Effects of Ecotourism and Adventure Tourism in the Santa Cruz Province, Argentina

by

Rachel Ryan

An Undergraduate Thesis
Submitted in Partial Fulfillment for the Requirements of

Bachelor of Arts
in
Environmental Science: Conservation and Ecology
The Effects of Ecotourism and Adventure Tourism in the Santa Cruz Province, Argentina

Rachel Ryan
May 4, 2012

Abstract
The majority of impoverished people living in rural areas depend on agriculture and similar practices to survive. Over the past century, countries like Argentina have depleted 2/3s of its native forests. These forests had once provided homes to millions of organisms, but are now rapidly losing biodiversity. This interrelated problem has sparked a variety of solutions, one of which is ecotourism. Ecotourism should conserve species richness and improve the socio-economic state of the community. Since Argentina largely utilizes ecotourism in the southern part of the region, it should be expected that the poverty rate for this area would also be low due to the inclusion of locals in ecotour programs. Based on previous knowledge of the study area, it was hypothesized that ecotourism and adventure tourism would help preserve biodiversity but have no effect on poverty levels. Based on the current results, the increase in tourists to Los Glaciares National Park was statistically significantly (P=.004) and there was an observed increase in bird species richness after ecotourism became popular. Although there was a decreasing trend in poverty, this can be attributed to Argentine’s economic crisis in 2001 and the global economic crisis in 2008-2009. Ecotourism has been proposed to help alleviate poverty and conserve biodiversity, but this can only be done through sustainable practices, community interaction, and policy reform.

Introduction

One of the many global issues we are currently facing is that of poverty. Today, about 1.4 billion people living in developing countries live on $1.25 or less, of this population about 75% live in rural areas and depend on the land to survive (The Hunger Project). Due to lack of resources (tools, funds, and education), many of the rural poor use unsustainable agricultural practices that negatively impact the environment. One of the negative consequences is the depletion of biodiversity species. Therefore, increasing poverty has the potential to impact the...
environment and decrease species biodiversity. This interrelated problem has led to a variety of proposed solutions, one of which is ecotourism.

Ecotourism is a subcategory of tourism that should benefit both the local citizens as well as limit environmental impact. Because of these goals, it has been suggested to help alleviate local poverty and conserve biodiversity. However, many argue over the actual benefits of ecotourism. Suggested benefits from ecotourism can range anywhere from local employment opportunities to inter-cultural peace. Yet, many of the ecotourism case studies have found that there are still areas of the ecotourism market and within ecotourism practices that need improvement in order to be considered a possible solution to biodiversity conservation and poverty alleviation. One suggested solution for improving the ecotourism market is to take into account the current and future impacts of the social, economic and environmental state of the industry, visitors, environment and local community (UNEP & WTO 2005).

One country that contains various ecotourist destinations is Argentina. The eco-regions of this country span from glaciers in the south to rainforests in the north and contain diverse species for each habitat. These locations and natural sites present the opportunity for ecotourism and other natural-based tourism sectors to be a prime commodity. This study focuses on one area in the Patagonian region of Argentina that is popular for ecotourists. It was hypothesized that ecotourism and adventure tourism help conserve bird species diversity, but do not help alleviate poverty in two cities in the Santa Cruz Province of Argentina.

**Literature Review**

**Ecotourism Trend**

Throughout the years the tourism industry has expanded both nationally and internationally. Although international tourism hit a financial struggle due to the global economic and financial crisis in 2008 and 2009, it has once again rebounded with 940 million international arrivals in 2010 (Tourism Highlights 2011). This increase not only brought a variety of visitors, but also financial wealth. As a global entity, tourism ranks fourth as an export class, only after fuels, chemicals and automotive products (Tourism Highlights 2011). The World Tourism Organization predicts that by 2020 international tourism will increase to almost 1.6 billion arrivals which is 2.5 times greater than the volume in the late 1990s (Tourism 2020
Vision 9). With the global benefits amounting from tourism, the industry has recently expanded and enhanced development on other tourism subcategories, including ecotourism.

Ecotourism was first initiated during the 1970’s global environmental awareness movement, yet it wasn’t until the early 1990’s that ecotourism and other branches of tourism (cultural, heritage, nature-based, and adventure) became popular, becoming one of the fastest growing sectors of tourism globally (FAQ: About Ecotourism). Ecotourism has exploded as a way of travel within the last decade. According to The International Ecotourism Society (TIES), ecotourism has been growing internationally by 20-34% each year since the 1990s (Ecotourism Fact Sheet 2006). Though this may reflect that ecotourism is typically grouped into other environmental travel categories such as nature tourism, adventure tourism, and wildlife tourism (Honey 6-7), as well as the beneficial use for marketing where the prefix eco- has the connotation of responsible use (Goodwin 1996).

What is Ecotourism?

In order to be considered ecotourism the travel experience should improve the socio-economic state of local people as well as conserve the environment (TIES 1990; Honey 29-30). This should involve visitation to natural or protected areas led by local citizens. Ideally, ecotourists’ expenditure should go toward further preservation of the natural environments as well as contribute to the funds of the local community. Often, the ecotourism programs incorporate interaction and education about local cultures and customs while contributing to preservation of the natural environment (Eagles & McCool 2002). Other forms of ecotourism involve small group visitation to natural environments, education about the cultural and environmental past, and utilizing the beneficial means to support the local, indigenous people as well as incorporating effective conservation methods (UNEP & WTO 2005). Ultimately, ecotourism aims to conserve biodiversity while minimizing the environmental impact from visitors, as well as reduce local poverty by positive socio-economic practices (Agrawal & Redford 2006).

