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**ECOTOURISM AS A CONSERVATION STRATEGY IN BLACK RIVER,
JAMAICA**

by

Dominique Ariane Brief

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfilment
of the requirements of the degree of Master of Science

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ABSTRACT

M.Sc.

Natural Resource Sciences

Nature-based tourism is proposed as a conservation strategy in both the developed and developing world, yet few empirical studies exist examining how the conservation process is achieved. An emerging nature-based tourism industry in Black River, Jamaica was studied to determine the factors involved in creating a symbiotic tourism-environment relationship. The tourism-environment relationship brings into play many stakeholders and at the local level these include the tour developers, conservation authorities, the natural environment, the host population and the visiting public. In this study, surveys of tour developers, conservation authorities and the host population indicate that Black River nature-based tourism is degrading the natural and host environment. To modify this outcome of resource degradation adequate administrative arrangements must be established to disengage the elite growth process in favor of a more equitable distribution among a majority of stakeholders. Surveys of the visiting public indicate satisfaction of this consumer group and provide detailed information to guide marketing and management strategies for further improvement of the tour product. Recommendations are presented to strengthen the link between nature-based tourism and conservation of the environment.

RESUME

M.Sc.

Sciences de Ressources Naturelles

Le tourisme écologique est proposé comme une stratégie de conservation dans les pays développés et ceux en voix de développement, mais peu d'études pratiques examinent les résultats obtenus par cette stratégie. Une industrie du tourisme écologique située à Black River en Jamaïque, est étudiée pour déterminer les éléments nécessaires à la création d'une relation où le tourisme et l'environnement sont en symbiose. Cette relation introduit plusieurs partenaires. Au niveau local les partenaires sont les promoteurs touristiques, les autorités de conservation, l'environnement naturel, la population locale et les touristes. Dans cette étude, les sondages qui portaient sur ces partenaires locaux indiquent que le tourisme écologique à Black River a un impact négatif sur l'environnement naturel et celui de la population locale. Des recommandations sont offertes pour réduire le niveau de dégradation de l'environnement par l'amélioration des aspects administratifs et politiques qui s'éloignent du système servant l'élite, en faveur des méthodes qui accordent les bénéfices à la majorité des partenaires. Les sondages portant sur les touristes indiquent, par ailleurs, leur satisfaction et offrent des informations détaillées pour guider les stratégies de marketing et de gestion pour l'obtention d'un meilleur produit touristique. Des recommandations sont présentées pour renforcer la relation entre le tourisme écologique et la conservation de l'environnement.

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PREFACE

The purpose of this study was to investigate nature-based tourism as a conservation strategy through an examination of the ecological and human dimensions of tourism development. Surveys of tour operators, conservation authorities, the host community and visiting public identify issues relevant to promoting the conservation process.

This thesis is composed of four chapters preceded by an introduction presenting the background and objectives of the study. Chapter 1, the Literature Review, establishes the context of the research topic. Chapter 2 and 3 are the body of the thesis. Chapter 2 investigates tour operator, conservation authorities and host community perceptions of the costs and benefits of tourism development to the natural and host environment. Management prescriptives that will enhance conservation of the natural and host environment are identified. Chapter 3 presents the data of 170 tourist surveys indicating the profile, demand trends, satisfaction issues, financial resource potential, and demographic travel pattern of this consumer group. Suggestions to improve the tourism product toward visitor satisfaction are revealed. The last chapter, chapter 4, presents the overall conclusions and suggestions for future work.

Direction for this research was received from Dr. J.R. Bider and Dr. D. Bird, Department of Natural Resource Science as well as from Dr. S. Milne, Department of Geography, McGill University. Dr. J.R. Bider, S. Milne and the graduate student, D. Brief, co-developed the framework of investigation and Dr. D. Bird contributed editorial assistance. The graduate student is solely responsible for the data collection and analysis.

Chapter 2 will be submitted to the journal *Biological Conservation* and chapter 3 to *Annals of Tourism Research* (as a Research note) for publication. Both papers will be submitted as co-authored with Dr. S. Milne, Dr. D. Bird and Dr. J.R. Bider.

The thesis format follows the conditions outlined in the "Guidelines concerning Thesis Preparation," which are:

Candidates have the option of including, as part of the thesis, the text of one or more papers submitted or to be submitted for publication, or the clearly-duplicated text of one or more published papers. These texts must be bound as an integral part of the thesis.

If this option is chosen, connecting texts that provide logical bridges between the different papers are mandatory. The thesis must be written in such a way that it is more than a mere collection of manuscripts; in other words, results of a series of papers must be integrated.

The thesis must still conform to all other requirements of the "Guidelines for Thesis Preparation". The thesis must include: A Table of Contents, an abstract in English and French, an introduction which clearly states the rationale and objectives of the study, a review of the literature, a final conclusion and summary, and a thorough bibliography or reference list.

Additional material must be provided where appropriate (e.g. in appendices) and in sufficient detail to allow a clear and precise judgement to be made of the importance and originality of the research reported in the thesis.

In the case of manuscripts co-authored by the candidate and others, the candidate is required to make an explicit statement in the thesis as to who contributed to such work and to what extent. Supervisors must attest to the accuracy of such statements at the doctoral oral defense. Since the task of the examiners is made more difficult in these cases, it is in the candidate's interest to make perfectly clear the responsibilities of all the authors of the co-authored papers.

INTRODUCTION

INTRODUCTION

Ecotourism is increasingly promoted by environmental groups as a strategy for natural resource conservation. The International Union for Conservation of Nature and Natural Resources (IUCN), a global collaboration to express views on the preservation, management and use of the world's biological diversity, promotes ecotourism as an "effective tool for conservation and an instrument for regional socioeconomic development" (IUCN 1993). Similarly, Conservation International (CI), conservationists and wildlife managers have embraced ecotourism as an economic incentive for reducing the illegal use of natural resources and for protecting ecosystems (Wells and Brandon 1992; Lindberg and Enriquez 1993).

While ecotourism has been widely advocated by many, others have questioned its true conservation value. Ehrenfield (1992) describes how efforts to commercialize conservation, including ecotourism, are very problematic due to their inherent biological and economic complexity and often cannot fulfill their purported purpose. Berle (1990) points out that while tourism can provide economic incentives for the preservation of species and natural systems, it can also destroy the resources on which it depends.

This lack of consensus is in part attributable to a paucity of information. Ecotourism has been promoted in a vacuum of working models, and the ecological and social dimensions of tourism that promote, or do not promote a symbiotic tourism-environment relationship are largely unknown (Boo 1992; Valentine 1992). It is clear that the natural resources must be protected (Boo 1992), if not enhanced (Brandon 1996) and that host, tour developer and tourist desires for tourism must be understood to yield a

mutually satisfactory outcome (Farrell 1992; Butler 1992; Cater 1993). It is unclear, however what site-specific conditions lead to such an equitable outcome (Wall 1992).

An emerging nature-based tourism business in Black River, Jamaica provides an opportunity to contribute toward a better understanding of the tourism-environment relationship. These tours have been identified in international publications as not only an example of ecotourism (Gauthier 1993), but as Farrell and Runyan (1991) describe, “where diverse organizations join to decide for wetlands, wildlife, and tourism, rather than rice projects and peat mining ... such strategies signal ecotourism in action”. Despite these praises, there are no previous studies of nature-based tourism in Black River.

Aim and Objectives

The aim of this thesis is to gain a better understanding of the tourism-environment relationship in Black River, Jamaica. The objectives of chapter 3 are: 1) to describe the possible costs and benefits of tourism to the natural and host environment in a Caribbean region and 2) shed light on the factors that underlie current ecological and community concerns. The objectives of chapter 4 are: 1) to present the profile, demand trends, satisfaction issues and financial resource potential of the visiting public in a Caribbean region and 2) to suggest marketing and management opportunities promoting the tour product toward customer satisfaction.

CHAPTER 1
LITERATURE REVIEW

LITERATURE REVIEW

1.1 Ecotourism

1.1.1 What is Ecotourism ?

In recent years, ecotourism and its potential as a tool for resource conservation has been the subject of international discourse (Lindberg and Hawkins 1993; UNEP 1995; Brandon 1996). Much of this discourse has focused on defining the term and although a plethora of suggestions exist, there is no universally accepted definition (Brandon 1996; Ceballos-Lascurain 1996). This lack of consensus persists, suggests Ziffer (1989) because ecotourism is a developing concept that simultaneously “attempts to describe an activity, set forth a philosophy and espouse a model of development” and is too complex to succinctly paraphrase. A central theme of ecotourism, however is the impact on the natural and host environment, as illustrated by the following definitions:

“A nature travel experience that contributes to conservation of the environment while maintaining and enhancing the integrity of the natural and socio-cultural elements”
(Scace 1992:14)

“A form of tourism inspired primarily by the natural history of an area, including its indigenous cultures. ... Ecotourism also implies a managed approach by the host country or region which commits itself to establishing and maintaining the sites with the participation of local residents, marketing them appropriately, enforcing regulations, and using the proceeds of the enterprise to fund the area’s land management as well as community development” (Ziffer 1989: 6)

Other attempts to define the term have resulted in sets of fundamental key principles denoting descriptive characteristics. P. Wight (1993) of the Land Resources Development Branch of Alberta Tourism, Parks and Recreation provides eight descriptive characteristics:

- It should not degrade the resource and should be developed in an environmentally sound manner;
- It should provide first-hand, participatory, and enlightening experiences;
- It should involve education among all parties – local communities, government, nongovernmental organizations, industry, and tourists (before, during, and after the trip);
- It should encourage all-party recognition of the intrinsic values of the resource;
- It should involve acceptance of the resource on its own terms, and in recognition of its limits, which involves supply-oriented management;
- It should promote understanding and involve partnerships between many players, which could include government, nongovernment organizations, industry, scientists, and locals (both before and during operations);
- It should promote moral and ethical responsibilities and behaviors towards the natural and cultural environment, by all players;
- It should provide long-term benefits – to the resource, to the local community, and to industry (benefits may be conservation, scientific, social, cultural, or economic).

These definitions and fundamental key principles highlight the relevance of this concept with current world development policy. In particular, the World Commission on

Environment and Development Report (WCED 1987) that emphasized intergenerational equity by stating that future generations should have comparable access to environmental and socioeconomic opportunities. Seminal publications reflecting this concept include *The World Conservation Strategy* (IUCN, UNEP, WWF 1980), *Our Common Future* (WCED 1987), and *Caring for the Earth: A Strategy for Sustainable Living* (IUCN, UNEP, WWF 1991). These publications point out that the continued biotic impoverishment of the planet threatens the future security of human beings, suggest that economic growth can no longer come at the expense of the environment and urge for a balance of business and environmental objectives. This world zeitgeist is also embraced in international tourism policy. The *Manila Declaration of the World Tourism Organization*, an international statement on the goals of modern tourism, and the *Joint Declaration of the WTO and United Nations Environment Program* recognize the fundamental role of the environment for tourism development and state that a rational modern tourism plan will protect, enhance and improve the natural and cultural resources.

In short, while the concept of ecotourism is highly relevant to global development philosophy, the many definitions and sets of fundamental key principles that exist for the concept mean there is no basic blueprint for its successful development. There is a general consensus, however that it is a form of tourism that reconciles environmental, social and economic concerns (Boo 1993; Western 1993; Cater 1994). And many (Inskeep 1991; Boo 1992; Brandon 1996) believe that with the appropriate management of its benefits and costs, it is a potential strategy for natural resource conservation.

1.1.2 Potential Benefits and Costs of Ecotourism

Considerable knowledge has been acquired about the economic, environmental and sociocultural implications of tourism development (de Kadt 1976; McNeely *et al* 1992; Ceballos-Lascurain 1996; Miller and Malek-Zadeh 1996) and past mistakes have been analyzed (Mathieson and Wall 1982; Pearce 1989; Dearden and Rollins 1993; Patullo 1996). For instance, up until the 1960's tourism was believed to be a panacea for economic growth, but its rapid development throughout the 1970's and 1980's gave rise to increasingly pronounced economic, environmental and social consequences (Mathieson and Wall 1982; Eadington and Smith 1992; Butler 1995). This recognition changed tourism planners' narrow focus on business economics, to a more comprehensive framework (Budowski 1976; Mathieson and Wall 1982; Blanchard 1994) and tourism development is now understood as a process that consists of a system of linkages derived from the economy, environment and society (Berkes 1989; Farrell 1992; Milne 1998) - a process that also involves management of common pool resources (Berkes 1989; Ostrom 1991; Healy 1994). An additional dimension of tourism development that is currently recognized is its' double-edged sword impact: while tourism can bring benefits, it also brings costs (Wilson 1976; Mathieson and Wall 1982; Berle 1990; Milne 1990). Figuring prominently among the efforts to account for these implications are R.W. Butler's tourist area cycle of evolution (Butler 1980) and the challenge of minimal environmental or sociocultural disturbance known as 'carrying capacity' (Decker and Purdy 1988; Thomson 1992; Ceballos-Lascurain 1996).

As with any tourism development, ecotourism brings both benefits and costs to a region (Boo 1992; Brandon 1996; Ceballos-Lascurain 1996). The following discussion

presents some of the potential economic, environmental and sociocultural benefits and costs that can result from ecotourism development.

The potential benefits of ecotourism for conservation are:

- Funding source to maintain or enhance environmental integrity and attractiveness of natural systems
- Employment opportunities that help reduce local activity that degrades environment.
- Creates environmental stewards

Tourism can be a source of funding to maintain or enhance environmental integrity and attractiveness of natural systems. Tourism can supplement government conservation budgets and provide incentive for private sector conservation (Whelan 1991; Boo 1992; Lindberg and Huber 1993). In private sector conservation efforts, successful strategies to generate capital and defray ecologically sound management costs include establishing entrance fees and donation opportunities (Sherman and Dixon 1991; Boo 1992; Lindberg and Huber 1993). In Rwanda and the Galapagos islands, entrance fees have produced significant revenues, however in other areas fees are only nominal (Ziffer 1989). The challenge of these revenue-generating strategies is to maximize visitor contributions. This requires correctly reflecting market demand and since tour developers and tourists sometimes have different perceptions of the financial value of a given resource (Boo 1990; Laarman and Gregersen 1996) the tourist is a key resource for accurate information.

Another benefit of ecotourism for conservation purposes is its' potential to create a variety of employment opportunities and reduce local activity that degrades the

environment (Boo 1992; Lindberg and Enriquez 1993). In many natural areas, the illegal use of resources such as poaching or land encroachment continue because this is the only way local residents can survive (Lindberg and Enriquez 1993). Employment opportunities as tour guides, wildlife officers, handicraft and concession vendors can provide alternatives in such situations (Boo 1992; Lindberg and Enriquez 1993).

An increase in the public's awareness of environmental protection is an indirect benefit created by ecotourism (Boo 1992; Blangy and Wood 1993). Boo (1992) suggests that an increased awareness of environmental issues can influence visitors to become advocates for environmental protection and change their resource-consumption patterns towards the benefit of the natural resources. An increase in the visiting public's environmental education is thus a benefit for conservation.

The potential costs of ecotourism for conservation are:

- Environmental degradation
- Economic instability and inequity
- Negative sociocultural changes

The environmental costs of ecotourism are widely recognized (Boo 1990; Dearden and Rollins 1993; Brandon 1996). Tourism can create litter, trail erosion, water pollution, alterations in animal behavior or reproduction rates and depletion of natural resources from hunting and plant collection. In a review of 166 studies on the effects of nonconsumptive recreation on wildlife, Boyle and Samson (1985) found that recreationists affect wildlife by altering habitat, causing disturbance and direct mortality. They also found that while mechanized forms of recreation create the most serious

impacts, casual intrusion by foot could also significantly affect vulnerable species. Other research identified the harassment of wildlife as a major issue in nonconsumptive tourism (Gauthier 1993). In Antarctica for instance, ecotourism infrastructure has created a number of negative impacts. Planes introduce fallout from engine, create noise that disturbs wildlife; ships spill oil, introduce exotic species, bird and plant diseases; onshore facilities overburden sewage and rubbish disposal; and high visitation levels degrade specific sites (Hall 1993). The problems ecotourism has created for the Galapagos National Park are also well documented and include the introduction of exotic species and the depletion of fishery, lumber and water resources (Wallace 1993).

Another cost of ecotourism is its unreliability as a source of income (Boo 1992). There are a number of external factors such as natural disasters, fluctuations in international currency exchange or political strife that can severely disrupt tourist arrivals and handicap the local economy (Boo 1992). Under these conditions, ecotourism should be an integral part of a diversified economy.

Ecotourism can also bring a multitude of costs to the host community. Community costs from tourism run along a spectrum of disturbances. These disturbances can be fairly mild such as feelings of irritation, but can escalate to feelings of deprivation and the corrosion of the values and culture of the host society (Mathieson and Wall 1982; Marsh 1986). In extreme cases entire villages have moved to escape the growth of tourism (Ziffer 1989).

As the above discussion illustrates, ecotourism brings a variety of economic, environmental and sociocultural benefits and costs and involves several concerned parties (Scace 1993; Nelson 1994). These concerned parties can include government

representatives, non-government organizations, tour developers, tourists, local communities, protected area personnel and financial institutions (Ziffer 1989; Boo 1992) and each plays a contributing role in tourism's development. All of these concerned parties has their perception of ecotourism development (Ziffer 1989; Butler 1992) and can propose a course of action, but it is the weight of influence that the proposal carries with the other parties that ultimately determines the outcome of tourism development (Nash 1992).

