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THE "SALE" OF BIODIVERSITY TO NATURE TOURISTS

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FOREWORD

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THE "SALE" OF BIODIVERSITY TO NATURE TOURISTS

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EXECUTIVE SUMMARY

When public or private natural areas charge entrance or other access fees to tourists, they in effect sell biodiversity to visitors. This market is perhaps the easiest to create in the context of natural area services, and resulting fee revenues can make substantial contributions to conservation. Indeed, tourism's financial and non-financial benefits often are important justifications for the establishment and management of natural areas. Nonetheless, many areas do not charge fees. Arguments for and against fees are described, and price responsiveness is discussed. Lastly, the conservation contribution of private reserves is reviewed.

1. INTRODUCTION

This paper discusses the “sale” of biodiversity to tourists, and the contribution this activity makes to conservation. In this context, the sale of biodiversity refers to entrance or other fees charged to visitors in return for granting them access to public or private natural areas. Many areas do not charge fees, so in some cases access is free and open rather than sold and restricted. Nonetheless, a substantial, and apparently growing, number of areas do charge their visitors.

The phenomenon of visiting natural areas is referred to as outdoor recreation, nature tourism, or ecotourism. During the past decade the concept of ecotourism has attracted the attention of conservation NGOs, development assistance agencies, UN organizations, and others (Boo, 1990; Brandon, 1996; Ceballos-Lascuráin, 1996; DFID, 1999; Goodwin et al., 1998; GTZ, 1997; Roldán n.d.; Steck, Strasdas, and Gustedt, 1999; Sweeting, Bruner, and Rosenfeld, 1999). Indeed, the UN has declared 2002 as the “International Year of Ecotourism”.

Despite the term’s reasonably long existence, there often are differing understandings of what ecotourism means, and no universal definition exists. The International Ecotourism Society defines it as “responsible travel to natural areas that conserves the environment and sustains the well-being of local people.”¹ As noted by Lindberg and McKercher (1997), most definitions are based on the concept that ecotourism is visitation that is both nature-based and sustainable. Operational definitions of sustainability are perhaps even more elusive than operational definitions of ecotourism, so in practice people often equate ecotourism with nature tourism.

The focus of the present paper is nature tourism, which is used synonymously with ecotourism and nature-based or outdoor recreation. Research and policy in the nature tourism arena are often skewed toward non-consumptive use of public areas by international visitors, and this paper follows that orientation. However, consumptive use (e.g., hunting or fishing), private areas, and domestic visitation can all be important, and will be discussed to some extent. Natural areas vary in degree of human impact and ecological integrity, but areas that are primarily of human construction (e.g., zoos) are excluded from the present concept of nature tourism.

¹ www.ecotourism.org/tiessvsfr.html

Through their visits to natural areas, tourists purchase and “consume” biodiversity,² and to varying degrees this activity contributes to conservation of that biodiversity. One might also argue that tourists can contribute to conservation through selection of tourism businesses that are environmentally friendly, regardless of whether the tourism activity occurs in natural areas. As Huyskens and Griffin (2000:4) note, there is:

"a widespread belief that tourists are increasingly being selective about their choice of tourism product and, more particularly, that operators' environmental credentials are a highly significant choice criterion. The corollary is that operators will gain a marketing advantage by adopting such practices or achieving accreditation based on these practices. The belief is so widespread that it could be said to form part of the conventional wisdom about contemporary tourism."

This potential contribution is not explored in this paper for a variety of reasons, and particularly because the evidence supporting this conventional wisdom remains lacking. Much anecdotal evidence, and some survey research, suggests that visitors prefer environmentally responsible tourism products or would be willing to pay more for them. However, evidence is limited that these good intentions translate into action or, indeed, that consumers even recognize which products are “greener” than others (Huyskens and Griffin, 2000). There is need for further, more focussed, and higher quality research and evaluation in the area of green consumerism by tourists.³

Despite these limitations in scope, natural area visitation is a complex phenomenon involving economic, ecological, and other issues. This paper provides an overview of selected issues, and interested readers are referred to cited sources for more detail.⁴

² “Consume” is placed in quotation marks to indicate that, with the exception of hunting and some fishing, tourist consumption generally does not lead to loss of individual animals or biodiversity.

³ Though Huyskens and Griffin (2000) provide a recent and thorough overview of the topic, it has been discussed in many publications, including UNEP (1998) and Swarbrooke and Horner (1999).

⁴ Those interested in protected area visitor fees are referred to a collection of papers on the topic at: www.ecotourism.org/retiesselfr.html. Also, see Aylward and Lutz (2002) for an extensive study of nature tourism in South Africa that includes evaluations of nature tourism's contribution to public area management agencies and private reserve conservation, as well as visitor price responsiveness.

2. THE ECONOMICS OF PUBLIC NATURAL AREAS – SETTING THE STAGE

Following Dixon and Sherman (1990:15-16), the benefits of natural areas can be grouped as follows:

- Recreation and tourism.
- Watershed protection, including erosion control, local flood reduction, and regulation of streamflows.
- Ecological processes, including fixing and cycling of nutrients, soil formation, circulation and cleansing of air and water.
- Biodiversity, including gene resources, species protection, ecosystem diversity, and evolutionary processes.
- Education and research.
- Consumptive benefits.
- Nonconsumptive benefits, including aesthetic, spiritual, cultural/historical, and existence value.
- Future values, including option and quasi-option value.

Of course, there are also costs associated with natural areas, including:

- Direct costs for purchase and management of the area.
- Indirect costs, such as crop damage by wildlife wandering outside the park.
- Opportunity costs, such as foregone outputs (timber, medicinals, etc.).

Public natural areas are protected based on the assumption, sometimes supported with formal evaluation, that the benefits of doing so outweigh the costs.⁵ However, the costs are often financial and/or spatially concentrated in nature, while the benefits are often non-financial and diffuse in space and time. Indeed, the benefits often accrue outside the geographic boundary of the national or local region (and its government) that bears the costs.

⁵ Such evaluations of alternative land use and designation illustrate the important role that tourism can play by generating benefits associated with conservation of biodiversity. Examples include Ruitenbeek (1989), Hodgson and Dixon (1988), and White, Vogt, and Arin (2000).

Although programs such as the Global Environmental Facility (GEF) provide international mechanisms for “gainers” to compensate “losers” due to protection of natural areas,⁶ it is widely felt that funding of public natural areas remains inadequate (James, 1999; James, Green, and Paine, 1999). In extreme, but not uncommon, cases, there is effectively no management at parks due to lack of funding. As noted by the World Wildlife Fund (WWF),⁷ most MPAs [marine protected areas] are “under-resourced and poorly managed, offering little in the way of real protection. Global estimates suggest that as many as 70-80% of the MPAs that have been established worldwide are protected in name only and are not actively managed at all” – that is, they are “paper parks”.

