BACKGROUND LEADING TO METHODOLOGY

Any evaluation of ecotourism first requires a working definition that distinguishes it from other types of tourism. Much discussion has been given to the conceptualization and definition of the term and to whether or not this term should apply to nature tourism in general or to a more specific type of nature tourism (Ceballos-Lascuráin 1993, Fennel and Eagles 1990). According to Wight, Western, Valentine, Hawkes and Williams (all 1993) and McAvoy (1990), what distinguishes ecotourism from nature, cultural, or adventure tourism is not its degree of specialization or how hard or soft the mode of experiencing a place is (Ruschmann 1992), as much as emphasis on its ethical values and principles. The Ecotourism Society’s definition, “Ecotourism is responsible travel to natural areas which conserves the environment and improves the welfare of local people,” is simple, elegant, can be applied to subsets of nature, cultural, or adventure tourism, and reflects the evolution of an ethical overlay. McCool (1994), and Wight (1993) go on to explain the close ties that ecotourism has to sustainable development and how that often means favoring supply (resource constraints and the needs of local people) over demand. Kusler (1991) and Kutay (1989) point out that ecotourism should occur in conjunction with managed protected areas. Norris (1992) and Wallace (1992, 1993b) have pointed out that ecotourism is not ecological unless it improves both protected area management (public or private as long as they are managed to protect natural processes) and provides economic benefits to local people asked to forego resource utilization. Stewart
and Sekartjakrarini (1994) concur that any description of ecotourism must integrate appropriate activities and behavioral norms and embrace a community development/conservation model of one sort or another.

It is precisely in the relatively remote and undisturbed natural areas and rural communities increasingly sought by many ecotourists and tour operators (Cater and Lowman 1994) that the potential to negatively impact or to protect natural and cultural systems is the greatest. While this gestalt view of ecotourism may not be the only type, it is a distinct focus in the literature, and it merits this special consideration because of its catalytic nature. Without disputing the desire of many for a broader or more inclusive notion of ecotourism, the studies described in this paper will build on the Ecotourism Society’s definition. They will describe a set of principles that clarifies and supports the definition and has enabled the authors to conduct an evaluation of ecotourism operations in the Brazilian and Ecuadorian Amazon.

In developing the criteria against which ecotourism can be judged, current conditions can be compared to an ideal or desired form of ecotourism derived from agreed-upon principles. A distinction must first be made between site-specific regulations, general codes or guidelines, and principles. Regulations are developed by managers at each attraction site—usually public or private protected areas or reserves—to fit specific environmental and social conditions that are in accord with management objectives and desired conditions. Most guidelines or codes like those compiled by the Ecotourism Society (1993) and the United Nations Environment Programme (UNEP 1995), are suggestions for behaviors that address general biophysical and social impacts that can be caused by tourism (Blangy and Wood 1993). Behind regulations and guidelines or codes, however, are the principles from which they were deduced. Principles provide the over-arching ethical frame that can be applied in most circumstances.

Once principles like “entails a type of use that minimizes negative impacts to the environment and to local people” are developed, indicators of and standards for compliance with the principle can be chosen that are relevant to a given location. Sometimes, this takes the form of compliance with regulations or guidelines, but often regulations do not exist for important principles. Sometimes regulatory agencies were present but not quite effective.

Previous efforts at developing principles for nature tourism have been made (Eber 1993, World Tourism Organization 1985, World Wildlife Fund—United Kingdom 1988, etc.) but none of them could be used to evaluate a given tour operation. Cronin (1990)
described principles guiding tourism planning and management in the direction of sustainable development. These principles are directed primarily at national or regional tourism planning. Though one of the principles does define sustainable development and contains criteria that would allow the evaluation of specific ecotour operations, the principles have apparently not yet been used for that end. Wallace (1992) synthesized and elaborated upon existing guidelines and documents containing the word *principles* and descriptions of ecotourism in the literature to develop a set of principles that were presented at the IV World Congress on Parks and Protected Areas. It is also reaffirming to note that Wight (1993) subsequently presented a similar set of principles, which she considered basic to an ethics-based perspective of ecotourism.