1.1.3 Management of Ecotourism

It is increasingly realized that tourism must be managed to prevent the degradation of the natural environment (WTO and UNEP 1982; Ziffer 1989; Inskeep 1991). In most situations, tourism creates ecosystem impacts and must be regulated for maintenance of the ecosystem (Woodley 1993). Use will cause changes, and while negative change can be critically damaging, positive change should be the goal, and good management intervenes between use and its effects (Farrell and Runyan 1991). The management between use and its effects is characterized by three dimensions: the physical environment, the host community and the visiting public (Mathieson and Wall 1982; Butler 1992; Wall 1993).

The first dimension, the physical environment is an essential backdrop to any tourism development and its maintenance. Preservation or enhancement is a fundamental component of any rational tourism plan (Inskeep 1991). As outlined above, tourism will create natural resource changes and the goal of management is to manage tourism development so that its negative impacts are minimized and its positive impacts are maximized. However, ecotourism takes this management issue one step further.

Appropriate ecotourism management recognizes that the causes of resource degradation must be taken into account. In a majority of situations, national and international environmental pressures are often more harmful than either tourist activity or the local use of resources (Whelan 1991; Woodley 1993; Brandon 1996). Ultimately, the significance of ecotourism as a conservation strategy depends largely on it addressing the causes of local resource degradation external to tourism activity (Brandon 1996: Brandon and Margoulis 1996). It is only with information on the causes of resource degradation that all the issues can be evaluated and addressed on a priority basis.

The host community, as the second dimension of ecotourism development, can greatly influence the success or failure of the local tourism (Ap 1992; Pigram 1992). Ecotourism destinations are often communities and involve a cultural component that is not present in other forms of tourism (Brohman 1996). In these situations, local populations are often dependent on the same resources as the tourism industry and tourism development can adversely affect residents' quality of life and cost them money (Canaan and Hennessy 1989; Boo 1992). Previous experience with displaced populations, their lack of economic benefits or direct costs from tourism have lead not only to hostile reactions to the visiting public (Marsh 1986; Patullo 1996), but also destruction of the natural resources (Brandon 1993). While local populations can help protect the natural resources, they must see a benefit in it for themselves (Whelan 1991). The specific requirements of the host community must be taken into account to promote the stability and long-term success of tourism development (Manning 1994) and tourism should be integrated into the broader development goals of the local community (Brandon 1993). Host participation including their involvement in problem identification and project

design gives valuable insight into the relevant issues and provides indispensable information for current problems as well as for future planning (Inskeep 1991; Ap 1992; Wells and Brandon 1992; Brohman 1996). It is in the best interest of the tourism industry to have a clear understanding of its local image and its impact on the host community (Murphy 1985; Cater 1993)

The last dimension of ecotourism is the visiting public. Ultimately, it is the visitor dollar that makes or breaks a tourist enterprise (Ziffer 1989). It is, however increasingly recognized that maximizing the number of tourists does not bring greater economic benefits to a host destination, nor does it achieve an appropriate balance among economic, environmental and social benefits and costs (Inskeep 1991). It is now believed maximizing tourist contributions to ecotourism demands the provision of high quality service (Frechtling 1987; Krippendorf 1987; Ryan 1991). High quality service entails understanding and satisfying customer demand (Frechtling 1987; Krippendorf 1987) and key factors include knowing who the customers are, what attracted them and how they could be better satisfied (Goodall and Ashworth 1988; Ziffer 1989; Giannechinni 1993; Ceballos-Lascurain 1996). In addition to information on this consumer group and their financial potential, demographic relationships have proven fruitful for management and marketing direction. Both tourist demand trends (Ross 1993) and tourist financial attributes (Ryel and Grasse 1991; Lindberg and Huber 1993) have been shown to reflect demographic profiles. A survey in Costa Rica, for example, found that tourist income, age, years of education and the quality of the experience affected the entrance fee a tourist was willing to pay (Lindberg and Huber 1993).

Details of consumer demand and financial attributes vary according to a number of international and national factors making this information site-specific (Lindberg and Huber 1993; Laarman and Gregersen 1996). Furthermore, recreational areas such as ecotourism businesses do not typically share this information and there is currently a paucity of information on the social and economic market value of natural areas (Valentine 1993; Lindberg and Huber 1993).

In summation, the issues and characteristics of ecotourism development will differ from place to place and effective and appropriate management requires on-site evaluation to detail the relevant issues (Nelson *et al.* 1993; Brandon 1993). As the demand for tourism to natural areas increases into the new millenium (Ingram and Durst 1989; Cory 1994), empirical research that details on-site conditions that promote, or do not promote harmony to an area's ecological and sociocultural systems has become indispensable (Boo 1992; Valentine 1992; Lindberg and McKercher 1996).

1.2 Tourism and the Caribbean

1.2.1 Why tourism development?

Over the last fifty years, thirty-one Caribbean islands have become independent and another thirty-two small island dependencies are poised for political autonomy (Weaver 1995). These newly emerging nations are faced with a syndrome of underdevelopment that has greatly limited their economic opportunities (Weaver 1995). In recent years, their economic reality has been one of collapsing intraregional and extraregional trade that has forced several of them into financial deficits (Holder 1988).

Faced with these issues several governments of island states have turned to tourism in an effort to gain control over their economic situation (Weaver 1995).

Tourism now plays a significant role in the economic survival of many Caribbean nations (Bloomerstein 1988; Holder 1988). In relation to other economic sectors, tourism has become the most promising opportunity to earn much needed foreign exchange and service the astronomical debt that plagues many Caribbean island states (Holder 1988). Furthermore, the Caribbean Tourism Research and Development Center (CRTC) believes this critical state of foreign exchange will increase the economic dependence on tourism for islands that presently have tourism but also for those who have rejected this development option up to this point (Holder 1988).

In short, it can be said that tourism is a development choice based on necessity for many Caribbean nations. Tourism to the Caribbean does create both benefits and costs (Hills and Lundgren 1977; Lea 1988). The economic benefits, however are believed to outweigh the environmental and socio-economic consequences and tourism is actively promoted by several international and national organizations (Holder 1988; World Bank 1994; Pickersgill 1995).

1.2.2 Ecological overview of the Black River Lower Morass

Individual studies of the Black River Lower Morass include its paleocological (Digerfeldt and Enell 1984), vegetation (Coke *et al* 1982), watershed (Haggstrom 1983), marine (Fairbairn and Haynes 1982; Reeson 1984; Aiken 1985; Smith 1990) and wildlife (Svensson 1983; Hurst 1987; Haynes-Sutton 1990) resources as well as its potential as a tourist attraction (Bacon 1987; Ross 1989) and biosphere reserve (Garrick 1986). There

is no single report, however that provides a comprehensive account of the areas' ecological context. In light of this, the following section consolidates the many individual studies and highlights the regions' conservation priorities and human activities that influence the natural resources. These findings, presented below, are summarized in Table 1.1. A list of the institutions, public and private sector conservation authorities consulted in Jamaica to gather information is provided by Appendix D.

1.2.2.1 Conservation Priorities

There are a number of reasons and ways to rank natural resources for conservation purposes including biodiversity prospecting (WRI 1993), competitive trade (Kirton and Richardson 1992), protecting indigenous peoples (Kemf 1993), hunting (Thomson 1992), ecological diversity (Soule and Kohm 1989; Botkin 1990; Spellerberg 1992) or recreation and tourism (Gunn 1994). The rationale chosen for this report is congruent with that of the International Union for Conservation of Nature and Natural Resources (IUCN 1993) which promotes the preservation of global biodiversity by selecting natural resources according to their ecological status. Accordingly, the natural resources identified in this report are those whose national or international ecological status are deemed extinct, endangered, vulnerable, rare, or threatened.

A number of the Black River Lower Morass' biological resources are international or national conservation priorities. A summary is provided by Table 1.1 and includes ecosystem spaces as well as individual species.

The Wetland Ecosystem

The Black River Lower Morass as a wetland ecosystem has conservation value both at an international and a national level. On an international level, wetlands are subject to the Ramsar Convention on Wetlands (IUCN 1996), which promotes their restoration, rehabilitation and maintenance of ecological character and is the only international environmental treaty dealing with one particular ecosystem. Jamaica has recently joined as a Contracting Party to the Ramsar Convention and the official announcement is to be made by December 1997 (D. Peck, pers. comm.), indicating that the Government of Jamaica has contractually agreed to "the wise use (sustainable use) of all wetlands within the country's territory" as denoted in the legal obligation of the convention.

On a national level, wetlands represent less than 2% of the islands surface area (NRCD 1981; Garrick 1986) and the Black River Lower Morass is the largest herbaceous one on the island (Downer and Sutton 1990; JCDT 1994). Its macrophyte vegetation includes three major formations: a herbaceous swampland, a mangrove complex and a swamp forest (Coke *et al.* 1982). Several areas play essential roles in the river and coastal ecosystems and others contain rare and endemic plant species or communities (NRCD 1981; Coke *et al.* 1982; Garrick 1986). For instance, there are two unclassified species of flowering plant (NRCD 1981) and swamp forest is one of the rarest and most restricted ecosystems on the island (Haynes-Sutton 1990). Furthermore, the sections within the morass represent some of the few areas of Amazonian-type swamp forests that exist outside of South America (Haynes-Sutton 1990; JCDT 1994). In addition to the

conservation value of the macrophyte vegetation, the morass may play a vital role in the life history of several species. In particular, the island's largest populations of two marine vertebrates, the West Indian Manatee (*Trichechus manatus*) and the Atlantic Bottlenose Dolphin (*Tursiops truncatus*) show a preference for its coastal shelf (Fairbairn and Haynes 1982; Haynes-Sutton 1990) and the island's second largest population of terrestrial reptile, the American Crocodile (*Crocodylus acutus*) (C. Swaby, pers. comm.) live in the morass. The West Indian Manatee and the American Crocodile are both identified by the World Conservation Union as global conservation priorities. Based on the type of ecosystem, its size and species composition this wetland is both a national and international conservation priority.

A number of other individual wetland species are conservation priorities in their own right. The following section identifies those individual species with international or national priority conservation value.

Birds

Of the 227 bird species on the island, 102 frequent the Black River Lower Morass (NRCD 1981). It is one of the most valuable wetland bird habitats in Jamaica because several regions play an important role for a large number of species, many of which are globally rare (Svensson 1983). Many have declined or disappeared from surrounding heavily altered habitats and have taken refuge on the forest islands in the morass. As a result, the morass is rated as high as forests in terms of species diversity and density (Svensson 1983).

Of particular conservation value are the nationally rare Jamaican Blackbird (*Nesopsar nigerrimus*) , Black Rail a.k.a. Black Crake (*Laterallus jamaicensis*), Spotted Rail (*Pardirallus maculatus*) (Svensson 1983; Downer and Sutton 1990; A. Haynes-Sutton, pers. comm.) and globally vulnerable West Indian Whistling Duck (*Dendrocygna arborea*) (IUCN 1994; WCMC 1997). The latter, one of the rarest ducks in the world, has a declining population in Jamaica and the Black River Morass is one of its main habitats on the island (Haynes-Sutton 1990). Possibly one other species, the Limpkin (*Aramus guarauna*), is of national conservation concern, however, its status is unclear. Westermann (1953) and Svensson (1983) claim that it is a very rare species in Jamaica and individuals in the wetland represent a majority of the island's entire population, while Downer and Sutton (1990) list it as a common resident of the island.

Fish

Available data on the ichthyofauna indicate that of the 30 known fish species in the Black River Morass waters, at least three species are endemic and one is a national conservation priority. This latter fish, the St. Elizabeth Minnow (*Chriopeoides pengellyi*), does not exist anywhere in the world except the Black River Morass (Aiken 1985).

Mammals

Caribbean Manatee

The Caribbean manatee (*Trichechus manatus*) is a globally vulnerable marine mammal (IUCN 1994; WWF 1996; WCMC 1997) protected internationally under the

Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES) and in Jamaica under the National Wildlife Protection Act.

The present status of the Jamaican population is unclear (A. Haynes-Sutton, pers. comm). Little is known about the population (Fairbairn and Sutton 1982; A. Haynes-Sutton, pers. comm.) other than the animals show a preference for the coastline area shared with the Black River Lower Morass (Fairbairn and Haynes 1982). It is unknown what attracts the animals to this coastline (Fairbairn and Haynes 1982), but they have been seen congregating and mating at the mouth of the Black River (Haynes-Sutton 1990). A population census in 1982 estimated about 100 animals island-wide, but there are most likely less than that now (A. Haynes-Sutton, pers. comm.). Hurst (1987) examined sightings of the animals and hunting pressure on the species and suggests a major conservation effort is needed if the species is to survive in Jamaica.

Reptiles and Amphibians

American Crocodile

The American Crocodile (*Crocodylus acutus*) is a globally vulnerable reptile (IUCN 1994; WCMC 1997) protected internationally under the Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES) and in Jamaica under the National Wildlife Protection Act. The largest populations in Jamaica are found in two areas on the island and the Black River Lower Morass is one of them (Groombridge quoted in Johnson 1988; Haynes-Sutton 1990; C. Swaby, pers.comm). Approximately 300 animals inhabit the wetland (C. Swaby, pers.comm).

The status of the Black River crocodile population is unknown. Some (C. Swaby, pers.comm) consider the population is at best stable and possibly in decline while others (W. Duntley, pers. comm.; B. Shields, pers. comm) believe the population to be increasing. There is little documentation on the Black River Lower Morass population other than a few data forms. These data forms were an initiative by the now defunct Conservation Data Center (CDC), a USAID-funded project to record information such as location, size, quantity, nest site, possible threats or disturbance to the animals. There are too few forms containing insufficient detail to draw any general conclusions about the population.

Giant Galliwasp

Very little is known about the Giant Galliwasp (*Diploglossus*). A species of lizard described as a nocturnal skink that is just under 3/4 of a meter in length with a black, somewhat triangular head, small legs and feet, and pale yellow body irregularly spotted and dashed with brown (Haynes-Sutton 1990). The last specimens were removed from the Black River 100 years ago, thus it is presumed extinct (Johnson 1988) but it may just be very rare (Haynes-Sutton 1990).

Turtles

Sea turtles inhabiting the Black River Lower Morass area include the Green (*Chelonia mydas*), Hawksbill (*Eretmochelys imbricata*), and Loggerhead (*Caretta caretta*) turtle (Haynes-Sutton 1990). The Green and Hawksbill populations are protected under the Convention of International Trade in Endangered Species of Wild

Fauna and Flora (CITES) and all three species under Jamaican Law (NRCD 1981). They are listed in the 1996 Red List of Threatened Animals as endangered, critically endangered and endangered (WCMC 1997) respectively. Royer (quoted in Haynes-Sutton 1990) identifies Jamaica as among the most important nesting sites for the Hawksbill in the entire Caribbean.

1.2.2.2 Human activity affecting natural resources

Human activity can degrade or enhance natural resources. A number of industries and practices in the Black River area are associated with degradation of the natural resources. In contrast, there are none which enhance natural resources. The following discussion describes activities associated with degradation; they are not discussed in any particular order but are listed alphabetically.

Activities associated with Degradation of the Natural Resources

Bauxite, Sugar and Rum Companies

A closed bauxite company and the local rum and sugar industry degrade the quality of the waterways. Although the bauxite company is closed, storage tanks full of caustic soda are leaking and continue to damage marine life (W. Duntley, pers. comm.). The rum and sugar factories discharge organic wastes (Reeson 1984; A. Haynes-Sutton, pers.comm.) and an effluent called 'dunder' from sanitation procedures, (D. Smith, pers.comm.; A. Haynes-Sutton, pers.comm.; W. Duntley, pers.comm.) into water tributaries of the Black River. The organic waste greatly reduces the oxygen levels and productivity of the riverways (Reeson 1984) and is associated with what are locally

called 'fish-kills', i.e. a large group of dead fish floating down river. The belief that the dunder is the cause of the fish deaths has prompted an agreement between the sugar/rum industry and the national government calling for the installation of a filtration system within the next three years (M. Spence, pers.comm.). In the past, the closure of a sugar factory did result in reduction of longstanding pollution levels within the waterways (Reeson 1984), and suggests a filtration system may indeed decrease the contaminant level within the morass.

Farming

Farming methods and techniques known to degrade the natural resources include drainage of the morass (Johnson 1988; NRCD 1981), the use of levees for agricultural cultivation and cattle grazing (Digerfeldt and Enell 1984), and the use of fertilizers and pesticides (Johnson 1988; C. Swaby, pers. comm). Other harmful farming activities include the construction of drainage canals and paddy fields for rice cultivation and levees for marijuana production (NRCD 1981).

Farming of particular produce also degrades individual species. For example, the cultivation of coffee beans, Caribbean pine, and marijuana have destroyed the habitat of Jamaica's most endangered species of endemic bird, the Jamaican Blackbird (Downer and Sutton 1990).

