Mass tourism as a potential noise pollution threat- A case study of Bhojpur tourism destination in Madhya Pradesh, India

Ravi Sharma¹, Bhattacharya A. K²

1- Indian Institute of Forest Management, Nehru Nagar, Bhopal, Madhya Pradesh, India
2- MP State Bamboo and Bamboo Crafts Development Board, Madhya Pradesh Government, Forest Department, Khel Parisar, 74 Bungalows, Bhopal (MP), India.

ravisharma_16@yahoo.co.in
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ABSTRACT

The paper discusses the noise pollution status as an important religious and archaeological tourist destination - Bhojpur, in the District Raisen of Madhya Pradesh, near the capital, Bhopal. The paper examines the noise levels caused due to various sources at the site, and evaluates the conclusions drawn and their management implications. The trends in the types and rates of visitation and comparison between the noise levels in peak and lean seasons have been conferred. The paper finally illustrates the present and future impacts of noise levels and the desired management interventions, so as to ensure the sustainable tourism development in the area.

Keywords: Noise Level, Impacts, Visitors Management, Sustainable Tourism, Mitigation.

1. Introduction

The environment is being increasingly recognized as a key factor in tourism. During the last decade of the twentieth century, this idea has strongly emerged that tourism depends ultimately upon the environment, as it is a major tourism attraction itself, or is the context in which tourism activity takes place (Holden, 2000), The relationship between tourism and the environment can be seen at various levels. In addition to direct tourism impacts on the environment through pollution, noise and disturbance, indirect, irreversible and long term impacts of tourism on environmental quality is characterized by dynamic feedback mechanisms (OECD, 1980), Many studies throughout the world have now documented the ecological impacts of the indigenous population on the environment (Bhattacharya, 2003a and 2003b; Fitzgibbon et al, 1995), The cumulative impact of multiple threats has been often synergistic rather than additive and it affects all the components of wilderness ecosystems and all levels of biological organization (Cole and Landres, 1996), Studies on tourism in India are few and predominantly impact oriented (Shackley, 1996; Singh, 1989; Singh and Singh, 1999; Madan and Rawat, 2000; Chaturvedi, 2002; Kuniyal, 2002; Gardner et al, 2002), However, research on India’s domestic tourism is almost non-existent (Singh 2004), One of the reasons for this lies in the fact that ‘tourism’, which is typically a product of ‘western’ modernity and industrialism, conceptual contrasts the legacy of travel practices of native Indian masses. Prior to its arrival as the tourism industry, during the colonial and post colonial times, indigenous forms of traveling and touring had a vivid and vigorous presence in the country (Towner, 1995),

Monitoring the diffused impacts of individual developments is a key tool in environmental management for both public and private sectors (Buckley, 1989, 1995, 1999; Treweek 1996; Thompson et al, 1997), There seems to be a rise in potential for disturbance and degradation
of wild land recreation areas which calls for an ongoing need to monitor and address potential direct and indirect user impacts. The degree of environmental impact varies, depending on the type of tourists and the intensity of site being used (Gartner, 1996). There are day-tourists, who visit a destination for a day and then leave; summer residents who are, in effect, tourists for a season; and tourists on bus tours and other trips that may visit a location for a few minutes or a number of days. Day-tourists have an impact on the environment through their transportation to the destination as well as their activities once they there (Davies and Cahill, 2000). Researchers have shown the problems of noise, litter and increased erosion from overuse of paths and trails which characterizes rural centers open for tourist activities. Increased competition for land and labor, damage caused to vegetation and harassment to livestock has been reported by a number of researchers (Pizam, 1978; Butler, 1974).

