



Pergamon

Annals of Tourism Research, Vol. 23, No. 3, pp. 543-562, 1996
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0160-7383/96 \$15.00+0.00

0160-7383(95)00074-7

ECOTOURISM QUESTIONED

Case Studies from Belize

Kreg Lindberg

Charles Sturt University, Australia

Jeremy Enriquez

School for International Training, Belize

Keith Sproule

Ministry of Tourism and the Environment, Belize

Abstract: Ecotourism has become a buzzword within the tourism, conservation and rural development fields. Significant economic and political resources have been devoted to ecotourism on the assumption that it achieves conservation and development objectives. This article evaluates the extent to which tourism at case study sites in Belize achieves three ecotourism objectives: generation of financial support for protected area management, generation of local economic benefits and generation of local support for conservation. When using positive net financial impact as a standard, tourism does not achieve the first objective, but could do so with implementation of a modest user fee. Tourism achieves the second and third objectives. The methodologies utilized are presented to encourage their refinement and application elsewhere. **Keywords:** ecotourism, conservation, Belize. Copyright © 1996 Elsevier Science Ltd

Résumé: L'écotourisme sous la loupe: une étude de cas pour Belize. L'écotourisme est un mot en vogue pour le tourisme, la défense de l'environnement et le développement rural. On a affecté des ressources politiques et économiques considérables à l'écotourisme en supposant qu'il atteint ses buts pour le développement et l'environnement. On mesure le succès du tourisme à Belize pour atteindre trois buts de l'écotourisme: fonds pour la gestion des zones protégées, bénéfices économiques locaux et soutien local pour l'environnement. Quand le critère est un bénéfice net, le tourisme ne réalise pas le premier but, mais pourrait le faire avec un modeste prix d'usager. Le tourisme réalise les deuxième et troisième buts. On décrit les méthodologies utilisées pour encourager leur perfectionnement et leur application. **Mots-clés:** écotourisme, défense de l'environnement, Belize.

INTRODUCTION

A broadly-accepted definition of ecotourism does not yet exist. However, many experts involved in the ecotourism field assert that tourism should satisfy conservation and development objectives in order to be considered ecotourism. This view is consistent with the restrictive definition of ecotourism used in Buckley's (1994:662) ecotourism framework. Three of these objectives are that ecotourism generates financial support for protection and management of natural areas, economic benefits for residents living near natural areas, and support for conservation among these residents, in part

Kreg Lindberg is a Lecturer in the School of Environmental and Information Science at Charles Sturt University (Albury NSW 2640, Australia. Email klindberg@csu.edu.au). His research interests include ecotourism and tourism's economic and social impacts. **Jeremy Enriquez** is Academic Director of the School for International Training program in Belize. **Keith Sproule** was Technical Consultant to the Ministry of Tourism and the Environment, Government of Belize.

due to the economic benefits. These objectives also reflect principles of sustainable tourism development (Inskeep 1991:461). The issue is not simply semantic; significant resources have been devoted to ecotourism development on the assumption that these objectives are largely achieved.

Ecotourism has been described and evaluated in several reports and conference proceedings (Adventure Travel Society 1991; Boo 1990). In addition, ecotourism articles have begun appearing in professional journals (Eagles 1992; Lee and Snepenger 1992; Place 1991; Stewart 1993; Wight 1993), including theme issues of *Tourism Management* (Vol. 14, No. 2) and the *Annals of Tourism Research* (Vol. 21, No. 2). However, relatively little quantitative analysis of ecotourism's success in achieving conservation and development objectives has been reported. This article presents such analysis. Tourism at case study sites in Belize was evaluated to determine whether it should be considered ecotourism using the criteria of achieving the three conservation and development objectives listed above. The potential criterion that visitor motivation be nature-oriented was not evaluated in detail. However, the attractions at these sites indicate that this criterion was likely met. Methodologies that can be used to make similar evaluations at other sites also are presented. Additional information concerning background, methodology, and results can be found in Lindberg and Enriquez (1994).

Belize is a small (22,960 km²) Central American country with a low population density (eight persons per km² compared to 87 and 252 persons per km² in Guatemala and El Salvador, respectively). In part because of this low density, a significant portion of Belize's terrestrial and marine area remains in a natural state, to the benefit of both biological diversity and the tourism dependent on natural attractions. Aside from tourism, the primary economic activities include agricultural production (sugar, citrus, and banana), fishing, and forestry. According to World Bank statistics of 1993, Belize is a middle-income country with per capita gross national product estimated at US\$2,010 (The World Bank 1993).

Belize offers a wide variety of tourism attractions, particularly to visitors interested in natural or cultural history. The attractions include impressive Mayan ruins, the world's second longest barrier reef and several popular terrestrial parks and reserves. Capitalizing on this endowment, the country has focused on ecotourism rather than more traditional tourism as a preferential development strategy. The current system of immigration records precludes precise estimates of tourist numbers, but local experts estimate 110,000–130,000 annual arrivals of bona fide tourists and businesspersons during the 1990–93 period.

