Protected Area Visitor Fees

Overview

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This document is part of a set of related papers:

1. Overview – describes general issues and "lessons learned" in the context of visitor fees.

2. Country review – describes fee systems and experience in various countries.

3. Summary – a distillation of the above two documents, with a focus on Belize. Includes a table summarizing fee levels and related issues across marine protected areas.

Two important requests:

Please reference these documents appropriately if you use material from them.

We have tried to provide the most up-to-date and accurate information possible. However, fee systems change over time. Therefore, please help us maintain the accuracy of the material by emailing Kreg Lindberg (k.lindberg@mailbox.gu.edu.au) with any updates or corrections.

We will update these documents periodically, so check back for newer versions.

Notes:

These documents were prepared as part of the "Generating Revenue through Ecotourism for Marine Protected Areas in Belize" project funded by the Summit Foundation and conducted by The International Ecotourism Society and Programme for Belize.

The focus is on marine protected areas in developing countries, but terrestrial protected areas and developed countries are also covered to some extent. The focus is on entrance fees. Typically, park systems also charge several other types of fees (e.g., permits for commercial operators, mooring fees, etc.). Such fees are reported where possible, but these documents are neither comprehensive nor official statements of fee policies.

Unless otherwise noted, all monetary figures are presented in US$. The following abbreviations are used in these documents: PA=protected area, MPA=marine protected area, NP=national park, MR=marine reserve, MP=marine park

The documents are based on a combination of published and unpublished papers, as well as "personal communication" with site managers, tour operators, environmental NGOs, and others. Written documents are referenced following academic convention, and URLs are provided where available.

Lastly, we would like to thank the numerous individuals and agencies that provided information and data!

Introduction

This paper discusses the use of visitor fees as a source of revenue generation for natural areas. It was written in the context of a marine protected area (MPA) finance and management project in Belize, and therefore has a focus on MPAs and developing countries. Nonetheless, it also draws upon the more extensive experience with fees in terrestrial protected areas, as well as in developed countries. Indeed, much of the literature on this topic has originated from the US experience. Though the focus is on public parks, many of the issues are relevant to private areas as well.

As described in the appendix, many park agencies around the world are faced with the challenge of managing parks on limited budgets. This challenge exists not only in low-income countries, but also in some of the world's richest, with the US being a prime example. As noted on its Web site,[1] "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."

Though systematic data is lacking, it is believed that funding difficulties are particularly acute for marine protected areas. As noted by the World Wildlife Fund (WWF),[2] most MPAs 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." In other words, they are "paper parks."

A natural response to the lack of government funding is to explore alternative forms of revenue generation, and visitor fees is one such form.[3] However, there is often opposition to fees, on the part of visitors, local communities, and especially the tourism industry. This paper discusses various aspects of the fee issue, including types of fees, the advantages and disadvantages of fees, and price responsiveness. The appendices provide additional background on revenue generation needs and the broader role of tourism in natural area conservation.

It should be stressed that though the focus of this paper is on fees, this is only one way for tourism to contribute to protected area management–visitors and businesses can also make donations, become involved in research, and contribute in other ways. For example, donations by former visitors to Saba Marine Park generated 9% of the park's revenue between 1993 and 1995 (Dharmaratne, Sang, and Walling 2000). In addition, tourism is, and should remain, only one source of funding for protected areas. Such areas provide a range of benefits to society, and

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[1] http://www.nps.gov/feedemo/#anchor170564

[2] http://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."

[3] Lack of public funding, and consideration of user fees as an alternative, is not just a nature conservation issues. Kinnucan, Ferguson, and Estabrook (1998) describe similar challenges and responses in the context of public libraries.

funding should reflect that. WCPA (2000) provides an overview of relevant issues and funding opportunities (c.f., Crosby, Geenen, and Bohne 2000:86-87; Geoghegan 1998; Spergel 2001).[4]

There is no single "correct" system for charging fees, so this paper outlines some key issues and general principles that can be considered in various contexts. Managerial decisions about fees often are based on achieving the important, but narrow, objective of revenue generation. Moreover, decisions are often made with little or no consultation with affected stakeholders, notably the tourism industry and local communities. Such narrow objectives and lack of consultation can lead to unintended effects, and even a reversal of fee decisions. 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.

