Tourism Related Factors Affecting Biodiversity:
A case study of Kaziranga National Park

A thesis submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy

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Abstract

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1.0 Introduction:

Use of natural resources to gain economic benefits has been very popular in almost all the developing countries. However use of natural resources could be either direct or indirect and one such form of indirect use of natural resources is tourism. Because of its benignant nature, tourism was considered as a smoke-free practice but now tourism is changing fast with commercial exploitation of resources on which it is based.

In the wake of growing tourism related activities, distinctive environment types and ecosystems develop specific environmental problems. Environmental degradation caused by facility development and visitations are some important internal threats in case of protected areas (Machlis & Tichnell, 1985).

It has also been accepted that proper management can lead not only to conservation of natural environment but also contribute to enhanced environmental quality. Now as an alternate, Ecotourism has been adopted which is capable of balancing our need and nature's productivity by harnessing resources in a sustainable manner.

However, it is not easy to adapt any alternative without assessing the ground reality both in terms of the extent of impacts of the current practice and the factors responsible for such impacts. Apart from physical assessment, it is equally crucial to understand the people's perception towards the same.

2.0 Relevance of the study and research gap:

This study attempts to address selected issues of tourism management through a perceptual study of tourism related factors that may affect biodiversity of a tourist destination. Considering the fact that no study on environmental management aspects in the context of nature-tourism in Assam was undertaken so far, this research was carried out in Kaziranga National Park, Assam to identify & study the major factors (related to tourism) contributing to ecological degradation in order to define possible management measures.

The study of impacts of tourism on ecology is enormously complex, as tourism has a number of biological impacts (Van der duim & Caalders, 2002). Multidisciplinary nature of tourism as an industry also complicates the measurement of impact.

Studies focused on perceptions of the environment have found that tourists generally have limited perception of wear and tear impacts but are more sensitive to the direct impacts resulting from litter, human waste, and vandalism etc (Lucas 1979; Marion & Lime 1986:229). Perceptions are based on how visitors believe impacts affect the overall attributes of the setting, such as scenic appeal or solitude, and whether or not the impacts are believed to be undesirable (Lucas 1979, Whittaker & Shelby 1988). Besides tourists, the perceptions of local community, service providing agencies (government and non-government) on ecological impacts are crucial to assess the effect.

3.0 The objectives of the study:

(i) To make a perceptual assessment of the tourism induced factors affecting the Biodiversity of Kaziranga National Park, Assam, India.
(ii) To identify whether there exists perceptual similarity among the stakeholders, regarding the key factors contributing to ecological degradation.

(iii)To define possible management measures and propose a framework for tourism management strategy for this protected area i.e. Kaziranga National Park.

4.0 Scope of the Study:

This study is confined to Kaziranga National Park, Assam, India, where it is attempted to make a perceptual study among various stakeholders of the tourism industry. The academic field of research is confined within the extent of biodiversity of Kaziranga and peoples' perception related therewith.

5.0 Methodology:

To achieve the prescribed set of objectives a questionnaire based survey was conducted among three key stakeholders of tourism i.e. (a) tourists, (b) service providers of tourism industry (and its related sectors) and (c) the local public of in and around Kaziranga including the members & representatives of NGOs concerned with Kaziranga National Park.

5.1 Questionnaire design:

The questionnaire has been designed based on a framework suggested by Tisdell (1999; *adapted from Mcneely et al., 1992, pp.14).*). However modifications were made after conducting a pilot survey and based on ground realities. The issues those were included in the questionnaire, though not exhaustive has covered as many topics as possible, particularly those raised during the pilot study.

The first part of the questionnaire comprised of 14 questions, where responses were sought on a seven point Likert scale. The second part of the questionnaire too comprised of 14 questions and responses varied between Strongly Disagree to Strongly Agree on a five point interval scale. The first part aimed to assess the factors that may affect the biodiversity of Kaziranga National Park. Whereas the second part assessed the perceptual similarity among the respondents on certain tourism & environmental issues.

5.2 Sampling technique:

Due to the exploratory nature of the study, the possibilities of having a definite sampling frame and therefore, probabilistic method of sampling has been ruled out. Non-probabilistic convenience method for selection of samples, with preference given to on the spot selection of respondents, was adopted.

5.3 Sample size:

A total of 505 responses were retained for further analysis after scrutinizing the responses. This comprised the sample size. The target respondents were tourists, service providers and local people/ representatives from local NGOs

5.4 Sampling Unit:

Individual respondents of the above mentioned groups comprised of the sampling unit.

5.6 Statistical applications:

For identifying the factors that are detrimental to the biodiversity of Kaziranga National Park, Factor Analysis was conducted on the first set of questions . When there are a large number of variables there exists the possibility that the variables are not all uncorrelated and representative of distinct concepts. Instead groups of variables may be interrelated to the extent that they are all representatives of a more general concept. Factor analysis was used to assist in selecting a representative for the original variables. It was used as an exploratory tool and used for data summarization only.

To ensure that relevant variables were included such that it results in conceptually meaningful factors, the questionnaire was subjective to a pilot survey.

Since the objective was to summarise the original information, the Principal Component Analysis was used along with Varimax rotation. Varimax gives clearer separation of sectors and has proved very successful as an analytical approach to obtain an orthogonal rotation of factors.

To test the appropriateness of Factor analysis, Bartlett Test of Sphericity was performed followed by Kaiser_Meyer_Olkin Measure of Sampling Adequacy. To evaluate the data reliability the Cronbach's alpha was too calculated. The factor analysis led to formation of different factors for the respondent groups.

For the second part of the questionnaire, the data collected was cross tabulated. The frequency distribution of the responses against each statement was subdivided group wise. This helps in easy interpretation for those who are not statistically oriented, and provides greater insight into a complex phenomenon than a single multivariate analysis. Moreover, it is simple to conduct and appealing to less sophisticated researchers. The statistical significance of the observed association is commonly measured by the Chi-square statistic.

Pearson's Chi-square statistic was used in this study to find out if the perceptions were independent of the stakeholder groups. In this study if Level of Significance (p) > 0.1 then the null hypothesis was not rejected (at 90% confidence level) else we rejected it.

The hypotheses were as follows: Null Hypothesis (H_o) is '*there is no perceptual difference among the stakeholders*' and the Alternative Hypothesis (H_1) is '*there is difference in perceptions among the stakeholders*'.

6.0 Analysis and Findings:

Factor analysis test was undertaken on the feedbacks received on 14 statements those were enlisted in the first part of the questionnaire. This helped in identifying the most critical factors.

The factor analysis of the whole data set together resulted in 6 factors, namely Factor 1 - Traffic, Factor 2 - Human Pressure, Factor 3 - Pressure of Tourism, Factor 4 - Disturbance to nature, Factor 5 - Pollution and Factor 6 - Baiting / Indulging animals that might affect biodiversity.

When the same exercise was done with responses of tourists only five distinctive factors emerged, namely Factor 1 - Activities of tourists and community, Factor 2 – Invasion of park premises, Factor 3 – Elephant safari, Factor 4 - Traffic and Factor - 5 Intrusion.

Factor analysis of the responses of local people resulted in five factors, namely Factor 1 – Damage to flora and fauna, Factor 2 – Spoiling scenic beauty, Factor 3 – Damaging natural settings, Factor 4 – Traffic and Factor 5 – Disturbance.

Analysis was made based on the third group of stakeholder i.e. service provider and it resulted in four factors, namely Factor 1 – Disturbing aesthetics, Factor 2 – Traffic / trespassing, Factor 3 – Invasion of park premises & Factor 4 – Tourism activities.

In an attempt to understand whether there exists some common issues among the factors, the following comparative table was formed.

Table 1.0: Factor Formation And The Corresponding Issues

Factors	**Tourists**	**Service provider**	**Local people**	**Overall**
1	St. 6 Trampling St. 9 Collection of fuelwood St. 12 Haphazard Development St. 13 Trekking & camping	St. 4 Picnicking around the park St. 7 Pedestrian & Vehicular traffic St. 11 Waste water disposal from the resorts / restaurants St. 14 Littering & dumping in & around the park	St. 3 Photography St. 8 Souvenir collection St. 9 Collection of Fuel wood	St. 2 Motor Vehicle St. 4 Picnicking around the park St. 7 Pedestrian & Vehicular traffic
2	St. 4 Picnicking around the park St. 5 Feeding of wildlife St. 11 Wastewater St. 14 Littering & dumping in & around the park	St. 2 Motor Vehicle St. 10 Running of motorboats St. 13 Trekking & camping	St. 11 Waste water St. 12 Haphazard Development St. 14 Littering & dumping in & around the park	St. 12 Haphazard Development St. 13 Trekking & camping
3	St. 1 Use of Elephant St. 3 Photography	St. 5 Feeding of wildlife by visitors St. 8 Souvenir collection from the park premises St. 9 Collection of fuel wood St. 12 Haphazard development activities	St. 1 Use of Elephant St. 5 Feeding of wildlife St. 6 Trampling of soil	St. 1 Use of Elephant St. 3 Photography St. 6 Trampling of soil
4	St. 2 Vehicle within the park St. 7 Traffic	St. 1 Use of Elephant St. 3 Photography St. 6 Trampling of soil during elephant ride	St. 2 Vehicle within park St. 4 Picnic St. 7 Traffic	St. 8 Souvenir collection from the park premises St. 9 Collection of fuel wood St. 10 Patrol boats
5	St. 8 Souvenir Collection		St. 10 Patrol boats St. 13 Trekking	St. 11 Waste water

	St. 10 Patrol boats			St. 14 Littering & dumping in & around the park
6				St. 5 Feeding of wildlife

From the above table, taking the top two factors into consideration, it was found that the following variables appeared to be common*.

St. 4 Picnicking around the park
St. 11 Waste water disposal from the resorts / restaurants
St. 12 Haphazard Development
St. 13 Trekking & camping
St. 14 Littering & dumping in and around the park

For the second set of questions, Chi square test tried to find out if there was perceptual similarity among the stakeholders on the factors contributing to ecological degradation of Kaziranga National Park. However similarities could be found in 11 statements.

Table 2.0: Perceptual Similarity Vs Perceptual Differences

Perceptually similar	**Perceptually different**
St.1 Excessive presence of visitors brings about behavioural changes in animals.	St.2 Food scarcity among wildlife results from developmental activities.
St.3 Developmental activities (construction) lead to rapid change in land use pattern and destruction of wilderness areas.	St.6 Loss of animal habitat (homes of wildlife) ultimately leads to permanent disappearance of the species and destruction of the eco-system.
St.4 Forcing the 'Mahut' (in case of elephant ride) to go closer to the animals may cause unexpected situations like attacking by the animals.	St.14 Eco-tourism helps in generating awareness and collection of funds for conservation of nature.
St.5 Various disturbances including noise pollution can bring about behavioural changes in animals.	
St.7 Habitat loss and food scarcity can cause migration of wildlife.	
St.8. Activities like grazing, trespassing, etc. inside the park can lead to the introduction of unwanted/ harmful plant variety and transmission of various types of diseases from animal to animal.	
St.9 Behavioural change in animals brings about danger to tourists and the locals.	
St.10 Increasing tourism activity leads to rise in local population resulting in negative	

* If the variable features in at least three groups, it is considered to be common.

ecological impacts.	
St.11 Eco-tourism highlights the cultural / natural heritage of an area.	
St.12 Eco-tourism enhances socio-economic status of local people.	
St.13 Eco-tourism also encourages community participation in nature conservation efforts.	

Followed by the appraisal of perceptual similarity among stakeholders with the help of chi-square test, an attempt was also made to find out similarities as well as differences of perceptions on the basis of gender, age group, education, occupation, daily budget and place of origin.