Differences in Tourism Subcategories

Since many individuals categorize ecotourism with other environmental tourism groups, it is necessary to understand the context of the other, similar categories. Nature based tourism
deals with travel to natural areas for its physical amenities or scenery (Honey 11; TIES 2006). Wildlife tourism is essentially nature based tourism, but with and without the use of local, wild animals (Spenceley 15). Cultural tourism involves immersion of the visitor into the lifestyles of the local people, either by experiences, activities, or observation of local sites and monuments (Tourism 2020 Vision 100). Adventure tourism incorporates activities that may lead to physical activity, and can be categorized as either hard or soft adventure tourism (Tourism 2020 Vision 92). Hard adventure tourism usually involves a certain skill and/or risk level and utilizes human transport either in camping or staying in rural lodges (Tourism 2020 Vision 92). Soft adventure tourism may use more comfortable lodging, mechanized transportation and be less physically strenuous (Tourism 2020 Vision 92).

One issue with assessing ecotourism and other sustainable tourism programs is because of the constant overlap in these categories. For example, 85 million Americans (40% of the population) in 1998 took an adventure trip (Tourism 2020 Vision 93). Yet, the North American travel industry broadly defines the adventure tourism segment, which can range anywhere from walking in the woods to canoe trips in the Amazon (Tourism 2020 Vision 93). Due to this inconsistency, many case reports, unless specifically stating otherwise, can account for multiple types of sustainable tourism.

Although all of these tourism subcategories have differences in niche, they should ultimately be a form of sustainable tourism. Sustainable tourism incorporates aspects of sustainable development and tourism. According to the UNEP and WTO, sustainable development “is a process to meet the needs of the present without compromising the ability of future generations to meet their own needs” (UNEP & WTO 2005). In order to be recognized as such development, it must incorporate social, economic and environmental sustainability (UNEP & WTO 2005). Therefore, all sectors of tourism should be working toward sustainable development.

Growth and Statistics

Ecotourism may have first originated in the United States through the Sierra Club Outing program as nature based tourism (Honey 11). The original outings involved hiking, backpacking, river rafting and mountain climbing and eventually led to various trips overseas.
(Honey 12). Today, many ecotourism sites are national or protected parks. According to the United Nations Environment Programme (UNEP) and Conservation International, natural areas are becoming a large area of tourism expansion (TIES 2006). Also, the commonly popular ‘sun and beach’ travel destinations’ growth are predicted to remain constant, while other categories such as nature tourism, ecotourism, heritage tourism and soft adventure tourism are expected to increase in growth over the next 20 years (TIES 2006). The expected growth of this industry is not just based off of travel statistics, but also based on the opinion of the consumers. A 1992 study found that as much as 60% of all international travelers vacationed at specific sites because of the natural experience and a separate study found 40% of international travelers visited areas for specific wildlife observation (Mastny 2001).

Another branch of sustainable tourism is adventure tourism. Since adventure tourists tend to travel independently, the growth rate in this category may be underestimated. In 1998, many adventure market operators claimed the growth rate for this segment was 15-20% a year (Tourism 2020 Vision 92), again this statistic does not include those who traveled independently. The expansion of ecotourism may have been a result of recent popularity, but it has been shown effective and beneficial in several areas.

**Benefits**

Ecotourism has the potential to create employment opportunities, support local businesses/services, bring revenue to natural areas, change local citizens’ attitudes on conservation, and bring inter-cultural peace (UNEP & WTO 2005). Although the beneficial aspects of ecotourism remain controversial, there have been various aspects and case studies that provide positive impacts. One benefit from ecotourism is local employment opportunities. For example, in the Ngamiland district of Africa, the Okavango Delta safari lodge sector employed over 3000 citizens and paid more than $7 million U.S. dollars to citizens on the payroll in 2005 (Massyn 2008). This was a major step to help local citizens become involved and improve their economic condition because much of Ngamiland is rural area (Massyn 2008). However, to get local citizens involved in ecotourism, governmental policies may need to change. In a case study carried out near Royal Chitwan National Park (RCNP) in Nepal, only 1% (1100 out of 87,000 villagers) of the area’s working age population was directly employed by the ecotourism industry prior to new legislation (Bookbinder et al. 1998). After a 1996 recycled revenue bylaw was put
in place, it required half of RCNP’s entrance fees and some of the revenue generated by concessionaire taxes be distributed to the local communities and by 1998, $400,000 per year was contributing to local development and local citizens had changed their view on environmental conservation (Bookbinder et al. 1998). Not only does ecotourism have the potential to generate jobs, but many tourists support businesses that hire local residents. A 2002 survey study showed that most American (57%), Australian (62%) and British (74%) travelers favored hotels that hire locally and an even higher proportion of these travelers expected the hotels to guarantee good working conditions and fair wages (Chafe & Honey 2005).

Another benefit of ecotourism and other sustainable tourism practices is that they have been bringing more people to developing countries. In the 1970s only 1 in 13 tourists traveled from a developed country to a developing country, but towards the end of the 1990s this number lowered to only 1 in 5 (Mastny 2001). One example is that of The Brazilian Sea Turtle Conservation Program (TAMAR). When TAMAR’s headquarters in Praia do Forte opened in 1982 there was minimal tourist activity and had only 500 residents, but by 2008 there were 600,000 people visiting each year and the residency expanded to 2,000 citizens (Stronza & Pêgas 2008). The revenue brought to these countries from the tourism industry helps boost the economic state of the country. The U.N. Conference on Trade and Development (UNCTAD) reported that tourism is currently the second largest source of international exchange, only behind oil export for 49 of the world’s developing countries (Mastny 2001).

