



## Journal of Sustainable Tourism

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/rsus20>

### The Role of Private Wildlife Reserves in Nicaragua's Emerging Ecotourism Industry

M.E. Barany , A.L. Hammett , L.J. Shillington  
& B.R. Murphy

Published online: 29 Mar 2010.

To cite this article: M.E. Barany , A.L. Hammett , L.J. Shillington & B.R. Murphy (2010) The Role of Private Wildlife Reserves in Nicaragua's Emerging Ecotourism Industry, *Journal of Sustainable Tourism*, 9:2, 95-110, DOI: [10.1080/09669580.2010.486673](https://doi.org/10.1080/09669580.2010.486673)

To link to this article: <http://dx.doi.org/10.1080/09669580.2010.486673>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution,

reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

# The Role of Private Wildlife Reserves in Nicaragua's Emerging Ecotourism Industry

**M.E. Barany, A.L. Hammett, L.J. Shillington and B.R. Murphy**

*College of Natural Resources, Virginia Tech, 210 Cheatham Hall (mail code 0323), Blacksburg, Virginia 24061 USA*

Ecotourism promises to be the fastest growing segment of Nicaragua's fledgling tourist industry, which is already the country's second highest generator of foreign exchange. Development of a lucrative ecotourism industry offers a unique opportunity for Nicaragua to unify economic growth with natural resource stewardship in a single sustainable development strategy. However, as ecotourism is largely dependent on protected area systems, the current condition of Nicaragua's public protected area system is a major obstacle to the industry's development. Limited by inadequate public financing, the establishment of private wildlife reserves can compliment Nicaragua's under-developed public protected area system, further enhancing the desirability of Nicaragua as an ecotourist destination. The opportunities and constraints of private reserve establishment are examined in this study of Nicaragua's first legally recognised private wildlife reserve.

## Introduction

Nicaragua's tourist industry lags behind that of other countries in the region. However, the country's recent political stability, natural resource richness, and proximity to Costa Rica has recently made tourism Nicaragua's second highest source of foreign exchange, with ecotourism playing an expanding role (US Embassy, 2000b). In need of sustainable rural development strategies, establishment of a successful ecotourism industry can offer Nicaragua important economic, environmental, and social benefits. Currently, the industry's potential is threatened by environmental degradation and the inability of the government to finance its expansive, but under-managed, protected area system (Figures 1 and 2).

In developing nations, protected area systems account for a substantial share of the overall revenue accumulated from tourism (Weaver, 1998). In a survey of visitors to Latin American airports, 48% of the respondents said that protected areas were a very important reason for travel to the region (Boo, 1990). In Costa Rica, protected areas were visited by 66% of the 780,000 tourists in 1996 (M. Mejia, pers. comm., 5 October 1999). This evidence represents the major influence that protected area systems have on tourists' choice of country destinations. Development of ecotourism in the region thus depends in part on the condition of national protected area systems. However, countries such as Nicaragua lack the financial resources necessary for a developed national system.

Where the public sector is too financially constrained to effectively manage protected areas, sustainable tourism can be a direct way to generate a revenue

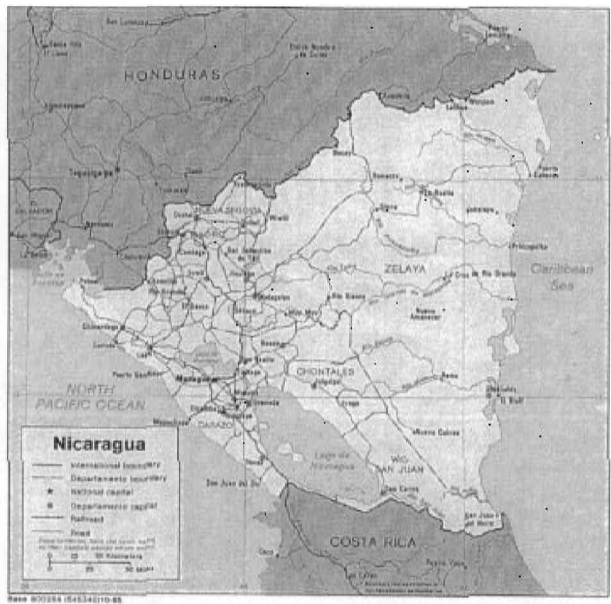


Figure 1 Country Map (LANIC, 2000)



Figure 2 Protected Areas of Nicaragua (UdSi, 2000)

base that can financially support management of protected area systems. If promoted, an ecotourism industry could increase finances for the underdeveloped Nicaraguan protected area system, contributing to the overall quality of Nicaragua’s environment, and increasing the desirability of the country as a tourist destination. When ecotourism to developing countries is largely dependent on established protected area systems, how can developing countries

with underdeveloped protected area systems, such as Nicaragua, capitalise on the growing demand for ecotourism?

## Justification

This paper will examine the potential of private wildlife reserves to complement public protected area systems, thus contributing to the development of a national ecotourism industry. Private reserves are defined as 'sites owned freehold or formally leased by individuals, corporations and other private bodies in which wildlife conservation is a primary activity and the responsibility of such owners or leaseholders' (Watkins *et al.*, 1996). As private initiatives are becoming increasingly important to biodiversity conservation (Langholz, 1996), partial privatisation of park management and the number of privately owned small ecotourism reserves are increasing throughout Central America (Barborak, 1992).