The statements /activities were grouped into three broad groups namely Development, Tourism activities and Ecotourism based on their characteristical similarities; perceptual similarity of stakeholder opinions (in terms of demographic profile) was judged over these three groups.

Based on rejection and non-rejection of the null hypothesis, two-way interpretation (i.e. demographic parameter wise and issue wise, the following observations were made.

Table 3.0: Perception And Respondent Groups *

Statement	Parameters under consideration						Perception
	Gender	Age	Education	Occupation	Daily Expense	Origin	
Group I: Development							
2: Food Scarcity	R	R	R	NR	NR	NR	Divided
3: Eco-destruction	R	R	R	R	NR	NR	Difference
6: Habitat loss	NR	NR	NR	NR	NR	R	No Difference
7: Migration	NR	NR	NR	NR	R	NR	No Difference
Group II: Tourism activities							
1: Excessive visitor	R	NR	NR	R	R	R	Difference
4: Mahut	R	NR	NR	NR	NR	NR	No Difference
5: Noise	NR	R	R	A	A	R	Divided
8: Weed/Disease	NR	NR	NR	NR	NR	NR	No Difference
9: Behaviour	R	R	NR	NR	NR	R	Divided
10: Populations	R	NR	NR	NR	R	R	Divided
Group III: Eco-tourism							
11: Culture	NR	NR	NR	R	R	NR	No Difference
12: Socio- economy	NR	R	R	NR	NR	R	Divided
13: Community conservation	NR	NR	NR	R	R	R	Divided
14: Funds	NR	NR	NR	R	NR	NR	No Difference

* R => Rejection of null hypothesis (H_0)
NR => Null hypothesis can not be rejected (H_1)

On the issue of 'Development', there is no difference in opinion occupation wise, budget wise and place of origin wise. The difference in perception occurred gender wise, age wise and education wise.

On the issue of 'Eco-tourism', there is no difference in perception gender wise, age wise and education wise. Difference was recorded occupation, budget and origin wise.

On the issue of 'Eco-tourism', there is no difference in perception gender wise, age wise and education wise. Difference in perception occurred occupation, budget and origin wise.

7.0 Conclusion and suggestions:

If the respondents are considered in totality, it was found that the sample perceived Traffic, Human pressure, Pressure of tourism, Disturbance to nature, Pollution, and Baiting animals as factors that affect the biodiversity of Kaziranga National Park. The tourist perception was that Tourist and community activities, Invasion of park premises, Elephant safari, Traffic, and Intrusion as factors that affect the biodiversity of Kaziranga National Park. The local people's perception was that Damage to flora and fauna, Spoiling scenic beauty, Damaging natural settings, Traffic, and Disturbance as factors that affect the biodiversity of Kaziranga National Park. The service providers perception was that Aesthetic disturbances, Traffic, Invasion of park premises, and Tourism activities as factors that affect the biodiversity of Kaziranga National Park.

Although, every resultant factor will have a vital role in terms of affecting the biodiversity of Kaziranga National Park, but issues like picnicking around the park, release of wastewater from the park, haphazard developmental activities, trekking & camping activities and littering/ garbage dumping in around the park need highest attention, as these emerged as common concern for all the stakeholder groups.

From the results of the Chi-square test it could be concluded that there existed very few perceptual differences in the total sample. However, when analysed demographic profile wise it was seen that differences did exist. Here also a common thread was observed to be running through irrespective of place of origin, occupation and spending capacity (budget) of the stakeholders regarding development issues. Interestingly, the stakeholders irrespective of any age group, level of education, types of occupation, limit of expenditure the respondents showed perceptual similarity over the issues of tourism activities. While gender wise, age wise and educational level wise it showed perceptual similarity on the aspects eco-tourism and its positive contributions.

Based on the above comparison, it was observed that irrespective of the demographic profile, the perceptions were almost similar for statements 4, 6, 7, 8, 11 and 14. They have a strong concern for issues such as going too closer to wild animals during elephant rides, loss of habitat leading to destruction of ecosystem, habitat loss & food scarcity followed by wildlife migration, effect of grazing of domestic cattle and trespassing activities, promotion of cultural and natural heritage through eco-tourism, contribution of eco-tourism for in nature conservation and awareness generation towards the cause. The respondent groups feel that above-mentioned activities will have significant impacts on the environment; the eco-tourism activities however can negate the ill effects and can contribute towards conservation of nature.

While regarding presence of excessive visitor, developmental activities induced food scarcity among animals, loss of habitat, awareness generation, and fund collection

through eco-tourism the stakeholders are divided in their perceptions. They are not yet sure whether presence of excess tourists and developmental activities might result in behavioural change, food scarcity and habitat loss eventually leading to disappearance of species as well as ecosystem.

Using the findings of the survey the following suggestions are made including managerial remedies to negate the damaging impacts of tourism development.

As there are different viewpoints of the stakeholders, it is always possible that some conflicts may occur. Therefore, measures have to be defined keeping in mind the common responses received from the stakeholders' end in order to transform Kaziranga into a better managed tourism destination. However, the growing environmental awareness would play a vital role in seeking community participation in planning a strategic tourism policy and implementing the same.

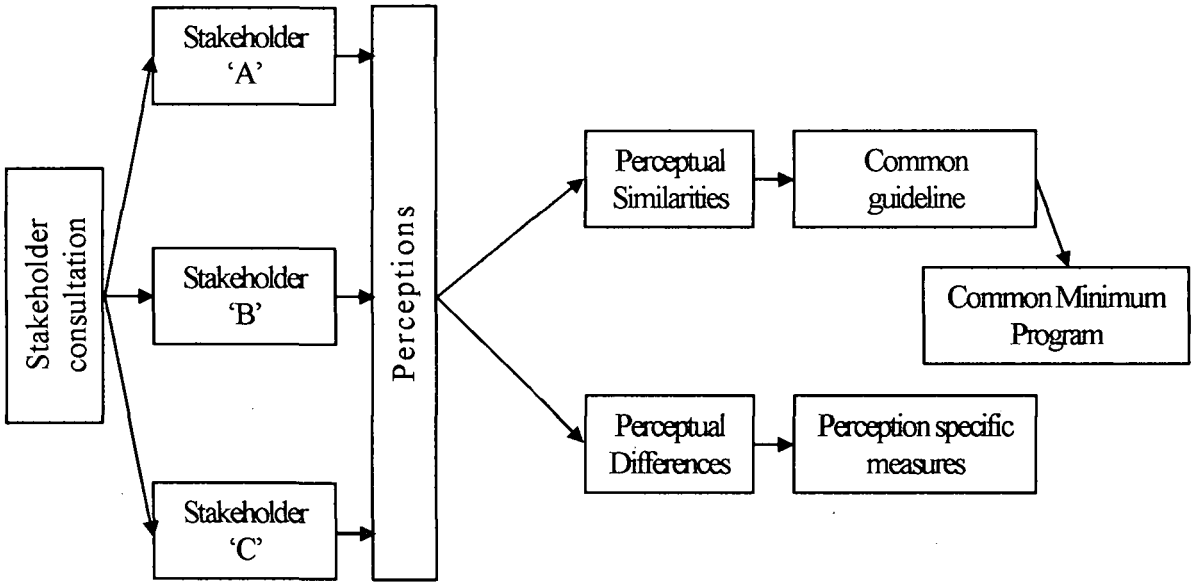

Figure 1.0: Stakeholder Consultation For Planning Of Tourism Development

Owing to the mixed responses received from the responding stakeholder groups, it is advisable to adopt a multi pronged tourism development strategy. A strategy designed on the issues that have common perception is likely to meet least resistance. However the most important phase of this process will be to have a stakeholder consultation, followed by which rest of the things can be planned. As far as the outcome of this study is concerned, stakeholder perception is central to the whole process of planning for an environmental friendly tourism approach in Kaziranga National Park.

Based on the preliminary observations made, feedback (common perception) received during the study and literature review, a set of suggestions (common guidelines) are being readied that would help in reducing the negative impacts on biodiversity. Suggestions are follows:

1. Legal norms must be revised and enforced to regulate developmental activities in and around the park. The park needs solution to issues like habitat loss and animal migration and controlling of haphazard development.

- ❖ Regulate construction of hotels, restaurants and tourist resorts, which can lead to destruction of natural settings (loss of habitat and change in land use pattern) and create problems associated with wastewater disposal
- ❖ Rope in the adjoining areas for trekking and camping (but in a regulated and non-destructive manner)

2. Check on pollution resulting from waste dumping and waste-water disposal. This will help to regulate littering and aquatic pollution.
   - ❖ Suitable arrangement of waste and waste-water treatment facility must be made.
3. To reduce pressure of tourism activities on Kaziranga to prevent it from becoming a mass tourism destination. I
   - ❖ Try to maintain a continuous but regulated flow of tourist through out the season
   - ❖ Provide alternatives as cultural/ rural tourism by promoting ethnic culture, tribal traditions like costumes and cuisine
4. To regulate excessive tourism – (to deal with associated problems of over-crowding)
   - ❖ To fix the number of visitors to be carried in one vehicle
   - ❖ To regulate the number of vehicles to be allowed at one go
5. To set norms and Code of Conduct (CoC) for safari operators to make their operations eco-friendly, so that pollution is reduced.
   - ❖ Vehicles they use should be noise free, run on less polluting fuels
6. To take precaution to avoid any confrontation with the animals or situations that can lead to behavioural change in animals – (will solve the problem of visitors going closer to wildlife)
   - ❖ To make mandatory for the safari groups/ tourist guides / mahout to follow code of conduct (CoC) while taking tourists inside the park
   - ❖ Points to be included in the CoC - to maintain safe distance from the wildlife during jeep safaris and elephant ride, refrain from feeding animals
7. To introduce penalty against any form of unlawful activities in order to reduce disturbance to the natural environ and prevent spread of harmful/unwanted flora.
   - ❖ Anyone who does not follow code of conduct and specific rules set by the park authority will be heavily punished
   - ❖ Any other activity that is not in the interest of Kaziranga National Park will also be penalised
   - ❖ Trespassing, fuel wood collection, souvenir collection and grazing of domesticated animals to be treated as a serious offence
   - ❖ Awareness propaganda (regarding the above) to be enhanced

In the process of planning and decision-making, the host community being the most important stakeholder group should certainly play a crucial role. An ample amount of literature suggest that the working mechanism of eco-tourism is essentially dependent on its various stakeholders i.e. Local community, tourists, service providers, policy makers, professionals, researchers and government agencies.

The following figure tries to summarize the various inter linkages and dynamics of tourism.

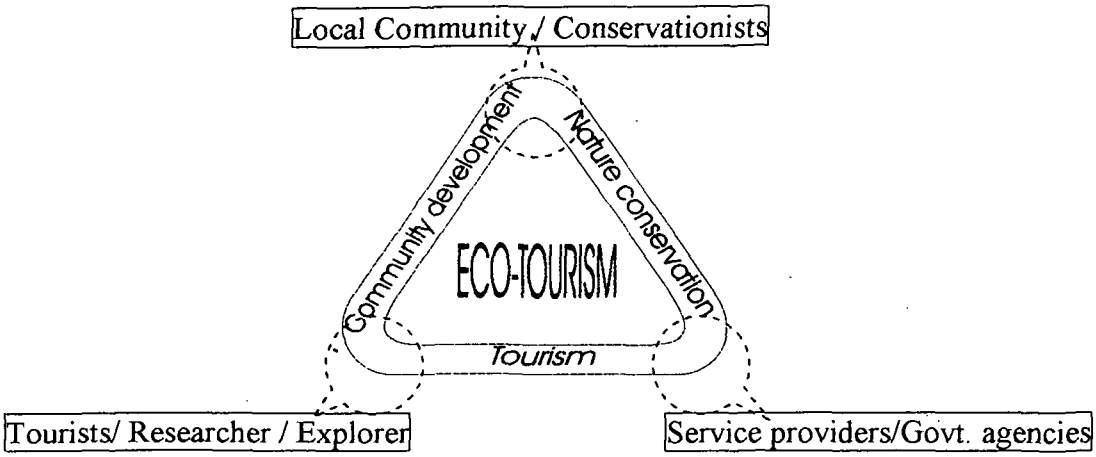

Figure 2.0: The Eco-tourism Triangle

Another thing that should come into consideration in case of proper tourism management is monitoring of tourism activities, assessment of possible as well as existing impacts of tourism on biological diversity, and thereby framing measures to mitigate these impacts. Monitoring is always essential in all sort of developmental projects including tourism, as in this process the natural settings usually get altered and to what extent this alteration is acceptable to nature is unknown to us. A rigorous assessment can help appraise these changes and thereby lead to suggestion of necessary measures.