Several of the advantages and disadvantages of instituting fees are described below. It is worth considering which of the advantages and disadvantages are relevant in a given context, both in terms of which ones are important and whether fees will lead to the desired or feared result. For example, equity concerns across socio-demographic user groups may not be important in the context of international visitation. In addition, a disproportionate impact on low-income groups may be considered important in domestic visitation if it occurred, but proposed fees may not lead to such an impact.

If a decision is made to charge fees after review of the advantages and disadvantages, consideration of possible fee objectives can help guide determination of the appropriate fee type and amount. Various objectives exist, including:

- *Cost recovery*, which involves generation of sufficient revenue to cover part or all of tourism's financial costs (e.g., construction and maintenance of a visitor center) and possibly tourism's other costs (e.g., ecological damage).

- *Generation of "profit,"* with the excess of revenue over cost being used to finance traditional conservation activities (at the destination or at other sites) or to achieve other objectives.

[4] Tourism can be a fickle industry, subject to declines due to factors outside the control of natural area managers, which means funding dependent on tourism can also be fickle. These concerns must be balanced with the reality that other sources of funding, from governmental allocations to donations, can also be unreliable, as well as traditionally insufficient. Such considerations support a diverse revenue strategy.

- *Generation of local business opportunities*, which may involve low fees in an effort to maximize number of visitors and/or the earmarking of fees to enhance site or experience quality.

- *Provision of maximum opportunities for learning and appreciation* of the natural resource, which may also involve low fees.

- *Visitor management* to reduce congestion and/or ecological damage, which would involve fees high enough to influence visitor behavior.

Of course, a combination of objectives may exist. For example, in the case of a developing country, 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 some cases, initial or "ideal" objectives may not be possible to achieve, in which case they must be modified. The example of fees at the Siuslaw National Forest in the US illustrates this. Historically, the U.S. Forest Service has been authorized by the U.S. Congress to only charge camping fees. Management objectives primarily focussed 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." This allowed the service to charge non-camping fees, including entrance fees. At the Siuslaw National Forest, the management objective was partial recovery of operating costs. The forest performed an evaluation of fees charged at other sites in the area (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.

As this example illustrates, information gathering (research) can be a critical part of the process. Relevant research includes:

- Review of past visitor surveys (particularly those measuring willingness of visitors to pay for the experience).

- Administration of surveys specifically designed to answer questions arising from consideration of fees (e.g., will one type or level of fee have a greater effect on visitation than another type or level?).

- Review of fees charged at similar (and possibly competing) sites elsewhere.

For example, the Fisheries Department in Belize has proposed a "Marine Protected Areas Network Initiative" (MPANI) as part of its efforts to enhance funding for MPAs in that country. The fee levels proposed in that document were based in part on review of results from past visitor surveys in Belize. In addition, the document advises that "the most accurate revenue projection can only be derived from a minimum two-week comprehensive visitor survey."

Though not formally part of the MPANI effort, The International Ecotourism Society is working with Programme for Belize to conduct such a survey.

Ideally, research should continue in the form of monitoring after implementation of the fee system. For example, the US Recreational Fee Demonstration Program includes several surveys of visitor reactions to fees. McCarville, Sears, and Furness (1999) describe the Canadian Park Service evaluation of user and general public preferences for fees. Another research example comes from Australia, where

> the last time [the New South Wales state park agency] implemented a revised fee structure, market research was undertaken to compare park entry and camping fees with other attractions (museums, cinemas, and theme parks) and direct competitors. Surveys were also undertaken in the general community and with park visitors on their willingness to pay an increased fee. The outcomes of the surveys confirmed a willingness to pay a fee increase of about 20% for the existing range of facilities and services. This formed a key component of the Service's decision to raise fees by that amount (ANZECC 2000:16).

The extent and nature of stakeholder consultation can vary widely and typically is dependent on available resources, political constraints, and other factors. Nonetheless, this step is often ignored or undervalued, and in some cases this has led to an inability to implement fees as planned. For example, fee increases have been partly reversed in various countries, including Costa Rica and Australia (at the Great Barrier Reef Marine Park), due to opposition by a tourism industry that was inadequately consulted in the planning process—this highlights the importance of consultation.