Lee and Snepenger (1992) offered one of the first assessment procedures for evaluating ecotourism. They compared ecotourism development with an ideal ecotourism development strategy. Their ideal ecotourism, like that of McCool, Cronin and others mentioned above, is part of sustainable development. Natural resources, local community, and visitors all benefit from ecotourism activity, along with commercial interests. Positive and negative elements of ecotourism activity were described in relation to an ideal scenario and used to evaluate ecotourism in Tortuguero, Costa Rica. Botrill and Pearce (1995) have described “key elements” that distinguish ecotourism from other forms of tourism. Utilizing key elements and data gathered from interviews with tour operators, they evaluated twenty-two nature based tourism ventures in British Columbia in 1992. Results were based on the judgement of researchers, who were looking at the data with the key elements in mind, and reported using perspectives of participants, operators, and natural resource managers.

In 1993, Wallace and Pierce (1996) began to apply the principles described earlier by Wallace to evaluate all registered ecotour operations in the Brazilian state of Amazonas. They used site-specific indicators for each principle in order to analyze surveys and interviews that had been conducted on-site with visitors, local people, and tour operators. Lincango and Wallace (1995) carried out a similar evaluation of all ecotourism operations in the Cuyabeno Wildlife Reserve in the Ecuadorian Amazon Basin. They improved on the approach used in Brazil by using the principles of pre-established, site-specific indicators, and valuative standards. All were selected after discussions with reserve managers and a review of desired future conditions that were expressed in the protected area’s management plans and literature on Cuyabeno and its local inhabitants. Because these evaluations are based on the degree to which a set of key elements or principles are followed, ecotourism can be
ranked and placed on a continuum from “unsatisfactory” to “very satisfactory.”

Use of indicators and standards is increasingly common among managers who monitor social and biophysical changes in natural settings. Many are using techniques like Limits of Acceptable Change (LAC), Visitor Impact Management (VIM) and Visitor Experience and Resource Protection Process (VERP) to see whether they are achieving desired future conditions (National Park Service 1994, Graefe et al. 1992, Stokes 1990, Hendee et al. 1990). This paper may be the first description of how such an approach has been used to evaluate ecotourism operations and the first time that desired future conditions are defined, in part, by a set of general principles as well as standards. It should be noted that indicators and standards are almost always intended to be site-specific. In an ideal ecotourism evaluation or monitoring procedure, indicators, and standards should be selected and delphi-tested by people who know the area and setting being evaluated, who agree on guiding principles, and who have come to some degree of consensus about existing problems and desired future conditions (USDA 1990).

DEFINITION AND PRINCIPLES

The Wallace/Pierce and Lincango/Wallace studies employ the definition of ecotourism and set of valuative principles that follow. Each principle is briefly discussed, and some generic indicators that evaluate adherence to each principle will be given. The principles will be described in a way that references the work of authors who have spoken to the concepts embodied in a given principle.

Ecotourism is travel to relatively undisturbed natural areas for study, enjoyment or volunteer assistance. It is travel that concerns itself with the flora, fauna, geology, and ecosystems of an area as well as the people (caretakers) who live nearby, their needs, their culture and their relationship to the land. It views natural areas both as “home to all of us” in a global sense (“eco” meaning home) but “home to nearby residents” specifically. It is envisioned as a tool for both conservation and sustainable development, especially in areas where local people are asked to forgo the consumptive use of resources for other uses. Such tourism may be said to be true ecotourism when it:

1. ENTAILS A TYPE OF USE THAT MINIMIZES NEGATIVE IMPACTS TO THE ENVIRONMENT AND TO LOCAL PEOPLE.

Historically, the term “ecotourism” was adopted by writers who were documenting the phenomenon of nature tourism, but later focused on attempts to mitigate negative impacts. There is consen-
sus that ecotourism should minimize impacts to wildlife, soil, vegetation, water, and air quality, and emphasize respect for the cultural traditions and activities of local people. Efforts are made to be less consumptive, travel lighter, produce less waste, and be conscious of one’s effect on the environment and on the lives of those living nearby. Both general guidelines and more site-specific norms should be developed and utilized. (The Ecotourism Society 1993, Hawkes and Williams 1993, Blangy and Nielson 1993, Passoff 1991, Williams 1991, Kutay 1989, Boo 1990).