Ecotourism also has the potential to conserve threatened species and change local opinions. For example, for many rural farmers and ranchers, wildlife predation on livestock is a major threat for their revenue. In order to change the attitudes of local citizens and protect the wildlife, there must be some sort of incentive for landowners. One study conducted in four protected areas in South Africa, found that ecotourism operations had the potential to generate enough money to offset the cost of the endangered wild dog, *Lycaon pictus*, reintroduction into these areas (Lindsey et al. 2005). These dogs although endangered, created negative associations for ranchers due to predation on their livestock. Since removing species and reintroducing them into a confined environment is expensive, the researchers tested to see if the costs generated by ecotourism would be enough to offset the expenses of conservation. By using contingent valuation surveys which included the amount willing to pay to view wild dogs and puppies at
den sites, researchers found that at one site, Kruger National Park, 75% of tourists were willing to pay to see wild dogs (Lindsey et al. 2005). This study also found that ecotourism can potentially improve the attitudes of landowners on wild dogs in South Africa (Lindsey et al. 2005).

Another case study that has been effective in changing the opinion of local citizens is that of TAMAR and the residents of Praia do Forte, Brazil. As previously stated, TAMAR is the Brazilian Sea Turtle Conservation Program which uses the ecotourism practices of a research station and visitor center to help protect sea turtles and their hatchlings (Stronza & Pêgas 2008). The research station and visitor center help bring revenue to the community as well as provide job opportunities. For example, the money generated from the visitor center goes towards employee wages, assistance to a local childcare facility, and to support community programs such as beach clean-ups (Stronza & Pêgas 2008). Due to positive relationship between the conservation program and the community, 94% of the residents said their value of sea turtles changed from years past (Stronza & Pêgas 2008). They went on to further explain that sea turtle eggs had once been used as a food source, but are now viewed as a community icon (Stronza & Pêgas 2008). Since TAMAR has included the villagers of Praia do Forte in its practices, a different appreciation for sea turtles now exists within the community. However, because of the heavy reliance of ecotourism on this community, 62% of respondents felt that if the TAMAR visitor center and research station closed, locals would go back to harvesting turtle eggs and meat (Stronza & Pêgas 2008).

**Challenges in Programs and Studies**

The use of ecotourism to incorporate both environmental conservation and poverty alleviation in most countries has yet to be shown effective. Although many countries utilize and promote the ecotourism sector of travel, the vast majority have gaps in their management or goals. Most studies that have been published on ecotourism’s aim to reduce local poverty and protect the natural environment have only focused on a specific subset of poverty, conservation, and development, and therefore provide the reader with the false generalization of the results (Agrawal & Redford 2006). Correlating the results between aspects that were not focused on in the study can give the reader misleading information and can cause potential damage to the observed community. Another issue that currently exists with published ecotourism case studies
is the study duration. Some studies relay the results of previously implemented ecotourism programs without comparing this data to a baseline data set (Agrawal & Redford 2006). This makes program evaluations hard to accurately identify since the results can’t be compared to original, pre-program data.

Another typical problem in the goal of ecotourism is that local employment opportunities are limited. Although previously suggested that local employment was a positive aspect of ecotourism, in reality, the majority of the employment is outsourced or unavailable to local citizens. One study of ecotourism in Madagascar has noted that the local population was rarely involved with tourism opportunities and therefore scarcely received the benefits or income produced from this industry (Pawliczek & Mehta 2008). This issue is common and can be attributed to the private tourism sectors that own the hotels and employ foreign personnel for managerial work (Pawliczek & Mehta 2008). Even locations that do employ local citizens for tourism based jobs tend to give them the lowest paying position. Another example is a case study done on biodiversity conservation and local economic employment from the Royal Chitwan National Park in Nepal (Bookbinder et al. 1998). Out of 996 houses surveyed, 4% had family members who worked for the park and only 2% of the population had family members who indirectly earned money by selling products or various services (Bookbinder et al. 1998).

Although ecotourism’s popularity has been increasing in natural areas and protected sites, this does not necessarily mean the land will benefit. In reality, majority of national parks and reserves are not able to benefit from increased tourist visits (Goodwin 1996). Some parks may not have the funds or availability to have trained guides, interpretive information (pamphlets), visitor centers and resources to manage incoming park visitors (Goodwin 1996). Without these commodities visitors not only miss in the educational aspect of the park but can potentially harm the environment, disrupting local habitats and leaving excessive amounts of trash. Yet, even the countries that do offer these beneficial resources, most lack the scientific information needed to accurately assess visitor impacts on the environment (Goeldner & Ritchie 389).

Other negative aspects that may be associated with increase in visitation to national parks or protected areas are the social and cultural impacts. Non-native tourists have the potential to transform the cultural, economic and political aspects of native or indigenous citizens as well as compete with residents for desirable resources through recreation, such as fishing and hunting
(Eagles & McCool 2002). This potential alteration in cultural and social aspects can change traditional community values and lead to negative association of tourists.

In order for ecotourism to be a successful travel entity, changes must be made on all aspects of the industry. From global stakeholders to local government officials to citizens living below the poverty line, everyone must be equally involved in the process for it to achieve its goals. Ecotourism has the potential to help change socio-economic cultures as well as environmental impacts, and with the effective measures it can happen.