Consultation can facilitate understanding of the priorities and concerns of the various stakeholders, and opportunities for addressing these. For example, a common industry concern is that fees will decrease visitation. As noted below, experience indicates that modest fees generally do not have significant effect on visitation, so the park agency and the industry may agree that visitation levels be monitored after a fee increase. It may be agreed that if visitation declines, and this decline is certified by an independent body to be due to the fee increase, then the stakeholders discuss alternatives to fees. This simple example illustrates the potential for taking an "adaptive" approach involving learning and flexibility to respond if fees have undesirable effects. If stakeholders feel there is flexibility to respond to their concerns, then they may be less likely to oppose fees. The US Recreational Fee Demonstration Program is one example of trialing and monitoring fee systems.

The four activities listed above are based on simple planning principles, principles that are part of "management-by-objectives" planning processes like the Limits of Acceptable Change (LAC) process used in the US and elsewhere.[5] Though such processes typically are applied in the

[5]The LAC process is described in Stankey et al. (1985). In the MPA context, it was used as the basis for the Saba Marine Park management plan (documentation available at: http://www.sabapark.com/).

context of broader recreation management, they are relevant in the fee context insofar as they provide a framework for 1) involving stakeholders, 2) considering alternatives, together with their respective advantages and disadvantages, 3) discussing and specifying objectives, and 4) information gathering during decision making and monitoring in follow-up. ANZECC (2000:28) also illustrates a useful "planning and implementation cycle for user-pays systems."

Types of Fees

There are many types of fees and related revenue sources associated with visitation at parks. The following classification is from the US National Recreation and Parks Association (Loomis and Walsh 1997:322).

- Entrance fees to enter a park.
- Admission fees to enter a building offering an exhibit or show (e.g., a visitor center).
- Rental fees for use of equipment such as boats and user fees for facilities such as a campsite.
- Sales revenue from operation of retail stores and rental income from concessionaires.
- Licenses and permits, such as for fishing or rafting.
- Special service fees.

Entrance fees are perhaps the most widespread and the most controversial (since the "product" being purchased with the other types of fees is more tangible). Even within this category there is wide variety, as fees can vary across time period or type of entry. For example, Yellowstone National Park in the US charges the following entrance fees, as of April 2001:

- Private, non-commercial vehicle: $20 for 7 days or $40 annual.
- Individual (e.g., hike or bicycle): $10 for 7 days or $40 annual.
- Snowmobile or motorcycle: $15 for 7 days or $40 annual.
- Commercial vehicle: per-entry, rates vary by type of vehicle from $25 and $10 per person for a sedan to $300 for a motorcoach (bus).

However, visitors can purchase a $50 annual pass that allows entry to all national parks. This combination of per-day with annual pass options helps tailor fee systems to different types of visitors, which can be beneficial both in terms of revenue generation and of visitor acceptance of fees.

Another example is provided by the state of Tasmania, in Australia, which has the following fee system for entry to its 12 national parks (amounts in AU$):

- Daily entry: $5 per person (bike, boat, bus, or foot) or $9 per vehicle (includes occupants).
- Holiday (all parks for up to 2 months): $12 per person or $30 per vehicle.
- Annual: $18 per vehicle for one park or $42 per vehicle for all parks.

As noted in ANZECC (2000:51), which provides additional detail, the system was customized to the types of park visitors and their needs:

> The annual all-park pass and especially the annual one-park pass are targeted at the regular Tasmanian user. The one-park pass was designed specifically to satisfy holiday shack owners and local communities that hold a great deal of local "ownership" of particular parks. The holiday pass is targeted at interstate visitors who represent 70% of total park visitors, many of whom constitute the growing pre-planned "holiday package" market segment.
>
> Entry booths are staffed at five major national park entrances, while payment is made by self-registration at several other locations. Passes may be purchased from district offices, tourist information centers and travel agents (using a voucher system).

As these examples illustrate, there are various ways to collect fees, including upon entry and through passes that might be checked upon entry or spot-checked when it is uneconomic to place staff at all entries. When visitors are taken to natural areas as part of a commercial tour, it is common, but not universal, for tour operators to purchase entry tickets and simply pass along the cost to their clients, either as part of the tour cost or as an additional cost.