Nicaragua recently passed legislation that officially recognises private reserves, making Domitila Private Wildlife Reserve Nicaragua's first legally recognised private reserve. This paper presents the development of this private reserve and emphasises the methods by which private reserves can greatly affect the success of Nicaragua's ecotourism industry in the initial stages of its development. This is an important study as very little attention has been given to the role of private nature reserves in sustainable tourism development. It was also found that there is a deficiency of research on Nicaragua's efforts to develop a private reserve system. The constraints and opportunities for private reserve establishment experienced by Domitila and addressed in this paper are novel contributions to the development of Nicaragua's ecotourism industry.

## Methodology

Based on the need of developing countries to generate foreign exchange, we explored various models of sustainable development strategies. Nicaragua was chosen as a focus point. The country's recent transition from a closed economy to a liberalised market has magnified both the challenges of resource management in a globalised economy and the potential for adopting innovative strategies. First we conducted a detailed literature search hoping to locate research and development work concerning Nicaragua's protected area systems, ecotourism, and private reserve development. This was followed up by visits to several public protected areas in the southern Pacific region and to the Domitila site. Throughout this visit we conducted unstructured interviews with government officials, non-governmental organisations (NGOs) involved in natural resource management, and members of the private sector (including the owners of Domitila). These interviews were followed up through e-mail correspondence, as policies affecting the development of private reserves in Nicaragua have recently changed.

## Layout of the paper

The results from our research are presented in the following sections. First, we argue that there exists a potentially positive relationship between Nicaraguan private nature reserves and the development of a successful national ecotourism

industry. Second, we emphasise some criteria in private reserve establishment and management that increase the likelihood of it becoming a sustainable ecotourism enterprise. We then provide a case study to illustrate the assimilation of these criteria in the field and to evaluate the opportunities and constraints associated with private reserve establishment in Nicaragua. This is followed by a discussion concerning the recent legislation passed by the Nicaraguan government to facilitate the establishment of a national private reserve system and recommendations for future development of this system. We conclude by highlighting the international importance of private reserve establishment to national sustainable tourism efforts.

## **Background**

### **Is ecotourism a sustainable development strategy?**

While ecotourism is often defined in an experiential context emphasising travel to natural areas that benefits local ecosystems and communities, ecotourism is rarely defined in a commercial context. In a commercial context, there are three main tenants that define ecotourism. First, ecotourism is a form of tourism that is economically sustainable (Gauthier, 1999; Scace, 1999). Second, ecotourism involves resource conservation, as its economic sustainability is directly dependent on the sustainability of the product base, the local ecosystem (Scace, 1999; Wight, 1994). And third, the tourist receives environmentally benign utility from this ecosystem such as wildlife observation, environmental education, etc. (Nelson, 1999). Economic sustainability, conservation of natural resources, and non- consumptive utility form the conceptual foundation of an ecotourism industry.

Efforts of the private and non-profit sector are mainly responsible for the initial development of this rapidly growing segment of the international tourist industry (Gauthier, 1999; Higgins, 1996; Scace, 1999; Weaver 1994). Only recently have public agencies begun to thoroughly address ecotourism's potential as both an economically and ecologically sustainable development strategy. Ideally, ecotourism can be considered an environmentally and socially benign development policy; however, there are reasons to question the industry's capacity to abide by ecotourism's informal code of ethics.

Critics of ecotourism argue that it often exhibits a conflict between short-term profit and long-term sustainability. The focus on meeting demands of tourism and profits can supercede the conservation of resources (Nelson, 1999). Commercial operators often use ecotourism as a marketing ploy to enlarge their market share (McLaren, 1998; Minca & Linda, 2000; Wight, 1994). Indeed, in Nicaragua some companies disguise mass tourism as 'nature tours' (T. Fletcher, pers. comm., 27 July 2000). According to Tom Fletcher, president of one of Nicaragua's first ecotourism operations, 'everything from natural history to off-road motorcycles has been touted in the local press as shining examples of "ecotourism"'.

Even when ecotourism is carried out with a sincere interest in conservation, resource degradation can occur. Ecosystems are complex and often managers lack thorough understanding of ecosystem processes (Nelson, 1999). Small-

scale, low-intensity impacts can have cumulative long-term effects on the ecosystem. Demands on local resources, creation of social inequities, and dependencies on external forces can also lead to negative effects within the human community (Honey, 1999; McLaren, 1998; Minca & Linda, 2000). Regardless of these potential drawbacks, many communities realise that implementing ecotourism as a development strategy is one way to avoid other, more destructive, development (McLaren, 1998).

Small-scale ecotourism operations have proved to be more benign than other modern economic alternatives that could dominate the landscape (Weaver, 1994). Ideally, ecotourism internalises the costs and benefits of local natural ecosystems because these ecosystems are the product base for the direct economic benefits of tourism (Woodley, 1999). This means that investors and developers of ecotourism activities have a direct stake in the integrity of the local environment and community. Since ecotourism occurs in rural areas, it can lead to economic development and diversification in otherwise neglected areas, giving rural communities economic stakes in the ecotourism operation and creating a new value for the ecosystem (Alderman, 1992; Brandon, 1996; Wight, 1994). In this sense, ecotourism can actually benefit natural resources by creating a market incentive to conserve them. And since ecotourists are often more tolerant of rustic, basic facilities, expansion of the industry can be increased with relatively minor additional expense. For these reasons, development of an ecotourism industry offers a rational strategy for sustainable development.

