

**Special Issue**

# Conservation Strategies, Protected Areas, and Ecotourism in Costa Rica

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## Executive Summary

Over the past two decades, ecotourism in Costa Rica has played a meaningful role in the country's economy, mainly in low-income, rural communities. The country's environmental sustainability is discussed in this study. Both pros and cons of ecotourism are outlined based on the experience of three communities settled in the Caribbean region. Institutional environmental policies, private sectors' endeavors, and the participation of the research centers complement the country's framework to position Costa Rica as a leading ecotourism destination. Nevertheless, a greater official commitment is required to meet the very essence of the concept of ecotourism.

## Keywords

*Ecotourism, conservation strategies, national parks, protected areas management, sustainability*

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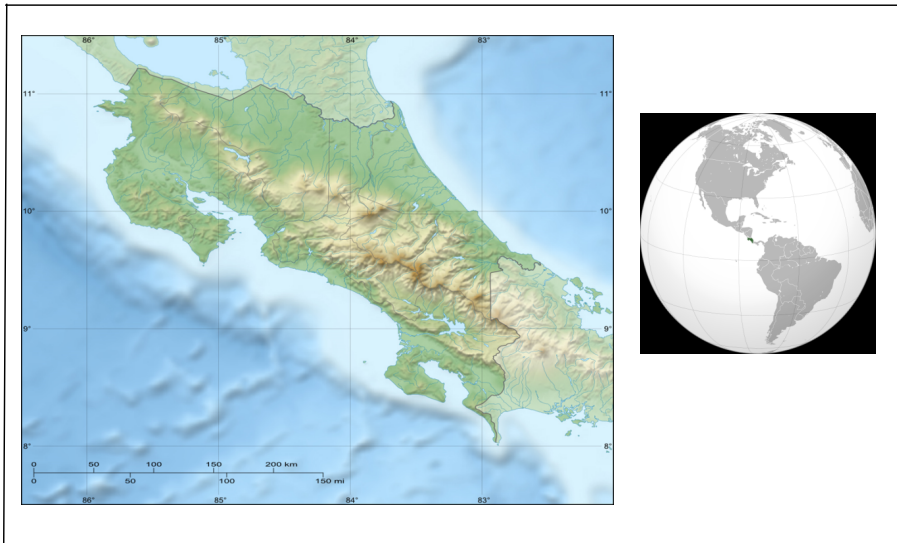
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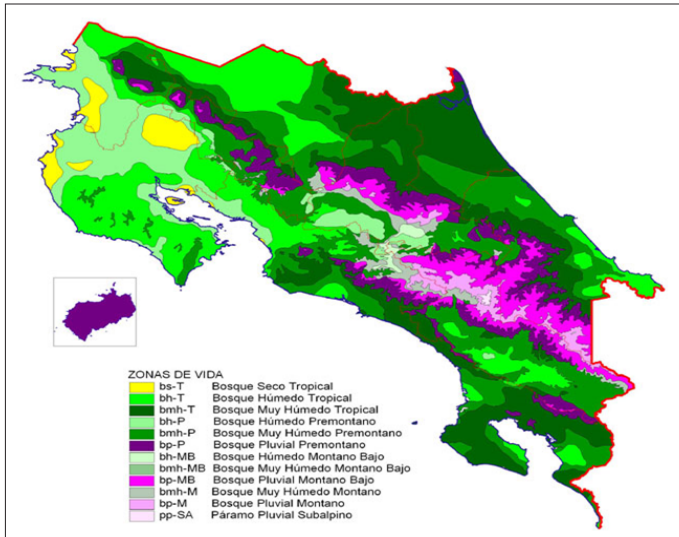
## Introduction