Though it can be expensive, direct collection upon entry allows park staff to inform, regulate, and count visitors. Sales via operators offers a "middle ground" in the sense that it reduces administration costs and still allows visitation levels to be monitored, but does not involve direct contact between park staff and visitors. The option, or combination of options, that is best for a given site will depend on various factors, including the number of visitors and entry sites, the motivation of staff to use the fee transaction to interact with visitors, the degree of compliance of visitors and/or tour operators with self-regulated payment, and so on. Regardless of the option used, there will be administrative costs involved – in staffing entry booths, spot-checking compliance, etc.

With respect to marine protected areas, some sites administer fees directly. For example, at Hol Chan Marine Reserve in Belize, reserve staff sell tickets at the dive/snorkel site, which is spatially limited. However, the revenue from this fee barely covers the cost of collecting it. At Half Moon Caye, also in Belize, most divers to the Blue Hole picnic in one location after the dive, and tickets are sold there.

However, it appears more common for tickets to be sold via operators given the large size and essentially unlimited entry points of many MPAs. For example, the "environmental management charge" of AU$4 per day at the Great Barrier Reef is sold through tour operators. Likewise, the Bonaire Marine Park charges $10.00 per diver per year. It is paid when divers check in at their resort, and the plastic tag they receive must be worn when they are diving. Spot checks are made on shore divers, but peer pressure to pay the fee ensures that checks are unnecessary on dive boats.

Visitor Fees – Disadvantages

Fees have been charged at public parks since at least 1908, when Mount Ranier National Park, in the 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. Nonetheless, many countries have resisted, or simply not considered, the use of visitor fees. 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 disadvantages of fees are as follows.

Cultural/Political Values and Priorities

Perhaps the most common, though intangible, disadvantage 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.

Equity Across Socio-Demographic Groups

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 responsiveness than do higher income groups – which would suggest that they would be most affected by a fee.

Based on surveys of responses to actual fees, as well as to willingness-to-pay scenarios, More and Stevens (2000) found that fees were more likely to reduce visitation by low-income groups than by high-income groups (in that study, low-income households are represented by less than $30,000 per year). Adams et al. (1989) reached the same conclusion in their study of pheasant hunting (c.f., Reiling, Cheng, and Trott 1992). 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.

If fees are not to be increased, the question becomes one of whether services should be reduced or revenue increased through taxes or other non-fee means. In the More and Stevens (2000) study, the majority of all income groups preferred higher fees over reduced services (a result also

found elsewhere (McCarville, Sears, and Furness (1999)). Low-income groups were more likely than high-income groups to favor taxes (17% compared to 5%). However, even low-income households favored on-site fees over taxes (26% compared to 17%) (see also Harris and Driver 1987; Stevens, More, and Allen 1989).

It often is possible to devise fee systems to facilitate visitation by groups that might be disadvantaged, such as through 1) lower fees for students or the elderly or through 2) annual passes, off-peak fee reductions, or "open" days with no fees, 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.[6] However, several other countries have retained uniform fee systems, in some cases due to explicit or perceived legislative prohibitions on differential fees.

Equity Across Resource User Groups

There is also an equity issue insofar as 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.

Cost of Fee Collection

Inevitably, there are costs involved in collecting fees (transaction costs), and in some cases these costs will make it uneconomic to collect fees. For example, some recreation areas have many entrances, few visitors, and/or high capital costs for collection facilities (Loomis and Walsh 1997). Nonetheless, there often are ways to reduce collection costs by, for example, selling tickets or passes through tourism or other businesses and by using an honor system, with spot-check enforcement. Data in USDI and USDA (2001:8) indicate that collection costs for the US National Park Service and Forest Service are about 20% of fee revenue.

Change in the Experience

[6] For MPAs in particular, many sites/countries charge residents reduced fees, or no fees at all, including Belize (Hol Chan and Half Moon Caye), Ecuador (Galápagos), Egypt (Ras Mohammed), Kenya, Netherlands Antilles (Saba), Philippines (Tubbataha and Gilutungan), Tanzania, Thailand, and the US (Hanauma Bay).

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 a "frontcountry" (non-wilderness) context, 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) 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.

Reduced Opportunities for Local Businesses and Employees

A basic microeconomic principle is that quantity demanded/consumed goes down as the price of a product goes up. In the tourism context, this means that fees may reduce visitation and thus business opportunities, which leads to opposition by tour operators.[7] For example, dive operators actively lobbied against the $10 fee at Bonaire Marine Park. Despite this opposition, there was no apparent decline in visitation due to the fee–the actual impact of fees on visitation levels is discussed further below.