Indicators include: group size; mode of transport; equipment; methods of waste disposal; use of “leave no trace” procedures; type and amount of training given to guides; type of information given visitors before and during field visits; level of cultural sensitivity of interpretive materials and activities pursued; resulting attitude of locals towards tourism; architectural style and types of building materials and decor; measures of biophysical change, such as site spreading, vegetative composition, erosion, water quality, wildlife behavior; and other site-specific measures. All of these imply some form of impact monitoring.

2. INCREASES THE AWARENESS AND UNDERSTANDING OF AN AREA’S NATURAL AND CULTURAL SYSTEMS AND THE SUBSEQUENT INVOLVEMENT OF VISITORS IN ISSUES AFFECTING THOSE SYSTEMS.

Learning about nature and other cultures is a primary motivator for ecotourists (Bottrill and Pearce 1995). Visitors should be able to experience truly representative and intact ecosystems and compare them with areas that have been disturbed (Ceballos-Lascuráin 1988). They should also be able to experience authentic two-way interaction with local residents (Wildland Adventures 1994, Wallace 1991, Williams 1991). Other awareness activities could focus on sustainable development (Wight, 1993), or conservation and wildland protection issues in the host and home country (Dubov 1993, Wallace 1991, Ceballos-Lascurain 1988, Janzen 1986).

Indicators, though sometimes difficult to document, include: Donations to local projects or NGOs; continued correspondence between locals and visitors; increased support for conservation/development projects and an increased level of commitment and activism (an untapped area for researchers). An indirect indicator would be educational and interpretive experiences for visitors, especially those that permit interaction with local people and their issues and that reveal how ecosystems function.
3. CONTRIBUTES TO THE CONSERVATION AND MANAGEMENT OF LEGALLY PROTECTED AND OTHER NATURAL AREAS.

Where possible this should mean strengthening the management capability, personnel, and stature of units that are part of a national, state, and local system of parks and protected areas (Norris 1992, Wallace 1993b, Kaus 1993, Barborak 1992, Whelan 1991, Kutay 1989) or similar management of private reserves or attraction sites (Ceballos Lascurain 1993).

Indicators include: Collaborative efforts between operators and protected area managers; payment of established entrance fees and additional donations; tours that encourage visitor interaction with protected area personnel and incorporate management issues into tour interpretive activities; adherence to area regulations; cooperation with infrastructure maintenance and improvements (volunteer work days, trail, dock, visitor center maintenance, etc.); research results that benefit a protected area in the case of “scientific tourism”; or development of management plans and subsequent actions on private reserves.

4. MAXIMIZES THE EARLY AND LONG-TERM PARTICIPATION OF LOCAL PEOPLE IN THE DECISION-MAKING PROCESS THAT DETERMINES THE KIND AND AMOUNT OF TOURISM THAT SHOULD OCCUR.

The key here is the early establishment and continued functioning of committees, partnerships, and other mechanisms that provide local input to public (protected area managers, etc.) and private (outside concessionaires, conservation groups, etc.) interests that operate in the area. Ideally, locals will also belong to those interests groups (Brandon 1993, Horwitch et al. 1993, IUCN/UNEP/WWF 1991, Healy and Zorn 1988, Peters 1990, Drake 1991, Budowski 1985).

Indicators include: Strength and duration of local advisory and planning groups; incorporation and implementation of local ideas in area management plans and tour activities, development of local ecotourism ventures and tour itineraries that conform to local needs and schedules; the presence of staff delegated to community relations tasks; and the attitude that local people have toward ecotourism.

In developing the criteria against which ecotourism can be judged, current conditions can be compared to an ideal or desired form of ecotourism derived from agreed-upon principles.
5. DIRECTS ECONOMIC AND OTHER BENEFITS TO LOCAL PEOPLE THAT COMPLEMENT RATHER THAN OVERWHELM OR REPLACE TRADITIONAL PRACTICES (FARMING, FISHING, SOCIAL SYSTEMS, ETC.)

