Tourism and Pollution: Investigating Impact on Bali Island of Sunderbans Tiger Reserve, West Bengal, India

Ananya Ghosh
Amity Institute of Travel and Tourism, Amity University, Uttar Pradesh, India.

Parikshit Sharma
Amity Institute of Travel and Tourism, Amity University, Uttar Pradesh, India.

Pawan Gupta
Indian Institute of Tourism and Travel Management, Noida, Uttar Pradesh, India.

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Abstract

Tourism in protected areas generates noise pollution, air pollution, water pollution and litter which can adversely affect human health, social well-being and destination sustainability. These pollutants should be checked and kept under controlled. The quality of lifestyle of the host community will potentially be degraded due to these pollutants which will lead to causing social tension. In this paper, we evaluate the perception of the host community regarding the pollution caused by tourism in Sunderbans Tiger Reserve by conducting a questionnaire survey. The data is collected from Bali islands of Sunderbans Tiger Reserve which is a popular island for tiger-man conflicts, hence has received lots of attention from tourism. Results show that there is an increase in water pollution and litter in the study area due to tourism.

Keywords

Tourism, Pollution, Impact of Tourism, Air Pollution, Noise Pollution, Water Pollution, Litter, Sunderbans Tiger Reserve.

Introduction

There is an association between environmental quality and the quality of life of the host community. To lead a healthy and contented life, there is a need for the surrounding atmosphere to be clean and healthy as well. Hence the importance of a clean environment is always been highlighted and given greater importance.
Tourism impacts the environment by the use of three areas which are transportation, activities, and facilities (Semenova, 2013). The impact on the natural environment ranges from plants to soils as well as wildlife (Eagles and McCool, 2002). There is a difference in the impact and level of damage caused by tourism on the natural environment and man-made environment however, the impact on the natural environment is not easily reversible (Raïtz and Pusczkóï, 2002). The tourism industry is responsible for causing many forms of pollution which are air emissions, noise, solid waste, litter, and many more (Rath and Gupta, 2017). The use of transport facility is increasing every year due to increase in tourist arrival. The impact can especially be seen in the case of air pollution as it has led to increase in carbon dioxide and carbon monoxide emission which is related to transportation energy use. The quality of air degraded and increase in the litter has been identified in protected areas due to tourism (Semenova, 2013). Noise pollution is also one of the ever-growing problems in the modern life which are causing stress to humans and distress to wildlife especially in protected areas (Krishna, 1993).

Recreational boating and the construction of tourist infrastructure have contributed to water pollution. During peak season, the overflow of tourist’s increases pressure on the existing sewage plants (Davies and Cahill, 2000). From the human health point of view, discharge of sewage into waterbodies with limited flushing on boats leads to the spread of diseases which came in contact by consuming contaminated shellfish (Seabloom et al., 1989).

Sunderbans Tiger Reserve in India is situated in West Bengal which is known as a versatile state (West Bengal Tourism, 2018) to experience different types of tourism products (Jana and Tarafder, 2012). Sunderbans Tiger Reserve is a UNESCO World Heritage Site and Biosphere Reserve (Beautiful Bengal, 2019) which was declared a tiger reserve in 1973 (National Tiger Conservation Authority / Project Tiger, 2017). The reserve was named after the trees known as Sundari which are found therein abundance (Indian Wildlife Resort, 2019).

The theme of this study is to evaluate the perception of the host community regarding the pollution impact caused by tourism in Sunderbans Tiger Reserve, West Bengal, India. The study also evaluates the correlation between perception of the impact on pollution and socio-demographic characteristics of the host community. The finding will give a clear picture of the current condition of the pollution caused by the tourism industry in the study area and highlight the suffering caused for the host community. It will help identify the areas for control and improvement to reduce pollution in the Sunderbans Tiger Reserve, West Bengal, India.
Materials and Methods

For this paper, the data was collected in the month of November 2020, from the host community residing in the Bali islands of Sunderbans Tiger Reserve (STR). A convenient sampling method was used due to the COVID-19 pandemic. The researchers used a structured questionnaire to collect the data from 325 respondents. Part I of the questionnaire collected information regarding the demographic profile of the respondents and part II collected information regarding their perception of the pollution impact caused by tourism. The impact was noted on a five-point Likert scale ranging from strongly disagree to strongly agree.

The analysis of the data was performed in the IBM Statistical Package for the Social Sciences (SPSS).

Version 23. Descriptive statistics were used to identify the demographic profile of the respondents. Mean and Standard deviation scores are calculated to determine the impact of pollution from tourism. To determine the relationship between the demographic profile of the respondents and the impact of pollution from tourism, a Multivariate Analysis of Variance (MANOVA) was applied. To check the reliability of the data, Cronbach’s alpha test was applied (Nunnally and Bernstein, 1994). The result of the reliability test shows a value of 0.70, which is suggesting that the data is reliable and can be used for further analysis (Statistics Solutions, 2020).