Costa Rica, with a surface of 51,100 km<sup>2</sup> (Figure 1), encompasses 5% of the world's biodiversity in just 0.03% of the world's land surface (Wainwright, 2007). The country also hosts more bird species (850) than the United States and Canada combined, and 6,000 species of butterflies, which is more varieties than in all of Africa (Honey, 2003). This high degree of diversity can be explained by its geographical location in the Neotropics in the Central American isthmus, which bridges two large continental landmasses in the western hemisphere. Wainwright (2007) cites four factors that contribute to the country's rich biodiversity: a) a tropical climate that helps nurture an enormous wealth of plants, insects, and nutrients; b) four mountain ranges and varied weather systems blowing in from both oceans at different times of the year reacting together in diverse ways to create a dense and varied mosaic of habitats; c) Costa Rica serves as a land bridge between two large and biologically different continental masses of the New World, influencing the great biodiversity found in the country; d) great temperature fluctuations in a small territory varying between 30°C in the tropical dry forest in the Pacific lowlands to freezing points on the tropical subalpine rain paramos on the Talamanca mountain range summits. All of the above contributes to the presence of "microclimates" identified in 12 different life zones (Figure 2).



**Figure 1.** Map of Costa Rica. Source: Camacho, March, 2011.

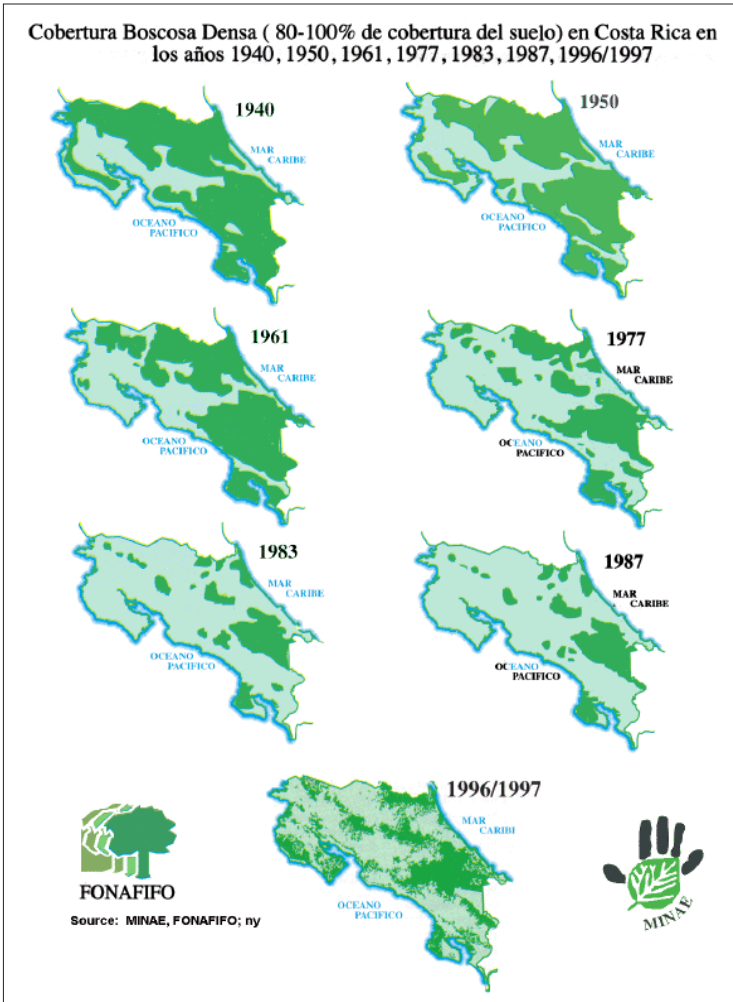
More than one-quarter of Costa Rica is considered to fall under some form of protected status, and Costa Rica has become a world-renowned ecotourism destination because of its extensive protected areas. Tourism directly accounted for 5.4% of Costa Rica's gross domestic product (GDP) in 2015, contributing to a total of 12.5% of the GDP, considering the related economic activities linked to it (WTTC, 2015).