Ecotourism often depends on natural areas where resource protection requires low visitor density and small group size. Ecotour operations are of smaller scale, and more susceptible to changes in season, weather, access, economic, and political events. Therefore, these operations yield irregular and modest returns when compared to mass tourism. Local economies will be more robust if they are diverse and if local people are not asked to make wholesale changes away from traditional activities (not to be construed as retarding the desire for increases in income and standard of living). Benefits should be diverse and should contribute to various aspects of the quality of life (Wilson 1994, Wildland Adventures 1994, Horwitch et al. 1993, Boo 1990, Kaus 1993, Hill 1992, Lindberg 1991, Wallace 1991, Adams 1990).

Indicators include: Increases or decreases in the diversity of economic activity, the variety and value of items produced and purchased locally; services provided by concessionaires to locals; the number and level of local park/ecotour employees; the relative distribution of benefits among community members; the number of programs that train or assist with the development of locally owned enterprises; existence of an adequate fee structure and evidence that some portion of park/protected area and concessionaire revenues are being reinvested in community development projects, and reserve or protected area infrastructure and management; and management zones for limited harvesting and other sustainable uses of an area’s resources by locals that complement traditional activities.

6. PROVIDES SPECIAL OPPORTUNITIES FOR LOCAL PEOPLE AND NATURE TOURISM EMPLOYEES TO VISIT NATURAL AREAS AND LEARN MORE ABOUT THE WONDERS THAT OTHER VISITORS COME TO SEE.

This is similar to principle number 2, but emphasizes making both foreign visitors and local people feel comfortable as visitors to any given natural area. Some authors specifically point out the need for “biocultural restoration” via educational and recreational activities for locals and employees (Janzen 1993, Wallace 1992, 1993a, WTO 1985).

Indicators include: Number and percentage of the local population that uses the park/protected area; number of special days, events, transportation arrangements for locals each year; use of multi-tiered fee structures; use of the area for environmental education...
by local schools; number of opportunities for employees (cooks, maintenance personnel, etc.) to occasionally accompany visitors on field tours.

METHODS FOR STUDYING REGISTERED ECOTOURISM LODGES IN AMAZONAS BRAZIL AND THE ECOTOUR OPERATIONS IN CUYABENO WILDLIFE REFUGE, ECUADOR

METHODS USED IN AMAZONAS IN 1994

Evaluating ecotour operations like those in the Amazonas, which are few, small, and dispersed, requires a methodology that can cope with logistical difficulties, small sample sizes, and the impracticality and expense of replication or sampling over a long time period. To do this first study in Brazil, researchers used a hybrid case study approach with both quantitative and qualitative analysis. Study sponsors asked that it be an applied study emphasizing practical methods. Interviews were conducted using separate survey instruments with visitors, operators and employees, and local people. Researcher observations were also systematically recorded and documents were content-analyzed to collect the data needed to compensate for the small sample size, narrow sampling frame, and possible diversity of viewpoints (Babbie 1995, Patton 1990). Between January and April 1992, interviews and observations were conducted at all eight registered “jungle lodges,” and the communities near each lodge. All operators referred to themselves as “ecotourism” ventures. Questionnaires were developed, peer reviewed, and piloted with staff from the sponsoring agencies—the state tourism agency (EMMAMTUR) and the principal environmental group concerned with ecotourism in Amazonas (Fundacion Vitoria Amazonica). Initially, survey instruments were not designed to test the six principles but were focused on the information sought by the sponsoring agencies.

Survey/Interview items dealt with: positive and negative impacts of ecotourism on people living near each lodge; the socioeconomic characteristics of each interview group; local community needs and attitudes about tourism; visitor expectations, attitudes, and level of satisfaction; visitor definitions of ecotourism; perceptions of undeveloped tourism potential; and willingness of visitors to make donations to rural development or community projects. Additionally, on-site observations regarding environmental and cultural impacts (waste disposal, fuel management, activities sensitive to needs of wildlife, interactions with locals, etc.) were recorded by interviewers. All responses were recorded by three researchers trained in interview techniques and the administration of survey instruments. Due to
varying degrees of literacy among subjects, surveys were read to each subject and responses recorded by the interviewer.

The sampling strategy was purposeful and stratified. The aim was to include: 1) most tourists at each site (total n=80), 2) all employees at each site (total n=89), 3) approximately 10 per cent of the local inhabitants, including known leaders and opinion makers, (total n=75). And, 4) two owners and/or managers for each site (total n = 18). The final sample was composed of approximately 10 per cent leaders. These influential community members were mainly teachers (usually female) and males who were either leaders by election or common consensus. The aggregate n (270) represents almost the entire population of tourists, employees and managers, and 10 per cent of the local people present during the sampling period of at each site. To obtain this sample required approximately 68 person days and hundreds of kilometers of river boat and off-road vehicle travel.

