

## **Environmental Globalization, Organizational Form, and Expected Benefits from Protected Areas in Central America\***

*Max J. Pfeffer*  
*Development Sociology Department*  
*Cornell University*

*John W. Schelhas*  
*Southern Research Station*  
*USDA Forest Service*

*Catherine Meola*  
*Development Sociology Department*  
*Cornell University*

**ABSTRACT** Environmental globalization has led to the implementation of conservation efforts like the creation of protected areas that often promote the interests of core countries in poorer regions. The creation of protected areas in poor areas frequently creates tensions between human needs like food and shelter and environmental conservation. Support for such conservation efforts partially depends on expectations of benefits by those impacted. This article considers the effects of different organizational models on local expectations of benefits to be derived from protected areas. Our analysis indicates that individuals are more likely to expect that benefits of the park go to other communities or the nation as a whole than to expect direct benefits for themselves. Forms of park organization also impact these expectations. Individuals exposed to the zoned park, as opposed to a conventional, strictly protected park, were more likely to expect benefits from the park regardless of the beneficiary considered. In addition, for those exposed to the zoned park, location of residence is related to expectation that individuals will benefit themselves. However, our interviews with park residents also indicate that the expectations of individual benefits are rarely met, creating potential dissatisfaction and sometimes animosity toward the park administration.

Poverty, population growth, expanding per capita consumption, and other factors are among the forces driving increasing demands for natural resources. Concerns are widespread that these demands will exceed the regenerative capacity of ecosystems and the supply of natural resources. In response, conservationists have advocated the creation

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of protected areas to provide ecosystem services like biodiversity protection, climate control (e.g., carbon sequestration), water for agriculture and direct human consumption, and genetic resources for crop improvement and the development of pharmaceuticals (Brandon, Redford, and Sanderson 1998; Daily 1997; McNeely, Harrison, and Dingwall 1994).

Protected areas limit direct use of natural resources to achieve globally-oriented conservation goals like forest, watershed, and biodiversity protection. Consequently, persons living in or near a park have restricted opportunities to benefit directly from the exploitation of natural resources. Conservation often conflicts directly with demands for natural resource use. But the success of protected areas depends on cooperation from those dependent on protected resources for their livelihoods. Such cooperation is mobilized, at least in part, by local residents' expectations that they will benefit from the park. Our article evaluates the effect of park management on such expectations, with a comparative analysis of two approaches in frontier areas of Central America.

#### **Park Organization and Expected Benefits**

Globalization can be defined as the intensification of social relationships, characterized by a worldwide spread of ideas, practices, and technologies (Milton 1996). Environmental nongovernmental organizations (NGOs) are an active and increasingly important force in the identification of global environmental problems and their solutions. They lead an international environmental discourse that emphasizes the universal quality of certain environmental problems and our purportedly common interest in resolving them (Frank, Hironka, and Shofer 2000; Hannigan 1995; Pfeffer, Schelhas, and Day 2001; Rocheleau and Ross 1995; Schelhas and Pfeffer 2005; Wilhusen et al. 2003; Yearley 1996).

Some social scientists suggest that despite this global force, locally distinctive environmental values and practices may emerge as a result of the different positions world regions occupy in material and power relationships (Milton 1996). For example, Redclift (1984) suggests that the focus of environmentalism in the more industrialized countries is on a pleasant countryside and outdoor recreation, whereas that of rural Latin America is about people's ability to survive in a degraded environment. Thus environmentalism cannot be understood apart from its social context, and environmentalism is often intimately tied in with other social issues, dramas, and contests (Agrawal 2005; Gezon 2005; Haenn 2005).

The proliferation of protected areas in the tropics is linked to the process of environmental globalization. Tropical parks relate to several global environmental concerns, one of the most important of which is tropical forest conservation. Rainforests have been seen by the global environmental community as both particularly endangered, because of their rapid loss, and particularly important, because they help stabilize climate and soils, have exceptional biodiversity, and may provide future benefits to humans through new medicines and crops. Protection of tropical forests in human occupied landscapes often brings about conflict between globally-inspired conservation goals (e.g., biodiversity conservation) and local needs (Pfeffer et al. 2001, 2005; Schelhas and Pfeffer 2005). Some social scientists have described protected area regimes as impositions by outside forces, sometimes to enable core regions to extract resources or exploit them through tourism and at other times to promote the conservation interests of core regions over local livelihood needs (Brandon et al. 1998; Brechin et al. 2003; Carrier 2004; Haenn 1999; Milton 1996; Peluso 1992). Others have highlighted the common ground between such conservation programs and local people's economic and other interests (Fisher 1994; Heyman 2004; Western and Wright 1994).

Parks initially established in many lesser developed countries often excluded direct access to resources (Campbell 2002; West 1991). Exclusionary approaches ignored the socioeconomic situation of many families living in or near protected areas. Advocates of the conventional, or exclusionary, park model argue that conservation and development are incompatible in the same location. This model emphasizes biodiversity conservation, defined as the sanctity of "scientific and ethical values of biological species regardless of utility for humans" (Kramer, Van Schaik and Johnson 1997:4). It implies the need for protected areas unaltered by humans, and it inherently conflicts with extractive uses that have an impact on biological resources. This model requires strict enforcement of regulations within its boundaries and can be coupled with regulation of ecological hazards outside park boundaries (Wells and Brandon 1992). Some advocates of the conventional model describe the belief that rural peoples are the best stewards of the land as a "romantic myth." This group argues that issues of social justice should be addressed by reducing pressures on parks through development projects outside the parks.