### **Nicaragua's need for sustainable development strategies**

Emerging from war and adjusting to the global economy, Nicaragua's economic policy has depended on large-scale resource exploitation. In 1990, the newly elected Violetta Chamorro government redirected Nicaragua's economic policies by promoting exports and creating incentives for foreign investments, and fostering programmes geared towards commercialisation of under-exploited natural resources including forests, fisheries, and mines (Castilleja, 1993). Deregulated trade and export incentives designed to encourage foreign capital investment in resource exploitation discouraged sustainable forest management. Modernisation of the agribusiness sector has caused a 'decrease in employment opportunities on the large farms, a squeezing out of small independent farms, and the emigration of landless peasants searching for a way to support their families' (Chamorro, 1998). The Washington Post recently reported 'Nicaragua remains poorer than ever and deeply splintered between haves and have-nots' (Moore, 1999).

It has been argued that these policies, which leave impoverished people on the fringes of unstable lands, are partly to blame for the large human toll exacted by Hurricane Mitch in November 1998 (Bendana, 1999). This region was at great risk from such a natural disaster due to years of environmental mismanagement (USAID, 1999). Shortly after Hurricane Mitch, Nicaraguan NGOs promoted a major effort to reduce the social and ecological vulnerability of the country (Vukelich, 1999). Post-hurricane assessments have emphasised the importance of a comprehensive environmental protection strategy to Nicaragua's long-term development (EIU, 1999).

One way that Nicaragua can begin to fuse resource conservation with rural development is by developing its ecotourism industry. Ecotourism requires limited capital investment and is capable of producing sizeable flows of foreign exchange, generating employment in rural areas, and generating income to help manage and protect parks and reserves (Barborak, 1992). In 1999 the Nicaraguan tourism industry generated approximately \$105 million, placing tourism as the nation's number-two earner of foreign exchange after coffee (US Embassy, 2000a).

### **Ecotourism: A potential solution**

Ecotourism is becoming a sizeable segment of the expanding Nicaraguan tourist industry. Our research did not uncover any quantitative data regarding ecotourism in Nicaragua, but the general consensus among those we interviewed is that ecotourism is the fastest growing segment of the Nicaraguan tourist industry. Using protected area visitor information it is estimated that there were 50,000–75,000 ecotourists in 1998 (T. Fletcher, pers. comm., 27 July 2000). This is between 13.1% and 19.6% of all tourists to Nicaragua that year. Furthermore, Nicaragua's rich resource endowment makes it a candidate for becoming a prime ecotourist destination.

Though very few studies have been conducted inside Nicaragua pertaining to the potential of its biological diversity, it has the region's (Central America's) greatest abundance of natural resources (Elizondo, 1997). About one-third of the country consists of forests (CIA, 2000; FAO, 2000). The lowland tropical rainforests in the south-east, shared with Costa Rica, make up the largest lowland rainforest north of the Amazon. Likewise, the coastal lagoons, wetlands and pine savannas of the north-east are the largest and best preserved of such ecosystems in the region (WCMC, 1992). Its standing forests total more than four times the area covered of its much-discussed neighbour, Costa Rica (Sanchez, 1999). According to David Zurick's 'adventure travel model' this resource richness is likely to attract tourists from the more frequented Costa Rican tourist zone (Weaver, 1998).

The greatest potential for Nicaragua's ecotourism industry is along the Pan American highway that links south-western Nicaragua with Costa Rica. At a recent national development conference, the corridor that passes from Lake Managua south to the San Juan River was recognised as the best opportunity for ecotourism development (Aviles, 2000). This idea is supported by the Ministry of Tourism (INTUR), which acknowledges that one of the best opportunities over the next few years will be projects involving ecotourism in the Lake Nicaragua basin (Ometepe Island, Solentiname Islands, and the San Juan River) (US Embassy, 1997). Offering a diversity of destinations and having a supportive infrastructure, this part of Nicaragua already serves as a corridor of travel from the popular tourist destination of Costa Rica.

### **Nicaragua's under-developed ecotourism infrastructure**

While the government wishes to develop Nicaragua into a popular regional ecotourism destination, it has few resources to develop and manage its public protected area system. Though 17% of the land area of Nicaragua is designated as publicly protected land (Sanchez, 1999), lack of financing for the National System



of Protected Areas (SINAP) has left most protected areas without adequate regulation and/or management. Only seven of SINAP's 76 protected areas are actively managed, and 11 more have only minimal levels of infrastructure and management (Sanchez, 1999).

Because Nicaragua's current infrastructure is inadequate to absorb projected rises in ecotourism, there is an effort to build the capacity of the Ministry of Environment and Natural Resources (MARENA) to manage the 76 protected areas with private, scientific, and conservation-based interests. While this will be difficult to achieve, private reserves can provide infrastructure for the expanding Nicaraguan ecotourism industry. They can also offer a rural development tool that could contribute to community-based conservation requiring little money from the government. Most importantly, successful private reserves can be economically sustainable, providing a reliable financing mechanism for land conservation.