**Importance of Biodiversity**

Biodiversity is an important aspect for both the environment and civilizations. The diversity of species provides genetic differences among groups and allows for adaption to changes in the environment. Civilizations have always depended on the natural diversity of organisms to provide food, shelter, and medicine. Hence, biodiversity is a necessity and contains different species populations across the world. Some species are endemic to certain locations and without protection could end up endangered or potentially extinct. According to the United Nations Environment Programme (UNEP), there are 1.7 million described species in the world, yet the estimated total number of species ranges between 10-100 million (United Nations Environment Programme). With the majority of global species unidentified to humans, it is essential that we help maintain biodiversity throughout the world.

As stated above, the amount of species identified is well under the actual number of species in existence today. One reason for this issue may be due to variation in methodology and inconsistency of data collection throughout countries (EarthTrends 2003). However, there are common ecological ways to measure biodiversity within a community. The two most common are measures of richness and distribution. For the purpose of this study, we will use richness to measure bird species diversity.

**Site Specific Biodiversity- Santa Cruz, Argentina**

Argentina is a country with a variety of ecosystem types. It contains 15 terrestrial ecoregions and 3 marine ecoregions out of a worldwide total of 238 (Project Performance 2011). One province of Argentina is Santa Cruz (Figure 1). Santa Cruz, specifically the areas
surrounding Los Glaciares National Park, contains a vast diversity of organisms. This area contains both glaciated ice as well as forested steppes. Organisms that are native to this region are the red fox, mountain lion, condor, Patagonian woodpeckers, Great Horned Owl, torrent duck, “four-eyed frog”, Patagonian gray fox, and skunks (PN Los Glaciares). Yet, this region is also unique because of its endemic species. One of the most well known endemic species is the Patagonian huemul (*Hippocamelus bisculus*). Due to habitat loss and hunting, the huemul is considered endangered with Andean populations estimated to be about 350-600 (Los Glaciares Argentina 2011). Other endemic species include regional birds. The National Council for Bird Preservation accounts the Patagonian steep area to have as many as 10 endemic bird species (World Wildlife Fund 2010). With such a high diversity rate, it is important that these areas are preserved.
Figure 1. Map of Santa Cruz Province (retrieved from http://www.argentina.gov.ar/argentina/portal/documentos/santacruz.pdf)
### Argentine Conservation Efforts

#### History Overview

Over the past century, Argentina has depleted its natural environment by two-thirds for wood due to the expansion of the paper and pulp industry, as well as using the land for cattle ranching and agriculture (Project Performance 2011). These impacts on the land resulted in a total forest loss of 69 million hectares and depletion of natural habitats and biodiversity (Project Performance 2011). Yet, around the 1930s a Natural Parks program was put into place that protected some of the local environmental habitats (Project Performance 2011). Since the program was new, many adjustments had not yet been made about policy and regulation. The issue was that even with the Natural Parks program, forests were still being used for other production projects (Project Performance 2011). During the 1990s the Argentine government decided to implement the Native Forests and Protected Areas (NFPA) project (Project Performance 2011). This project contained four objectives in order to better implement policies of management and conservation. One of those policies was to increase environmental sustainability in tourism for four National Parks in the region of Patagonia (Project Performance 2011).

Out of the estimated 435 protected areas that Argentina has today, only 35 are national parks (Buckley 141). Since these National Parks were developed, the World Bank has been assessing and revising various aspects. For the NFPA, some of the components added to the project design were national inventory of native forests and further research on the forests to better provide management and conservation methods (Project Performance 2011).

#### Ecotourism in Santa Cruz

Since the 1990’s, everything with the prefix ‘eco’ exploded in Latin America, this sparked a new form of tourism known as ecotourism (Mader 2002). Many areas in Latin America were considered prime spots for ecotravel due to their high levels of biodiversity, one of which is Argentina. Being the second largest country in South America, Argentina contains 18 different eco-regions ranging from the humid subtropical rainforest to the arid High Andes (Buckley 140). These areas are home to millions of organisms and offer unique environmental
attractions. Some of these areas are located within the Santa Cruz province of Argentina’s Patagonian region.

Two cities that are located within the Santa Cruz province are El Calafate and El Chaltén. El Calafate was established in 1927 as a center point for the park and surrounding regions and is located at the southern end of Lake Argentina, about 40 km east of Los Glaciares National Park (Los Glaciares Argentina 2011). The town of El Chaltén was founded in 1985 and is located on the northern edge of the park (Los Glaciares Argentina 2011). Due to the cities’ proximity to the park, there are many tourist activities designed for both ecotourism and adventure tourism. Popular ecotourism activities include visitation to the park and guided tours in the Andean-Patagonian steppe. Some of the popular adventure tourism activities in this area include hiking and glacial trekking.

Los Glaciares National Park, also referred to as PN Los Glaciares, was established in 1945 but became a protected area in 1937 (Los Glaciares Argentina 2011). It became a national park primarily for the preservation of the glaciers that surround the Andean-Patagonian forest and steppe. Los Glaciares National Park covers over 1,482,000 acres of land and contains 47 major glaciers, the most popular being Perito Moreno (PN Los Glaciares). Although Perito Moreno is considered the most popular, the two largest glaciers in the park are Upsala (595 km²) and Viedma (575 km²), both of which feed into the lakes, Argentina and Viedma (Los Glaciares Argentina 2011). Other popular glaciers are Upsala, Onelli, and Spegazzini.