Before 1970, the main objective of parks was typically to preserve the natural resources for aesthetic, spiritual and recreational use. These "conventional" parks, based on the U.S. national park model, set aside large tracts of land where significant natural features, landscapes, ecosystems and wildlife would thereafter be left unaltered by human intervention. As this vision of environmental protection was replicated

in developing countries, local people were often disadvantaged, if not wholly displaced (Batisse 1997). Critics claimed that this type of conservation is imperialistic, preserving biodiversity for the elite and the citizens of rich countries, while neglecting or worsening the situation of local residents (Wilhusen et al. 2002). As political resistance grew and land shortages increased, this park model became increasingly unrealistic and conservationists developed less restrictive models of protected area management (Brandon et al. 1998; Terbough 1999; West and Brechin 1991; Wilhusen et al. 2002). Beginning in the 1970s, zoned parks attempted to balance these disparate demands (Buck et al. 2001; McNeely 1995; Sharma and Shaw 1993; Western and Wright 1994; Zube and Busch 1990).

The zoned park model is based on a philosophy of local participation and stewardship. It typically includes a core zone where use is restricted to scientific, educational, and tourism activities; a special use zone which also has restricted use; and a buffer zone where resource use and habitation is allowed, usually regulated through land title and permit systems (McNeely 1990; Price 1996). Zoned parks are politically appealing alternatives to conventional ones because they attempt to protect biodiversity and provide for human needs. The belief among zoned park supporters that rural people make the best stewards due to presumed historical relationships with the land has led to increased community participation in conservation projects. The potential positive results include increased local control over resources, greater autonomy, and higher income for park residents (West and Brechin 1991; Wilhusen et al. 2002).

The park models outlined above create different relations of individuals to the park. In the zoned park local residents have restricted access to natural resources within the buffer zone, while in the conventional model they are prohibited from extracting resources from the park. This raises several questions about the relationship between park models and local residents' expectations about the benefits of parks, which in turn influence their conservation behaviors. We assume that park restrictions on natural resource use create indirect benefits (e.g., biodiversity protection or carbon sequestration) but reduce direct benefits (e.g., income from produce sales or food for household consumption derived by individuals). Based on this assumption, we hypothesize that individuals will expect relatively few direct benefits to themselves from the park. Second, because individuals living in zoned parks have some access to the park's natural resources for personal use, we hypothesize that their expectations of benefiting from the park will be higher than those living near the conventional park.

### **The Study Sites**

The conventional park in our study is in Costa Rica, where tropical research and eco-tourism have drawn substantial attention to environmental issues. The zoned park is in Honduras, one of the poorest countries in the western hemisphere. Although very different in some respects, both countries have a national park system, and in both the management of parks and adjacent lands pose challenges.

#### **La Amistad International Park, Costa Rica**

Costa Rica's national park system was initiated in the 1970s, and rapidly became one of the premier park systems in Latin America, both in terms of the percentage of national land designated as parks (WRI 1994) and the effective level of protection provided by the country's national park service (Boza 1993; Gamez and Ugalde 1988). While the park system has traditionally focused on park boundary protection and environmental education, recent reorganization of the country's parks and protected areas into conservation units sought to promote buffer zones and corridors around parks to compensate for the inadequate size of some parks (Boza 1993). Thus, there has been active engagement of residents living near parks to gain support for environmental conservation and to educate them about the benefits of living near a park.

The Costa Rican section of La Amistad International Park (LAIP) was created in 1982. The park protects 207,298 hectares in Costa Rica and is supplemented by a similar sized park in Panama and several other contiguous parks and reserves, making up the largest area of continuous protected forest in Central America. The Park encompasses the higher reaches of the Talamanca Mountains in southern Costa Rica, and largely includes only lands over 2,000 meters in elevation. While the park is exceptionally large, seasonal altitudinal migrations of birds and butterflies are significant phenomena in Costa Rica, making management of lands adjacent to the park a key issue. In the Coto Brus area, where we concentrated our Costa Rican research effort, buffer zone management activities have been carried out by the National Park Service (emphasizing protection with some sustainable development activities), the Organization for Tropical Studies Environmental Dialogue Program (emphasizing participatory community development), the grassroots nongovernmental organization, Agroecological Foundation of Coto Brus (organizing an "ecological committee" and promoting sustainable agriculture and forestry), and the local nature conservation organization, APRENABRUS (emphasizing environmental education).

**Cerro Azul Meambar National Park, Honduras**

Officially designated protected areas are a relatively recent phenomenon in Honduras, where the government established its first national park in 1980. By 1996 there were 100 parks and other protected areas in Honduras, and an additional 56 areas were proposed for protection (Marineros and Gallegos 1998). Law 87-87 declared all lands over 1,800 meters in altitude protected areas. The rapid expansion of this protected area system revealed a number of management problems, including conflicts between environmental protection and the economic needs of people living in and near the parks. Honduras remains one of the poorest countries in the western hemisphere, second only to Haiti in poverty. Not only is literacy very low, but most rural areas have no access to electricity, only poor transportation infrastructure, and very little exposure to mass media (Barton 2001; Pfeffer et al. 2001, 2005).

