sea level, where fish would previously not have featured in local diets, as well as in villages closer to the coast. Almost without exception, every household in

every village purchased fish as their main source of animal protein, with wealthier households consuming more than the poorer. As bushmeat is depleted in forested areas, communities increasingly turn to fish, and even in villages where bushmeat is regularly harvested, the majority was sold for significant sums, and these same households then often purchased fish for their own consumption.

Pressure on forest ecosystems and species has led to increased harvest of marine resources for local consumption, but fishing stocks are also under pressure from commercial fishing boats from Europe and other areas which operate just off-shore under murky agreements lacking transparency and accountability. At the same time, fish is harvested and shipped to the more populous Nigeria in much the way forest products like eru (*Gnetum africanum*) more visibly drain across the terrestrial border. Local fishermen already report a dramatic decline in the availability of fish. These cross-ecosystem relationships are an important element of environmental and livelihood assessments in the Mt Cameroon region.

And finally, over time the research undermined certain assumptions about local communities' relationship to the forest, and possible strategies for conservation in the area. As the charts (above) illustrate, indigenous communities make use of a wide range of habitats and rely on a mix of native and introduced, and cultivated and wild species. When products from all habitats were analyzed, more than three times as much was found to be harvested for subsistence than for sale; but when farms are excluded, the vast majority of species harvested from compounds, fallow and forest are consumed for subsistence. Pressure on forest *habitat* from most indigenous villages is limited. 'Stranger' farmers migrating into the region continue to clear forest for cash crops like cocoa as well as for subsistence farms, but this is primarily in areas outside of community control (eg forest reserves or areas with ambiguous land tenure), or where community structures have broken down.

Indigenous communities can, however, exert pressure on particular *species* when strong external demand from commercial markets is introduced. This includes the case of *Prunus africana* for the international medicinal plant trade, or bushmeat and in some cases timber, for local markets. But in general, community members look to more intensive cash crop production, jobs or trade for additional cash income. By far the most significant factors influencing ecosystem management and conservation in the region originate outside of indigenous villages. These include economic hardships faced by communities in other parts of the country that force migrants into the area in search of livelihoods, and expansion of commercial agricultural plantations, and to a lesser extent logging, under the control of government, corporations, or urban elites.

*This paper is a draft, the basis of a spoken presentation. A final version, including citations throughout, and a bibliography, will be available at the Bridging Scales and Epistemologies conference in Alexandria.*