

VISITOR USE FEES AND CONCESSION SYSTEMS IN PROTECTED AREAS:

Galápagos National Park Case Study



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CONTENTS

List of Maps, Tables and Figures	2
Introduction	3
Valuation of Protected Areas Using Ecotourism	3
Galápagos National Park	4
History of Tourism in the Galápagos Islands	6
Tourism Management Planning in the Galápagos National Park	7
Visitor Carrying Capacity	8
Economic Revenues from Tourism for the Galápagos National Park	9
Do Visitor Use Fees and Concession Fees Adequately Value Ecosystem Services?	12
Ongoing Challenges	13
Conclusions	14
References	16

List of Maps, Tables and Figures

Map 1 The Galápagos Islands	4
Map 2 The Galápagos National Park and Marine Reserve	5
Map 3 Visitor sites	7
Table 1 Population growth in the Galápagos Islands	6
Table 2 Number of visitors to Galápagos NP 1970 – 2000	6
Table 3 Number of tourist boats in the Galápagos NP	7
Table 4 Visitor use fees for the Galápagos NP	9
Table 5 Visitor use fees before the Special Law (US\$)	10
Table 6 Annual license fees for boats per berth (US\$)	10
Table 7 Galápagos NP budget and revenues from visitor use fees (US\$)	11
Figure 1 Population growth in the Galápagos Islands	6
Figure 2 Visitors to Galápagos NP 1976-1999	9
Figure 3 Distribution of entrance fee revenue	10
Figures 4a & b Passenger capacity and category of ships	11

Introduction

Biodiversity conservation and sustainable use of natural resources in developing countries are priorities in the global environmental conservation agenda. Putting conservation into practice is especially difficult in developing countries, where diverse land uses compete for the same natural resources. An optimum land use from an economic perspective would be to choose the activity that gives the highest economic return over the long term. This concept is problematic, however, because many services and resources provided and supported by ecosystems have no market value. The value of most natural capital and ecosystem services is not usually represented in well-functioning markets or may not show up in markets at all (Constanza et al., 1997). As a consequence, ecosystems are exploited primarily for their marketable goods, which include fisheries, oil, timber, or are converted to other uses such as pastures or agricultural lands. Biodiversity and natural resources conservation is a land-use option that may not bring the same economic benefit as competing uses. One strategy to increase effectiveness of biodiversity conservation is to give an appropriate economic value to the services and goods provided by ecosystems that are not included in the market. The long-term maintenance of biodiversity may be secured if the conservation of natural capital becomes a competitive use of the resource.

Protected areas have been established all over the world to conserve natural resources and biodiversity for current and future generations. Funding for conservation activities in protected areas is not always available. This is especially true in developing countries, where governments often do not have resources to allocate for conservation; managers of protected areas must often find alternative ways of obtaining funds.

Protected areas provide multiple environmental services to human populations, for example, watershed protection, erosion control and nutrient cycling. It has been estimated that ecosystems worldwide provide at least US\$33 trillion worth of services every year; recreation activities provided by ecosystems are recognized a service contributing to this total (Constanza et al., 1997). It is critical to begin economic valuation of the benefits of preserving natural habitats in developing countries (Tobias and Mendelsohn, 1991). Every year, millions of people around the world visit natural areas. The revenues generated by this travel represent potential economic benefits for local people and for further conservation. Ecotourism can make an important contribution to sustainable development throughout the world, particularly in developing tropical regions (Mendelsohn, 1997). The Galápagos National Park (Galápagos NP) of Ecuador is an example where ecotourism constitutes the main source of funding for the administration and conservation of a protected area. This protected area may serve as a management model for other protected areas in developing countries.

Valuation of Protected Areas Using Ecotourism

Areas with high biodiversity value can be preserved if the value of conservation outweighs the opportunity costs and the direct costs of protection of the resource (Grossling, 1999). One method of imposing this value on an area is to develop the area as an ecotourism destination. Ecotourism is defined by The International Ecotourism Society as "responsible travel to natural areas which conserves the environment and improves the welfare of local people" (Western, 1993). The World Conservation Union (IUCN) expands this definition to "environmentally responsible travel and visitation to natural areas, in order to enjoy and appreciate nature (and any accompanying cultural features, both past and present) that promote conservation, have a low visitor impact and provide for beneficially active socio-economic involvement of local peoples" (IUCN, 1997). Ecotourism demand is directly related to the remarkable or unique natural components of an area, therefore, ecotourism can be a strong economic motivation to conserve a natural site. Efficient management of ecotourism

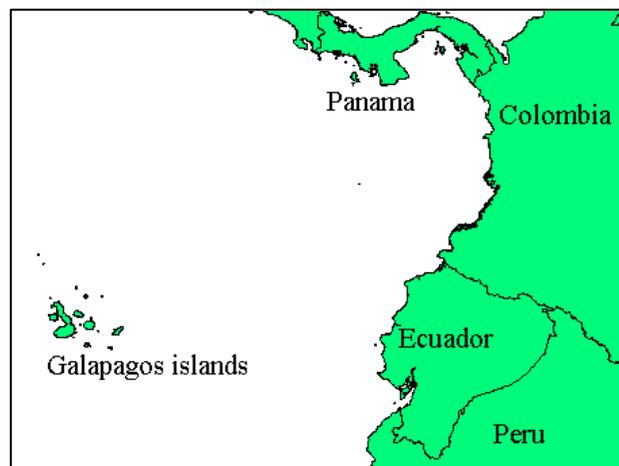
can help both preserve natural resources and generate a broader and more equitable distribution of associated economic benefits (Chase et al., 1998).