FORM-XVIA

TEZPUR UNIVERSITY

Certificate of the Research Supervisor

This is to certify that the thesis entitled 'Tourism Related Factors Affecting Biodiversity: A case study of Kaziranga National Park' submitted to the Tezpur University in the Department of Business Administration under the School of Management Sciences in partial fulfilment for the award of the degree of Doctor of Philosophy in Management Sciences is a record of research work carried out by Mr. Pranab Jyoti Patar under my personal supervision and guidance.

All helps received by him from various sources have been duly acknowledged.

No part of this thesis has been reproduced elsewhere for award of any other degree.

Date: 30/9/08

Place: Tezpur

Chandana Goswami

Signature of Supervisor

Name: Dr (Mrs) Chandana Goswami

Designation: Reader

School: Management Sciences

Department: Business Administration

FORM-XVIB

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Certificate of the External Examiner and ODEC

This is to certify that the thesis entitled 'Tourism Related Factors Affecting Biodiversity: A case study of Kaziranga National Park' submitted by Mr. Pranab Jyoti Patar to the Tezpur University in the Department of Business Administration under the School of Management Sciences in partial fulfilment for the award of the degree of Doctor of Philosophy in Management Sciences has been examined by us on _____ and found to be satisfactory.

The Committee recommends for the award of the degree of Doctor of Philosophy.

Signature of:

Supervisor

External Examiner

Date:_____

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New Delhi

Chapter I:
INTRODUCTION

"Tourism is good as industry but not as a craze. When it distorts the character of place and isolates the peace of touristic areas, it becomes positively harmful."

- Anonymous

Chapter I

INTRODUCTION

The natural environment, in simple words can be defined as the life support system. Apart from food and shelter, it provides services as well and if this system disturbed, how can life remain normal? The earth is a treasure trove of natural resources, some that are not renewable and some which are renewable but have a lower rejuvenation rate.

The mounting world population has constantly been creating pressure on the equilibrium of nature. Growing demand of our needs, the quest for economic progress and even the enjoyment of the riches have compelled nature to react vehemently. Although the environment seems to have a stretchable carrying capacity, it does not really regenerate beyond a certain point. In other words the natural environment can simply be described as fragile. Although the earth harbours a plethora of life forms, not all of them are intelligent enough to realise its fragility. Hence the responsibility falls upon the cleverest species on the Earth i.e. human beings, and it's up to us how fast we can realise the seriousness of the situation and put our combined efforts to leave the planet as liveable as possible for our successors. More than half a century ago Mahatma Gandhi once said, "The world has enough for everyone's need, but not for anyone's greed". His view still holds good today and we have to attempt to rein in our greed.

The world environment is changing fast and the reasons are mostly anthropogenic. Consequently we are gradually losing many resources right from greenery to clean environment, from mental peace to social security. As an antidote the inclination is towards visitation to environments that are still untouched and unabused e.g. wilderness areas, forests, nature reserves, river valleys, beaches, mountains, etc. Such travelling activities of persons to places other than his usual environ and staying there for various purposes (which is referred to as tourism) has grown to its maximum to become one of the largest industries of the world. This export industry is now being compared next only to Oil and Armaments as a generator of foreign currency exchanges at International level (Jha, 2002). Tourism is a booming sector and with its tremendous potency to grow further, it has triggered socio-economic development in many parts of the world.

Tourists normally showed increasing desire to find fulfilling experiences in environments that are ecologically well managed. Unfortunately virgin environments that lure people from distant places are disappearing rapidly owing to the pressure of mass tourists, who simply want leisure without any ethics or sentiments for it. In most parts of the world tourism is largely being exploited for economic development because of it's so-called non-polluting nature. However in due course of time, the growing magnitude of this booming industry has already given rise to issues mostly of environmental concern (both natural and cultural). Tourism related activities that involve overuse and misuse of resources have resulted in irreversible damage to the environment; pollution and other consequences leading to a gloomy future of the tourism industry. Man progresses, nature losses; as stated by Negi, 1990 to explain the ill correlation between environment and development. Development is essential but not at the cost of ecological balance. The fact is that any development, without any thought given to environmental factors, can actually prove to be disastrous and ultimately turn out to be counter-productive for tourism itself.

Tourism was once considered as a favourite past time and not much importance given to developmental aspects. Over the ages, it has transformed into a sophisticated phenomenon, which now has a multidisciplinary approach involving an assorted human concern. For one section of the society (the rich) if it is merely a leisure activity, then for the rest it is a livelihood option. Besides being a source of income (revenue), tourism provides impetus to employment generation, infrastructure development, awareness generation, scope for newer researches, and more importantly it spreads message of peace and universal brotherhood. However, tourism also brings in unwanted and ill consequences as fast as the beneficial aspects.

Human interventions including tourism activities are responsible for acceleration of ecological degradation, environmental pollution, unnatural landscape changes, cultural pollution and mis-utilization of resources.

Tourism in true sense is a multi-dimensional service industry, which produces no real product, rather offers service at various level and in various forms. During the year 1988 itself, the Wharton Econometrics of American Express Co. described tourism as the world's largest industry and a major contributor to the world economy (Jenkins,

1994 in Batra & Chawla, 1995). Tourism in fact continued to grow since the Second World War, virtually ushering in an era of international tourism.

In India tourism has been an age-old practice. Pilgrimage was perhaps the most ancient form of tourism activity that was first initiated by Shri Shankaracharya. International tourism in India dates back to 5th century, when the famous Chinese explorer Hiuen Tsang visited this magnificent land for the first time. During the year 1946, the ruling British government initiated the first-ever tourism enterprise in India when a Committee was appointed to advise the government on the development of tourism. And after India's independence, it was Pt. Jawaharlal Nehru; the then Premier who pioneered the concept of Bharat Darshan (Bharadwaj & Choudhury, 1997). In the early phases of tourism in India, the growth was much faster, even faster than that of world tourism, inflow of tourists both national and international grew very fast. Hence the upliftment that occurred nationally in terms of economy and in other regional aspects was quite visible.

Table: 1.1 Flow of tourists to India

Year	International tourist	Domestic tourist	Income
1951	16,800	-	-
1990	1.7 million	63.8 million	-
1995	-	-	US$ 2583 million
2000	2.64 million	210 million	US$ 3168 million

Source: Ministry of Tourism, Govt. of India

Developing countries that are looking for fast economic reforms and have limited resource-based economies have already been availing the advantage of tourism. Two more key reasons that can possibly explain the reason for growing popularity of tourism industry in developing countries are, (1) Major consumers of international tourism are the residents of developed countries, whose favourite destinations are located mostly in third world, (ii) Tourism is basically a service-intensive industry that depends on manpower, which is in plenty in these countries. Tourism thereby also solves the problem of unemployment.

Leaving aside the negative aspects of tourism, one thing that emerges is that it contributes to the economies of the developing countries. The tourism related problems however can be attributed to ill-management, lack of awareness and lack of pro-environment attitude.

No type of tourism can be sustainable in the absence of appropriate planning, monitoring, evaluation and management; and sustainable nature-based tourism or eco-tourism can only be achieved when the behaviour of destination managers, stakeholders and tourists is ecologically, economically and ethically responsible (Deng, King & Bauer, 2002). Sustainable tourism is in fact a combination of certain factors (such as economy, ecology, culture, community and their locality) that are seeking simultaneous sustainability in the long run. And for such reasons (of achieving sustainability) eco-tourism has managed to take the front seat among the other alternatives. Few form of eco-tourism is also environment-friendly, culture-friendly and people-friendly because (i) it opens relatively undisturbed and unexplored areas with unique wilderness and species richness to the nature lovers from all over the globe, (ii) encourages sustainable utilization of natural resources and their conservation, (iii) leaves minimal impact, (iv) operates on a small scale, (v) requires little specialised low cost infrastructure, (vi) promotes indigenous items (handicraft, food, ayurvedic medicines, etc.) and increases their cultural and economic value, (vii) revitalizes local (tribal) customs and tradition, (viii) opens employment opportunities to skilled and local unemployed youths, (ix) ensures fair distribution of benefits and costs among its various stakeholder groups, (x) contributes to nation's economy through foreign exchange, (xi) improves local infrastructure & facilities, (xii) encourages desirable land use planning, (xiii) promotes scientific research, expeditions, networking, (xiv) monitors, assess and manages the impacts of tourism, etc.

As far as the negative aspects are concerned, it is essential to appraise the impacting factors and assess the level of damage they might or have already caused to environment and to the industry itself. In most cases, Environmental Impact Assessment (EIA) is commonly conducted as a precautionary measure to predict and quantify possible physical changes and vulnerability of species to extinction. Such steps can as well contribute positively to tourism policy design and formulation of other legal and institutional framework. As far as the planning for development is concerned a high degree of sensitivity is needed and when it comes to tourism the task becomes mammoth. There is no dearth of instances, where tourism ventures have failed due to improper planning both in developed and developing countries. In 1963, United Nations Conference on International Travel and Tourism had adopted a set of recommendations

emphasising effective tourism planning at national level. While planning for tourism, the priority has always been on ensuring protection of resources along with other aspects. Meaningful planning and successful implementation will be possible when perceptions of the stakeholders and policy makers do not show much variance.

It has been revealed from previous experiences that mass tourism (in spite of planning) usually contributes to more detrimental effects, as there barely exists any regulatory measures. All tourism activities are not nature oriented; yet it has been observed that tourism leaves some impact on the environment. Though it has been argued that the relationship between tourism and the environment is complex (Wall, n.d.), this complex relationship is nothing but a symbiotic association making them two faces of the same coin. However changing demand and supply modify this relationship from time to time (Wall, n.d.). The degree of importance of the relationship between tourism and environment is cited in the Manila Declaration on World Tourism during World Tourism Conference, 1980, which states that tourism resources available in various countries comprises of space, facilities and values simultaneously. These are resources whose use cannot be left uncontrolled without running the risk of their deterioration, or even destruction. These natural heritages of mankind therefore need to be preserved by national and international communities with all necessary steps (Bhatia, 1991). Hence the concern for conservation of resources has resulted in the concept of having an appropriate alternative of tourism. One such most coveted alternative is eco-tourism, which is defined by International Union for Conservation of Nature and natural resources (IUCN) as "environmentally responsible travel and visitation to relatively undisturbed natural areas to enjoy, to study and appreciate nature (and accompanying cultural features of both past and present) that promotes conservation, has lower visitor impact and provides for beneficially active socio-economic involvement of local populations". Eco-tourism has actually rejected an age-old theorem that believes development and conservation cannot co-exist; rather it has effectively been able to establish the 'dev-con' relationship by raising environmental awareness, generating revenues and mobilising conservation forces while contributing to the socio-economic prosperity. It is an accepted fact that to make eco-tourism a positive economic and environmental tool, it requires policies that foster responsible nature tourism development, broad-based and active local participation in its benefits, and conservation

of developing countries' biological heritage. For responsible tourism development local participation is very essential; however it would be more important to know whether the concerned people also have a positive perception towards this participatory approach.