A significant portion of Belize is designated as national park or reserve, or is otherwise legally protected; 12.7% of the country's land area was contained in IUCN protected area categories I through V as of 1993, and this percentage continues to grow (World Resources Institute 1994). However, many of the protected areas have no on-site management presence. Under agreement with the Government of Belize, the Belize Audubon Society (BAS) manages seven

Table 1. Visitation at BAS-Managed Protected Areas (not including school groups)

Protected area ^a	1992			1993		
	Foreigners	Belizeans	Area Total	Foreigners	Belizeans	Area Total
Blue Hole NP	3,791	3,108	6,899	5,149	2,310	7,459
Guanacaste NP	3,983	1,813	5,796	3,625	1,514	5,139
Crooked Tree WS	2,192	124	2,316	2,125	249	2,374
Cockscomb Basin WS	2,968	791	3,759	3,255	783	4,038
Four-Area Totals	12,934	5,836	18,770	14,154	4,856	19,010

^aNP = National Park, WS = Wildlife Sanctuary.

protected areas. Visitation statistics for the four protected areas where BAS maintains a management presence are shown in Table 1. Although BAS manages these protected areas for the government and people of Belize, it does not receive financial support from the government and has not, as of July 1994, received government permission to charge entrance fees. The government manages some of the country's protected areas, notably the marine reserves managed by the Ministry of Agriculture and Fisheries.

Evaluations were undertaken at three case study sites (Figure 1): Hol Chan Marine Reserve and the adjacent communities of San Pedro and Caye Caulker; Cockscomb Basin Wildlife Sanctuary and the adjacent communities of Maya Center and Maya Mopan; and Manatee Special Development Area and the adjacent community of Gales Point. These sites represent a diversity of ecosystems, management regimes, tourism development characteristics, demographic composition, and level of community involvement in tourism and conservation.

The Hol Chan Marine Reserve (Hol Chan) was established in 1987 to protect the reef ecosystem, to provide recreational services (tourism), and to provide research opportunities. Hol Chan is managed by the Ministry of Agriculture and Fisheries and receives approximately 22,000 visitors per year, of which 95% are foreigners. Seventy-six percent of the visits are for snorkeling, while the remaining 24% are for diving. San Pedro and Caye Caulker are primarily mestizo communities that have historically depended on fishing but have become increasingly reliant on tourism. Seventy-seven percent of the Hol Chan visits by foreigners originate in San Pedro, which is 6 km from the reserve, while the remaining 23% originate in Caye Caulker, which is 10 km from the reserve. There is a wide variety of tourism facilities in San Pedro and, to a lesser extent, Caye Caulker. Tourism in these communities is based on Hol Chan and several other marine attractions.

The Cockscomb Basin Wildlife Sanctuary (CBWS) was initially established as a forest reserve in 1984 and has since been expanded and converted into a wildlife sanctuary. The CBWS, which is

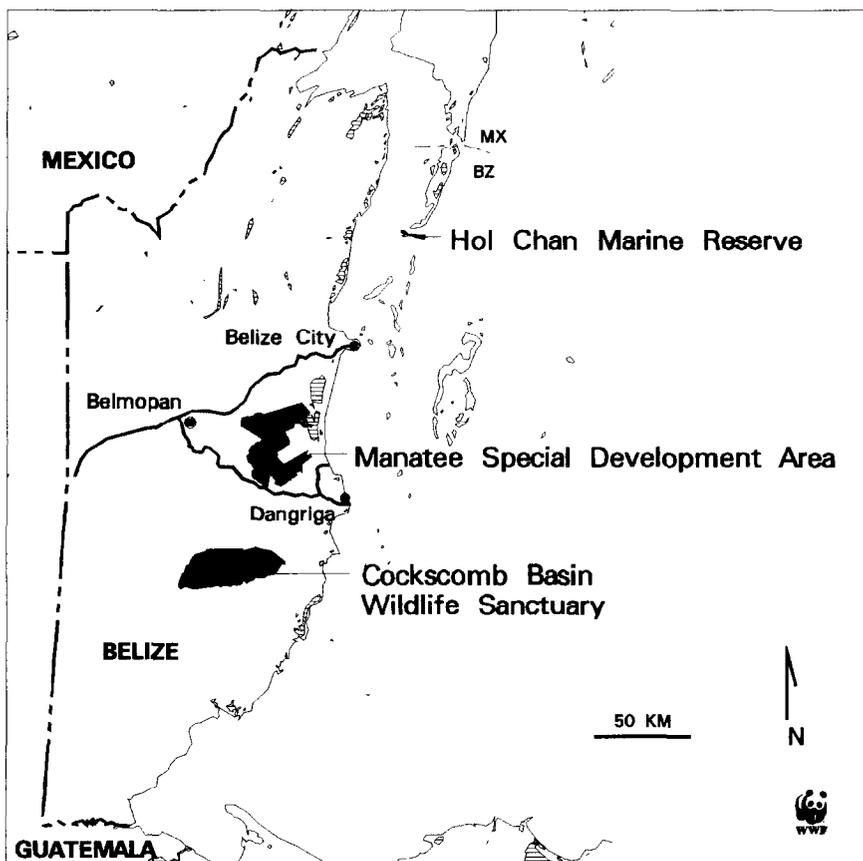


Figure 1. Map of Belize Showing Case Study Protected Areas

managed by BAS, was primarily established to protect the jaguar (*Panthera onca*), the local watershed, and the ecosystem generally, but management objectives include the promotion and facilitation of nature-based tourism in order to improve the national and local economy. In 1993, 3,255 foreigners and 783 Belizeans visited the sanctuary to take nature walks, watch birds, and attempt to view the elusive jaguar. Foreign visitors usually make day trips from the towns of Dangriga or Placencia or stay overnight at the bunk and camping facilities provided by the sanctuary. Maya Center and Maya Mopan are Mayan communities that primarily rely on agricultural production. At the time of evaluation, all CBWS visitors stopped in Maya Center to register in the sanctuary log book. Local tourism facilities are limited to a craft center and small general store. Tourism in Maya Center is focused on CBWS.

