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Economics of Wildlife Tourism

Abstract

After introducing the importance of the topic, we examine the economic impacts of wildlife tourism on income and employment as an indicator of the importance of this form of tourism. While such indicators can be important politically and to particular interest groups, they are shown to be an inadequate guide to the economic use and conservation of resources, including wildlife used in tourism. One reason for this (amongst others) is that total economic value must be taken into account in determining economic resource use and this is shown to be quite important in the case of wildlife species. Empirical procedures, such as use of the travel cost method and stated preference methods (for example, contingent valuation) are outlined and the way in which they can be used for determining the optimal economic allocation of land and other resources for wildlife tourism is explained. Economic implications and limitations of some empirical estimates of the importance of wildlife tourism are discussed. This leads on to a consideration of the purpose and usefulness of using economic instruments to manage wildlife tourism.

Economics of Wildlife Tourism

1. Introduction

The economics of wildlife tourism is important and needs discussion. First, wildlife tourism is a major economic activity. Second, the common misconception that the economics of wildlife tourism consists purely of its commercial aspects needs correcting. While commercial aspects of wildlife interest economists, commercialism does not determine the boundaries of the applications of economics to wildlife tourism. This will, for example, be clear from the consideration below of the concept of total economic value. It will be demonstrated that (1) wildlife tourism contributes significantly to incomes and employment and that (2) wildlife is a valuable tourism resource for satisfying human desires for goods and services. Nevertheless, the impacts of wildlife tourism on income and employment (its commercial dimensions) frequently understate the value of wildlife as a tourism asset for satisfying economic wants. Employment and income are only generated by commodities that are marketed or involve monetary exchange. However, much of the economic value of wildlife for tourism and for satisfying other human wants is not marketed, and some of this value cannot be marketed. This feature makes it difficult (but not impossible) to determine the economic value of wildlife for tourism and for other purposes.

Economics has a variety of applications to wildlife tourism. These include:

(1) estimates of the impact of expenditures by wildlife tourists on incomes and employment (this is a branch of economic impact analysis);

(2) consideration of the economic value of wildlife for satisfying human wants for tourism and other purposes and the implications of these values for the optimal economic management of resources, including wildlife (this is a branch of welfare economics); and

(3) use of economic policy instruments to achieve improved outcomes from wildlife tourism. Economics can also provide a basis for various predictions or forecasts about the demand for wildlife tourism, and can be used to assess environmental change involving such tourism (see for example, Tisdell 2001, 2002) and to examine sustainability issues pertinent to wildlife management.

Sustainability issues involving wildlife conservation, tourism and economics are complex. Several such issues are however, covered in the *Wildlife Society Bulletin,* (2000) Vol. 28, No. 1. Isaacs (2000) article on ecotourism may be of particular interest, and also Gowdy (2000). Relevant discussions about sustainability matters occur in Tisdell (1987, 1998, all reprinted in Tisdell, 2001), Tisdell and Wen (1997a, b), and Tisdell (2002, Chs. 5 and 6). Additional coverage of sustainability issues involving wildlife, natural resources and economics can be found in Tisdell (1999c, 1999b) and in his earlier works (for example, Tisdell, 1993, Part IV, Tisdell, 1991, Ch. 10). There is no doubt that economic systems can be a threat to economically sustainable development, and can imperil the conservation of biodiversity. Sometimes, the commercial development of wildlife tourism contributes to these unfavourable results and calls for its regulation of tourism.

This chapter, in turn, concentrates on measures of the economic impact of wildlife tourism, explains the relationship between the economic value of wildlife tourism and the total economic value of wildlife, discusses the ways and purpose of measuring the economic value of wildlife tourism, assesses the economic implications of various measures of the importance of wildlife tourism, and then examines the role that economic instruments can play in managing wildlife tourism.

2. Economic Impact of Wildlife Tourism on Income and Employment

Wildlife viewing tourism is an important segment of tourism and has grown rapidly in many countries in recent decades (see Field, 2001; Wilkie and Carpenter, 1999) and is becoming a major industry (see The US Fish and Wildlife Service, 2001). For many tourists, a significant reason for visiting a country/region or extending their stay is the presence of wildlife. South Africa is a case in point. Wildlife tourists consist of specialists and generalists (see Wilson and Tisdell, 2001).

Therefore, the demand for wildlife tourism comes from a wide group of visitors, both domestic and foreign. Similarly the amount of money generated from such tourism varies according to species (Wilson and Tisdell, 2003), foreigners and locals (Tisdell and Wilson, forthcoming, b) and on average, specialists such as birdwatchers, spend more money than generalists (Sekercioglu, 2002). Furthermore, a large percentage of visitors would not visit an area if it were not for the presence of wildlife and tourists are known to spend extra days in an area because of the presence of wildlife (Wilson and Tisdell, 2003; Tisdell and Wilson, 2002a).

The economic importance of wildlife tourism has been measured in different ways. The appropriate method depends on the purpose of the exercise and some methods are dubious and give conflicting results. This is partly because estimating *all* the costs associated with wildlife tourism (e.g. travelling, accommodation and food) is difficult. Furthermore, visitors often want to see a multitude of attractions, including wildlife. Such multiple-purpose journeys usually involve multiple sites. This creates a major problem in using the travel cost method for estimating the value of sites, as discussed below. However, despite such difficulties, a large number of studies worldwide have shown that the expenditures incurred as a result of wildlife tourism are large (see The US Fish and Wildlife Service, 2001; Benson, 2001; Upeneja et al. 2001; Zawacki et al. 2000; The International Ecotourism Society, 2000). Some studies show that the primary employment generated from wildlife tourism related expenditure is large and after allowing for the multiplier effect, the total employment impacts are even larger (see World Tourism Organisation, 1999; Howarth Tourism and Leisure Consulting, 1981). Although large estimates of income and employment generated from wildlife tourism and its multipliers are attractive and useful for a country, especially for political support, these estimates can be misinterpreted. For example, despite the large national estimates indicated in the mentioned literature, the benefits to the local area where the wildlife viewing takes place are sometimes small because most of the expenditures take place outside local area. This has implications for the conservation of wildlife that is involved in tourism. Another important issue that should be borne in mind is that that these economic impacts only arise from market expenditures and they do not represent total economic values as explained below.