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 $0.28 to $1.11. When fees were increased more dramatically in the mid-1990s, they were blamed for a national income loss of $65 million due to reduced tourism spending (Inman et al. 1998).

This is a real concern, especially in areas with few alternative economic opportunities. In such cases, even modest decreases in visitation can be problematic for the industry and local communities, even though the fee increase is good for the park agency. Nonetheless, the effects of fees need to be carefully evaluated. For example, in the Cost Rican case, the decline in visitation at the national level may have been due primarily to other factors, including a high-profile kidnapping (Lindberg and Aylward 1999).

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 needs to be explained in such circumstances is that the fee is necessary precisely because tax funding is insufficient.

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[7]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.

Visitor Fees – Advantages

Revenue Generation

The most obvious advantage of fees 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 $176 million due to the program, which is in addition to the $22 million collected at non-program sites. The program has more than doubled recreation fee revenue from 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).

Bates (1999) describes the example of one particular national forest in the US, the Mt. Baker-Snoqualmie. During 1998, $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.

Of course, few parks systems will collect revenue at this level–amounts will vary from country to country. The following table shows revenue raised by parks agencies in Australia, where management is primarily at the state level:

User Pays Revenue in Australia and New Zealand
(Amounts in AU$ and NZ$; Source: ANZECC 2000)

State/Region (date)	User-pays revenue	
	Entry fees	Other
Queensland (98/99)	Nil	$4,050,000
New South Wales (94/95)	$6,227,292	$6,657,172
Western Australia (98/99)	$4,540,891	$1,546,848
Victoria (98/99)	$928,000	$3,291,000
Tasmania (98/99)	$1,600,000	$1,500,000
South Australia (98/99)	$1,498,000	$5,073,000
Northern Territory (98/99)	$1,689,000	$489,000
Commonwealth/National (98/99)	$7,594,650	$1,099,950
Australian Capital Territory (98/99)	$122,875	$104,029
New Zealand (98/99)	Nil	$10,937,000

MPAs 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).

Economic Efficiency

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 at a level where marginal benefit equals marginal cost. Though nature tourism is to some degree nonrival, in that 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.

Unfortunately, rarely is there sufficient information on demand or, especially, on cost for a precise determination of efficient fees. Nonetheless, economic efficiency does provide one possible basis for price determination–and highlights the issue of visit-related costs and the economic losses that occur when fees are set on different bases.[8]

Equity Across Users and Non-Users

Although discussions of user fee equity often focus on concerns about access for low-income groups, there is also a countervailing equity consideration–that the users of a good or service should pay for it. If visitors do not pay the costs of providing the visitor experience, then others must pay for it, usually through taxes. This may be seen as inequitable in the case of uneven distribution amongst visitors (e.g., if visitors tend to be wealthier than non-visitors) or of visitation by those resident outside the government's tax base (e.g., international visitors, or interstate visitors in the case of state-funded agencies).

An important issue in this "cost recovery" context is what costs should be attributed to visitation, and thus paid by visitors. This is a difficult issue to resolve, as most natural areas have mandates for both conservation and visitation, and many agency activities (and thus costs) contribute to both. Moreover, there remains debate concerning the degree to which visitation should be viewed as a private good, to be paid for by users, or a public good, to be paid for by society as a whole.

Enhanced Opportunities for Local Businesses and Employees

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, many private campgrounds in the US compete with campgrounds provided in national parks and national forests, which often have been provided "below cost" by the government agencies.[9]

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[8] Economic principles of fees are presented in Lindberg and Enriquez (1994:Appendix A), Loomis and Walsh (1997), and Rosenthal, Loomis, and Peterson (1984).

[9] Though campgrounds are an obvious example of this issue, sometimes the park agencies compete with the private sector in the core attraction itself. Anon (2000) reports the case of Mammoth Cave National Park in Kentucky, US, undercutting commercial cave attractions.

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.

Visitor Management

In principle, one can use fees as a visitor management tool, and in particular to distribute visitors away from heavily used places or times, thereby reducing negative ecological impacts,[10] 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 $1 to $5, and the difference in fees across campsites led to shifts in favor of the cheaper campsites. 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 campsite example (c.f., Kerkvliet and Nowell 2000).