Descriptive statistics (frequency and means) were manually computed in the field for quantifiable survey items, which formed the majority of inquiries. Because of a series of logistical problems, no computerized statistical package was available in the area during the study. Content analysis (Babbie 1995) was utilized to categorize all responses to open-ended questions. These questions concerned: subjects not covered that tourists would like to know more about; tourist perceptions of community visits; gifts and services that tourists would like; tourist expectations; suggestions on how visits could be improved; tourist definitions of ecotourism; and quality-of-life questions directed at local people.

A subsequent evaluation of these results was made using the principles described previously. Site-specific indicators (which measure environmental impacts, benefits to locals, etc.) relevant for Amazonas, were selected by researchers using an approach from a standardized list of indicators that accompany each principle. These indicators were scaled using a four-point scaling system: satisfactory, mostly satisfactory, partially satisfactory, and unsatisfactory. A simple matrix and scoring system summarizes the aggregate performance of the Amazon lodges and tour boat sampled. Although the matrix and aggregate scores will be useful for obtaining an overall picture of ecotour operations in Amazonas, it is expected that the greatest value for planners, managers, and owners would come from the scores given to individual indicators for each operator.

SAMPLING OF THE RESULTS OBTAINED IN AMAZONAS

Table 1 summarizes the indicators used for each principle and the overall evaluation obtained by combining the results from...
visitor, operator/staff, and community survey items that tested. In this first study summary scores were assigned utilizing standards established by those who developed the study. That was to improve in the second (Ecuadorian) study. Looking at Principle 2, for example, “Ecotourism increases the visitor awareness and understanding of natural and cultural systems as well as their subsequent involvement,” the first indicator is “visitor exposure to the local community during the tour.” Results from the visitor survey showed that 66 per cent reported having been provided an opportunity to visit a local village and that 79 per cent of those visiting rated that visit as good or excellent. Researchers had discussed a standard for this indicator and agreed that in cases where a simple majority of the visitors were provided with a satisfactory visit to a local village, that the tour would be evaluated as satisfactory. If 75 per cent had reported such an experience, the tour would have been given a four (very satisfactory) for that indicator.

METHODS USED IN CUYABENO, ECUADOR

The second study included all visitors arriving at the Cuyabeno Wildlife Reserve between November 1994 and January 1995 as well as reserve managers, tour operators, and local people. Questionnaires formatted for interviews and focus groups were designed this time to include items that tested a number of site-specific indicators for each ecotourism principle. A single indicator often had multiple items, if it was judged as especially important for Cuyabeno. Additional items addressed demographics, visitors’ motivations, visitation frequency, etc. Visitors were asked to complete their survey at the end of their tour, while they were still in the Reserve, so that perceptions were minimally distorted by time. The major difference or improvement in the second study was that indicators, and more importantly, standards for those indicators were discussed among researchers, operator guides, local people, and reserve managers prior to defining analytical procedures. In some cases, standards could be derived from existing Reserve regulations, which was not possible in Brazil.

Focus groups were conducted in November of 1994 with indigenous people in Siona-Secoya, Cofán, and Quechua villages, who receive the most visitation inside the Reserve. An attempt was made to include people involved in tourism activities as well as those who were not. At least one person representing each family was present during the focus groups. Managers of the four ecotour operations in Cuyabeno were interviewed utilizing a format similar to the visitors’ survey. For one week researchers observed and recorded nuances of attitude and behavior not accessible when using other methods of research.
### TABLE 1: Summary of Principles

