

Evaluation of Community-Based Conservation Education: A Case Study of the Golden-Headed Lion Tamarin Education Program in the State of Bahia, Brazil

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Introduction

This study was designed to evaluate the effectiveness of the community-based conservation education program "Projeto Mico-Leão-Baiano" (Bahian Lion Tamarin Project) in changing the knowledge, attitudes, and behavior of people in the region around the Una Biological Reserve in the south of the state of Bahia, Brazil (Nagagata, 1994). More specifically, the aim was also to determine if a conservation education program should be developed which targets the landowners and farmers in the Una region. Initiated in 1989, and concentrating primarily on the communities of Ilhéus and Itabuna, the "Projeto Mico-Leão-Baiano", run by Maria Cristina Alves, uses the endemic and endangered golden-headed lion tamarin (*Leontopithecus chrysomelas*) as a symbol and focal point to encourage the conservation of the rapidly dwindling Atlantic coastal forest of the region (Alves, 1991).

Methods

A questionnaire was used to compare target (community) and non-target (farmers) groups. Seventy-five community people and 145 farmers were interviewed. Data were obtained on knowledge, attitudes, and behavioral intent towards the golden-headed lion tamarin (GHLT) and the local forest. An "ex post facto" quasi-experimental design was chosen to compare between the groups (Tull and Hawkins, 1990).

Results and Discussion

Knowledge: The golden headed lion tamarin was found to be well known in the region. A high percentage of respondents in both groups (78.7% of the community and 77.9%

of the farmers) recognized the GHLT from a photograph. However, only 37% of the community and 19.6% of the farmers also recognized the GHLT as the most endangered local animal. Thus, although more than three-quarters of the interviewees recognized the GHLT, considerably fewer were cognizant of its endangered status. There was evidently a "knowledge gap" between recognizing the animal and knowing that it is an endangered and endemic species. The gap was more pronounced amongst the farmers.

Attitudes: Both groups showed fairly positive attitudes toward the GHLT and the forest, although the community rather more so than the farmers. Eighty-nine percent of the community and 68.8% of the farmers thought that the forest has benefits for man (Table 1). This difference is statistically significant.

Approximately 68% of the community and 70% of the farmers thought that deforestation in the region was a serious problem (Table 2). In contrast, 6.7% of the community and 27.4% of the farmers thought that the amount of deforestation was *not* serious, while 25.3% of the community and 2.2% of the farmer's "did not know". There is a significant difference between the groups, resulting from the difference in the "not serious" and "do not know" categories.

Table 1. Comparison between the community and farmers regarding benefits from the forest. "Do you think the forest has any benefit?"

| | Frequency Observed (%) | | | Total |
|-----------|------------------------|-----------|------------|-------------|
| | Yes | No | Don't know | |
| Community | 67 (89.3) | 3 (4.0) | 5 (6.7) | 75 (34.2) |
| | | 56.8 | 11 | 7.2 |
| Farmers | 99 (68.8) | 29 (20.1) | 16 (11.1) | 144 (65.8) |
| | 109.2 | 21 | 13.8 | |
| Total | 166 (75.8) | 32 (14.6) | 21 (9.6) | 169 (100.0) |

* $X^2 = 10.52$, $p = 0.005$

Table 2. Comparison between the community and farmers regarding the amount of deforestation in the municipality. "How serious do you think the amount of deforestation is in the municipality?"

| | Frequency Observed (%) | | | Total |
|-----------|------------------------|------------|------------|-------------|
| | Not Serious | Don't know | Serious | |
| Community | 5 (6.7) | 19 (25.3) | 51 (68.0) | 75 (35.7) |
| | 7.9 | 15 | 52.1 | |
| Farmers | 37 (27.4) | 3 (2.2) | 95 (70.4) | 135 (64.3) |
| | 14.1 | 2.7 | 93.9 | |
| Total | 42 (20.0) | 22 (10.5) | 146 (69.5) | 210 (100.0) |

* $X^2 = 31.56$, $p = 0.0001$

Behavior: Few respondents in either group claimed to have participated in some type of conservation activity (Table 3).