The Manatee Special Development Area (Manatee SDA) was established in 1991 as the first of several proposed SDAs for the region. The SDA designation primarily provides a process for

zoning the area for flora, fauna, and water protection; low density housing; small-scale agriculture; and commercial use. As of January 1994, there was no official management structure for the area, which, as the name suggests, is known for the manatees that inhabit local lagoons. Gales Point is a Creole village that relies on fishing, hunting, subsistence farms, and remittances from relatives working in the United States. Local facilities include homestays (bed and breakfasts), small bars and restaurants, and guides who take visitors to view manatees, sea turtle nesting sites and other natural attractions. Tourism in Gales point is focused on the Manatee SDA.

TOURISM AT THE CASE STUDY SITES

Financial Impact on Protected Areas

Tourists have long played an important role in the establishment and management of protected areas in North America and Europe (Dabrowski 1994). This role continues and has expanded to protected areas in developing countries. For example, White and Dobias note that:

Tubbataha [National Marine Park in the Philippines] is a clear case of tourism contributing to marine conservation and resource management. It is probable that if no tourism existed at the site, it would not have been declared a national park nor would a national foundation have been formed for its protection (1991:456).

How is this role manifested? Tourism-related support for protected areas can be grouped into two broad categories: financial and political. When entrance fees, donations, and other tourism-related revenues are channeled back into protected areas, tourism generates direct financial support. Examples of this are the Saba and Bonaire Marine Parks in the Netherlands Antilles. Tourism revenues from user fees, souvenir sales, and donations cover park operating costs. Moreover, the creation of these revenue sources was a condition for the Dutch government donations that were needed to establish the park (Dixon, Scura and van't Hof 1993).

Tourism can generate political support through several mechanisms. National or foreign visitors may pressure governments to initiate or increase protection of natural areas. In addition, the government may increase support in recognition of either the benefits accruing to tourism businesses using the protected area or the benefits accruing to the government from protected area tourism revenue that is channeled to the treasury rather than directly back into the area itself. In some cases, this political support can lead to financial support for the protected area. For example, it is believed that government funding of Hol Chan is a result of the reserve's contribution to the local tourism industry. Likewise, past increases in government funding for the Parc National des Volcans in Rwanda are strongly correlated with increases in treasury revenues from park entrance fees. Further,

visitors may join or otherwise support conservation organizations that in turn help fund protected area management.

Although tourism can generate financial support for protected areas, it can also generate financial costs. These costs need to be compared to tourism-related revenue to identify its net financial impact on protected areas. Unfortunately, many of the costs associated with tourism, such as negative ecological or social impacts, are difficult to assess in financial terms. Moreover, those costs, like direct costs, that can be expressed in financial terms are difficult to allocate to the various protected area functions, of which tourism is only one. This difficulty arises because protected areas are examples of what economists and accountants call "joint production". For example, one area may simultaneously provide protection of flora and fauna, protection of an important watershed, opportunities for tourism, and so on. The provision of one of these goods or services does not generally detract from the provision of others. For this reason, it is difficult to allocate to one of these goods or services the expenditures made to produce all of them. As described below, cost accounting techniques are one method for allocating such expenditures.

Tourism at protected areas generates a wide variety of impacts, including financial, economic, social, and ecological. This analysis only includes those impacts that affect the protected area financially. For example, the ecological impact of visitation is excluded except insofar as the protected area incurs financial costs to manage such impacts. In addition, the focus is on visitation by foreign tourists. Domestic visitation is an important component of resource management, but its impact is not evaluated here. This focus is consistent with other evaluations of the desirability of ecotourism in developing countries. Protected area functions, and thus revenues and expenditures, are grouped into two categories: tourism (foreign visitation) and traditional management functions (all other activities, including domestic visitation). Lastly, the focus is on natural areas that are formally protected and have a management presence. The Manatee SDA is excluded because it does not have a management presence. Similarly, natural areas without formal protection, such as many dive sites near San Pedro, are excluded.

The revenues and expenditures associated with tourism at CBWS and Hol Chan were identified through review of protected area budget records and interviews with staff. By necessity, this identification included allocations based on staff and researcher judgment, thereby introducing some arbitrariness. For this reason, three estimates were made for both revenues and expenditures. The medium scenarios reflect allocations based on those assumptions judged to be most appropriate. The low and high scenarios reflect allocations based on alternative assumptions; results from these scenarios are presented as a form of sensitivity analysis. Revenues and expenditures were then compared to assess the net financial impact of tourism at these protected areas. Results from CBWS are presented here. Results from Hol Chan are similar and are presented in Lindberg and Enriquez (1994).

