

Social cost benefit analysis of Sultanpur National park, Haryana

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Abstract

This paper deals with the estimation of the social benefits accruing from the Sultanpur National Park, Haryana. Sultanpur National Park is an important wetland located about 50 km away from Delhi. Both foreign and domestic visitors arrive at the Park for bird watching and recreational purpose. Economic valuation of the Park was done by ascertaining the Willingness to Pay of the visitors by asking questions to them. The results obtained indicated that the social benefits accruing from the Park are far in excess of the maintenance cost of the Park even though the direct benefits to the Park are quite less. It can be said that the society values the Park highly as a place for recreation and as environmental resource.

Key words: *Sultanpur National Park, Cost benefit analysis, Willingness to Pay.*

Introduction

There is a broad and growing consensus that wetlands are critically important ecosystems that provide globally significant social, economic and environmental benefits. Important wetland functions and services include groundwater recharge, flood mitigation, erosion control, and retention of carbon, nutrients and pollutants (Dugan, 1990; NRC, 1995). Wetlands support important levels of global biological diversity, including over 10,000 species of fish, over 4,000 of amphibians, and numerous species of waterfowl (McAllister *et al.*, 1997; WCMC, 1992). Wetland ecosystems also provide opportunities for recreation, aesthetic experience and reflection. Recreational uses including fishing, sport hunting, bird watching, photography, and water sports. Improper management of wetland resource results into habitat degradation, loss in breeding grounds and wintering areas of migratory avifauna and loss of aesthetic and other values. Increased demand for land associated with population growth continues to be a significant cause of wetland loss. Economic valuations had proved to be a powerful tool for measuring and comparing the various benefits of wetlands and this exercise could act as a catalyst for wetland conservation (Edward *et al.*, 1997; Ramachandra, *et al.*, 2005). Cost-benefit analysis plays an important role in valuation of wetlands. In cost benefit analysis, both the paid price and unpaid price is taken in account. One of the most straight forward methods employed by various economists for the valuation of non-market benefits is the method of contingent valuation (Mitchell and Carson, 1989). This method involves asking the people their Willingness to Pay (WTP) by conducting a survey. More accurately, Willingness to Pay is the amount the society would be willing to pay to use a good beyond that which it actually does pay (Scodarai, 1990). An individual's WTP is the maximum of money he is willing to give for the resource he enjoyed. The economic value of environmental resources is measured by the summation of many individuals' Willingness to Pay for it. Therefore, economic valuation in the environment context is about 'measuring the preferences' of people for an environmental benefit or against environmental degradation. The present study is the simple attempt to estimate the social benefits accruing from the Sultanpur National Park in Haryana.

Methodology

The current study was based on the survey conducted through a Questionnaire. A common Questionnaire was used for both the India and Foreign visitors in the National Park. It was aimed to obtain information

regarding the education, occupation, income, expenditure at the site, group size, number of males and females, vehicle used and travel cost. Sampling was started in the first week of February 2005 and concluded at the last week of the May 2005. In total, 500 questionnaires were distributed to both the Indian and Foreign visitors. Information regarding the expenditure in day to day maintenance and monthly pay was obtained from the office of the National Park. The seasonal variation of different species of birds and their monthly counted data was also obtained from the office. In addition, the information about the tourist flow in each month was also acquired. After the field work, elementary calculation works were done to convert foreign currency to equivalent Indian currency. The sum of the per head expenditure during the travel, boarding, lodging and recreation were calculated. This gives the individual's Willingness to Pay for enjoying the National Park. Multiplying the average WTP with the total number of tourist in the year we get the annual WTP for foreign and Indian visitors. Adding the foreign and Indian annual Willingness to Pay, the total Willingness to Pay for the year is estimated. Subsequently, comparison between the annual investments of the year to the total WTP gives an idea of the benefits or loss to the National Park.

Description of the Study site

The Sultanpur National Park is located in Gurgaon district of Haryana, about 50 km from Delhi and 15 km from Gurgaon on the Gurgaon Farukh Nagar Road. In the old map this area was shown as marshy land having a salt pan, where water accumulates during rains and dries out during summer. A number of organisms like crustaceans, fish and insects thrive during floods which attract a number of birds. The sanctuary potential was first of all identified by the world famous Ornithologist Peter Jackson keeping in view its importance and potential. An area covering 859 acres was declared a Bird Sanctuary in 1972 and was upgraded to the status of National Park in 1991. In Sultanpur National Park 255 bird species are residents and around 90 migratory bird species arrive in search of feeding grounds. In winter the sanctuary provides a picturesque panorama of migratory birds. The important tree species found in the Park are *Acacia nelotica*, *Dalbizzia sissues*, *Albizzia lebbek* and *Zizyphus sps*. The aquatic vegetation consists mainly of *Eichornia crassipus*, *Typha angustata*, *Trapa*, *Azolla*, etc. Apart from the birds the periphery of the lake provides a good habitat to many other animals such as Blue Nilgai, wild cat, rabbit and reptiles. For the benefits of bird lover certain facilities have been developed in the Park like an education and interpretation centre, a library as well as films, slides and Binoculars. There are four watch towers located at different points. In addition there is parking facilities and drinking waters.