Like eco-tourism there are other forms of alternative tourism too, such as green tourism, wildlife tourism, geo tourism, sustainable tourism, responsible tourism, etc. These alternative forms of tourism practices are nothing but counter-measures – that are capable of negating the detrimental and undesired outcomes of mass tourism. Alternative tourism is mostly based on eco-ethics that follow certain codes of conduct rather than legal framework and it is additionally required to stick to the principle of sustainability. Sustainability is a factor that comes in to consideration everywhere be it nature, be it life, be it prosperity, be it money, be it society and be it culture. Now the question is whether one hundred percent sustainability is practically feasible? It would be worth mentioning here that, the entire biosphere is a large form of ecosystem, where every component is interdependent. However, the conflict between ecology and economy is not new and time is a witness to how our ecological features are being deteriorated due to our actions of seeking short-lived economic gain.

According to the World Commission on Environment and Development (Brundtland Commission, 1987) the sustainable development is 'a form of development that meets the needs of the present without compromising the ability of future generations to meet their own needs.' Butler, 1991 has suggested a working definition of sustainable development in the context of tourism as: 'Tourism which is developed and maintained in the area (community, environment) in such a manner and at such a scale that it remains viable over an indefinite period and does not degrade or alter the environment'. According to World Tourism Organisation, sustainable tourism is a tourism, which leads to management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity and life support system and it can only take place if carrying capacities for key tourism sites (considering cultural integrity, essential ecological processes and the biological diversity) are conducted and then rigorously implemented through a system of effective planning and operating controls to fulfill the economic, social aesthetic needs.

The environmental problems, along with anxieties, have however brought a new awakening, awareness and then action. To counter these ill effects of tourism, identification of causal factors has become the need of the hour. The famous quote: prevention is better than cure can be well established in case of environmental balance, as nothing in the environment is purely restorable and hence conserving it from further deterioration is the only solution. Studies are hence essential to constitute the foundation for tourism management strategies (both at local and regional level) with long-term plans for the future. Policy planning for tourism is indeed a Herculean job as prior to implementation it becomes extremely essential to validate its concept and obtain acceptance from the people. Next to environment, man is the most crucial component of the tourism industry, as man is either a tourist, or he is the host who provides facilities to take care of the visitors need. Hence the management plans are to be need-specific based on environmental needs, people's need and the needs of time. The Conservation International (CI) along with United Nations Environment Programme (UNEP) has already made it clear that 'Tourism requires careful planning in the future to avoid further negative impacts on biodiversity. Many of the factors associated with biodiversity loss – land conservation, climate change, pollution – are also linked to tourism development'. In spite of our late realisation about the adverseness of tourism development and quantification of the same, responses are falling into places slowly leading towards the requisite conservation measures.

Nothing can be more protective as well as restorative for the environment than saving it from further deterioration. This can be done by "taking account of their (local) culture and traditional practices, making certain that roles of all sectors of the community are understood and, above all, asking people to frame their own, local environmental goals" and such a policy alone may "provide the long term gains which are the very essence of sustainability" (Vidal, 1992).

Chapter II: LITERATURE REVIEW

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LITERATURE REVIEW

2.1 Tourism

Tourism comprises of the activities 'of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes' as per World Tourism Organisation's (WTO) definition. It is nothing but a collection of activities, services and industries that delivers a travel experience, including transportation, accommodations, eating and drinking establishments, retail shops, entertainment businesses, activity facilities and other hospitality services provided for individuals or groups travelling away from home. (Northern Arizona University, 2002). However, tourism can be of various forms, such as – Heritage, Culture, Rural, Wildlife and Nature based tourism.

The term nature-based tourism is generally applied to tourism activities that are dependent on the use of natural resources, which remain in a relatively undeveloped state, including scenery, topography, waterways, vegetation, wildlife and cultural heritage (Ceballos-Lascurian, 1996:19 in *Deng, King & Bauer, 2002*). According to WTO estimation nature-based tourism is seven percent of international tourism expenditure (Lindberg, 1997) and according to World Resource Institute, the same has been increasing at an annual rate of between 10% and 30% (Reingold, 1993 in *Deng et al., 2002*). As nature tourism grows, protected areas will witness increasing pressure from tourists, with the quality of destination attributes exerting a considerable influence over their experience.

After the Second World War, tourism roused significantly at international level with more and more number of people taking up holidaying. Hence, growing number of visitation has also caused consequent effects on the destination, e.g. unplanned growth in various forms including over-all infrastructure development resulting in the degradation of our natural environment, which is the primary cause of tourist attraction. The denigration of human progress embodied in the sustainability paradigm is likely to hold back humanity from facing up to and solving problems of poverty and underdevelopment. It is hence a far bigger problem than some of the troublesome by-products of unplanned tourism development. (Butcher, 1997: 31 in Liu, 2003)

The tourism boom, which characterised in the 1960s as a result of the induction of jet travel, was also responsible for the advancements in the development of statistical measurements and evaluation of tourism (Bhatia, 1991). Various surveys conducted showed that natural tourist resources were the primary factor that attracted tourists even in countries that were rich in cultural heritage.

2.2 General Impact of tourism

Eagles, Bowman & Tao, 2001 have identified the following four key links between Tourism and Environment:

1. Components of the natural environment are the basis for a marketable tourism attraction or product.
2. Management of tourism operations should minimise or reduce their negative environmental impacts.
3. Funds generated through tourism can contribute directly and indirectly towards conservation of the environment being visited (i.e. tourist destination).
4. Attitudes of tourists towards the environment are influenced by the environmental and cultural interactions provided by tourism operators and park staff.

There are environmental aspects to every major component of tourism business (e.g., products and markets, management, money and people). These environmental aspects are heightened when the locations in which tourism is occurring happens to be protected areas (Buckley, 1994).

Like any other industry, tourism also has contributed to and has had negative as well as beneficial impacts on the environment. Positive impact of tourism is about generating employment, revenue, awareness and interest among local public. According to Roe, Leader-William & Dalal-Clayton, 1997 negative impacts are of two types: Direct & Indirect. Direct impacts include effect on the environment (including the flora and fauna). Large-scale visitation every year to natural environments leads inevitably to some disturbance and damage these sites. While such damage is attributable directly or indirectly to tourists and their activities, it is often unclear whether their actual behaviour is responsible for the major negative impacts on nature or whether it is due to activities of the service providers (e.g. construction and development of infrastructure and facilities). Whatever be the case, it is tourists who are usually identified as causing

destruction, particularly in developing countries (Deng et al, 2002). Lea, 1988 and Olindo, 1991 have indicated how large volume and demanding access to game and to relatively luxurious travel and accommodation facilities have caused problems such as overcrowding, animal disturbance, vegetation degradation and soil compaction, and waste production within Kenya's game parks (France 1997:13).

The 21st century on planet earth has bought with it a complexity of human caused environmental problems. Ecosystems services, the basic life support systems of the earth that contribute to clean air, clean water and biodiversity are being impacted increasingly by a growing human population and further impacts on the environment are being forecasted by scientists. Serious environmental problems need to be reduced through concentrated efforts that deal with the causes of such problems and in this context, the tourism industry, along with other industries, has an important role to contribute to improved environmental futures (Worboys & De Lacy, 2003).

Impacts of tourism can be categorized into three main types: economic, social and environmental. The 'impacts of tourism' was noted in the definition of tourism given by Mathieson & Wall, 1982:1 – 'The study of tourism is the study of people away from their usual habitat, of the establishments which respond to the requirements of travellers, and the impacts that they have on the economic, physical and social well-being of their hosts. However, Tourism has long been considered a 'clean industry or smokeless industry' that has a pro environmental prospective. Unfortunately this image is changing now and it became apparent that tourism industry is not as benign as first thought; even most parties are also aware of the possible negative impacts and realize the need for action (UNEP, 2000; Berno & Bricker, 2001). Concern over ecological effects of tourism started to mount during the 1960s and 1970s (Pearce, 1985). The International Union of Official Travel Organization (IUOTO), the predecessor of the WTO was one of the first organizations to come to the defence of environmental protection as early as in the year 1950, having one of its main objectives as the study and development of natural tourist resources. In the year 1954, the study and development of environmental questions became institutionalized in the activities of IUOTO and the protection of tourist heritage was included in the agenda of each IUOTO Assembly (Bhatia, 1991). The WTO espoused the sustainable approach to

tourism, and started to apply sustainable development principles in all of its tourism planning and development (WTO, 1998).

There are varieties of challenges associated with the measurement of impacts of tourism. Some of these apply to all forms of impact assessment and include:

- The difficulty of establishing a base level against which to measure change
- The difficulty of disentangling human-induced change from natural change
- Spatial and temporal continuities between cause and effect
- The complexity of environmental interactions – primary impacts induce secondary impacts and tertiary impacts and so on

Other challenges are more specific to tourism and include:

- The diversity of activities involved
- The diversity of environments in which tourism occurs
- The mobility of tourists that occurs en route as well as on-site
- Cumulative impacts

Furthermore, there are three main methods by which impact assessments are undertaken:

- After-the-fact analyses
- Monitoring of change through time
- Simulation

Each of the above has differing requirements with respect to time and money, produce results with differing characteristics and, consequently, different degrees of management utility (Wall, 1996). Furthermore, much change associated with tourism may be cumulative as a number of small enterprises is developed in sequence in close proximity, each having a minor impact when viewed alone but together having far-reaching consequences. Cumulative impact assessment is a challenging topic, which is beginning to attract the attention of those charged with conducting and evaluating impact assessments, although it has yet to receive much recognition in the tourism literature (Shoemaker 1994 in Wall 1996).

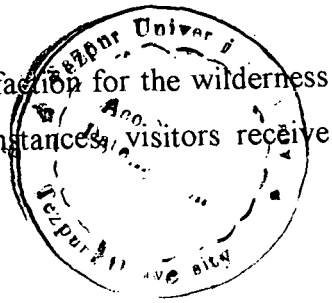
Crowding can decrease aesthetic enjoyment and diminish opportunities for solitude (Wager 1964). Crowding was originally based on physical components measured in terms of visitor density, but later came to be conceptualised as psychological evaluations of visitor density (Gramann, 1982). Early research efforts reported that increasing user density reduces visitor satisfaction (Herberlein & Shelby, 1977) leading managers to focus on determining the permissible numbers of visitors that would

prevent crowding. But during further research it was revealed that increasing visitor number do not always, or directly, diminish visitor satisfaction (Absher and Lee, 1981; Shelby, 1980). In fact, density is not negatively evaluated as crowding by visitors until it is perceived to interfere with or disrupt desired recreation objectives or outcomes (Gramann and Burdge, 1984). Visitor expectations, preferences and motives may be more important determinants of perceived crowding than actual visitor densities (Marion & Ferrell, 1998).

Population rise has brought about three major environmental problems, namely climate change, habitat destruction & species extinction, and pollution. Hence tourism will require more careful planning in the future to avoid any further negative impacts on biodiversity. The above-mentioned problems contribute to biodiversity loss, and are also linked to tourism development. However, tourism carries in itself the seeds of its own destruction. The well known economic analyst and futurologist, Herman Kahn, described tourism as ".....next only to atomic power in its potential for environmental destruction.....". Whereas according to Bharadwaj & Choudhury, 1997 it is not tourism that destroys the environment; it is the bad tourism management that does it. Tourism development can become a positive factor for improving the environment, if certain amount of intelligent basic planning is done (Bhatia, 1991).