Currently, Argentina provides some data on natural tourism; however their definition of natural tourism is very broad and probably incorporates other dimensions of sustainable tourism such as ecotourism. The Argentina Federal Strategic Plan for Sustainable Tourism 2016 identifies natural tourism as visitation to natural attractions such as national parks and reserves (Perfil del Turismo Natural 2010). Since many ecotourism operations also utilize these areas, it can be assumed that the data provided for this sector of tourism is higher than the actual number of tourists visiting specifically for natural tourism. A 2006 Survey of Travel and Tourism in Households (EVyTH) found that 34.7% of the Argentine residents who participated in the survey visited a natural attraction during their vacation, while 85% of tourists to the Santa Cruz province visited a natural attraction (Perfil del Turismo Natural 2010). Another economic contributor to the Santa Cruz region is from adventure tourism. According to the Argentina Federal Strategic
Plan for Sustainable Tourism 2016, adventure tourism consists of sports activities such as; trekking, mountain climbing, white water rafting, mountain biking, hang gliding, and other extreme sports (Perfil de Deportes de Aventura 2010). In 2006, Santa Cruz had 35% of visitors incorporate some form of adventure sport, primarily trekking and mountain climbing (Perfil de Deportes de Aventura 2010).

El Calafate and El Chaltén contain natural amenities that make them prime locations for ecotourism and adventure tourism. Since both areas utilize tour guides, educational signs, guided walkways, and waste management practices, they can be viewed as limiting the negative impact on the environment. Due to these features, we will consider the visitation to Los Glaciares National Park from El Calafate as ecotourism and guided soft adventure hiking in El Chaltén as adventure tourism. For the purpose of this study the adventure tourism in El Chaltén will be referred to as both ecotourism and adventure tourism, due to the employment of local tour guides as well as hiking on established paths. Although labeled as soft adventure tourism, it does incorporate the value of environmental conservation and promote the local socio-economic state.

Methods

Study Site

The two main areas of focus for this study were the cities of El Calafate and El Chaltén, both of which are located in the Santa Cruz Province. These areas were chosen based on the tourism markets they advertise (ecotourism and adventure tourism) and the proximity to major tourist attractions; Los Glaciares National Park, Lago Argentino (Lake Argentina), and Mount Fitz Roy and Torre. El Calafate is located in the south west region of Santa Cruz and lies at the foot of Los Glaciares National Park and Lake Argentina. El Chaltén is located about 220 km north of El Calafate, and is known as the National Capital of Trekking. This city was founded in 1985 and only contains about 600 permanent residents. It is the northern most point of Lake Viedma and is surrounded by Mount Fitz Roy and Torre, as well as the Patagonian Andean forests.
Figure 2. Map of Los Glaciares National Park (retrieved from http://www2.medioambiente.gov.ar/sifap/detalles.asp?id=21)
**Procedure**

To find how the different types of tourism markets affect the environment and the community, specific questions were generated to find; amount of tourist visits annually, revenue from tourist activities, distribution of funds, local involvement, and environmental impact.

The data was collected using information received from contacts in Argentina and by country statistics. Data retrieved from the Glaciers National Park service provided the number of visitors arriving on a monthly and annual scale. However, only the total number of visitors per year was displayed to show a trend in visitor arrivals throughout time. The total number of nights each traveler spent in a hotel room in El Calafate was used to assess the amount of visitors that came to El Calafate between the years of 2008-2010. The data was collected from the Instituto Nacional de Estadística y Censos (INDEC) and was determined by multiplying the number of travelers by the number of nights each stayed in the establishment. The poverty rate for the Patagonian region was obtained through the Socio-Economic Database for Latin America and the Caribbean (SEDLAC). The sources used to gather data were Latin American and Caribbean (LAC) household surveys, which are carried out by the Instituto Nacional de Estadística y Censos (INDEC). The data derived from this source was computed into mean annual poverty headcount ratios (PPP) for USD-2.5-a-day and USD-4-a-day. The outcome of bird species richness surrounding the study sites were collected using data from the Global Biodiversity Information Facility (GBIF). A buffer area of 19,889 square miles was placed around Los Glaciares National Park to include both El Calafate and El Chaltén. The species richness was graphed against pre- and post- ecotourism and adventure tourism, which were grouped into time blocks of 20 years.

The questions above were generated for the Director of Tourist Services in El Calafate, Los Glaciares National Park, National Director of Conservation of Protected Areas, Director of International Programs, staff at Ministry of Environment, as well as various tourist operations specific to El Calafate and El Chaltén. However, most of the contacts did not answer the specific questions and instead directed the response to a generic website.
Data Analysis

The trend in tourism for the cities of El Calafate and El Chaltén were shown using a regression statistical analysis evaluating tourist arrivals over time. A regression model was used to compute total yearly visitors to the Los Glaciares National Park using SPSS. The regression model used a correlation coefficient (r) to find the relationship between the increase in year and park attendance. The hotel occupancy for El Calafate was used to provide additional information on the number of visitors entering the city between the years of 2008-2010. An ANOVA test using SPSS was used to show the variance of traveler visitation among the years (F).

Poverty rate was evaluated using a regression model to assess the trend in poverty rates over time, this was also found using SPSS. The biodiversity in bird species was measured using species richness. Since the observed species richness is a total count and there are limited data points, no statistical analysis was produced.

Results

Tourism Information

Over a period of eight years, total annual admittance into Los Glaciares National Park significantly increased (p=.004) (Figure 3, Table I). The linear relationship between the number of attendees and the increase in year was relatively strong (r = 0.848716) and there was also a 72% variation in park admittance which was accounted for by varying years (Figure 3, Table I). The number of visitors staying overnight in El Calafate did not vary between the years of 2008-2010 (F=.368, p=.695) (Figure 4, Table II).

