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Visitor impact management of Parambikulam Tiger reserve in Western Ghats

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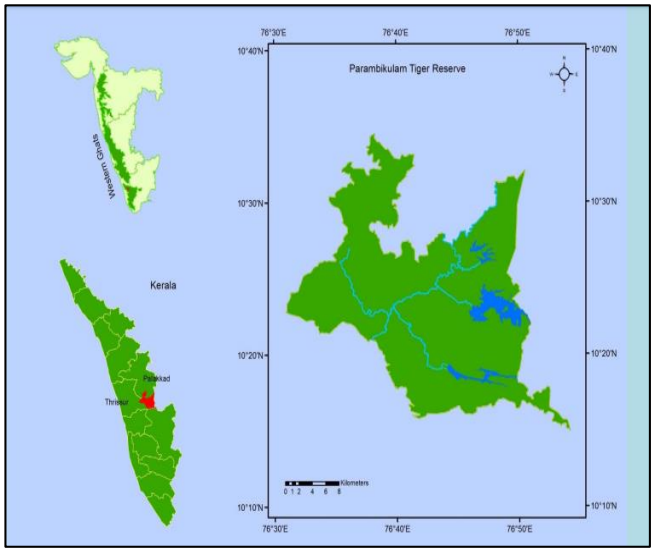
Abstract
Over the twentieth century, wildlife-based tourism has experienced significant growth, with increasing emphasis placed on ecotourism. Conservation of biodiversity and cultural diversity has implicitly and explicitly ingrained in the principals of ecotourism with much stress on sustainable use of natural resources and scope for income generation and employment opportunities. Protected areas of western Ghats-Anamalai Hills attract visitors from various parts of the country. Hence the researchers have undertaken the study at Parambikulam Tiger Reserve: A well-protected ecological portion in the Nelliyampathy - Anamalai landscape of the Southern Western Ghats in India. Considering its biological richness, abundance of wildlife and land scape beauty makes Parambikulam Tiger Reserve one of the most attractive places in the entire stretch of Western Ghats. The present study focuses on to understand the visitor experience on tourism activities and visitor management strategies for sustainable tourism at Parambikulam Tiger Reserve on Anamalai hills. The findings of the study shows that the visitors experience at the tiger reserve are satisfactory with a scope of improvement in future and factors like environment education, facilities at the tiger reserve environment, visitor and site management techniques contributes to Visitor Impact Management at Tiger Reserve. This assist the stake holders and authorities of tiger reserve, to identify the priority areas for better management and conservation for future generation.

Keywords: eco-tourism, conservation, biodiversity, visitor management technique

1. Introduction
Protected areas are one of the important tools used across the globe for in situ conservation. Tourism and visitation have been intricately linked to protected areas since their conception in the modern era. Tourism being a double-edged sword, series of challenges and opportunities are associated with the activity, which need to be monitored and protected to ensure the sustainable development. Eco Tourism helps in the sustainable management of protected areas, as a market-based alternative catering to the growing number of discriminating travelers trying to find, understand and enjoy a natural environment. Ecotourism in simple terms means management of tourism and conservation of nature in a way so as to maintain a fine balance between the requirements of tourism and ecology on the one hand and needs of the local communities for jobs, new skills, income generating employment and a better status for women on the other. Conservation of biodiversity and cultural diversity is implicitly and explicitly ingrained in the principals of ecotourism with much emphasis on sustainable use of natural resources and scope for income generation and employment opportunities. Ecotourism is an ideal and alternative to the devastating nature of mass tourism in the 21st century. Thus, by many conservationists, ecotourism has been followed as a strategy to protect natural resources while also meeting human needs. Older than the Himalaya mountains, the mountain chain of the Western Ghats are well known for their rich and unique flora and fauna. A number of protected areas are included in this region, including the Indira Gandhi Wildlife Sanctuary (958 km²), Eravikulam Wildlife Sanctuary (97 km²), Chinnar Wildlife Sanctuary (90 km²) and Parambikulam Tiger Reserve (274 km²).