There are a few examples of "peak load" pricing. For instance, the White River National Forest in the US has a $5 fee per person on weekends for cross-country skiing and snowmobiling, but only a $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 be 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, for] 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.

[10]However, if the visitors go elsewhere, there may be an overall increase in ecological impacts.

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).

An additional, and potentially very important, visitor management gain from fees is that, as illustrated in the case of Australia, "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).

Enhanced Site and Experience Quality

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.

The example of parks in South Australia illustrates this advantage. As noted in ANZECC (2000:14), fees led to the:

> transformation of certain parks from tired degraded reserves to steadily improving credits to the system: upgraded buildings, reticulated water, sewerage, rehabilitated recreational facilities... Also, a management presence has been established over a wide area of the state, making more efficient use of existing resources and by using user-pays funded staff to provide services in new areas – there are significant decreases in vandalism and repair costs where administrative charges are imposed.

Survey results from the Turks and Caicos Islands supports the concept that high marine site quality can be used to sustain high fees, in a virtuous cycle (Rudd et al. 2000). Results indicate that divers would be willing to pay an extra 13% in dive prices for a dive featuring 12 grouper rather than for a trip featuring one grouper. Likewise, they would be willing to pay an extra 5.6% for a trip with large grouper (30 lbs/13.6 kg) rather than a trip with small grouper (5 lbs/2.3 kg). Westmacott et al. (2000) report that surveys of divers in the Maldives indicate that they would be willing to pay an average of $87 more to visit healthy reefs than to visit reefs that had died due to bleaching. Medio (1996) provides Red Sea examples of how sustaining site quality enables marine tourism destinations to maintain an "upmarket" position, with associated high levels of profitability for the industry.

One of the reported reasons for tourism industry opposition to fees is concern that fee revenue will not be used to enhance the site (often based on a feeling that historic park management has been ineffective). For example, 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." Such views rest on the assumption that fees should only be collected in exchange for a good or service rendered, which may be inappropriate in the context of government agencies serving conservation as well as recreation functions.

Nonetheless, it is clear that using fees to enhance site quality increases acceptance of the fees on the part of both visitors and the tourism industry.

Will Fees Reduce Visitation? The Issue of 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, 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, if the increased revenue per visitor is not offset by decreased numbers of visitors.

It should be stressed that price responsiveness 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.[11]

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." This lack of response is notable given the substantial fee increases at some sites. For example, Rocky Mountain National Park saw no obvious drop in visitation despite a doubling of the fee from $5 to $10 per visit. "Crown jewel" sites such as the Grand Canyon and Yellowstone, increased fees from $10 to $20 as part of this program. 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.

Moreover, the public is not only paying the fees, but appears to accept them. Of visitors surveyed at US national parks, 89% said the fee was "about right" or even "too low" (USDI and USDA 2000). 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.

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[11]If demand is inelastic (e.g., values up to -1), then visitation will decrease by less, in percentage terms, than the increase in fees. If demand is elastic (values above -1), then visitation will decrease by more than the increase in fees. For example, an elasticity of -.75 is inelastic and indicates that visitation would decrease by 7.5% if there were a fee increase of 10%.

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 A and C, and using an entrance fee increase from AU$5 (price at time of survey) to AU$6 for Kakadu, they estimated an elasticity of -0.014; demand was not estimated to become elastic until a fee of AU$197. Using an entrance fee increase from AU$0 (price at time of survey) to AU$1 for Hinchinbrook, they estimated an elasticity of -0.0015; demand was not estimated to become elastic until a fee of AU$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.

In the marine park context, a few of the parks surveyed for this project noted decreased visitor numbers due to fee increases, primarily when close substitutes were available. However, the clear majority of sites did not experience decreased visitation, and at many visitation increased as tourists were attracted by the enhanced management made possible by fee revenues.

Though typically not focussed on price-responsiveness *per se*, studies of visitor willingness to pay (WTP) can provide indications of how visitation will be affected by fees. Most studies have found that visitors are willing to pay much more than they are actually asked to pay, particularly in the context of developed country visitation at developing country parks (Lindberg and Aylward 1999). With respect to marine areas in particular, Roberts and Hawkins (2000:86) report that "divers are willing to pay significant sums to protect marine habitats, on the order of $20 - $30 per trip."

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 $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.