<table>
<thead>
<tr>
<th>PRINCIPLE</th>
<th>Description</th>
<th>Group Size</th>
<th>Mode of transport/equipment</th>
<th>Waste disposal</th>
<th>Architectural style/materials</th>
<th>Soil, water, vegetation impact</th>
<th>Information given to visitors</th>
<th>Sensitivity of activities</th>
<th>Attitudes of local people</th>
<th>OVERALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Entails a type of use that minimizes negative impacts to the environment and to local people.</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2.375</td>
</tr>
<tr>
<td>2</td>
<td>Increases the awareness and understanding of an area’s natural and cultural systems and the subsequent involvement in issues that affect them.</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1.8</td>
</tr>
<tr>
<td>3</td>
<td>Contributes to the conservation and management of legally protected areas and other natural areas.</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Maximizes the early and long term participation of local people in the decision process that determines the kind and amount of tourism that should occur.</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>5</td>
<td>Directs economic and other benefits to local people, which complement rather than overwhelm or replace traditional practices (farming, fishing, social systems).</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2.1666667</td>
</tr>
<tr>
<td>6</td>
<td>Provides special opportunities for local people or nature tourism employees to also utilize natural areas and learn more about the wonders that other visitors come to see.</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1.6402778</td>
</tr>
</tbody>
</table>

**CUMULATIVE** 1.6402778
Standards were developed by creating a four-point Likert scale that corresponds to the mean scores or to a descriptive statistic yielded by a given survey item (Table 2).

Table 2. Relating mean visitor responses to the question: “How often did you receive information on how to avoid disturbing wildlife?”

<table>
<thead>
<tr>
<th>SCALE</th>
<th>1 Never</th>
<th>2 Rarely</th>
<th>3 Sometimes</th>
<th>4 Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Satisfactory</td>
<td></td>
<td></td>
<td>&gt;3.5</td>
<td></td>
</tr>
<tr>
<td>Satisfactory</td>
<td></td>
<td></td>
<td>2.5</td>
<td>3.4</td>
</tr>
<tr>
<td>Partially Satisfactory</td>
<td>1.5</td>
<td></td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td>Unsatisfactory</td>
<td></td>
<td></td>
<td>&lt;1.4</td>
<td></td>
</tr>
</tbody>
</table>

The site specific nature of indicators should be emphasized. For example, in Cuyabeno, most travel is done by boat along rivers and streams. In relation to the first principle, “Ecotourism should minimize impacts to the environment and to local people,” managers felt that boat size, engine size, and appropriate speed and handling, were all important indicators of negative impacts to both the environment and local people. As a result, visitor and operator surveys included scaled items about each of these indicators. One survey item asked visitors to state to what extent they agreed with the statement “The speed and way the boats were handled were appropriate for the setting.” Choices were distributed along a Likert five-point scale ranging from “strongly agree” to “strongly disagree.” The reserve set standards for the size of boats (less than 12 meters and no wider than 1.2 meters) and boat engine size (25 HP), so researchers were able to observe compliance or non-compliance. Interviews with operators and guides provided a third perspective on these items.

SAMPLING OF THE RESULTS FROM CUYABENO

Indicators or sets of indicator scores were tabulated. The following short excerpt from results reported by Lincango gives an idea of how three indicators (of twelve indicators used for Principle 1) and standards were employed. These results illustrate the method and also refinements that will be necessary. Bear in mind that we will only look at three of the thirty-three indicators employed for the six principles.
Appropriate Boat Size

Evidence from Visitor Survey

As shown in Table 3, the majority of visitors (66%) agreed that their tour operators used an appropriate boat size for tourism in Cuyabeno (mean=3.9). About 45 per cent “strongly” agreed and 21 per cent “somewhat” agreed with this statement. Based on visitor perceptions, this indicator is rated as “satisfactory.” A one-way analysis of variance on the visitor data showed no significant differences (F=0.5) among visitors using the four tour operators.

Evidence from Local People

Local community members were not questioned about boat size.

Evidence from Tour Operators

Reserve standards for boat size, engine size and speed are clearly established. While operators were not surveyed about compliance, researchers were able to use the standards during their observations.

Evidence from Researcher Observation

Researchers noted that several boats were larger than legally permitted and gave this indicator a score of two or “partially unsatisfactory.”

Appropriate Boat Type

Evidence from Visitor Survey

A majority of visitors agreed “strongly” (39%) and “somewhat” (24%) that the boats used by their tour operator were appropriate for the natural environment (mean=3.8). Given the agreed upon standard, this indicator was also given a score of three or “satisfactory.” There were no significant differences (F=0.5) among the visitors to the four tour operations for this indicator.