Parambikulam Tiger Reserve is the most protected ecological piece of Anamalai sub unit of Western Ghats, surrounded on all sides by protected areas and sanctuaries of Kerala and Tamil Nadu, the sanctuary is endowed with a peninsular flora and fauna which are excellently conserved due to total protection and minimal human interferences. The sanctuary being a major ecological continuum from Peechi to Eravikulam through Anamalai aids the large viable populations of wildlife. It is also the home ground for different races of indigenous people who are as well an integral part of the prevailing harmonious ecosystem.



***Source*:** Magesh *et al*., (2014) [17]

Fig 1: Study Area: Parambikulam Tiger Reserve

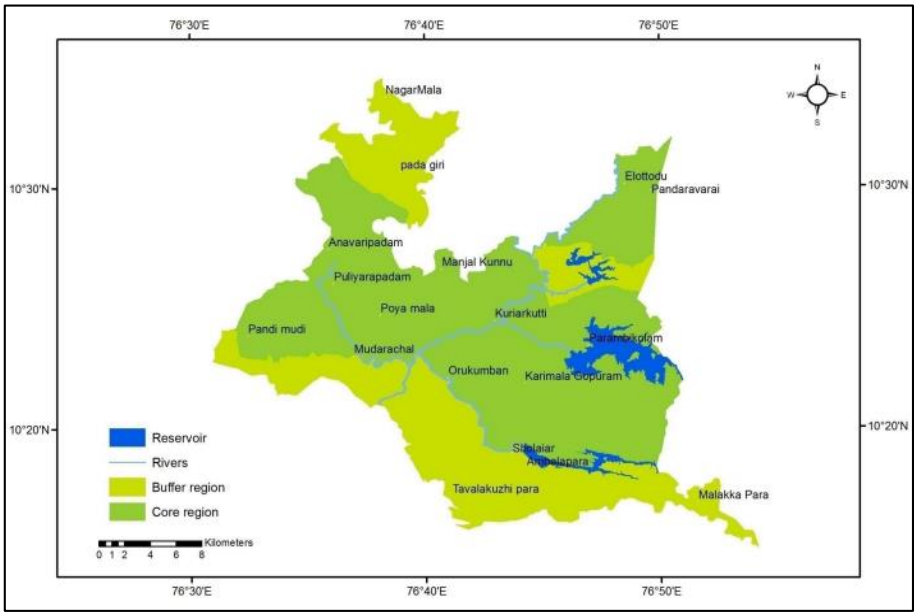


Fig 2: Zoning of Parambikulam Tiger Reserve

2. Review of Literature

2.1 Ecotourism

Mathew (2004) has reviewed the positive and negative externalities of an economic activity like tourism and suggested to develop ecotourism as an alternative to mass tourism. Anil Reddy (2000) holds the view that ecotourism is entirely a new approach in tourism that reserves travel to natural areas to appreciate the cultural and natural history of the environment. He also reviewed various issues and information about ecotourism. Batra and Chawla (1994) viewed ecotourism as a practical alternative route by which a measure of economic benefit can be won from tourism, with minimal damage to the environment and society and maximum advantage to local people. Ralf Buckley (2009) [4] in his evaluative study on the net effects of ecotourism on the environment examined the outcomes of ecotourism that has been achieved in regards to environmental issues. It proposes an analytic framework distinguishing four types of mechanism: those which can generate positive effects; those which can reduce negative effects; those which can increase negative effects; and contested issues, including scale and mainstreaming. Babu (2010) concluded that ecotourism endeavors to encourage and support the diversity of local economies for which the tourism related income is important. The revenue generated from tourism helps and encourages government to fund conservation projects and training programmes. David and fennel (2000) [6] highlighted the need promote the right kind of tourism that is quality and eco-friendly tourism so that maximum benefit can be harnessed without affecting and altering physical and social quality.