Poverty

The mean poverty headcount ratio was measured annually on two different measures, extreme poverty (USD-2.5-a-day) and moderate poverty (USD-4-a-day). Both extreme poverty (p=.007) and moderate poverty (p=.002) did significantly decrease over time in the Patagonian region (Figure 5, Table III). Around 2007 the poverty rates tended to level off for both measures of poverty (Figure 5).
**Biodiversity**

Over the years a diverse range of birds were observed living among or along Los Glaciares National Park (Figure 6, Table V). After ecotourism and adventure tourism became popular in the 1990s, there was an increase number of observed bird species compared to the number of birds species observed before the 1990s (Figure 7).

![Total Annual Admittance into Los Glaciares National Park](image)

**Figure 3.** Amount of Yearly Visitors Entering Los Glaciares National Park

**Table I.** Data Analysis of Annual Amount of Visitors to Los Glaciares National Park

<table>
<thead>
<tr>
<th>r</th>
<th>R2</th>
<th>Regression Equation</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.849</td>
<td>0.72</td>
<td>y = 37621x - 8E+07</td>
<td>18.028</td>
<td>0.004</td>
</tr>
</tbody>
</table>
Figure 4. Total Number of Nights Each Visitor Stayed in a Hotel Room/Unit in El Calafate from 2008-2010

Table II. Data Analysis of Total Number of Nights Each Visitor Stayed in a Hotel Room/Unit in El Calafate from 2008-2010

<table>
<thead>
<tr>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1.132E9</td>
<td>2</td>
<td>5.659E8</td>
<td>.368</td>
</tr>
</tbody>
</table>


**Figure 5.** Mean Annual Headcount Ratio of Poverty Estimates in the Patagonian Region of Argentina Based on Extreme Poverty (US $2.5/day) and Moderate Poverty (US $4/day)

**Table III.** Data Analysis of Mean Annual Headcount Ratio of Poverty in Patagonian Region based on USD-2.5-a-day

<table>
<thead>
<tr>
<th>r</th>
<th>R2</th>
<th>Regression equation</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.854</td>
<td>0.73</td>
<td>$y = -1.325x + 2E+03$</td>
<td>16.204</td>
<td>0.007</td>
</tr>
</tbody>
</table>

**Table IV.** Data Analysis of Mean Annual Headcount Ratio of Poverty in Patagonian Region based on USD-4-a-day

<table>
<thead>
<tr>
<th>r</th>
<th>R2</th>
<th>Regression equation</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.899</td>
<td>0.808</td>
<td>$y = -2.502x + 5E+03$</td>
<td>25.176</td>
<td>0.002</td>
</tr>
</tbody>
</table>
Figure 6. Observed Bird Species Richness Within and Around Los Glaciares National Park
Table V. Bird Species Observed, Location Found and Year Found for Figure 6

<table>
<thead>
<tr>
<th>Order</th>
<th>Species</th>
<th>Location Found</th>
<th>year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charadriiformes</td>
<td>Thinocorus rumicivorus</td>
<td>(-50.4002, -71.5546)</td>
<td>1992</td>
</tr>
<tr>
<td>Charadriiformes</td>
<td>Thinocorus rumicivorus</td>
<td>(-50.4015, -71.5608)</td>
<td>1994</td>
</tr>
<tr>
<td>Charadriiformes</td>
<td>Thinocorus rumicivorus</td>
<td>(-49.6081, -71.4801)</td>
<td>N/A</td>
</tr>
<tr>
<td>Passeriformes</td>
<td>Upucerthia (genus)</td>
<td>(-49.575, -71.533)</td>
<td>1961</td>
</tr>
<tr>
<td>Passeriformes</td>
<td>Muscisaxicola capistrata</td>
<td>(-49.417, -71.533)</td>
<td>1961</td>
</tr>
<tr>
<td>Passeriformes</td>
<td>Cinclodes fuscus</td>
<td>(-49.4, -71.533)</td>
<td>1961</td>
</tr>
<tr>
<td>Passeriformes</td>
<td>Phrygilus fruticeti</td>
<td>(-49.35, -71.533)</td>
<td>1961</td>
</tr>
<tr>
<td>Passeriformes</td>
<td>Phrygilus gayi</td>
<td>(-49.317, -71.533)</td>
<td>1961</td>
</tr>
<tr>
<td>Passeriformes</td>
<td>Diuca diuca</td>
<td>(-49.3, -71.533)</td>
<td>1961</td>
</tr>
<tr>
<td>Podicipediformes</td>
<td>Podiceps occipitalis</td>
<td>(-49.5833, -72.5833)</td>
<td>1983</td>
</tr>
<tr>
<td>Falconiformes</td>
<td>Phalcoenus albogularis</td>
<td>(-49.3252, -72.9878)</td>
<td>2007</td>
</tr>
<tr>
<td>Anseriformes</td>
<td>Merganetta armata</td>
<td>(-49.3319, -72.9939)</td>
<td>2007</td>
</tr>
<tr>
<td>Anseriformes</td>
<td>Merganetta armata</td>
<td>(-49.938, -73.1015)</td>
<td>2009</td>
</tr>
<tr>
<td>Falconiformes</td>
<td>Buteo polyosoma</td>
<td>(-49.9467, -72.6058)</td>
<td>2003</td>
</tr>
<tr>
<td>Passeriformes</td>
<td>Muscisaxicola capistrata</td>
<td>(-50.4717, -73.0177)</td>
<td>1999</td>
</tr>
<tr>
<td>Passeriformes</td>
<td>Upucerthia dumetaria</td>
<td>(-50.3167, -72.8)</td>
<td>1981</td>
</tr>
<tr>
<td>Passeriformes</td>
<td>Elaenia albiceps</td>
<td>(-50.4505, -72.7206)</td>
<td>1992</td>
</tr>
<tr>
<td>Anseriformes</td>
<td>Merganetta armata</td>
<td>(-50.4209, -72.4778)</td>
<td>2009</td>
</tr>
<tr>
<td>Falconiformes</td>
<td>Geranoaetus melanoleucus</td>
<td>(-50.3333, -72.4167)</td>
<td>1981</td>
</tr>
<tr>
<td>Passeriformes</td>
<td>Muscisaxicola capistrata</td>
<td>(-50.3389, -72.2808)</td>
<td>1992</td>
</tr>
<tr>
<td>Anseriformes</td>
<td>Anas platlea</td>
<td>(-50.3393, -72.266)</td>
<td>1994</td>
</tr>
</tbody>
</table>