Results and Discussion

The result of the study indicates that, on an average around thirty thousand visitors, both Indian and foreigners visit the National Park per year. It can be seen from Table 1, that, the number of foreign visitors per year was significantly less (comprising less than 7 % of the total) than the number of Indian visitors. The estimated average individual's Willingness to Pay for an Indian visitor and foreign visitor to access the Park were Rs. 93.92 and Rs. 161.50, respectively. The variation in the Willingness to Pay between the Indian and foreign visitors was attributed to the variation in the mode of travel and the other expenditures on the site. Almost all the foreign visitors arrived at the Park mentioned either Gurgaon or Delhi as the last place visited before arrival. Majority of the foreign visitors used car and taxi to visit the Park. In contrast, most of the Indian visitors belong to nearby places within a distance of 50 km from the Park and used buses and three wheelers as their mode of travel. A small section of the Indian visitors used car/taxi. However, as the number of Indian tourists far exceeded the foreign tourists, the total

Willingness to Pay for the Indian visitors were more compared to the total Willingness to Pay by the foreign visitors. For instance, in the year 1991, a total of 886 foreigners (~3 % of the total visitors) visited the Park and the calculated total Willingness to Pay by them was Rs. 1, 43, 089.00. Corresponding, estimated total Willingness to Pay for the 31, 368 (~97 % of the total visitors) Indian visitors during the year was Rs. 29, 46, 083.00. It can be further observed from the Table 1, that even though the direct benefits for all the five years were less than the maintenance cost of the Park, the estimated total Willingness to Pay for all the years are much greater than the maintenance cost. The estimated total Willingness to Pay of the visitors was 10.13, 3.17, 7.67 and 4.10 times greater than the maintenance cost respectively, for the years 1991, 1995, 2001 and 2005. The direct benefits to the Park include the income earned through the entry fee of the visitors, vehicle parking fee, video and still camera fee, *etc.* In the above five years under study the income from the direct benefits ranged between 11 and 33 % of the expenditure in the different years. Since, Willingness to Pay is a measure of social benefits, it can be inferred that the benefits accruing from the Park are far in excess of the costs. It can also be noted that the number of Indian visitors are decreasing for the past few years. Thus the benefits arising from them have been decreasing steadily over the last few years. This decrease can be attributed to the decrease in the number of birds arriving at the Park in the recent few years. In the last few years there was a fall in the number of birds in the National Park. The reason for the less number of birds arriving at the Park might have been, perhaps the deterioration in environmental quality of the Park over the past few years. The monthly variation of visitors to the National Park and the number of birds in the Park illustrated in Figure 1. The correlation between the number of visitors and the number of birds in the Park is quite evident from the graph. The correlation coefficient of the two is positive (0.861) and significant. From the information contained in the questionnaire various other interesting results have been obtained. Fig. 2 shows the variation in the average Willingness to Pay of Indian and Foreign tourists according to their income status. In case of the foreigners the average Willingness to Pay of the third income level (Rs. 228.20) and fourth income level (Rs. 250.54) are nearly equal and the Willingness to Pay are more for the individuals falling under these two levels. In the case of Indian tourists, the individual falling in the third level of income class (Rs. 126.86) have the highest average Willingness to Pay. Thereafter, the average Willingness to Pay of Indian visitors decreases with income. The average Willingness to Pay of Indian visitors falling in the fourth and fifth income level was Rs. 97.14 and Rs. 58.00, respectively. No explanation at present can be given to this behaviour and the reason behind it needs to be investigated. The variation in the WTP of the Indian and foreign tourists to their occupational and the educational status are depicted in Fig. 3. From the figure [(i) Occupational classes] it could be inferred that the average WTP is nearly the same for all the occupational categories. Even though the average WTP for the house-wife was higher than other categories, we can ignore this while deriving the above inference since there was only one housewife in our samples. In case of the foreign tourist the WTP is highest among the individuals who come under the category of Academics. Comparing the figures, it can be further noted that for each occupational level except for the housewives the average WTP for the Indian tourists is lower than that of the foreign tourists. With regard to the educational classes [(ii) Educational classes] the average WTP was found to be highest for individuals at the school in case of foreign tourist. In case of Indian visitors the WTP is found to be nearly equal for the last two levels of education. However, in the case of the foreign tourist the last two are widely different. It can be inferred on the basis of the trends from the figures that generally the people who are highly educated attach more value to the benefits of environment resources.