Cerro Azul Meambar National Park (CAMNP) was created by the Honduran government in 1987 with the expansion of the protected area system. The park includes all of Cerro Azul Meambar Mountain above 1,800 meters to the peak of 2,047 meters. CAMNP covers about 32,000 hectares. Initial responsibility for management of the park was assigned to the Honduran National Forestry Development Corporation (*COHDEFOR*), but this agency never mounted any significant management program.

In 1992, *Aldea Global*, a nongovernmental organization, entered into a park management agreement with *COHDEFOR*. This contract assigned responsibility for management of CAMNP to *Aldea Global* for an initial five year period, and this contract was subsequently renewed for another five years. *Aldea Global* proposed a set of fixed boundaries that were officially adopted in 1994. The boundaries established three zones: (1) a core zone of 890 hectares, or about 3 percent of the Park; (2) a 9,129 hectare special use zone; and (3) a buffer zone covering 21,357 hectares, or about 68 percent of the park area (*COHDEFOR-Administracion Forestal del Estado* 1994). Settlement is not allowed in the core or special use zones, but there are forty-two communities in the buffer zone. These communities are home to about 19,600 inhabitants altogether, and between 490 and 949 inhabitants each, and their economies are oriented to small scale coffee and subsistence maize and bean production. Efforts to regulate land use in the Park have led to several conflicts with ongoing economic activities. Regulations that impinge on existing economic behavior include restrictions on cattle grazing, tree harvesting, use of pesticides and fertilizers, and burning ground cover (Barton 2001; Pfeffer et al. 2001, 2005).

### **Data and Methods**

Data used in this paper were collected in two ways in both Costa Rica and Honduras. We conducted a set of semi-structured qualitative interviews with 54 individuals in five villages within CAMNP (completed in 1999) and 67 persons in five villages within five kilometers of LAIP's southern perimeter (completed in 2000). The villages we selected were geographically dispersed. We selected respondents purposefully, typically making initial contacts in the villages through park guards or other local informants targeting community leaders for interviews. About half of the interviews resulted from cold calls that initiated contacts with individuals we felt were missed in the introductions provided by park guards or informants.

We engaged respondents in semi-structured interviews of between one and two hours duration. Our questioning was based on an interview guide consisting of a variety of open-ended questions about attitudes and behaviors related to forests and the park. Specifically we asked respondents what they thought the benefits of the park were, who benefited from the park, if they felt the distribution of benefits was fair, and if they thought there were any problems associated with the park. The responses were open-ended and allowed us to capture the respondents' sentiments in their own words. We used these qualitative data to select content for our survey questionnaires and to verify and interpret the results of our quantitative analyses.

Our analysis of the qualitative data began with a simple reading of field notes and interview transcripts. We looked for patterns of responses to our questioning. For the purposes of this paper, we focused on a subset of the patterns or themes related to benefits from the park and looked for consistency of responses across the interviews. We present selected quotations to support and elaborate the findings of our quantitative analysis.

In 1999, with the assistance of students and faculty at the Honduran National Forestry School, we interviewed 601 randomly selected household heads living in eight communities in or near CAMNP. In 2000 we conducted a similar survey of 523 randomly selected households in eight villages within 5 kilometers of the southern border of LAIP with the assistance of faculty and students from the University of Costa Rica. The communities were purposefully selected to provide a complete geographic coverage within the CAMNP buffer zone in Honduras and along the southern boundary of the LAIP. In both cases our sampling frames were complete lists of all households in our selected communities. We targeted household heads after discovering in earlier qualitative interviewing that they were much more informed

about land use decisions than other household members. When household heads were not available, we interviewed their spouses. Thirty-eight percent of our Honduran and 36 percent of our Costa Rican respondents were female.

The wide-ranging survey interviews included questions about attitudes toward natural resources, especially forests and the park, land use including agricultural production and de- and re-forestation, sources of information about forests and the environment, expected benefits from the park, and a variety of sociodemographic characteristics like income, income sources, age, education, and household composition. The focus of this paper is on individual expectations of who will benefit from the park. We asked respondents who they expected to benefit from the park: themselves, people in the community, people in other communities, and people all over the nation. Responses were simply recorded as "yes" or "no" for each beneficiary.

We analyzed the likelihood that respondents expected benefits from the park for themselves, their own community, other communities, or the nation.<sup>1</sup> We predicted the likelihood of these expectations with a series of logit models. Our baseline models had just one predictor, residence in the Honduran park buffer zone or in a community within 5 kilometers of the Costa Rican park. Our full model included controls for household income, total land occupied, environmental orientation, source of environmental information, age, years of schooling, household size and religion practiced. Comparison of the baseline and full models allowed us to examine the effects of controlling for these variables on our parameter of interest, residence in or near the respective parks. We used results from the full models to calculate predicted probabilities of the respective expected beneficiaries net of the effects of the other variables in the models. Predicted probabilities were calculated as follows:

$$P_i = \exp(Z_i) / (1 + \exp(Z_i)),$$

where  $Z_i$  is the predicted value of  $\ln(P_i / (1 - P_i))$ .