Because of the problems and issues involved in estimating *all* the expenditures on wildlife tourism, it is often more realistic and relevant to estimate the economic benefits to the local area or region arising from wildlife tourism, although this approach is also not without problems. Economic impact analyses can be used for this purpose.

Box 1 shows tourist expenditures associated with sea turtle and whale watching in Queensland, Australia. It can be seen from Box 1, that the local income and employment created by the initial wildlife tourism expenditures can be large.

Box 1

Regional economic impacts of wildlife tourism – evidence from Australia

Large numbers of tourists, both local and foreign, watch sea turtles and whales in Australia like in some other parts of the world during the respective seasons. During the 1999/2000 sea turtle season, 23,500 visitors came to Mon Repos, Queensland and the number of visitors to Hervey Bay to watch whales was 62,670 in 2000. A study conducted to determine the local economic impact found that the average expenditure per respondent per day on accommodation, food, travel, souvenirs purchased, recreational activities in the region (Bundaberg and Mon Repos) within a 60 km radius was Aus $35.45 per day. Assuming that this is the average expenditure of the 23,500 sea turtle viewers, the total direct expenditure in the region from sea turtle viewing is approximately Aus $833,075. Since the average number of days spent by these visitors is 3.21 days, the amount of expenditure in the region for the sea turtle season was approximately Aus $2.68 million for the 1999/2000 season. In the case of whales, assuming that the average expenditure of 62,670 whale watchers in the Hervey Bay region for 2000 was Aus $125.97 per day, then the total direct expenditure is approximately Aus $7,894,539. Since the average number of days spent by whale watchers is 3.76 days, the expenditure in the region during the season is approximately Aus $30 million.

Sources: Tisdell and Wilson (2002a); Wilson and Tisdell (2003)

It is commonly thought that the economic value of a commodity, such as wildlife tourism, can be appropriately measured by expenditure on it. While this can indicate primary impacts of this expenditure in generating income and employment, such impact analysis does not represent economic value or worth and in the absence of this particular economic exchange, money may be spent on something else that would also generate income and employment. For example, suppose that annual expenditure on wildlife tourism in a region is estimated to be $100m annually. This will support income and employment in the locality. Now imagine that the wildlife disappears and with it wildlife tourism in the region. In such a case, the land previously utilised by wildlife may be converted to farms, or alternative economic uses. Then $100m annual expenditure on wildlife tourism in the region might be diverted to purchase those alternative products or spent in other regions. For instance, $70 million might be spent in the local region purchasing these products. Therefore, because of these issues it is important to take into account the net economic impact of wildlife tourism for a country/region.

Because wildlife provides monetary benefits from tourism and creates employment, governments/states have an incentive to conserve wildlife even though all the benefits cannot be estimated or may nor remain in the areas/region where wildlife is viewed. Monetary benefits from wildlife usually provide an important incentive for government intervention in conserving wildlife because the overall benefits to a country from wildlife tourism are positive (despite some leakages abroad), although all of these benefits may not accrue to local areas/communities where wildlife tourism occurs. In the absence of wildlife for viewing/wildlife tourism, some groups of tourists may by-pass the country or spend fewer days in a region or country. This is more likely to be the case with specialists such as birdwatchers. For example, *Birding Tours Worldwide* (2003) advertise many countries specifically for their birdlife.

3. Total Economic Value and Wildlife Tourism

Economics concentrates on valuation to provide guidance on how to deal with the basic economic problem, the problem of reducing economic scarcity. Because individuals as a whole want more from available (limited) resources than these resources are able to provide, comparative economic scarcity exists. The economic problem then arises of how to manage, administer or allocate these scarce resources, so as to satisfy human wants to the greatest extent possible. The management of wildlife to satisfy human desires for tourism constitutes a resource use.

Welfare economics tries to express all the economic values that humans assign to resources in terms of money. These economic values are derived solely for the purpose of addressing the basic resource allocation problem, as envisaged by economists. Most frequently these monetary values are based on the willingness of individuals to pay for the use and conservation of a resource, for example, a particular species of wildlife.

A major issue for economics is how to determine appropriate monetary measures of value in order to address the basic choice problem effectively. A related issue is the extent to which economic and social systems (of which the market system is an example) ensure a socially efficient or optimal allocation of resources from the point of view of satisfying human wants. It is found that actual economic, social and political systems often fail to satisfy human wants efficiently. This is reflected in the fact that if available resources were better managed, some people could be made better off without anyone being made worse off. In such cases,

economists claim that a social improvement is possible. Whether or not a social economic improvement is possible is usually decided by economists on the basis of the Kaldor-Hicks test, sometimes called the potential Pareto improvement test. According to this test, a change is a social improvement if those who gain from it could compensate the losers and remain better off than before the change.

Market and other systems sometimes fail to satisfy human wants to the extent possible because they do not take full account of total economic value. They may, for example, fail to conserve wildlife resources to the extent desirable for tourism and other purposes, because the relevant monetary payment in the market system for these resources is much less than their total economic value, as measured, for example, by the maximum amount that individuals would be prepared to pay for these resources. Market systems fail to take into account unmarketed values because owners of resources providing unmarketed or unmarketable economic values gain no financial benefit by taking these values into account in their decision-making. This may call for government intervention in the system to take account of unmarketed economic values, for example, to protect wildlife by providing national parks.

The total economic value of a resource has been defined as being equal to its *total economic use value plus its total economic non-use value* (Pearce et al. 1994). Note that these values are all measured in money terms, for example, dollars.

Non-use economic values usually involve relatively intangible attributes of resources. In the case of a wildlife species, non-use value includes the economic pure existence value of the species, its bequest value and arguably its option values – because some textbooks in environmental economics also categorise option values under use values (for example, Pearce et al., 1994) because of the possibility of using the resource in the future. Individuals often place an economic value on species they will never use nor see as shown by their willingness to pay for their continuing existence. Some individuals wish to conserve species for future generations and are prepared to pay for this. This represents an economic bequest value. Option value refers to the willingness to pay for keeping open the option of possibly using a species in the future, even if it is not being used now or to accommodate a possible change in its non-use values. For some species, non-use values constitute nearly all their total

economic value as illustrated in Box 2. For other species, their economic use value constitutes most of their value.