Fishing

Unregulated fishing and inappropriate fishing methods degrade marine resources (Reeson 1984; Smith 1990). The intensity at which fishing takes place is depleting fish

stocks (NRCD 1981; D. Smith, pers. comm; A. Haynes-Sutton, pers. comm.; C. Swaby, pers. comm.) and catching methods which are non-specific, killing several species at the same time, contribute to the unsustainability of these resources. These fishing methods include unrestricted net fishing which has decimated the fish population (C. Swaby, pers. comm); the use of seine nets in nurseries with mesh too small to allow smaller and younger fish to escape (Haynes-Sutton 1990; C. Swaby, pers. comm) or lobster with eggs (B. Shields, pers. comm); the use of explosives such as dynamite to kill river and reef fish (NRCD 1981; W. Duntley, pers. comm.; A. Haynes-Sutton, pers. comm; D. Smith, pers. comm.). Other ecologically unwise fishing techniques include the use of poisonous products such as battery acid, bleach and tick powder (A. Haynes-Sutton, pers. comm), inappropriate cutting of shrimping channels that changes the vegetation (NRCD 1981; C. Swaby, pers. comm.), and the catching of small shrimp and berried female shrimp (Reeson 1984). Most of these harvesting techniques prevent both maximum and sustainable yields of the marine products (Reeson 1984; A. Haynes-Sutton, pers. comm.).

One of the more destructive local fishing practices is setting fire to the morass vegetation. Fires are a natural feature of the Black River Lower Morass and there is a sequence of events in place when fires occur naturally which limits their extent and duration (C. Swaby, pers. comm; A. Haynes-Sutton, pers. comm). This sequence of events is usually out of place when humans set the fires and burn uncontrollably, sometimes smoldering for days and damaging the vegetation extensively (L. Linton, pers.comm.; A. Haynes-Sutton, pers. comm; C. Swaby, pers. comm). Extensive damage resulting from these purposely set fires occurs at least twice a year (NRCD 1981; C.

Swaby, pers. comm), resulting in not only a reduction in the number of mangrove trees but preventing their regeneration (Haynes-Sutton 1990).

Forestry

Large and small-scale forestry enterprises degrade both individual species and the habitat at large. Large-scale activities such as logging destroy freshwater swamp species and degrade biodiversity by the selective felling of trees, in particular the mahogany tree (*Sweitenia mahogani*), for timber (NRCD 1981). Logging also creates deforested catchments, which increase sedimentation and decrease wetland productivity (Johnson 1988). Equally relevant are the small scale enterprises including the removal of bark from mangroves for dye preparation, palm fronds for basket making (NRCD 1981) and the cutting of overhangs resulting in reduced shade for marine nurseries (B. Shields, pers. comm.). The fact that 75% of Black River households use wood or charcoal for cooking significantly adds to the number of mangroves cut (George 1990). Other herbaceous resources are removed to make broomsticks and thatched roofs (M. Spence, pers. comm.). All of these practices, paired with the absence of replanting or management of the herbaceous growth, result in degradation of the forestry resources.

Introduction of Foreign Species

The introduction of foreign species has impacted on several domestic species. For example, the cattle egret (*Bubulcus ibis*) introduced in the 1940's and 50's is out-competing the Jamaican blackbird (C. Swaby, pers. comm.). Similarly, many native fish species have decreased due to the introduction of gamefish in the 50's or early 60's

(NRCD 1981; B. Shields, pers. comm.) and commercial species such as perch (W. Duntley, pers. comm).

Mining

Peat and sand mining have modified the natural character of the wetlands. Peat mining in the upper morass changed the water balance of the lower part of the wetland, causing an increase in sedimentation rates (Reeson 1984) which damages the local coastal reefs (Haynes-Sutton 1990). If measures are not taken to correct this damage the reef ecosystems will die (Smith 1990). Sand mining has significantly increased the natural erosion (Haynes-Sutton 1990) and it also impacts on the local wildlife species such as crocodiles (*Crocodylus acutus*) and marine turtles by destroying their nesting sites (C. Swaby, pers. comm).

Opportunistic Hunting

Opportunistic hunting of the international conservation priority species of American Crocodile, West Indian Manatee and West Indian Whistling Duck is reducing their numbers. The American Crocodile is shy of humans and will retreat if given the opportunity, moreover, the risk of harm from a crocodile is negligible over the past decade, only two human deaths are attributable to direct crocodile attacks (C. Swaby, pers. comm). The animals, however, are routinely killed on sight out of an unwarranted and irrational fear of them (C. Swaby, pers. comm; W. Vanbarneveld, pers. comm.; A. Haynes-Sutton, pers. comm). The West Indian Manatee also suffers from opportunistic hunting. The animal is hunted for its flesh which is considered a delicacy by locals, a

factor in the species decline not only in the Caribbean (Westerman 1953) but worldwide (WWF 1996). Described by a local teenager: "the meat of the manatee is delicious, it has many flavors: pork, beef, chicken and fish" and a local fisherman: "Good meat! Very strong meat! ... three flavors: pork, beef and mutton".

Fishermen are responsible for nearly all human-related manatee mortality in Jamaica by entanglement in gill nets, beach seines, harpoons and dynamite (Hurst 1987). Hunting of the manatee is on a purely opportunistic basis because the scarcity of the animal does not make a search for the animal time-effective (Powell quoted in Hurst 1987; W. Duntley, pers. comm.); however, when one is observed during fishing expeditions there is little hesitation in killing it since an animal of its size, several hundred kilograms, and its market value make a significant supplement to a fisherman's income which far outweighs the legal penalty if caught (Haynes-Sutton 1990; W. Vanbarneveld, pers. comm.; W. Duntley, pers. comm.). The most recent recollections of manatee meat being sold in Black River date back to 1990 and estimations of the price at that time range from J\$33 /kg per pound [equivalent to US\$1/kg] (B. Shields, pers. comm) to J\$77 /kg [equivalent to US\$2.30/kg] (W. Duntley, pers. comm.) indicating that an average manatee, weighing 680 kg (WWF 1996), represents roughly a potential income of J\$22 440 to J\$52 360 (US \$680 - \$1585). When these potential income figures are measured against the financial penalty imposed by national law, i.e. J\$100 (US \$3.00) (Hurst 1987) for possession or killing of a manatee, the current penalties appear to be an unrealistic deterrent in the killing of this internationally protected species.

The West Indian Whistling Duck is in decline partially as a result of uncontrolled hunting. Jamaican conservation organizations have made great efforts to promote the

survival of this species, including a national recovery plan, yet these birds are still illegally shot during bird hunting season (Downer and Sutton 1990; M. Spence, pers. comm.; A. Haynes-Sutton, pers. comm.).

Urban Development

Urban development including road modifications and urban sprawl, both of which are in part due to tourism, have altered ecologically important areas and in particular those of the American Crocodile. Road modifications have caused the hypersalinization of several salt pans resulting in the death of fish within them and, consequently reducing the prey available to the local crocodile population (C. Swaby, pers. comm.). Urban sprawl has also impacted negatively on the crocodile population by reducing not only their habitat in general but, more importantly, their nesting areas (C. Swaby, pers. comm.).

In addition to the alteration of ecologically important areas to the crocodile, these species are further disadvantaged by newly arriving human residents who are accompanied by dogs. The reduction of the crocodile's traditional food resources combined with an increase of a palatable substitute, dogs, has led to the situation where a number of crocodile attacks on dogs have been witnessed by community members resulting in a 'frenzied fear' towards the crocodiles (C. Swaby, pers. comm.). Several residents indicate that if a crocodile attacks any of their children, a group would be organized to shoot as many of the animals as they could find. In short, urban development has resulted in the crocodile having less to eat, fewer places to live and reproduce, and an increased chance of being killed.

Waste Management

Untreated waste disposal occurs frequently along the south coast of Jamaica (Haynes-Sutton 1990) and the situation in Black River is no exception. Private and public sectors use inappropriate waste management techniques and facilities to dispose of sewage, household garbage, and industrial waste polluting the local environment (M. Spence, pers. comm; J. Howell, pers.comm: A. Haynes-Sutton, pers.comm). For instance, the current method to dispose of raw sewage is to dump it directly into the sea (Haynes-Sutton 1990; M. Spence, pers. comm). This activity is associated worldwide with serious health problems. Garbage disposal is also a problem. There are open landfills within the morass filled with household garbage (Haynes-Sutton 1990) and larger items such as rusted car bodies and parts (pers. obs). These dump sites are the result of an inadequate garbage collection service (J. Howell, pers. comm.). A household survey (George 1990) discovered that only 10% of residents have their garbage collected on a regular basis. The disposal of household refuse directly onto the beach or into the sea behind homes is also a risk factor for the local crocodiles which, when attracted to the refuse, increases their probability of an encounter with a fearful human who may kill it (C. Swaby, pers. comm.).

Similar methods of waste disposal including the discharge of raw sewage into waterways and the dumping of garbage in mangroves led to an outbreak of typhoid in a neighboring town which resulted in several mortalities. This suggests that the community of Black River is at high risk for a similar occurrence (Haynes-Sutton 1990).

Summary

The Black River Lower Morass contains a number of biological resources with international and national conservation value including the wetland ecosystem; five species of birds, the Jamaican Blackbird, Black Rail, Spotted Rail, West Indian Whistling Duck and possibly the Limpkin; an endemic fish, the St. Elizabeth Minnow; one mammal, the Caribbean Manatee; and six reptiles, the American Crocodile, Green, Hawksbill and Loggerhead turtles and possibly the Giant Galliwasp. The degradation of these international and national conservation valued resources are associated with the human activities of bauxite, sugar and rum manufacturing, farming, fishing, forestry, mining, opportunistic hunting, urban development and waste management.

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Table 1.1: Biological Conservation Priorities and the Human Industry which Degrades Them in Black River, Jamaica (1994)

NATURAL RESOURCE		ECOLOGICAL STATUS		DEGRATORY INDUSTRY
Common Name (Latin Name)	Latin Name	National	International (1)	
Spaces				
Wetland (macrophyte vegetation)	many species	rare***	***	Forestry, Sugar/Rum factories Peat mining, Sand mining Farming, Waste management
Species				
Birds				
Jamaican Blackbird	<i>Nesopsar nigerrimus</i>	rare	near threatened	Farming, Introduction of foreign species
Black Rail	<i>Laterallus jamaicensis</i>	rare		
Limpkin	<i>Aramus guarauna</i>	rare		
Spotted Rail	<i>Pardirallus maculatus</i>	rare		
West Indian Whistling Duck	<i>Dendrocygna arborea</i>	rare*	vulnerable	Opportunistic hunting
Fish				
St. Elizabeth Minnow	<i>Chriopeodes pengellyi</i>	rare		
Mammals				
Caribbean Manatee	<i>Trichechus manatus</i>	endangered*	vulnerable**	Opportunistic hunting
Reptiles and Amphibians				
American Crocodile	<i>Crocodylus acutus</i>	vulnerable*	vulnerable**	Sand mining, Fishing, Opportunistic hunting, Urban development
Giant Galliwasp	<i>Diploglossus or Celestus occiduus</i>	extinct?		
Turtles				
Green	<i>Chelonia mydas</i>	endangered*	endangered**	Egg harvesting, loss of nesting habitat
Hawksbill	<i>Eretmochelys imbricata</i>	endangered*	endangered**	
Loggerhead	<i>Caretta caretta</i>	endangered*	vulnerable	

Protected by:

*WPA - National Wildlife Protection Act

**CITES - Convention of International Trade in Endangered Species of Wild Fauna and Flora

***Ramsar - International Convention on Wetlands

(1) IUCN 1996 Red List of Threatened Animals Category

CHAPTER 2

The Tourism-Environment Relationship in Black River, Jamaica: Perceptions of Tourism Operators, Conservation Authorities and the Host Community.

ABSTRACT

This study investigates the ecological and host impacts of nature-based tourism, as perceived by tour operators, conservation specialists and host community of Black River, Jamaica. Interviews revealed that the host community and tour developers desire an increase in tourism. Despite this desire for an increase in growth, all three groups identified both negative and positive ecological and host impacts. The negative ecological impacts included erosion of riverbank and riverside vegetation and wildlife distribution changes. The negative socio-economic impacts included disruption of local industry and transportation and loss of economic earning potential. The findings suggest that the tourism-environment relationship, in a developing country such as Jamaica, can occur in a situation of common pool resources and become characterized by a repetitive and spreading phenomenon that leads to both ecological and host resource degradation. To modify this outcome of resource degradation adequate administrative arrangements must be established to disengage the 'elite growth process' in favor of a more equitable distribution of benefits among a majority of stakeholders. The findings have direct management applications as the region has been selected to become Jamaica's next National Park.

INTRODUCTION

In rural areas throughout the Caribbean, tourism development is receiving increased recognition as a funding mechanism for environmental conservation (McNeely *et al* 1992; IUCN 1993; Poon and Poon 1994). Tourism is widely regarded as one of the most significant and promising economic sectors in the Caribbean (Bloomerstein 1988; Holder 1988; Weaver 1995) and in Jamaica (World Bank 1994). The growing recognition of tourism's potential ecological and socio-economic costs (Mathieson and Wall 1982; Lea 1988; Edwards 1988), however, has highlighted the importance of comprehensive tourism planning, including the participation of not only tourism developers but also the wider community (Inskeep 1991; Ap 1992; Wells and Brandon 1992). The participation of stakeholder groups in tourism development is a recent aspect of tourism planning and there have been relatively few attempts to compare how their perceptions and attitudes toward tourism may differ. At the same time, a clear understanding of tourism development is often limited by a rather cursory knowledge of the underlying processes that promote the compatibility of tourism with the ecological and host environment (Decker and Purdy 1988; Nelson *et al* 1993; Milne 1998). Perception and attitude surveys can reveal site-specific information that is useful in setting up programs to minimize friction between stakeholder groups and in formulating plans to promote environmental conservation.

This article provides a comparative analysis of the perceptions and attitudes toward nature-based tourism in Black River, Jamaica between three stakeholder groups: tour operators, conservation authorities and the host community. Nature-based tourism in Black River, Jamaica is an ongoing effort to protect the endangered species of American

Crocodile, *Crocodylus Acutus*, and provides a unique opportunity to conduct such an analysis. The broad aim of this study was to examine perceptions of tour operators, conservation authorities and hosts toward the ecological and socio-economic benefits and costs of current tourism in Black River, Jamaica and to determine their attitudes toward future tourism development. Following this overview, a discussion of some of the problems constraining the compatibility of tourism with the local ecological and host context is presented. There is a focus on planning and management implications of the findings and measures that may improve the conservation potential of tourism while minimizing its negative impacts are outlined.

Study Area

The Black River Lower Morass measures 68 square kilometers (Haggstrom 1983) and is located along the southwestern coast of the island of Jamaica, WI (Figure 1). The region is a freshwater swamp and peat marsh and is home to the largest river system on the island (Coke *et al.* 1982). It is a biodiverse region identified with 12 national conservation priorities including species of bird, reptile, fish and mammal to be protected. Species of international conservation priority include the near threatened Jamaican Blackbird (*Nesopsar nigerrimus*), vulnerable species of West Indian Whistling Duck (*Dendrocygna arborea*), Caribbean Manatee (*Trichechus manatus*), American Crocodile (*Crocodylus acutus*), Loggerhead turtle (*Caretta caretta*) and the endangered Green (*Chelonia mydas*) and Hawksbill (*Eretmochelys imbricata*) turtles (IUCN 1996).

Black River nature-based tourism consists of a two-to-four-hour boat excursion along the river of the same name and through a swamp and marsh wetland to view the

habitat, wildlife and local fishing community. One stop is made within the morass to provide tourists with an opportunity to swim, eat and relax. Highlights of the tour include viewing natural resources such as the endangered species of American Crocodile, several bird species, and large termite nests lodged mid-air in the roots of the mangrove trees. In addition, the tour features exposure to local culture including members of the fishing community 'in action'. Fishermen are periodically requested to approach the tour boat to show their catch and explain their interesting fishing methods and tools. Tools and techniques of the fishing community such as shrimp traps, fish pots and the design of the local cottonwood canoes remain from the time of their African ancestors over 300 years ago (Ross 1989).

The Black River Lower Morass has been selected to become Jamaica's next National Park, yet little is known about the tour operators, conservation authorities and host perceptions of the tourism-environment relationship. Do they view tourism as compatible with the ecological and host environment? Do they want an increase in tourism? How is the establishment of a National Park perceived? The present study addresses these questions.

Past and Present use of Study Area

Major boat traffic along the Black River dates from the 19th Century when local produce including sugar, pimento, logwood, fustic, annatto, coffee and other products were transported from the interior of the island on small boats to ships anchored along the coast and destined for international ports (Barrett 1976). Product exportation centered on logwood towards the late 19th Century when a high demand in Europe for logwood dye

made Black River the economic center of Jamaica (Lunta 1993). The discovery of synthetic dyes however, made exportation unprofitable and resulted in the industry's closure (Lunta 1993). Large-scale development of the area was absent until the 1970s when the National Government proposed to mine the wetland for peat. Peat was identified as an alternative to imported petroleum which presently satisfies 90% of the island's energy needs and contributes to a mounting international debt (Digerfeldt and Enell 1984). In 1993 petroleum imports cost the country US\$328.5 million, representing over 15% of all imports (EIU 1995). As a result of this heavy dependence on imported oil, government policy is to develop renewable sources of energy to reduce this consumption (EIU 1995). A series of environmental feasibility studies of the Black River Lower Morass by a national petroleum firm, Petroleum Corporation of Jamaica, determined that peat mining was an ecologically disastrous development option for the wetland and furthermore, would minimally contribute towards alleviating the pressure of foreign debt. A debate between conservationists and developers questioning the alternatives of mining the area for peat or developing it as a National Park ended in a decision for the latter (Bacon 1987) and development of the area as the country's third National Park is currently underway (Bacon 1987; JCDT 1994; NRCA 1995).