In the context of the present scenario, the present study focused on the main objective of intended to-

1. discuss the current noise level scenario at the Bhojpur (a site of religious and natural attractions in proximity of Bhopal, the capital city of Madhya Pradesh),
2. compare the noise levels at the peak and lean seasons.
3. Suggest measures to mitigate any related externalities

2. Material and methods

In the context of the baseline noise assessment, there is no need of looking at all the sources in isolation, rather one can measure total ambient noise levels at different and carefully selected locations through appropriate noise meters (Barathwal, 2002). For the determination of the noise level at the tourism activity spot, various locations were selected (viz. Maximum tourist activity point, destination point, nearby village, nearby forest area etc.). The noise was measured at the destination points on the peak and lean days on an hourly basis. The noise generating point sources of the noise were identified from the destination area to compare the noise levels at the peak and in lean periods.

The noise level was measured on the dB (A) scale. Noise on an hourly basis at the randomly selected locations was monitored at the time of peak days' tourism activities and the lean days’ tourism activities of the year with the help of sound level meter, in collaboration with Madhya Pradesh Pollution Control Board. A comparison was made done between the noise generated in the peak tourist period and lean period of tourist activity. The noise levels so determined were compared with the standard noise level in the air developed by the Central Pollution Control Board (CPCB) in India (Table 1),

<table>
<thead>
<tr>
<th>Area Code</th>
<th>Category of Area</th>
<th>Limits in dB(A)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Day Time*</td>
</tr>
<tr>
<td>A</td>
<td>Industrial area</td>
<td>75</td>
</tr>
<tr>
<td>B</td>
<td>Commercial Area</td>
<td>65</td>
</tr>
<tr>
<td>C</td>
<td>Residential Area</td>
<td>55</td>
</tr>
<tr>
<td>D</td>
<td>Silence Area</td>
<td>50</td>
</tr>
</tbody>
</table>

*Daytime: 6 a.m. to 9 p.m.; **Night Time: 9 p.m. to 6 a.m.

In addition to the visual assessment methodology as stated above, the Biotic Assessment Forms (BAF) were also filled in through observations made during extensive visits to the sites in consultation with the local staff and residents. The BAF facilitated evaluative and real qualitative insight into the type of changes that occur at the sites along with the
characteristics of the sites, which play an important role from the point of visual assessment and further comparisons of the destination sites in near future.

2.1 Study area - Bhojpur (Archeological, Historical and Religious).

Founded by and named after the legendary Parmar King of Dhar, Raja Bhoj (1010-1053), Bhojpur, situated 28 km from Bhopal, is renowned for the remains of its magnificent Shiva temple and Cyclopean dam. The temple, which has earned the nomenclature of the Somnath of the east, is known as the Bhojeshwar Temple. The temple was never completed and the earthen ramp used to raise it to a dome - level still stands. Had it been completed, it would have had very few rivals. As it is, even with the ravages of time, it remains one of the best examples of temple architecture of the 11th - 13th centuries. The *lingam* in the sanctum rises to an awe-inspiring height of 7.5 feet with a circumference of 17.8 feet. Set upon a massive platform 21.5 feet square, and composed of three superimposed limestone blocks, the architectural harmony of *lingam* and platform creates a superb synthesis of solidity and lightness.

**Visitation:** The visitation statistics to the Bhojpur is not available, as the records of the number of visitors to the site are not recorded. But according to the unofficial sources and through the discussion with the locals and the staff at the site, it is predicted that the destination receives a huge number of visitors’ influx every year. It is assumed that the annual average influx of the visitors to the site is approximately 0.3 million with the maximum influx during fairs and festivals.

3. Result

The noise was recorded at the selected points of the study site with the aid of a noise level meter and compared with the readings during the peak and lean activity periods. The results obtained from the experiment at the Bhojpur and presented below in the form of graphical plots (Fig.1.) indicate that during the peak periods the noise level in decibel scale varies from 54 dB to 84 dB, with an average of 68.1 dB on holidays and weekends and average of 81.2 dB at the time of fairs and festivals. During lean periods, it remains in low range from 49 dB to 71 dB with an average of 62 dB. The summary of the results has been provided in Table 2. The noise levels in Bhojpur Village show an average of 62 dB and 81.2 dB in lean and peak seasons respectively (Fig. 2). According to the CPCB’s Standard Noise level specifications for the residential area, this level is very high (standard value being 55dB), The perceptive analysis of the locals manifests that the tourists disturb the peace of the locals and the vehicles and the crowds (especially during the peak seasons) are the major factors of noise pollution in the residential areas.