Private reserves can be profitable ventures. A study of Latin American private reserves found that 72% of the respondents believe that they are able to generate more income as a private reserve than they could through alternative land uses, such as logging, cattle ranching, and agriculture (Langholz, 1996). Contributing to this profitability is the efficiency of private reserves to respond to market changes (Weaver, 1998). Private reserves are financially efficient and maximise budget allocations for conservation by avoiding bureaucratic money sinks, leaving more money flowing back into the reserve (Weaver, 1998). Private sector operations can offer lower costs, greater efficiencies and a range of market responses (Wells, 1997).

In March 1999, a new law established regulations for private reserves in Nicaragua (M. Mejia, pers. comm., 5 October 1999). 'Private wildlife reserves' are defined as private areas dedicated to conservation by their landowners and recognised by MARENA, on the basis of certain criteria and the potential for the conservation of biodiversity. This decree states that the landowner assumes the responsibility for the management of the reserve but rules and procedures established by MARENA must be followed. Before presenting a case study of Nicaragua's first private wildlife reserve, some criteria for the successful establishment and operation of private wildlife reserves will briefly be described.

### **Some criteria for establishing successful private reserves**

There are key points that are important to the establishment of successful private nature reserves. First, private reserves need to be economically viable. While there are a number of activities to generate revenue, the most remunerable is ecotourism (Langholz, 1996; Alderman, 1992). Because there are many factors affecting the potential success of an ecotourism industry, a marketing study should be conducted to determine demand. Accessibility should be a significant consideration as proximity to tourist gateways and corridors is necessary to capture the ecotourism market. Also, the reserve should have a point of interest that offers unique and diverse experiences. This could be wildlife, views, and access to national parks and reserves.

In order to ensure a sustainable ecotourism industry and perpetuity of revenue generation, conservation of the ecosystem product base is a requirement. Private

reserves should abide by the rules and regulations of public conservation institutions (Brandon, 1996; Lees, 1995). Efforts should be made to include environmental education of local populaces, research, and promotion of conservation and protected area systems. Conclusions drawn from a survey conducted by the Regional Wildlife Management Program for Meso-America and the Caribbean verify that responsible private reserves can definitely contribute to biodiversity protection in the region (M. Mejia, pers. comm., 5 October 1999).

A major way that private reserves can achieve conservation is by fostering community development. One of the most tangible links between private reserves and neighbouring communities is job creation (Durbin & Ratrimoarisana, 1996; Langholz, 1996). Both the Alderman's (1992) and Langholz' (1996) studies of private reserves in Africa and Latin America found that over 80% of the individuals employed by the sample group originated from communities near the reserve. Aside from providing employment for staff, guides and suppliers, researching local natural resources can provide a sound scientific basis for management and development of rural areas (Schabel, 1997).

By adhering to these criteria of profitability, natural resource conservation, and community development, private reserves provide a vehicle through which tourism can enhance local environments (Minca & Linda, 2000). The following case study examines how one private reserve contributes to the development of Nicaragua's ecotourism industry by enhancing the ecotourism infrastructure and ensuring biodiversity conservation through community development. If tourism is integrated into a well-structured economic and social web, it is likely to become a powerful and attractive strategy for development (Minca & Linda, 2000).

### **Case Study: Domitila Private Wildlife Reserve**

Domitila is a 420-hectare parcel of land located on the north-western shores of Lake Nicaragua, separated from Zapatera Island National Park by a 2.5 km wide strait (Figure 3). The property was settled in 1881 and has been owned by the family ever since. Though it was the site of a productive cattle operation, the current owner first conceived the idea of a nature reserve in 1974. However, due to war and political instability that plagued the country in the 1970s and 1980s, the owners left Nicaragua for 20 years. During this time the resources in the area were intensively over-utilised.

The owners returned in 1998 faced by three options for management of the land. The first option was to reactivate the commercial cattle farm. The second option was to invest in rice production. And, third, they had the option of generating revenue through ecotourism. As the first two options were not economical and would lead to further depletion of the property resources, the owners decided to work with the local population in establishing a nature reserve. According to the owners, the main reason for the destruction of the region's biodiversity is poverty. Ecotourism can be a vehicle of sustainable development for the vicinity of Domitila and contribute to biodiversity conservation at the same time.



**Figure 3** Location of Domitila Private Wildlife Reserve (Johnson, 2000)

**Profitability**

Domitila has great potential to be a prime ecotourist destination. It is located in a highly travelled corridor that offers a wide array of unique experiences. At 71 km south of Managua by road and 80 km north of Costa Rica, Domitila lies just off the Pan-American Highway. Zapatera National Park, Volcan Mombacho Natural Reserve, and Río Manares Natural Reserve are protected areas, near or adjacent to Domitila, offering the ecotourist a variety of experiences.