Local commercial activity within the Black River Lower Morass includes the extraction of timber, fish and shrimp (Garrick 1986; Johnson 1995). Approximately 300 individuals fish and shrimp in the morass (Aiken 1985) and the shrimp industry is particularly important to the economic viability of the residents (Reeson 1984; Garrick 1986). Some of these individuals are dependent on the same riverways as the tour boats

to earn their living and represent about 10% of the total fishing community numbering roughly 40 persons (W. Duntley, pers. comm.; B. Shields, pers.comm).

Recreational use of the Black River began 30 years ago in the form of occasional crocodile hunts and bird-watching expeditions. Expeditions were guided by a local entrepreneur who had fished and hunted in the area since his early teenage years, or by members of the fishing community. The local entrepreneur made the decision to develop his tourism business further when the National Government's plans to mine peat were announced. Despite the announcement of plans for the national park, the threat of returning to the peat mining remained and the entrepreneur felt the need to demonstrate to the Government that money could be earned from the morass, without destroying the habitat and wildlife (C. Swaby, pers. comm.). He established regular daily boat tours in 1986.

Boat tours of the Black River became increasingly popular and in 1990 a second boat tour operation was opened. This second boat tour operation is owned by the local physician who established the business as an investment opportunity (D. Bennett, pers. comm.). The opportunity for high economic returns also enticed a returning national to develop a third boat tour operation (L. Linton, pers.comm.) and this third boat operation was in the process of being built during the research period. The majority of tourists are bused to the wetland from tourist centers around the island and promptly returned to their hotels following a meal and, in some cases, one more stop to visit another nature-based tour operation at local waterfalls. Boat tour visitation is constant throughout the year, averaging 400 to 500 tourists per week/ per tour operator, and the slowest month of the year, up to the research period, generated 1200 visitors per tour operator. Tour fees of

US \$15 per tourist indicate a rough estimate of pre-cost monthly earnings of US \$24 000 - \$30 000 per month/ per tour operator. For comparative measures, the national minimum wage of the country is equivalent to US \$60 per month. Operators have created a tour that minimizes exposure to the local community to minimize the increasing crime rate that has traditionally followed tourism development on other parts of the island. An incident of violence is considered to be a threat to the durability of the business and, accordingly, measures have been taken to minimize tourist contact with the town. It is not the local town members but an "unwanted element" from other parts of the island, who are feared to begin frequenting the area if tourists are encouraged to wander freely about town.

Tourism development in Jamaica is concentrated along the north coast and it is only in recent years that the south coast has been considered to be a tourism opportunity. North coast tourism, developed in the 1950s and 1960s as traditional 3S (sun, sand, sea) tourism, is stigmatized by high rates of crime, drugs and prostitution. The south coast does not have the aqua-blue waters or white sandy beaches of the north coast and its tourism potential centers on nature-based activities. South coast tourism has steadily increased over the last 10 years and incidents of violence, while rare are beginning to occur (S. Browne, pers, comm.).

To effect its status as the country's third National Park, the National Government has plans to consolidate the mixture of crown and private property within the Black River Lower Morass. They are also in the process of creating policy and guidelines over land-use application and approval procedures governing all National Parks. In the meantime, development of the area continues since the Government has decided not to regulate until

consolidation of land is final and an evaluation system functional (M. Spence, pers. comm).

METHODOLOGY: SURVEY INSTRUMENT, SAMPLE AND DATA ANALYSIS

Data were gathered by interviews based on survey questions from Canadian tourism studies (Grekin 1994; Nickels 1990) that were adapted to local circumstance. Content and reliability of survey questions were further developed according to the guidelines of Fink and Kosecoff (1985), Smith and Glass (1987) and Jackson (1988). Survey questions are supplied by appendix A.

Many (Ziffer 1989; Wells and Brandon 1992; Boo 1993) suggest that stakeholder groups provide site specific information that can be used to promote harmonious and long term tourism development. Accordingly, face to face interviews with members of all stakeholder groups took place during summer 1994. Stakeholder groups were identified based on authors' knowledge of research area and included all tour operators (n=3), local and national government, non-governmental and private sector conservation authorities (n=7), and community members (n=25). The interview population was selected as follows: the tour operators interviewed represent the entire population of tour operators on the Black River, conservation authorities were identified based on their familiarity with the local ecological and human environment, and community members were sampled on a volunteer, random basis from areas representative of boat tour presence. As described above, the design of the boat tours highly restricts tourist-host interaction to a small percentage of the local community, namely, fisherman that share the riverways with the boat tours, craft vendors located on tour property and boat tour guides.

Consequently, those interviewed (n=25) represent roughly 35% of community members that are in regular contact with the boat tourists as well as boat tour activity. Tourism to the town of Black River also exists, but the focus of this analysis is on the impacts of nature-based tourism and not the regional tourism. Interviews lasted from one to three hours. Data are tabulated to yield percentage of respondents for a given category and multiple answers allowed for certain questions. Further statistical analysis was not attempted due to the small number of respondents within groups.

RESULTS

Perceptions of ecological benefits and costs

A summary of the perceived ecological benefits and costs of Black River nature-based tourism is presented in Table 2.1. All three stakeholder groups perceived both benefits and costs, however the fishing community sub-group did not identify any ecological benefits. On the positive side nature-based tourism is credited with enhancing the conservation of the natural resources (31%) and providing the funds for private conservation efforts (17%). Enhanced conservation of the natural resources includes fewer deliberately ignited mangrove fires, fewer purposely killed crocodiles and less pollution within the morass. Deliberately ignited mangrove fires are one of the more ecologically destructive community activities (A. Haynes-Sutton, pers. comm) and crocodiles are killed out of fear (W. Von Barneveld, pers. comm; C. Swaby, pers. comm; W. Duntley, pers. comm). Community members apparently recognize that tourists are coming to the area to see the fauna and flora and thus, they are making efforts to conserve the area since the potential for them to earn money increases with the presence of tourists

(C. Swaby, pers. comm). Community income from tourists includes craft vendors on the tour site, parched-shrimp vendors along the tour bus route, and the occasional boat trip along the waterways of the morass. Enhanced conservation of the natural resource also results from the community's increased ecological awareness that is resulting in local environmental stewards. For instance, several community members identify the recently acquired knowledge of the various wildlife and vegetative systems as the motive behind why they no longer condone the community practice of dumping garbage within the morass.

While a minority perception, tourism's provision of funds for private conservation efforts is an interesting dimension of the boat tours and their concomitant influence over the crocodile population. One of the tour operators uses his profits from the boat tours to fund crocodile research and collect knowledge that will lead to their conservation. In the effort to continue this conservation research, however this tour operator introduces farm raised crocodiles into the wild population. The rationale of this activity is the belief that the declining wild population is insufficient to meet tourist expectations and must be supplemented to continue attracting a public audience and maintain the durability of the tour business. The failure of the tour businesses is coupled with the fear that the national government will resume their plans to mine the area for peat; an activity considered ecologically destructive by this tour operator, and one that must be avoided (C. Swaby, pers. comm). The ability of conservation authorities to comment on actual changes to the fauna is greatly dampened by a lack of up-to-date ecological information.

On the negative side, there is an overwhelming agreement among tour operators, conservation authorities and residents that the natural resources are degraded by boat

activity (74%). This degradation includes erosion of the riverbank and riverside vegetation and modification to local wildlife distribution patterns. Boat tours alone however, are not perceived as the sole cause of this degradation. There is evidence that it is the combination of boat tour and local community activity that results in the riverbank erosion. Riverbank erosion is restricted to those areas where the roots of riverside vegetation have been weakened by community fishing techniques; these areas are undercut and soft and it is the addition of the constant wave action created by frequent boats that results in the riverbank erosion (A. Haynes-Sutton, pers. comm.; L. Linton, pers. comm; C. Swaby, pers. comm). The speed, model and frequency of the boats are inappropriate for the local habitat and create a bow wake and propeller wash that not only erodes the riverbank, but also inundates the birds nesting along the river edge (A. Haynes-Sutton, pers. comm.; L. Linton, pers. comm; C. Swaby, pers. comm). Furthermore, the noise of the boat engines has caused many of the bird species to retreat from tour areas (A. Haynes-Sutton, pers. comm.; L. Linton, pers. comm; C. Swaby, pers. comm). While there is an overall agreement that the riverbank is eroding, there is a divergence in opinion as to who is responsible for the inappropriate boat activity. The majority of the tour operators (2/3) and the fishing community (8/15) ascribe environmentally destructive boat activity to the other ones' group. In the same way, a large percentage of conservation authorities (5/7) and members of the fishing community (7/15) believe the growing number of tour operators, and hence increasing numbers and frequency of tour boats, is a factor in the perceived ecological changes. Only a minority of tour operators (1/3) agrees with this point of view.

Boat activity and tourism-related businesses are also associated with changes to the crocodile population. Boat activity such as inappropriate methods of approaching the animals, throwing branches or bumping the logs on which the animals are resting results in their retreat from tour areas (A. Haynes-Sutton, pers. comm; D.Smith, pers. comm). In some cases, inappropriate boat driving has led to the injury and even death of the animal (M. Spence, pers. comm). Tourism-related business associated with decreases in the crocodile population include urban development and the harvesting of their eggs. Urban development, such as new road construction due in part to increasing tourism has altered ecologically important areas of the crocodile population reducing their food supply and nesting habitat (C. Swaby, pers, comm.). The raiding of crocodile nests for eggs, which are sold as tourist souvenirs, is also a factor in the population decline (M. Spence, pers. comm.; C. Swaby, pers. comm.). Other tourism-related businesses associated with degradation of a particular species include a newly established crab restaurant. This crab restaurant caters solely to the boat tourists and there is concern about the possible impacts on the crab population resulting from year-round harvesting of a wild species. There is also concern for potential concomitant impacts on the crocodile population which also feeds on this crab species.

Perceptions of socio-economic benefits and costs

Tour operator and the host community perceptions of socio-economic benefits and costs are given in Table 2.2. Both stakeholder groups identified benefits and costs resulting from Black River nature-based tourism. The fishing community sub-group however, did not identify any socio-economic benefits. On the positive side, socio-

economic benefits were perceived as the generation of employment opportunities (46%), an increase in exposure to foreign cultures (29%) and altruism (21%). A majority of tour personnel believed that without the boat tour they would have been forced to move away from the area in search of employment. An additional benefit of working for the boat tours was identified as an increased interaction with foreign people allowing them intimate exchanges that would otherwise have been unattainable. These intimate exchanges provided the tour drivers with descriptions of distant countries and the opportunity to learn foreign languages. Many of the tour drivers greeted tourists in their own language including Italian, German and Japanese.

Altruism was identified by a minority of the stakeholders as a socio-economic benefit. The altruistic behavior of tour boat owners included paying for medical care and medication, purchasing high school football and soccer uniforms and free passage on the boat tours for school groups.

As for negative impacts, tour operators and the host community perceived three main socio-economic costs resulting from tour development. These included crowding and congestion (57%), conflicts over land use (39%), and a decrease of income and social interaction (18%) to the local fishing community. The perception that there are too many boats on the riverway is evidenced by the occasional traffic jam that occurs as boats are returning or leaving the docking area. One boat tour driver points out, "each tour operator makes 12 trips a day up the river, that is enough ... more than this and there won't be any space left to drive the boats".

Another concern of the host community centers on conflicts over land use. While the majority of the fishermen (11/15) identify this as a concern, the tour operators do not.

Members of the fishing community explain that their ability to provide fish and shrimp to the local market is progressively impeded by both tour boat activity and tour expansion. Tour boat activity causes fish to retreat away from riverfront areas and into the bush of the morass, forcing the fishermen to follow to catch their daily requirements. Venturing further into the morass is disliked because it takes more time, is more difficult and increases the exposure to the larger crocodiles whose territories lie further in the morass. Exposure to the larger crocodiles, reportedly 3 to 5 meters in length, is not favored because the fishermen are afraid of them.

Other tour activity that is perceived as a socio-economic cost by the fishing community is the expansion of tour grounds. Tour enterprises envelop the community's traditional docking area i.e. one tour enterprise is located directly across the river and the other two boating operations are located on either side of the community's docking site. The latter two boating operations are widening their river front land-use resulting in an ever-decreasing area available to the community for docking. Both the fishermen and the community-at-large dock in this area to deliver produce to the community market located directly behind. Compounding this situation is the fact that there is no other available bank area. The final result is that the tour owners' increasing appropriation of riverfront land is not only an inconvenience to community members but it also obstructs their economic industries.

The tourism-host relationship also involves the sinking of community canoes. Traditionally-designed canoes are used by the community to not only fish but to travel from where they live, e.g. from the interior of the morass to the mouth of the river where they visit the town center to shop, sell their produce or attend church. The water

clearance of the canoe, whose design remains from the community's African ancestry, is approximately 7 centimeters above water level. Tour boats, driving above a certain speed, create a water wake that inundates the canoes and sinks them. In addition to the inconvenience of having to swim to shore and the time wasted to address this situation, community members are particularly irate when they are dressed in their best clothes for travel to the town center. As one fisherman makes clear: "The boat tours are like car traffic -- when I see one coming I get out of the way".

Tourists taking pictures are also regarded unfavorably by fishermen. Most fishermen have few items of clothing and when it is necessary to be in the water, for instance to retrieve fish traps, fishermen disrobe to keep their clothes dry. Passing tour boats with picture-taking tourists are considered a great inconvenience to shy fishermen who sometimes wait quite some time until the boats are safely at a distance before ascending into their canoes.

Another cost perceived by the fishing community is a loss of income due to the presence of the boat tours. In years gone by, fishermen worked as guides of the morass and came to depend on the foreign exchange earnings as a significant supplement to their income, however this business has progressively disappeared since the formalized boat tours began. The exposure to foreign cultures and languages is also identified by members of the fishing community as an aspect of tour guiding that they appreciated.

In short, stakeholder perception of nature-based tourism is a mixture of ecological and socio-economic benefits and costs. There is general agreement among tour operators, conservation authorities and the host community that while there may be some ecological benefits there are clear indications of resource degradation. Ecological benefits include

enhanced conservation of natural resources and increased funding for conservation activities. Costs to the natural ecosystem include erosion of the riverbank and distribution changes to the bird, crocodile and marine populations. Socio-economic impacts are also distributed as both benefits and costs. Benefits to the host environment include increased employment, social interaction and altruistic activity while costs include feelings of crowding, congestion, conflicts over land use and a decrease in income and social interaction.

These findings illustrate an interesting issue of Black River nature-based tourism. Namely that the host community perception of benefits and costs is not homogeneous. While some members of the host community benefit, others are negatively impacted. For example, at the same time as the tour personnel perceived an increase in employment, members of the fishing community perceived a loss in employment. A non-homogeneous perception of benefits and costs in the Black River host community is a realistic feature of the tourism-environment relationship and must be understood in any effort to harmonize the tourism-host relationship.

Attitudes of tour operators, conservation authorities and hosts toward future tourism development

There was a general consensus among stakeholders that the best use for this region is for tourism and other community activities (71%) and a majority also expressed a desire for increased tourism (66%) (Table 2.3). The main explanation for the desire of an increase to tourism is to earn money (63%) and all stakeholder groups have plans to expand their businesses. Tour operator expansion plans include a walking tour through

the wetland, an aquarium, water slides, canoes and paddle boats. Each tour operator identified the reduced quality of tourism, i.e. disappearing wildlife and the congestion of tour boats as the reason for diversifying their business and for expanding onto other areas of the wetland. Host community members also expressed their desire to increase their personal business as tour guides and would like an agreement between themselves and tour operators to enable them to do so. Community members believed that tour operators had an advantage with the hotel management around the island that encouraged tourist visitation away from the local fishing community. Further explained, members of the fishing community pointed out that tour operators send presents such as fruit and food gift baskets to the hotel management and staff around the island. Community members perceived this as an incentive for hotel staff to promote visitation to the three main tour operators and to disregard the local fishermen as tour guides. This interaction was believed to disadvantage the individual fishermen who did not have the resources, financial or social, to compete.

In contrast to the majority attitude in favor of increased tourism is a minority opinion (23%) that there is already too much environmental degradation that will only be exacerbated by an increase in tourism. Furthermore, there is a conceptual division between tour operator and conservation authority attitude with respect to whether the environmental (71%) or economic goals (11%) of Black River tourism are more important (*also* Table 2.3). Tour operators, although agreeing that tourism should not degrade the environment, emphasized that the primary goal of any tourism development is to maximize financial gain. In contrast, conservation authorities believe the primary goals of nature tourism are to preserve the environment, fund conservation efforts and

improve the local community's quality of life. These differing attitudes translate into very different ideas about the future of Black River tourism. Tour operators believe maximizing financial gain necessitates large modification to the environment and high volumes of tourists while the attitude of conservation authorities translates into minimal modification of the environment and a low volume of tourists. The lack of governing control over tourism development in the Black River wetland has created fertile ground for unregulated opportunism leading to degradation of the natural and host environment. As succinctly described by Charles Swaby, the owner of the first boating enterprise, "this is like the Wild West of North America ... everyone does as they please."