The direct revenues from tourism include the tourism-related user fees, donations, and souvenir sales that are channeled into the protected area budget. Although CBWS does not charge entrance fees, it does charge bunk fees for overnight visitors. It also receives donations and profits from sales of postcards and books. These revenues are shown in Table 2. Because staff estimate that almost all of this revenue comes from foreign visitors, 100% of this revenue is allocated to tourism.

The indirect revenues from tourism include the portion of governmental and donor agency funding that results from tourism at the protected area. The CBWS does not receive funding from the Government of Belize, but does receive funding from international donors. Based on interviews with protected area and donor agency staff, 5% of donor support was allocated to tourism in the medium scenario shown in Table 2. Low and high scenarios were also calculated by allocating 0% and 10%, respectively, of donor support to tourism.

The expenditures from tourism were calculated using cost accounting principles (Hartley 1986). Expenditures were grouped into three categories: solely tourism products, rival products and nonrival products. The solely tourism category includes expenditures made for goods and services solely related to tourism. For example, purchase of equipment for rent to foreign visitors would be included in this category. The expenditures in this category are allocated in whole to tourism.

Table 2. Tourism-Related Revenues and Expenditures at Cockscomb (medium scenario, April 1991 through April 1993, BZ)

Revenue Source	Source Total	Tourism Percentage	Tourism Revenue
Bunk Fees	17,129	100%	17,129
On-site Donations	15,134	100%	15,134
Postcards/Books	751	100%	751
Other	637	100%	637
Int'l Donor Support	171,230	5%	8,562
Total Tourism Revenues			42,213
Expenditure Category	Category Total	Tourism Percentage	Tourism Expenditure
Wages	100,338	10%	10,034
Social Security	5,223	10%	522
Brochures	2,808	80%	2,246
Facilities & Maintenance	5,634	80%	4,507
Visitor Center	17,242	60%	10,345
Bridges & Road Repair	1,488	50%	744
Traditional Management	184,948	10%	18,495
Total Tourism Expenditures			46,894^a
Net Financial Impact (revenues less expenditures)			-4,681

^aGreater than the sum of individual expenditures because of rounding.

The rival product category includes expenditures for goods and services that can be used for *either* tourism *or* traditional management functions, but not both at any one time. For example, a warden who spends part of his time speaking with tourists as an informal guide cannot spend that same time performing traditional management functions. The expenditures in this category are allocated based on the respective amount used for each purpose. Interviews with CBWS staff indicate that approximately 10% of staff time is spent on tourism-related activities, so the same percentage of wages and social security is allocated to tourism (Table 2). Brochure and (visitor) facilities expenditures are allocated based on the percentage of total CBWS visitation represented by foreign tourists (Table 1).

The nonrival category includes expenditures for goods and services that can be used for *both* tourism *and* traditional management functions at the same time. Because protected area "products" are rarely sold in markets, it is not possible to allocate nonrival expenditures based on net realizable value. An alternative is to designate each product as either a main product or a byproduct, with a common allocation being 100% of the expenditure allocated to the main product and none of the expenditure allocated to the byproducts. A modified version of this technique is used here.

Some nonrival expenditures are directly associated with tourism, while others are for traditional protected area management. The latter are indirectly associated with tourism insofar as tourism is one of the many protected area goods and services. Expenditure for the visitor center, which is associated with tourism, is allocated based on the percentage of visitation comprised of foreigners, with downward modification to reflect the relative importance of education of domestic visitors as a motivation for center construction. The allocation of bridge and road repair expenditure is based on similar reasoning. A percentage of traditional management expenditures, which represents all CBWS expenditures not previously allocated to tourism, is allocated to tourism based on staff and researcher evaluation of the importance of tourism as a motivation for area establishment and maintenance.

Three expenditure scenarios were developed using different expenditure assumptions. The low scenario was based on the actual CBWS budget and did not include a percentage of traditional management expenditures. This scenario reflects an assumption that tourism is insignificant as a motivation for establishment and maintenance of the sanctuary. The medium expenditure scenario (Table 2) was based on the actual budget and includes a percentage of traditional management expenditures. The high scenario was based on the proposed budget and includes a percentage of traditional management expenditures. This scenario reflects the expenditures, tourism and otherwise, believed necessary to adequately protect the resources and provide a quality tourist experience.

The tourism-related revenues and expenditures at CBWS were BZ\$42,213 and BZ\$46,894, respectively, under the medium scenarios (BZ\$2 = US\$1). Thus, CBWS incurred a net financial loss of

Table 3. Tourism's Net Financial Impact at Cockscomb (April 1991 through April 1993, BZ)

			Revenue Scenarios		
			Low (33,561)	Medium (42,213)	High (50,775)
Expenditure Scenarios	Low	(28,399)	5,162	13,814	22,376
	Medium	(46,894)	-13,333	-4,681	3,881
	High	(119,069)	-85,508	-76,856	-68,294

BZ\$4,681 from providing tourism opportunities during the period of evaluation. Table 3, which shows the net impact under the various combinations of revenue and expenditure scenarios, illustrates that the net impact depends significantly on which assumptions are made in the allocation process. The desirability of a given level of impact must be evaluated within the context of protected area objectives. These objectives might include the recovery of tourism-related costs; the generation of surplus revenue from tourism in order to finance other activities; or the achievement of other, typically nonfinancial, objectives. For example, at CBWS tourism revenues fail to cover tourism expenditures, but this would be acceptable if CBWS were trying to maximize the number of visitors rather than to recover tourism costs.