Citing earlier studies, James, Green, and Paine (1999) note that effective conservation in African protected areas is estimated to cost between USD 200 and USD 230 per km², yet James (1999) reports the following agency budgets in USD per km² for selected east and southern African countries:

• Angola	< 1
• Botswana	51
• Kenya	409
• Namibia	70
• South Africa	2,129
• Tanzania	30
• Uganda	47
• Zambia	23
• Zimbabwe	436

Though some countries are funded above the effective conservation level, many are not – and budgets for other sub-Saharan countries are generally lower still. James, Green, and Paine (1999) estimate that, on average across developing countries, protected area budgets represent only 30% of the financial requirements for effective conservation. Average per km² funding in developed countries (USD 2,058) is much greater than in developing countries (USD 157), but the former also face budgetary constraints. For example, the US has implemented the “Recreational Fee Demonstration Program” in order to generate revenue in the face of inadequate federal government outlays (USDI and USDA, 2000).⁸ Queensland and other states in Australia also face resource difficulties (LGAQ, 2000; c.f., Van Sickle and Eagles, 1998). There has even been discussion of fees in the Nordic countries, where there is a strong tradition of open (and free) access to both public and private land (Ovaskainen, Horne, and Sievänen, 1999:49).

⁶ At the national level, it is assumed that gains and losses will “even out” across diverse public funding programs. For example, some will gain from public funding of protected areas, while others will gain from public funding of agricultural research (and some from both).

⁷ www.panda.org/endangeredseas/mpa/. Van’t Hof (1996) reports that 75% of the 130 coastal and marine parks in the wider Caribbean are “paper parks.”

⁸ As noted on its Web site, “the [US] National Park Service (NPS) is beset by financial difficulties brought about by increasing levels of visitation, unfunded infrastructure repair, and rising operating costs” (www.nps.gov/feedemo/#anchor170564).

To the extent that 1) domestic beneficiaries of public natural areas can not be galvanized into pressuring politicians to allocate greater funding for such areas and/or 2) international beneficiaries do not pay for the benefits they receive, public area management agencies are forced to “sell” area benefits in order to expand their budget. In other words, they have an incentive to create a market in the biodiversity they manage because non-market funding mechanisms have been inadequate relative to conservation needs and the benefits that such areas bestow on society.

The challenge for protected area managers is that it is very difficult to create a market for most biodiversity benefits. As illustrated in Dixon and Sherman’s (1990:26) Table 1, most natural area benefits are nonexcludable – and this is one rationale for public funding of such areas. However, tourist visits are excludable in principle,⁹ and such visits apparently represent the biodiversity benefit that is most commonly sold via markets. The provision of visit opportunities also often involves the most visible agency cost (e.g., construction of roads and visitor facilities), and this may facilitate public acceptance of the market. Nonetheless, there has been resistance to creation of this market, as discussed below.

⁹ At many areas, visitation is nonexcludable in practice, as the cost of exclusion would outweigh the benefits of the market created through exclusion.

3. THE ROLE OF TOURISM IN PUBLIC NATURAL AREA CONSERVATION

Before turning to the issue of selling biodiversity benefits through tourism user fees, it is worth describing the broader context of tourism's positive and negative impact on natural area conservation.¹⁰ Tourists have long played an important role in the establishment and management of protected areas in North America and Europe (Dabrowski, 1994). This role continues and has expanded to protected areas in developing countries. For example, White and Dobias (1990:456) note that:

"Tubbataha [National Marine Park in the Philippines] is a clear case of tourism contributing to marine conservation and resource management. It is probable that if no tourism existed at the site, it would not have been declared a national park nor would a national foundation have been formed for its protection."

In an economic context, tourism benefits begin with the willingness-to-pay (WTP) of visitors for the tourism opportunity. This WTP can translate not only into income opportunities for tourism businesses, but also financial and political benefits for the natural areas themselves. When the entrance fees, donations, and other tourism-related revenues that capture some of this WTP are channelled back into protected areas, tourism generates direct financial support. Examples of this include the Saba and Bonaire marine parks in the Netherlands Antilles, where tourism revenues from user fees, souvenir sales, and donations cover park operating costs. Moreover, the creation of these revenue sources was a condition for the Dutch government donations that were needed to establish the park (Dixon, Scura, and van't Hof, 1993).

Tourism can generate political support through several mechanisms. National or foreign visitors may, as a result of positive visit experiences, pressure governments to initiate or increase protection of natural areas. In addition, governments may increase support in recognition of the benefits accruing to tourism businesses (and their employees) using the protected area or the benefits accruing to the government from protected area tourism revenue that is channelled to the treasury rather than directly back into the area itself.

This political support can lead to financial support for the protected area. For example, past increases in government funding for the Parc National des Volcans in Rwanda were highly correlated with increases in treasury revenues from park entrance fees. Finally, visitors may join or otherwise support conservation organizations that in turn help fund protected area management.

Although tourism can generate support for protected areas, it can also generate costs. These costs might be categorized as economic (e.g., local inflation), ecological (e.g., wildlife disturbance), experiential (e.g., congestion amongst visitors), and social (e.g., unwanted changes in local community social or cultural patterns). Most of these costs are difficult to assess in monetary terms, and their impact on natural areas is not always direct. There has been much discussion of ecological and experiential impacts within nature tourism, though most of the research on these topics comes from OECD countries, and especially the US (e.g., Hammitt and Cole, 1998; Liddle, 1997; Manning, 1999).

¹⁰ This section is based on Lindberg, Enriquez, and Sproule (1996).

4. VISITOR FEES – PROS AND CONS

Fees have been charged at public parks since at least 1908, when Mount Ranier National Park (US) imposed a visitor fee (MacIntosh, 1984). There is no international database that provides comprehensive information regarding use of fees, but anecdotal evidence indicates that they have been introduced and/or increased at many developed and developing country natural areas during recent years. Responses to a survey of protected areas conducted in the early 1990s suggest that about one-half of the world's protected areas charged entrance fees at that time (Giongo, Bosco-Nizeye, and Wallace, 1994), and it is likely that this proportion has increased in the ensuing years. Appendix 2 illustrates the prevalence and level of fees in selected African countries.

Nonetheless, many countries have resisted, or simply not considered, the use of visitor fees—the creation of a market in this context. To some degree this is due to inertia, but in some cases it is due to concern about the negative aspects of charging fees. Some of the “pros” and “cons” of fees are listed in Table 1 and described below.¹¹

Table 1. The pros and cons of visitor fees

<i>Cons</i>
Fees are inconsistent with the society's cultural-political values
Fees may have a negative equity effect (low-income groups, minorities, or local residents most affected)
Fees may change the nature of the visitor experience
Fees may reduce business opportunities
Fees are inequitable insofar as other industries do not pay for use of public resources
<i>Pros</i>
Fees generate revenue
Fees may lead to economic efficiency
Fees may reduce public sector "undercutting" of private sector businesses
Fees can be used as a visitor management tool
Fees can increase visitor numbers if revenue used to enhance attraction and experience

Perhaps the most pervasive, yet diffuse, “con” is a cultural-political one. In many countries, people have viewed national parks and other public natural areas as part of their national heritage. They feel that the areas, and recreation at those areas, are “public goods” (in the broad sense), like defense, that should be provided by the government to all citizens, with funding ultimately being based on taxes or other government revenue sources. They feel that it is simply not appropriate to charge citizens to access public land.