Recreation and cultural services world wide have been valued at US\$3.8 billion annually, of which coastal biomes account for US\$144 per hectare annually (Constanza et al., 1997). Ideally, the costs associated with managing recreational services provided by a protected area should be reflected in a visitor use fee. Several willingness-to-pay studies have shown that protected area visitors are generally willing to pay much higher visitor use fees than are currently charged in developing nations (Tobias and Mendelsohn, 1991; Maille and Mendelsohn, 1993; Menkhaus and Lober, 1996). However, developing countries typically lack the necessary experience to guide natural resource managers in designing effective pricing strategies for protected areas (Chase et al., 1998). The Galápagos National Park Service (GNPS) has been managing tourism on the islands since the 1970s and thus can provide useful insights on how successful ecotourism programs can be used to support biodiversity conservation.

Galápagos National Park

The Galápagos Islands are located in the Pacific Ocean, approximately 1,000 km from the coast of Ecuador (see Map 1). The archipelago, which includes 14 major islands and more than 107 islets and rocks, has belonged to Ecuador since 1832. The islands constitute 8,009 km² of land, of which 97% is part of the Galápagos National Park; an additional 133,000 km² of ocean are protected in the Marine Reserve (see Map 2).

Map 1 The Galápagos Islands

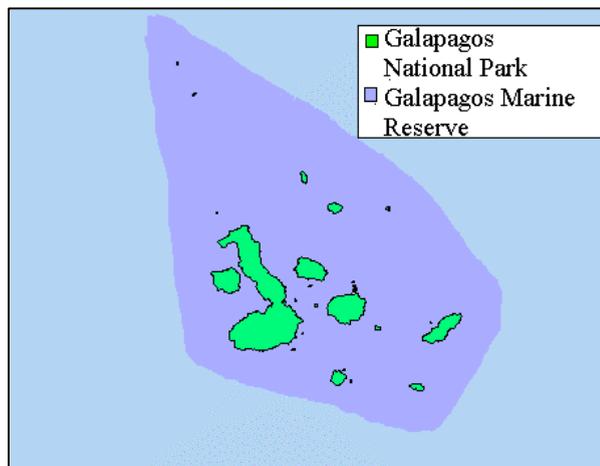


Source: ESRI, 2000

The Galápagos Islands were made famous by their important role in the development of Darwin's theory of evolution. The archipelago is characterized by a unique assemblage of flora and fauna. Plant and animal species on the islands display a high degree of endemism, as would be expected on an isolated tropical archipelago (Stattersfield et al., 1998). Ninety percent of the reptile species, 66% of birds, and 20-30% of terrestrial vegetation and marine fauna are endemic to the islands (Carrasco, 1992). Charismatic species of fauna include the giant tortoise, land and marine iguanas and large numbers of seabirds, including the bluefooted booby. It is also the principal nesting area for the waved albatross. Due to the confluence of oceanic currents, the Galápagos Islands have three distinct biogeographic regions (Rojas, 2000). These currents have given rise to a unique marine environment that supports such fauna as sea lions, fur seals, sea turtles, whales, dolphins, sharks and corals. The

unique wildlife and its fearlessness of interface with humans combine to make this one of the world's leading natural tourism attractions.

Map 2 The Galápagos National Park and Marine Reserve



Source: ESRI, 2000

Conservation efforts on behalf of the islands started in 1934 when the Ecuadorian government created a nature sanctuary and two years later prohibited the hunting of certain species (Southgate and Whitaker, 1992). In 1959, after a strong campaign led by a group of prestigious scientists, the Galápagos National Park was created and the Charles Darwin Foundation for the Galápagos Islands was born. The GNPS is the government institution managing the Galápagos NP. The Charles Darwin Research Station (CDRS), whose objective is to provide information and technical assistance to the GNPS and other branches of the government, is the operative branch of the Charles Darwin Foundation (Charles Darwin Foundation, 2000a). In 1979, UNESCO declared the Galápagos Islands National Park a World Heritage Site, and in 1985 it was declared a Biosphere Reserve. In 1986, the Galápagos Marine Resources Reserve was created, and four years later it was declared a whale sanctuary. In March 1998, the Special Law for Galápagos created the Galápagos Marine Reserve as a protected area to be managed by the GNPS. The marine reserve includes all the interior waters of the archipelago plus the waters within 40 miles of the various islands' coastlines. It is the second largest marine reserve in the world after Australia's Great Barrier Reef.

The Ecuadorian government enacted special legislation for the province of Galápagos in 1998 which aimed to promote biodiversity conservation and sustainable development (Government of Ecuador, 1998). The important changes in management and conservation of the archipelago brought about by this new law are discussed in later sections.