**Figure 2.** Holdridge Life Zones in Costa Rica. Source: Camacho, March, 2011

Traditionally a farm-based economy, the Costa Rican economy has evolved toward greater land conservation efforts over the past few decades. These include ecotourism, biological research, biological corridors to bridge protected areas, environmental education, and reforestation projects along with rural tourism endeavors for community development in countryside settlements. However, agriculture and livestock production continue to play a large role in the Costa Rican economy. This condition dates to Spanish rule during the colonial years when population growth required that much of its forested land gave way to monoculture, cattle pasture, and urban sprawl (Hall & Perez, 2003). As a consequence, an increasing deforestation dynamic took place in the 1960s and 1970s. During this period, between 123,500 and 163,000 acres were cleared per year (Gonzalez & Lobo, 1999). The tropical dry forest region, on the Pacific lowlands, was almost completely cleared. By the late 1980s, Costa Rica had one of the highest deforestation rates in the Americas (Figure 3), with a subsequent severe environmental crisis and natural resources degradation. By this point, Costa Rica had cleared almost 80% of the country's original forest coverage (Gonzalez & Lobo, 1999).

To abate this negative situation, protected areas were developed in the early 1960s, including the Cabo Blanco Absolute Reserve as Costa Rica's first protected area (Camacho, 2011). This effort was the foundation of the conservation movement in Costa Rica. This was followed by the development of the Costa Rica "National Parks Networks" in the early 1970s. The first Costa Rican national park (the Poas Volcano National Park) set the early stages of the National Parks System. The 1980s saw the establishment of additional national parks, wildlife refuges, natural reserves, and the creation of the National System of Conservation Areas (SINAC) (Camacho, 2011). These efforts were accompanied by environmental laws and the ratification of international treaties such as the Rio de Janeiro Earth Summit in 1992 (Dirección de Cambio Climático, 2017). Among these treaties, Costa Rica signed the Ramsar



**Figure 3.** Forest coverage in Costa Rica over different time periods. Source: Gonzalez &Lobo, 1999.

Convention for Wetlands of International Importance in 1991. Since 1991, Costa Rica has designated 14 natural sites under this management category (Álvarez, 1999). Many of them fall under two different designations, a previously declared National Park, and a Wetland of International Importance under the Ramsar Convention (e.g., Tortuguero National Park).

### Conservation Strategies in Costa Rica

Different conservation strategies have been implemented by public and private institutions from the 1960s onward. These strategies include public protected areas management, designation of private conservation areas, reforestation programs,

watershed protection, scientific research, and standards of environmental sustainable performance applied to the hotel industry. Some of these efforts and strategies include the National System of Conservation Areas, the Payment of Environmental Service, the Biodiversity Institute, the Organization for Tropical Studies, and the Certification of Sustainable Tourism.

The National System of Conservation Areas (SINAC) was created in 1998 by the article 22 under Biodiversity Act Law 7788. SINAC is a Ministry of Environment and Energy (MINAE) program. It manages eleven conservation areas (Figure 4) including 150 identified sites under various protected management categories (Table 1). SINAC is a convergence of public and government activities aiming at conservation strategies and sustainable development of natural resources (Camacho, 2011; SINAC, 2017a). These areas were designated for the protection of the different resource settings in Costa Rica and account for about one quarter of the country's total landmass (Figure 5). Ongoing efforts are now oriented at bridging some of these protected areas by building biological corridors (Figure 6). SINAC is participatory with a decentralized coordination involving the state, local public entities, and the private sector. It includes forestry, wildlife, protected areas management, and the protection and conservation of watersheds and water systems. The role of the SINAC is to enact policies as well as plan and execute processes aimed at achieving sustainability in the management of the country's natural resources (SINAC, 2017a).