2.2 Visitor Impact Management

Farrell and Marion (2002) studied on the protected area visitor management framework for ecotourism and protected area visitation in Central and South America. Managers have addressed the issue of the management of ecotourism in the protected areas by employing VIM frameworks. In this study, the Protected Area Visitor Impact Management (PAVIM) framework is an alternative to carrying capacity and LAC (Limits of Acceptable Change). A set of evaluation criteria was employed to compare the relative positive and negative attributes of carrying capacity, other decision-making frameworks and the new framework within the context of their actual and potential use. Positive attributes of PAVIM include simplicity, flexibility, cost effectiveness, timeliness and incorporating input from stakeholders and local residents. Negative attributes include diminished objectivity and cultural sensitivity issues. Buckley (2003) [4] conducted a study on Ecological Indicators of Tourist Impacts in Parks. Monitoring visitor impacts needs ecological baseline data that incorporate seasonal cycles, long-term trends, extreme events, and internal patterns. It needs indicators that reflect the priority conservation values of the protected areas concerned, and the types of use, not merely management processes. It needs specific indicators that are discriminating, quantifiable, actionable, sensitive, ecologically significant, integrated, and feasible in practice. And it needs experimental design that distinguishes tourist impacts from other sources of variation. Interested and experienced rangers and volunteers can make a major contribution to such monitoring programmes, but reliable ecological monitoring needs qualified ecologists. Mathieson and Wall (1982) [1] presented that impact of consumptive activities such as hunting, poaching and trampling of the vegetation at the wildlife area creates the destruction of wildlife for souvenirs such as elephant tusks and lion-claw necklaces. Poaching is a major threat to wildlife, especially in African countries. Mason (2006) discusses a number of 'hard' and 'soft' approaches to visitor management, focusing specifically on interpretation and self-regulation, using codes of conduct. These approaches can be divided into 'hard' and 'soft' categories. 'Hard' visitor management approaches involve physical management, regulatory management and economic management. 'Soft' approaches make use of education and interpretation. While the approach of managing impacts has its merits, it has tended to assume that negative impacts are inevitable. 'hard' and 'soft' approaches to visitor management, focusing specifically on interpretation and self-regulation, using codes of conduct. These approaches are examined within the context of protected natural areas in Antarctica and the Arctic Region

3. Objectives of the study

Managing the visitors during the peak season leading to

pollution and littering is the foremost issues faced by the protected areas. Thus the study develops strategies for the sustainable development of national park from tourism perspective while identifying alternative measures to prevent vulnerability in order to assist forest managers, and other stake holders in preserving the region which solely depends on tourism which is the important economic activity in the region.

3.1 Objectives

- Assess the visitor experience and their relationship with demographic Variables.
- Understand the existing Site Management Techniques, Visitor Education and Environment Management in the Tiger Reserve.
- Study the Visitor Impact management with different protected area techniques.

4. Need for the study

Tourism and visitation in protected areas generate diverse impacts on the environment, economy, local communities, and the visitors themselves. Managing the visitor traffic during peak season leading to pollution and litter is the foremost issue faced by the protected areas. The need for managing tourism and visitor management has led to focused research on sustainable development in protected areas in recent years. Sustainable development within protected areas is a long-term commitment. The study area has exceeded its carrying capacity limit in recent years as the destination is flocked by visitors, not only from various parts of our country but also from other parts of the world. The protected areas have also recorded forest fire in the month of July 2017 and February 2018. Thus considering the importance of conserving the biodiversity, the researchers have taken up this study to understand the visitor impact management in the Parambikulam Tiger Reserve since the tourism activity in the region is the major economic drive for the local community.

5. Methodology and Discussion

For the purpose of the study, visitors to the Parambikulam Tiger Reserve, Kerala were selected as population. Those who were willing to contribute and be a part of the survey were only approached. Convenience sampling is used for the present study. The sample size of the study was 300 tourists; the data were collected through a structured questionnaire. The fieldwork for this study was conducted in the months of December2017 to March 2018.

- T test ,ANOVA ,Post Hoc and Multiple regression analysis were conducted in the study
- Study variables such as Facilities at the tiger reserve, Visitor management, Site Management techniques, Visitor Education and Environmental Education were studied to measure the visitor experience, satisfaction and visitor management techniques at the Tiger reserve
- T test and ANOVA were conducted to study the significance between the demographical factors and study constructs
- Multiple regression analysis is conducted to identify the factors contributing to the visitor impact management at the Parambikulam Tiger Reserve

