

Pricing the enjoyment of ‘elephant watching’ at the Minneriya National Park in Sri Lanka: An analysis using CVM



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ABSTRACT

The Minneriya National Park (MNP) is noted among elephant conservation areas in Sri Lanka for the excellent elephant (*Elephas maximus*) viewing opportunities that it provides to both domestic and foreign tourists. Given its high reputation, the present study estimates the optimum entrance fee that could be charged from visitors for ‘observing elephants’ at the Park. The Contingent Valuation Method (CVM) was used to determine the appropriate entrance fee. The study interviewed 407 visitors to MNP, using a closed-ended questionnaire. The estimated mean willingness to pay (WTP) per domestic visitor was SLR 172.00 (USD 1.30). If this park fee is implemented, the revenue of the Park would increase up to SLR 6.81 million per year, which would be a 49% increase in revenue and a 48% decrease in visitors compared to current values. The study recommends introducing a pricing policy for observing elephants at the Park.

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1. Introduction

According to Worboys et al. (2005), wildlife tourism is an important component of the international and domestic tourism industry. Depending on the region, on average, wildlife tourism accounts for 20 to 40% of international tourism (Filion, Foley, & Jacquemot, 1992; Giongo, Bosco-Nizeye, & Wallace, 1993). Wildlife tourism encompasses a range of activities, which includes bird watching, wildlife viewing, photographic and walking safaris, reef-diving, whale watching, trophy hunting and sport fishing. Sri Lanka is a country that is promoting tourism, including wildlife tourism, in the post-Civil War context, given its reputation worldwide as a place of great natural beauty and attractions. According to official records, roughly 14% of the land area of Sri Lanka comes under the Department of Wildlife Conservation (DWC), which ranks among the highest in Asia (Anon., 1995; DWC, 2001). National parks are the only protected areas that permit recreation in Sri Lanka and one of the main goals of DWC is ensuring ‘sustainable tourism’ in national parks. MNP is one such national park which is popular among tourists. Though the Park allows bird watching, elephant viewing, and photography, ‘elephant viewing’ continues to remain the main attraction among its visitors.

Sustainable tourism has become today a catch-all phrase for many forms of tourism development. One of the criteria of sustainable tourism is the optimal use of all resources while maintaining ecological processes and conserving natural heritage and biodiversity (UNEP, 2006). The current trend towards reductions in fund allocation for operating protected area networks in Sri Lanka has however meant that the

DWC has had to increase park entrance fees from time to time albeit without a proper estimation of pricing the visitor attractions in national parks. An appropriate pricing policy in national parks can therefore be a useful tool not only to achieve successful and sustainable management of national parks but also to provide better products and services at fair prices to visitors.

The critical question for anyone interested in wildlife tourism is how to manage the available resources to move towards the desirable goal of sustainable tourism. Under certain circumstances, the market does not exist for environmental goods and services or, if it does, is not well-designed. Since park resources such as scenic beauty and endangered species are not traded in the market place unlike many other commodities, they require the use of non-market valuation techniques. One of the methods commonly used for non-market valuation is the Contingent Valuation Method (CVM), which is ‘a tool to place an amount or value on goods and services that are typically not exchanged in the market place’ (Ajzen & Driver, 1992). In the present study, we deploy this method.

One of the most important concepts in CVM is willingness to pay (WTP). WTP is ‘the maximum amount consumers are prepared to pay for a good or service’ (ADB, 2007). More specifically, in the context of the present study, WTP is the amount of money that a person is willing and able to pay to enjoy recreational facilities (McConnell, 1985). Scholars have conducted several studies on the WTP entrance fee for parks and other recreational places. Reynisdottir, Song, and Agrusa (2008), who studied the seasonal WTP entrance fees for Gullfoss waterfall and Skaftafell National Park in Iceland, have shown that income, attitude towards environmental protection, number of previous visits, history of paying entrance fees, country of residence, age and education affect the payment of entrance fees. Arin and Kramer (2002), who

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conducted a study on divers' WTP to visit marine sanctuaries, on the other hand, have shown that substantial amounts of revenue may be collected through entrance fees in order to support coral reef conservation. Wang and Jia (2012) studied the tourists' WTP for the purpose of preparing guidelines for a possible increase in entrance fees and for efficient sustainable management of the Dalai Lake Protected Area in Northeast China. In the case of Laarman and Gregersen (1996), the study focused on the principles and criteria which contribute to an appropriate pricing policy for protected areas which proved that pricing is a potentially powerful tool to move park managers and policy makers towards greater efficiency, fairness and environmental sustainability in park management.

The CVM elicits consumer preferences for goods and services that are not traded directly in the market. CVM is also a unique method for estimating the value of non-market goods such as protected area resources. Pearce and Moran (1994) believe that WTP is one of the sources of income for protected areas and that a huge flow of finance would come from an individual's WTP. Monetary values of such environmental goods and services are thus established through the setting up of a 'hypothetical' market. In the present study, a hypothetical market was not set up; instead, a questionnaire survey was conducted through which visitors were interviewed to elicit their willingness to pay (WTP) for observing elephants at MNP under the existing recreational services and visitor facilities.