Most estimates of price-responsiveness are short-run, and one might expect long-run responsiveness to be greater, as people adjust and seek new sites. However, there may also be a countervailing effect, which is that people get used to the existence of a new or higher fee, and thus are less likely to respond negatively to it (it becomes their new "reference" price).

In summary, one finds that demand for natural areas generally is not price responsive, that modest fees (e.g., of less than $10) usually has only modest effect on demand. The reasons for this may vary across locations, but a couple reasons include:

- Fees tend to be a small part of income, unlike automobiles or other "big purchases."

- Fees tend to be a small part of a larger holiday package, especially for non-local visitors.

For example, Roberts and Hawkins (2000:86) note that divers typically spend over $3,000 per trip, which means that a $10 entry fee represents less than 1% of total trip costs. However, if the charge were $10 per day of a 6-day dive trip, one might expect a greater response to the price.

However, price responsiveness may vary greatly across sites and fee levels. Sites that have many substitutes, that are not special or unique, will generally exhibit greater price responsiveness than those that are special or unique (Stevens, More and Allen 1989). For example, Schneider and Budruk (1999) surveyed visitors at a beach in a national forest in the southwestern US. There was no fee for that area, but there were fees at similar sites elsewhere in the same forest. Of the 344 people surveyed, 123 (about a third) changed their visitation in response to the fees, with changes including coming less frequently, visiting free sites rather than fee sites in the same forest, and visiting sites outside the forest. In other words, when close substitutes are readily available at lower cost, it is likely that visitation will be relatively price responsive.

Other Fee Issues

In addition to the advantages and disadvantages noted above, there are other (often related) issues that arise in the fee decision making process. An important one is that of earmarking, of retaining revenue collected at least at the agency level, and ideally at least partly at the park level. Though some governments may see fees as a way to obtain tax revenue from tourists and

tourism, from the park agency perspective the motive for charging fees is to compensate for inadequate budgets. The gap between budgetary needs and government funding will only be closed if fee revenue is retained rather than going to the general government treasury.

Of course, it is not always so straightforward. In some cases, revenues that go to government treasuries may lead to increased treasury funding of parks. Conversely, in the case of earmarking, politicians may reduce treasury funding by the fee amount received by the park agency. This actually makes the agency worse off than without fees, as there is no gain in revenue but there are additional costs associated with collecting fees.

Thus, the agency, and park supporters (ideally including the tourism industry) should make a strong case for earmarking. Past experience supports this case. For example, ANZECC (2000:3) notes that, "client services and facilities were greatly improved where user-pays revenue was retained by parks services. Local retention of revenue was most commonly mentioned [by agencies] as the key factor in creating a positive cycle from revenue to better services and facilities to positive public attitude and back to increased revenue."

Earmarking can be important for enhancing acceptance of fees by key stakeholders, including visitors, local communities, the tourism industry, and agency staff. For example, ANZECC (2000) report that a recent survey in the state of Tasmania indicated that 86% of the public felt fees were good if income is returned directly to parks, but only 36% if income is retained by consolidated revenue (the state government treasury). If fee revenues are used to hire local persons either as regular park staff or as contractors, such as for infrastructure development, then fees can benefit local communities and engender their support.

There is a concern that earmarking provides an incentive for park staff to allow or promote visitation to levels that may lead to unacceptable ecological or experiential changes (e.g., Lindberg, Tisdell, and Xue 2001). The extent to which this problem exists is unknown, but it is an issue that managers should be sensitive to.

As Geoghegan (1998) notes, the self-financing protected areas in the Caribbean tend to be managed by "extra-governmental" agencies, including environmental NGOs and quasi-governmental statutory bodies. Such groups tend to have greater legal and administrative flexibility and avoid pressures to channel fees into governmental treasuries. Nonetheless, some traditional governmental agencies have earmarking policies. Anecdotal evidence suggests that there is at least a modest trend toward earmarking – with both governmental and extra-governmental examples. For instance, the US Fee Demonstrational Project provides for 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. Another example is the Protected Area Conservation Trust (PACT) in Belize. Though not directly a park funding program, the revenues collected from departure taxes paid by international visitors to the country goes into a special fund used to finance conservation projects.