Box 2

The Relative Importance of the Non-use Economic Value of Wildlife Species: Elephants and Tree Kangaroos

Estimates of the economic value of wildlife species show that for some species non-use economic value accounts for the major part of their total value and that use value, including tourism use value, can constitute a low fraction of this value. For example, Tisdell and Wilson (forthcoming, a) found that non-use value accounted for 80 per cent, or more, of the total economic value of Australian tree kangaroos for more than half of a sample of over 200 respondents in Brisbane, Australia. In this case, those surveyed were, asked how much they were prepared to donate as a one-off payment, to help conserve Australian tree kangaroos. They were then asked to state what percentage of this payment (an indication of economic valuation) was dependent on their being able to see or use Australian tree kangaroos. The residual was used to indicate non-use economic value. Bandara and Tisdell, (2003), used a similar but more detailed approach. They found from a sample of 300 residents in Colombo, Sri Lanka, that the tourism economic value of the Asian wild elephant only accounted for 26 per cent of its economic value and that more than half its economic value could be attributed to its non-use value. Both Asian elephants and tree kangaroos in the wild are used for tourism purposes. Their non-use values help foster political support for their conservation. This in turn assists the sustainability of these species (and other species associated with the same habitat) thereby contributing to the sustainability of associated wildlife tourism.

The economic value derived from wildlife tourism is an economic use value. Tourism use of wildlife may be consumptive, as in the case of recreational fishing or hunting, or it may be non-consumptive, as in the case of whale watching or in the viewing of wildlife generally. Often tourism use of wildlife is not marketed or priced, as in many national parks or protected areas where entry is free, or it is underpriced. This can result in the false conclusion that the wildlife concerned has little or no economic value and in turn, can result in inappropriate social decisions about wildlife conservation.

For example, suppose entry of visitors to a protected area is free, such as in the case of many Australian or New Zealand national parks. Suppose that the most profitable alternative use of the area is for the grazing of beef cattle. This alternative may provide a profit of $1 million per year to graziers, but renders the land unsuitable for wildlife tourism due to loss of wildlife species and habitat change. If, however, the economic value of the area for wildlife tourist exceeds $1 million, it is socially optimal, in terms of satisfying wants, to protect the land and use it for wildlife tourism rather than use it for cattle grazing. The decision about which is

the better resource-use alternative in economic terms requires careful measurements to be made of the economic value of tourist use. Even if tourist use value is less than $1 million, the addition of non-use economic values of the protected area may imply that the best economic use of the land is one involving nature conservation and its use for tourism. This, for example, would be so if this alternative results in a non-use value of $400,000 per year for the area and a use value for tourism of $800,000 per year.

Note also that while the standard economic theory of total economic value assumes that the components of total economic value are additive, there may be interaction between the components and consequently the additivity assumption is then not satisfied. For example, the non-use economic values of a wildlife species may be increased by seeing these and by favourable ecotouristic experiences (Tisdell and Wilson 2002a) as illustrated in Box 3, and as detailed in Tisdell and Wilson, (forthcoming c). Furthermore, not everyone is convinced about the appropriateness of the values and assumptions underlying the total economic value concept (see for example, Erickson, 2000 and Tisdell and Wen, 1997a). Despite such limitations, the concept of total economic value marks a significant step forward compared to valuation techniques that only consider use values.

Box 3

The Impact of Wildlife Tourism on Economic Values:

Ecotourism and Turtles

Economic values placed on wildlife for tourism and other purposes are not static. For example, it has been found that the ecotourist's experiences with wildlife can increase their economic support for the conservation of the species concerned. The perceptions of visitors of both economic use values and non-use values of a wildlife species can rise as a result of contact with the species and the educative experience involved. For example, Tisdell and Wilson (forthcoming, c), Tisdell and Wilson (2002c, 2001a) found that on average, visitors to Mon Repos Turtle Rookery, substantially increased their stated willingness to pay for the conservation of sea turtles within Australia after their experience. Over 40 per cent of respondents in a sample of 519 said that as a result of their visit to this rookery, they would like to contribute more money to the conservation of sea turtles. Only one per cent of the sample said they would contribute less. The majority of visitors (98%) were also convinced following their visit that more action should be taken to minimise threats to sea turtles.

4. Measuring the Economic Value of Wildlife Tourism as a Form of Land or Resource Use

Sometimes just one species of wildlife is the sole, or virtually the sole feature, attracting visitors to a particular area. On other occasions, a combination of different wildlife species and other features attracts visitors to a site. Then it can be difficult or impossible to disentangle the separate economic values of each component for tourism, because the tourism economic value of the combination exceeds the sum of the values of its individual components. In the first case, the travel cost method may be used or a variant of the contingent valuation method employed to determine the economic value of the species for tourism. Similarly, the contingent valuation method can be used in the second case for valuing the overall environmental attraction.

The travel cost method (discussed, for example, in Hanley and Spash, 1993, Ch. 5) is the most popular and the longest established method for estimating the demand for visits and value sites used for outdoor recreation (Hotelling, 1947; Clawson, 1959, Knetsch, 1963; Clawson and Knetsch, 1966). Described as a revealed preference method, it uses the cost of travel as a surrogate for the price of using a tourist site. Those who travel further usually pay

more to visit a site. Other things equal, we would expect those individuals living further away from a wildlife tourist or recreational site to visit it less frequently than those closer by. It is possible empirically to estimate the relative frequency of visits at a site from zones around the site as a function of the cost of travelling to the site. This relationship is called the trip generation function.

This function can then be used to estimate the aggregate demand curve for visits to the site. The demand curve provides a basis for placing an economic value on tourism at the site. If wildlife is the prime attraction, then, as explained by Loomis (2000), the demand curve can provide a basis for measuring the economic value of wildlife tourism at the site. The area under the demand curve represents the maximum willingness of visitors to pay for visits to the site. If entry to the site is free and no on-site costs are associated with visits, the area under the demand curve represents the overall economic value of the site for (wildlife) tourism.