**Figure 4.** Map of Conservation Areas in Costa Rica. Source: Camacho, 2011

**Table 1**  
Management Categories in Costa Rica

Management	#	Total Hectares	Percentage of total	
			Protected	Total
<b>Total</b>	<b>150</b>	<b>1.306.251</b>	<b>100,0</b>	<b>25,56</b>
National park	32	562	43,5	11,1
Biological Reserve	8	21.4	1,6	0,42
Forest Reserve	11	283	21,6	5,5
Protected Zone	31	157	12,0	3,1
Wildlife Refuge	51	176	13,4	3,4
Wetland (RAMSAR)	14	92.7	7,1	1,8
Other categories	3	8.89	0,7	0,2

Source: Camacho, 2011.



**Figure 5.** Map of Protected Areas in Costa Rica. Source: Camacho, 2011.



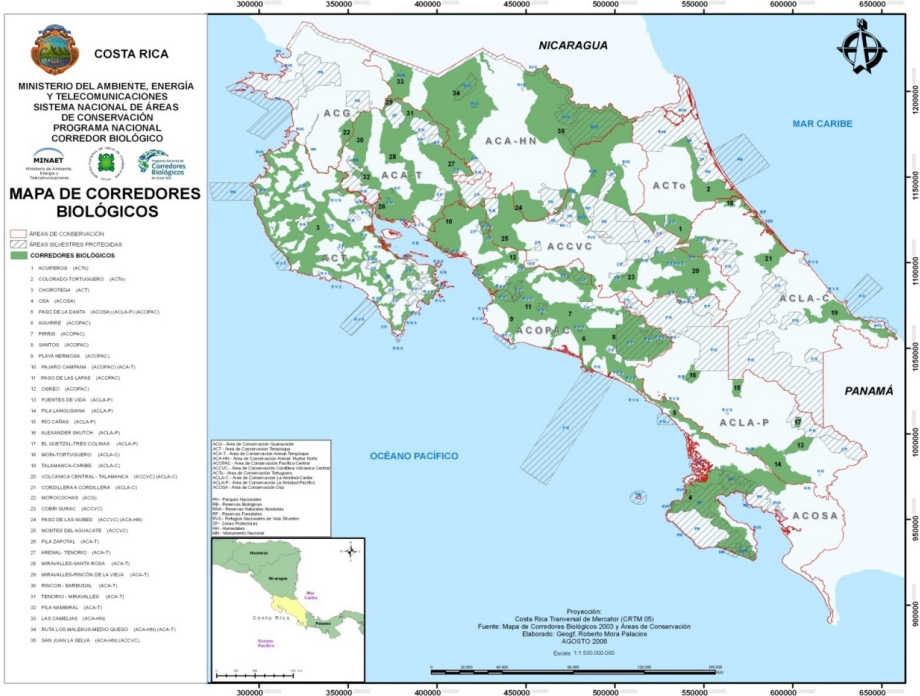


Figure 6. Map of Biological Corridors of Costa Rica. Source: Camacho, 2011.

The Payment of Environmental Services (PES) is a policy developed by the National Forestry Fund (FONAFIFO) in 1996. It acknowledges the importance of forests, specifically teak plantations, in the protection and improvement of the environment, the mitigation of greenhouse effect gases, the protection of water sources for multiple purposes, and the preservation of biodiversity. This includes sustainable use, scientific importance, ecosystems protection, and scenic beauty. With these reforestation incentives, 587,000 acres of land have benefited from the PES since 1999 (Camacho, 2011; González & Lobo, 1999).

The Biodiversity Institute (INBio) is a nongovernmental research and biodiversity management center established in 1989. Its research focuses on inventories and monitoring activities, conservation efforts, communications and environmental education, biodiversity informatics, bioprospecting, and scientific publications aimed at providing tools for the natural resources and wildlife management (INBio, 2017).