¹¹ This section is based in part on Lindberg and Aylward (1999) and Lindberg (1998), but the topic is treated in many other sources, including Laarman and Gregersen (1996).

Another common concern, particularly in the domestic visitation context, is that of equity (Harris and Driver, 1987). That is, fees may have a disproportionate effect on low-income citizens or other groups within society (e.g., ethnic minorities and/or local residents, who often are also low-income). The empirical evidence of such an effect is mixed, with some studies finding no differences in participating groups across fee and non-fee sites, but others finding that lower income groups exhibit higher price elasticity than do higher income groups – which would suggest that they would be most affected by a fee. With respect to ethnicity, Bowker, Cordell, and Johnson (1999) found that blacks and hispanics in the US were less likely to support fees than were other ethnic groups. Similarly, Bowker and Leeworthy (1998) found that hispanics were more price responsive, and thus more affected by fees. However, there is some indication that low income, elderly, and rural groups in the US favor fees, with one possible explanation being that they are less likely to visit natural areas and thus would be better off with revenue being generated by fees rather than by taxes (Harris and Driver, 1987; Stevens et al., 1989).

It generally is possible to devise fee systems to facilitate visitation by groups that might be disadvantaged, such as through lower fees for students or the elderly, or through annual passes or "open" days with no fees, both of which implicitly favor local residents. In addition, such concerns are less relevant in the case of international visitation, particularly when the visitors tend to be much wealthier than residents of the destination country. Framed in economic terms, it may be difficult to justify retaining low or nonexistent fees in order to maximize the consumer surplus of foreign visitors. Many countries, including Costa Rica, have implemented multi-tiered fee systems in order to limit equity impacts for nationals while generating revenue from foreigners. However, several other countries have retained uniform fee systems, in some cases due to explicit or perceived legislative prohibitions on differential fees.

Another consideration is that fees may change the nature of the visitor experience by making it more structured and commercialized. Similarly, fees may increase visitor expectations to be "entertained," which may diverge from management agency efforts to use visits as opportunities for interpretation and education. However, this concern may be overstated. In the case of international visitation, the experience often already is relatively structured and commercialized – as it is part of a trip that has long been planned, has cost substantial money to undertake, and has involved various business intermediaries. In addition, much visitation occurs in the portion of natural areas that contains infrastructure development, where the experience is already quite structured and commercialized. Lastly, even in wilderness settings fees may not be problematic. For example, a recent paper by Trainor and Norgaard (1999) in the US indicates that visitors are able to deal with the apparent contradiction between fees and wilderness experience – philosophically, they felt that fees were not appropriate in wilderness, but they understood the pragmatic reasons for fees, and thus accepted them.

Another "con" is that fees may reduce visitation and thus business opportunities, which leads to opposition by tour operators.¹² For example, Lee and Snepenger (1992) report that tour operators at Tortuguero National Park in Costa Rica considered a boycott of the park to protest an increase in fees from USD 0.28 to USD 1.11. When fees were increased even more dramatically in the mid-1990s, reduced international arrivals were blamed on this increase, and the national income loss due to reduced tourism spending was estimated at USD 65 million (Inman et al., 1998). This is a real concern, especially in areas with few alternative economic opportunities. However, as noted below, demand at many areas is inelastic, such that dramatic decreases in visitation would not be expected with modest fees. In the Cost Rican case, the decline in visitation at the national level was probably due at least in part to other factors, including a high-profile kidnapping (Lindberg and Aylward, 1999).

¹² In some cases, opposition may also result from industry concerns that fee systems will enable the government to more closely track the number of clients, and thus business income.

The tourism industry often points out that other users of public resources, such as the mining, forestry, fishing, and agricultural industries, often use these resources without paying full market prices. Thus, visitors, and the tourism industry, might argue that they should not have to pay market price to “use” public lands for tourism. Unfortunately, because governments often do not see parks as resources for job-creating industries, they do not fund park management agencies at the same level as forestry or agricultural agencies. Thus, this equity concern is often legitimate, but the result is that parks are left without adequate funding. In such cases, the park agency and the industry have an incentive to work together to lobby for greater general government funding of parks.

There are a variety of other reasons why people oppose user fees at natural areas. One common reaction is that visitors feel that they are paying twice for the same good – that they pay for a park through their taxes, but then also with an entrance fee. What they do not recognize, and what needs to be explained in such circumstances, is that the fee is necessary precisely because the amount they pay through taxes is insufficient.

On the “pro” side, the most obvious one is revenue generation. The US fee demonstration program has generated substantial revenue benefits for the relevant agencies, including the National Park Service and the US Forest Service. In Fiscal Year 2000, the agencies collected USD 176 million due to the program, which is in addition to the USD 22 million collected at non-program sites. The program has more than doubled recreation fee revenue relative to pre-program years (for a current overview of the program, see USDI and USDA, 2001; for historical data on park fees in the US, see Loomis and Walsh, 1997:334-340).

In this program, 80% of the new fees collected to go into the budget of the forest or park that collects it, with the remaining 20% going to maintenance of recreation areas where fee collection would not be feasible. Bates (1999) describes the example of one particular national forest in the US, the Mt. Baker-Snoqualmie. During 1998, USD 460,000 was generated through the fee project at that forest, money that was used to hire 24 trail maintenance workers, who cleared over 700 miles (1,100 km) of trails, improved drainage, and helped maintain trailhead toilets and bulletin boards.¹³

Table 2 provides estimates of visitation and revenue levels for three Costa Rican parks, based on evaluation of price elasticity from historic price and visitor data (Lindberg and Aylward, 1999). It illustrates that increased fees can lead to increased revenue when demand is inelastic.

Table 2. Estimated visitation and revenue at various price levels, Costa Rica

Price (USD)	Foreign visits (monthly)			Revenues from foreign visits (USD ‘000s, annual)		
	Poás	Irazú Antonio	Manuel	Poás	Irazú Antonio	Manuel
1	6,917	3,881	7,359	83	47	88
5	6,487	2,910	5,602	389	175	336
10	6,302	2,492	4,845	756	299	581
15	6,194	2,248	4,402	1,115	405	792
20	6,117	2,074	4,088	1,468	498	981

¹³ For an additional example, see Appendix 1.

Examples of marine protected areas that cover most or all of their expenses through entry fees and other tourism-related income include Hol Chan (Belize), Ras Mohammed (Egypt), Bonaire (Netherlands Antilles) and Palau (as a whole).

Fees can also lead to efficiency in the economic sense of maximizing social welfare. As noted by Rosenthal, Loomis and Peterson (1984), it is economically efficient to price recreation where marginal benefit equals marginal cost. Though nature tourism is to some degree nonrival (a visit by one person does not preclude a visit by another), it typically generates costs of one type or another – ecological, experiential (congestion), or direct (e.g., provision of facilities). In such cases, free access will lead to overvisitation because the marginal user will receive less benefit than the cost his/her visit has imposed on others. Relatedly, one can also make an equity argument on the “pro” side insofar as the users of a good or service should pay for its provision.