Appropriate Size of Boat Engine

Evidence from Tour Operators

Tour operators reported using engines of 25 HP, 50 HP, and 65 HP. Two of the tour operators described their compliance with established regulations, while one tour operator admitted the use of 65 HP engines in boats. The other tour manager reported the use of two 65 HP outboard engines for two big boats (24 passengers capacity each) utilized for transfers in and out. However, this tour operator specified that they use paddle boats, canoes, or catamarans for
field trips in the Reserve. In addition, a “Flotel” (boat) with a capacity of 48 people was reported to be used during the operation. The “Flotel” navigates short distances using three 100 HP engines, and moves at an average speed of five knots along the Aguarico River located in the Reserve. This indicator is rated as “partially unsatisfactory,” given the results from interviews with tour managers.

### Appropriate Boat Handling

**Evidence from Visitor Surveys**

A majority of visitors agreed "strongly" (35%) and “somewhat” (24%) that speed and handling was appropriate for the setting. Given the agreed upon standard, this indicator was given a score of three.

**Evidence from Researcher Observation**

Observers noted speeds in excess of the Reserve standard on several occasions, however, and gave a score of two or “partially satisfactory.”

These are only three of eleven indicators for Principle 1. As was done in the Amazonas study, Lincango goes on to sum and average the scores for all indicators for each principle and the scores for each principle are summed and averaged for an overall score along the continuum of unsatisfactory to very satisfactory. More informative than the aggregate score, however, are the scores for each principle and most importantly, for the individual indicators. These are the most useful for managers and operators who wish to offer what might be called, “real ecotourism.”
ADDITIONAL IMPROVEMENTS NECESSARY

Although the use of principles, indicators, and standards continues to evolve and is, perhaps, more sophisticated in its second version than in its first, much remains to be done. Indicators must capture the essence of each principle. Principles IV and V (Participation of and Benefits to locals), for example, need careful evaluation. Critics recognize that ecotourism may only reinforce existing power structures and inequities if it simply involves and rewards those who step forward first (Gonsalves 1991, Johnston 1990). Indicators for these principles must go beyond dollars spent locally by visitors and look at the distribution of economic benefits, training programs, and other measures of equity. This will be easier to do in some cases than in others.

Quantifying results of indicator items must continue to improve. To fairly calculate an overall score for indicators, like those described above for boat size and handling in Cuyabeno, may require weighing the evidence from various sources within a case study. In this example, visitor perceptions about boat size and handling are probably not as important as those of researchers observing and operators testifying about sizes and speeds that violated a pre-existing standard. Balance can be achieved by either weighing some scores or by using more indicators from the sources that are most important in order to achieve the same effect. Indicators items for Principle V, for example, which would probe benefits to local people and examine whether traditional practices were being overwhelmed by tourist activity, should largely be evaluated using evidence from interviews with local people. This is not to say that items from the visitor or operator surveys that test this principle should be omitted. Nothing else, they serve to demonstrate the significant differences of opinion among the stakeholders of any ecotourism setting.

Another important methodological step is to reduce the arbitrary judgements of impact described by Botrill and Pearce (1995). Consensus must be achieved among stakeholders about the selection of site-specific indicators before the field survey instruments are produced. If there is a sense of ownership among operators, protected area managers, local people, and researchers, the results will have a better chance of being utilized. This is important for protected area managers, who will manage existing and future concessions, and who wish to achieve a partnership approach with operators and local people. During the two studies described here, there has been an over-reliance on researcher judgement in developing both indicators and standards.

Scales and statistical analysis can be improved. A finer degree of quantitative analysis is possible if six or seven point scales are used.
Researchers in the Amazonas and Cuyabeno studies kept scales simple at the request of sponsor. They were more appropriate for the nominal or categorical information derived from open-ended responses from local people, and researcher observations. In the future, studies that win the confidence of stakeholders will have to provide results by which tours and operators can be evaluated. The six principles all seem necessary to this author but may not be sufficient. The author welcomes a discussion of the principles, and other suggestions for improving this type of evaluation.

REFERENCES


EMBRATUR, EMAMTUR (The Brazilian and Amazonian Tourism Ministries). 1991. Sistema Nacional de Turismo. A conference held in Manaus, Nov.4-8, on the contribution of tourism to conservation and development.


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