The Organization for Tropical Studies (OTS) is a nonprofit organization established in 1963 that gathers more than fifty universities, colleges, and research centers worldwide. The aim of OTS is at strengthening education and investigation into tropical biology. More than 300 scientists from more than 25 countries work at OTS every year. The organization manages three field stations in Costa Rica: La Selva Biological Station, Las Cruces Biological Station and Wilson Botanical Garden, and Palo Verde Biological Station. La Selva Biological Station is located on the Caribbean lowlands. It is one of the world's top tropical wet forest research centers. Las Cruces

Biological Station and Wilson Botanical Garden is located on the southern outskirts of the Pacific basin of Costa Rica. It is known for its large collection of endangered palms and bromeliads. It is also part of La Amistad Biosphere Reserve and it is a key place for the study of the ecology of natural restoration and biological corridors. Palo Verde Biological Station is located on the Pacific lowlands, it is known for its tropical dry forest, fresh water swamps, and extensive wetlands. It is home to thousands of avian species.

The Certification of Sustainable Tourism (CST) is a voluntary and cost-free program unveiled in 1997 by the Costa Rican Institute of Tourism. The CST program categorizes tourism development in terms of the fulfillment of social, cultural, and natural resources management sustainability (Honey, 2003; ICT, 2017; Le Pree, 2008). This program is focused on all of Costa Rica's lodging establishments, regardless of their size or location. The program seeks to certify the level of sustainability of the lodging establishment through its assessment tool, which measures the business' performance in four major areas of development: Physical-biological parameters, infrastructure and services, external clients, and an understanding of the socioeconomic environment (LePree, 2008).

## The Importance of Ecotourism in the Costa Rican Economy

Many authors have outlined the increasing importance of tourism in the world economy. Nearly three decades ago, Greenwood (1989) stated that tourism is "the largest scale movement of goods, services, and people that humanity has perhaps ever seen" (quoted in Stronza, 2000: 264), whereas Honey (2003) argued that tourism rivals oil as the world's largest industry. Lepree (2008) suggested that tourism supports at least 215 million jobs worldwide, accounting for 6% of the global gross national profit. With the development of the protected areas system, Costa Rica has been promoted as an ecotourism leading destination with the subsequent importance of ecotourism in the country's rural economy. According to the Costa Rican Institute of Tourism (ICT), tourism activity accounts for nearly one-third of Costa Rica's revenue<sup>1</sup>, outweighing pineapple and banana crops, two of Costa Rica's main exports. Costa Rica's Central Bank reported that tourism represented 5.4% of the total GNP, generating 2.85 billion dollars and over 2.6 million tourism visits annually. The result is that tourism has become one of the fastest growing economic sectors in the country (Granados, 2016).

## The Onset of Ecotourism in Costa Rica

Ceballos-Lascuráin defines ecotourism as "traveling to relatively undisturbed or uncontaminated natural areas with the specific objective of studying, admiring, and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations" (Horton, 2009, p. 94). As opposed to mass tourism, often characterized by packaged trips of large groups and large, multinational brand name tourism providers, ecotourism is characterized as flexible and small-scale, with responsible activities in natural environments carried out by individuals or small groups (Horton, 2009).

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<sup>1</sup>By 1993, tourism had already become Costa Rica's number one foreign exchange earner, surpassing coffee and bananas (Honey, 2003; Le Pree, 2009) and by the late 1990s, the tourism sector employed 12% of Costa Rica's labor force, thus turning this economic activity into Costa Rica's second-leading source of foreign exchange, after microchips (quoted in Horton, 2009: 93).