6. Findings and Suggestion

6.1 Findings

From the demographic profile of visitors (Table 1) it is found that 66.3 percent of the respondents are male and 33.7 percent of the respondents are female,7.3 percentage of the respondents belongs to the age group of less than 18 years, 45.3 percent of the respondents belongs to the age group of 18-24 years and are majority, 25.0 percent of the respondents belongs to the age group of 25-35 years, 16.0 percent of the respondents belongs to the age group of 35-49 years and 6.3 percent of the respondents are under the age group of 50-64 years. Majority of the respondents visiting the national park are domestic tourists with 64.3 percent and only 34.7 percent of the visitors are foreigners. Among the visitors, 5.0 percent have completed School education, 17.7 have completed higher secondary, 14.3 percent are diploma holders, 38.3 percent of the respondents are Graduates, 20.0 percent are Post graduate's and 4.7 percent of the respondents are others. Among the visitor's 28.3 percent are self-employed, 15.3 percent are government employees, 33.7 percent are private employees, 13.3 percent are doing business, 6.3 percent are retired and 3.0 percent are homemakers while 24.0 percent earn below Rs. 50,000, 38.7 percent between Rs. 50,000 - 1,00,000, 11.3 percent earn between Rs.1,00,000 2,00,000, 17.0 percent earn between Rs.3,00,000-5,00,000 and 9.0 percent earn 5,00,000 and above. 56.7 percent respondents are single and 43.3 percent are married.

Table 1

Demographic Factors	Constructs	Frequency	Percent
Gender	Male	199	66.3
	Female	101	33.7
Age	Less than 18 years	22	7.3
	18-24	136	45.3
	25-35	75	25.0
	35-49	48	16.0
	50-64	19	6.3
Type of visitor	Foreign	107	35.7
	Domestic	193	64.3
Level of Education	School	15	5.0
	Secondary	53	17.7
	Diploma	43	14.3
	Graduation	115	38.3
	Post-graduation	60	20.0
	Others	14	4.7
Occupation	Self-employment	85	28.3
	Government	46	15.3
	Private	101	33.7
	Business	40	13.3
	Retired	19	6.3
	Housewife	9	3.0
Annual Income	Below 50,000	72	24.0
	50,000-1,00,000	116	38.7
	1,00,000-2,00,000	34	11.3
	3,00,000-5,00,000	51	17.0
	5,00,000 and above	27	9.0
Marital Status	Single	170	56.7
	Married	130	43.3

Descriptive statistics (Table 2) states that the Visitors experience on environmental conditions (4.326), Visitor (4.146) and Environmental Management (4.246) at the tiger reserve are highly satisfactory. Whereas Facilities at the tiger

reserve (3.940), Site Management (3.966) and Visitor Education (3.736) at the tiger reserve are satisfactory.

Table 2

Factors	Highest Mean Value	Lowest Mean Value
Environmental conditions	4.326	3.536
Facilities at the Tiger reserve	3.940	3.703
Visitor Management	4.146	3.453
Site Management	3.966	3.733
Visitor Education	3.736	3.906
Environmental Management	4.246	3.573

Demographical factors such as Gender, Education, Occupation, Age and Source of Information has significant difference with the factors contributing to visitor impact management at the tiger reserve.

From ANOVA (Table 3) it is found that, Visitor Management techniques have significant difference with demographical factors -Gender, Education, Occupation and Age. Much stress was laid to limit the length of stay (Mean Value 3.453) by the visitors to reduce the impact on the tiger reserve among the visitor management techniques followed in the tiger reserve.

Visitor experience and satisfaction on the Environment Management technique has significant difference with gender. High importance has been placed on good practice of solid waste management (Mean Value 3.57) to maintain the sustainable environment.

Visitor education about the tiger reserve has significant difference with type of occupation of the visitors which influences the satisfaction level of visitors at the tiger reserve.

Visitor's satisfaction on the Facilities at the tiger reserve and Site management techniques has significant difference with Education, Occupation and Age of visitors. Visitors laid a importance to improve on Clean and accessible restrooms (Mean Value 3.703) so that visitors can help in reducing the impact by availing the facilities.