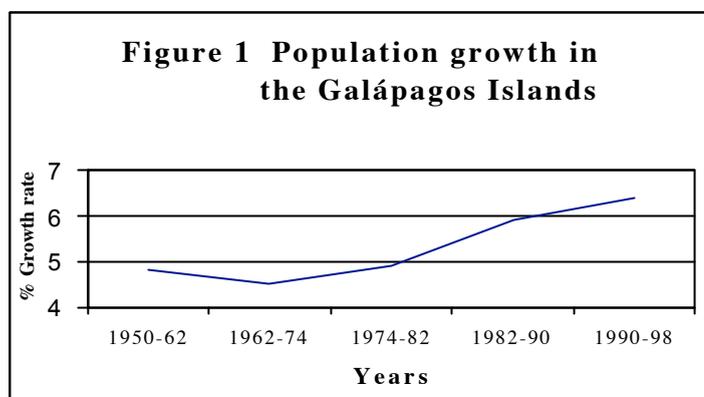
The Galápagos NP faces several threats to its ecological integrity. Introduced species present the most serious threat to the islands' ecology. For the last couple hundred years, humans have introduced and continue to introduce exotic species to the island system. This has caused disruptions in the natural ecosystems, from changes to predator-prey dynamics to extinction of endemic species (Rojas, 2000). Overexploitation of marine resources is one of the main conflicts between the local population and the GNPS. Overharvesting directly threatens important marine species such as sea cucumbers, lobsters and sharks. Illegal fishing practices and poaching also threaten sea lions, turtles, penguins and dolphins.

Pressure on the resources of the Galápagos Islands is directly linked to rapid human population growth (see Table 1). The human population of around 16,000 is spread over only the five islands of

Baltra, Santa Cruz, San Cristóbal, Isabela and Floreana. The Galápagos province has the highest rate of population growth in Ecuador (see Figure 1), mainly due to a high migration rate (Fundación Natura, 2000), itself a product of better employment opportunities and superior public services on the islands compared to mainland Ecuador (Fundación Natura, 1998).

Years	% Growth rate
1950-1962	4.8
1962-1974	4.5
1974-1982	4.9
1982-1990	5.9
1990-1998	6.4

Source: INEC, 1982, 1990, 1998



History of Tourism in the Galápagos Islands

Rare and unique places are highly valued by tourists and have often been successfully developed for ecotourism (Mendelsohn, 1997), which is the case for the Galápagos Islands. Tourism began in the archipelago in 1969 when two travel companies, Metropolitan Touring and Turismundial, were contacted by Lars Eric Lindblad and other established cruise operators (Southgate and Whitaker, 1992). The first cruise ship, the “Lina A,” arrived in the islands in 1969 (Amador et al., 1996) and tourism has been increasing continuously ever since. Though there were fewer than 5,000 visitors in 1970, the number increased to more than 66,000 in 1999 (see Table 2). The increase in tourism has seen a concomitant increase in infrastructure, e.g., boats and hotels.

Table 2 Number of visitors to Galápagos NP 1970 - 2000

Year	Foreign	Nationals	Total	Year	Foreign	Nationals	Total
1970	----	----	4579	1986	13897	12126	26023
1971	----	----	5781	1987	14826	17769	32595
1972	88	6683	6771	1988	23553	17192	40745
1973	92	6999	7091	1989	26766	15133	41899
1974	----	7500	7500	1990	25643	15549	41192
1975	N/A	7000	7000	1991	25931	14815	40746
1976	868	5432	6300	1992	26655	12855	39510
1977	1349	6439	7788	1993	36682	10136	46818
1978	1606	10693	12299	1994	40468	13357	53825
1979	9539	2226	11765	1995	40303	15483	55786
1980	13465	3980	17445	1996	45782	16113	61895
1981	12229	4036	16265	1997	48830	13979	62809
1982	11056	6067	17123	1998	50351	14440	64791
1983	10402	7254	17656	1999	53469	12602	66071
1984	11231	7627	18858	2000*	40759	12359	53118
1985	11561	6279	17840				

Sources: Carrasco, 1992; GNPS Tourism Unit, 2000

*through September 2000

Today, tourism is the main economic activity of the archipelago. Most tourists travel by air to the islands of Santa Cruz or San Cristóbal. Tours then leave from the Baltra airport near Santa Cruz or the two main port towns near the airports (Wallace, 1993). Tourism activity is most important on Santa Cruz island (Fundación Natura, 1998) because it is the commercial center of the islands and the location of the GNPS headquarters and the CDRS. The number of ships and hotels has increased since 1972 (Fundación Natura, 1998). There are 23 places to lodge on the island of Santa Cruz, 11 on San Cristóbal, six on Isabela and one on Floreana (Ministry of Tourism, 2000). Tourism is now mainly on live-aboard boats; since visitors travel largely by boat, and eat and sleep on board, the need for significant tourist infrastructure on outlying islands is greatly reduced (Wallace, 1993). In 1972, there was a single ship with the capacity of providing overnight accommodation; by 1984 there were 54 ships, and in 2000, 80 ships were registered. The passenger capacity of the ships increased from 597 in 1981, to 1,729 in 2000 (Table 3). The growing number and size of charter boats is generating a different kind of impact and leading to congestion at some visitor sites.