Suggestions to Reduce Degradation and Enhance Environmental Conservation

Tour operators, conservation authorities and host members agree that reducing environmental degradation of the Black River Lower Morass is dependent on addressing boat tour activities as well as other commercial activities in the region (74%) (Table 2.4). Of the major commercial activities in the area, those considered to cause the most serious environmental damage, and in need of regulation, include the dumping of pollutants into the waterways by the local sugar/rum factory and agricultural farms, the disposal of raw sewage directly into the waterways by the local community and hospital, urban development and sand mining, destructive fishing methods including dynamiting, using net with too small a mesh, and the burning of mangroves for shrimp or charcoal.

Tour operators and conservation authorities suggest that the best way to enhance environmental conservation is to institute a management plan for the area (*also* Table 2.4). Both groups agree the plan should detail multiple zones where conservation,

tourism and community activities are permitted (77%). Both groups also emphasize that a crucial element in the success of this management plan is not only the development of guidelines but, more importantly the enforcement of regulation and policy. Additional suggestions to promote environmental conservation include educational programs, tax-incentives promoting environmentally friendly behavior and beneficial involvement of the local community including promotion of the local craft industry, facilitation of goods transportation and land tenure. Suggestions for educational programs include developing and teaching alternatives to current unsustainable environmental practices and communicating the concept of sustainable development to the local community as well as to the local and national government administrations.

Opinion on Management and National Park Status

The consensus among tour operators, conservation authorities and fisherman is that the national government would not manage the boat tours in a more environmentally sustainable manner than the private ownership of the day (75%) (Table 2.5). The national government is perceived (69%) as being notoriously ineffective at enforcing environmental law due to inadequate personnel, funds, and political will. Tour operators and conservation authorities prefer on-site management by a local community organization to management by the National Government (63%). The three groups indicate, however, that the National Government should help develop and enforce regulations (60%).

Some tour operators and conservation authorities predict National Park status will contribute to conservation if coupled with an enforced regional management plan (40%)

(also Table 2.5). There is a division in opinion however, on tourism's role with respect to the National Park. The majority of conservation authorities (5/7) suggest that it is a means of defraying the costs of running the National Park while only a minority of tour operators (1/3) proposed this possibility.

IMPLICATIONS OF SURVEY RESULTS

Although there is indication of some improved management of the natural resources, the overall perception of tour operators, conservation authorities and fishermen is there has been degradation of the natural and host environment. Degradation of the natural resources is identified as erosion of riverbank and riverside vegetation and the distancing of bird, crocodile and fish populations away from tour areas. Degradation of the host environment includes disruption of community transportation and industry as well as a reduction in foreign exchange earnings. The disruption of the local fishing industry has broader implications on local, regional and international economic systems. Fisherman supply fish to the Black River market for local consumption, shrimp to the entire island for tourist consumption (Reeson 1984) and the locally parched shrimp are sold as a specialty item as far as the international destination of Miami, Florida (C. Swaby, pers. comm.). The shrimp industry is one of the major economic contributors to the local community and compromise of this industry may have concomitant repercussions on local household incomes.

Tour operators, conservation authorities and residents believe that regulation of boat speed, frequency and model would minimize these adverse environmental impacts. Allied to this is the need for regulation of other commercial activity in the region that also

impacts adversely on the natural resources. Commercial activity perceived as environmentally damaging include the dumping of pollutants into the waterways by the sugar/rum factories and agricultural farms, the flow of untreated sewage into the waterways, solid waste disposal into natural areas, ecologically unsound urban development, sand mining, and unsustainable fishing methods.

Conservation authorities more than tour operators advocate a vision of nature tourism based on minimal modification to the environment, low volume of tourists, and financial assistance towards enhancement of the natural and community environment. In contrast to this vision, the majority of tour operators believe the main goal of any tourism enterprise is to maximize financial gain. Moreover, this goal can entail major alterations to the natural environment and high volume of tourist traffic. Tour operator plans to further expand their tourism businesses by building walking tours, an aquarium and water slides in the area is indicative of a basic difference between their concept of nature-based tourism and that of the conservation authorities.

Suggestions to improve conservation of the Black River environment identify the need for a management plan for the region based on zones of tourism, conservation and other community activities. In addition, educational programs communicating the concept of environmental sustainability to both government and community constituencies are viewed as essential as well as a system of monitoring and enforcement of regulations to be instituted and maintained. Tour operators and conservation authorities believe that National Park status may contribute to conservation if coupled by such an enforced management plan. Both tour operators and conservation authorities champion on-site management of the National Park by a community organization.

DISCUSSION

The link between development and conservation is missing in most conservation efforts (Wells and Brandon 1992) and Black River nature-based tourism is no exception. The latter is characterized by unregulated opportunism leading to degradation of the natural and host environment. One of the highlights of this study however, is the fact that it epitomizes the central thesis of Garrett Hardin's article, *Tragedy of the Commons* (Hardin 1968), and therefore indicates a means by which to reconcile nature-based tourism and resource conservation. Garrett Hardin's article put forth the notion that common pool resource users maximize personal interests to the point of resource destruction for all. As more recently examined in other tourism (Healy 1994) and conservation literature (Berkes 1989; Soule and Kohm 1989), recreational activity that relies on the use of common pool resources leads to environmental degradation. Further to this analysis, and as made obvious in this study, nature-based tourism is governed by two types of phenomena: repetitive and spreading phenomena. It is repetitive by continuously offering the same activity for the tourist groups that come to the area, both over time and space. Moreover, this repetitive activity has cumulative negative impacts if it is not in harmony with the natural resource systems in which it takes place. In this study, tourism activity is not harmonious with the habitat, wildlife and the host/community systems.

This study's findings also illustrate that nature-based tourism that exists in a capitalist society such as that of the developing country Jamaica is also dominated by a spreading phenomenon. This spreading phenomenon is evidenced by the duplication and perhaps, even multiplication of the tour business as in this particular study. Similarly,

businesses can appropriate increasing terrain of natural areas as they diversify their business portfolio. In brief, the repetitive and spreading phenomena are dimensions of the tourism-environment relationship and the concept's realistic application as a conservation strategy.

The key to modifying the outcome of resource degradation must lie in establishing adequate administrative arrangements that prevent the maximizing of individual interests and that promote a design that is harmonious with the natural systems in which it takes place. To be specific, multi-stakeholder common resource pools demand particular regulatory techniques and management arrangements to avoid resource destruction. Ostrom (1991) and Brohman (1996) suggest governing the common resource area through guidelines, developed by input from all concerned parties, and which regulate individual activity toward the benefit of all. Evidence of such types of public participation is minimal, however there are some isolated case studies (Berkes 1989; Blanchard 1994) which have proved successful in developed countries. Emerging strategies to access and include all player input toward achieving a mutually decided outcome, suggest a management structure based on collaborative management (Keogh 1990; Jamal and Getz 1995; Borrini-Feyerabend 1996). This collaborative management disengages the elite exploitative growth process in favor of more equitable distribution of benefit by accounting for input and direction from all players. It appears to be an appropriate management structure for resource conservation in a common resource pool situation such as that which exists for nature-based tourism in Black River, Jamaica.

CONCLUSION

As Black River is poised to become Jamaica's third National Park, it is shown that perceptions of tour operators, conservation authorities and hosts of the environment-tourism relationship are informative guides towards management of the area and the process of promoting conservation. The findings of this study clearly show that the boat tour ability to contribute to resource conservation is greatly influenced by the political context in which it exists. Tour operator, conservation authorities and resident surveys illustrate that unregulated and uncontrolled tourism development has at least altered, if not degraded, the natural and community environment. Despite widespread recognition of resource degradation there continue to be individual plans to further develop the local tourism industry. It is believed that National Park status may contribute to resource conservation if coupled with an enforced management plan that includes an educational program for the local community as well as government constituencies.

These findings have management implications for nature-based tourism enterprises, such as that of the Black River Morass, which depend on common resource pools. It is recommended that a structure of collaborative management, developed on a multi-stakeholder participatory planning process, is needed to promote environmental conservation. In short, a symbiotic tourism-environment relationship depends on shifting the current situation of 'open access to public resources' toward one of 'managed access to common property'.

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Table 2.1: Perception of tourism ecological impact by tour operators, conservation authorities and hosts in Black River, Jamaica (1994)

	Tour Operator	Conservation	Hosts		Combined ^a
Perception	(n/3)	Authorities (n/7)	Fishing comm (n/15)	Tour personnel (n/10)	(n/35) %
<i>Ecological benefits</i>					
Enhanced conservation	1	3	-	7	31
fewer fires					
fewer killed crocodiles					
less pollution					
Funding for conservation	1	2	-	3	17
<i>Ecological costs</i>					
Damage to natural resources	3	6	10	7	74
Riverbank erosion					
Wildlife distribution changes					

^a Mean percentage of tour operator, conservation authority and host responses

Table 2.2: Perception of tourism socio-economic impact by Black River tour operators, conservation authorities and hosts in Black River, Jamaica (1994)

Perception	Tour Operators n/3	Hosts		Combined ^a (n/28) %
		Fishing comm n/15	Tour personnel n/10	
<i>Socio-economic benefits</i>				
Employment generation	3	-	10	46
Increased social interaction	-	-	8	29
Altruism	2	-	4	21
<i>Socio-economic costs</i>				
Crowding and congestion	2	10	4	57
Land use conflicts	-	11	-	39
Inhibits local industry (fishing/shrimping)				
Loss of land (docking area)				
Increased confrontations with crocodiles				
Disrupts local transportation				
Unwelcome picture-taking				
Decreased income/social interaction	-	5	-	18

^a Mean percentage of tour operator, conservation authority and host responses

Table 2.3: Attitude of tour operators, conservation authorities and hosts toward future tourism in Black River, Jamaica (1994)

Question/response	Tour Operators (n/3)	Conservation Authorities (n/7)	Hosts (n/25)	Combined ^a (n/35) %
<i>a) What should the area be used for?</i>				
Tourism and other community activities	2	5	18	71
<i>b) Would you like to see more tourism than presently exists?</i>				
Yes	2	3	18	66
No	1	2	5	23
<i>Explanation?</i>				
To earn money	2	3	17	63
Too much degradation	1	2	5	23
Social Interaction	-	-	7	20
<i>c) What should responsibilities of ecotour management be?</i>				
Not degrade environment	2	6	17	71
Benefit local community	2	5	11	51
Provide close interaction with nature	1	6	-	20
Minimal modification to environment				
Low volume of tourists				
Maximize tourism dollars	2	2	-	11
Major modification to environment				
High volume of tourists				
Fund conservation efforts	1	5	5	31

^a Mean percentage of tour operator, conservation authority and host responses

Table 2.4: Suggestions of tour operators, conservation authorities and hosts to promote environmental conservation in Black River, Jamaica (1994)

Question/response	Tour Operators (n/3)	Conservation Authorities (n/7)	Hosts (n/25)	Combined ^a %
<i>a) Suggestions to reduce degradation?</i>				
Regulate boat tour as well as Other Industries in area	2	6	18	74
<i>Explanation?</i>				
Other Industries?				
Sugar/Rum Industry dump toxic effluent	2	4	13	54
Agricultural Farms dump pesticides, weedicides	1	3	3	20
Hazardous Sewage & Waste disposal	1	2	3	17
Urban Development and Sand mining	1	2	-	9
Unsustainable Fishing and Community activities	2	2	2	17
<i>b) How could environmental conservation be promoted?</i>				
Management plan	2	6	19	77
enforced regulations/policies				
educational programs				
Tax-incentives toward environmentally friendly activity	-	3	-	-
Benefits to local community from tourism	1	5	-	17

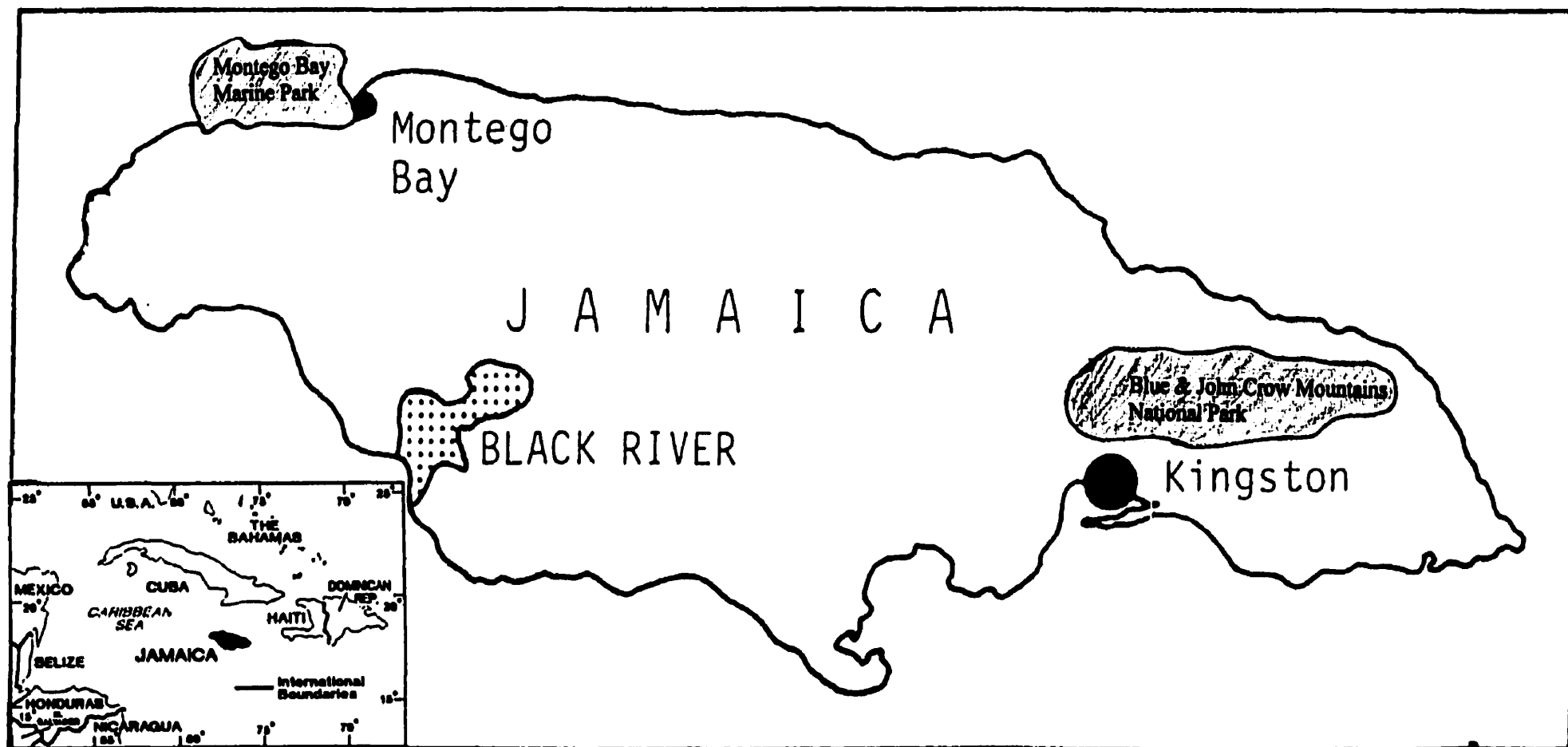
^a Mean percentage of tour operator, conservation authority and host responses

Table 2.5: Attitude of tour operators, conservation authorities and hosts toward future management of the wetland and National Park in Black River, Jamaica (1994)

Question/response	Tour Operators (n/3)	Conservation Authorities (n/7)	Hosts (n/25)	Combined ^a (n/35) %
<i>a) Would National Government manage tours better than private ownership of today?</i>				
No	2	6	18	75
<i>Explanation?</i>				
Not effective enforcer of environmental law/ Don't have personnel or funds	2	5	17	69
<i>b) Who should manage National Park?</i>				
Community organization	1	6	15	63
Not National Government	1	5	6	34
<i>c) Role of National Government?</i>				
Help establish and enforce regulations	2	4	15	60
<i>d) Will National Park Status contribute to conservation?</i>				
Maybe, if co-exists with enforced management plan	1	4	9	40

^a Mean percentage of tour operator, conservation authority and host responses

Figure 1: Map showing location of Jamaica within the Caribbean, National Parks and the Black River Lower Morass on the island of Jamaica



CONNECTING TEXT

In the preceding chapter, the impacts of nature-based tourism on the natural and host environment were investigated. Perceptions of tourism developers, conservation authorities and hosts indicate that nature-based tourism in Black River brings both benefits and costs to the ecological and host environment. Furthermore, tour operators and the members of the host community desire an increase in tourism and have plans to further develop the local tourism. Recommendations were presented to promote the compatibility between tourism and the ecological and host environment.

Another aspect of nature-based tourism is its success as a consumer product. This is investigated in the next chapter through surveys of the visiting public and their opinion about tour features.