Visitors have varying perceptions of the existence and significance of recreation-induced resource impacts. Recent studies have found that even perceived impacts could degrade the quality of visitor experiences (Roggenbuck, Williams & Watson, 1993; Vaske, Donnelly & Shelby, 1993). Perceptions are based on how visitors believe the impact affects the overall attributes of the setting, such as scenic appeal or solitude, and whether or not the impacts are believed to be undesirable (Lucas 1979, Whittaker & Shelby 1988). However visitor responses can be quite variable. Lucas, 1979 reported that the visitor satisfaction was not diminished by trail and campsite impacts. In contrast, Roggenbuck et al. (1993) found that littering and human damage to campsite trees were among the most highly rated indicators affecting the quality of wilderness experiences. Visitors appear to be sensitive to overt effects such as the occurrence of litter, horse manure or tree damage, and to particularly visible examples of physical impacts such as soil erosion (Marion & Ferrell, 1998). As per the findings of Hollenhorst & Gardner (1994, in Leung & Marion, 2000), vegetation loss and bare

ground on campsites are two important determinants of satisfaction for the wilderness visitors (especially trekkers and campers). In both these instances, visitors receive negative experience with reduced satisfaction.



2.3 Environmental impacts

In the wake of tourist activities, distinctive environment types and ecosystems develop specific environmental problems. However, it has been widely accepted that proper management can lead not only to conservation of natural beauty and wildlife but also enhance environmental quality. The promotion of environmentally sound tourism with the development context is an area of mutual concern for the WTO and United Nations Environment Programme (UNEP). Cohen, 1978 expresses concern that developing countries with no tradition of conservation and awareness of the need for environmental protection must be very cautious in promoting tourism.

Concern over the ecological effects of tourism started to mount during 1960s and 1970s (Pearce, 1985). The studies on tourism and environment gained tremendous boost from the efforts of Budowski, 1976 and Cohen, 1978, followed by the works of Coppock, 1982, Mathieson & Wall, 1982, Farrell & McLellan, 1987, and so on. These works eventually helped in designing tourism impact management measures as carrying capacity analysis, assessment of ecological impacts, etc.

There is limited empirical literature on the environmental degradation caused directly by eco-tourists within protected areas of developing countries. Much of this research has been conducted in developed countries, in parks and wilderness areas not managed specifically for eco-tourism. This body of literature often referred to as recreation ecology (Cole, 1987), is directly applicable to eco-tourism management. Recreation ecology studies describe the types, amounts and rates of ecological changes (both positive & negative) resulting from visitor use, including use-related environmental and managerial factors that influence these changes (Marion and Rogers, 1994).

Despite its positive potential, eco-tourism is not without risks. Uncontrolled tourism development and subsequent impacts can destroy or degrade the sustainable and scenic resources of protected areas along with the cultural resources of the fringe villages (Henning, 1996). MacKinnon & MacKinnon, 1986 recommended that managers of protected areas should explain to tourism authorities that limits must be placed on visitor use so that carrying capacities are not exceeded. Any form of tourism can be

detrimental to nature if the pressure of visitors is beyond the carrying capacity of the place and if the visitors do not live up to the community norms. In every tourist spot there is a carrying capacity for tourists, as well as for any other type of use, which will vary with the fragility of the area concerned and the nature of tourist activity contemplated (Bhatia, 1991).

In the absence of effective planning and management, eco-tourism can lead to significant negative impacts on vegetation, soil, water, wildlife and historic resources, cultures (such as loss of interest in traditional practices), and even visitor experiences (such as visitor crowding and conflicts). Such impacts can be both ecologically and culturally significant and may negatively affect visitor satisfaction. Visitation may then diminish, along with economic benefits and resource protection incentives (Mieczkowski, 1995). Negative impacts of tourism came in to light when pristine places like mountain peaks especially the Mt. Everest and forest trails were found to be full of unbelievable amount of garbage (Ceballos –Lascurain, 1997).

Impact of Tourism on Environment has been documented on the following aspect (Ceballos - Lascurain, 1996).

a. Impact on Vegetation: Trampling, driving vehicles, collection of grass & other plants, grazing activity by animals and firewood collection by hotel owners can have an impact on the vegetation composition.

b. Impact on Animals: Animals are exposed to unusual visual and sound stimuli when they encounter tourists. This can generate various types of responses such as fleeing, hiding, halting, avoiding or even migrating to an undisturbed but less profitable habitat. This response can lead to disruption of their feeding, resting and breeding activity (Speight 1973, in Ceballos –Lascurain, 1996).

c. Impact on Ecosystem: Tourist activity can have an impact on the soil, mineral and water resources in an area. Soil compaction can result from trampling, climbing, and animal trekking (Ceballos –Lascurain, 1996). Visitors when they walk or scramble down the slopes can cause a dispersed downward movement of topsoil. This results in erosion of topsoil, prevents natural regeneration, and leads to subsequent changes in the vegetation composition. Soil compaction is a serious problem caused by intensive use of the path by people and animals (Kuss, Graefe & Vaske, 1990).

Eventually while categorising impact areas of tourism (i.e. natural resources, pollution and physical impacts) the UNEP in the year 2004 indicated that impact of tourism on environment has gradually been resulting in far reaching global consequences through loss of biological diversity, Ozone layer depletion and climate change.

Studies conducted in the recent past on the impact of mountain tourism has revealed that owing to the growth of tourism activities in mountainous region, negative effects such as pollution, pressure on forest areas (fire wood collection), noise and overcrowding, littering and garbage dumping, water pollution, clearing of campsites, etc. have developed. In one such study, Spaltenberger (n.d.) had pointed out impacts of mountain tourism in the Himalayas in the form of deforestation, waste disposal and trail degradation.

In Gunung Gede Pangrango National Park in Indonesia, it was observed that regeneration of trees and shrubs was very low on tourist trails (Supriadi and Darusman, 1992 in Ceballos – Lascuarain, 1997).

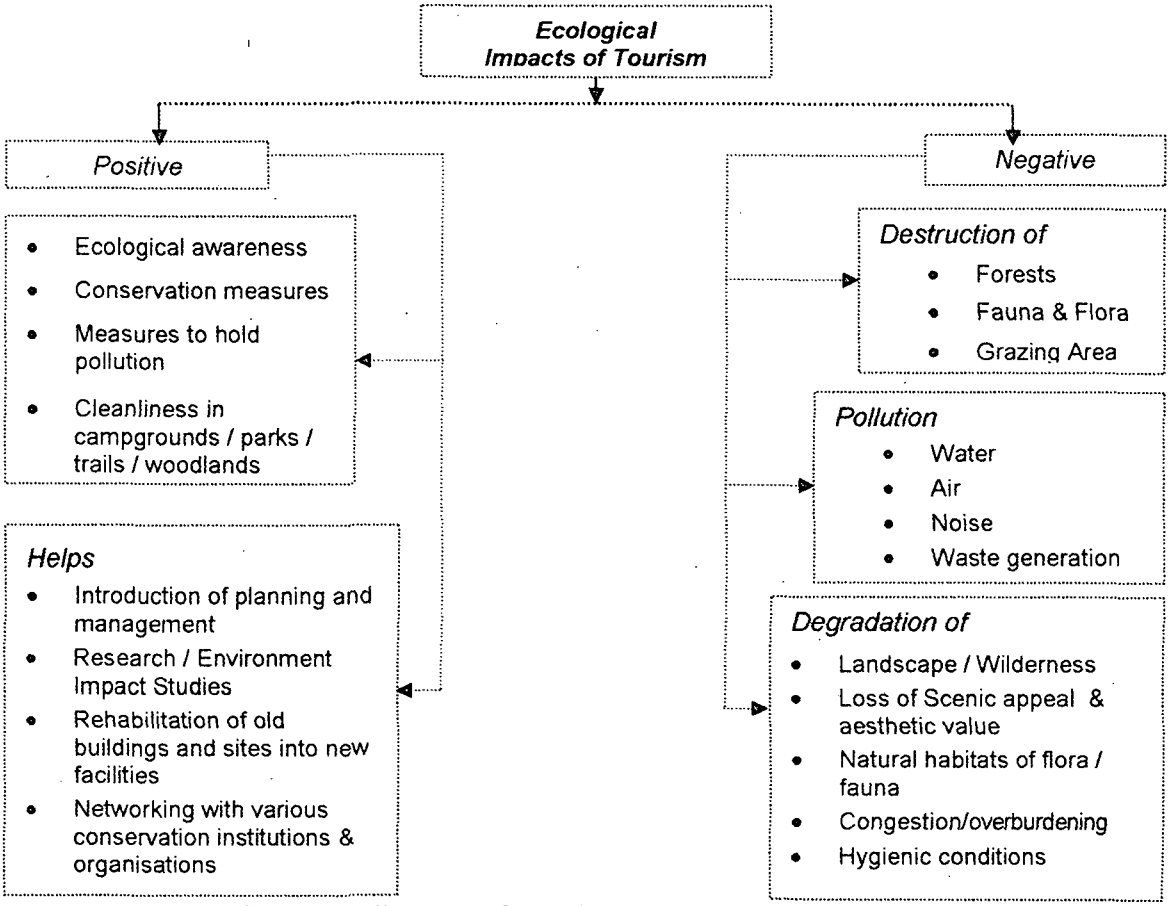


Figure: 2.1 Impact Of Tourism Activities On Ecology

(Source: Adapted from V. Mathieson & Wall 1982, Pearce 1989, Singh 1991, Ryan 1991, Burns & Holden 1995)

This was mainly due to soil compaction, which was a result of thousands of people walking on the trails. Soil compaction results in changes in vegetation composition and therefore affect the animal community dependent on them (Liddle, 1975).
In simple form, impacts of tourism on ecological environment can be divided into two parts as shown in Figure 2.1.

Kuss et al., 1990 recorded that due to soil compaction the microbial composition also changes. In Zurich near Switzerland, the untrampled soil had higher number of microbes than the trampled soils. Thus, the entire physiology of the soil gets altered as a result of trampling.

Other tourism related activities such as casual plant picking and flower collection and tourist vehicle driving can also result in loss of individual species. In Maasai Mara reserve in Kenya, the tourist vehicle tracts have made criss-cross patterns on the ground. The intensive driving on these tracts had resulted in loss of vegetation cover on the trails (Muthee 1992 in Ceballos - Lascurain, 1996).

Garbage in tourist area pose a major problem for environment. Very often the rubbish is simply dumped in the bush out of tourist's sight or at best buried in a pit, which however soon becomes full. Organic waste can be processed and reused as compost, but inorganic waste creates a major eye sore. Burning of this waste again pollutes air with poisonous gases. In Antartica, tourist ships cause immense water pollution by emitting sewage, oil and garbage (Marsh 1992 in Ceballos – Lascurain, 1996).

The presence of toilet papers, oxygen bottles, tins, plastic, papers etc have given a bad name to tourism in many places. In Gunung Gede Pangrango National Park in Indonesia, Khumbhu area in Nepal and Lukal airstrip in Mt. Everest examples of tourist carelessness towards maintaining aesthetics of the area they are visiting can be seen. (Byers et al. in Ceballos – Lascurain, 1996).

Ecological effects of constructions are usually deleterious. Large villages tend to grow up around the hotels and lodges to accommodate the hotel staff and their families. The situation is exacerbated if, as often the case, the park headquarters are situated along the lodge or demand for extra accommodation requires another lodge to be built nearby.

There are persuasive scientific, aesthetic and practical reasons for seeking to reduce the scale of this damage. Active intervention is necessary to zone recreational activities or

to limit their intensity in the interests of environmental protection. However, whether these measures are formulated on voluntary basis or imposed by planning authority, they need to be based on proper understanding of the ecological processes.

Environmental damage caused by tourism related developments is to be found all over the world. Some prominent damages *(Adapted from Carson L. Jenkins 1995)* are:

i) **Water pollution**: discharge of effluent into water bodies
ii) **Visual pollution**: high rise hotel developments
iii) **Congestion**: tourist spots and townships
iv) **Land-use pollution**: unplanned landscape development and natural area degradation
v) **Ecological disruption**: to animal breeding by uncontrolled access to protected areas.