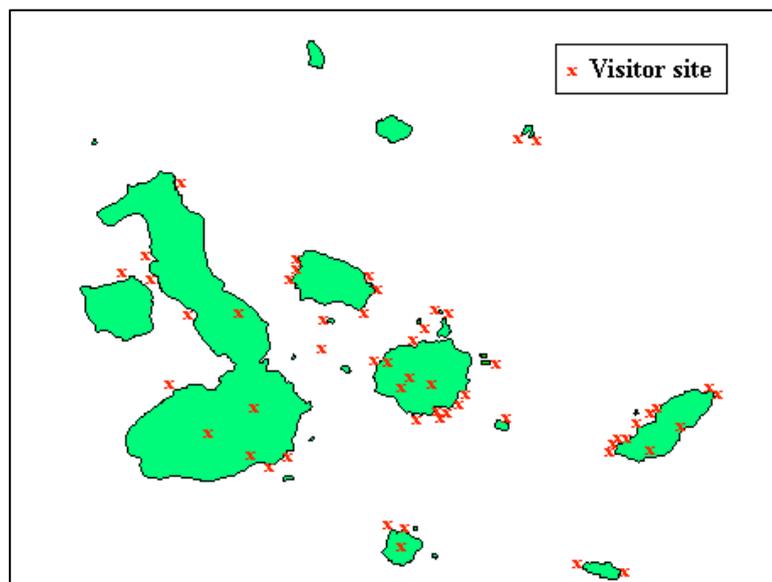
Year	1981	1995	1996	1997	2000
Number of boats	40	88	90	84	80
Total capacity of the boats	597	1446	1484	1545	1735

Sources: GNPS Tourism Unit; Fundación Natura, 1998

Tourism Management Planning in the Galápagos National Park

The GNPS assumed management of tourism on the islands in 1974, and between then and 1977 the park Management Plan led to establishment of visitor sites on many of the islands, delineation of paths and the determination that tourists be accompanied by guides (Fundación Natura, 1998). Most of the visitor sites can be accessed only by ship, so visits are primarily done in organized groups with a certified guide (Amador et al., 1996). There are currently 56 terrestrial visitor sites (see Map 3) and 62 marine visitor sites (Fundación Natura, 2000).

Map 3 Visitor sites



Source: ESRI, 2000

Since 1975, the GNPS has managed a guide certification program. Guide training courses are given in collaboration with the Charles Darwin Research Station (GNPS, 1996). Guides play a strategic role in park management; they help enforce park regulations and provide tourists with information on the conservation programs carried out by the Galápagos NP and the research station. This aspect of tourist education has helped increase visitor support of conservation activities on the islands.

Visitor Carrying Capacity

In 1973, the Management Plan of the Galápagos NP established a maximum number of 12,000 tourists per year to the islands. Due to growing demand, this number has been increased several times. In 1978, the number was increased to 14,700 visitors, and again in 1982 to 25,000. Currently, there is no limit on the total number of visitors allowed to visit the Galápagos NP. In lieu of a total visitor limit, the Management Plan established a specific carrying capacity for each of the terrestrial visitor sites, a key tool for effective management and conservation of the sites. The methodology for defining the carrying capacity was first applied in 1984 and then was improved and partially applied in 1991. In 1996, the Galápagos NP Management Plan applied a revised methodology specially suited for the unique characteristics of the Galápagos NP (Amador et al., 1996). The carrying capacity of a site is determined after studying several factors, including: timing of the visit, length of the visit, area available, erosion susceptibility, number of people in the group, precipitation and tidal patterns, and management capacity.

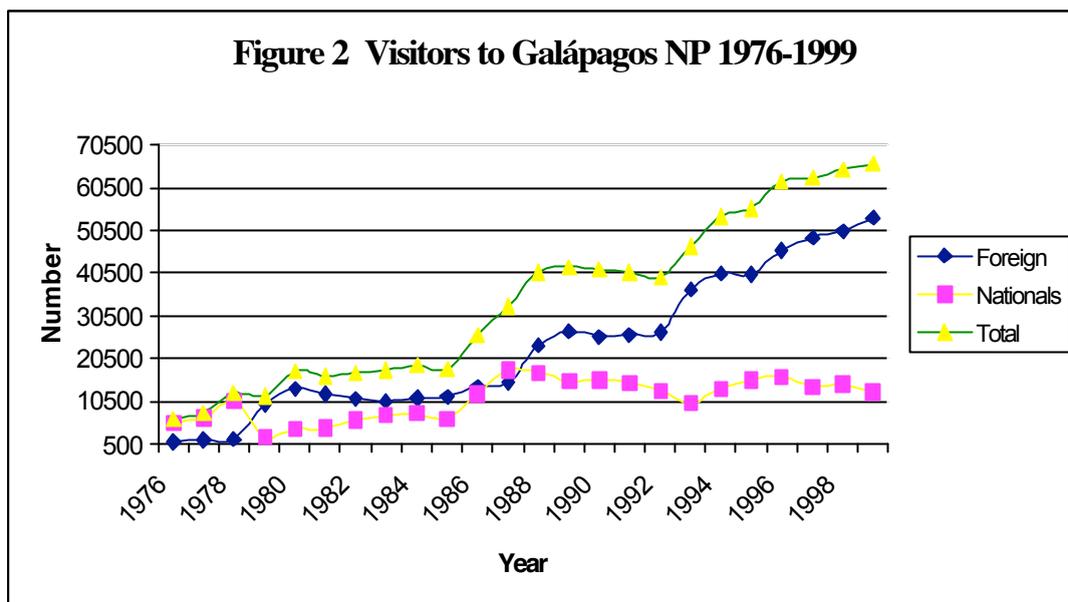
The GNPS manages the number of people visiting the sites by using a “fixed itinerary” system for ships carrying 20 or more passengers. This system, started in 1978 (Fundación Natura, 1998), initially focused on 90+ berth vessels, but in 1990 it was expanded to include all ships with more than 20 passengers (Cayot et al., 1996). Each ship annually receives a compulsory site schedule from the park, which allows the GNPS to control the number of visitors at each site. Ships with fewer than 20 passengers have an open itinerary, which gives the GNPS the flexibility to move visitors from overused sites to under-used ones. There is some flexibility in this mechanism as ships are frequently granted changes in their schedule (personal communication with Edgar Muñoz, Fundación Natura, 1998).