CHAPTER 3

Customers of Nature-based tourism: Matching the Tourist Experience and Service Provision

INTRODUCTION

Major issues facing the nature-based tourism industry today include providing high quality service (Frechtling 1987; Krippendorf 1987; Ryan 1991) and financing ecologically sound management (Boo 1993; Lindberg and Huber 1993; Brandon 1996). High quality service entails understanding and satisfying customer demand (Frechtling 1987; Krippendorf 1987) and key factors include knowing who the customer is, what attracted them and how they could be better satisfied (Goodall and Ashworth 1988; Ziffer 1989; Giannecchini 1993; Ceballos-Lascurain 1996). In addition to information on the consumer group and their financial potential, demographic relationships have proven fruitful for management and marketing direction. Both tourist demand trends (Ross 1993) and tourist financial attributes (Ryel and Grasse 1991) have been shown to reflect demographic profiles. The success of management and marketing strategies is greatly enhanced with such information by guiding priorities for improving the product.

Details of consumer demand and financial attributes vary according to a number of international and national factors making this information site-specific (Lindberg and Huber 1993; Laarman and Gregersen 1996). Visitor surveys are the standard research tool to collect this type of detailed information (Gravetter and Wallace 1985; McNeely *et al.* 1992; Boo 1993), however few researchers publish their findings (Lindberg and Huber 1993) and there is currently a paucity of information on the social and economic market value of natural areas (Valentine 1992; Lindberg and Huber 1993). Furthermore, marketers and tourists sometimes have different perceptions of consumer wants and needs (Witter 1985) and the financial value of a given resource (Boo 1990; Laarman and

Gregersen 1996), making the consumer population a key resource for accurate information.

This study investigates the profile, demand trends, financial resource potential and demographic travel pattern of consumers of nature-based tourism in Black River, Jamaica. It is an integral part of a research project in Black River, Jamaica to gain a greater understanding of the tourism-environment relationship. There are no previous studies of this tourist population.

METHODOLOGY: SURVEY INSTRUMENT, SAMPLE AND DATA ANALYSIS

The present survey adapted to local circumstance the questionnaire employed by Grekin (1994) in a tourism study of Baffin Island, Canada. Format, content validity and results reliability were further developed according to the guidelines of Fink and Kosecoff (1985), Smith and Glass (1987), and Jackson (1988). The questionnaire is supplied by appendix B. Demographic and financial data are accessed with closed and open-ended questions and consumer opinion with five-point Likert-type scale questions.

During summer 1994, a pilot study finalized the survey instrument and on-site distribution and retrieval of the survey instrument achieved over a 90% response rate. An opportunistic random sample of the tourist population resulted in 170 fully completed questionnaires. Results are tabulated to yield number, percentage and mean figures for a given category. Mean figures are used to rank tourist responses and one-way analysis of variance of the 24 dependent variables with the six independent variables yielded 144 F-values.

RESULTS AND DISCUSSION

Demographic information (Table 3.1) indicates that the general profile of the Black River nature-tourist is an individual from Britain (35%), Jamaica (25%) or the United States (18%) who is equally likely to be between the ages of 26-35 (32%) or 36-55 (30%) and to be female (53%) or male (48%). They have at least a secondary level education (44%), earn either less than US\$ 20 000 (34%) or between US\$ 30 000 – 59 999 (41%) per annum (pre-tax) and travel with family (51%) or friends (41%). Other studies (Ziffer 1989; Ceballos-Lascurain 1996) show similar findings including equal probability of the nature-tourist being female or male, earning anywhere from less than US \$25 000 to US \$100 000 and strong representation from individuals travelling with family or friends.

Tourist opinion indicates that natural resources play a greater role in attracting the tourist than the sociocultural environment. As illustrated in Table 3.2, factors most central to the travel decision include wildlife (mean = 4.41), scenery/vegetation (mean = 4.34) and rare species (mean = 4.01) while factors less central to the travel decision include education (mean = 3.79), meeting local people (mean = 3.12) and arts and crafts (mean = 2.4). Caution must be exercised interpreting these demand trends due to current Black River tour operator marketing strategies that emphasize natural resources rather than the sociocultural environment. Their promotions may result in a biased tourist population. Other survey information supports this cautionary note since a majority (88%) of the tourists surveyed who did not meet Black River residents indicate they would have liked to have had the opportunity.

Overall satisfaction with tours is high (mean = 4.20) (Table 3.3). The majority (74%) of tourists rated the tours at the top of the scale as 'good to excellent', furthermore, a majority (57%) also indicated not only would they return on the tour but they (75%) would recommend it to a friend (Table 3.4). Although tourist opinion indicates satisfaction with tour features, some items rate lower, indicating opportunities for tour improvement toward consumer demand (Table 3.5). Tour features respondents were most satisfied with include the tour guide (mean = 4.48), transportation (mean = 3.71), and educational content (mean = 3.65). Respondents were less satisfied with park facilities (mean = 3.39), food (mean = 3.23), cost (mean = 3.20), and technical information (mean = 2.89). Technical information such as maps and books are currently not main features of the tour, but tourists seemed interested in having this feature of the excursion developed.

Half (47%) of the respondents purchased a pre-paid package and the other half (45%) paid a gate entrance (Table 3.6). Those who purchased a pre-paid package paid between US \$51 - \$85 dollars for the day trip while gate entrances were between US \$0 and \$20 dollars. Those who did not pay include school children groups, as it is the policy of both tour operators to encourage appreciation of natural areas at a young age. When respondents were asked if they would pay a higher entrance fee for conservation purposes, respondents (52%) were divided and half (26%) indicated that they would be willing to do so (*also* Table 3.6). Predictions on what tourists would be willing to donate towards conservation of the area include "donating time" to specific monetary amounts between US \$1 to \$100. The majority of respondents indicated they would be willing to donate between \$1 - \$10 US dollars. Thus few tourists appear to be willing to pay a

higher entrance fee. These entrance fees reflect those found appropriate in Central American Parks of US \$5 and \$10 dollars (Lindberg and Huber 1993), suggesting these amounts may be the approximate market value of such tourism attractions. The donation predictions of Black River tourists however, are much lower than those found in other nature-tourist surveys where tourists are willing to donate between US \$50 to \$200 dollars (Lindberg and Huber 1993) for conservation of an area.

To determine any significant differences in opinion among demographic subgroups, the 24 dependent variables (tour features) were tested by one-way analysis of variance with the six independent variables (demographic subgroups) including nationality, age, gender, education, income and travel mode (Table 3.7). Of the resulting 144 F-values a total of 20 items (14%) proved significant at the .05 percent level. Nationality (7 items) and age (6 items) produced the greatest number of differences in opinion on tour features. Fewer differences were found for gender (1 item), education (3 items), income (2 items) and travel mode (1 item).

Results of the analysis of variance tests indicate that American, British, Jamaican and Germans each had a difference in opinion on at least one tour feature. Americans stood out by far, differing in opinion on five tour features compared to the other nationalities that tested for significance across only one or two factors. Americans felt that they learned significantly more about conservation efforts and Jamaican history, were more satisfied with the educational content as well as cost, and rated the tour significantly higher than all the other nationalities. British respondents learned significantly less about geography and Germans rated the tour significantly lower than all other nationalities. Jamaicans indicate they learned significantly more about Jamaican

history and paid less for the tour. Multi-tiered pricing, where nationals pay less than other visitors, has proved to promote both revenue maximization and social equity (Laarman and Gregersen 1996) and may also be an appropriate pricing policy for Black River.

Respondents under the age of 18 had significantly different opinions on tour features than all other age categories. Respondents under 18 rated tour features including the scenery/vegetation, wildlife and education as significantly less important in attracting them to the excursion than the other age categories. They also learnt less about geography and conservation efforts. Other age category differences include those respondents between 18-25 who pay less for the excursion than the other age categories. Females rated education as a more important factor attracting them to the tour than males. Other demographic subgroup differences include education at the graduate and undergraduate level. Graduates indicate that they learned less about Jamaican history and rated the tour lower than the other education categories. Undergraduates were significantly more satisfied with the cost than other education levels. Those earning less than \$20 000 US dollars per annum (pre-tax) were significantly more satisfied with the cost than other income groups and those respondents earning \$20 000 - \$29 999 US dollars per annum (pre-tax) rated meeting local people less important than the other income groups.

IMPLICATIONS AND CONCLUSION

The general profile of a Black River nature tourist appears to be an individual from Britain, Jamaica or the United States, between the age of 26-55 and is equally likely to be female or male, has at least a secondary level education, earns either less than \$20

000 or between \$30 000 – 59 999 US dollars per year (pre-tax) and travels with family or friends. Natural resources decidedly play a more central role in attracting the tourists to the excursion than the sociocultural environment. Overall opinion of the tour is high and a majority of respondents would return on the tour and recommend it to a friend. Satisfaction with tour infrastructure is also high with the exception of available technical information. Provision of technical information such as maps and books would be appreciated. Tourists are divided whether they would be willing to pay a higher entrance fee, currently set at \$15, to support conservation efforts. They would however, be willing to donate funds in the range of \$1-\$10 US dollars. Nationality and age were the most significant variables in differentiating tourist opinion on tour features and the information could be useful to future marketing and management planning.

These findings indicate that tourists can provide information on demand trends and financial aspects of a tourism enterprise to guide management and marketing strategies. Furthermore, this information is a starting point for future research at this and other similar nature-based tour evaluation studies.

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Table 3.1: Tourist demographic profile at Black River, Jamaica (1994)

Demographic Category	Respondents (n)	Percent (%)
Nationality		
American	27	17.5
Belgian	2	1.3
British	54	35.1
Canadian	2	1.3
German	16	10.4
Italian	9	5.8
Jamaican	38	24.7
Japanese	1	0.6
Netherlands	5	3.2
Total (n)	154	100.0
Age		
UNDER 18	19	11.6
18-25	40	24.4
26-35	52	31.7
36-55	49	29.9
56-65	3	1.8
66+	1	0.6
Total (n)	164	100.0
Gender		
Female	84	52.5
Male	76	47.5
Total (n)	160	100.0
Education		
Primary	2	1.2
Secondary	73	44.0
Undergraduate	34	20.5
Graduate	57	34.3
Total (n)	166	100.0
Income		
UNDER 20 000	38	33.6
20 000 - 29 999	14	12.4
30 000 - 39 999	22	19.5
40 000 - 59 999	24	21.2
60 000 - 99 999	9	8.0
100 000+	6	5.3
Total (n)	113	100.0
Travel Mode		
Alone	6	3.8
Family	80	51.0
Friends	65	41.4
Other	6	3.8
Total (n)	157	100.0

Table 3.2: Tour features central to travel decision to Black River, Jamaica (1994)

Question on Survey Instrument	Tourist Opinions (a)				
	Percentage Distribution of Response (b)			Mean (c)	Rank (d)
	Not Important	Neutral	Very Important		
<i>How important were each of the following in your decision to come to Black River?</i>					
Natural Resource Feature					
Wildlife	4.1	11.2	77.6	4.41	1
Scenery/Vegetation	4.1	11.2	78.2	4.34	2
Rare Species	8.2	17.1	64.7	4.01	3
Sociocultural Feature					
Education	10	28.2	53.0	3.79	4
Meeting Local People	27.7	28.2	35.3	3.12	5
Arts & Crafts	17.6	26.5	11.8	2.4	6

a Results represent responses from 170 tourists of Black River Tours, Jamaica. Nonresponses are not included

b Percent of responses distributed under 'Not Important' answered 1 or 2, those under 'Neutral' answered 3, and those under 'Very Important' answered 4 or 5 on the 5 point Likert Scale.

c Mean value is derived from Likert scale range of 1=not important to 5=very important

d Ranks are assigned by mean value. Rank 1 is given to highest mean value, rank 2 to second highest mean value, etc.

Table 3.3: Tourist overall opinion of tour at Black River, Jamaica (1994)

Question on Survey Instrument	Tourist Opinions (a)			
	Percentage Distribution of Response (b)			Mean (c)
	Not Very Good	Neutral	Very Good	
How would you rate this tour overall ?	1.2	7.7	73.5	4.20

a Results represent responses from 170 tourists of Black River Tours, Jamaica. Nonresponses are not included

b Percent of responses distributed under 'Not Very Good' answered 1 or 2, those under 'Neutral' answered 3, and those under 'Very Good' answered 4 or 5 on the 5 point Likert Scale.

c Mean value is derived from Likert scale range of 1=not important to 5=very important

Table 3.4: Tourist willingness to return or recommend tour at Black River, Jamaica (1994)

Question on Survey Instrument	Tourist Opinions (a)		
	Percentage Distribution of Response		
	Yes	No	Not Sure
<i>Would you come back on this tour ?</i>	57.0	16.0	14.7
<i>Would you recommend this tour to a friend ?</i>	75.0	2.0	8.8

a Results represent responses from 170 tourists of Black River Tours, Jamaica. Non-responses are not included

Table 3.5: Tourist satisfaction level with tour features at Black River, Jamaica (1994)

Question on Survey Instrument	Tourist Opinions (a)				
	Percentage Distribution of Response (b)				
	Completely Dissatisfied	Neutral	Extremely Satisfied	Mean (c)	Rank (d)
<i>How satisfied were you with each of the following?</i>					
Guide	0.6	6.5	82.9	4.48	1
Transportation	7.1	25.9	43.5	3.71	2
Educational Content	8.8	27.1	44.1	3.65	3
Park Facilities	8.2	35.3	28.2	3.39	4
Food	6.5	31.8	33.5	3.23	5
Cost	10.6	33.5	24.7	3.20	6
Technical Information (maps,books)	24.1	34.7	20.2	2.89	7

a Results represent responses from 170 tourists of Black River Tours, Jamaica. Non-responses are not included

b Percent of responses distributed under 'Completely Dissatisfied' answered 1 or 2, those under 'Neutral' answered 3, and those under 'Extremely Satisfied' answered 4 or 5 on the 5 point Likert Scale.

c Mean value is derived from Likert scale range of 1=not important to 5=very important

d Ranks are assigned by mean value. Rank 1 is given to highest mean value, rank 2 to second highest mean value, etc.

Table 3.6: Tourist financial expenditures and willingness to pay predictions at Black River, Jamaica (1994)

Question on Survey Instrument	Tourist Opinion (a)	
	Percentage Distribution of Response	
	Yes	No
<i>Did you travel to Black River on a pre-paid package?</i>	47.0	45.0
<i>Did you pay an entrance fee?</i>	45.0	38.0
<i>To continue supporting conservation of the area and wildlife, would you pay a higher entrance fee?</i>	26.0	26.0

a Results represent responses from 170 tourists of Black River Tours, Jamaica. Non-responses are not included.

Table 3.7: Level of significance of tourist opinion on tour features - Analysis of variance across selected demographic characteristics at Black River, Jamaica (1994)

Tour Feature Question on Survey Instrument	Analysis of Variance (level of significance)					
	Demographic Subgroup					
	Nationality	Age	Gender	Education	Income	Travel Mode
<i>How important were each of the following in your decision to come to Black River?</i>						
Scenery/Vegetation		0.05				
Wildlife		0.05				
Rare Species						
Education			0.05			
Meeting Local People		0.05				
Arts & Crafts						
<i>How much, if anything, did you learn in Black River about the following?</i>						
Geography	0.05	0.05				
Wildlife						
Vegetation						
Jamaican History	0.05			0.05		
Conservation Efforts	0.05	0.05				
Local People					0.05	
<i>How satisfied were you with each of the following?</i>						
Transportation						
Guide						
Technical Information (maps, books)						
Educational Content	0.05					
Park Facilities						
Food						
Cost	0.05			0.05	0.05	0.05
<i>Tour Rating</i>						
How would you rate this tour overall?	0.05			0.05		
<i>What was the total price (for the pre-paid package)?</i>						
	0.05	0.05				
<i>How much would you be willing to contribute towards conservation of this area and its wildlife?</i>						

*only responses that are significant at .05 level are indicated

OVERALL CONCLUSIONS

Results obtained from the tour operator, conservation authority and host community surveys indicate that nature-based tourism in Black River, Jamaica brings both ecological and socio-economic benefits and costs. Benefits include enhanced conservation of the natural resources, funding for conservation activity, employment generation, increased social interaction and altruism. Costs include degradation of the natural resources, crowding and congestion along the river ways, land use conflicts and decreased social interaction and income. Tour operator, conservation authorities and the host community suggest opportunities to decrease negative, and promote positive ecological and socio-economic tour impacts.

A symbiotic tourism-environment relationship, however is largely limited by the local political context of unregulated opportunism in a common resource pool. It appears that changing the current 'unregulated access to public resources' toward one of 'managed access of common property' is essential to yield an outcome of satisfaction among stakeholder groups. To enhance the compatibility of tourism activity with the local natural and host environment a political structure of collaborative management is recommended.

Tourist surveys revealed information that could be useful to improving the tour product toward consumer satisfaction and for future marketing and management planning. The general profile of a Black River nature tourist appears to be an individual from Britain, Jamaica or the United States, between the age of 26-55 and is equally likely to be female or male, has at least a secondary level education, earns less than US \$20 000 or between \$30 000–\$59 999 per annum and travels with family or friends. Overall

opinion of the tour is high and a majority of respondents would return on the tour and recommend it to a friend. As a financial source for conservation activities, tourists are divided whether they would be willing to pay a higher entrance fee currently set at US\$15, but would donate funds in the range of US\$1-\$10. Nationality and age were the most significant variables in differentiating tourist opinion on tour features.