Domitila’s own ecosystem diversity provides a variety of experiences that are both recreational and educational. A population of howler monkeys (*Aloutta palliata*), 150 species of tropical and migratory birds, a dry tropical forest, over 500 species of butterflies, wetlands, and Lake Nicaragua offer plenty of opportunity for unique experiences. Experiences that the owners are planning on offering include: interpretive trails, a boardwalk and wetland wildlife observation deck, horse trails, and boating on Lake Nicaragua. Domitila can also serve as a launching site for excursions to the nearby-protected areas such as Zapatera National Park.

The owners expect ecotourism to become the main source of revenue generation. To accommodate ecotourists, the owners will provide all the services and facilities that are needed by students, scientists, and visitors. A central lodge and cabanas will have the capacity to house 25 people. The site of this lodge is on the edge of the dry forest, with a panoramic view of Zapatera Island, Lake Nicaragua, and Mombacho Volcano. Within the planned lodge there will be a kitchen where Nicaraguan cuisine will be served. Bathing facilities will also be provided. Water and electrical services will be available and powered by a solar energy system.

To ensure that Domitila remains a desirable ecotourist destination, the owners have formulated a set of regulations keeping within the theme of ‘take only photographs, leave only footprints’. These regulations include:

- prohibition of vehicles within the reserve;
- restriction of foot traffic to trails;
- prohibition of wildlife and wildlife habitat disturbance; and
- restricted harvesting of vegetation for natural souvenirs.

This abbreviated list illustrates the owner's commitment to operating an economically sustainable ecotourist destination by minimising visitor-use impacts and ensuring a quality experience. The owner's commitment to natural resource conservation is expressed in the following section.

### Natural resource conservation

While most of the land is either dry tropical forest or savanna, Domitila also includes two small rivers and wetlands adjacent to Lake Nicaragua. This ecosystem diversity provides habitat for a variety of wildlife and vegetation. Some of the more notable species inhabiting the dry forest include: howler monkeys (*Alouatta palliata*), wild cats (*Urocyon cinereoargenteus*), coyotes (*Canis latrans*), and tucans (*Collared aracari*). The forest also contains numerous tree species and medicinal plants. One tree species 'tempate' (*Jatropha curcas*) is rare and has economic value as a bio-fuel for its extract. The abundance of water makes Domitila a refuge for migratory birds of both South and North America. This water (Lake Nicaragua in particular) also has endemic fish species, and is inhabited by freshwater sharks. Though ecologically diverse, Domitila has been subjugated to activities of timber extraction, agriculture, and cattle grazing that are typical forces rapidly altering Nicaragua's environment.

The owners feel a responsibility to conserve the biodiversity of Domitila as a link within the biological corridor created by the three public protected areas. In achieving local biodiversity conservation, the owners have three focuses: protection of habitat, protection of the flora and reforestation of highly degraded areas, and protection of the riparian ecosystems. By officially declaring their land a private wildlife reserve, the owners are legally bound to follow natural resource conservation rules and procedures established by MARENA. The owners are also contributing to regional biodiversity conservation by declaring Domitila's dry forest a genetic reserve for tempate, and planning to develop a research station.

As a research station, Domitila is well situated to host investigations of the region's flora and fauna. There has been little research on the ecology of the area. This research station will provide a chance for national and international students to study, and at the same time, advance the knowledge of the region's natural resources. By employing local residents, the research station will also contribute to the local knowledge of natural resources. This community involvement aspect of Domitila's management plan may be the most important contribution to resource conservation by relieving some of the poverty that is responsible for the unsustainable extraction of the area's resources.

### Community development

Within an hour's walk of the reserve's boundary live approximately 300 people. They conduct small-scale agriculture, raise cattle, and many find work on large farms. Compared to the rest of Nicaragua, the local population around

Domitila is under-employed and earns less than the country average. The monthly income varies from \$32 to \$48 with a high level of unemployment especially among the women. The community infrastructure is minimal, with no potable water services, poor sanitation facilities, and no electric or transportation services. Schools are over five km away and the hospital is 18 km away.

With a low standard of living, there is a strong reliance on intensive and often unsustainable use of the local natural resources. The resources of Domitila have been a source of subsistence and income for this population. Some of the extractive activities include the harvesting of wood for crafting or selling as woodfuel, the harvesting of wildlife for food and sale, and the extraction of medicinal plants. The success of Domitila thus depends on the creation of alternative incomes for these people.

By including the community, Domitila provides a novel alternative to the unsustainable use of natural resources. The local population has been represented in every aspect of planning. A committee of the area's residents was formed to take part in the decision-making process. This committee was selected from the owners' first development programme. In 1999 this development programme started a grain farm for the local population. This created a partnership with the local community and was a step towards alleviating pressure on Domitila's resources. This committee has since helped organise and determine the needs of the rest of the community.

With community needs in mind, the owners have planned some sustainable uses of the reserve and region's natural resources. The owners plan to establish local organic farming efforts that will provide food for visitors as well as for sale in local markets. A chicken hatchery will also provide food and products for sale. A woodfuel plantation will help alleviate the demands on natural forest stands and can create possible income on Nicaragua's large woodfuel market. Profits made from the commercialisation of these sustainable activities will be dispersed as follows: 50% to community members involved in these projects; 20% to finance new projects; 15% to maintain the local infrastructure; and 15% for 'social character' (employee uniforms, etc). The focus of Domitila's community development initiative is to improve the living conditions of the inhabitants in the area with better education, water supply, health clinics, employment, and development of infrastructure. The total number of people that the owners hope to permanently employ is 21, 13 of whom will be women. While most of these workers will be at the lodge, the other employees will be working in the projects mentioned above.