The Management Plan established the following use zones: absolute protection zone, primitive zone, special use zone, visitor use zone, port and adjacent protected areas zone, and rural and urban zone. Tourism activities take place in the visitor use zones (Galápagos NP, 2000), areas with low levels of disturbance and representative of the native biodiversity of the islands. These sites can withstand certain levels of visitation and have distinctive features of interest to visitors (GNPS, 1996). The visitor use zones are further divided into three categories:

- a) extensive use, i.e., sites that can hold only a few groups of visitors at a time;
- b) intensive use, i.e., sites that can hold high numbers of visitors and at a constant rate; and
- c) recreational, i.e., sites which are located close to human settlements and provide the local population with recreation opportunities (GNPS, 1996).

Visitor numbers to the Galápagos NP are controlled and monitored in three ways:

- Visitor information cards (on arrival, each visitor provides their age, nationality and other general information).
- Reports by ships on the number of tourists carried per trip.
- Reports from the guides (for each trip the guide must submit a report on the number of tourists aboard, the duration of the visit, and the sites visited).



Sources: Carrasco, 1992; GNPS, 2000

Economic Revenues from Tourism for the Galápagos National Park

The Galápagos NP has an entrance, or visitor use, fee for park visitors. The fee levels were defined by the Special Law for Conservation and Sustainable Development of the Galápagos Islands (see Table 4). Under the Galápagos NP's differential pricing system, foreign tourists pay higher fees than do Ecuadorians. As is often the case in national parks that also serve as protected areas, visitor use fees in the Galápagos NP were insufficient to cover the costs of services provided by the park. Current fee levels mark a significant increase over the past but still generate only about 25% of the Galápagos NP's budget. The underpricing of fees for tourism operators and tourists was noted to be a problem that could result in the overexploitation of the resource and provide insufficient funds to cover the costs of tourism services and conservation activities (Southgate and Whitaker, 1992). Park income was insufficient for park and marine reserve management to appropriately manage the increasing numbers of visitors (Wallace, 1993). Though the visitor use fee was increased in the last few years, particularly in 1993 (see Table 5), it did not affect visitor demand for access to the park, and visitor numbers have been increasing steadily.

Category	Amount in US\$
Foreign tourist (non-resident)	100
Foreign tourist under 12 years	50
Foreign tourist of a member country of the Andean Community or Mercosur	50
Foreign tourist of a member country of the Andean Community or Mercosur under 12 years	25
Citizen or resident of Ecuador	6
Citizen or resident of Ecuador under 12 years	3
Foreign tourist non-resident attending a national academic institution	25
National or foreign children under 2 years	No fee

Source: Government of Ecuador, 1998

The ships' operation license (concession) fees have also increased. In 1991, all ships paid US\$10 per berth annually (Whitaker and Southgate, 1992). Under the new law, these license fees vary from US\$50/berth per year to US\$250/berth per year according to the category of the vessel (see Table 6).