As noted earlier, the purpose of this article is to evaluate whether tourism at CBWS should be considered ecotourism by virtue of its achieving certain conservation and development objectives. Indicators and standards have not been defined for these objectives. However, for the first objective it appears reasonable to use net financial impact as an indicator and a positive value for this indicator as a standard. By this criterion, tourism at CBWS should not be considered ecotourism because it currently generates a net loss. Nevertheless, the net loss is small, and even modest tourism fees would generate a net gain, thereby qualifying CBWS tourism as ecotourism. Using visitation rates from the period of evaluation, a modest entrance fee of BZ\$3.00 (US\$1.50) charged to foreign visitors would have generated BZ\$19,575 during this period. This revenue would more than cover the current net loss of BZ\$4,681. An alternative is to seek a reduction in expenditures. However, expenditures are currently very modest (US\$23,447 over 25 months), and reductions would adversely impact the visitor experience.

Insofar as a modest entrance fee would significantly affect tourism's contribution to protected areas at CBWS, and at other sites around the world, implementing or increasing such fees would appear to be a high priority. In fact, many sites have done so in the past few years. However, results from a recent survey (Giongo, Bosco-Nizeye and Wallace 1994) suggest that only about one-half of the world's protected areas charge entrance fees. There are various reasons more areas do not do so. In Belize, as elsewhere, one reason

is tourism industry opposition to such fees. For example, Lee and Snepenger (1992) report that tour operators at Tortuguero National Park in Costa Rica considered a boycott of the park to protest an increase in fees from US\$0.28 to US\$1.11.

Industry opposition to fees is based primarily on the concern that fees will reduce the number of visitors and thus business opportunities. Although the concept that an increase in price will lead to a decrease in quantity demanded is a basic microeconomic principle, other microeconomic principles suggest the effect on demand will be less than is commonly believed, particularly in cases like Belize where fee levels will remain low.

The argument advanced here is based on the assumption that a protected area user fee will be viewed within the context of the total tour cost rather than as an individual purchase. That is, the protected area visit is viewed as one of many inputs forming the tour product. This assumption will be met in the common case in which the visit is part of a packaged tour or when the fee is "hidden" in the price of larger purchases like airline tickets. Moreover, framing effects in consumer behavior may lead non-tour visitors to perceive the fee in this manner (Kahneman and Tversky 1982:168; Tversky and Kahneman 1986).

Once this assumption is made, the principles of derived demand show that demand for tours will be relatively unaffected by increases in user fees (Nicholson 1992:662-663). First, the smaller the share of total product cost, the less price elastic the derived demand for the input. In the case of Belize, a fee of US\$1.50 is much less than 1% of the US\$1,006 estimated average tourist expenditure per visit in Belize (Central Bank Research Department 1992). The fact that the fee represents such a small share of the total product cost means that fee increases would have little effect on the number of visitors. Second, the less price elastic the demand for the product, the less price elastic the demand for inputs. Demand for ecotourism trips, such as those to Belize, is thought to be less price elastic than for traditional tourism trips, such as to Caribbean "sun and sand" destinations. This is because there tend to be fewer substitutes for the types of attractions found in Belize than for the sun and sand sites. As a result, fee increases for inputs to the Belize tour product, such as a protected area visit, would have less effect on demand than would fee increases for inputs to a generic sun and sand tour product.

These first two principles are based on the concept that a fee increase will raise the tour price by only a small percentage, and that this raised tour price will in turn only lead to a modest reduction in quantity of tours demanded. Therefore, protected area fee increases will have little impact on the number of tourists in the region. The impact at the local level will depend on the qualities of the local protected area. The third principle is that the lower the elasticity of substitution across inputs, the lower the price elasticity of demand for particular inputs. This means that the effect of fee increases at a specific site within a tour package, such as at a particular protected area within Belize, will depend on how unique that

site is relative to other sites that serve as potential inputs to the package. Unique sites will be able to sustain higher fees with less effect on visitation than will less unusual sites.

These economic principles demonstrate one conceptual basis for assertions that most protected areas can increase fees without significantly affecting visitation, and thus business opportunities. Principles from other social science disciplines provide additional conceptual bases (McCarville, Driver and Crompton 1992). Empirical results show that fees often have less effect on visitation than is popularly believed. That is, visitation is price inelastic (Bovaird, Tricker and Stoakes 1984; Dixon, Scura and van't Hof 1993; Lindberg 1991; Walsh 1986).

Two additional issues are relevant here. First, it is equitable for the tourism industry to pay for the protected area it uses as an attraction. As a tour operator in the Bay Islands of Honduras noted, "I'm the beneficiary of the reef. The reef's beauty is what I sell, and I should be the person who pays for its upkeep" (Gordon 1993). Second, fee revenues will often lead to improvements in the tourism product, thereby potentially increasing, rather than reducing, visitation. Many tourism businesses recognize these issues and, in some cases, have taken the lead in support of user fees.