In some situations, fees can also be beneficial for local businesses because free or underpriced access to recreation opportunities on public land may take away opportunities from private businesses. For example, private campgrounds in the US may compete with campgrounds provided in national parks and national forests, which often have been provided “below cost” by the government agencies. In Australia, there is national legislation designed to prevent government agencies from “undercutting” the private sector – and this has affected fee levels in some cases. For example, ANZECC (2000) reports that the tourism industry (e.g., camping grounds) in Western Australia criticized the park agency for undercutting their prices, and this led to a price increase at public areas.

In principle, one can also use fees as a visitor management tool, and in particular to distribute use away from heavily used places or times, thereby reducing congestion or user conflict. For example, Bamford et al. (1988) studied changes resulting from differential camping fees in Vermont (US) state parks. Fees ranged from USD 1 to USD 5, and the difference in fees across campsites led to shifts in favor of the cheaper campsites. Of course, this strategy will work best when demand is elastic, when visitors are price responsive. As noted below, this often is not the case at the level of whole parks. However, when one considers the role of substitutes, it may work well at the level of individual sites within a park that are similar to each other – and this was the case for the Vermont campsite example.

There are a few examples of “peak load” pricing. For instance, the White River National Forest in the US has a USD 5 fee per person on weekends for cross-country skiing and snowmobiling, but only a USD 2 fee per person during the week. However, thinking again about substitutes, it may be difficult for people to substitute week days for weekends, so this pricing schedule may do better at generating higher revenue from weekend visitors than at redistributing use.

As one study from the UK put it (Bovaird, Tricker, and Stoakes, 1984):

"The generally low elasticity values identified by the analysis ... indicate that the use of admission prices as a means of rationing overall levels of demand at sites might well necessitate large increases above present price levels. [However,] [f]or some individual sites ... quite high price elasticities have been found and in these cases demand is likely to be much more easily managed by relatively small increases in present admission prices."

In short, fees used for visitor management are most likely to be effective when the site has close substitutes, or when the fee represents a large percentage of total trip costs (e.g., when the fee is quite large or when visitors tend to come from local areas). As a result, fees frequently may not be effective as a direct visitor management tool, but they can enhance visitor management through funding traditional activities and through the presence of staff for fee collection. This is illustrated in the case of Australia, where “extra staff employed to collect user charges have provided an important management presence, and

the contact necessary to collect fees and arrange permits has been used to inform and educate the public” (ANZECC, 2000:13).

Lastly, though fees may reduce visitor numbers, they may also have the opposite effect if they are used to enhance the quality of the resource. In addition, in some cases fees can act as price signals – as indicators to potential customers that the experience will be one of quality.

5. VISITOR FEES – PRICE RESPONSIVENESS

Several of the arguments for and against fees rest on the assumption that visitation is price-responsive (price elastic). For example, fees will reduce visitation by low-income groups only if such persons stop visiting the park as a result of the fee. Likewise, as noted in the above quote, fees will be most effective for visitor management if demand is price elastic. On the other hand, fees will be most effective for revenue generation if demand is price inelastic.

It should be stressed that price elasticity can be highly variable depending on the characteristics of the site and the visitors who travel to it. However, research suggests that visitation to natural areas generally is price inelastic—that is, there may be a price response, and even modest responses may be important, but the number of visits will decrease by less, in percentage terms, than the price increase.

The fee demonstration project in the US provides an opportunity to evaluate the effect of fee increases at numerous sites in that country. Systematic analysis and calculation of elasticities apparently has not yet occurred, but government agencies and external researchers are tracking the effects. As the agencies note (USDI and USDA, 2001:iii), “[v]isitation to recreation sites participating in the Recreational Fee Demonstration Program continues to appear unaffected in any significant way by the new fees. Visitation at [program] sites has remained relatively constant.” This lack of response is notable given the substantial fee increases at some sites. For example, Rocky Mountain National Park saw no apparent drop in visitation despite a doubling of the fee from USD 5 to USD 10 per visit. McCarville, Sears, and Furness (1999) report similar results for national parks in western Canada, where entrance fees doubled over three years, yet visitation levels remained constant.

The public is not only paying the fees, but appears to accept them. Of visitors surveyed at national parks, 89% said the fee was “about right” or even “too low.” Loomis and Walsh (1997:120, based on Adams, Lewis and Drake, 1973) present various US elasticities for activities (rather than sites), with the most elastic value being -0.40 for sailing day outings. Demand for individual sites, rather than activities, will tend to be more elastic, as several sites may be able to provide the same activity opportunity. Nonetheless, the reported elasticities suggest that demand for sites will often be inelastic unless there are convenient substitute sites.

Knapman and Stoeckl (1995) used travel cost analysis to estimate demand curves for Kakadu National Park and Hinchinbrook Island National Park in Australia. Based on their models without allowance for the opportunity cost of travel time (Models A and C), and using an entrance fee increase from AUD 5 (price at time of survey) to AUD 6 for Kakadu, they estimated an elasticity of -0.014; demand was not estimated to become elastic until a fee of AUD 197.¹⁴ Using an entrance fee increase from AUD 0 (price at time of survey) to AUD 1 for Hinchinbrook, they estimated an elasticity of -0.0015; demand was

¹⁴ Such high values are common in travel cost analyses, which assumes visitors will respond to higher entrance fees in the same way they respond to higher travel costs. Intuitively, one would expect visitors to respond to a AUD 100 increase in transport expenses differently than a AUD 100 increase in entrance fees. Therefore, these figures should be treated with some caution.

not estimated to become elastic until a fee of AUD 166. They note that Australian empirical studies typically generate elasticity estimates of -0.033 to -0.40.

There are relatively few estimates of elasticity for developing country natural areas. In a study of wildlife viewing demand at Lake Nakuru National Park, Kenya, Navrud and Mungatana (1994) estimated price elasticities of -0.17 to -0.84 for foreigners and -1.77 to -2.99 for residents. The greater price responsiveness for residents is likely due to their lower income levels, which makes them more sensitive to prices.

Chase et al. (1998) used contingent behavior models to estimate price elasticities for international tourism at three national parks in Costa Rica. These estimates were -2.87 for Volcán Poás, -1.05 for Volcán Irazú, and -0.96 for Manuel Antonio. Note that one of these indicates significant price responsiveness and the other two roughly unitary elasticity (neither elastic nor inelastic). However, in an analysis using actual price and visitation data for the same parks, Lindberg and Aylward (1999) found elasticity values of -0.0513, -0.296, and -0.238, respectively. There may be several explanations for the difference, with perhaps the most likely being that visitors had full information on fees at the decision point (time of survey) in the contingent behavior study, while in reality most of the visitors apparently did not know the actual entrance fee at the point of their decision to visit the parks. Chase (1995) found that almost three-quarters of visitors did not know the fee at the time of arrival at the respective park. By this point, visitors had made a psychological, financial, and time commitment to their visits – these were sunk costs in reality, but variable costs in the Chase et al. (1998) survey. Moreover, substitutes were clear to respondents in the Chase et al. survey, but presumably were less apparent or available to visitors faced with a higher-than-expected fee upon arrival.