We measured income by asking respondents to estimate their annual income for the previous year in the local currency. Incomes were converted to U.S. dollars for comparison. Land use was measured by asking respondents how much land they had in forest, fallow, coffee, pasture, horticultural crops, maize and beans, or other uses and

<sup>1</sup> It is important to note that in each case the park regimes were imposed by national decree with little or no local inputs. For this reason we can test the impacts of park models on individual expectations without confounding endogenous effects that might have been rooted in local expectations and inputs in the selection of the parks in the first place.

converted to hectares for analysis. Sources of environmental information were determined by asking respondents where they had gained knowledge about forests. Sources of information included neighbors, park guards, meetings/presentations, radio and television. Responses were recorded as "yes" or "no" for each item. We measured environmental orientation with an attitude scale indicating a positive or negative orientation toward preservation of the environment. This scale was constructed from twelve variables that covered a number of environmental attitudes (see Appendix). If the response to an item was favorable toward preserving the environment, we coded that item as "1," if the response was negative it was coded "-1," and "0" if indifferent. We summed the twelve items, and the resulting summated scale ranges from 12 to -12. The alpha statistic was .66, indicating a reasonably high level of individual item consistency with the overall scale. Household size (total persons living the respondent's house), age, education (years of schooling), and religion practiced were all based on respondents' self reports.

### **Findings**

Before we consider possible effects of the park models on individual expectations that they will benefit from the park, we need to take into account other differences between individuals exposed to the alternative forms of administration. Table 1 shows a number of differences between respondents in the two cases. Individuals in the Costa Rican case earn more than twice as much income annually than their Honduran counterparts. Annual mean income for the Hondurans surveyed was about \$1,104 compared with \$2,544 for the Costa Ricans. Access to productive resources is an important explanation of this income difference. Our average Costa Rican respondents occupy about three times as much land as the Hondurans surveyed and, perhaps most importantly, Costa Ricans on average have more than four times as much land in coffee as the Hondurans.

There are also important social differences between the two areas. Evangelical churches have made greater inroads into Honduras with almost 40 percent of the respondents reporting this affiliation (Table 1). In contrast, almost three-fourths of the Costa Ricans in our study identified themselves as Catholics. Results of our field work indicated that the Catholic church in both locations emphasized individual responsibility for the stewardship of natural resources, while Evangelical churches stressed that the consequences of natural resource use would be dictated by God's will, and humans could not control the environmental future. While these patterns may not hold globally, they were

**Table 1. Selected Characteristics of Respondents, Costa Rica and Honduras**

Characteristic	Costa Rica (LAIP)	Honduras (CAMNP)
	Mean	
Income (\$US)	2,544	1,104*
Land Use (Hectares)		
Forest	3.4	1.6
Coffee	3.1	.7*
Total	14.7	5.1*
Environmental Orientation	4.1	2.1*
Household Size	4.7	6.1*
Education (Years)	4.8	3.4*
Age	39.3	42.4*
	Percentage	
Source of Environmental Information		
Neighbors	52.8	51.2
Park Guards	83.9	90.5*
Meetings/Presentations	45.5	59.9*
Radio	83.9	90.5*
Television	85.3	41.1*
Male	63.7	61.6
Religion		
Catholic	73.0	47.3*
Evangelical	16.1	37.6*

\* Difference between countries statistically significant at  $p < .01$ .

quite striking and consistent across the communities in the two countries as indicated by our in-depth qualitative interviews.

Another important influence on environmental attitudes is education. Costa Ricans spent more years in school. Typically, both the Honduran and Costa Rican respondents had no more than a primary education, but the average Costa Rican had 4.8 years of schooling compared with 3.4 years in Honduras. Educational attainment is widely believed to be related to the development of concern for environmental protection. Thus it may not be surprising that Costa Ricans in our study had a significantly more preservationist environmental orientation than the Hondurans. On the other hand, Hondurans had significantly more exposure to a variety of local sources of environmental knowledge like park guards, meetings or presentations (*charlas*), and radio programs, reflecting the intensive efforts to educate residents living inside the park. This higher level of exposure to environmental knowledge sources did not translate into attitudes more supportive of environmental preservation (Meola 2003).

We postulated above that individuals would be less likely to expect to benefit from a park themselves relative to others. We wanted to compare the effects of the Costa Rican and Honduran park models independent of the effects of the variables listed in Table 1. To do this we fitted a series of logit models predicting the likelihood that individuals expect the park to benefit them personally, their community, other communities, and the nation as a whole. As described above, we fitted baseline models with the country of residence as the only predictor and full models that included the country of residence as well as variables listed in Table 1. While these variables control for individual level characteristics, they also control for broad national economic, social and cultural differences. As indicated in Table 1, these differences are expressed through individual characteristics. In controlling for these differences, we assume that we can better isolate the actual effects of exposure to the respective park models.

As indicated in Table 2, those with a more preservationist environmental orientation were more likely to expect benefits from the park for all the beneficiaries considered. Radio seems to be a particularly useful media for convincing individuals of the benefits presumed to be associated with the parks. Park guards also serve quite effectively in this capacity. Those with more years of schooling are more likely to expect benefits from the park for themselves and their community.