Nearly every country in Latin America promotes some sort of ecotourism, with Costa Rica playing a large role (Honey, 2003). Sustainability has been integrated into the nation's tourism industry since the 1990s, and ecotourism is the main tool of its National Park System (NPS), which was officially created in 1969. The NPS grew rapidly, and by 1996 it included 230 different protected areas, covering between 25% and 28% of its land under some form of protection. This was achieved through the acquisition of a combination of publicly held conservation areas and hundreds of smaller privately owned reserves (Honey, 2003; Le Pree, 2008). Among these, approximately 110 contain "ecolodges" and/or provide tourism activities such as hiking, bird watching, and touring rainforest canopies (Honey, 2003). All of this allowed Costa Rica to rapidly develop its ecotourism economy in the 1990s, surpassing older nature travel destinations such as Kenya or Nepal. In 1992, the U.S. Travel Society named Costa Rica "the number one ecotourism destination in the world," and by 2000, Costa Rica was already receiving over 1 million visitors with a population of only 4 million people. Sixty percent of tourists were motivated to visit the country primarily because of its protected areas, ecotourism, and nature-based attractions, generating 600 million dollars that year (WTTC 2015). This revenue was generated from tourists participating in economic, social, and environmental transformations in rural Costa Rica (Honey, 2003; Horton, 2009; LePree, 2008).

### **Ecotourism in Costa Rica's Caribbean: Three Case Studies**

The three case study locations for discussion in this manuscript are the Tortuguero National Park, the Cahuita National Park, and the Yorkin ecotourism project. Many people in these three communities make their livelihood within protected areas under state and community supervision.

The Tortuguero National Park was designated as a National Park on September 24, 1970. The park encompasses a surface of 190,115 acres, of which 124,254 acres belong to its marine area. The small community of Tortuguero Village is located within the park. Tortuguero Village is a community of loggers, fishermen and sea turtle poachers (SINAC, 2017a). Since 1959, the Sea Turtle Conservancy, an NGO oriented to save sea turtles from imminent extinction, has played a key role in the designation of Tortuguero as a protected area for nearly 60 years. This group has worked on research and community involvement in preserving the park's natural resources. Before that, an unregulated exploitation until the late 1960s prevailed (Sea Turtle Conservancy, 2017). Tortuguero is the one of the oldest sites in the world that focus on the research and conservation of sea turtles.

In March 1996, Tortuguero was also designated as a Ramsar site for Wetlands of International Importance due to its extensive wetland biodiversity, and particularly because of its avian fauna (Álvarez, 1999). Today, as a world-renowned ecotourism destination for its extensive beach used for nesting sea turtles, it provides shelter to four endangered sea turtle species: the green turtle (*Chelonya midas*) for which Tortuguero is the most important nesting area in the western hemisphere, the leatherback turtle (*Dermochelys coriacea*), the hawksbill turtle (*Eretmochelys imbricata*), and the loggerhead turtle (*Caretta caretta*).

Along with the park's marine area, the complex network of canals with their extensive Tropical Wet Forest shelter a rich biodiversity (Janzen, 1983; SINAC, 2017b), including populations of endangered species such as the jaguar (*Panthera onca*),

the green macaw (*Ara ambigua*), the manatee (*Trichechus manatus*), and the tonka bean tree (*Dypterix panamensis*) (SINAC, 2017b; Wainwright, 2007; Windevoxhel & Córdoba, 1998; Zuchowsky, 2007).

Administered by the SINAC, boat tours to the canals, night hikes to watch nocturnal animals, and sea turtle nesting tours are offered to the visitors by local certified tour guides (D. Chiapponi, personal communication, March 17, 2017). Family-run hotel lodging and handicrafts are two other economic activities that have grown in a community that once depended only on poaching, fishing, and lumber activities. In other words, ecotourism has turned into the main economic driver of Tortuguero.

The Cahuita National Park is an example of community/government shared management. It harbors the best developed reef on Costa Rica's Caribbean coast (Cortes & Leon, 2002). With a surface area of 2,639 acres of landmass, and 55,352 acres of marine area, the park was created for the protection of its flora and fauna, coral reefs, and other marine ecosystems (SINAC, 2017c; Windevoxhel & Córdoba, 1998). Before its foundation as a national park on September 7, 1970, the community of Cahuita spread as far as today's national park's boundaries (L. Wilson, personal communication, March 18, 2017); therefore, part of the population was relocated, and the national park is managed together by the local development association and the governmental SINAC ever since. Local guides and tour operators are trained by the governmental National Learning Center (INA) and the ICT in tourism in order to assist the incoming tourists (SINAC, 2017c). It is the only National Park run under this managerial category nationwide, and the revenues are allocated by the development association to numerous projects of community outreach (L. Wilson, personal communication, March 18, 2017). Besides nature-based activities, Cahuita has become an increasingly popular culinary and cultural destination due to the unique features of the Afro-Caribbean culture.