At Bonaire Marine Park in the Netherlands Antilles the USD 10 fee is believed to have increased visitation, rather than decreased it, as divers have been attracted by the well-managed reefs – with management being possible precisely because of the fee. Though the results are variable, there is strong indication that domestic demand in developed countries is price inelastic and that international demand in developing countries is also price inelastic. One explanation is that many tourists view a site visit, and any associated fee, as part of a larger trip package, even when this is not strictly the case; that is, the natural area visit is viewed as one of many inputs forming the tour product.

Once this assumption is made, the principles of derived demand suggest that quantity demanded will be relatively unaffected by increases in user fees (Nicholson, 1992:662-663). This is illustrated by the following example of visits to natural areas in Belize, Central America (following Lindberg, Enriquez and Sproule, 1996). First, the smaller the share of total product cost, the less elastic the derived demand for the input. In the case of Belize, a fee of USD 1.50 is much less than one percent of the USD 1,006 estimated average tourist expenditure per visit in Belize (Central Bank Research Department, 1992).

Second, the less elastic the demand for the product, the less elastic the demand for inputs. Demand for nature tourism trips, such as those to Belize, is thought to be less elastic than for traditional tourism trips, such as to Caribbean "sun and sand" destinations. This is because there tend to be fewer substitutes for the types of attractions found in Belize than for the sun and sand sites. As a result, fee increases for inputs to the Belize tour product, such as a natural area visit, would have less effect on quantity demanded than would fee increases for inputs to a generic sun and sand tour product.

These first two principles are based on the concept that a fee increase will increase tour price by only a small percentage and that this increase in tour price will in turn only lead to a modest reduction in quantity of tours demanded. Therefore, natural area fee increases will have little impact on the number of tourists in the country. The impact at the site level will depend on the qualities of the site. The third principle is that the lower the elasticity of substitution across inputs, the lower the elasticity of demand for

particular inputs. Thus, the effect of fee increases at a specific site within a tour package, such as at a particular natural area within Belize, will depend on how unique that site is relative to other sites that serve as potential inputs to the package. Unique sites will be able to sustain higher fees with less effect on visitation than will less unique sites.

This discussion of derived demand is based on the assumption that tourists are faced with the fee, either directly or via its effect on a tour package price, when making choices to visit sites. However, as noted above, tourists may learn of the fee only after a commitment has been made to visit the site, such as upon arrival at the entrance (Chase, 1995; Lawson, Gnoth, and Paulin, 1995). Typically, a substantial time and monetary commitment has been made to visit the site, and this commitment may lead to a willingness to pay the fee rather than cancel the visit. Because repeat visitation is less likely in international tourism than in domestic recreation, knowledge of the fee gained upon arrival may have little effect on future visitation.

One should keep in mind that, especially in the international context, the choices of other actors, and particularly of tour operators, can play an important role. To some degree, operators probably behave like individual visitors. For instance, they may be unlikely to shift away from unique sites in the face of a price rise. However, the decision making process of operators may diverge from that of visitors, in part due to greater information about substitutes. For example, in response to a contingent valuation survey a visitor may report a willingness to pay an additional USD 20 in tour costs to visit the site in question. However, if the tour operator believes that a different site is a good substitute and will not be raising fees, the operator may shift the tours to that site.

6. FEE OBJECTIVES AND OTHER CONSIDERATIONS

In summary, anecdotal and research evidence indicate that demand for visitation at natural areas often will be inelastic, particularly at fee levels (e.g., USD 10 or less) that are low relative to overall trip price and when there are few good substitutes. In some cases, this has led to hurried introductions of new or increased fees without thorough consideration of fee objectives and effects. Whether to charge a fee, and at what level, depends not only on price elasticity, but, most fundamentally, on what an agency's fee objectives are. These objectives might derive from broader management objectives, as well as legal, political, and administrative constraints. Though fee decision making processes will vary across locations, it is recommended that the following four activities be part of every process:

- Explicitly consider both the advantages and disadvantages of fees.
- Consider and state fee objectives.
- Conduct research to guide decision making.
- Work with relevant stakeholders, including tour operators and local communities.

Various objectives may exist, including:

- *Cost recovery.* Generation of revenue to at least cover tourism's financial costs (e.g., for facility construction and maintenance) and possibly tourism's other costs (e.g., environmental damage).
- *Generation of "profit."* Generation of revenue in excess of costs, with the excess being used to finance traditional conservation activities (at the destination or at other sites) or to achieve other objectives.
- *Generation of local business opportunities.* This typically will involve low or no fees in an effort to maximize number of visitors.
- *Generation of foreign exchange and/or tax revenues from tourist purchases.* As with business opportunities, this typically will involve low or no fees in an effort to maximize number of visitors.
- *Provide maximum opportunities for learning and appreciation of the natural resource.* Again, this may involve low or no fees, though overall learning and appreciation might be increased by charging fees and using resulting revenue to enhance education programs.

- *Visitor management.* Use fees to reduce/redistribute visitor numbers or reduce depreciative behavior, thereby decreasing congestion, user conflict, or environmental damage. However, achievement of this objective may require relatively high fees.

Of course, a combination of objectives may exist. For example, cost recovery or profit generation may be the primary objective for foreign visitation while maximum learning opportunities may be the primary objective for domestic visitation.

In addition, the decision to implement fees is only the starting point. Past experience indicates several other important issues that might be considered. For example, opposition to fees results in part because visitors may view them as unfair or feel that they will not receive benefits from paying fees (McCarville, Reiling & White, 1996). Sites may increase visitor acceptance of fees by explaining the purpose of the fee, with particular attention on whether fees will be used to enhance visitor services. The Tasmania (Australia) national parks and reserves visitors guide (1993 version) noted that "[a]ll funds raised from fees will be re-invested to ensure improved facilities such as better roads, shelters, picnic areas, toilets and walking tracks." A recent survey in Tasmania indicated that 86% of the public felt park fees were good if income is returned directly to the parks, but only 36% if income is retained by the government treasury (ANZECC, 2000).

However, information on fee purpose may not always affect willingness to pay the fee. For example, Laarman & Gregersen (1996) report a study by Barry (1992) at Tikal, Guatemala, in which no relationship was found between willingness to pay higher fees and information on fee purpose.

Communication with affected industry and other user groups may reduce opposition from those sources. It is unrealistic to expect total agreement and acceptance of fees, but acceptability can be improved by meaningful collaboration with user groups. A likely outcome of such collaboration is awareness of the importance of phased implementation of fees (or fee increases) so that industry can adjust their prices accordingly. For example, in 1996 the Australian commonwealth government announced that the "environmental maintenance charge" for tourists visiting the Great Barrier Reef on commercial tours would be increased from AUD 1 to AUD 6. The industry strongly opposed the increase, and this led the government to back down – the EMC was increased to AUD 2 in January 1997 and then to AUD 4 (rather than AUD 6) in April 1998. In part, the opposition resulted from the magnitude of the increase, but it also resulted from the timing, which did not allow operators to incorporate the change into prices of tours that sell a year or more in advance (a similar problem occurred in Costa Rica, where fees were changed suddenly after election of a new government). A common industry recommendation is notice 18 months in advance. In some countries, the industry opposes fees because management of fee revenues is corrupt or at least perceived to be so. As do visitors, the industry would like to see benefits from the fees. Rudd et al. (2000:10) report that dive operators in the Turks and Caicos Islands were "very wary of any increases in dive price that might be caused by MPA user fees. Their caution stems from a wariness of the government's ability to actually transform MPA revenue into concrete actions to protect the reefs".