Based on the full models we calculated predicted probabilities that individuals would expect the respective benefits net of the effects of the other variables in the models. The results presented in Figure 1 are consistent with the pattern we expected. Individuals are least likely to expect to benefit themselves. Hondurans were more likely than Costa Ricans to expect each of the beneficiaries to benefit from the park. This finding is consistent with our hypothesis that Hondurans will be more likely to expect benefits because they have more direct access to resources in the park by virtue of their residence within the buffer zone.

These findings echo results of our semi-structured interviews. When asked who benefits from the park, the most common responses in both Costa Rica and Honduras were "everyone" or "the entire community." There was almost no mention of individuals benefiting. One Costa Rican respondent explained how certain losses had led some area residents to oppose the park:

The national park often did not pay what farms were worth [when people were forced to leave the park], or [the park guards] follow me and take my rifle and my dogs and throw me in jail. Now I cannot be a hunter like I was before. Others

**Table 2. Coefficients and Standard Errors (in parentheses) of Logistic Regression Models Predicting Individuals Expectations of Benefits from the Park to Themselves, Their Community, Other Communities, or the Nation as a Whole**

Variable	Expected to Benefit from Park			
	Individual	Community	Other Communities	Nation
Costa Rica (LAIP)	-1.19 (.22)***	-1.64 (.28)***	-1.40 (.28)***	-.86 (.28)**
Female	-.48 (.17)**	-.38 (.21)	-.52 (.21)**	-.40 (.21)
Age	-.01 (.01)	-.01 (.007)	-.01 (.01)	-.01 (.01)
Catholic	.39 (.24)	.40 (.29)	.10 (.30)	.29 (.29)
Evangelical	.31 (.26)	.29 (.32)	.10 (.34)	.49 (.33)
Years of Schooling	.12 (.04)**	.11 (.05)**	.08 (.05)	.07 (.05)
Household Size	-.01 (.03)	.01 (.04)	-.07 (.04)	-.04 (.04)
Total Hectares Operated	-.00 (.00)	-.00 (.00)	.00 (.00)	.00 (.01)
Income	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
Environmental Orientation	.09 (.02)***	.06 (.02)**	.07 (.02)***	.04 (.02)*
Source of Environmental Information:				
Neighbors	-.19 (.17) <sup>b</sup>	-.08 (.21)	-.18 (.21)	.02 (.21)
Park Guards Meetings/	.48 (.18)**	.65 (.22)**	.26 (.23)	.46 (.23)*
Presentations	.29 (.17)	.33 (.22)	.71 (.22)***	.37 (.22)
Radio	.69 (.23)**	.67 (.26)**	.83 (.27)**	.69 (.27)**
Television	-.17 (.21)	.03 (.26)	.12 (.26)	.48 (.26)
Constant	.45 (.46)	1.16 (.57)*	1.99 (.58)***	1.104 (.57)*
Chi-Square	57.27***	118.50***	111.05***	75.03***
Nagelkerke R-Square	.18	.19	.18	.13
Cox & Snell R-Square	.12	.10	.09	.07
N	1,124	1,124	1,124	1,124

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

because they only have a hectare here say they are going hungry. They say if they had a farm up there [in the park] they would even have cattle.

Another Costa Rican respondent commented:

The benefit brought by the park, by and large, is ecological. The community really stagnated thanks to conservation. When the park was created, this community was very big, really big. In declaring this zone a national park, they bought land and everything. The people left, everything declined. It is difficult to work in a place like this. There are no inhabitants. There is no economic progress. It is hard.

A Honduran respondent similarly commented:

A park guard came and told us that burning our fields was prohibited. He said he had orders from three superiors. I told

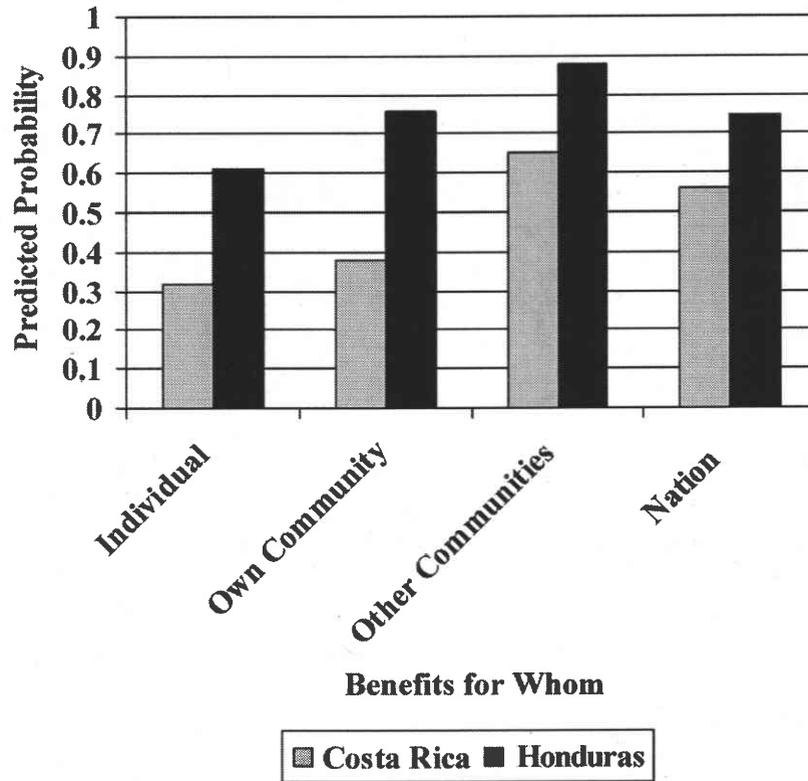


Figure 1. Predicted Probabilities of Expected Park Benefits, Costa Rica (LAIP) and Honduras (CAMNP)

him, that is fine, but just one more thing. Bring a string to sew our mouths shut because we are not going to have anything to eat.

