14

Limits and strengths of local participation: a case study in Eastern Amazonia

Patricia Shanley, Jurandir Galvão and Leda Luz

• Introduction

Local knowledge of natural resources is now recognised for its ecological value and is subject to close scientific attention. Inclusion of local communities in natural resource based research and development projects is now considered essential. Much attention has focused on promoting participation through approaches such as RRA and PRA, which integrate local people into development efforts. However, in this article we describe the strengths of local participation and the limits to local knowledge in a five year research and development project conducted in eastern Amazonia.

This project has focused on the subsistence and economic value of non-timber forest products (NTFPs) for rural communities. NTFPs are natural resources harvested from forests by local people for subsistence or economic purposes. They include fuelwood, fruits, fibres and bushmeat which are used as foods, medicines and for construction purposes.

• Community collaboration

At the outset of the collaboration our team of researchers had not undergone PRA training. However, activities such as resource mapping, oral histories, ranking of preferred species, and transect walks were utilised to gain an overview of resource availability, utilisation. and changes through time. For our purposes, PRA was a respectful approach that valued local knowledge, and made practical sense.

Species selection

Local participation was essential to the project. First, we needed to determine which NTFPs were the most promising as options for developing income generating activities. The study aimed to provide environmental and economic information on NTFPs for which markets could be developed.

The community aided us by reorienting our vision and thinking. While we approached the forest with a botanical focus, assuming that flora would be of greatest import to villagers, it quickly became apparent that our priorities differed from theirs. Medicinal plants with the potential to cure cancer were not of pressing interest to a population more likely to suffer from malaria, malnutrition or diarrhoea. Instead game species, including large rodents, agouti, paca, armadillo and deer, and game-attracting fruit trees were the NTFPs of prime interest to local people.

Second, the game-attracting, edible fruit that the community recommended we study, were deemed unpromising by urban colleagues. They considered them distasteful, oily, grainy, and lacking in sweetness. These fruits had no national market, export statistics, or international acclaim and regional economists considered them to be insignificant. In spite of these warnings from the ‘experts’, we decided to study four fatty fruits which were selected by villagers. They are in need of calories, fats and protein and thus appreciated the oily fruits.

To corroborate our species selection, we conducted a conventional one hectare, labour intensive, ethno-botanical forest inventory. This inventory yielded the same list of species given to us by the villagers. It affirmed the

Source: PLA Notes (1997), Issue 28, pp.64–67, IIED London

results we had gathered with PRA but offered quantitative and botanical accuracy, which we were unable to achieve with PRA.

Where mapping and measurement pay off

Although each component of our work (population ecology, game and NTFP consumption studies) was informed by members of the community, substantial support from conventional scientific methods was also needed. For example, to determine whether the fruits had market potential, we needed to know how many fruit trees grew in the forests (density) and how many fruit they produced (yield).

We first sought these answers through discussions, ranking and transect walks. Such methods often yielded exaggerated notions of resource availability and composition, indicating that PRA was not a reliable method for obtaining critical information relating to population ecology. In one instance, an extremely knowledgeable hunter estimated that 1000 mature trees of piquiá (*Caryocar villosum*) occurred in their 1500 ha forest, with concentrations of up to 20 trees per 5 ha. Two years later, after mapping much of the 1500 ha area with over a dozen hunters we discovered a total of 149 mature piquiá trees.

Although hunters were the best informants regarding fruiting species and they had extensive site specific expertise, their knowledge of densities and fruiting patterns was restricted to their hunting range. In these high biodiversity forests, where less than one species of tree per hectare is common, knowledge from a particular area is not readily communicated to a wider geographic area.

To obtain basic yield data, we collected estimates of average annual fruit production per tree from scores of villagers, all of whose families had lived for in the forest for generations. These estimates varied over ten-fold. Such variation is understandable because when collecting for direct consumption, families typically collect only one or two dozen fruit at a time. Whether 200 or 2000 are lying beneath the tree is irrelevant: a big pile of fruit is a big pile of fruit. Thus estimating the economic value of the forest using PRA, we discovered that few residents had even a vague notion of the quantities of products they harvested freely from the forest. When a plentiful product is not paid for, there is little reason to remember if two or ten kilograms are harvested.