Though the focus of this paper has been on entrance and related visitor fees rather than on access rights and concession charges for operators, it is worth noting that tourism industry operators often perceive and/or assert *de facto* access rights to an area that exceed whatever contractual rights they may have been granted by the management agency. In addition, the industry is often politically powerful. Such considerations do not mean that agencies should give up their decision making rights and responsibilities, but agencies should address these considerations in deliberations about fees, access, and other policies that affect the industry.

7. THE ROLE OF TOURISM IN PRIVATE NATURAL AREA CONSERVATION

There are numerous private nature reserves around the world, and tourism occurs at many of these. Langholz (1996) and Langholz et al. (2000) provide evaluations of such reserves, including information on economic and other managerial aspects of these areas. Such studies indicate that motivations for establishing private reserves are dominated by conservation goals. Though profitability is the second most important motivator, many reserve owners (e.g., 60% of those in a study in Costa Rica) do not depend on their reserves for revenue generation. Indeed, although profitability was on the increase, Langholz (1996) reports that in his study of reserves in Africa and Latin America only 59% were profitable. Such reserves often provide other revenue-generating goods and services beyond nature tourism (e.g., game sales), but nature tourism is the dominant revenue component, generating an average 67% of operating income (Langholz, 1996).

Due to the popularity and accessibility of its wildlife, certain parts of Africa have particularly strong potential for generating financial and economic returns from tourism at private reserves. Many of these are game reserves or "game ranches" where visitors watch or hunt game. Price Waterhouse (1994) evaluated the financial and economic desirability of cattle ranching versus wildlife and tourism for conservancies in Zimbabwe. For the Devure Ranch, they estimate that cattle had the potential to generate gross revenue of ZWD 22 per hectare per year using a realistic stocking rate, and ZWD 37/ha/yr using a high stocking rate. On the other hand, a small wildlife operation with tourism, hunting, and culling was estimated to generate ZWD 67/ha/yr.

Table 3 provides an additional example using projected performance in a comparison in Madikwe, South Africa (Price Waterhouse 1994; Davies, Trieloff, and Wells, 1997). The substantial amount allocated to wildlife and tourism capital expenditure covers costs such as development of a road network, construction of offices and staff accommodation, purchase and introduction of game, and construction of perimeter fencing.

Table 3. Cattle ranching versus wildlife tourism in Madikwe, South Africa

(all figures except jobs are in thousands of Rand)

	Cattle Ranching	Wildlife and Tourism
Capital expenditure	12,050	35,400
Gross income	2,500	27,430
Net income	1,300	14,130
Government income	80	4,840
Wages earned per year	480	7,300
Number of jobs	80	1,214

The development of wildlife and tourism in Madikwe has progressed more slowly than expected, but it nonetheless has demonstrated the desirability of that land use as an alternative to cattle ranching (Davies, 2001, personal communication). The financial viability of private game reserves, especially game ranches, is illustrated by the large number of such reserves in South Africa and elsewhere on the continent.

The above indicates that reserves involving tourism can be the most profitable land use in some cases and, even when not, can be an important complement to an owner's conservation goals. Nonetheless, the question remains – What is the ecological contribution of private reserves? James and Goodman (2000) and Lindberg, James, and Goodman (2001) provide evidence that this contribution can be substantial. It is based on game ranches in KwaZulu-Natal province in South Africa and provides several measures of their contribution to conservation. Table 4 presents a simple “macro” measure – the contribution of game ranches to priority landscapes. This shows the area within the study region that falls into various landscape priority classes, the contribution of public protected areas to each class, the contribution by game ranches (private reserves), and the contribution by "tourism ranches" (defined as those game ranches that are established and maintained because of tourism).

Table 4. Game ranch contribution to conservation in KwaZulu-Natal, South Africa

Priority Class	Study Region Total by Class (ha)	Public Areas		Game Ranches		Tourism Ranches (subset of game ranches)	
		Area (ha)	Percent of regional total	Area (ha)	Percent of regional total	Area (ha)	Percent of regional total
1	151,554	25,096	16.6	3,743	2.5	3,743	2.5
2	356,546	13,556	3.8	26,164	7.3	26,164	7.3
3	910,348	128,927	14.2	99,910	11.0	97,572	10.7
4	1,062,301	241,232	22.7	64,315	6.1	55,855	5.3
5	0	0	0.0	0	0.0	0	0.0
Total	2,480,749	408,811	16.5	194,132	7.8	183,333	7.4

This table illustrates the important role of game ranches in general, and tourism ranches in particular. Overall, tourism ranches contribute 45 percent (7.4/16.5) as much land to conservation as do public protected areas. In the case of priority class two, the contribution of tourism ranches is actually greater than the contribution of public protected areas.

In summary, private reserves can make an important contribution to biodiversity conservation. Though tourism is not the sole reason for the existence of private reserves, it is often the dominant one. Thus, tourism's contribution to biodiversity goes beyond its importance in the establishment and management of public natural areas.

8. DISCUSSION AND CONCLUSION

The material presented above indicates that nature tourism generates revenue for both public and private natural areas. Tourism is not the sole source of revenue for these areas, and not all tourism revenue goes into conservation management. Nonetheless, there is strong indication that the selling of biodiversity in the form of tourist visits provides both financial and political support for conservation of that biodiversity – support that generally appears to outweigh tourism’s negative impacts on biodiversity. Though it is difficult to prove empirically, the number of public and private protected areas certainly would be much smaller if visitation did not occur. Moreover, there is evidence that tourism’s “off-park” benefits, notably job and income creation, can enhance support for conservation and sustainable use more broadly (Lindberg, Enriquez, and Sproule, 1996). In the context of this general conclusion, several more specific issues are discussed below.

Is there a need for subsidies and grants?

Subsidies and incentives have long been an issue in mass tourism as destinations seek to attract investors and developers (See, for example, Arthur Young, 1988). There has been a different focus within ecotourism, where the concern has been that local entrepreneurs often lack access to capital, and that many projects funded by NGOs and/or conservation-oriented development assistance programs have lacked sufficient evaluation of commercial viability.¹⁵

The focus of the above work has been on private and communal businesses, but public natural areas have also gained through subsidies and grants typically directed at conservation, but often involving nature tourism. For example, USAID, through its biodiversity conservation programs, supports the development of national park systems (including creation of new parks), demarcation and equipping of parks, recruitment and training of staff, encourages government reforms, and promotes regulated investments in private lodging, guide service, and other tourism ventures. Of particular interest has been their support of strategies to create protected area entrance fee systems to provide revenues needed to maintain and upgrade sites. Such assistance can provide an impetus for overcoming the inertia of free entry through education, research on visitor willingness to pay, and so on.