Controlling for differences in economic, social, and cultural factors in predicting expected benefits sharpened differences between the Honduran and Costa Rican cases. These outcomes suggest that the respective park models may have an independent effect on individual expectations of benefits from the park. To get a better sense of differences between the two park models, we fit logit models separately for Costa Rica and Honduras using the same variables as used in the full model as well as controls for each village location in the respective parks. Location is important because in Costa Rica no one resides in the LAIP proper, and in Honduras approximately 20,000 people reside in

42 villages within the officially designated CAMNP buffer zone. While park officials in Costa Rica have conducted educational programs in communities around the LAIP and national laws regarding use of natural resources apply in these communities, the communities are not managed as part of the park per se. In Honduras in contrast, the communities falling within the CAMNP buffer zone are considered part of the park, and natural resources in the buffer zone are more intensively managed than in any other part of the park. A variety of forest use restrictions apply in the park, but do not pertain outside. These include restrictions on felling timber and the extraction of other forest resources. Thus, location of residence has added significance in Honduras.

We fitted logit models separately for Costa Rica and Honduras to determine if the community location of residents was related to expected benefits from the park.<sup>2</sup> In Honduras, location was related to expectations that individuals themselves would benefit from the park. Location had no effect on expectations that the community, other communities, or the nation would benefit. In Costa Rica location was not related to any of the expectations. Figure 2 shows the location of the Honduran villages in our study as well as the predominant land uses in the park.<sup>3</sup> The villages are mostly located near roads that form the perimeter of the park. The western boundary of the park is formed by the main national highway linking the capital city, Tegucigalpa, and San Pedro Sula, the nation's industrial and commercial center. With more direct access to this road some villages have greater access to income generating opportunities. In general, communities with better road access in the southern and southwestern sections of the park are characterized by more intensive land use, especially coffee production. There is a modest linear relationship between median community income and the proportion of respondents expecting to benefit from the park themselves (Pearson correlation coefficient = .76,  $p = .03$ ). Villages with the highest percentage of residents expecting to benefit themselves are mostly found in those areas with the most intensive land uses and access to a variety of income earning opportunities (e.g., Cerro Azul and Rio Bonito). Thus, expectations of deriving benefits from the park appear to be realistic.

These findings suggest that individual expectations are related to location in the park, but they offer only indirect evidence. Results from

<sup>2</sup> To conduct this test for a location effect, we chose the community with the highest median income as the comparison. Income is a useful criterion since higher income is one of the benefits promised when parks are created.

<sup>3</sup> Land use was classified through the analysis of satellite imagery. For a detailed description of the classification procedures used see Pfeffer et al. 2005.