Economic Impact on Local Communities

The creation of tourism-related jobs for local residents is a commonly cited ecotourism objective. This objective stems not only from the principle of equity, but also from the principle that tourism jobs reflect a concrete benefit of conservation. This benefit is expected to increase support for conservation among local residents. However, researchers (Place 1991) note that relatively few jobs are created for local residents, in part due to lack of the capital and training necessary for entry into the tourism industry. Several surveys of businesses, residents and tourists have been conducted to identify the number of jobs and other benefits accruing to local residents from tourism to natural and cultural areas (Baez and Fernandez 1992; Dearden 1991; Groom, Podolsky and Munn 1991; Healy 1988; Wearing and Parsonson 1991).

A survey was administered in-person to residents in each of the case study communities. All households in Maya Center and Maya Mopan were surveyed. A geographically based random sample was used for the other communities. One-half of the households in Gales Point, one-third of the households in Caye Caulker, and one-sixth of the households in San Pedro were surveyed; the proportion for each community was based on desired sample size and considerations of cost and time. The total number of households surveyed in each community is shown in Table 4. Eight households were surveyed in Maya Mopan. Because there is no tourism in Maya Mopan, it is excluded from Table 4 but included in analysis of resident attitudes.

The survey included sections focused on attitudes toward tourism, attitudes toward conservation, and demographic data. The demographic section included questions identifying all household

Table 4. Tourism's Direct Local Economic Impact (percentage of households receiving each benefit, as reported by respondents)

Type of Economic Benefit from Tourism	Community			
	San Pedro (<i>n</i> = 75)	Caye Caulker (<i>n</i> = 31)	Gales Point (<i>n</i> = 34)	Maya Center (<i>n</i> = 12)
Wage-Paying Job	41%	19%	21%	8%
Other Job	5%	10%	0%	50%
Other Income-Generating Activity	0%	0%	3%	25%
One or More of These Benefits ^a	44%	26%	24%	67%

n = number of households surveyed in each community.

^aMay be less than sum of individual benefits because some households receive multiple benefits.

members working in either wage or non-wage jobs. For each job, the respondent was asked to identify the type of business, whether the job was full- or part-time, and the extent to which the job was dependent on tourism. In addition, respondents were asked to identify other tourism-related income-generating activities in which household members engaged, including, for example, handicraft production to the extent it was not viewed by respondents as fitting into the wage or non-wage job categories.

As shown in Table 4, tourism has generated significant direct economic benefits for local residents in the case study communities. San Pedro has the highest percentage of wage-paying jobs, while Caye Caulker has fewer wage-paying jobs but more non-wage jobs. These figures reflect the relatively well-developed industry in San Pedro and the relatively high level of self-employed entrepreneurs in Caye Caulker. Gales Point has a significant number of wage-paying jobs, but these tend to be more seasonal and sporadic than is the case in San Pedro and Caye Caulker. Maya Center benefits from non-wage jobs and other income-generating activity, reflecting the fact that most tourism benefits in that community stem from handicraft sales (residents also benefit from employment at the sanctuary).

Tourism also has generated additional economic and non-economic benefits for residents in the case study communities. Of the 103 households that did not receive direct economic benefits, almost one-half (50) agreed or strongly agreed with the statement that "I have personally benefitted from tourism development in [community name]." Table 5 illustrates one source of additional economic benefits: jobs resulting from tourism's "multiplier" effect. Many of the jobs outside the industry were perceived as dependent on tourism in these communities. In San Pedro 70% of the non-tourism jobs are perceived to be dependent on tourism. This figure, together with the figures in Table 4, shows the extent to which San Pedro has moved from dependence on fishing to dependence on tourism. This transition has also

Table 5. Tourism's Additional Local Economic Impact (percentage of non-tourism jobs that depend on tourism, as reported by respondents)

Level of Dependence	Community			
	San Pedro (<i>n</i> = 75)	Caye Caulker (<i>n</i> = 31)	Gales Point (<i>n</i> = 34)	Maya Center (<i>n</i> = 12)
Totally-Dependent	22%	28%	22%	20%
Partially-Dependent	48%	30%	12%	30%
Total	70%	58%	34%	50%

n = number of households surveyed in each community.

occurred in Caye Caulker but to a lesser degree. The perceived dependence in Gales Point and Maya Center reflects the relative importance of tourism in these communities.

Is the second ecotourism objective, the generation of local economic benefits, achieved? Two potential indicators are the percentage of households receiving direct economic benefits from tourism and the percentage of employees of tourism businesses active in the area that are local residents. Relative to other ecotourism sites, tourism in the case study communities generally rates well on these indicators. Although there are no tourism benefits in Maya Mopan, significant percentages of households in the other communities receive direct economic benefits from tourism (Table 4). Many of the high-level management jobs and low-level menial jobs in Belize's tourism industry are held by foreigners from, respectively, OECD and Central American countries. This is particularly true in San Pedro among the case study communities. Nonetheless, personal observation and results from surveys of tourism businesses suggest that Belizean tourism businesses make significant efforts to hire local residents. No specific standards for these two indicators are defined here. Nonetheless, it appears from evaluation using these indicators that tourism in the case study communities qualifies as ecotourism.

Effect on Local Resident Conservation Attitudes

The final objective is that ecotourism increase support for conservation among residents living near protected areas. This support is expected to increase, in part, because of the local economic benefits generated by tourism associated with the adjacent protected area.