SUGGESTIONS FOR FUTURE WORK

The significance of ecotourism as a conservation strategy depends largely on it addressing the causes of local resource degradation external to tourism activity (Whelan 1991; Brandon and Margoulis 1996). Nature-based tourism in Black River does not appear to impact in any significant way on the causes of resource degradation in its region, nor are there any indications that these are the intentions of most of the tour developers. It would appear essential that the future evolution of Black River nature-based tourism include developing links between tourism and conservation activity.

In short, while nature-based tourism in Black River, Jamaica is successful as a tourist product, it does not harmonize with the natural and host environment in which it takes place. Furthermore, it does little to address the causes of natural resource degradation that exist external to its own operations. It appears that Black River nature-based tourism is not as Farrell and Runyan (1991) describe 'ecotourism in action', but rather tourism with many opportunities to improve its relationship with the natural and host environment.

APPENDIX A

Black River survey questions for tour managers, conservation authorities and host population

Tour operator questions

Basic information about the tour design

1. Why were the tours developed?
2. What does the tour consist of?
3. How do you define ecotourism?
4. Do you think the government would run the ecotours better than the private ownership of today?
5. How does the tour support itself financially?

Information about tourists and residents

6. Where do most of the tourists come from? How would you describe the tourists that come here - any generalities - age, gender, education?
7. Are there peaks in tourist numbers? when and why?
8. Do you have any preferences in the type of tourist that comes here?
9. What can a tourist expect from this tour?
10. How is the local community involved with the tour - do they employ local people? Any local businesses that the tour interacts with?
11. Are you trying to increase ties with local businesses? How is this achieved?
12. Are you involved with any community projects - funding of local activities?
13. Have there been any conflicts with the local people?
14. Is there a way for tourists or residents to make suggestions about the tour?

Environmental interests of tour

15. Are any areas off limits to the tourists? To the residents?
16. Are any suggestions made to the tourists or to the residents to minimize their environmental impact?
17. Are there any threats to the plant or animal life of the area?
18. Is there any monitoring of the area's wildlife or habitat?
19. Has the government shown any support for conserving natural areas such as this?

Future?

20. What do you think the natural areas of Black River should be used for?
21. What are the future goals of this tour establishment?
22. What role should the government have in the development of the ecotours?
23. What should the responsibilities of the ecotour management be?
24. What role should tourists play in ecotourism? (economic)
25. How do Black River residents contribute towards ecotourism?
26. What do you forecast as the future for the natural environment here?
27. What would be necessary to improve conservation in the area?
28. What do you predict for the future of tourism to this area? (growth industry?, impact on environment, impact on local economy)

Conservation authority questions

Opinion of ecotourism

1. How would you define ecotourism? And the definition of an ecotourist?
2. Do you think ecotourism is a good way to conserve natural areas or wildlife? Why/why not?
3. Do you think the government would run the ecotours better than the private ownership of today?
4. What should the responsibilities of the ecotour management be?
5. What role do tourists play in ecotourism?
6. How do Black River residents contribute towards ecotourism?
7. How have the ecotours in Black River influenced the area?

Conservation Mandate

8. What are the largest environmental threats to Jamaica right now?
9. How much importance is placed on conservation of natural areas?
10. What type of support is available for conservation projects?
11. Are there any areas of Jamaica that are receiving priority attention? why?
12. Are there efforts to monitor environmental impacts in tourist areas? Such as?
13. Are natural areas seen as important for attracting tourists from overseas?

Future?

14. What would you suggest for preventing the destruction of natural areas?
15. What do you think the natural areas of Black River should be used for?
16. What role should the government have in the development of the ecotours?

Host community questions

Socio-economic information

- Age - gender - education
- occupation - income.

Opinion of local ecotourism

1. What do you think about ecotourism in Black River? How do you define ecotourism?
2. Who do you consider an ecotourist in Black River?
3. What are the good aspects of ecotourism for the people of Black River?
4. What are the bad aspects of tourism for the local community?
5. What about for yourself, have you benefitted from ecotourism?
6. Who do you think benefits the most from ecotourism? Anyone else?

Limits of the market?

7. What do tourists do when in Black River? Do they come to town, do they spend money?
8. Are there things that tourists should do in Black River, but at present are not doing?

Knowledge about tours

9. What do you think about the tours up Black River and to the YS Falls?
10. Why do you think the tours were developed?
11. What would the area be used for if the tours were not here?

Potential problems?

12. What do you think the natural areas of Black River should be used for?
13. Do you think the government would run the ecotours better than the private ownership of today?
14. What role should the government have in the development of the ecotours?
15. What should the responsibilities of the ecotour management be?
16. What role should tourists play in ecotourism?
17. How do Black River residents contribute towards ecotourism?
18. Do the residents of Black River use the same area as where the tours take place? For what reason and how often. Do you personally use the tour areas? For what and how often.
19. Have you found tourism restricts you in any way?
20. Is there anything tourists should not do while in area? Any place they should not go?
21. Do you have any complaints about tourism in Black River? Would you like to see more of the tourism that is presently taking place?
22. What would you change about ecotourism in Black River?
Do you have any suggestions to improve it?

APPENDIX B

Black River tourism cover letter and questionnaire

**McGILL UNIVERSITY
DEPARTMENT OF NATURAL RESOURCE SCIENCES
AND GEOGRAPHY**

BLACK RIVER VISITOR SURVEY

This survey is part of a study to gain a better understanding of the interactions between natural areas and tourism. It is being carried out in the Departments of Natural Resource Sciences and Geography at the University of McGill, Montreal, Canada.

We hope that you will spare a few moments to answer some questions about your own experiences and opinions of Black River. The information you give is strictly confidential - you'll note we do not require your name or address. If you need more space than provided, please continue on the back of the page.

Thank you very much for your cooperation.

Interviewer, Dominique Brief

McGill Supervisor, Professor J. Roger Bider, Ph.d.

DATE: _____

PAGE 1 OF 2

VISITOR EVALUATION FORM1. Where do you currently live?

2. In which age group are you?

Under 18	☐	36 - 55	☐
18 - 25	☐	56 - 65	☐
26 - 35	☐	66 +	☐

3. What is your sex? MALE ☐ FEMALE ☐

4. Level of education attained?

School: Primary ☐ Secondary ☐University: undergraduate ☐ graduate ☐

5. What is your approximate annual income, before tax? currency _____ (prefer US\$)

☐ UNDER 20 000 ☐ 40,000 - 59,999☐ 20,000 - 29,999 ☐ 60,000 - 99,999☐ 30,000 - 39,999 ☐ 100,000 +

Other _____ (indicate currency)

6. With whom are you travelling?

☐ ALONE ☐ FRIENDS☐ FAMILY ☐ OTHER specify _____7. What is your occupation?(please print)
_____8. At which hotel are you staying?(please print)

9. How important were each of the following in your decision to come to Black River?

	NOT IMPORTANT		NEUTRAL		VERY IMPORTANT
MEETING LOCAL PEOPLE	1	2	3	4	5
ARTS & CRAFTS	1	2	3	4	5
DIVERSION FROM CITY/BEACH	1	2	3	4	5
SCENERY/VEGETATION	1	2	3	4	5
WILDLIFE	1	2	3	4	5
RARE SPECIES	1	2	3	4	5
EDUCATION	1	2	3	4	5
OTHER(specify) _____	1	2	3	4	5

10.a) Did you have the opportunity to meet any Black River residents?

☐ YES ☐ NO

b) If no, would you have liked to?

☐ YES ☐ NO

11. How much, if anything, did you learn in Black River about the following?

	NOTHING				A GREAT DEAL
JAMAICAN HISTORY	1	2	3	4	5
CONSERVATION EFFORTS	1	2	3	4	5
LOCAL PEOPLE	1	2	3	4	5
GEOGRAPHY	1	2	3	4	5
WILDLIFE	1	2	3	4	5
VEGETATION	1	2	3	4	5

12. How satisfied were you with each of the following?

	COMPLETELY DISSATISFIED		NEUTRAL		EXTREMELY SATISFIED
ACCOMODATION(Black River)	1	2	3	4	5
PARK FACILITIES	1	2	3	4	5
FOOD	1	2	3	4	5
COST	1	2	3	4	5
TRANSPORTATION (LOCAL)	1	2	3	4	5
GUIDE (BLACK RIVER)	1	2	3	4	5
TECHNICAL INFORMATION (maps, books)	1	2	3	4	5
EDUCATIONAL CONTENT	1	2	3	4	5
OTHER? _____	1	2	3	4	5

13. Did you travel to Black River on a pre-paid package? YES ☐ NO ☐
 What was the total price?(specify currency) _____

14. Excluding the pre-paid package, what did you spend money on in Black River?
 AMOUNT CURRENCY(prefer in US\$)

FOOD AND BEVERAGES _____

PERSONAL EXPENSES _____

SOUVENIRS _____

ENTRANCE FEE _____

TRANSPORTATION _____

ACCOMODATION _____

OTHER? _____

15.a) Did you pay an entrance fee for the Black River tour? YES ☐ NO ☐ if no, go to 15c.

b) To continue supporting conservation of the area and wildlife, would you be willing to pay an entrance fee that is higher? YES ☐ NO ☐

c) How much would you be willing to contribute towards the conservation of this area and its wildlife? _____ (specify currency)

16. What were your three major expectations from this tour and were they met?(please print)

1. _____

2. _____

3. _____

17. What did you find most interesting about the environment or wildlife in Black River?

18. What, if anything, would have improved your visit?(please print)

19.a) How would you rate this tour overall? TERRIBLE POOR NEUTRAL GOOD EXCELLENT
 1 2 3 4 5

b) Would you come back on this tour? YES NO NOT SURE
☐ ☐ ☐

c) Would you recommend this tour to a friend? ☐ ☐ ☐

What would make you return to Black River?(please print)

20. Do you have any other comments regarding tourism and/or conservation efforts in Black River?(please print)

THANK YOU FOR TAKING THE TIME TO PARTICIPATE IN THIS QUESTIONNAIRE. HAVE A PLEASANT DAY.

APPENDIX C

Data analysis results for chapter three:

Analysis of variance test results of Black River tourist on tour features across demographic characteristics

Tourist Questionnaire Data
Significant Single Factor Anova, alpha = .05

Nationality

11A Geography
SUMMARY

Groups	Count	Sum	Average	Variance
American	27	112	4.14815	0.59259
British	52	169	3.25	1.44808
Jamaican	33	132	4	0.875
Netherlands	5	19	3.8	0.2
Italian	9	31	3.44444	1.02778
German	15	52	3.46667	1.12381

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	20.0587	5	4.01173	3.81631	0.002893	2.2813
Within Groups	141.913	135	1.05121			
Total	161.972	140				

SIG

SIG? 11A (no British)
SUMMARY

Groups	Count	Sum	Average	Variance
American	27	112	4.14815	0.59259
Jamaican	33	132	4	0.875
Netherlands	5	19	3.8	0.2
Italian	9	31	3.44444	1.02778
German	15	52	3.46667	1.12381

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	6.71344	4	1.67836	2.06831	0.092188	2.4803
Within Groups	68.163	84	0.81146			
Total	74.8764	88				

NS

11A CNCL: British learned significantly less about
Geography than other nationalities

11D Jamaican History
SUMMARY

Groups	Count	Sum	Average	Variance
American	28	98	3.76923	1.14462
British	54	160	2.96296	1.31936
Jamaican	35	131	3.74286	1.6084
Netherlands	5	13	2.6	0.8
Italian	9	19	2.11111	0.86111
German	13	36	2.76923	1.35897

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	36.6088	5	7.32176	5.54359	0.000112	2.2808
Within Groups	179.624	136	1.32076			
Total	216.232	141				

SIG

11E Conservation Efforts
SUMMARY

Groups	Count	Sum	Average	Variance
American	27	100	3.7037	1.37037
British	53	141	2.66038	1.78705
Jamaican	35	104	2.97143	2.20504
Netherlands	5	12	2.4	1.3
Italian	9	26	2.88889	1.11111
German	15	45	3	1

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	21.31	5	4.26243	2.55108	0.0305	2.28
Within Groups	230.6	138	1.67085			
Total	251.9	143				

SIG

SIG? 11E (no American)
SUMMARY

Groups	Count	Sum	Average	Variance
British	53	141	2.66038	1.78705
Jamaican	35	104	2.97143	2.20504
Netherlands	5	12	2.4	1.3
Italian	9	26	2.88889	1.11111
German	15	45	3	1

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	3.532	4	0.88288	0.50723	0.7305	2.453
Within Groups	194.9	112	1.7406			
Total	198.5	116				

NS

11E CNCL: Americans learned significantly more about
Conservation Efforts than the other nationalities

SIG? 11D (no American)
SUMMARY

Groups	Count	Sum	Average	Variance
British	54	160	2.96296	1.31936
Jamaican	35	131	3.74286	1.6084
German	13	36	2.76923	1.35897
Italian	9	19	2.11111	0.86111
Netherlands	5	13	2.6	0.8
British	54	160	2.96296	1.31936

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	27.59	5	5.51788	4.08593	0.0016	2.289
Within Groups	220.9	184	1.34716			
Total	248.5	189				

SIG

SIG? 11D (no American, no Jamaican)

SUMMARY

Groups	Count	Sum	Average	Variance
British	54	160	2.96296	1.31936
Netherlands	5	13	2.6	0.8
Italian	9	19	2.11111	0.86111
German	13	36	2.76923	1.35897

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	5.89972	3	1.96657	1.57207	0.202956	2.7233
Within Groups	96.3225	77	1.25094			
Total	102.222	80				

NS

11D CNCL: Americans and Jamaicans learned significantly more about Jamaican History than other nationalities

Question 12

12D Educational Content

SUMMARY

Groups	Count	Sum	Average	Variance
American	22	91	4.13636	0.69481
British	48	171	3.5625	0.97473
Jamaican	31	120	3.87097	1.04946
Netherlands	5	17	3.4	0.8
Italian	5	14	2.8	1.2
German	11	34	3.09091	0.69091

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	14.4249	5	2.88499	3.13361	0.010671	2.2925
Within Groups	106.796	116	0.92066			
Total	121.221	121				

SIG

SIG? 12D (no American)

SUMMARY

Groups	Count	Sum	Average	Variance
British	48	171	3.5625	0.97473
Jamaican	31	120	3.87097	1.04946
Netherlands	5	17	3.4	0.8
Italian	5	14	2.8	1.2
German	11	34	3.09091	0.69091

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	8.43454	4	2.10863	2.17254	0.07792	2.4675
Within Groups	92.2055	95	0.97058			
Total	100.64	99				

NS

CNCL: Americans are significantly more satisfied with the Educational Content than other nationalities

12E Accomodation

SUMMARY

Groups	Count	Sum	Average	Variance
American	20	80	4	0.73684
British	17	51	3	1.25
Jamaican	35	114	3.25714	1.25546
Netherlands	5	14	2.8	1.2
Italian	4	14	3.5	0.33333
German	10	39	3.9	0.96669

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	14.9	5	2.98	2.77177	0.0228	2.322
Within Groups	91.39	85	1.07513			
Total	106.3	90				

SIG

SIG ?12E (no American)

SUMMARY

Groups	Count	Sum	Average	Variance
British	17	51	3	1.25
Jamaican	35	114	3.25714	1.25546
Netherlands	5	14	2.8	1.2
Italian	4	14	3.5	0.33333
German	10	39	3.9	0.96669

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	6.53	4	1.63244	1.39226	0.2463	2.511
Within Groups	77.39	86	1.17251			
Total	83.92	70				

NS

12E CNCL: Americans are significantly more satisfied with their Accomodations than other nationalities

12H Cost SUMMARY

Groups	Count	Sum	Average	Variance
American	22	86	3.90909	1.1342
British	19	54	2.84211	0.69591
Jamaican	38	121	3.18421	1.50569
Netherlands	5	11	2.2	0.7
Italian	5	16	3.2	0.7
German	13	39	3	1.33333

Source of Variation	SS	df	MS	F	P-value	Fcrit
Between Groups	19.0214	5	3.80429	3.21334	0.010012	2.3092
Within Groups	113.655	96	1.18391			
Total	132.676	101				

SIG

SIG? 12H (no American) SUMMARY

Groups	Count	Sum	Average	Variance
British	19	54	2.84211	0.69591
Jamaican	38	121	3.18421	1.50569
Netherlands	5	11	2.2	0.7
Italian	5	16	3.2	0.7
German	13	39	3	1.33333

Source of Variation	SS	df	MS	F	P-value	Fcrit
Between Groups	5.151	4	1.28766	1.075	0.375	2.494
Within Groups	89.84	75	1.19782			
Total	94.99	79				

NS

12H CNCL: Americans are significantly more satisfied with the Cost than other nationalities

Question 13B SUMMARY

Groups	Count	Sum	Average	Variance
American	5	276	55.2	1785.2
British	32	2252	70.375	628.629
Jamaican	7	224	31.9871	882.383