Financial – ecological – development tradeoffs

An important, though under-researched, issue is whether there are tradeoffs between financial, ecological, and development objectives in nature tourism. Taking them pairwise, one can argue that fee revenue provides an incentive for park managers to maximize visitor numbers, to the detriment of conservation. This clearly is a potential problem. However, provided fees are collected and revenues benefit the natural area, the gains to conservation from an increase in financial resources probably will outweigh the ecological costs of additional visitation. Research suggests that negative ecological impacts

¹⁵ Such issues were discussed at a 1999 workshop on ecotourism development assistance organized by The International Ecotourism Society (TIES), the Interamerican Development Bank (IDB), Conservation International (CI), and the World Resources Institute (WRI).

from visitation typically are spatially limited. Though impacts can be ecologically important in some cases, especially with sensitive and endemic species, it is unusual for tourism impacts to threaten fundamental conservation management objectives.¹⁶ Financial objectives can also work in favor of ecological objectives if fees not only generate revenue but also reduce visitor numbers.

Turning to the financial-development tradeoff, one of the reasons ecotourism has been embraced is that it is seen as an opportunity to create jobs in remote regions that often have suffered due to changing resource use policies (e.g., reduction in timber harvest in the western US and Canada) and/or have not benefited greatly from traditional economic development programs (e.g., many communities near ecotourism destinations in developing countries).¹⁷ Insofar as fees implemented to achieve financial goals reduce visitation, they also may reduce business opportunities and thus economic development. The example of lost income due to reduced visitation in Costa Rica illustrates this tradeoff, as well as the need to evaluate it critically. Given the common finding of price inelasticity, the tradeoff likely is not as great as some might feel, particularly when fee levels remain relatively modest. Nonetheless, the potential for this tradeoff exists.

It should also be noted that local communities benefit from increased public natural area revenue when a portion of this revenue is shared with the communities. For example, Archabald and Naughton-Treves (2001) discuss the history of revenue sharing at national parks in western Uganda. An initial pilot project involved sharing 20 percent of income from gorilla tourism at Bwindi Impenetrable and Mgahinga Gorilla national parks. This was followed by a 1994 policy that 12 percent of income at ten parks be set aside for revenue sharing. Two-thirds of this revenue was designed for local communities neighboring the park, with the remaining third split between the park's home district and a central pool at national park headquarters designated for communities surrounding parks that generated less income. Funds were administered by a Park Management Advisory Committee (PMAC), which elected Parish Park Committees (PPCs) to serve as the link between villagers and the PMAC. The PPCs solicited project ideas from villages and submitted proposals to the PMAC. Projects selected by the PMAC were implemented by project committees designated by the PPCs. Although funds generated under the 1994 policy were distributed through 1998, the policy has recently undergone revision. Brandon (1996) reports on other examples of revenue sharing, including Nepal's Wildlife Conservation Act, which provides for the distribution of 30 percent to 50 percent of protected area fee revenue to surrounding communities.

Lastly, there is also the potential for an ecological-development tradeoff insofar as concerns about negative ecological impacts lead to restrictions on visitor numbers and/or facilities, and thus also business opportunities. In practice, development objectives may dominate conservation objectives in such cases, as illustrated by the example of the Galápagos, where the "carrying capacity" was ignored when it threatened to limit visitor numbers and business opportunities. In addition, there is the conventional wisdom that it is in the interest of nature tourism businesses to maintain a pristine natural environment, as this is what attracts visitors. Without denigrating the conservation actions of many dedicated nature tourism operators, there are many other operators who believe (often correctly) that visitors seek the appearance of pristine environments, but may not care, nor even be able to recognize, whether a given environment truly is ecologically healthy. In other words, one can not rely on the business self-interest argument for conserving natural environments.

¹⁶ Perhaps more important are the aesthetic and symbolic impacts of humans and their infrastructure in pristine or semi-pristine environments.

¹⁷ A discussion of the local economic benefits of nature tourism is beyond the scope of this chapter, but see Wunder (1996, 2000) for a case study and Lindberg (2001) for an overview.

Challenges and difficulties

Perhaps the most fundamental challenge is that most public natural area managers have never thought of themselves as sellers of biodiversity—nor do they wish to perform that function. At the risk of over generalization, many managers and staff have been trained in the natural sciences and view conservation as their highest priority (Lindberg et al., 1997). In addition, their personal values may include the view that access to natural areas should be a free public good. Moreover, they may simply wish to avoid the additional burden of implementing and administering a fee system.

Given the current dominance of the “economic rationalism” paradigm, many natural area agencies are moving toward “user pays” and thus the selling of visitor access to biodiversity. However, this is often a top-down transition, and inertia, vested interests, and personal devotion to alternative paradigms hinder the diffusion of this view. Rightly or wrongly, tourism is often seen as a threat to conservation, rather than as a contributor.

Such statements are not meant to criticize natural area staff, but simply to recognize the diversity of views regarding the topic. Several protected area systems have moved quite substantially toward a more commercial focus, at least when it comes to visitation. The US example has been noted above, and the state of Queensland, Australia, is moving toward a businesslike approach to visitor access, and particularly access by commercial operators. A partnership approach is the key feature of the new system, with commercial tourism operators moving to individually negotiated "use agreements" with protected area managers rather than the traditional "one size fits all" permit system. The new system will provide operators and park managers a more stable and workable system, generate greater returns for the parks system, and focus on best practice, with opportunities to negotiate increases in operating standards. For example, in response to operator needs for greater security in access to visitor sites, to justify capital commitments and product development, it has been recommended that use agreements be increased to 10 years, with annual "rolling" renewals provided businesses meet operating requirements. In addition, licensed operators will be able to trade access rights to ensure efficient use of park visitor capacity. AEC Group (2000) provides background on issues and principles, while TIPA Working Group (2001) describes the process of developing the new system.

A second challenge and potential difficulty is that, despite the above statements that tourism typically generates greater benefits than costs for natural areas, there remains the risk that tourism interests may directly or indirectly be given greater weight than conservation interests. Many protected areas have a dual mandate for conservation and visitation. Some conservation supporters have not accepted the appropriateness of visitation, nor recognized the conservation benefits it can bring. However, it is also possible for the pendulum to move in the opposite direction, for tourism interests to make conservation secondary. The dynamic between various interests varies from country to country, and indeed from natural area to natural area. Thus, the challenges described here should be seen as “something to consider” rather than necessarily a problem in every situation.

Lastly, it is quite common for fee revenues to be “lost” to the sites that generate them, going instead to the central treasury. Although such revenue can, indirectly, lead to greater government funding for agencies and individual sites, earmarking of fee revenue is widely considered to be preferable. Though some countries have implemented earmarking systems, many other countries have not, and this remains one of the challenges in the field.

Next steps

Perhaps the most important step in this context is for agencies to engage in a discussion of the pros and cons of charging fees—in other words, to discuss whether they want to create a market in tourism consumption. This discussion might fruitfully occur within a larger context of tourism management policy (e.g., concession policy, infrastructure development policy, etc.) and ideally will include not only agency decision makers, but also staff “on the ground” and other stakeholders, including the tourism industry, conservation NGOs, and local communities. A decision might quite reasonably be made that the negative aspects of user pays outweigh the positive aspects, but a discussion will clarify the basis for such a decision. As noted above, such a process ideally should start not with how much to charge, but with more fundamental fee-related objectives. Clarification and agreement on objectives then guides decisions regarding whether a fee is charged, at what level, and in what manner.