![Observed Bird Species Richness](image-url)
Figure 7. Observed Bird Species Richness Before (pre- 1990) and After (post-1990) Eco- and Adventure Tourism

Discussion

The purpose of this study was to determine the effects of ecotourism and adventure tourism in El Calafate and El Chaltén, Argentina. The original prediction that ecotourism and adventure tourism benefit environmental conservation but do not help alleviate local poverty cannot be accurately identified with the given results. The increase in tourist arrivals to Los Glaciares National Park showed significance (Figure 3), and under the certain circumstances the tourism sector can be viewed as ecotourism and/or adventure tourism. Also, the observed species richness of birds located within or around Los Glaciares National Park was higher after the popularity of eco- and adventure tourism (Figure 7). Yet the poverty results did not coincide with the hypothesis. The moderate poverty rates in the Patagonian region showed a significant linear decrease (p=.002, Table IV), as well as the extreme poverty in this area (p= .007, Table III). Also, the variance of traveler visitation to El Calafate between three years was not significant (p= .695, Table II). Although there was some data that corresponded with the hypothesis, there are a variety of factors that must be taken into account before accurately assessing ecotourism and adventure tourism on environmental conservation and poverty alleviation.

Tourist Arrivals

Since the study sites were two cities surrounding the popular ecotourist destination of the national park, the amount of visitors arriving to each city annually needed to be taken into consideration. Due to the size of El Chaltén and the duration of this study, it was not possible in to obtain the amount of tourist arrivals each year. Yet, even if this information was available, it would have been lower than the actual number of visitor arrivals because adventure tourism, especially in El Chaltén, is often underrepresented since many of these tourists do not stay in hotels but camp instead.

The visitation to El Calafate was found using hotel occupancy data from 2008-2010 which measured the number of nights each traveler spent in the hotel establishment. This data showed that there was no significant difference between the amount of traveler visits each year (p= .695, Table II). Due to popularity in the sustainable tourism market, it was expected that
there would be an increase in tourist visits annually and therefore a variation between tourist numbers per year. One reason for this may be from the global economic crisis of 2008-2009. Since the results show data between the years of 2008, 2009, and 2010, it is hard to accurately assess the data especially since it occurs during the economic crisis. Also, the data is limited because it only analyzes three years. Due to lack of consistent data, these three years were chosen based on the complete monthly records, however this makes it hard to determine if there was an actual trend that is not observed. In order to see if tourist arrivals are increasing in El Calafate, the data needs to cover a wider yearly span.

Another factor that must be taken into account is the number of sustainable tourist arrivals to the national park. Although Los Glaciares National Park uses responsible practices such as signs, raised walking paths, and guided tours, not everyone who visits this site is an ecotourist. As previously stated, ecotourism should conserve the environment while providing socio-economic benefits to the local community (TIES 1990; Honey 29-30). If visitors who come to Los Glaciares National Park do not help improve the socio-economic state, they are categorized not as ecotourists but as nature tourists. An issue with obtaining the exact number of tourists that visit on ecotourism or adventure tourism market sectors is that the data is not documented at the national park. Yet, because of the issue in definition inconsistencies (as discussed previously), gathering ecotourism data from private tourist operations could also be a problem. Many tour operators and businesses are trying to cash in on the ‘eco’ trend and may use the term ecotourism for any activity that involves nature (Mastny 2001). Therefore, one must be aware that data received from these markets may include a variety of tourism sectors (nature based, cultural based, adventure based) or the opposite, ‘greenwashing’. ‘Greenwashing’ is a term used to describe the use of misleading consumers about environmental practices, services or products of a company (Greenpeace).

A potential solution to this issue would be to have a global standard of guidelines for the label of ecotourism. This would allow for both business operations and tourists to follow the genuine ecotourism concept of minimal impact on the environment as well as promoting socio-economic benefits to the community. The result in a standardized set of regulations would not only be beneficial to the environment, but benefit both the tourism industry and the local communities as well. The tourism industry would benefit by having accurate data that can be
used in research studies. This could be used to further assess a specific ecotourism site or function, and in turn provide improvements to the industry. The local community would benefit from the use of a central certification of ecotourism markets by possibly gaining higher levels of employment, supporting local businesses/services, the revenue input to natural areas, changes in attitudes on conservation, and emergence of inter-cultural peace (UNEP & WTO 2005). By using a global ecotourism certification, the ecotourism market could benefit tourism operations, communities, and provide clarity in the definition.