The community-based tourism in Yorokin, Talamanca involves a native Costa Rican Bribri community in the lower Talamanca mountain range. The Bribri are the most numerous indigenous population in Costa Rica. They hold a certain level of autonomy over their land and are amongst the least developed human communities whose livelihood heavily depends on small scale farming. Their territory is not managed as a government protected area, but they are entitled to own and run their territory based on their traditions. As farming communities, they used to heavily rely on cacao crops for their livelihood, but cacao pod rot disease affected them in the late 1980s, costing nearly 80% of their harvests. This situation forced the male population to move out to work at the banana plantations. During the rainy season, heavy floods in the Yorokin river frequently prevented the men from returning to their communities. Thus, in 1992, three female leaders of the community created the Stibrawpa Association to generate job opportunities for both men and women within the village itself. The Stibrawpa Association pursues three main goals: to strengthen the Bribri peoples' culture, undermined by the emigration of their community members, to improve Yorokin's economy, and to preserve the forest (Soto, 2016).

Stibrawpa, which is "crafts people" in Bribri, began in 1992 as a group of craftswomen manufacturing their own handicrafts for tourists in Cahuita with the aid of a small donations program by the United Nations Development Program. By 1996,

the Stibrawpa association began with its accommodations projects to lodge visitors in Yorkin (B. Morales, personal communication, March 22nd, 2017; PNUD, 2014; Soto, 2016). The Association has broadened their ecotourism offer to visitors. Along with their handicrafts and lodging, the visitors may learn from the Bribri traditions: the bow and arrow demonstration, the thatch roof building demonstration, nature hikes to Cue river and the waterfall across Yorkin river, the cocoa tour to teach visitors how to make chocolate, the visit to the organic farms their traditional food is based on, and learning about the Bribri peoples' traditions and beliefs through lectures. The cultural/ecotourist experience also involves volunteer work with the locals in their tree nursery, interaction with their primary school and high school students, and trail signaling (B. Morales, personal communication, March 22, 2017). Currently, Yorkin's estimated visitation is 1,300 people on a yearly basis. Most visitors are tourists from France, Germany, and the USA interested in an alternative kind of tourism involving an eco-friendly and native people's culture focus. In high season, Stibrawpa may accommodate 70 people per day in their facilities (Soto, 2016).

The Stibrawpa Association has carried out extensive outreach in its community through the development of its ecotourist project. Their efforts have aided in the generation of job opportunities to local people who otherwise emigrated therefore causing family disruption in the Bribri community. Stibrawpa now employs many of the community's men as boat operators to offer boat rides to and from Yorkin to visitors. Additionally, the association's revenues have been invested in Yorkin's schools facilities. The student dropout rate has decreased among Bribri children and adolescents, who do not have to leave their community to get formal education. Lastly, the local economy has diversified from a merely farming based one to an ecotourist economy. Keeping their own people in their community invigorated the overall social bond, allowing the Bribri people to retrieve some aspects of their culture that were weakened as a result of the emigration experienced in the past (B. Morales, personal communication, March 22, 2017).