Recommendations

- Information from this study indicates that the "Projeto Mico-Leão-Baiano" could benefit from at least two additions. First, the project could place greater emphasis on the fact that the golden-headed lion tamarin is endemic and endangered, and as a "flagship species" for the local forests. Second, the project could incorporate more participatory conservation activities into its program. Evaluations of the project in future years could address how long-term changes in knowledge and attitudes affect behavior and values regarding conservation of local natural resources.
- The principal finding of this study is that the community-based program is not reaching the farmers. This argues strongly for the need for a conservation education program designed specifically for them. Different kinds of farmers (poor farmers v. wealthy farmers, small landholders v. large landholders) will require different kinds of education programs. The author's personal experience further suggests that the most effective program should be delivered on a personal basis (the educator working directly with individual farm owners). In addition, farmers are more likely to be positively influenced by other local farmers who already have positive attitudes about conserving the forest and who have already participated in conservation activities (Reading and Kellert, 1993).
- A conservation program for farmers should incorporate the following features:

a) *Self-reference.* An effective rural conservation education program should include many specific references to the farmers and their problems (Rogers, 1977). In this case the principal problem is the need to integrate agricultural production (their livelihood) with forest production. The educator should obviously also have a clear understanding of the problems specific to the region and to the crops farmed, and hence the economic aspects of conservation-oriented practices. In Una, the predominant crop is the perennial cocoa, which over recent years has been suffering from epidemics of witch's broom disease, and low international market prices. Likewise, there are a number of methods for the cultivation of cocoa in terms of the shade plants used, which include *Erythrina*, canopy trees of the original forest (*cabruca*), and numerous others such as bananas and even rubber trees (see Alves, 1990).

b) *Problem-solving.* An important characteristic of a good conservation education program is a focus

Table 3. Conservation activities participated in by members of the community and farmers.

| | Frequency | % |
|-----------------------------------|-----------|-----|
| COMMUNITY (N = 14) | | |
| Presentation in school | 4 | 5.3 |
| Planting seedlings | 4 | 5.3 |
| Cleaning the beach | 2 | 2.7 |
| Conservation of the forest | 2 | 2.7 |
| CEPLAC seminar ¹ | 1 | 1.3 |
| Member of Green Party | 1 | 1.3 |
| FARMERS (N = 23) | | |
| Planting with CEPLAC ¹ | 6 | 4.1 |
| Forest conservation | 2 | 1.4 |
| Cocoa cultivation | 2 | 1.4 |
| Advisor on conservation | 2 | 1.4 |
| Agricultural technician | 2 | 1.4 |
| Planting seedlings | 2 | 1.4 |
| Planting trees | 1 | 0.7 |
| Defending nature | 1 | 0.7 |
| Research | 1 | 0.7 |
| Motorsaw licence | 1 | 0.7 |
| Helping Ibama ² | 1 | 0.7 |
| Conservation foundation | 1 | 0.7 |
| EMAQ activities (military) | 1 | 0.7 |

¹Comissão Executiva do Plano da Lavoura Cacaueira (CEPLAC), the Regional Cocoa Growing Authority.

²Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (Ibama), the Brazilian Institute for the Environment.

on specific problem-solving. If the farmers are given an opportunity to help solve some of the problems they are causing, they are more likely to be interested in participating in conservation.

c) *Audience analysis.* Different problems are caused by and affect different groups (audiences). It is important to determine and understand which problems need to be addressed for each. Audience analysis should take place before the conservation education program is begun, but should also be carried out during and after the program as well (McDonough, 1984).

d) *Evaluation.* An evaluation protocol should be developed and implemented *prior* to initiating the conservation education program.

e) *Clear objectives.* An important element for the success of a rural conservation education program and for its accurate evaluation is to establish clear objectives from the start. Formal evaluations are usually designed to assess whether the predetermined objectives are being met. The objectives must clearly state whether knowledge, attitudes, and behaviors, or some combination of them will be changed (McDonough, 1986).

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