Table 3

Demographical factors	Study Constructs	F Value	Sig. (2-tailed)
Gender	Visitor Management	.566	.019
	Environment Management	5.363	.010
Education	Facilities at the Tiger Reserve	2.331	.042
	Site Management Techniques	2.385	.038
Occupation	Facilities at the Tiger reserve	3.727	.003
	Visitor Management	2.787	.018
	Site Management Techniques	4.948	.000
	Visitor Education	5.213	.000
Age	Visitor Management	3.271	.012
	Site Management Techniques	2.676	.032
	Facilities at the Tiger reserve	2.917	.022
Source of Information	Facilities at the Tiger reserve	2.768	.012
	Visitor Management	8.131	.000
	Site Management Techniques	2.525	.021
	Visitor Education	3.336	.003
	Environment Management	5.075	.000

Table 4

Model		R	R Square	Adjusted R Square	Std. Error of the Estimate	
1		.631a	.398	.392	5.95003	
ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	6931.603	3	2310.534	65.264	.000[b]
	Residual	10479.234	296	35.403		
	Total	17410.837	299			

Regression Coefficient

Table 5

Co efficients[a]						
Model	Un standardized Coefficients			Standardized Coefficients	t	Sig.
	B	Std. Error		Beta		
1	(Constant)	11.656	3.135		3.718	.000
	Site Management Techniques	.573	.205	.175	2.795	.006
	Visitor Education	.677	.205	.221	3.309	.001
	Environment Management	.695	.134	.325	5.209	.000

a. Dependent Variable: Visitor Management

The result of the regression model (Table 4) has been tested using ANOVA. The value of F ratio is equal to 65.264 ($P<0.00$) .R^2 value is 0.398 (39 percent).The adjusted R^2 is equal to 0.392 which denotes that R^2 would change marginally when another independent variable is added to this model .Therefore the model is fit and significant and it is inferred that the factors like environmental management, site management techniques and visitor education has significant

importance in Visitor Impact Management at Parambikulam Tiger Reserve.

Coefficient effect of Site Management Techniques, Visitor Education and Environment Management factors are calculated from the formula

$$Y = a + b1X1 + b2X2 + b3X3 \quad (1)$$

Y=11.656+0.573(Site Management Techniques) + 0.677(Visitor Education) + 0.695 (Environment Management)

The coefficient of X1 (0.573), X2(0.677), X3 (0.695) represents the partial effect of site management techniques, visitor education and environment Management on visitor impact Management, holding the other variables as constant. The estimated positive sign implies that the Management of visitor impact would increase by 0.573 for every unit increase in site management techniques, 0.677 for every unit increase in visitor education, and 0.695 for every unit increase in environment Management, and the coefficient value significant at 1 percent level.

Based on standardized coefficient, environment management is the most important factor to extract Visitor Impact Management score, followed by visitor education 0.677 and site management techniques 0.573 with positive effect. The impact of study variables is high on visitor impact Management.

Hence we conclude that the visitors experience at the tiger reserve are satisfactory with a scope of improvement in future and factors like environment education, facilities at the tiger reserve environment, visitor and site management techniques contributes to Visitor Impact Management at Tiger Reserve.

6.2 Suggestion

The study has revealed that environmental management, site management techniques and visitor education are the factors that contribute to Visitor Impact Management at Parambikulam Tiger Reserve. Much stress was laid on the Length of stay, solid waste management and clean accessible rest rooms at the tiger reserve which helps the authorities of tiger reserve to prioritize the factors for the better visitor impact management in tiger reserve. Drainage facilities can also be improved for better experience of visitors during their visit to the tiger reserve. These strategies can also be suggested to the management of other protected areas for sustainable development. Also KTDC and website of tiger reserve scan improve their contribution on visitor impact management by educating the visitors and providing up to date information on the tiger reserve than other sources.

7. Conclusion

Protected areas are the cornerstone for most of the national biodiversity conservation strategies. The research study was carried out at Parambikulam Tiger Reserve a well-protected ecological portion, which is one among the bio diversity hotspots, and well known for the conservation of tiger and other endangered animals like Indian Bear, Indian Elephant, Nilgiri Tahr and Lion tailed monkey. The research study revealed the experience of visitors and factors that contributes 40 percent on the Visitor Impact Management at Tiger Reserve. The study has also suggested measures to improve visitor experience and visitor impact management at the tiger reserve. It is important to identify the remaining factors that contribute to visitor impact management, thus leaving a wide scope for future study on visitor impact management at destination