After the industrial revolution, when visitors flocked to tourist places in thousands the "Ugly Tourist" phenomenon came in to being (Ceballos – Lascurian, 1996). Foreigners were ridiculed for their careless and insensitive behaviour while visiting other countries. During late 19th century, the protected area concept was created. While the founders of Protected Areas were interested in protecting the environment rather than providing tourism facility, it was the tourist who had provided the economic support for doing so (Butler, 1992). By the late 20th century, the growing concern for environment led to setting aside areas for preserving the ecology of the region or for conserving the plant and wildlife of the area.

According to Dowling, 1993 the main adverse environmental impacts occur as a result of activities such as disturbance of vegetation, wildlife and landforms. The effects of tourism in environmentally sensitive areas are directly related to quality of the operator and their knowledge of the bush. Some of the significant tourism related activities that affect the environment are: trekking, camping, etc. Frequently used camp sites in natural areas are typically characterised by a zone of heavily compacted soil and a general absence of vegetation. Adverse impacts identified include water pollution, litter, an increase in bushfires and a general reduction in aesthetic values. The presence of bush walkers or photographers is noted as the most common cause of disturbances of wildlife. The methods used to access tour destinations may cause adverse environmental impacts, e.g. use of four wheel drive cause noise pollution, destruction of vegetation, soil compaction and erosion, use of motor boats results in emission of oil and fuel residues, etc. Every tourist has the potential to damage the environment no

matter how environmentally sympathetic they may be (Butler, 1990). Thus, minimising environmental impacts requires a more holistic, multi purpose, integrated approach to planning, management and regulation, as well as incentives to encourage particular activities to exclusion of others and education both on-site and elsewhere (Buckley and Pannell, 1990).

The literature thus points to the fact that the harm caused to biodiversity of a tourist place depends on the perceptions and knowledge base of tourists, tour operators and the immediate community. These three groups have a decisive role in protecting or degrading the ecological environment of the spot.

2.3 Impacts on Biodiversity

The difficulty of working out the notion of biodiversity is related to the fact that it is a compound concept, including ecosystems, species, and genes. The self-recuperative power of ecosystems and of species is poorly understood, as are the related time-scales. Changes in ecosystems are to large extent related to human activities. (Sprengers *et al* 1995; ter Keurs, Musters and de Graaf, 1997 in Van Der Dium & Caalders, 2002)

Impact of tourists on wildlife has been noted in several studies. If the tourist activities are intensive it can result in deviation from the normal activities of the animals. And it is quite obvious that an animal may react to certain unusual human interventions e.g. tourism activities and consequently there may be some temporal changes in their behaviour. But over a period of time upon repeated exposures to similar stimuli, the animal would be able to ignore it and will show normal behaviour again.

Sometimes the threat to wildlife from tourism can be more direct due to lack of awareness among local communities. For example a large number of local guides involved in tourism in the rainforest of Ecuador hunt wild species for food, display bravado during tours and also the occasional dynamiting of rivers for fish. The capture and trade in wildlife species especially that of monkeys and macaws is also very common. Careless behaviour by tourists can also adversely affect wildlife and ecosystems, e.g. elephants have been killed by eating zinc batteries thrown onto rubbish heaps surrounding the outskirts of lodges in the Maasai Mara in Kenya (Badger *et al.* 1996).

Van Der Dium & Caalders, 2002 have conceptualised the following framework to ascertain the crucial relationship between biodiversity and tourism (Figure 2.2).

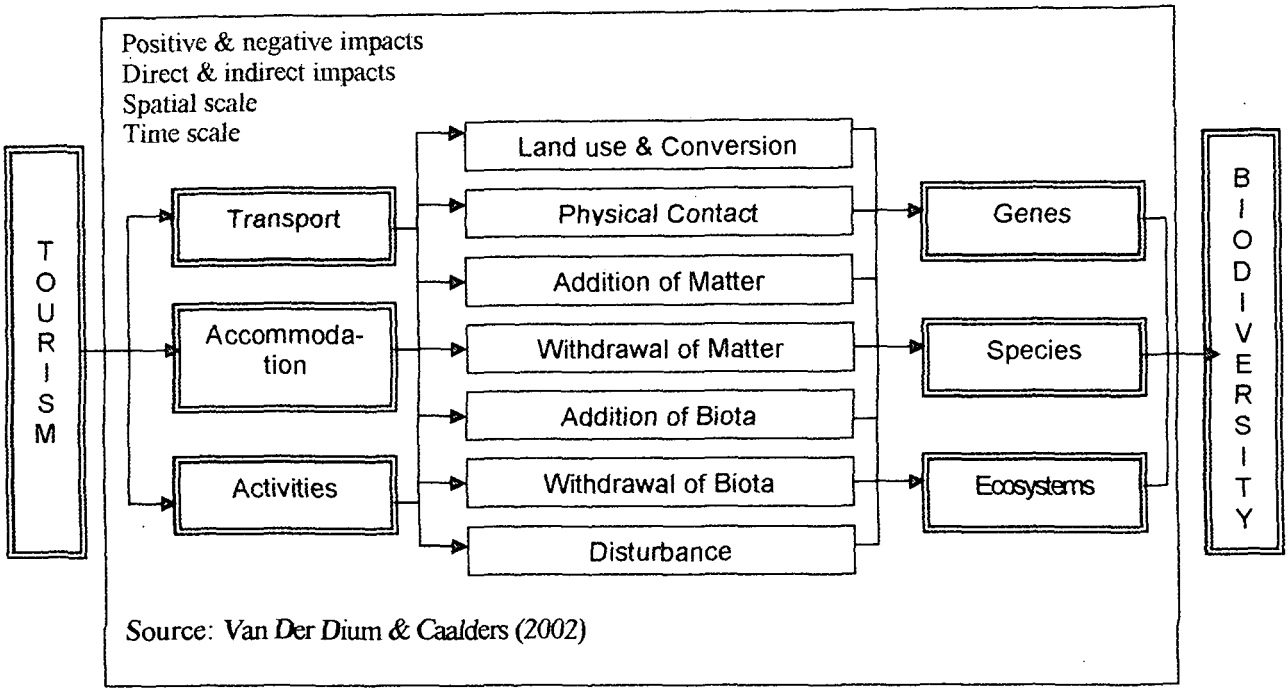


Figure: 2.2 Conceptual Model Of Ecological Impacts Of Tourism On Biodiversity

A desire for extra tips too encourages the safari drivers to ignore laws which bar them to take their vehicles to close quarter. Wildlife viewing, one of the most popular activities associated with nature tourism, also contributes to a variety of direct and indirect impacts on wildlife itself. Wildlife may be directly affected in two ways by non-consumptive tourism. The presence of people may cause disturbance by interrupting feeding or breeding behaviour and altering ranges of animal movement. Alternatively, wildlife may become habituated to human presence and possibly become reliant on scavenging food from visitor areas. In addition, indirect effects of tourism on wildlife include impacts on habitat, water supply and prey species (Wall & Wright, 1977; Mathieson & Wall, 1982; Edington & Edington, 1986). Trampling or vehicular traffic can directly degrade wildlife habitats, and the presence of tourists may disrupt essential wildlife activities such as feeding, sleeping or reproduction and the raising of young (Knight & Cole, 1995).

The management of wildlife viewing is complicated by the fact that wildlife responses to recreation activities are highly variable, dependent upon the recreationists'

behaviours, the context of the disturbance, and the wildlife's learned responses (Knight and Cole, 1995).

Cott, 1969 recorded in Murchison Falls National Park in Uganda that all recruitments to population of crocodiles in Nile was stopped due to tourism disturbance. The reason was that the female crocodiles normally bury their eggs in sand on the water edge and remain close to the nest during incubation period. If a boat approaches the edge they dive into the water leaving the nest to be raided by baboons or monitor lizards that eat up the eggs. When this problem was recognized, it was easily solved by requesting boat operators to keep clear of the nurseries during the nesting season.

The case of Protection of Whales in USA is another example of similar sort wherein awareness brought about radical changes in the attitude of the tourists. During 1960s in USA, Whale watching was a popular tourist activity and at the same time whale was considered as a popular game animal. However, by 1966 the Whale watching industry had generated enough public sympathy for the whales. And subsequently due to the public pressure the Blue Whale and the Humpbacked Whale were declared as totally protected species. (Ceballos and Lascurain, 1992). This event marked the beginning of Eco Tourism Era. Eco-tourism was recognized as a feasible alternative for conserving the natural and cultural heritage of countries in a sustainable manner.

The above studies have pointed out that with the support of tourists, service providers and local community, it is possible to do damage control exercise and thus conserve biodiversity.

2.4 Indian perspective

Negi in 1990 has concluded that threat to wildlife is most likely to intensify due to increase in tourist arrivals, demand for souvenirs and continuance of low level of income for local residents.

According to a survey conducted in Himachal Pradesh, the residents of the state showed serious concern about the environmental disturbances resulting from tourism development. Seventy percent of the residents thought that the effect of tourism might be complete disappearance of the green belt of the state (Kapoor, 1997).

With the increase of nature-tourism activities particularly those of exploratory nature, environmental awareness also has increased. Thereby drawing large public attention

towards tourism induced environmental degradation. However every time tourism may not be directly responsible for such degradation, as there are other forms of activities too like development & urbanization, which are dependent on natural resources and cause imbalance in the equilibrium of natural world.

Studies on impact assessment of tourism in National Parks and sanctuaries have been carried out mainly in Indonesia, Africa, North America and Central America. A beginning was made in the state of Uttaranchal, namely a study on the environmental impact of tourism on Hemkund Lake and Valley of Flowers by Berkmuller, Mukherjee & Mishra, 1993 followed by a study on impact of tourism in Corbett National Park. (Sinha, Thapliyal & Moghe, 2000).

2.5 Perceptual assessment of tourism impact

A concept arising out of the recognition that natural attractions may have potential limits for tourism is that of carrying capacity. Goldsmith, 1974 identified four categories of carrying capacity: physical, ecological, economic and perceptual. Ecological and perceptual aspects (which directly link to economic ones) become increasingly important in maintaining an attraction in its mature phase and in preventing its decline. (Hillary, Nanacarrow, Graffin & Syme, 2001).

Despite the likely importance of both environmental and perceptual capacity, research has often focused on the environment or perceptions of it separately, but rarely linked the two. This has made it difficult to assess the extent of environmental impacts that tourists are or are not aware of. The exception include two early studies by Merriam and Smith, 1974 and Lee, 1975 who found there was *no correlation between their own/ expert assessments of campsite impact stages and comments / ratings collected about the same campsites*. Other studies have compared the perceptions of tourists with those of residents to provide an approximate indication of the degree of impact awareness (Dowling and Clark, 1976; Lucas, 1979; Martin, McCool & Lucas, 1989; Hillary *et al*, 2001).

Studies that have focused on perceptions of the environment have found that tourists generally have limited perception of wear and tear impacts but are more sensitive to the direct impacts resulting from litter, human waste and vandalism, etc. (Lucas, 1979 and Marion & Lime, 1986:229). More recent work (Hammit, Bixler & Noe, 1996) showed

that tourists are still most observant of the direct impacts of other participants (trail use for more than one activity, litter, etc.) but that they may also be growing more aware of other impacts on the environment (like trail erosion). The suggestion of increased awareness and sensitivity to environmental impacts over the past decades highlights this issue in planning for a sustainable tourism industry in the future (Lucas, 1985; Hammit *et al,* 1996 & Hillary *et al,* 2001). Change is inevitable but the evaluation of the significance of changes in the environment will vary greatly with the values of the user and their relationship to that environment (Wall, n.d.).