Profitability, natural resource conservation, and community development are important criteria for the successful establishment of private wildlife reserves. Domitila appears to be currently addressing these criteria sufficiently, and the methods by which the owners are doing so should serve as a model for successful establishment of other private reserves in Nicaragua. For Nicaragua to become a sought-after ecotourist destination it is necessary that future private reserves show a commitment to implementing these criteria. This commitment will also increase credibility from the perspectives of necessary partners, such as the Nicaraguan government and the national and international NGO community.

## Discussion

### Cooperation between the Nicaraguan government and the private sector

The primary obstacles that the owners of Domitila encountered have been overcome since the case study began, largely due to the cooperation of the Nicaraguan government. This section provides a synopsis of ways that public and private sectors can cooperate to facilitate establishment and development of private reserve systems. For Domitila, the impartiality of the Nicaraguan government towards private nature reserves was initially the limiting factor. However, the following discussion illustrates how new Nicaraguan government policy is acting as a catalyst.

The first task in the establishment of Domitila was to obtain funds for feasibility and environmental studies, as well as for its development. However, the owners had no working capital, and to start, were not able to find any financial help in Nicaragua (M. Mejia, pers. comm., 5 October 1999). As a result of the expensive start-up costs and the absence of a mechanism for private reserve loans, the owners had to seek international help. However, international governmental and non-governmental financing was impossible because there was no legislation in Nicaragua that recognised private reserves. Before Nicaragua's private wildlife reserve law, the owners of Domitila reported that it was, 'impossible in Nicaragua to obtain recognition as a private wildlife reserve because of the absence of a necessary legal framework in order to establish that category' (M. Mejia, pers. comm., 5 October 1999). The lack of a legal framework to recognise private nature reserves was therefore responsible for the inability of Domitila to solicit funds from the financing community, compounding other obstacles to the development of this reserve.

Domitila now has access to domestic and international financing sources due to the ratification of the new law, which provides legal recognition of Nicaraguan private reserves. This national law has allowed Domitila to move forward with its plans, as Danida, a Danish NGO, recently awarded a grant to Domitila to begin construction of the facilities. The Nicaraguan government has even gone a step further in enhancing investments in private nature reserves. The new law provides the following incentives (M. Mejia, pers. comm., 20 July 2000). The owners of private wildlife reserves will be:

- exempt from income taxes for 10 years and property taxes for as long as the property is managed as a private wildlife reserve;
- exempt from Nicaraguan retail sales taxes on goods that contribute to the reserve; and
- given access to support for environmental services.

### Further considerations for development of a private reserve system

The preceding discussion illustrates the importance of government involvement in the establishment of a private reserve system. Further steps can be made to integrate private reserves in national planning. These include (Lucas, 1992):

- public consultation on establishment and management;
- partnership mechanisms to marry national and local interest;
- linkages with general planning legislation and other land use areas; and

- mechanisms that provide for cooperative management and public use of private land through management and access agreements.

Facilitation of establishment should not be the sole function of the Nicaraguan government's involvement with private reserves. As Nicaragua's ecotourism industry evolves, the government needs to ensure that established private reserves do not become general tourist destinations co-opting the concept of ecotourism as a marketing ploy. Regulations and contracts to ensure that private reserves cannot introduce practices that threaten the environment should be created and enforced. Economically, the government can play a critical role in the sustainability of the private nature reserve and ecotourism industry. For example, while enterprises becoming major monopolies can squeeze out local enterprises (Swarbrooke, 1999), too many entrants into the private reserve system can drive down profits (Wells, 1997). Regulated entry allows a fixed number of operators who can act as partial monopolists to charge prices above marginal cost for profit.

While government support for the private reserve system is necessary, it is important to remember that public resources are limited. A nongovernmental organisation specifically designed to support the developing national private reserve network would greatly increase the chance of striking the proper balance between private sector and public sector cooperation. Perhaps an appropriate example for Nicaragua is an NGO that coordinates Colombia's network of private reserves. This NGO promotes the association of new reserves, conducts environmental extension, facilitates transfer of environmentally sound technologies, and proposes legal and institutional changes to the government (Uribe, 1996).

The future of ecotourism in Nicaragua depends on the current development of Nicaragua's private reserve network. So far, proper steps are being made to ensure that entrance into the ecotourism land market is possible and profitable. To ensure that such a development strategy remains sustainable, monitoring and evaluation of the progression of both the ecotourism industry and the private reserve network is crucial. Proceeding cautiously, Nicaraguan ecotourism and the private reserve network may prove to be an adoptable strategy for sustainable development.

## Conclusions

It is estimated that one-sixth of Central America's landscape is officially designated as 'protected area' (Utting, 1993). Most protected areas actually fail to provide management, thus giving birth to the 'paper park' syndrome that plagues this region. Approximately three-quarters of the protected areas in Latin America are not effectively safeguarded and an even larger percentage lack long-term management plans and financial resources needed to guarantee their perpetuity (Umana & Brandon, 1992). The average budget needed to operate protected areas in Central America is \$336 per square kilometre, while the actual budget available is \$101 per square kilometre (Green & Paine, 1997).