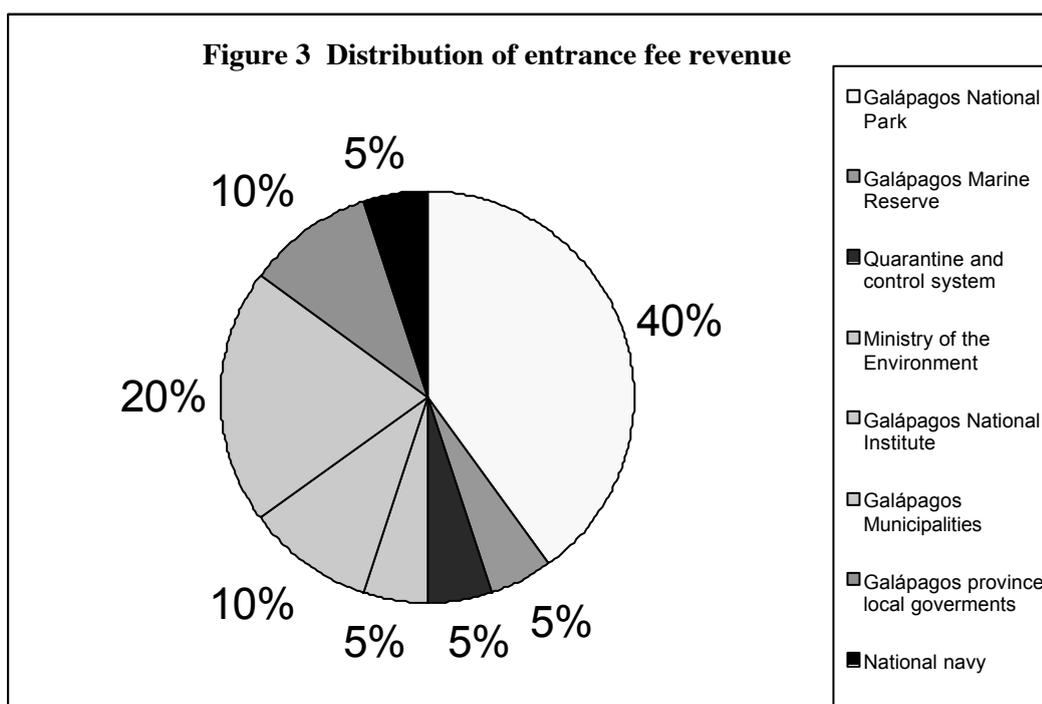
Table 5 Visitor use fees before the Special Law (US\$)		
Category	Before 1993	1993-1998
Nationals	0.55	3.00 + 2.50 municipality tax
Foreigners	40.00	80.00 + 30.00 municipality tax if enter through San Cristóbal OR 80.00 + 12.00 municipality tax if enter through Baltra

Sources: Fundación Natura, 1998; Southgate and Whitaker, 1992

Before the Special Law for the Galápagos was established, the Galápagos NP was an extremely important source of funding for INEFAN (Ecuadorian Institute of Forests, Protected Areas and Wildlife) and for the other protected areas in Ecuador (Fundación Natura, 1998). Prior to implementation of the law, an average of only 30% of visitor use fee income reverted to the budget of the GNPS, while the remainder went to INEFAN.

Table 6 Annual license fees for boats per berth (US\$)		
Type	Category	Amount
Cruise	A	250
Cruise	B	200
Cruise	C	150
Day tour	R	250
Day tour	E	50

Source: GNPS Tourism Unit



Source: Government of Ecuador, 1998

The new legislation has changed the distribution of the income generated by the visitor use fee (see Figure 3). It reduced the revenues directed to INEFAN (i.e., the Ministry of the Environment) to 5% of the visitor use fee income, and an important benefit for the conservation of the islands was achieved by allocating 45% of the visitor use fees to the management of the Galápagos NP and the Galápagos Marine Reserve. The GNPS collects the fees and makes monthly transfers to the institutions as established by the new law.

Funds designated for the inspection and quarantine of the province of Galápagos and to the national navy for control and surveillance of the Marine Reserve must be used in accordance with the Galápagos NP Management Plan. The funds channeled to the Galápagos National Institute (INGALA), the Galápagos Municipality and the Galápagos Provincial Government must be used in for purposes of education, health, athletic and environmental projects, environmental services or visitor services.

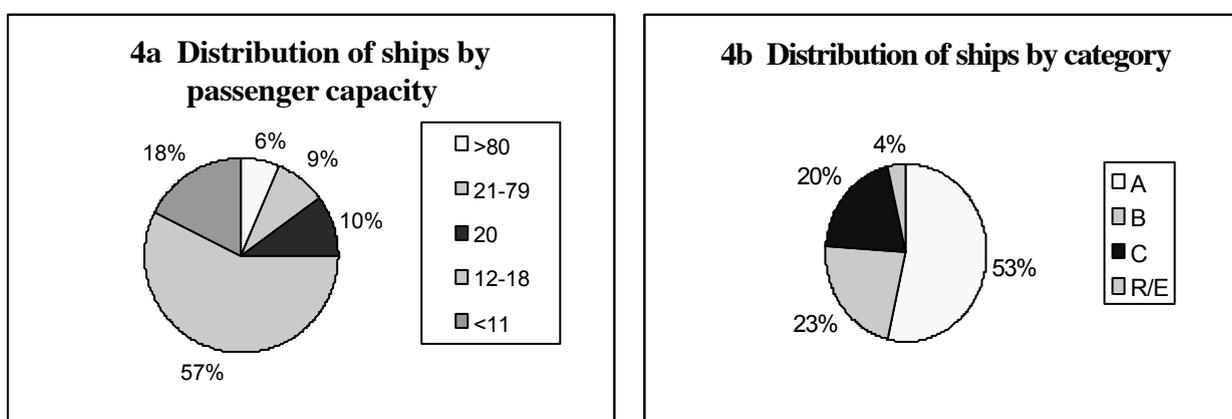
The 1999 budget of the GNPS (which includes the Marine Reserve) was US\$ 2.29 million. In 1999, visitor use fees at the Galápagos NP totaled over US\$5 million (see Table 5). Foreign tourists provided the bulk of the revenues, with Ecuadorian citizens/residents providing less than 2%. The Galápagos NP received 40% of these revenues, and the Marine reserve 5%, a total of approximately US\$2.2 million for the management of the Galápagos NP and the Marine Reserve.