In the case illustrated in Figure 1, the line marked, DD represents the demand to visit a wildlife area as a function of the price of a visit. One way of estimating this demand relationship empirically is by the application of the travel cost method, but it is not the only possible method for doing this. The maximum willingness of individuals to pay for visits is equivalent to the area of the shaded triangle in Figure 1, namely $500,000 per annum. If visits are free, this is the economic surplus of visitors. It is also the annual economic value of the site for tourism if visits impose zero maintenance costs. If the next most economic use of the land is for agriculture and this has an annual economic value of $200,000 (level of profit), optimal social economic choice would require the site to be allocated to (wildlife) tourism. This is so even though use of the site is free. It should, according to the principles of welfare economics, be free if there are no running (or marginal) costs to cater for visitors, and no crowding problems.

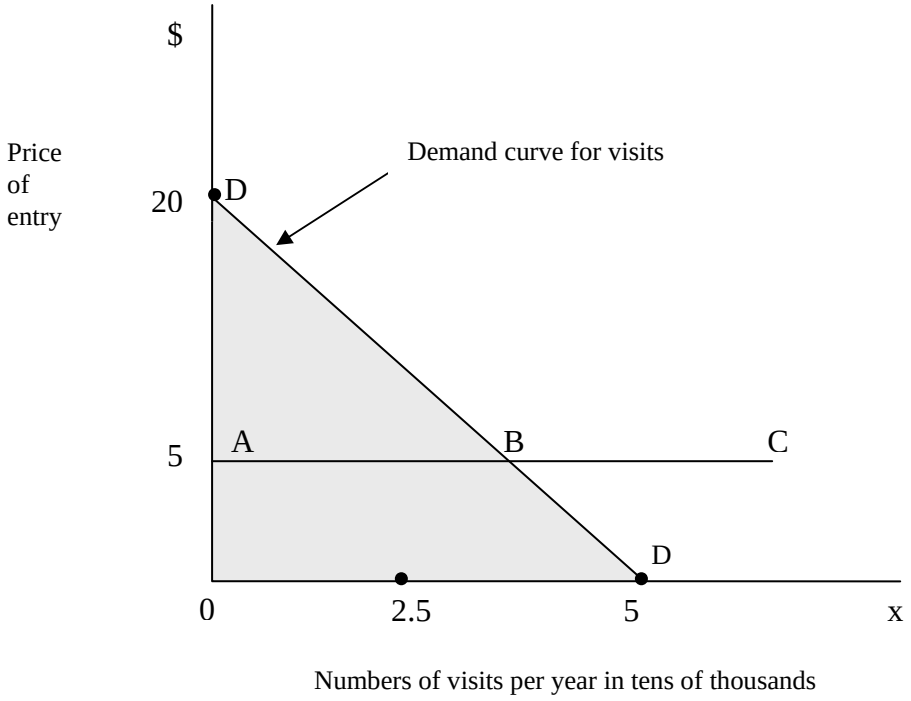


Figure 1: The economic value of a protected area for tourism or outdoor recreation as indicated by the economic surplus (the shaded area) obtained by its visitors if entry is free and marginal cost is zero.

According to economic welfare principles, visitors to a site should be charged the marginal cost of catering for their visits because this is the economic opportunity cost of resources used to service visitors. If that is zero, then free entry to the site is socially optimal. On the hand, if, for example, catering costs are $5 per visit, a fee of $5 per visit is optimal, assuming no collection costs. At point B, the extra value placed on visits by tourists, as indicated by the line DD, just equals the extra cost of catering for an extra visit. The net economic value of the protected area for tourism would then be equivalent to the triangle above line AB.

Observe that it is not socially optimal to charge a monopoly price or to maximise total income or revenue at a tourist site. This can be illustrated by Figure 2. The monopoly-profit maximising price is $10 per visit, the value for which marginal revenue indicated by the line KT equals zero, and provides an income from the site of $250,000 per annum, equal to the area of rectangle OTSR. It leaves visitors with an economic surplus of $125,000 per year. Hence, with this charge (fee), the overall economic value derived from the site is $375,000 per annum. This is less than its overall economic value when entry is free, namely $500,000

per annum. So monopoly-pricing results in *lost* economic value annually of $125,000, equal to the area of triangle TDS.

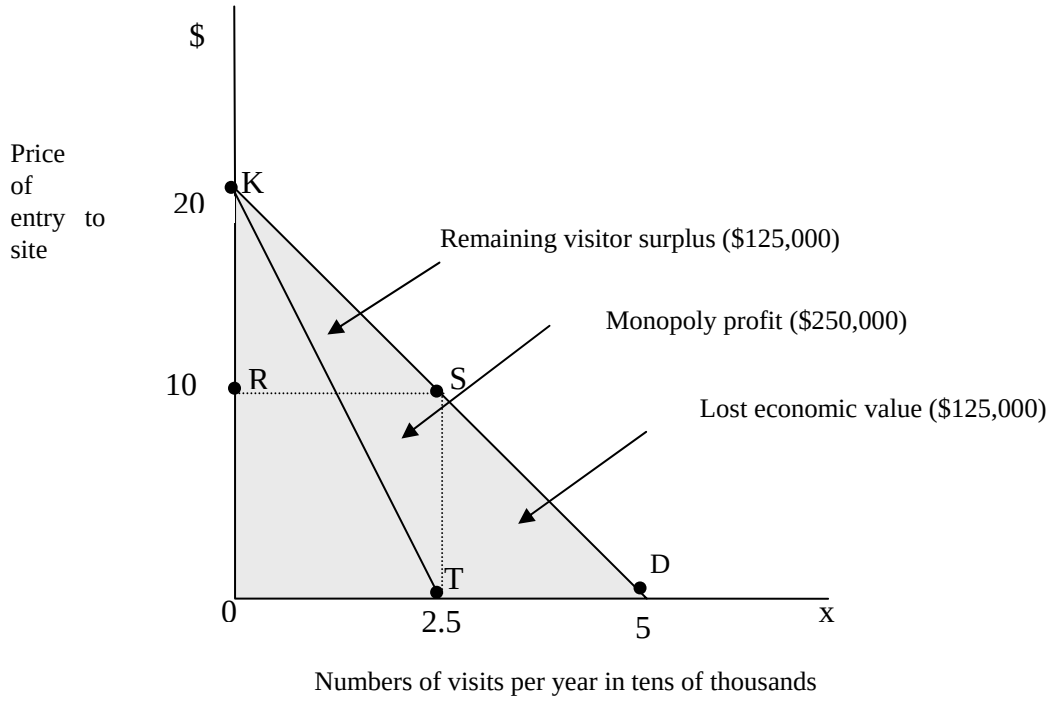


Figure 2: An example illustrating how maximising income or expenditure on visits to a wildlife site can reduce the social economic value of the site.