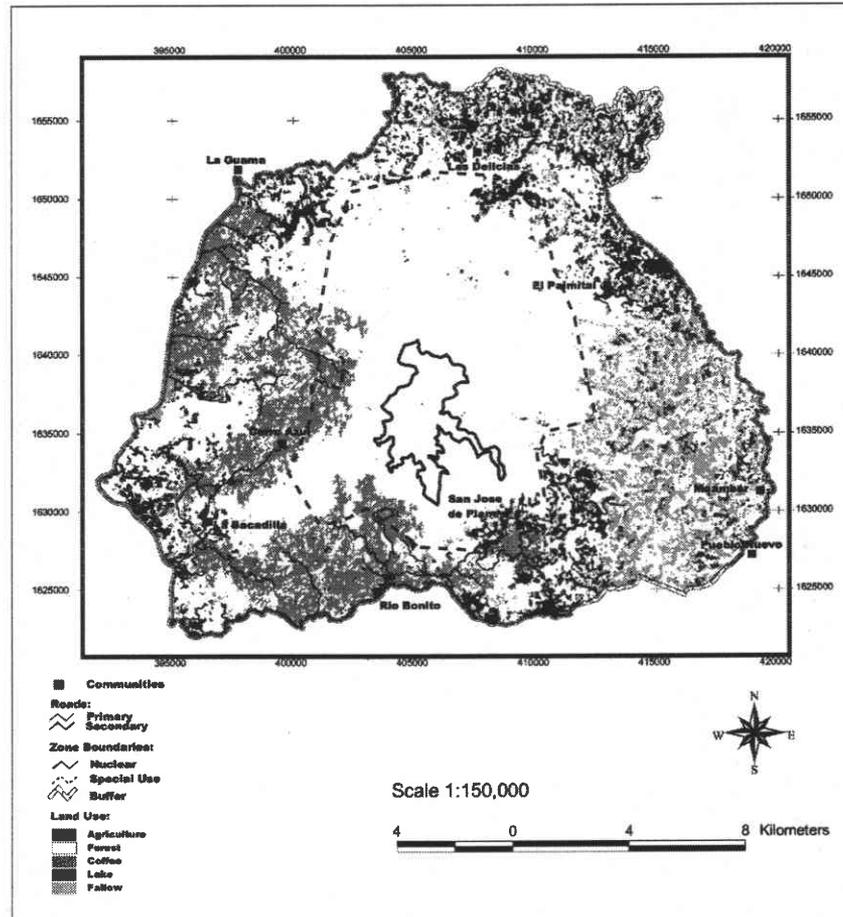


Figure 2. Land Use in Cerro Azul National Park Based On Landsat Thematic Mapper™ Satellite Images (Source: Pfeffer et al. (2005))

our qualitative interviews focus more directly on individual thinking about park benefits and their distribution. They also highlight the importance of location in heightening expectations that the park would benefit individuals. To better isolate location effects, we compared responses of residents of Cerro Azul, the most accessible community, with those of residents of Palmital, the most remote place. As indicated earlier, we asked respondents in both places what benefits they thought the park offered and who they thought benefited. A number of respondents in both locations offered relatively flat responses that seemed to parrot official park propaganda with little further reflection

on the part of the individual. The following interaction is typical of such responses:

Interviewer: What are the benefits of having the park?

Respondent: Well, the benefit I see in having the park would be that we have abundant water, growing timber, and also animals that reproduce. We also see that we have pure air and a cool climate.

I: Alright. Who benefits from the park?

R: I think in the case of this park, the whole population benefits.

I: [Population] of the community?

R: Of the community, but also other communities, because we see that due to the park we have abundant water sources. So, we are benefiting many communities, because we get the water from here.

In Palmital, almost all the interactions were very similar to the one presented above. The responses in Cerro Azul were much more varied, with about half of the respondents in the in-depth interviews citing concrete examples of how the park could bring material benefits to the community. The types of benefits included the attraction of: businesses and associated employment; tourists, researchers and government employees and demand for local services and products; connections to wholesale markets; and employment opportunities related to management of the park (e.g., park guards). These responses demonstrated fairly substantial reflection about potential benefits linked to the park and how the expected benefits had not been realized. One exceptionally comprehensive interchange illustrates some of the more developed thinking about expected benefits from the park:

Interviewer: What do you think about the park?

Respondent: For the people who live in the village of Cerro Azul it's good because tourists are coming.

I: Why does the park exist? What use is the park?

R: I think it's useful for an environment that brings people that one doesn't know, to have contact with people, to be sociable. That's what comes to my mind, to have contact with people that come from outside and to see what people have to say. And now the tourists buy things.

I: What do they buy?

R: Little things. For example, they eat fruit.

I: And do they purchase from you directly?

R: Yes, don't you see we put little things on the fence—bananas, oranges, mangos—we sell these during the day and sometimes people want to buy these things for re-sale. Tourists from outside come to me and if they make the park nice, God

willing, people keep coming. If you don't believe me, that's alright. But this park is a done thing. It's been announced at the national level; and you're asking about it now. Is it, the Cerro Azul Park, announced in other countries?

I: Yes, it's in the guidebooks that you buy in the United States; the park is listed there. That means it's recognized at the international level.

R: A while ago some people from here who can read and write were going to a meeting and I told them what to say. I said, don't go there with a blank slate, explain to the people at the meeting how it is here. For example, tell them how it is to live in a park. One little settlement near Cerro Azul is between waterfalls on the left and the right, and we have clear water. The river is full of lilies and lots of things. The people from here said, ahhh, what a nice description, but are you misleading others? No, I said, go and look. It's the way I'm telling you. Just write it down the way I told you.

I: Do you think it's good or bad to have a park here? What is your opinion?

R: I think that the park does not benefit us because it's a government thing.

I: What would happen if the park doesn't let you grow maize for your household? Who would benefit from that?

R: Nobody. I don't see any benefit in that. On top of it, they prohibit everything.

I: Do you think this park harms anyone?

R: Look, for the government it's good, but for those who work the land, I don't think it's good.

I: How does the park harm people who work the soil?

R: It doesn't allow the people to work, and the government is not going to support them. That's my opinion. Isn't that the truth? Because I think that they are just not letting people work, and how are people going to survive if they don't work? If the people don't work, they don't eat.

I: What do you think the government or the administrators of the park can do so that people are not harmed?

R: Create opportunities for jobs, so that they don't have to work the land; so that they have a way to work without disturbing the land. It should be a park like the government says, but the government should bring factories so people have work. Because look, things are poor here.

I: What kind of factories?

R: Shoes, fabric, everything that we consume. It's peaceful here, but now that we have the park, they don't let us work. Look, they interfered with my little piece of land that I already cultivated. Now I can't work on it, because it's in the park. It's

prohibited, and we're afraid to go there and work. We should be allowed to work the land we have cleared, but not any other land.

As this interchange indicates, higher expectations of benefiting individually from the park often do not translate into satisfaction with management of the park. Many CAMNP residents are not satisfied, feeling that the park has not lived up to its potential. This sentiment was most pronounced in Cerro Azul, a community in a prime location to benefit from the park. Another resident of Cerro Azul expressed this dissatisfaction:

The truth is that we are very, very interested in conserving the park. We have always thought that *Aldea Global* should treat us in another manner. They should at least give us what we deserve because we want to care for what we have.