Forest residents who market these fruit and who live closer to cities generally had a more accurate gauge of production. Like apple and orange growers, their livelihoods depend on knowing how much income their forest will produce per hectare. Similarly in the case of valuable, less abundant commodities, such as meat, we found that hunters retained a clear notion of the weights of their recent game captures.

To gain a rigorous measurement of quantities of forest products used, we designed a research plan in conjunction with the community, and trained families to weigh and record forest products used daily. To discover whether 200 or 2000 fruit lay beneath a tree, a long-term research project was needed. The research design was based on information from local people but was constructed by the research team to obtain necessary scientific and statistical rigour. The project was carried out principally by researchers during the first year. However the researcher team's influence diminished, over the years of study until in the fourth and fifth years, the full-time team consisted solely of villagers.

Learning from mistakes

A range of development activities emerged from the research including: the processing and marketing of key fruit species, creation of forest reserves, and the undertaking of outreach workshops. While informed by research results, this component was driven by the community with minimal assistance from the team's scientists except in catalysing events and documenting results as needed.

Keeping a low profile as villagers experimented with who marketed fruits and how and when, was essential to allow local ownership of the development effort. It took village assessment of the gains and losses of early approaches to decide on eventual

Source: PLA Notes (1997), Issue 28, pp.64–67, IIED London

marketing methods. For instance, the initial group of men who carried fruit to market hastily drowned the profit in drink. The second attempt was initiated and carried out by women who, in spite of being unfamiliar with markets or travel, returned with goods and profit for the entire community.

Because our results had relevance throughout the region, data needed to be disseminated to other communities where land and forest resources have come under increasing pressure. Graphs of economic value and lengthy Latin names, however, were unimpressive to local people. 'Translating' our results with and for community residents challenged us to analyse our data from a local perspective, and in so doing, to make relevant information accessible to local people. Otherwise, the research may have been lost in inaccessible journals.

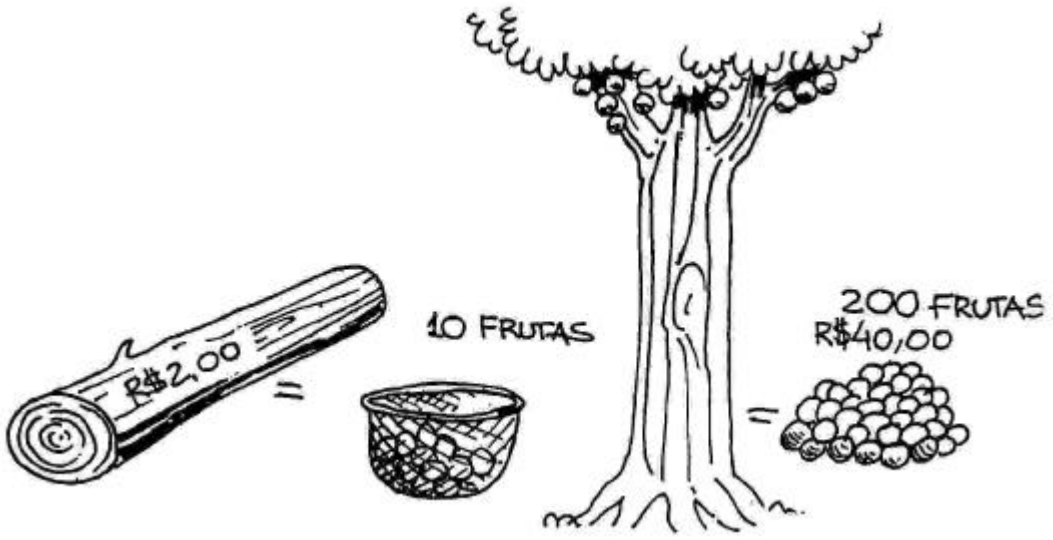
Moreover, since outsiders could match neither the language nor site-specific knowledge of local people, village presentation of the results was critical. To disseminate ecological and economic information to neighbouring communities, we developed a village outreach team whose work was informed by technical findings but grounded in practical, site-specific knowledge.