Private reserves, when properly developed, can complement public protected area systems. These in turn provide a supply of experience and infrastructure needed to meet the expanding ecotourism demand. Ecotourism can provide a sizeable contribution to a developing nation's economy, while creating market

incentives for sustainable land use and conservation. This is a significant contribution in regions where poverty and marginalization are creating high risks of environmental and social disasters, such as occurred with Hurricane Mitch.

The development of private reserve systems depends directly on public policy and partnerships. Governments that wish to adopt ecotourism as a development strategy, but lack resources to establish and manage protected area systems, should act now to reduce barriers to private reserve establishment and create market incentives for investments in the national ecotourism industry. To build public sector confidence, private organisations must ensure that their own work is of consistently high quality and that they are prepared to engage in government efforts at juggling national development with environmental protection. This paper has examined the benefits of such a partnership, and how these benefits can be achieved. Indeed, as the role of private nature reserves in ecotourism industry development becomes increasingly significant, so will the need for further research regarding this matter.

### Acknowledgements

We wish to express our gratitude to Dr Jeffrey McCrary, Director of Basic Sciences, University of Central America-Managua, for his continuous support of Virginia Tech's Natural Resource Program in Nicaragua.

### Correspondence

Any correspondence should be directed to Dr A.L. Hammett, Dept. of Wood Science and Forest Products, College of Natural Resources, Virginia Tech, 210 Cheatham Hall (mail code 0323), Blacksburg, Virginia 24061, USA (himal@vt.edu).

### References

- Alderman, C.L. (1992) The economics and the role of privately owned lands used for nature tourism, education and conservation. In M. Wells and K. Brandon (eds) *People and Parks: Linking Protected Area Management With Local Communities* (pp. 287–300). Washington, DC: World Bank.
- Aviles, R. (2000) Incer Barquero presenta propuesta ecoturística. *La Tribuna* (28 July). Managua, Nicaragua.
- Barborak, J.R. (1992) History of protected areas and their management in Central America. In H.K. Steen and R.P. Tucker (eds) *Changing Tropical Forests Historical Perspectives on Today's Challenges in Central and South America* (pp. 93–101). Durham, NC: Forest History Society.
- Bendana, A. (1999) Nicaragua's structural hurricane. *NACLA* 33 (2), 16–23.
- Boo, E. (1990) *Ecotourism: The Potentials and Pitfalls*. Washington, DC: World Wildlife Fund.
- Brandon, K. (1996) *Ecotourism and Conservation: A Review of Key Issues*. Biodiversity Series, 33. Washington, DC: World Bank.
- Castilleja, G. (1993) Changing trends in forest policy in Latin America: Chile, Nicaragua, and Mexico. *Unasylva* 175 (44), 29–35.
- Chamorro, X. (1998) The advancing frontier in Nicaragua. *Nica News* 12 (March).
- CIA (2000) Nicaragua. The world factbook. <http://www.cia.gov/cia/publications/factbook/geos/nu/html>.
- Durbin, J.C. and Ratrimoarisana, S. (1996) Can tourism make a major contribution to the conservation of protected areas in Madagascar? *Biodiversity and Conservation* 5, 345–53.
- Economist Intelligence Unit (EIU) (1999) Nicaragua, Honduras. *Country Report* (2nd quarter), 3–25.