The economic principles for determining socially optimal fees for wildlife tourism are complex. But from this example, it can be seen that a larger amount of receipts or income (for the operator) from wildlife tourism does not necessarily represent greater economic value. In the above case, maximum revenue from wildlife tourism actually reduces the economic value obtained from wildlife tourism by $125,000.

Observe that charging the monopoly price would boost public finances but is indefensible from the point if view of maximising social economic benefits from the available wildlife resources. Again, observe that if all receipts were spent locally that this would boost local incomes and employment to the greatest extent if receipts happened to be maximised. This local 'benefit', however, would be at the expense of national or global satisfaction of economic wants. Thus, social indications obtained from economic impact analysis can conflict with the goal of maximising national or global economic welfare. Nevertheless, politically, impact analysis often is given a lot of weight.

Note that this analysis does not differentiate between domestic and foreign tourists. It basically adopts a global outlook. However, some countries concentrate on the maximisation of national economic benefits and charge higher prices to foreigners than locals to visit their national parks. This may increase their national economic welfare. Developing countries in particular, often believe that such price discrimination is justified on income distribution grounds. However, if all nations adopt such policies, global economic welfare can be reduced by their national selfishness.

For some economic allocative purposes, it is only necessary to know the amount of the economic surplus obtained by visitors to a site and not their demand curve for visits. By using this direct estimate, it is often possible to determine whether the use of a site for wildlife tourism is economically more valuable than alternative uses. In fact, Navrud and Mungatana (1994) use this approach (as illustrated in Box 4) to estimate the economic value of flamingoes for tourist visits to Lake Nakura in Kenya. This method of estimation of the economic surplus is similar to the contingent valuation method because it relies on statements from respondents about the value or economic benefits to them of a resource. The contingent valuation method, outlined in detail in Bateman et al. (2002), is classified as a stated preference method. Mostly it has been used to estimate the total economic value of economic resources rather than their tourist economic value, as was done by Navrud and Mungatana (1994). As can be inferred from the discussion in the previous section, the total economic value of wildlife resources at a tourist site will normally exceed their tourist economic value, and can never be less than their tourist economic value.

Box 4

Estimates of the Economic Value of Flamingoes for Tourism

Navrud and Mungatana (1994) have used economic methods to estimate the economic value of flamingoes for tourism in Lake Nakaru National Park in Kenya. They used both a type of contingent valuation method (CVM) and a travel cost method to derive estimates of the lake's economic value for tourism. From the results of their CVM-type analysis, they found the visitors' economic surplus to be equal to approximately US$7.5 million annually, with one-third of this surplus being due to the presence of flamingoes. The motive for the study was that Lake Nakaru was becoming increasingly polluted from industrial and other developments thereby threatening the survival of its flamingoes. Touristic economic value of flamingoes (which depend on an unpolluted lake) provided an economic argument for regulating the emission of pollutants into the lake. These authors obtain a much higher value for the economic value of Lake Nakaru National Park for tourism using the travel cost method rather than from their version of CVM. This is most likely because travel costs were incurred by visitors (especially international ones) to visit multiple places. This would have limited the applicability of the travel cost method and inflated the estimates of the economic value of Lake Nakaru National Park to visitors.

New economic techniques for estimating the economic value of wildlife continue to be developed. Some of new techniques provide estimates of the economic value of different attributes or characteristics of wildlife for tourism or recreation. Such methods include the hedonic travel cost method (Brown and Mendelsohn, 1984; Ward and Beal, 2000) and various choice modelling techniques (Hanley et al., 2001; Bennett and Blamey, 2001). Boxall et al. (1996) have, for example, applied choice modelling to suggest policies to increase the economic value obtained from recreational moose hunting in Canada. However, as yet choice modelling techniques are far from perfect for economic valuation.

Techniques of economic valuation have been developed primarily as an aid for making improved economic choices about resource use. It is only by understanding the basic economic problem and the purpose of economic valuation that one can appreciate the purpose of the economic techniques developed for valuing wildlife and other natural resources used for tourism or outdoor recreation.

5. Economic Implications of Empirical Estimates of the Importance of Wildlife Tourism

Several quantitative estimates are available of the importance of wildlife tourism as a part of human activity. In the light of the above discussion, we can now assess the importance of such estimates from an economic perspective and point out their limitations.

Most of the estimates given are for expenditure (equals revenue obtained by others) on wildlife tourism. For example, Hoyt (2000) estimated an expenditure of US$1,049 million on whale watching globally alone and Filion et al. (1994) attributed a minimum of 20 per cent of expenditure on international tourism to wildlife based tourism. As pointed out in Chapter 1, large expenditures are made annually on wildlife tourism and recreation in the USA. This indicates that there is substantial demand for wildlife tourism and associated hobbies.

These estimates, furthermore, imply that much income and employment is generated by wildlife tourism. The employment and income directly created by wildlife tourism results at the first stage from initial expenditure on wildlife tourism. In turn, when some of this income is spent by the recipients, this creates further income and employment. Economists say that a multiplier effect is present. Filion et al. (1994) suggests that on average this multiplier for wildlife tourism is approximately 2. There is no doubt that such economic impacts assume political significance and sway politicians. However, as pointed out above, income and employment can also be generated by alternative economic activities to tourism and expenditure on tourism does not represent net economic benefit or net economic value.