A traditional response to visitor impacts has been the establishment of carrying capacities that limit visitation. However, research reveals that many factors influence the extent of such problems and that reducing visitation is often not an effective or preferred management response. Besides certain other criteria are also needed to be taken care of, such as *limits of acceptable changes* (Marion & Farrell, 1998).

2.6 Control measures

It has been widely accepted that properly managed tourism can lead not only to conservation of natural resources and enhancement of environmental quality but also can improve economy and take care of the host community. The lacuna identified during the literature review (that research on the environmental management aspects of tourism (nature / wildlife) with special reference to people's perception (in Assam's context) is still long awaited), has motivated this study. The importance of local communities (tourism stakeholders) in tourism development and management has been underestimated until recently but is increasingly accepted in the literature on sustainable tourism (Garrod & Fyall, 2000 in Deng *et al, 2002*). It has been observed that the environmental impact caused from mass tourism is more predominant than that of environmental impacts of nature tourism. In view of the tremendous potency of tourism for economic sustainability, both mass and nature tourism needs to be promoted through proper environmental management concerns.

In terms of an appraisal, what does seem to be of priority is to identify not just the problems, which are associated with tourism but to undertake management solutions. Management solutions in tourism require detailed policy considerations, which can then be related to a plan of action (Jenkins 1995 in Batra & Chawla 1995).

Once the appraisal of impact and identification of affecting factors is done and the strategic sustainable tourism development is planned, six key points can come into consideration (modified from Worboys & Lacy, 2003). They are as follows a) locale specific environmental systems, b) environment management competency and capacity building, c) partnership for protection of natural tourism destinations, d) strategic intelligence service, e) long term investment strategy and f) long term planning. Apart from first hand experience and research output in this line successful case studies of other region and lessons from similar studies would play a vital role in transforming tourist destinations like Kaziranga (India) into a model of sustainable eco-tourism.

Way back in 1976 Budowski in Deng *et al, 2002*) proposed three types of relationship – conflict, coexistence, and symbiosis – between conservation and nature-based tourism. As an alternative to mass tourism, eco-tourism integrates natural resources, environmental education and sustainable management (Commonwealth Department of Tourism, 1994 cited in Deng *et al, 2002*).

According to Barnes, Burgess & Pearce, 1992, wildlife-based (nature-based) tourism is a non-consumptive means of using wild-resources to benefit human populations and for the sensitive management of the same, four caveats are essential; such as

(a) Management of wildlife tourism needs to be sensitive to the *scale* of tourism, which can both threaten wildlife and give rise to stress in animal population.

(b) Incomes from tourism need to filter down to local people, whose land and interests are affected in one way or the other. This is necessary in order to create adequate incentives for local populations to protect land and wildlife.

(c) Where wildlife tourism occurs on reserve lands, the goals of the park management must be furthered by the economic gains from the tourist industry and not counteracted by tourism activity in order for the park management to support this use of wildlife.

(d) To ensure the long-term success of wildlife tourism in developing countries, the tourism industry needs to be sensitive to the wide range of potential tourists.

Once the advantages of the eco-tourism (alternate tourism) was identified, the question of sustainability came in, the sustenance of both eco-tourism as well as its beneficial

role. One of the first action strategies on tourism and sustainability emerged in Globe'90 conference in Canada. This conference approved a set of recommendations for sustainable tourism; later on in 1992 Tourism Concern suggested ten guiding principles, namely (i) Sustainable use of resource, (ii) Reduction of over consumption and waste, (iii) Maintenance of diversity, (iv) Integration of tourism into planning, (v) To support local economies, (vi) Involvement of local communities, (vii) Consultation with the stakeholders including public, (viii) Training of staff, (ix) To market tourism responsibly and (x) To undertake research.

2.8 Benefits of Eco-tourism

Eco-tourism has always been identified as a potential for socio-economic and environmental sustainability. Wearing & Neil, 1999 has indicated four key reasons why local communities may consider eco-tourism:

a) A desire to be a part of strong growth in tourism generally and see the potential of catering for special-interest tourism (niche markets)
b) An awareness of the high value of natural attractions in the locale
c) Empathy for conservation ideals and the need for sustainable tourism
d) A desire to responsibly rejuvenate the local tourism industry.

In addition, Dernoi, 1981; Fennel, 1999 also have illustrated five advantages of alternate tourism (Eco-tourism has already been identified as one of the effective alternatives), such as

a) The families can offer homely accommodation to the tourists for monetary benefits
b) The local community will benefit directly from the above revenue generation
c) Leakage of tourism-revenue to other countries will cease
d) Eco-tourism can be an ideal form of alternate tourism for those from the developed / industrialised nations, for cost-conscious travellers or for people who prefer close contacts with locals
e) It can promote trans-national relations by exchanging international – interregional – intercultural understandings.

Similarly Weaver, 1993 (cited in Fennel, 1999) too has analysed potential benefits of alternate tourism under five sub-headings, namely Accommodation, Attractions, Market, Economic impact and Regulation. Hetzer, 1997 (cited in Fennel, 1999) identified four fundamental pillars that needs to be followed for a more responsible form of tourism, namely (a) minimal environmental impact, (b) minimum impact on – and maximum respect for – host cultures, (c) maximum economic benefits to the host country's grassroots and (d) maximum 'recreational' satisfaction to participating tourists.

A significant contribution to eco-tourism's global following has been its potential to deliver benefits to communities remotely located from centres of commerce, benefits that do not involve widespread social or environmental destruction. However, in case of general tourism (mass tourism) local communities are significantly vulnerable to deleterious impacts of the same. The interdependence of tourism and the social and physical environment is fundamental to the future of each, and seeking a way to accommodate the needs of all parties including those who experience its effects most directly and those who do not (Wearing & Neil, 1999).

To have better and effective tourism development as well as management, stress has been given on the policy planning followed by implementation and accordingly the realisation among the planners and developers regarding the involvement of stakeholders of tourism, who stand to be impacted most by eco-tourism development, is increasing significantly. Although, in tourism services many agencies and organisations are involved, the sector most responsible for the impetus to create policy is the government. Likewise policy design, the implementation phase too is essential in coordinating understanding and cooperation between public, private and government sector; therefore the government has to play a leadership role to make tourism operation smooth and efficient. Considering this fact, Liu in 1994 (citied in Fennel, *1999*) suggested a *must-to-do* list for the government,

a) Facilitate efficient private sector activity by minimising market interference and relying on competition as a means of control
b) Ensure a sound micro-economic environment
c) Guarantee law and order, and the just settlement of disputes
d) Ensure the provision of appropriate infrastructures

e) Ensure the development of human resources
f) Protect the public interest without obstructing private-sector activity with too many regulations
g) Promote private sector activity by not competing in the business arena with private enterprise
h) Acknowledge the role of small business entrepreneurs and facilitate their activities.

For any development project to flourish, partnership and collaboration between concerned groups or agencies is must. According to Clements et al., 1993 (cited in Fennel, 1999) since tourism is starting to be recognised as a community development tool, development must be sensitive to the requirements of many stakeholder groups, including tourism providers (e.g. hotels), public providers (e.g. recreation and park providers), and residents. However in most instances significant degrees of incompatibility between parks and the locals do exist, and to make tourism more prosperous McNeely, 1993 suggested following ten principles,

a) Build on the foundations of local culture
b) Giver responsibility to local people
c) Consider returning ownership of at least some protected areas to indigenous people
d) Hire local people
e) Link government development programmes with protected areas
f) Give priority to small-scale local development
g) Involve local people in preparing management plans
h) Have courage to enforce restrictions
i) Build conservation into the evolving new national cultures
j) Support diversity as a value.

Having understood that eco-tourism has the potential for socio-economic and environmental sustainability, the focus should be on involving all stakeholders in the endeavour of promulgating sustainable tourism.

Sustainable tourism is really an issue of how best to encourage tourism while minimizing its costs. The World Tourism Organization defines sustainable tourism as "tourism which leads to management of all resources in such a way that economic,

social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems." This calls for an assessment of the perceptions of the stakeholders. If the perceptions are seen to be aligned in the same way, concerted efforts of sustainability will yield results.

Stakeholder's opinion also is a crucial factor for identification of environmental (including socio-cultural) indicators that may also help in avoiding ill affects of tourism growth. Until recently, interests of the communities were not accounted in most decision making process be it tourism development or any other projects, however many literatures on sustainable tourism have commented on its significance (Garrod & Fyall, 2000 in Deng *et al*, 2002). Analysis of tourism related factors that can affect the natural environment based on people's perception is unique to the state of Assam. Comparative studies have pointed that the impact of mass tourism is predominant over that of nature tourism, when it comes to environmental consequences. In order to achieve healthy tourism growth, precautionary management solution is a must. Management solutions in tourism require detailed policy considerations, which can then be related to a plan of action (Jenkins, 1995 in Batra & Chawla, 1995). Worboys & Lacy, 2003 have referred to six key points for strategic sustainable tourism development: a) locale specific environmental systems, b) environment management competency and capacity building, c) partnership for protection of natural tourism destinations, d) strategic intelligence service, e) long term investment strategy and f) long term planning.

It is now a widely accepted fact that the right kind of tourism can help conserve natural environment and take care of the country's economy. The lacuna identified during the literature review was that research on the environmental management aspects of tourism (nature / wildlife) with special reference to people's perception in the context of Assam has not yet been done. This motivated the researcher to undertake this study. Apart from first hand experience and research output in this line successful case studies of other region and lessons from similar studies would play a vital role in transforming tourist destinations like Kaziranga (India) into a model of sustainable eco-tourism.

Chapter III:
OBJECTIVES & METHODOLOGY

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3.1 Research Gap

The review of literature reveals the following research gaps ....

(a) Lack of eco-tourism related study in Assam's context, particularly on issues pertaining to Kaziranga,

(b) Much emphasis on physical aspects and lesser focus on stakeholders' perceptions of tourism related consequences.

As far as Assam centric eco-tourism studies are concerned, literature survey could not find much; only a couple of Ph.D. Thesis & Masters Dissertations and a few papers from seminar proceedings. Where, some works focused on eco/tourism potentials, then some were about assessing pros and cons of it, while some other on geographical and/or on socio-cultural aspects of tourism. However, there were a few significant studies on destination positioning, carrying capacity, etc. but none of them could actually fulfil our need. Though, Kaziranga has been a place of various research and studies, the tourism aspect has hardly been studied as tourism as a subject is still emerging in a state like Assam.

There are some examples of perception based studies on tourism related aspects from the West. These studies mostly tried to assess visitor's satisfaction, crowding, visitor perception towards impact of tourism on physical settings of a tourist place, etc. However, one of the papers mentioned about the importance of linking ecological and perceptual aspects. Interestingly, some studies were on people's awareness on wear and tear impacts of tourism activities too.

Literature on assessment of physical change, impact of tourism on vegetation, on wildlife or on ecosystem and even on socio-economic aspects were found in plenty. Taking cues from the studies of various kinds in the line of tourism management, the idea to undertake a research on people's perception and biodiversity of Kaziranga was conceived.

Although literature-review highlights several methods and approaches of assessing impacts, this study emphasises more on perceptual evaluation of tourism related factors affecting Biological Diversity.

While earlier studies have been based mostly on technicality of ecology, this one deals with a very unique aspect of tourism research i.e. perception of *stakeholder's*. The aesthetic value of a tourism spot depends on the tourist's perception. To a large extent the level of degradation also depends on how the tourist perceives his actions harm bio-diversity. Many a times the tourist is genuinely unaware that his actions actually degrade the environment.

Along with tourists, the perceptions of local community, personnel involved with government and non-government agencies (tourism and forests), on ecological impacts are crucial to assess the effect.