Source of Variation	SS	df	MS	F	P-value	Fcrit
Between Groups	8768.11	2	4384.05	5.63069	0.006908	3.2257
Within Groups	31922.80	41	778.6			
Total	40690.71	43				

SIG

SIG ? 13B SUMMARY

Groups	Count	Sum	Average	Variance
American	5	276	55.2	1785.2
British	32	2252	70.375	628.629

Source of Variation	SS	df	MS	F	P-value	Fcrit
Between Groups	995.808	1	995.808	1.30688	0.260362	4.1213
Within Groups	26628.3	35	760.809			
Total	27624.1	36				

NS

CNCL: Jamaicans pay significantly less than other nationalities

Question 19A SUMMARY

Groups	Count	Sum	Average	Variance
American	27	121	4.48148	0.56695
British	45	184	4.08889	0.21919
Jamaican	30	131	4.36667	0.37816
Netherlands	3	12	4	0
Italian	5	19.5	3.9	0.3
German	15	58	3.86667	0.40952

Source of Variation	SS	df	MS	F	P-value	Fcrit
Between Groups	5.763	5	1.15256	3.24357	0.0088	2.29
Within Groups	42.29	119	0.35534			
Total	48.05	124				

SIG

SIG?19A (no American or German) SUMMARY

Groups	Count	Sum	Average	Variance
British	45	184	4.08889	0.21919
Jamaican	30	131	4.36667	0.37816
Netherlands	3	12	4	0
Italian	5	19.5	3.9	0.3

Source of Variation	SS	df	MS	F	P-value	Fcrit
Between Groups	1.906	3	0.63525	2.30089	0.0838	2.72
Within Groups	21.81	79	0.27609			
Total	23.72	82				

NS

CNCL: Americans rate the tour higher and Germans rate the tour Lower than other nationalities

2- AGE

Scenery/Vegetation

SUMMARY

Groups	Count	Sum	Average	Variance
Under 18	19	72	3.78947	1.50677
18-25	39	166	4.25641	1.03779
26-35	47	206	4.38298	0.80666
36-55	46	210	4.56522	0.42899

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	8.43919	3	2.81306	3.36183	0.020462	2.6661
Within Groups	123.005	147	0.83677			
Total	131.444	150				

SIG

9B Wildlife

SUMMARY

Groups	Count	Sum	Average	Variance
Under 18	19	73	3.84211	1.69591
18-25	38	167	4.39474	0.78592
26-35	48	219	4.5625	0.67686
36-55	44	197	4.47727	0.62738

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	7.444	3	2.4813	3.03868	0.031	2.667
Within Groups	118.4	145	0.81652			
Total	125.8	148				

SIG

SIG? 9A Scenery/Vegetation (no under 18)

SUMMARY

Groups	Count	Sum	Average	Variance
18-25	39	166	4.25641	1.03779
26-35	47	206	4.38298	0.80666
36-55	46	210	4.56522	0.42899

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	2.06248	2	1.03123	1.38793	0.253292	3.0664
Within Groups	95.8468	129	0.743			
Total	97.9091	131				

NS

CNCL: The Under 18 age group rate Scenery/Vegetation less Important then the other age groups

SIG?9B Wildlife (no under 18)

SUMMARY

Groups	Count	Sum	Average	Variance
18-25	38	167	4.39474	0.78592
26-35	48	219	4.5625	0.67686
36-55	44	197	4.47727	0.62738

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.601	2	0.30026	0.43397	0.6489	3.068
Within Groups	87.87	127	0.69188			
Total	88.47	129				

NS

CNCL: The Under 18 age group rate Wildlife less Important then the other age groups

9E Meeting Local People

SUMMARY

Groups	Count	Sum	Average	Variance
Under 18	19	44	2.31579	2.11896
18-25	37	121	3.27027	1.92492
26-35	49	161	3.28571	1.20833
36-55	42	136	3.2381	2.28339

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	14.9784	3	4.9928	2.75841	0.04465	2.6679
Within Groups	259.022	143	1.81134			
Total	274	146				

SIG

9G Diversion from City

SUMMARY

Groups	Count	Sum	Average	Variance
Under 18	18	55	3.05556	1.82026
18-25	37	134	3.62162	1.85285
26-35	44	158	3.59091	1.64271
36-55	46	187	4.06522	1.39565

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	14.32	3	4.77301	2.91229	0.0366	2.669
Within Groups	231.1	141	1.63892			
Total	245.4	144				

SIG

SIG?9E (no Under 18)

SUMMARY

Groups	Count	Sum	Average	Variance
18-25	37	121	3.27027	1.92492
26-35	49	161	3.28571	1.20833
36-55	42	136	3.2381	2.28339

ANOVA

Source of Variation	SS	df	MS	F	P-value	Fcrit
Between Groups	0.05241	2	0.0262	0.01483	0.985285	3.0667
Within Groups	220.916	125	1.76733			
Total	220.969	127				

CNCL: The Under 18 age group rate Education less important then the other age groups

SIG?9G (no Under 18)

SUMMARY

Groups	Count	Sum	Average	Variance
18-25	37	134	3.62162	1.85285
26-35	44	158	3.59081	1.64271
36-55	46	187	4.06522	1.39565

ANOVA

Source of Variation	SS	df	MS	F	P-value	Fcrit
Between Groups	6.235	2	3.11727	1.93132	0.1493	3.069
Within Groups	200.1	124	1.61406			
Total	206.4	126				

CNCL: The Under 18 age group rate Diversion less important then the other age groups

Question 11

11A Geography

SUMMARY

Groups	Count	Sum	Average	Variance
Under 18	19	50	2.63158	1.57895
18-25	37	134	3.62162	1.2973
26-35	48	184	3.83333	0.99291
36-55	43	162	3.76744	0.89701

ANOVA

Source of Variation	SS	df	MS	F	P-value	Fcrit
Between Groups	21.6508	3	7.21694	6.47178	0.000387	2.6679
Within Groups	159.465	143	1.11514			
Total	181.116	146				

SIG?11A (no Under 18)

SUMMARY

Groups	Count	Sum	Average	Variance
18-25	37	134	3.62162	1.2973
26-35	48	184	3.83333	0.99291
36-55	43	162	3.76744	0.89701

ANOVA

Source of Variation	SS	df	MS	F	P-value	Fcrit
Between Groups	0.95621	2	0.47811	0.45606	0.634829	3.0667
Within Groups	131.044	125	1.04835			
Total	132	127				

CNCL: The Under 18 age group learnt less about Geography than the other age groups

11E Conservation Efforts

SUMMARY

Groups	Count	Sum	Average	Variance
Under 18	18	38	2.11111	1.75163
18-25	37	110	2.97297	1.74925
26-35	49	155	3.16327	1.30612
36-55	46	139	3.02174	1.79952

ANOVA

Source of Variation	SS	df	MS	F	P-value	Fcrit
Between Groups	15.15	3	5.05015	3.11866	0.028	2.667
Within Groups	236.4	148	1.61933			
Total	251.6	149				

SIG?11E (no Under 18)

SUMMARY

Groups	Count	Sum	Average	Variance
18-25	37	110	2.97297	1.74925
26-35	49	155	3.16327	1.30612
36-55	46	139	3.02174	1.79952

ANOVA

Source of Variation	SS	df	MS	F	P-value	Fcrit
Between Groups	0.87	2	0.43502	0.27157	0.7626	3.066
Within Groups	206.6	129	1.6019			
Total	207.5	131				

CNCL: The Under 18 age group learnt less about Conservation Efforts than the other age groups

Q13B

SUMMARY

Groups	Count	Sum	Average	Variance
18-25	12	509	42.3778	683.628
26-35	19	1519	79.9268	1251.38
36-55	24	1567	65.2933	635.317

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	10370	2	5184.98	6.03756	0.004387	3.1751
Within Groups	44657	52	858.788			
Total	55026.9	54				

SIG

15C (no Under 18)

SUMMARY

Groups	Count	Sum	Average	Variance
18-25	11	98.6	8.96364	35.7905
26-35	5	54.8	10.922	67.7254
36-55	9	105	11.7	108.53

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	39.18	2	19.5891	0.29098	0.7504	3.443
Within Groups	1481	22	67.3203			
Total	1520	24				

NS

SIG?13B (no under 18, no 18-25)

SUMMARY

Groups	Count	Sum	Average	Variance
26-35	19	1519	79.9268	1251.38
36-55	24	1567	65.2933	635.317

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	2270.88	1	2270.88	2.50709	0.121019	4.0785
Within Groups	37137.1	41	905.782			
Total	39407.9	42				

NS

CNCL: The 18-25 Age Group paid significantly less than the other age groups

3 - Gender

9D

SUMMARY

Groups	Count	Sum	Average	Variance
Female	78	313	4.01282	1.25957
Male	71	249	3.50704	1.39638

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	9.50795	1	9.50795	7.17734	0.008225	3.9055
Within Groups	194.734	147	1.32472			
Total	204.242	148				

SIG

CNCL: Females rated Education more important than the Males.

4 Education

11D SUMMARY

Groups	Count	Sum	Average	Variance
S	69	228	3.30435	1.6266
U	34	120	3.52941	1.77184
G	46	129	2.80435	1.13865

Source of Variation	SS	df	MS	F	P-value	Fcrit
Between Groups	11.6413	2	5.82066	3.85722	0.023312	3.058
Within Groups	220.318	146	1.50903			
Total	231.96	148				

SIG

12H SUMMARY

Groups	Count	Sum	Average	Variance
S	53	164	3.09434	1.35631
U	27	101	3.74074	0.96866
G	38	111	2.92105	0.72333

Source of Variation	SS	df	MS	F	P-value	Fcrit
Between Groups	11.42	2	5.71083	5.36221	0.0059	3.075
Within Groups	122.5	115	1.06501			
Total	133.9	117				

SIG

SIG? 11D (no Graduate)

SUMMARY

Groups	Count	Sum	Average	Variance
S	69	228	3.30435	1.6266
U	34	120	3.52941	1.77184

Source of Variation	SS	df	MS	F	P-value	Fcrit
Between Groups	1.15373	1	1.15373	0.68918	0.408401	3.9352
Within Groups	169.079	101	1.67405			
Total	170.233	102				

NS

CNCL: Graduates learnt less about Jamaican History

than the other education levels

SIG? 12H (no Under Graduates)

SUMMARY

Groups	Count	Sum	Average	Variance
S	53	164	3.09434	1.35631
G	38	111	2.92105	0.72333

Source of Variation	SS	df	MS	F	P-value	Fcrit
Between Groups	0.665	1	0.66458	0.60795	0.4376	3.948
Within Groups	97.29	89	1.09316			
Total	97.96	90				

NS

CNCL: Undergraduates were significantly more satisfied with the Cost than other education levels

19A

SUMMARY

Groups	Count	Sum	Average	Variance
Secondary	61	264	4.31967	0.38361
Undergraduate	30	130	4.33333	0.50575
Graduate	42	165	3.92857	0.40941

Source of Variation	SS	df	MS	F	P-value	Fcrit
Between Groups	4.50115	2	2.25058	5.37142	0.005736	3.0658
Within Groups	54.4688	130	0.41899			
Total	58.9699	132				

SIG

SIG? 19A (no Graduate)

SUMMARY

Groups	Count	Sum	Average	Variance
Secondary	61	264	4.31967	0.38361
Undergraduate	30	130	4.33333	0.50575

Source of Variation	SS	df	MS	F	P-value	Fcrit
Between Groups	0.004	1	0.00375	0.00886	0.9252	3.948
Within Groups	37.68	89	0.42341			
Total	37.69	90				

NS

CNCL: Graduates rated the tour significantly lower than the other education levels

5-Income

SUMMARY

Groups	Count	Sum	Average	Variance
Under 20	33	83	2.51515	1.75758
20-29	15	27	1.8	0.45714
30-39	22	65	2.95455	1.09307
40-59	22	50	2.27273	0.87446
60-99	9	28	3.11111	2.11111
100+	6	18	3	1.2

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	17.786	5	3.5572	2.83231	0.019537	2.3044
Within Groups	128.849	101	1.25594			
Total	144.636	106				

SIG

SIG? 11F (no 20-29)

SUMMARY

Groups	Count	Sum	Average	Variance
Under 20	33	83	2.51515	1.75758
30-39	22	65	2.95455	1.09307
40-59	22	50	2.27273	0.87446
60-99	9	28	3.11111	2.11111
100+	6	18	3	1.2

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	8.42	4	2.10502	1.52044	0.2033	2.476
Within Groups	120.4	87	1.38448			
Total	128.9	91				

NS

CNCL: The 20-29 income group rated Meeting Local People less important than the other income groups

12H

SUMMARY

Groups	Count	Sum	Average	Variance
Under 20	31	112	3.6129	1.51183
20-29	10	27	2.7	0.9
30-39	19	54	2.84211	0.69591
40-59	20	61	3.05	0.57632
60-99	7	24	3.42857	0.28571
100+	6	16	2.66667	0.26667

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	12.6019	5	2.52037	2.74163	0.023699	2.3193
Within Groups	79.9788	87	0.9193			
Total	92.5806	92				

SIG

SIG? 12H (no Under 20 \$US)

SUMMARY

Groups	Count	Sum	Average	Variance
20-29	10	27	2.7	0.9
30-39	19	54	2.84211	0.69591
40-59	20	61	3.05	0.57632
60-99	7	24	3.42857	0.28571
100+	6	16	2.66667	0.26667

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	3.118	4	0.7795	1.26326	0.2873	2.534
Within Groups	34.62	57	0.60744			
Total	37.74	61				

NS

CNCL: The under \$20 000 income group were significantly more satisfied with the Cost than the other income groups

6-Travel Mode

12H

SUMMARY

Groups	Count	Sum	Average	Variance
Alone	6	19	3.16667	2.16667
Family	59	183	3.10169	0.78258
Friends	45	142	3.15556	1.22525
Other	7	32	4.57143	0.61905

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	13.8098	3	4.60319	4.56888	0.004651	2.6849
Within Groups	113.849	113	1.00751			
Total	127.658	116				

SIG

SIG? 12H (no Other)

SUMMARY

Groups	Count	Sum	Average	Variance
Alone	6	19	3.16667	2.16667
Family	59	183	3.10169	0.78258
Friends	45	142	3.15556	1.22525

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.084	2	0.04195	0.04076	0.9601	3.081
Within Groups	110.1	107	1.02929			
Total	110.2	109				

NS

CNCL: The Other group were more satisfied with the Cost than the other travel types

APPENDIX D

List of institutions and public and private sector conservation authorities consulted in Jamaica

#	Institution	Acronym	#	Individual Interviewed	Professional Title
<i>PUBLIC SECTOR</i>					
1	Black River Municipal Library		1	Joy Douglas	Coordinator of Caribbean Ecotourism Network
2	Canadian Center for International Development	CIDA	2	Yvonne Walters	Regional Manager Jamaica Tourist Board
3	Conservation Data Center	CDC	3	Dudley Smith	Environmental Impact Assesor
4	Black River Tourist Board		4	Michael Spence	NRCA Representative to Black River
5	Jamaica Tourist Board	JTB	5	Yvette Strong	Exec. Director Wildlife and Parks
6	Natural Resource Conservation Authority	NRCA	6	John Howell	Coordinator
7	Black River Environmental Protection Agency	BREPA			
8	Protected Areas Resources Conservation Project	PARC			
9	Tourism Action Plan	TAP			
10	University of the West Indies Libraries	UWI			
11	UWI Centre for Environment and Development	UWICED	7	Matthew Wright	Assistant Director
12	United States Agency for International Development	USAID	8	Jane Ellis	Director: Natural Resources and Agricultural Development
<i>PRIVATE SECTOR</i>					
Organizations					
13	Black River Environmental Protection Agency	BREPA	9	Brother Shields	Secretary-General
14	Black River Fishing Committee		10	Peter Reeson	Co-Director
15	Environmental Solutions Limited		11	David Smith	Executive Director JCDT and IUCN Caribbean representative
16	Jamaica Conservation and Development Trust	JCDT	12	Susan Anderson	Assistant Director JCDT

17 Jamaica Hotel & Tourist Association	JHTA
18 Petroleum Corporation of Jamaica	PCJ
19 South Coast Conservation Foundation	SSCF
20 Urban Development Corporation	UDC

21 Wildlife Biologists

22 Ecotour Owners

In Black River

South Coast Safaris/Black River Safaris

Outside of Black River

13 Harvey Webb III Assistant Director, Admin.

14 Anne Haynes-Sutton Ex-director: Wildlife&Parks (NRCA)
Ecology/Wildlife Consultant

15 Audrey Downer Ornithologist

16 Robert Sutton Ecology/Ornithology Consultant

17 Wendy VonBarneveld Wildlife Officer

18 Charles Swaby Herpetologist

19 Mr. Duntley Oldest Fisherman in Black River
(has fished locally for 50 years)

20 Dr. Bennett Medical doctor

21 Lloyd Linton Aquatic Ecologist

22 Desmond Henry

23 Diana McIntyre-Pyke Director/Chair: CountryStyle

24 Merrick Gayle, Esq. Entrepreneur

25 Simon Browne Owner/Operator YS Falls

NOTE: Each of the institutions was consulted at least twice over the three month research period with the exception of JTB and USAID which were visited only once.