- Elizondo, D. (1997) The environment. In T.W. Walker (ed.) *Nicaragua Without Illusions: Regime Transition and Structural Adjustment in the 1990s* (pp. 131–46). Wilmington, DE: Scholarly Resources.
- FAO (2000) Nicaragua. Country profiles. [http://www.fao.org/forestry/country/nav\\_world.jsp](http://www.fao.org/forestry/country/nav_world.jsp).
- Gauthier, D.A. (1999) Sustainable development, ecotourism, wildlife and ecosystems. In J.G. Nelson, R. Butler, and G. Wall (eds) *Tourism and Sustainable Development: Monitoring, Planning, Managing, Decision Making* (pp. 113–34). University of Waterloo: Heritage Resources Center.
- Green, M. and Paine, J. (1997) State of the worlds protected areas. Presented at the IUCN World Commission on Protected Areas Symposium on Protected Areas in the 21st Century: From Islands to Networks. [http://www.wcmc.org.uk/protected\\_areas/albany.htm](http://www.wcmc.org.uk/protected_areas/albany.htm).
- Higgins, B. (1996) The global structure of the nature tourism industry: Ecotourists, tour operators, and local businesses. *Journal of Travel Research* 35 (2), 11–19.
- Honey, M. (1999) *Ecotourism and Sustainable Development. Who Owns Paradise?* Washington DC: Island Press.
- Johnson, H. (2000) Location of Domitila Private Wildlife Reserve. Adapted from the Ministry of Tourism (INTUR).
- Langholz, J. (1996) Economics, objectives, and success of private nature reserves in sub-Saharan Africa and Latin America. *Conservation Biology* 10 (1), 271–80.
- Latin American Network Information Center (LANIC) (2000) Country map, University of Texas. [http://www.lib.utexas.edu/Libs/PCL/Map\\_collection/americas/Nicaragua.GIF](http://www.lib.utexas.edu/Libs/PCL/Map_collection/americas/Nicaragua.GIF).
- Lees, A. (1995) Innovative partners: The value of nongovernment organizations in establishing and managing protected areas. In J.A. McNeely (ed.) *Expanding Partnerships in Conservation* (pp. 188–96). Washington, DC: Island Press.
- Lucas, P.H.C. (1992) *Protected Landscapes: A Guide for Policy-Makers and Planners*. London, UK: Chapman and Hall.
- McLaren, D. (1998) *Rethinking Tourism and Ecotourism: The Paving of Paradise and What You Can Do to Stop It*. West Hartford, CT: Kumarian Press.
- Minca, C. and Linda, M. (2000) Ecotourism on the edge: The case of Corcovado National Park, Costa Rica. In X. Font and J. Tribe (eds) *Forest Tourism and Recreation: Case Studies in Environmental Management* (pp. 103–26). Oxon, UK: CABI Publishing.
- Moore, M. (1999) For Nicaraguans, promises unkept. In long uneasy land, only poverty is constant. *Washington Post* (19 July 19).
- Nelson, J.G. (1999) Tourism and sustainable development: An introduction. In J.G. Nelson, R. Butler, and G. Wall (eds) *Tourism and Sustainable Development: Monitoring, Planning, Managing, Making Decisions* (pp. 3–30). University of Waterloo: Heritage Resources Center.
- Sanchez, M. (1999) Areas naturales protegidas. In MARENA (ed.) *Biodiversidad en Nicaragua: Un Estudio de Pais* (pp. 387–425). Managua, Nicaragua: MARENA-PANIF.
- Scace, R.C. (1999) An ecotourism perspective. In J.G. Nelson, R. Butler, and G. Wall (eds) *Tourism and Sustainable Development: Monitoring, Planning, Managing, Decision Making* (pp. 81–110). University of Waterloo: Heritage Resources Center.
- Schabel, H. G. (1997) Integrating a research station into community development and area protection in Nicaragua. In O.T. Bouman and D.G. Brand (eds) *Sustainable Forests: Global Challenges and Local Solutions* (pp. 127–38). New York: Food Products Press.
- Swarbrooke, J. (1999) *Sustainable Tourism Management*. Oxford: CABI Publishing.
- UdSi (2000). Protected areas of Nicaragua. <http://www.udsi.com.ni/areas.htm>.
- Umana, A. and Brandon, K. (1992) Inventing institutions for conservation: Lessons from Costa Rica. In S. Annis (ed.) *Poverty, Natural Resources, and Public Policy in Central America* (pp. 85–108). New Brunswick: Transaction Publishers.
- Uribe, E. (1996) Colombia. In E. Lutz and J. Caldecott (eds) *Decentralization and Biodiversity Conservation* (pp. 6–16). Washington, DC: World Bank.
- USAID (1999) Watershed management for hurricane reconstruction and natural disaster vulnerability reduction. <http://hurricane.info.usaid.gov/stockenv.htm>.

- US Embassy (1997) Nicaraguan tourist industry. <http://www.usia.gov/abtusia/posts/NU1/wwwhe23.html>.
- US Embassy (2000a) Economic trends and outlook. <http://usembassy.state.gov/posts/nu1/wwwhe09.html>.
- US Embassy (2000b) Promoting tourism in Nicaragua. <http://www.usembassy.state.gov/posts/nui/wwwhe59.html>.
- Utting, P. (1993) *Trees, People and Power: Social Dimensions of Deforestation and Forest Protection in Central America*. London: Earthscan.
- Vukelich, D. (1999) The devastation of debt. *NACLA* 33 (2), 24–7.
- Watkins, C.W., Barrett, A.M., Smith, R., and Paine, J.R. (1996) *Private Protected Areas: A Preliminary Study of Private Initiatives to Conserve Biodiversity in Selected African Countries*. Cambridge, UK: World Conservation Monitoring Center.
- Weaver, D.B. (1994) Ecotourism in the Caribbean Basin. In E. Cater and G. Lowman (eds) *Ecotourism: A Sustainable Option?* (pp. 159–76). Chichester, NY: Wiley.
- Weaver, D.B. (1998) *Ecotourism in the Less Developed World*. Oxon, UK: CABI.
- Wells, M.P. (1997) Economic perspectives on nature tourism, conservation, and development. *Environmental Economics Series*, 55. Washington, DC: World Bank.
- Wight, P. (1994) Environmentally responsible marketing of tourism. In E. Cater and G. Lowman (eds) *Ecotourism: A Sustainable Option?* (pp. 39–56). Chichester, NY: Wiley.
- Woodley, S. (1999) Tourism and sustainable development in parks and protected areas. In J.G. Nelson, R. Butler, and G. Wall (eds) *Tourism and Sustainable Development: Monitoring, Planning, Managing, Decision Making* (pp. 159–74). University of Waterloo: Heritage Resources Centre.
- World Conservation Monitoring Center (WCMC) (1992) *Protected Areas of the World – A Review of National Systems. Volume 4: Nearctic and Neotropical* (pp. 161–5). Gland, Switzerland and Cambridge, UK: IUCN.