Cerro Azul is one of the most interesting communities in that it is the village with the highest income level, and residents almost unanimously expect that they will benefit from the park. In 1998, the village embarked on a campaign to lobby the park management to more actively pursue conservation efforts. Leaders of Cerro Azul with strong agreement from village residents felt they would benefit directly from conservation efforts by being well-placed to attract tourists. One resident of Cerro Azul articulated very well the hopes of many residents for potential benefits in the somewhat distant future:

They are getting lots of benefits from the park now . . . For example, people have come here from the universities to do studies—people from schools here in Honduras as well as from other countries. In this form they are exploiting this forest just by looking at it and studying it . . . without harming it. And I think with the people who come from other places, the people in the communities will feel the benefits that come with having a forest. People will benefit, for example, from selling food, others from guiding people, and in this way I think we begin to live from eco-tourism. I think if people do this little by little, they will develop an interest in the incentives offered by the tourists. Then they will begin to love the forest and I think that they will conserve the forest a little more.

Cerro Azul has several advantages including accessibility by road, a beautiful location nestled within a mountain valley with a river running through it, and some economic resources to be able to capitalize on eco-tourism. As exemplified in the last quotation, Cerro Azul residents believe strongly that their ability to benefit from the park is directly linked to the preservation of its resources.

### Conclusions

Efforts to understand environmental globalization have led to interest in organizational isomorphism, or the mechanisms by which organizational forms are reproduced in varied settings (Frank et al. 2001). Certainly there is little doubt that international agencies and environmental NGOs serve as *social carriers* of agendas that reflect the interests of more economically advanced or core countries (Kahlberg 1990, 2004). But these organizational forms and agendas are not simply superimposed on passive subjects. People define and assert their local interests in opposition to these global forces (Pfeffer et al. 2001). Our analysis addresses the consequences of efforts to adapt globally-oriented conservation models to local conditions. We have attempted to determine whether different forms of park organization affect perceptions of benefits from parks on the part of people living in or near them. The question of expected benefits is an important one, because such expectations may motivate local cooperation and support in the stewardship of park resources. Such support cannot be taken for granted because parks often constrain opportunities for local residents to secure their livelihoods. Thus people's needs to secure food and shelter may conflict with the conservation goals promoted by global environmental organizations.

We expected to see differences between the conventional park that excludes human habitation and the zoned park that allows people to reside in the park buffer zone and actively engages them in the management of the park's resources. As we had anticipated, Honduran residents of the zoned park were more likely to expect to benefit from the park than their counterparts living on the outskirts of the conventional park in Costa Rica. In fact, they were more likely to expect benefits from the park not only for themselves, but for their community, other communities, and the nation as a whole. These higher likelihoods were net of the effects of income, land use, age, education, household size, environmental orientation, and exposure to different sources of environmental information.

Our analyses also showed that in Honduras location was an important factor in the likelihood of expected benefits for individuals and their communities. In higher income communities a higher proportion of individuals expected to benefit from the park. These higher income communities had the benefit of the best road access, and their higher expectations of benefits appear to be an accurate assessment of tangible local opportunities. By the same token, lower proportions expecting benefits in poorer, more remote communities also represent accurate assessments by individuals residing there. Higher income communities

also see the conservation of park resources as an asset creating the potential for income generation.

Since our analysis is limited to two cases, our findings should be read with caution. But the consistency of our findings also offers a solid starting point for further research on the relationship between park organization and individual expectations of benefits. In addition to obvious practical implications such research would directly address contemporary questions in organizational and economic sociology. The results presented here suggest that the zoned park model generates greater expectations of benefits on the part of local residents compared with an exclusionary conventional park model. However, the zoned park model also presents challenges for mobilizing support from local residents. Those with the greatest market access and income generating opportunities may be most supportive of the stewardship of park resources, but they also tend to reside furthest from the most critical conservation zones in the park. Those closest to critical resources are also likely to be the most in need by virtue of their remote location. This point suggests that managers of zoned parks must implement a varied set of resource preservation measures targeted at different segments of the park population and that residential locations must be a key criteria in their strategic thinking.

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### Appendix. Environmental Orientation Attitude Scale

Respondents were asked if they agreed, disagreed or neither agreed nor disagreed with the following statements:

1. More than anything else, the forest exists to provide firewood and lumber.
2. Hunting animals is alright when there are many of them in an area.
3. The most important thing about trees is to make money from them.
4. It is always alright to hunt wild animals.
5. It is alright to burn fallow lands if you are going to plant there.
6. It is alright to hunt wild animals if you do it for food.
7. We need food and money before we can begin to worry about protecting forests.
8. Humans have to cut trees to be able to live.
9. It is better to use the land to produce food than to leave it in forest.
10. Hunting animals is alright if you need money.
11. If we were to conserve forests here we would have fewer opportunities to earn money.
12. Our community would be better in the long run if we would conserve our forests rather than cut them.

Before summing the responses, the items were recoded so that "1" reflected a favorable attitude toward preservation and "-1" a negative attitude.