Long time frame

Our study was not rapid. The fruit species of most interest to locals and which bore the greatest economic potential had received scant prior study. Understanding even the basic ecology of the fruit trees and game species required a long term time frame. The study continued for four years with the local community, with frequent visiting to both the trees and the people who use them. While PRA activities gave us an overview of natural resource use, close observation and measurement over a long time generated data quantifying the value of primary forests for local communities.

The long time needed to understand the ecology, complemented the long time needed for local people to know us. As our knowledge of the ecology of the forest and the villagers increased, so did our competence as catalysts of development activities. In spite of our planning, we often found development opportunities arose unexpectedly, washing pots with women at the rivers edge, lingering after a church service, encountering disgruntled hunters on a forest trail.

Figure 1. The economic value of timber *versus* NTFPs, such as fruit



Source: PLA Notes (1997), Issue 28, pp.64–67, IIED London

Could development activities have proceeded more rapidly? Year after year, as we counted fruit during the rainy season, intruded on village homes to measure NTFP consumption, and inventoried game during the dead of night, we frequently asked this question. When an opportunity arose to be formally trained in PRA for the purpose of measuring the economic value of NTFPs, we jumped at the chance (see Figure 1). We thought we would learn to accomplish in two weeks what we had laboured on for three years!

Practising PRA methods with excellent trainers in a neighbouring region definitely improved our skills and added to the tools we had in our original kit. In a short time, an impressive amount of information on natural resource use was gathered and a good working relationship created with the community. Formal training improved the range and scope with which we could employ PRA activities. However, the significant gaps in information that we encountered - fruit tree and game densities, fruit and medicinal oil production and estimates of NTFP consumption- were exactly those which we had devoted our last few years to discovering.

But our recent community development work has confirmed the utility of PRA, especially when used in conjunction with other more quantitative methods. Currently, we are in the process of disseminating the ecological and economic information generated to neighbouring communities and are surprised at its capacity to catalyse positive change. The outreach team uses PRA to understand the needs of a community and natural resource pressures it faces. PRA has helped communities increase the use and sale of NTFPs, to negotiate with loggers to conserve particular trees and to create community forest reserves.

Measures of success: more forests or more paper

What indicators of success would villagers use to measure such a long-term project? Money is a key indicator for many people. In spite of results demonstrating that the subsistence value of NTFPs is substantial and that these values can outweigh sums offered by loggers for timber, most hungry people prefer cash income. The monetary gains accruing to the community, through the sale of NTFPs were minimal, although the sale of forest fruits, mainly by women, did offer petty cash and goods to some families. As the prices of forest fruits increase, however, the market and population ecology information gathered during the project has increasing potential to pay off economically.

As villagers sought cash and game from their forests, the scientists longed for numeric results and 'rigorous' data for publication in leading journals. The team felt pulled in two directions and numerous conversations revolved around the divergent needs of the scientific/ development communities and local ones. Although our research agenda had been constructed for scientific needs, once finished, our team prioritised returning results to rural communities. This route was chosen in spite of institutional pressure to publish results for the benefit of funding agencies. We found that the process of returning the data to communities prior to publishing, offered comparative information which sharpened our discussion, and widened the use of our study for both local and international audiences.

Immediate needs on the part of local communities and the desire for rapid, quantifiable change by many funding agencies tends to prioritise farming, not forestry activities. Long term, unquantifiable gains - a community's heightened ability to negotiate, subtle variations in forest management, increased opportunities for women, and modifications in plant utilisation - are easily overlooked. To achieve lasting forest conservation that truly benefits local people, academic, development, and funding communities must consider assessing projects not by their speed or the weight of paper they generate, but by their commitment to long term work on the ground.

- **Patricia Shanley, Jurandir Galvão** and **Leda Luz.** Address for correspondence: Durrell Institute of Conservation and Ecology, University of Kent, Canterbury, Kent CT2 7NJ, UK.

Source: PLA Notes (1997), Issue 28, pp.64–67, IIED London