## Discussion

The tourism boom in Costa Rica in the 1990s triggered a number of new conservation strategies and social and economic policies that changed the country's economic dynamics. In less than a decade, tourism became the leading economic activity in the country, outpacing the economic dependency on monocultures. The diversified tourism-oriented economy based on the country's biodiversity and extensive protected areas system became the country's most important source of income. In this sense, ecotourism could well be used as both a source of income for rural communities and a tool of conservation. However, the small-scale, low-impact facilities associated to ecotourism should not be disregarded due to perceivable disadvantages. Despite the benefits that ecotourism brings to low-income, rural communities, social hardships are far from being solved. For example, in Tortuguero, the "trickle-down" effect that should result from incoming massive tourism is not reflected in the Park infrastructure, logistics, and sufficient personnel. Nor does tourism income seem to be allocated to the fulfillment of the social community needs such as the improvement

of poor school facilities<sup>2</sup> and addressing the lack of adequate waste water treatment in the village. Moreover, some of the upscale hotel facilities do not contribute, as they should, to improve the conditions of the canals themselves. For instance, off-board motor boats used for tours and other types of transportation along the canals should be more regulated to avoid both disturbing wildlife and contaminating the canals with fuel leaks. On the other hand, the locals frequently complain that lack of employment is in part due to the fact that some hotel owners hire undocumented underpaid labor.

Another example of these pros and cons of ecotourism can be seen in the Cahuita case study. Undoubtedly, this industry has brought economic growth to the community. The management of the National Park by the Cahuita Development Association has resulted in a better infrastructure in the community. The school facilities, for example, reflect this.

Although ecotourism diversifies and generates local economy, it also triggers male prostitution and drug dealing in an alarming rate. It is true that the causality of ecotourism in these issues is not very clear cut, but it is also true that mass tourism contributes to this social problem. To summarize, without an adequate official supervision, ecotourism does not guarantee environmental and social sustainability.

Alternatively, Yorkin seems to run in line with the concept of ecotourism as it is defined, since it combines ecotourism, recreational tourism, and cultural tourism. Its small impact on the environment might be due to both the Bribri conception of Nature as a “providing mother” that should be respected and taken care of, as well as to the low impact of a small visitation of tourists. In despite of the humble profits from this activity, Yorkin is today a fairly prosperous village. The Stibrawpa project has generated jobs for many people in the community. The community openness to foreign volunteering has contributed to their infrastructure improvement which makes their facilities more attractive to ecotourists. Among the three case studies, Yorkin also reflects a more profound community empowerment since it involves the essence of the native Bribri culture. This very fact represents the core difference between ecotourism and corporate tourism focused mostly on profit.

Ecotourism is no doubt a more sustainable economic alternative for rural development. Its low-impact nature, its concern in protecting biodiversity, and the obvious social outreach of the communities in many ways, are good reasons to promote it and strengthen it. However, an institutional commitment is far from being the best.

One of the perils associated to ecotourism, is the proclivity of it to become highly impactful mass tourism. No clear regulations of protected areas carrying capacity are properly supervised with an increasing number of tourists coming to the country pursuing nature-based attractions. In other words, the Costa Rican government still greatly supports and stimulates mass corporate tourism, despite the “Essential Costa Rica” nature trademark Costa Rica promotes itself with.

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<sup>2</sup>According to the school principal the community development association lacks proper funding for the school infrastructure and students' items which heavily depend on donations.

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## Interviews

**Laura Wilson**, Afro-Caribbean community leader in Cahuita town, member of the Afro-Costarican Women's Center for the preservation of the afro caribbean culture. Lecture offered to San Francisco State University's students for their study abroad program RPT 470: Care Break-Ecotourism and Community-Based Development in Costa Rica. Department of Recreation, Parks and Tourism, SFSU, March 18, 2017.

**Bernarda Morales**, Bribri leader and founder of Stibrawpa women association in Yorkin, Talamanca. Lecture offered to San Francisco State University's students for their study abroad program RPT 470: Care Break-Ecotourism and Community-Based Development in Costa Rica. Department of Recreation, Parks and Tourism, SFSU, March 22, 2017.

**David Chiapponi Madden**, naturalist and local tour guide and entrepreneur in Tortuguero community. Pers. comm., March 17, 2017.