In natural resources management, decisions on resource allocation are based on the economic value of the environmental goods and services. In the case of recreational services, it measures the net economic benefit of a good or service. When it comes to visitors, this is measured by the amount that they are willing to pay, beyond what they actually pay.

The market price method estimates the economic value of ecosystem products or services that are bought and sold in commercial markets in order to determine the value of an ecosystem service. The standard method for measuring the use value of resources traded in the marketplace is the estimation of consumer surplus (CS) using market price and quantity data. This concrete method uses the consumers' actual WTP that is demonstrated through the price of a good or service purchased in the market (Kahn, 1998). On the other hand, a change in price would be one way to estimate the demand for a good. A change in the entrance fee at a recreational site could also result in a change in the number and composition of visitors to that site. The economic benefit of such changes is often measured by CS, which is graphically represented by the area that falls within the demand curve above a particular fee (Fig. 1). Therefore, in the pricing process, the net economic benefit is also considered.

This paper presents the findings of a CVM study that was conducted among visitors to MNP. The findings of this study would be of benefit to

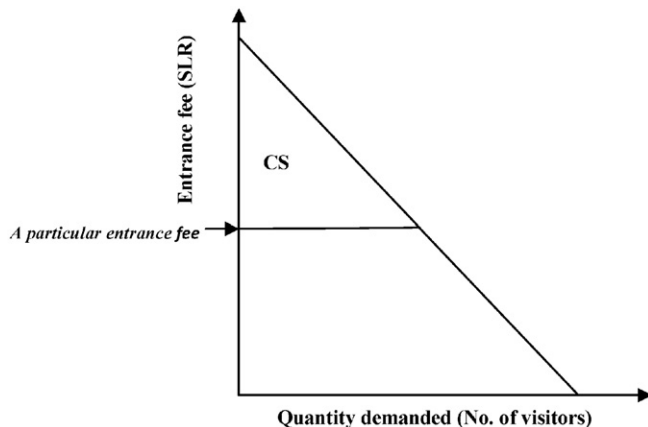


Fig. 1. Demand curve (entrance fees vs no. of visitors).

park managers at MNP if they wish to revise the park entrance fee on a scientific basis. The objectives of the study are: (1) to identify the socio-economic characteristics of visitors; (2) to determine the visitors' mean WTP (demand) for observing elephants at MNP; (3) to estimate the characteristics of paying and any differences in WTP among visitors; and (4) to estimate the CS under different price regimes or entrance fees.

2. Study area

MNP is situated approximately 182 km away from Colombo, the capital of Sri Lanka. The Minneriya reservoir, comprising an area of 249 km² and its environs, was declared the MNP in 1998. The total area of the park is 8889 ha, with MNP regarded as a prime habitat for elephants due to the large number of Asian elephants that are attracted to the grass fields on the edge of the reservoir during the dry season. The Minneriya tank contributes to sustaining large herds of elephants, with the number of individual elephants in the range of 200–300. It is the only park in Sri Lanka where a large clan of elephants can be found in one place. Thus, the park is visited by wildlife enthusiasts to view birds and elephants. Fig. 2 shows the number of visitors to MNP during the period from 2009 to 2014 which shows that the number of visitors to the Park has increased gradually. In other words, the demand for watching elephants (in terms of the number of visitors) has increased gradually over the past six years. Thus in 2014, MNP received 76,195 domestic visitors while in 2009 the number of visitors was 31,429 (DWC, 2014), which shows how the demand has doubled during this six years period.

3. WTP estimation model

The literature on the subject of WTP underscores the demographic and psychographic factors that affect people's demand for recreational services. Among variables predicted to influence WTP are income, age, attitude towards environmental protection, employment, history of paying entrance fees and education (Bowker, Cordell, & Johnson, 1999; Moore & Stevens, 2000; Reiling, Cheng, & Trott, 1992; Williams, Vogt, & Vitterse, 1999). In addition, membership in environmental organizations and attitude towards environmental protection may also affect payment intentions (Carlsson & Johansson-Stenman, 2000; Clinch & Murphy, 2001). Accordingly, following model was applied in estimating WTP (demand) for observing elephants at MNP:

Probability(Yes/No)

$$= \int \text{bidvalue, gender, hhinc, education, age, member} + \varepsilon_i \quad (1)$$

where *bidvalue* represents the random amount the visitor is asked to pay, *gender* is a dummy variable denoting whether the respondent is a male or female (1 = male, 0 = female), *hhinc* indicates the respondent's household level of income, *education* denotes the level of education in number of years, *age* denotes the age in number of years and *member* a dummy variable denoting whether the respondent is a member of an environment or tourism-related organization/field (1 = member of environment or tourism-related organization, 0 = not a member of environment or tourism-related organization). ε_i is the error term.

It is possible to estimate the individual *i*th WTP assuming that it can be modeled as the following linear function (Lopez-Feldman, 2012):

$$WTP_i(z_i, u_i) = z_i\beta + u_i \quad (2)$$

where, z_i is a vector of explanatory variables, β is a vector of parameters and u_i is an error term. It is expected that the individual will answer "yes" when his WTP is greater than the suggested amount t_i

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