Result and Discussion

Most of the respondents are males (51.1 percent) followed by females (48.9 percent). The majority of the respondents are falling under the age category of 18-25 (32.6 percent) followed by 46-55 (18.5 percent) and 26-35 (15.4 percent), which displays that the destination is equally frolicked by the young and middle-aged alike. A good number of respondents had an education less than matriculation (32.0 percent) followed by matriculation (23.4 percent). Labour (11.1 percent) was the most opted employment opportunity among the respondents, followed by fishing (7.7 percent), agriculture (7.1 percent), and boat driver at Sunderbans Tiger Reserve (7.1 percent), displaying more demand for skill oriented jobs. 31.4 percent of the respondents had an annual income less than 1,00,000 followed by 7.1 percent of the respondents who had an annual income between 1,00,000-5,00,000. However, 26.2 percent of the respondents had no education, 60.6 percent of the respondents had no employment and 61.5 percent had no income in 2020.
To study the pollution impact caused by tourism, a total of 05 statements were framed and recorded, as represented in Table 1. The mean and standard deviation is been recorded for the statements to evaluate the impact of pollution caused by tourism. The highest scores were recorded for “Tourism has caused water pollution in STR” and “Tourism has increased litter in STR”. Whereas lowest scores were recorded for “Tourism has caused air pollution in STR”, “Tourism has caused noise pollution in STR” and “Tourism has caused congestion and overcrowding in STR”. The average score for all five statements is 2.31.

Table 1 Pollution caused by Tourism

<table>
<thead>
<tr>
<th>Statements</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tourism has caused air pollution in STR.</td>
<td>1.06</td>
<td>0.235</td>
</tr>
<tr>
<td>Tourism has caused noise pollution in STR.</td>
<td>1.10</td>
<td>0.294</td>
</tr>
<tr>
<td>Tourism has caused congestion and overcrowding in STR.</td>
<td>1.04</td>
<td>0.189</td>
</tr>
<tr>
<td>Tourism has caused water pollution in STR.</td>
<td>4.22</td>
<td>0.493</td>
</tr>
<tr>
<td>Tourism has increased litter in STR.</td>
<td>4.13</td>
<td>0.336</td>
</tr>
</tbody>
</table>

Source: Researcher

Table 2 Multivariate Analysis of Variance

<table>
<thead>
<tr>
<th>Demographic Factor</th>
<th>Factor</th>
<th>P Value</th>
<th>Wilk’s</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hypothesis difference</td>
<td>Error difference</td>
<td>F Value</td>
</tr>
<tr>
<td>Gender</td>
<td>5.000</td>
<td>216.000</td>
<td>2.318</td>
</tr>
<tr>
<td>Age</td>
<td>25.000</td>
<td>803.906</td>
<td>0.951</td>
</tr>
<tr>
<td>Education</td>
<td>25.000</td>
<td>803.906</td>
<td>25.000</td>
</tr>
<tr>
<td>Occupation</td>
<td>35.000</td>
<td>911.060</td>
<td>1.669</td>
</tr>
<tr>
<td>Annual Income</td>
<td>10.000</td>
<td>432.000</td>
<td>1.460</td>
</tr>
</tbody>
</table>

Source: Researcher

MANOVA was applied to identify a relationship between the demographic profile of the respondents and the impact of pollution, as represented in Table 2. Here demographic profiles were treated as independent variables whereas impact statements were treated as dependent variables. The significance level was identified as less or equal to 0.05. The result depicts that there is a statistically significant difference between the gender, education, and occupation of the host community towards the pollution impact caused by tourism in Bali islands of Sunderbans Tiger Reserve, India.

Conclusion

The result of the study represents the finding to show a negative impact on the water of the Sunderbans Tiger Reserve and litter around the Sunderbans Tiger Reserve which means that the water pollution and litter have increased due to the tourism activity in the Sunderbans Tiger Reserve, India.
area. Such finding is also noted in similar studies (Kapure et al., 2020). The main cause identified for the increase in water pollution and litter in the study area is caused majorly by the ferry/boats due to absence of waste management system and secondly caused by the tourists disposing of waste in the water and land such as plastic, glass bottles, etc. The study also shows statistical significance between the gender, education, and occupation of the respondents and their perception of pollution impact caused by tourism in Sunderbans Tiger Reserve. The result supports the finding of other researches (Kapure et al., 2020; Harun et al., 2018).

This study collects the perception of a limited number of host communities along with that the data is collected from only one location. This seems to be a limitation of the study. For any further researcher, large sample size is recommended and other islands can be approached to get an overall perception. As the data was collected during the Covid-19 pandemic, the impact might be altered, hence data collected post-pandemic might give a different picture.

References