Nevertheless, Prasad and Tisdell (1998) found that in Fiji, tourism (some of which is nature based) had a bigger economic impact on the Fijian economy than sugar cane production because the income multiplier of the sugar industry was lower than that of the tourism industry after allowing for import leakages.

Income and employment analysis can be especially useful at a regional level. Given income distribution concerns, governments are often anxious to encourage the development of industries that can promote development and create employment in depressed regions. Regional income and employment multipliers can be utilised to compare the potential of alternative industries to create regional employment and income. Due to economic leakages from the local economy, these multipliers will be much lower than national or global

multipliers. Leakages are usually higher in peripheral regions (Hohl and Tisdell, 1995, reprinted in Tisdell, 2001) and small economies than in central regions and large economies.

Nevertheless, the development of wildlife tourism can be a valuable means of promoting economic activity in depressed and remote regions despite the of high economic leakages. Wen and Tisdell (2001) concentrating mainly on wildlife tourism in Xishuangbanna Prefecture found that growth in ecotourism contributed significantly to the economic development of Yunnan Province, China. In Australia, Hohl and Tisdell (1995, reprinted in Tisdell, 2001) found that nature-based tourism, despite economic leakages, provided significant economic opportunities for the residents of Cape York Peninsula.

The number of persons engaging in wildlife tourism is often used to highlight its importance. It is estimated that each year millions engage in wildlife tourism in the United States. Globally the numbers may run to many millions. But these numbers, may not be accurate indicators either of the economic impact nor of the net economic value of wildlife tourism, as pointed out by Tisdell and Wen (1997b, reprinted in Tisdell, 2001).

For example, few may engage in some types of wildlife tourism or recreation yet the economic value placed on it by participants (or alternatively their total expenditure) on it can be much greater than for activities in which many engage. For example, trophy hunting attracts comparatively few tourists, but per capita expenditure by trophy hunters is very high and their economic impact can also be high. We cannot judge the economic impact nor the economic value of different forms of wildlife tourism merely by comparing the numbers of persons participating in these. However, participation figures may interest politicians in gauging the number of stakeholders, even if they do not adequately reflect the intensity of the interest of participants.

Most available monetary estimates of the ‘economic worth’ of wildlife tourism do not successfully measure its economic value but rather concentrate on costs or expenditure involved in it. Although, if accurately calculated, these dollar sums indicate economic impact, they do not reflect net economic worth (net economic value). The latter concept is relevant if the economic focus is on resource use and one wants to minimise collective economic scarcity.

Thus, measures of the importance of wildlife tourism need careful scrutiny from an economics viewpoint, and vary in economic relevance according to the policy or purpose to be considered. In particular, expenditures or costs incurred in engaging in or catering for wildlife tourism are a poor indicator of the net economic value of wildlife tourism in satisfying economic wants collectively.

Can we generalise about economic features of the demand for wildlife tourism? Some generalities are possible but they have not been neatly summarised in one place. However, on the basis of empirical evidence and analysis, Tisdell, (1974, reprinted in Tisdell, 2001, p.285) observed:

"Such factors as (1) rising incomes, (2) more education, (3) more available leisure time, (4) improvements in transportation, (5) the falling costs of recreational equipment relative to incomes and (6) economic development generally have accelerated the demand to use natural areas for recreational purposes. At the same time as the demand for natural areas has increased, the supply of these has dwindled because increased amounts of land have been appropriated for agriculture, for industry for mining, to accommodate urban sprawl, to provide housing at holiday resorts and to meet other demands of a high consumption society with a rising population. On the face of it, the relative value of saving natural areas for recreational and conservational purposes seems high and indeed, there may be a case for reconverting some developed land to a more natural state."

Sinden (1977) provided Australian evidence in support of the above generalisations, which also apply to wildlife tourism. They are also consistent with the observations of Rankin and Sinden (1971).

With economic development or economic growth, we can expect both the comparative net economic value or worth of wildlife for tourism to grow, and also the economic impacts of wildlife tourism to increase. This means that wildlife tourism will become comparatively more important from an economic viewpoint in the future. Since species extinction is as yet irreversible, this provides a powerful argument (over and above total valuation considerations) to conserve wildlife species and resources to cater for future economic needs, including those of future generations.

Much can also be said about the economics of tourist demand at the level of individual and in particular localities. However, influences on the demand of individuals for wildlife tourism are covered extensively elsewhere and useful guidelines about demand for regional wildlife resources can be found in McNeely et al. (1992) and in Tisdell (1996).

6. Economic Instruments and Wildlife Tourism – Their Purpose and Usefulness

The allocation and use of scarce resources, including the conservation of wildlife for tourism, not only needs relevant incentives, but also controls so that available resources are not over utilised. This is applicable for both the public and private provision of wildlife for tourism purposes.

Table 1

Classification of policy instruments based on their degree of flexibility

← Minimum Flexibility →	← Moderate Flexibility →		← Maximum Flexibility →	
← Maximum Government Involvement →			← Increased Private Initiative →	
← Control Oriented →	← Market Oriented →		← Litigation Oriented →	
Regulations and standards	Charges, taxes and fees	Market creation	Final demand intervention	Liability Legislation
General examples				
Relevant agency restricts the amount of operators of wildlife tourism and users (visitors) at a site and restrictions placed on certain areas. Compliance is monitored and sanctions made (fines, cancelling/suspension of license, jail terms) for non-compliance	User charges: The environmental authority, the National Parks and Wildlife Service or landholders charge fees at wildlife tourism sites. Fees are aimed at creating incentives for providers of wildlife, to reduce tourist numbers or both.	Tradable permits: Environmental authority establishes a system of tradable permits in the use of wildlife resources. Trading is permitted at unregulated prices	Performance rating: Environmental authority or National Parks and Wildlife Service requires wildlife tourism operators to provide information on the use of wildlife for their business. Notices, informing visitors about the threats to wildlife and threats from wildlife. Eco-certification maybe provided for such operations.	Strict liability legislation: The tourist operator or user or both are required by law to pay any damages to those affected or wildlife injured. Damages parties collect settlements through litigation and court system
Specific examples of applications: • Licensing of wildlife watching activities • Rationing use • Quotas • Zoning • Land use restrictions • No go areas • Distance restrictions for viewing wildlife	• Various user fees to watch wildlife • User charges and permits • Taxes on hunting equipment/fishing gear use • Subsidies to operators/investors • Non compliance charges	• Property rights attached to wildlife resources • Tradable permits for use of wildlife for tourism/hunting or subsistence hunting	• Ranger/display education • Other interpretive facilities • Black-list wildlife tourism operators • Disclose legislation requiring operators to adhere to specified regulations • Provide warnings about dangerous animals and dangers to wildlife from tourism.	• Damages compensation for all parties • 'Zero Net Impact' requirements • Liability on neglecting • safety requirements • Insurance requirements for wildlife tourism operators