Poverty

In the Patagonian region of Argentina, there was a significant decrease in moderate poverty throughout time (p=.002, Figure 5) as well as extreme poverty throughout time (p=.007, Figure 5). However, it cannot be accurately determined that ecotourism and adventure tourism in the Santa Cruz province influenced this trend. Reasons for this issue are that the poverty statistics are based on a regional level (Patagonia) and take additional variables into account. Although Patagonia contains many ecotourism segments, this study focused on two specific cities within one province of Patagonia. A better solution would be to obtain specific poverty data from both El Calafate and El Chaltén or poverty data for the Santa Cruz area. Yet, even with this data it cannot be determined that both tourism markets influenced the poverty levels due to extraneous variables. One such variable is economic conditions. During 2001, Argentina went through a national economic crisis and then again during the 2008-2009 global economic crisis. Although the results show only a seven year time span from 2003-2010, the height of the poverty headcount ratio for both measures of poverty was at 2003, and there was a small peak in poverty in 2009 (Figure 5). Data beyond 2003 would have helped solidify the trend that economic crisis influences poverty levels, especially since in May 2002 the official poverty rate for Argentina was up to ~53% while the next year showed an economic rebound (Valdovinos 2005).

Another variable that can contribute to poverty variance is the data provider. For example, poverty rates of Argentina tend to be lower when displayed by the Argentine government compared to poverty rates of Argentina displayed by private organizations. The results in this study for poverty were collected from SEDLAC which incorporates data derived from the World Bank. The World Bank uses various sources for statistical information, one of which includes the Argentine poverty statistic. Therefore the results of the extreme and moderate
poverty headcount ratio for the Patagonian region may actually be a misrepresentation of the actual poverty in this area.

Biodiversity

Argentina contains a diverse group of organisms, especially birds. Due to the responsible practices of Los Glaciares National Park, it was believed that ecotourism and adventure tourism would help conserve the biodiversity of bird species. Since ecotourism and its counterparts became popular around the 1990s, it was predicted that there would be higher observed species richness in birds, post-eco-and adventure tourism. The bird species observed within and around Los Glaciares National Park showed a higher species richness after 1990 (Figure 7).

As previously discussed, it is not certain that the popularity in ecotourism and adventure tourism (after 1990) is correlated with the increase in bird richness. One factor that could have led to the obtained results is the amount of visitation to El Calafate and El Chaltén before and after 1990. For instance, El Chaltén was not founded until 1985 (Santa Cruz Patagonia) which would have impacted the number of visitor arrivals pre-1990. Since it takes time for a city to develop, it would be expected that visitor arrivals to El Chaltén did not start until several years after the city was founded. Therefore, the idea that eco- and adventure tourism had an influence on conserving bird biodiversity in El Chaltén is not necessarily true because it may have taken time for tourists or tourist operations to arrive. Also, a rapid increase in tourist visitation for El Calafate was due to the establishment of an airport in 2000 (Los Glaciares Argentina 2010). Prior to this event, it would have been harder and/or taken more time to reach this destination. Therefore, it is reasonable to believe that more bird species were observed post-ecotourism and adventure tourism because of the increase in tourist populations.

Also, the increase in observed bird species may not have been from ecotourism and adventure tourism, but from local residents or other tourists. For example, if there was a significant trend in population growth for both cities, there would be a greater chance of bird sightings and higher amount of species richness. Yet, due to lack of data and amount of ecotourism arrivals, it is unknown which sector of tourism (if any) would be impacting biodiversity conservation.
Although the current results show that the species richness for birds has increased in PN Los Glaciares post-1990s (Figure 7), the conservation of birds in and around the park have been declining for the past 15 years (Imberti 2012). A recent example of this issue is seen in the Hooded Grebe (*Podiceps gallardoi*). Although this Santa Cruz native has only been identified as early as 1974, it was placed as endangered on the IUCN Red List in May 2009 (Hernández 2012). According to Birdlife International, the grebe’s population over the past 30 years has declined by as much as 80%, yet 40% of the population declined within the last seven years (Hernández 2012). Although the reasons for this species endangerment is due to exotic predation and destruction of breeding sites from wind damage, it is necessary that human impact doesn’t further reduce the population size. According to Santiago Imberti, it is not the ecotourists themselves who are impacting the diversity of birds at PN Los Glaciares, but the service providers “who do not have the knowledge of producing ‘eco’ tourism” (Imberti 2012). In order for ecotourism to effectively conserve species richness all parties must be involved.

**Conclusion**

Today, issues such as poverty and environmental depletion are becoming serious problems. One proposed solution to benefit this interconnected issue is that of ecotourism. Through this study it was shown that ecotourism has the potential to benefit both the natural environment as well as the local community, but only if economic sustainability, environmental sustainability, and social sustainability are incorporated. In order to better assess ecotourism and adventure tourism programs, extraneous variables must be eliminated by establishing global ecotourism guidelines that tourist operations must follow. By setting standards for ecotourism impacts on the environment and local community, there will be fewer inconsistencies and more benefits.

**Acknowledgments**

I would like to thank my senior thesis advisor, Dr. Tracy Gartner, for helping me continually improve my thesis as well as provide guidance over the past two years. I would also like to thank Dr. Jeffrey Roberg for providing guidance, knowledge, and contact information specifically in regards to Argentina. The following thanks are to those who have helped
contribute time, data, and support; Dr. Sarah Rubinfeld, Alejandra Jimenez Maravan, Parque Nacional Los Glaciares, Santiago Imberti, and the 2012 Environmental Science Senior Class.
Literature Cited