In many parts of the world local residents have borne heavy costs when natural areas have been protected. The establishment of protected areas has often led to reduced access to resources that have historically been used by these residents. In some cases, residents have been moved from their homes within what has become the protected area. Resettlement occurred during the establishment of CBWS; other examples include resettlement during the

establishment of Korup National Park in Cameroon and Dumoga-Bone National Park in Indonesia (Dixon and Sherman 1990:172,189). Local residents may not support the adjacent protected area if they have to bear these types of costs. Illegal resource use continues in many protected areas because few alternatives exist or because of negative attitudes toward the protected area.

Protected areas have been established because they generate benefits. However, many of these benefits accrue at the national or global level, while relatively few benefits accrue, or are perceived to accrue, at the local level. Support for tourism among conservationists is often based on the belief that it will provide local benefits that counterbalance the local costs of protected area establishment. The reasoning is that attitudes towards conservation are based at least in part on the relative costs and benefits provided by the protected area, such that increasing benefits will increase support. Attitudes, when combined with additional factors, would then affect whether residents illegally use protected area resources. Such a model, using CBWS and Maya Center as an example, is consistent with the principles of social exchange theory (Ap 1992) and the theory of reasoned action (Ajzen and Fishbein 1980; Manfredo 1992).

The costs to local residents include: (a) *Reduced access to resources located within the protected area*. At CBWS, agriculture and hunting became illegal within the sanctuary when it was established. As a result, there was a significant reduction in access to resources. These resources may also be non-economic. For example, in some cases the site has spiritual or religious significance to local residents. Establishment of a protected area may negatively affect religious practices. (b) *Injury to residents, livestock, or crops by animals living within the protected area*. This is only a minor issue at CBWS, where jaguars and birds cause a small amount of livestock and crop damage. However, this is a major issue in parts of Africa and elsewhere. For example, 86% of surveyed residents living near protected areas in Tanzania reported crop damage from wildlife, while 10% reported that wildlife killed livestock or poultry (Newmark, Manyanza, Gamassa and Sariko 1994). (c) *Economic or social costs related to tourism development at the protected area*. This is not a significant issue at CBWS, in part because of the low number of tourists. This issue is more important at heavily visited protected areas such as the Galápagos National Park in Ecuador or the Everest region of Nepal (Emory 1989; Johnston and Edwards 1994).

Conversely, the benefits to local residents include: (a) *Employment opportunities as protected area staff*. This is an important benefit in small villages like Maya Center where even a few staff jobs generate a significant impact. (b) *Employment and other benefits related to tourism development*. Wage-paying employment in the tourism sector, such as at a hotel, is more prevalent at larger destinations like San Pedro than at the small community of Maya Center. However, even a modest handicraft operation, like that found in Maya Center, can generate a significant economic impact at the local level (Tables 4

and 5). (c) *Productive benefits, such as protection of water supplies, generated by the protected area.* The CBWS protects the local watershed, thereby benefitting farmers in Maya Center and surrounding regions. Watershed protection has been a major reason for establishing many protected areas, such as the Dumoga-Bone National Park in Indonesia (Dixon and Sherman 1990). (d) *Aesthetic and educational benefits generated by conserving flora, fauna, and ecosystems.* This category is an example of benefits that often accrue to persons outside the local area to a greater extent than to local residents. However, Maya Center residents do recognize the role of CBWS in protecting the jaguar and the ecosystem. To the extent this function is valued by residents, it is a protected area benefit that accrues to them.

These examples illustrate that CBWS has generated both costs and benefits for residents of Maya Center. Tourism at CBWS plays a direct role in this equation. When the local benefits of tourism outweigh the local costs of tourism, support for conservation of the protected area with which it is associated will tend to increase. Tourism also plays an indirect role insofar as it generates revenues for protected areas, thereby potentially increasing staff employment opportunities for local residents.

The extent to which these costs and benefits will affect attitudes depends on additional factors. First, attitudes are based on perceived, rather than actual, costs and benefits. Tourism benefits, such as jobs, can have a greater effect than productive or aesthetic ones because the former tend to be more apparent than the latter. Second, many individuals are concerned with the welfare of others within their community. As a result, impacts on others, and not just on the individual and his or her household, may be important factors contributing to attitudes. Third, attitudes may depend on the willingness of residents to accept governmental policy, including priorities relating to the establishment of protected areas. Fourth, attitudes may depend on the relative distribution of costs and benefits. Residents may feel that they have borne an unequally high share of the costs or received an unequally low share of the benefits from protected area establishment or tourism development. In such cases, attitudes may differ from that which would be predicted by examining only absolute costs and benefits. Fifth, attitudes may also depend on the level of resident participation in protected area decision-making.

Whether residents use resources from within the protected area will depend on attitudes toward conservation combined with several additional factors. The first factor is the attractiveness of resources within the protected area as sources of food, fiber, and income relative to alternative sources. The second is the perceived likelihood that resource use would reduce other benefits, such as tourism jobs, derived from the protected area. The third is the knowledge of and respect for use regulations, the likelihood of being caught, and the magnitude of punishment for breaking regulations. Tourism can affect these factors, for example, by providing alternative income sources and generating funding for increased patrols within the protected area.