Table 7 Galápagos NP budget and revenues from visitor use fees (US\$)		
Year	Revenues from Visitor Use Fees	Galápagos NP budget
1995	3,296,678	1,093,360
1996	3,722,238	1,073,747
1997	3,948,337	1,441,721
1998	3,716,630	1,802,115
1999	5,098,455	2,291,355

Source: Fundación Natura, 2000

In addition to the visitor use fees, the GNPS receives revenues from boat concession fees. Concession fees total about US\$400,000 or 8% of the income generated by the entrance fees. Each ship purchases an operation license, or concession fee, from the park. The fee is established according to the category of the ship and its authorized number of berths (see Table 6). Ships are classified according to their size, number of berths, and quality of the berths. Category A cruise ships are the most luxurious and C the least. Category R day tour boats are the most luxurious.

Figures 4a & b Passenger capacity and category of ships



Source: GNPS Tourism Unit

In 2000, there were 80 passenger ships registered with the GNPS (see Table 3). The number of ships operating in the Galápagos NP has been reduced from 90 in 1996 to 80 in 2000, but the total passenger capacity increased from 1,484 in 1996 to 1,735 in 2000 (Fundación Natura, 1999; GNPS, 2000a). Though the quota of boat concessions given by the government for the Galápagos NP cannot be increased, conflicts have arisen over the transfer and merging of concessions.

Do Visitor Use Fees and Concession Fees Adequately Value Ecosystem Services?

Ecotourism in the Galápagos NP brings important economic resources that benefit its management and conservation. The financial return improved dramatically with the legislation enacted in 1998, which addressed several failures of the previous system in relation to distribution of the visitor use fees. Through visitor use fees, tourism now provides an important economic contribution to the islands; 95% of the funds generated stay in the province of Galápagos, and 45% of those funds go directly to management of the Galápagos NP and the marine reserve. In addition, other funds collected also support conservation in the Galápagos NP.

Five percent is allocated for the inspection and quarantine system of the Galápagos province. Fee systems using differential pricing are generally supported. A resident and a foreigner may enjoy their visit equally, but due to higher income the foreigner may be willing to pay more for the visit (Lindberg, 1998).

Visitor use fees in the Galápagos NP are an attempt to value the recreational service provided by the islands. The fees are the main source of income for the GNPS and thus directly support conservation of the islands, which will maintain the integrity of this special place for future generations. Because a percentage of the revenue from the visitor use fees also reverts to local governments, the local population enjoys benefits from ecotourism and is more likely to support conservation efforts on the islands. This support is a key factor in maintaining a valuable recreational service for the visitors. The usefulness of this revenue to local people depends upon the effectiveness of the local governments in identifying and investing in beneficial policies and projects.

If the US\$5 million income from visitor use fees is used as a measure of the price paid for the recreational services of the Galápagos NP, the net present value (which is the net value of the service in current dollars over time) of recreation in the Galápagos NP is about US\$125 million, assuming a 4% real interest rate and the same visitation levels as in 1999¹. If revenues for the concession fees were added to the calculation, the net present value would be US\$135 million. This is a conservative estimate as visitor numbers have been increasing at a steady rate (see Figure 2).

The current economic resources generated by the visitor use fees and the operation licenses are not equivalent to the real recreational value of the islands to the users. The user fees currently charged were not based on a willingness-to-pay study, nor related to the cost to the park of providing tourism opportunities; consequently, there is a risk that fees currently charged are below what is a fair market price.

There has been only one study carried out in the Galápagos Islands that attempts to put a value on the recreational services provided by the Galápagos NP (Edwards, 1991). The study used a hedonic demand analysis where a demand curve is used to estimate the revenue-maximizing fee. This study estimated that the government of Ecuador could gain about US\$27 million in taxes (visitor use fees)

¹ Present value = US\$5 million (income generated per year) / 0.04 (interest rate) = US\$125,000,000

each year from tourism in the Galápagos NP, based on a visitor use fee of US\$770 and 34,722 tourist arrivals.

The attitudes of the local population towards tourism were measured using interviews (Fundación Natura, 2000). In 1997, 63% of the respondents felt that tourism was beneficial; by 1998, the number increased to 75%, and by 1999 to 79% (Fundación Natura, 2000). Another interesting result of this survey was that 35% of the interviewees thought that the local population did not have the capacity to provide tourism services. Local governments could invest part of their revenue from visitor use fees to strengthen local tourism development.

Ongoing Challenges

The current Special Law and by-laws still leave several issues unresolved. These include special regulations for tourism in protected areas, a unified system for authorization of tourism operations, establishment of a tourism advisory board, and rules for the quality of tourism services (Fundación Natura, 2000). When these missing systems are implemented, the management of tourism in the islands will be more effective. The establishment of operating systems for tourism which are compatible with the conservation of protected areas as well as quality standards for tourist services will enhance the sustainability of tourism in the region. The special regulations for tourism in protected areas will also establish a clear system for obtaining operation permits and licenses for tourism operators on the islands.