8. Acknowledgement

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9. References

1. Andrew Wallace, The Effect of National Park Visitation on Environmental Awareness, 2006.
2. Arun LK, Local Community Assemblages of Periyar Tiger Reserve. Kerala Forest Research Institute (KFRI) Research Report, Thrissur, Kerala, India, 1999.
3. Bhatia A, SWOT Analysis of Indian tourism Industry. International Journal of Application or Innovation in Engineering & Management, 2013.
4. Buckley and Ormans, Eco principle & Practices publication-CABI, 2009.
5. Butler and Hvenegaard, research The Economic Values of Bird Watching Associated with Point Pelee National Park Canada, and Their Contribution to Adjacent Communities, 1988.
6. David and Eagles, Ecotourism in Costa Rica: A Conceptual Framework, Journal of Parks and Recreation Administration. 1990; 8 (spring):23-34.
7. Della Corte, Sciarelli, Cascella Gaudio Customer. satisfaction in tourist destination: The case of tourism offer in the city of Naples, Journal of Investment and Management, 2015.
8. Dolnicar. Insights into Sustainable Tourists in Austria: A Data-based A Priori Segmentation Approach, Journal of Sustainable Tourism. 2010; 209-218.
9. Epler Wood, Ecotourism principles, practices & policies, 1991.
10. Filion, *et al*. The Importance of Wildlife to Canadians in: The Economic Significance of Wildlife-Related Activities, 1987-1989.
11. Floyd M, Race, Ethnicity. Use of the National Park System. Social Science Research Review. 1999; 1:1-24.
12. Green, Michael J.B Eco-development in Orissa's protected areas: a participatory approach to conserving forest biodiversity and alleviating poverty piloted in Satkosia, 2010.
13. Matt Landu, Tourism. Recreation (EMT 508). 1990; 36:2.

14. Iqbal BA, Sami S. Global and India's Tourism scenario, 2016.
15. Jattan Pramita SS. Participatory Forest Management Objectives in India, Indian Forester, Dehra Dun, 2001.
16. Jyothi Maye RS, Venkateswara RB, Durga Rao S. Eco Tourism in India–Problems & Prospects Environmental Impacts on Tourism. The International Journal of Business & Management. 2012; 1:1-5.
17. Magesh, *et al*. Ecological studies of the Parambikulam Tiger Reserve in the Western Ghats of India, using Remote Sensing and GIS. 2014, 23-24.
18. Panwar HS, Green MJB, Misra MK. Conceptual framework for eco-development including community-based ecotourism and its application in Satkosia Gorge Sanctuary, 2009.
19. Patel R. India's tourism industry – Progress and emerging issues. Arthprabhand: A Journal of Ecotourism and Management, 2012; 1:5.
20. Raghu Prasad R. Ecotourism and Protected Areas: Contributing community development and conserving biodiversity, Piloted in Satkosia, 2014.
21. Rajeev Raghavan, Sandeep Das. Protected areas and imperilled endemic freshwater biodiversity in the Western Ghats Hotspot, 2016.
22. Spenceley, Snynan. Protected Area Tourism Progress, Innovation and Sustainability, Journal of Tourism and Hospitality Research, 2017.
23. Sunil Sharma, Emerging International Tourism Markets, Rajat Publication, 2007.
24. TIES, Fact sheet: global ecotourism. The International Ecotourism Society, 2006.
25. Umesh R. Dangarwala, Dr. Krupa J. Rao, scenario of Tourism Industry in India, 2016.
26. Wade and Eagles, The use of important: Performance Analysis &Market Segmentation for Tourism Management in Parks& Protected Areas: An Application to Tanzania's National Parks, Journal of Eco Tourism, 2003.
27. www.indiawildlifeportal.com assessed on 14 March 2018
28. www.indiatourismstate.com assessed on 02 March 2018
29. www.tourisminindia.com assessed on 27 February 2018
30. www.tourism.gov.in assessed on 20 January 2018
31. www.ecotourismindia.coM assessed on 14 February 2018
32. www.incrediblenindia.org assessed on 2 April 2018
33. http://www.ijasrd.org/in assessed on 20 March 2018
34. www.wikipedia.com assessed on 4 April 2018
35. http://dx.doi.org/10.1016/0160-7383(95)00075-5
36. https://parambikulam.org/ assessed on 19 April 2018