Source: Adapted from Da Motta et al. (1999, p.181)

Several policy instruments have been used/discussed in the economic literature that can be used to manage wildlife tourism. These policy instruments can be used not only to provide incentives or place controls on providers of wildlife for tourism (operators) but can also be aimed at users of wildlife (tourists). Apart from the use of policy instruments to provide incentives or controls, these instruments may also be aimed at generating revenue which could be used to develop infrastructure facilities and for conservation purposes.

Sustainable use of resources is a major current policy objective and Davis et al. (2001) have shown that a wide range of economic policy instruments can be used in managing wildlife tourism to meet the aims and objectives of administrators, which of course change from situation to situation. In other words, one set of economic instruments that works in a particular situation may not be the best in another situation or place. Outcomes from policy instruments can vary a great deal according to circumstances. Some of the available policy instruments are summarised in Table 1. Probably policy instruments listed under 'charges, taxes and fees' and 'market creation' in Table 1 are most widely recognised as involving market or economic instruments, but those under 'regulations and standards' and 'liability legislation' also involve aspects of institutional economics.

The choice of instruments by administrators depends upon many considerations and not just economic efficiency. Criteria that administrators may consider apart from economic efficiency include low information costs, equity, dependability, adaptability, provision of incentives and political acceptability (Turner et al. 1994). Despite the large array of policy instruments available, regulatory instruments are most commonly used (Turner, et al. 1994), including the management of wildlife tourism. The use of instruments such as regulations and standards maybe preferred because of precautionary principle, especially when outcomes are unknown. It has been argued that regulatory instruments require less information than economic-type instruments, are more dependable (subject to adequate policing) and have a higher degree of political and administrative acceptance (Turner, et al. 1994). Nevertheless, regulatory instruments allow minimum flexibility, involve 'maximum' government intervention and are 'control oriented'. Examples of regulatory instruments apart from 'no go areas', bans, zoning and land-use restrictions are the licensing of operators of wildlife-tourism providers The latter sometimes falls into the category of economic instruments. For instance, whale-shark tour operators in the Ningaloo Marine Park and commercial tourism operators on the Great Barrier Reef, Australia have to be licensed, pay an annual fee and

operate within stipulated guidelines. This limits the number of operators and can prevent the over-use of resources. Licensing involving fees also generates revenue. Another commonly used economic instrument is the levying of fees and charges on tourists to view wildlife. Tour operators charge a fee, part of which is paid to the managing authority such as in the case of whale shark or the Great Barrier Reef viewing. Fees may also be charged to enter nature reserves/national parks such as in the case of national parks in the US or some Australian national parks such as Kakadu national park in the Northern Territory. Fees are also often charged to enter nature reserves managed by non-governmental organisations, such as the Royal Society for the Protection of Birds (RSPB) in the UK.

Apart from generating revenue, fees can be used to reduce the number of visitors to a site, but their effectiveness in doing this depends on the elasticity of the demand curve.

There is unutilised scope for greater use of some economic instruments. For example, there is little use of market–based instruments involving tradable rights which have less government/regulatory intervention. This is the case not only in wildlife tourism, but in other sectors as well. Hanley et al. (1997) point out that lack of market-based instruments is due partly to ignorance on the part of policy-makers, practical problems, institutional problems and opposition from administrators and policy makers. However, market-based instruments based on tradable rights are used in wildlife tourism in a limited way in some countries as shown in Box 5. The potential exists for the further use of these instruments in wildlife tourism as suggested, for example, by Davis et al. (1998) and Davis and Tisdell (2001), for instance, in the trading of licenses of the whale shark and those of the Great Barrier Reef commercial tourist operators.

Box 5

Use of market-based instruments in wildlife tourism

Wildlife tourism in Botswana is growing and every effort is made to obtain the maximum benefits from tourism. One example (Rozemeijer 2000) involves the use of tradable permits in the use of wildlife. In this instance Community Based Organisations (CBOs) have been issued with exclusive quota rights in the use of wildlife. The community can decide whether to hunt the quota or not, and how to hunt it. According to this system the species can be divided over the community members for subsistence hunting or the quota can be sold to a private sector partner(s) for tourism. Usually the community sells the commercially valuable species such as elephant, zebra, lion and leopard to the private sector partner(s). These species have no subsistence use for local people. Valuable trophy (male) animals such as buffalo, eland, gemsbok, sable, wildebeest and kudu are sold while females (meat value) and the lesser antelopes such as duiker, impala and springbok are retained for subsistence hunting. Trophy hunting joint venture agreements involving tradable permits generate large sums of money at community level and substantial employment during the odd six months hunting seasons.

In addition, institutional changes can bring economic benefits. An example is the new institutional economics approach associated for instance with Coase (1960). It emphasises the importance of property rights and bargaining between the users and parties affected (Tisdell, 1993). The 'Coase theorem' advocates that 'regardless of who owns the property rights there is an automatic tendency to approach the social optimum via bargaining' (Turner et al. 1994, p.153). Wildlife tourism could make use of this approach or a variant of this approach in settling disputes between wildlife tourism operators and land owners or wildlife tourism activities and individuals affected by noise, crowding, pollution and so on.

Yet many wildlife tourism activities operate without being subject to policy instruments. One example is the 'jumping crocodile' cruises conducted on the Adelaide river in the Northern Territory, Australia. Entry and exit for operators are not regulated and there is no tenure in the use of the river for crocodile watching tours. This could create disincentives for investing in these tourism businesses.