When tourism is improperly managed it can cause serious damage to natural ecosystems. The GNPS has been very keen in addressing this problem, especially regarding the negative impact an excessive number of tourists in a visit site can have on the natural ecosystem. One of the problems facing the GNPS is the overuse of some visit sites. Overused sites are those visitor sites where the visitor carrying capacity is exceeded. One of the main challenges for the park is to distribute the visitors evenly over the sites. In order to fulfill this objective, the park service must have strict control over the ships' itineraries and must obtain good data on the numbers of visitors at each site. The GNPS undertook to manage this problem, and the number of overused sites decreased from seven in 1995 to two in 1999 (Fundación Natura, 2000).

If ecotourism in the Galápagos NP and the marine reserve is to be successful, the local population must participate in the decision making and management processes. If members of the local population do not benefit from tourism, they may have the economic incentive to shift to more environmentally damaging activities such as the overexploitation of marine resources. The promotion of tourism with local participation is mandated in the Galápagos Special Law, and the GNPS is working to increase tourism with community participation. For example, the park is planning to direct more visitors to San Cristóbal and Isabela islands (personal communication with Edgar Muñoz, Fundación Natura).

The Galápagos NP is offering a service to visitors, and the data shows that there is a growing market for this service. The establishment of the visitor use fees and the operation licenses was not, however, based on an analysis of the market or a study of "willingness to pay." The GNPS must evaluate the current pricing scheme in order to set fees that reflect the market demand and that show how much users value the services offered by the protected area. There are several methods that can be used for this purpose, e.g., market evaluation, survey of tourist demand, demand curve analysis and market-based reactive management (Lindberg and Huber, 1993). It will be especially important to analyze the operation license fees, which may be too low considering how much income the tour operators gain from their operations in the Galápagos NP.

Collaboration with local governments must also continue. Thirty percent of visitor use fee revenues are allocated to local government institutions. To ensure appropriate feedback into conservation benefits, this revenue generated from recreation services provided by the park needs to be invested in activities that promote the sustainability of the local economy. The best scenario would be that work done by local governments using revenue from user fees complements the work of the GNPS through activities such as environmental education.

Conclusions

Tourism may supplement traditional conservation benefits and increase the economic justification for conservation (Lindberg and Huber, 1993). Ecotourism in the Galápagos NP has proven to be an important support for conservation activities on the islands. The two most significant means of support have been the revenue generated for park management through fee collection and the benefits enjoyed by the local population through non-extractive use of the protected area. These have been especially significant since the Special Law for the Galápagos was enacted. With the current distribution of revenues from visitor use fees, the GNPS has been able to improve its management capacity (Fundación Natura, 1999). The increase in user fees in the Galápagos NP has not affected the number of visitors, which supports the idea that at unique sites higher fees can be sustained with little or no effect on visitation levels (Lindberg, 1998).

There are several factors that must be addressed in order to have an effective income generating mechanism using visitor use fees and for these fees to support conservation in the Galápagos NP and in protected areas in general:

- The natural capital stock that produces services must be given adequate weight in the decision-making process (Constanza et al., 1997). The service provided by protected areas through recreation generates important economic resources for the local people and government. Visitor use fees in protected areas can provide funding not only for the conservation and management of the area, but also funding to strengthen local governments and to support local people. This economic benefit must be clearly shown at all levels of the decision-making process and must be used as a tool to gain political support for the conservation of protected areas. As natural sites become rare, the ecological benefits of preserving the remaining sites will only increase (Tobias and Mendelsohn, 1991).
- Other environmental services in the Galápagos Islands must also be quantified, e.g., the scientific value of the genetic resources and the value of maintaining the ecological integrity and avoiding depletion of the marine resources. Valuation of these and other services will result in the real value of the islands being considered an important factor in the decision-making process.
- Funds obtained through ecotourism must be invested in providing alternatives to local people who otherwise are likely to convert the land to other unsustainable uses (Mendelsohn, 1997). In the case of the Galápagos NP, if revenue from ecotourism is not invested in providing sustainable alternatives to local people, they will turn toward incompatible, inappropriate and unsustainable activities. Local people must receive the economic benefits from the ecotourism industry, and tourism with local participation must continue to be promoted. Investment in local development of tourism activities must be promoted along with adequate control by managers of the protected area.
- Efficient pricing of visitor use fees should be based on the point where demand for the resource equals the marginal cost of providing that resource (Lindberg, 1998). Techniques for estimating

demand for an ecotourism site should be applied in protected areas in order to set visitor use fees at a level that will bring the greatest benefits. In the Galápagos NP, methods to estimate the optimum visitor use fee (e.g., market evaluation, demand curve analysis) will help the GNPS evaluate its current pricing scheme.

- The revenue obtained from the visitor use fees must be invested in conservation of the site and in improving the management capacity of the park service. The investment of revenue in human capital is also essential. Offering continuous training and competitive wages for protected area personnel will attract high-level professionals to the conservation area. The increase in revenue from visitor use fees for the GNPS has allowed park management to improve its management capacity; for example, it is able to pay better salaries and has more financial resources available for controlling and monitoring the park.
- Effective control systems must be established in order to have precise and effective monitoring of the visitor sites. By monitoring the carrying capacity in each visitor site, protected area managers have an important set of data that should be used to avoid detrimental impacts of tourism. In the case of Galápagos NP, carrying capacity should also be determined for marine visitor sites. Tourism will benefit the park as long as it does not produce excessive negative environmental impacts and provides opportunities for local communities.

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