Several studies have tested, and supported, various components of this model (Bruner 1993; Infield 1988; Jacobson 1991; Newmark, Leonard, Sariko and Gamassa 1993; Weber 1989). The research presented here focused specifically on how tourism has affected conservation attitudes in the Belize case study communities.

A resident survey was administered as previously described. Residents were asked "When the [name of adjacent protected area] was being established were you in favor or not in favor of having it?" They were then asked, in an open-ended format, to explain the reason for this attitude. This set of questions was followed by a similar set asking whether the respondents were *currently* in favor or not in favor of the protected area. Table 6 shows the high level of support among residents for adjacent protected areas. The relatively low level of support in Gales Point results in part from the low level of awareness that the Special Development Area (SDA) exists, rather than from lack of support for conservation.

Reasons for favorable attitudes were grouped into three categories: tourism, conservation, and other benefits. Conservation benefits included protection of watersheds, protection of species, and so on. Responses indicate that tourism is the primary reason for favorable attitudes, as well as for the increase in favorable attitudes (Table 6). Differences across communities reflect differences in the level of tourism development. Residents of San Pedro, Caye Caulker, and Maya Center have received more tourism benefits than residents of Gales Point and Maya Mopan (as there is currently no tourism in Maya Mopan, the respondent noting tourism benefits may have been expressing desire for future tourism development in that community). Results from this direct questioning are corroborated by results from cross-sectional analysis using regression and χ^2 tests. The level of perceived tourism-related benefits, particularly those accruing to the community, is a significant predictor of conservation attitudes (Lindberg and Enriquez 1994).

Residents were also asked whether the establishment of the adjacent protected area reduced their access to resources from the area. Responses were cross-tabulated with the distribution of direct

Table 6. Resident Support for Adjacent Protected Areas

Community	Percent in Favor of Area		Reason for Favorable Attitude			
			Tourism Benefits		Conservation Benefits	
	When Established	Currently	When Established	Currently	When Established	Currently
San Pedro	63%	100%	45%	73%	19%	25%
Caye Caulker	71%	94%	42%	71%	23%	23%
Gales Point	50%	56%	15%	12%	29%	35%
Maya Center	58%	92%	42%	75%	17%	17%
Maya Mopan	63%	100%	0%	13%	50%	88%

economic benefits from tourism. Of the 26 households reporting reduced access to resources, 11 (42%) receive direct economic benefits from tourism. Thus, in many but not all cases, tourism has provided alternative income to these households. Of the 21 households reporting damage to crops, livestock, or fish by protected area wildlife, six (29%) receive direct economic benefits from tourism.

The responses from resident surveys demonstrate that tourism-related benefits have been an important factor in increasing support for conservation. Although it is not clear whether the development of tourism has caused a reduction in illegal resource use, results do show that tourism has provided an economic alternative to many households bearing the costs, including reduced resource use, of protected area establishment. No specific standards for the final objective are defined here. However, the results from these indicators, increase in support for conservation and provision of economic alternatives, lead one to conclude that tourism at these sites qualifies as ecotourism.

CONCLUSIONS

Ecotourism has received much attention and support from conservation and development professionals in the past several years. Nonetheless, a definitive standard for the concept has remained elusive. In addition, quantitative analysis of the extent to which ecotourism has achieved the objectives ascribed to it has been relatively rare. This article presents such an analysis and, in so doing, serves to evaluate the extent to which specific case study tourism activity that is often described as ecotourism truly achieves the implied objectives of that description.

The results show that, when using positive net financial impact as a standard, tourism at these sites does not currently achieve the objective of generating financial support for protected area management. However, the implementation of even modest fees would result in tourism achieving this objective. The results also indicate that tourism at these sites does achieve the objectives of generating local economic benefits and local support for conservation. Thus, on balance, tourism at the case study sites can be viewed as ecotourism when using these objectives as criteria.

This evaluation has focused on a specific set of dimensions. Other dimensions can be used to evaluate whether specific tourism activity is ecotourism. The criterion that tourist motivation be nature-oriented is perhaps the most common and least restrictive definition of ecotourism. It is probably also the easiest to operationalize. Conversely, more restrictive criteria can be used. For example, Cater (1992) and Wheat (1994) question whether tourism in Belize meets the standards of either ecotourism or sustainable tourism.

The criteria used in this article were selected because they were relatively easy to operationalize and because they are often implicitly or explicitly used by conservation and development professionals when evaluating the desirability of ecotourism. Refinement and wider application of the techniques presented here is merited to help

inform these professionals regarding the extent to which ecotourism meets formally stated assumptions.

Finally, this article focuses on specific sites in Belize. The results clearly are dependent on the situation at these sites and should not be used to infer that tourism elsewhere does or does not achieve ecotourism objectives. However, in the experience of the authors, there are similarities between these sites and ecotourism-type developments elsewhere. One of these similarities is that tourism often achieves some, but not all, ecotourism objectives. □ □

Acknowledgments — The authors gratefully acknowledge the support of World Wildlife Fund (US) and the Ministry of Tourism and the Environment (Belize). The authors also thank Rebecca Johnson for her comments and suggestions.

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Submitted 7 September 1994
Resubmitted 25 February 1995
Accepted 23 March 1995
Refereed anonymously
Coordinating Editor: Lisle S. Mitchell