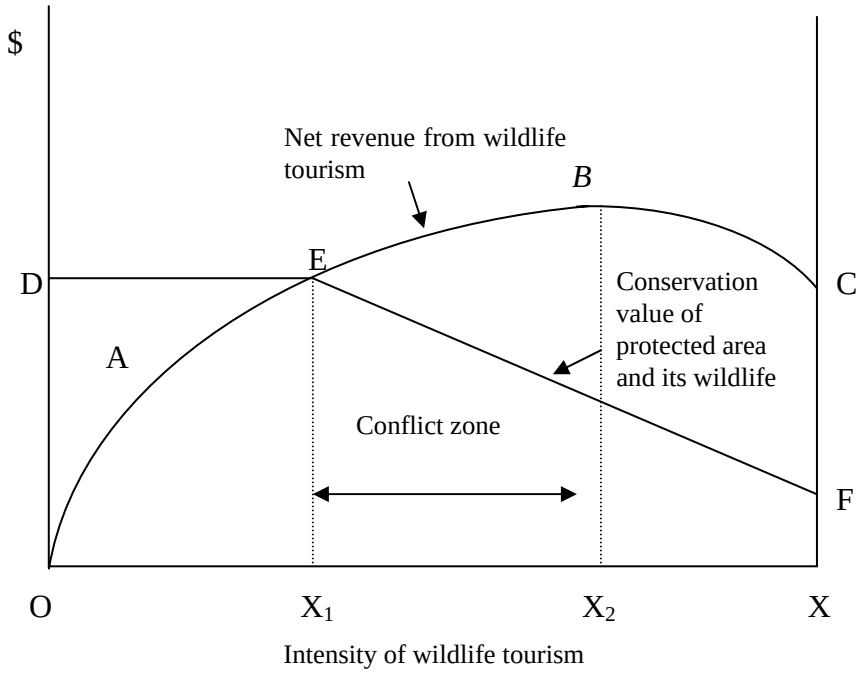
Lack of incentives/controls can retard the growth of a sustainable wildlife tourism industry. Furthermore, a lack of policy instruments can lead to forms of wildlife tourism which are dangerous. For example, in the south of Sri Lanka visitors are taken out in unsuitable (leaking) catamarans to watch herds of wild elephants, sometimes getting too close to the animals. Not only are such forms of tourism dangerous, but have negative consequences for wildlife tourism as a whole. As was discussed, economic policy instruments could be used to achieve better outcomes for sustainable wildlife tourism while also meeting some of the other criteria mentioned above.

7. Conclusions

Wildlife has economic use and non-use values and the sum of these two components make up the total economic values. Use values of wildlife may or may not be priced or marketed. Wildlife tourism creates market use values for some species but not others. The mere absence of market values arising from wildlife tourism for consumption does not mean that such species do not have economic values. These other values of wildlife include indirect use values such as the ecological values they perform in the environment and the non-use economic values they have for humans. Sometimes the non-market values of species, exceed their market economic values. Therefore, it is imperative that non-market economic values of wildlife are considered in the decision making process when land is allocated for commercial use.

Tisdell and Wilson (2002b), suggest that there is a strong correlation between wildlife tourism numbers and the frequency of sightings of wildlife. If the frequency of sightings is low or sightings cannot be guaranteed, then the number of wildlife tourism visitors is likely to fall. Hence, demand for wildlife tourism can require the maintenance of sizeable populations of wildlife, and this can result in positive outcomes from the viewpoint of conservation. Therefore, wildlife tourism and conservation outcomes need not be incompatible. However, there are instances where this is in conflict. This is illustrated in Figure 3. In Figure 3 let curve OABC represent the net revenue which a protected area with wildlife can earn from wildlife tourism, and let the curve DEF represent the conservation value of this area and its wildlife, which may be indicated by an index. In this case the protected area could be used for wildlife tourism up to an intensity X_1 without compromising the conservation value of the area and its wildlife. In this case wildlife tourism and conservation are not incompatible. However, any expansion of the wildlife tourism beyond this point to generate extra revenue,

say to level X_2 may compromise the conservation values of the area and its wildlife. This is sometimes a serious problem in China (Tisdell, 1999a) and elsewhere and leads to situations where wildlife tourism and conservation conflict.



Source: Adapted from Wen and Tisdell (2001).

Figure 3: Possible conflict between wildlife tourism and conservation of wildlife

Various policy instruments, including economic ones, can be used to bring about sustainable outcomes, for both wildlife tourism as well as for conservation. If these policy instruments are well used, then a social economic improvement is possible. Economics, therefore, could play a major role in ensuring positive outcomes for wildlife tourism as well as for conservation.

There are many important issues in wildlife tourism that need to be addressed in future research. Some of these include:

(1) How much money wildlife tourism generates and how much of this should be used for conservation. Furthermore, it is important to examine the economic benefits to property owners from wildlife tourism;

(2) There is a need to consider not only the economic use values from wildlife tourism but also consider non-use values arising from it;

(3) The role market-based instruments can play in wildlife tourism and the conservation of wildlife needs more attention. At present, the use of such instruments for wildlife tourism purposes is limited;

(4) The welfare effects of charging entry fees to publicly managed national parks and wildlife tourism sites need further consideration. Conservation implications and provision of infrastructure from entry fees should also be examined; and

(5) The reasons for the increasing degradation of wildlife resources despite the large sums of money generated from wildlife tourism need to be understood.

The issues discussed in this chapter have important implications for planning, design and management of wildlife tourism for various stakeholders. Wildlife is a valuable resource and has tourism and other economic values, but needs to be exploited with conservation in mind. These objectives are inseparable. Furthermore, the potential for developing new ventures in wildlife tourism exists but business aspects have to be taken into account. Because of the various economic values of wildlife, commercial developers of land should weigh all options before deciding on the appropriate use of land. It may well be that wildlife tourism can be more profitable than producing agricultural commodities, especially in the long-term. It is also important for conservation managers and wildlife tourism operators to consider the non-use values of wildlife and in some species, as was shown, exceed the use values. Furthermore, wildlife tourism can influence the non-use values individuals place on species. All this could increase the economic value of wildlife tourism.

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