Such a process ideally will help address the challenges and difficulties noted above. If staff participate in the fee policy debate, they will better understand the role of tourism at natural areas. If the tourism industry is brought in as a legitimate stakeholder, they probably will be less likely to oppose and overturn agency decisions regarding fees and access. Lastly, such a process may facilitate political acceptance of earmarking and other important systems, as the rationale for them is made clear (e.g., fees are necessary to close the gap between budgetary needs and government funding, and the gap will only be closed if fee revenue is retained). Such a process will not be a panacea, but it enhances the likelihood that visitation, and any associated revenue, can be used to benefit conservation.

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APPENDIX 1: THE US RECREATIONAL FEE DEMONSTRATION PROGRAM

US federal land management agencies have recently undertaken a "Recreational Fee Demonstration Program." Aspects of this program have been referenced in the body of the paper, but the following provides a specific example and highlights the development of a business plan rather than an ad hoc implementation of fees.

Historically, the US Forest Service has been authorized by the US Congress to only charge camping fees. Management objectives primarily focused on not undercutting the private sector, so market evaluation was performed and fees were set at approximately the same level as equivalent private sector campgrounds.

In 1996, Congress authorized the Forest Service, as well as other federal agencies, to conduct visitor fee "demonstration projects" for three years (Public Law 104-134). This allowed the service to charge non-camping fees, including entrance fees. At the Siuslaw National Forest in the state of Oregon, the management objective was partial recovery of operating costs. The Siuslaw National Forest performed an evaluation of fees charged at other sites (primarily Oregon State Parks sites), as well as the fee necessary for full cost recovery. The full cost-recovery fee was considered too high, so partial recovery was settled upon. This illustrates the dynamic nature of objectives and knowledge of visitor demand; this demand can constrain achievable objectives.

The fee structure includes a fee of USD 3 per car (USD 3 per person at one site that attracts visitors in busses) or an annual pass for USD 25. The site retains 80% of the revenue, and the traditional government funding allocation has not been reduced as a result of implementing fees (though it may be reduced due to general budgetary reductions). The additional revenue will be used to improve services and facilities, and this is being explained to visitors to reduce resistance to entrance fees at sites that historically have not charged such fees. This project not only illustrates how fees can be implemented, but also how natural area management agencies can take a "business approach" to nature tourism, including development of business plans (e.g., Siuslaw National Forest 1996).

APPENDIX 2: DAILY ENTRY FEES FOR AFRICAN PROTECTED AREAS IN NOVEMBER 1998 (IN USD)*

Source: Krug (1999)

Country	Non-residents	Non-national residents	Citizens	Fee for a car (once per entry)**
<i>Eastern Africa</i>				
Kenya	15; 20; 23; 27 [5 ¹]	1.7; 2.6; 3.4; 4.3 [1.7 ¹]	1.7 [1.7 ¹]	L&F 3.5
Malawi	15	?	?	F 15 <u>per day</u>
Tanzania	15; 25 [50 ² ; 100 ³]	15; 25 [20 ² ; 40 ³]	1.5; 2.2 [2.2 ² ; 2.2 ³]	L 1.5, F 30 <u>per day</u>
Uganda	7; 15 [175 ⁴ ; 250 ⁵]	3.6; 7.3 [150 ⁴ ; 180 ⁵]	1.5 [40 ⁴ ; 50 ⁵]	L 3.7, F 20
<i>Southern Africa</i>				
Botswana	11.5	2.3	0.5	L 0.5, F 2.3
Namibia ⁶)	2.2; 4.4; 6.6	2.2; 4.4; 6.6	1.1; 2.2; 3.3	L&F 2.2
South Africa (once per entry):				
-Kwazulu-N. NCS ⁷)	1.5	1.5	1.5	L&F 6.6
-SA National Parks ⁸)	1.8; 2.7; 6.6; 8	1.8; 2.7; 6.6; 8	1.8; 2.7; 6.6; 8	L&F 5.3
Zambia	15; 20	2	2	L 5; F 10
Zimbabwe ⁹)	5	5	0.3	L&F 0.3

Notes:

- * - Entry fees for adult visitors on a privately organised safari (some countries offer commercial tour operators price reductions for their clients)
 - Several entry fees are reported for countries with a multiple park pricing policy
 - Fees in local currency are converted at November 1998 exchange rates

** L = locally registered vehicle, F = foreign registered vehicle

- 1) Marine Parks
- 2) Mahale NP
- 3) Chimpanzee trekking in Gombe Stream NP
- 4) Gorilla trekking in Mgahinga Gorilla NP

- 5) Gorilla trekking in Bwindi Impenetrable NP (lower fees are charged for stand-by tickets).
- 6) 'Day visitors' pay the entry fee for each day entering a park. 'Overnight visitors' pay no entry fee. However, without them knowing it, daily entry fees are included in the accommodation charges (1997 exchange rate).
- 7) Kwazulu-Natal Nature Conservation Service: On top of the entry fee, visitors to protected areas in Kwazulu-Natal have to pay a community levy. Depending on the site, this levy ranges from USD 0.2 – USD 2.2 per entry and is used to support development in neighbouring communities. (1997 exchange rate)
- 8) South African National Parks: 'Day visitors' pay the entry fee for each day entering a park. 'Overnight visitors' to Kruger NP, Kalahari Gemsbok NP and Richtersveld NP pay the entry fee only once when entering a park. At all other parks 'overnight visitors' pay no entry fee (1997 exchange rate).
- 9) Visitors have also the option to pay an entry fee covering a period of seven days. This weekly fee is USD 10 for foreigners and USD 0.6 for citizens.

Env/epoc/gsp/bio(2001)5/final. The BIODIVERSITY benefits of coral reef ecosystems: values and markets. by Herman Cesar Cesar Environmental Economics Consulting, Amsterdam, The Netherlands. EXECUTIVE SUMMARY. In most tropical countries, coral reef ecosystems provide many goods and services to coastal populations, such as subsistence and commercial fishery, tourism, coastal protection and biodiversity. A variety of anthropogenic practices threatens reef health and therefore jeopardizes the benefits flowing from these services and goods. These threats range from local pollution, sedimentation, de... ENV/WKP(2014)2. Organisation de Coop ration et de D veloppement  conomiques. Organisation for Economic Co-operation and Development.  It was then submitted to EPOC for declassification under the written procedure and declassified after incorporation of all comments received.  OECD (2006),  Sensitivity analysis in ENV-Linkages , [ENV/EPOC/GSP(2006)6], OECD, Paris, France. OECD (2008), OECD Environmental Outlook to 2030, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264040519-en>. OECD (2009), The Economics of Climate Change Mitigation: Policies and Options for Global Action beyond 2012, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264073616-en>. Env/epoc/gsp(2006)1/ final. Paris: Organization for Economic Cooperation and Development. Climate prediction: a limit to adaptation?