Related to the issue of earmarking is that of informing visitors how fees are used, and particularly how fees will enhance visitor services. Opposition to fees results in part because visitor may view them as unfair or feel that they will not receive benefits from paying them, such that information about the need for fees and the resulting benefits for visitors can lead to greater acceptance (McCarville, Reiling & White 1996; McCarville, Sears, & Furness 1999). 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." Similar communication efforts are made in the context of the US Recreational Fee Demonstration Program.

However, it should be noted that a change in services that is seen as an improvement to some visitors may be seen negatively by others who prefer that the area be maintained as it is (Martin 1999; Vogt and Williams 1999). The optimal use of earmarked revenues will need to be considered in the context of visitor desires, agency guidelines and priorities for the specific area, and other factors. Though some studies have found that information on use of fees may not always make a difference to visitors (Laarman & Gregersen 1996), anecdotal evidence and the majority of studies indicate that communication is a cost-effective means of increasing visitor acceptance of fees (Lundgren et al. 1997; McCarville, Sears, and Furness 1999; Roberts and Hawkins 2000:86).

Another issue is the common tourism industry concern that park agencies do not provide sufficient advance notice of fee changes to allow incorporation of them into tour package prices. For example, in 1996 it was decided to increase the "environmental maintenance charge" for tourists visiting the Great Barrier Reef (Australia) on commercial tours from AU$1.00 to AU$6.00. The industry strongly opposed the increase, and this led the government to back down–the EMC was increased to $2 in January 1997 and then to $4 (rather than $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.

Appendix: The Need for Revenue Generation and the Tourism Option

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.

As this list illustrates, tourism is but one of the benefits provided by natural areas, and thus generally should be only one of the sources of funding for them.

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.[12] 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. Although programs such as the Global Environmental Facility (GEF) provide international mechanisms for "gainers" to compensate "losers" due to protection of natural areas, 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.

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[12]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).

In the early 1990s, IUCN estimated that protected area budgets totaled approximately $4.1 billion, which was only 24% of the $17 billion needed to maintain the areas (IUCN 1994 and WRI/IUCN/UNEP 1992, in Vaughan 2000). 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. Similarly, Wilkie and Carpenter (1999a) report that government and donor investments currently meet less than 30% of the estimated recurrent costs of protected area management in central African countries, and Wilkie, Carpenter, and Zhang (2001) list actual versus recommended spending for protected areas in Cameroom, with actual spending accounting for less than 20% of recommended spending.

Citing earlier studies, James, Green, and Paine (1999) note that effective conservation in African protected areas is estimated to cost between $200 and $230 per km^2, yet James (1999) reports the following agency budgets in $ per km^2 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 countries in Africa and elsewhere are often lower still.

Average per km^2 funding in developed countries ($2,058) is much greater than in developing countries ($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). Queensland and other states in Australia also face resource difficulties (LGAQ 2000), while McCarville, Sears, and Furness (1999) report that during a period of three years in the late 1990s, the Canadian Park Service operational budget was cut by almost a third (c.f., Van Sickle and Eagles 1998). Even in Nordic countries, which have both high income levels and a strong tradition of open and free access to nature, fees have been considered. As noted by Ovaskainen, Horne, and Sievänen (1999:49), in Finland:

> the budget funding allotted to visitor services has become insufficient with the increased number of services provided. During the next few years, it has to be decided whether the basic recreation services on public lands can still be offered free of charge in the future – which might mean cutbacks in facilities – or whether they should be subject to a charge on the beneficiary-pays principle.

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 (1990:26), most natural area benefits are nonexcludable – that is, a parks agency can not prevent someone from receiving the benefit of knowing that a specific park or system of parks exists and protects flora and fauna. This inability to exclude beneficiaries is one rationale for public funding of such areas.

However, tourist visits are excludable in principle,[13] 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, of charging entrance or other user fees.

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

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Note: The following includes references that are not cited in the text, as additional resources, providing they contain discussion or information relevant beyond a single location (e.g., articles on tourism that simply mention a local park fee are not included). Generally, the references do not cover methodological issues in estimating price elasticity or willingness to pay. Methods are discussed in various textbooks, including the following:

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Garrod, G., & Willis, K.G. (1999). *Economic Valuation of the Environment: Methods and Case Studies*. Northampton, MA: Edward Elgar.

Herriges, J.A., & Kling, C.L. (Eds.) (1999). *Valuing Recreation and the Environment: Revealed Preference Methods in Theory and Practice*. Northampton, MA: Edward Elgar.

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