<table>
<thead>
<tr>
<th>PLACE</th>
<th>PEAK PERIODS</th>
<th>LEAN PERIODS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Range (dB)</td>
<td>AVERAGE (dB)</td>
</tr>
<tr>
<td></td>
<td>Holidays / weekends</td>
<td>Fairs / Festivals</td>
</tr>
<tr>
<td>Bhojpur</td>
<td>54- 84</td>
<td>68.1 dB</td>
</tr>
</tbody>
</table>

**Table 2:** Summary of Noise Level findings at Bhojpur
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Figure 1: Noise level as determined during the Peak periods at Bhojpur

Figure 2: Noise level as determined during the lean periods at Bhojpur village.

The location of a noise source, as it relates to the location of noise-sensitive land use, is an important factor in determining the impact of the noise; that is, how long the noise exposure at a receiver will exist. The land use pattern of the Bhojpur includes an open area with agricultural fields and the undeveloped land with minimum constructions and concrete establishments with the forest and natural open area all around the site, which is less sensitive to the noise. The impact due to the noise that may apparently seem to be getting absorbed in the natural open area, thereby showing no impact at present might lead to serious effects in future. The existing level of continuous noise in the area may cause various symptoms in the future, as shown by the various studies (Pizam, 1978; Butler 1993, Lohani et al., 1997),

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4. Conclusions

1. Visitors, visiting the destination areas for their leisure and enjoyment are causing the major problems of waste generation and noise impacts.
2. Due to the rapid increase in the visitors’ influx and consequent increase in production and the consumption characteristics of the tourists, the noise pollution is increasing considerably.
3. The permitted ambient noise level in the residential area is 45-55 dB, whereas the results indicate that the noise level in the village areas adjacent to spot is generally above 80 dB during the peak season and even during the lean season, it is above 55 dB with an average of 62 dB.
4. The trends of visitor influx indicate a constant rise in the visitor number. Therefore the situation will be grimmer in the forthcoming days.
5. Presently the noise in the area may seem to be getting absorbed in the natural ambience and vegetation, thereby causing or showing no impact at present, but the cumulative impact of continuously increasing noise pollution on the locals living in proximity need special attention and further research.
6. Noise level at the place is also above the prescribed standard due to heavy use of speakers, crowds, and the concentration of locals and the visitors at the site. These may have prolonged effects on the locals in the coming decade of tourism development.
7. No record of visitors’ influx to the area is maintained, as there is no such provision of the visitors’ management at the site. The same is true for the Bhojpur Temple where no authentic records are available with the authorities.

5. Suggestions for management interventions

1. Reduction of noise at the site - This can be controlled by the minimum use of loudspeakers and controlling traffic volume at the site. The impact of heavy visitors’ influx can be mitigated by the implementation of appropriate visitor management strategies at the site.
2. New nearby destinations and activities can be explored to diversify the visitors to the other options at the site like a Jain shrine, river area, trekking and rock climbing sports; these have not been explored yet.
3. Blocking the path of noise- Creating noise barriers like planting trees or using different absorptive materials near the speakers and parking places to control the noise output may provide both short term and long term remedies.
4. Launching campaigns may be useful to encourage active community participation involving women and youth groups in the visitation management at the sites especially where adequate management staff is lacking.
5. Independent local environmental bodies may be created and / or local biodiversity committees may be utilized to mitigate noise problems by imparting training focused on visitors’ management and creating awareness among the locals and tourists.

6. References