Conclusion

From the results of our study it can be inferred that the social benefits arising from the Park are much higher in comparison to the maintenance costs involved. However, the current study falls short to represent a complete analysis of the costs and benefits of the National Park because of certain limitations. Some of the limitations are: (i) the travel cost analysis method could not be applied because of lack of data on population of different zones. Hence, the values of total WTP obtained from our study may be the underestimates of the actual WTP. (ii) Exact travel cost for the foreign visitors could not be calculated because of the problem faced in estimating their exact travel distance and therefore, the travel cost was estimated only from the place they last visited before arriving at Sultanpur National Park. Despite these limitations, the results obtained convincingly indicated that the society values the Park highly as a place for recreation and as environmental resource. Given that tourism is one of the growing income generating industries globally, the economic value of the Park may be enhanced considerable in future. Maintaining wetlands and capitalizing on these values can be a valuable alternative to more disruptive uses and degradation of these ecosystems.

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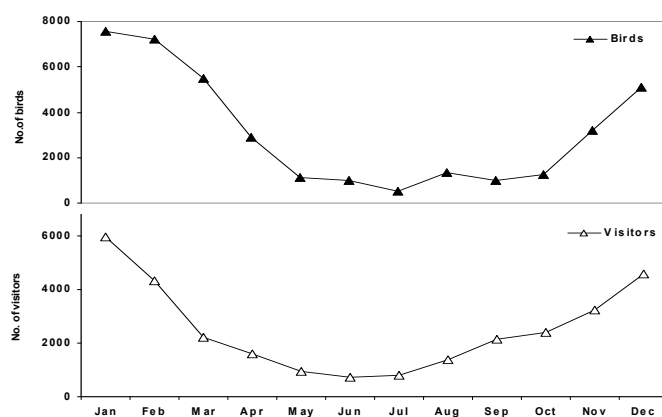
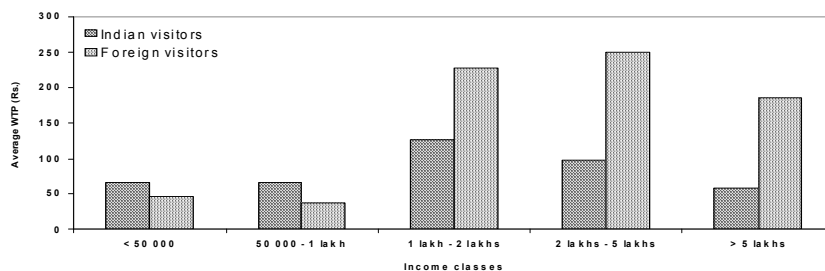
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Table 1. Estimated Costs and benefits in different years for Sultanpur National Park

Years	No. of Visitors		Annual Budget** for the NP (in Rs.)	Direct benefit to the NP* (in Rs.)	WTP (in Rs.)		Total WTP (in Rs.)
	Foreign	Indian			Foreign	Indian	
1991	886	31,368	3,05,000	1,02,000	1,43,089	29,46,083	30,89,172
1995	1,257	25,490	8,20,000	89,000	2,03,006	23,94,021	25,97,026
2001	2,217	29,931	4,13,000	99,000	3,58,046	28,11,120	31,69,165
2005	2,118	28,286	7,31,000	1,22,000	3,42,057	26,56,621	29,98,678

WTP – Willingness to Pay; NP – National Park; *The earning from the entry, vehicle Parking, camera fees, etc.; **The expenditure allocated for salary of the staffs, maintenance of the Park, etc.

**Fig. 1 Average monthly variation in number of birds and isitors at the Park****Fig. 2 Average WTP of visitors at Park belonging to different income classes**

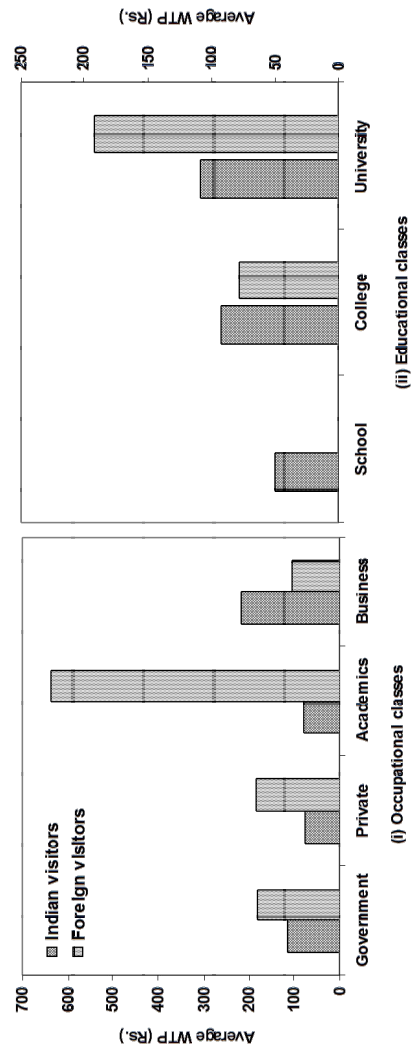


Fig. 3 Average WTP of an Indian and foreign visitors at the Park