3.2 Objectives

In order to achieve the overall goal of the study three objectives were set, which are as follows:

(i) To make a perceptual assessment of the tourism induced factors affecting the Biodiversity of Kaziranga National Park, Assam, India;

(ii) To identify whether there exists perceptual similarity among the stakeholders, regarding the key factors contributing to ecological degradation.

(iii)To define possible management measures and propose a framework for tourism management strategy for protected areas.

3.3 Scope of the Study

This study is confined to Kaziranga National Park, Assam, India, where it is attempted to make a perceptual study among various stakeholders of the tourism industry. The academic field of research is confined within the extent of biodiversity of Kaziranga and peoples' perception related therewith.

3.4 The Survey

To achieve the prescribed set of objectives a questionnaire based survey was conducted among three key stakeholders of tourism i.e. (a) tourists, (b) service providers of tourism industry (and its related sectors) and (c) the local public of in and around Kaziranga including the members & representatives of NGOs concerned with Kaziranga National Park.

3.5 Design of the study

To study the perception of the stakeholders of tourism (i.e. infrastructure service providers, community and tourists) a questionnaire was designed based on a framework suggested by Tisdell, 1999. However modifications were made after conducting a pilot survey and based on ground realities. The issues those were included in the questionnaire, though not exhaustive has covered as many topics as possible, particularly those raised during the pilot study.

Table 3.1 A Framework For The Study Of Tourism And Ecological Impacts

Factor involved:	Impact on natural quality	Comment
Overcrowding:	Environmental stress, animals show changes in behaviour	Irritation, reduction in quality, need for carrying capacity limits or regulation
Over development	Development of rural slums, excessive man-made structures	Unsightly urban-like development
Recreation:		
* Powerboats	Disturbance of wildlife	Vulnerability during nesting seasons, noise pollution
* Fishing	None	Competition with natural predators
* Foot safaris	Disturbance of wildlife	Overuse and trail erosion
Pollution:		
* Noise	Disturbances of natural sounds	Irritation of wildlife & other visitors
* Litter	Impairment of natural scene, habituation of wildlife to garbage	Aesthetic and health hazard
* Vandalism destruction	Mutilation and facility damage	Removal of natural features
Feeding of wildlife:	Behavioural changes, danger to tourists	Removal of habituated animal
Vehicles:		
* Speeding	Wildlife mortality	Ecological changes, dust
* Off-road driving	Soil and vegetation damage	Disturbance to wildlife
Miscellaneous:		
* Souvenir collection	Removal of natural attractions, disruptions of natural processes	Shells, coral, horns, trophies, rare plants, etc.
* Firewood	Small wildlife mortality, habitat destruction	Interference with natural energy flow

* Roads and excavations	Habitat loss, drainage	Aesthetic scars
* Power lines	Destructions of vegetation	Aesthetic impacts
* Artificial water holes and slat provision	Unnatural wildlife concentrations, vegetation damage	Replacement of soil required
* Introduction of exotic plants and animals	Competition with wild species	Public confusion

Source: Tisdell, 1999

3.5.1 Justification for using Tisdell's framework:

Although, a number of frameworks/matrix were revealed during the review literature; they were hardly close to the one we were looking for. In the beginning of this research, our preliminary field work helped us define our objectives and how to go about it. McNeely's framework offered some guidance on the different variables for the study.

Further search for guidelines/frameworks to facilitate our study led to Tisdell's framework, which was nothing but a modified version of McNeely's model. It mentioned and studied those very things that this study also aimed to analyze e.g. unplanned growth of tourism, possible impact of tourism activities on natural environment, tourist's behaviour, etc. Although, Tisdell's both objectives & methodology were different, it gave us a much needed base to plan our course of action. Taking clues from it our questionnaire was designed, with locale specific adaptations.

Since, Tisdell's study analyzed ecological impacts (mostly physical changes) occurring from tourism activities, it was decided to use some of his variables while studying people's perception on tourism related factors affecting biodiversity of Kaziranga National Park

3.5.2 Variables under consideration

The following variables were taken into consideration. Variables are divided into two groups Part 1 & Part 2:

Part 1:

a) Effects of elephant ride
b) Motor vehicles for safaris
c) Picnicking
d) Feeding of wildlife by the visitors

e) Trampling during elephant ride
f) Traffic (pedestrian and vehicular)
g) Souvenir collection
h) Fuel wood collection
i) Running of powerboat
j) Waste water drainage
k) Developmental activities like construction
l) Trekking and camping
m) Littering and dumping of garbage.

Part 2:

a) Excessive visitors
b) Food scarcity and developmental activity
c) Construction activities and destruction of wilderness areas
d) Elephant ride and close encounter with wildlife
e) Noise pollution and behavioural change in animals
f) Loss of habitat and destruction of eco-system
g) Wildlife migration due to habitat loss and food scarcity
h) Grazing / trespassing and transmission of disease or spreading of weed species
i) Behavioural change in animals and life risk of tourist
j) Tourism induced population rise and ecological impact
k) Cultural & natural heritage and Eco-tourism
l) Socio-economy of locals and Eco-tourism
m) Community participation in conservation and Eco-tourism
n) Awareness generation / fund raising and Eco-tourism

3.5.3 The questionnaire

The questionnaire was prepared in two languages (i.e. English and Assamese), so as to receive maximum responses. Further more, while preparing the questionnaire it was kept in mind that the rural population would find it comfortable to respond to the questionnaire in Assamese. During the survey, both the versions of the questionnaire were made available and provided to the respondent as and when required.

Principles of questionnaire designing were followed thoroughly to avoid erroneous occurrences during sampling. Care was taken to keep the language of the questionnaire easy; in addition inclusion of technical terminology was kept to a minimum. Although, the subject of the study was new to many, the enumerator briefed the respondent about it before filling up the questionnaire.

The questionnaire had two parts comprising of statements 14 each. In the first part responses were sought on a seven point Likert scale, whereas in the second part responses varied between Strongly Disagree to Strongly Agree on a five point interval scale (See Annexure I). The first set aimed at identifying the factors that are perceived to have critical impact on biodiversity. The second set tried to assess the agreeability of the respondents on issues relating to environment and tourism.

Demographic profile (i.e. stakeholder group, gender, age group, educational qualification, occupation, daily budget and place of origin) of the respondents was also sought at the end of the questionnaire (budget and place of origin were applicable to tourists only). Inclusion of above mentioned identification data was done to find out any relationship that might exist among the respondents' perception and other variables under consideration.

A pilot survey was conducted with the proposed questionnaire in July – August 2002 among 25 respondents to test the effectiveness and compatibility of the same; the necessary changes & modifications in the question content, wordings and sequence were made accordingly.

3.6 Data Collection

The perceptual evaluation of tourism related factors affecting Biodiversity of Kaziranga National Park is mainly done using two basic approaches, namely Primary data collection and Informal discussion. Besides answering to the pre-designed queries of the questionnaire, the respondents gave their candid views on various aspects of tourism in Kaziranga with special reference to ecological impact. These views were considered while analysing the data. Since the results of the study were to be correlated and cross checked with those of first hand accounts, people's view played a crucial role.

3.6.1 Sampling technique

Due to the exploratory nature of the study, the possibilities of having a definite sampling frame and therefore, probabilistic method of sampling have been ruled out. Non-probabilistic convenience method for selection of samples, with preference given to on the spot selection of samples, was adopted.

To fulfil the sampling requirement, all those places have been visited extensively, where people (including tourists) congregated in large numbers; such as resorts, lodges,

guest houses, booking counters, hotels & restaurants, market places, etc. Every possibility to interview target respondent was exploited to gather a respectable sample size. The evenings were the best time to converse with tourists, particularly foreigners, as at this time they usually relax over a cup of tea.

Besides the questionnaire interview, informal discussions were held among the respondents in order to dig out more information on issues relating to biodiversity and the environment of Kaziranga. The outcomes of the informal interactions with local people and the service providers have helped draw a better picture of whole study. While conducting the interview, attention was given to obtain accurate results. If the questionnaire was filled in by the respondent, prior guidelines were provided by the enumerator (the scholar himself) to avoid non-response or other errors. However in spite of such efforts, error has occurred in some cases; thus some of the responses had to be abandoned.

3.6.2 Sampling

(a) Element:

- Individual tourists (both domestic and foreign origin),
- Individuals engaged in providing services to the tourism and its related sectors (irrespective of whether agencies/ companies were government or non-government),
- Members of the host community (local people) including NGO representatives.

(b) Sampling unit:

Individual respondents.

(c) Extent:

In and around Kaziranga National Park, although the main base was at Kohora (the head quarters of the Central Range).

(d) Time:

A survey was conducted with the help of questionnaires during October 2002 to March 2003 and October 2003 to April 2004 among tourists, service providers of the tourism industry and the local public of in and around Kaziranga including the members & representatives of NGOs concerned with Kaziranga National Park.

3.6.3 Sampling frame

Size of the prospective target groups for the purpose of the study was not at all pre-defined and finding a frame of all the elements of the population was a near impossible task. Moreover defining a sampling frame was not necessarily essential for the study.

3.6.4 Sample size

850 questionnaires were distributed among the stakeholders, 690 responses received and out of which only 505 responses were found to be complete and considered fit for analysis.

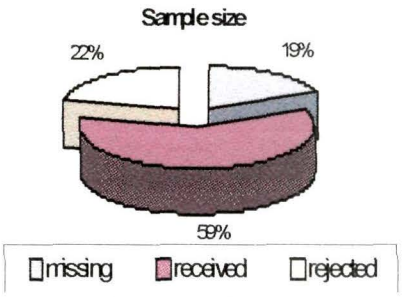

Figure: 3.1 Sample

3.7 Statistical applications

For identifying the factors that are detrimental to the biodiversity of Kaziranga National Park, Factor Analysis was conducted on the first set of questions. When there are a large number of variables there exists the possibility that the variables are not all uncorrelated and representative of distinct concepts. Instead groups of variables may be interrelated to the extent that they are all representatives of a more general concept. Factor analysis was used to assist in selecting a representative for the original variables. It was used as an exploratory tool and used for data summarization only.

As we are dealing with as many as 14 variables, thus there is a need for a tool that can reduce the number of variables by combining two or more variables into a single factor. Moreover to achieve the first objective i.e. to make a perceptual assessment of tourism related factors affecting the biodiversity of Kaziranga National Park (KNP), the factors are to be identified first, which demands grouping of these 14 variables in terms of their proximity i.e. identification of distinctive groups involving correlated variables.

Thus Factor Analysis plays a crucial role here by reducing the variables into sub-sets and giving descriptive definition to perceptions. Hence it will become easier to identify factors that affect the biodiversity of KNP. The rating data on these variables can be reduced to a few important dimensions, which will eventually contribute to the first objective.

To ensure that relevant variables were included such that it results in conceptually meaningful factors, the questionnaire was subject to a pilot survey.

Since the objective was to summarise the original information, the Principal Component Analysis was used along with Varimax rotation. Varimax gives clearer separation of sectors and has proved very successful as an analytical approach to obtain an orthogonal rotation of factors.

To test the appropriateness of Factor analysis, Bartlett Test of Sphericity was performed followed by Kaiser_Meyer_Olkin Measure of Sampling Adequacy. To evaluate the data reliability the Cronbach's alpha was too calculated. The factor analysis led to formation of different factors for the respondent groups.

For the second part of the questionnaire, that data collected were subject to cross tabulation. The frequency distribution of the responses against each statement was subdivided group wise. This helps in easy interpretation for those who are not statistically oriented, and provides greater insight into a complex phenomenon than a single multivariate analysis. Moreover, it is simple to conduct and appealing to less sophisticated researchers. The statistical significance of the observed association was measured by the Chi-square statistic.

Pearson's Chi-square statistic was used in this study to find out if the perceptions were independent of the stakeholder groups. In this study if Level of Significance (p) > 0.1 then the null hypothesis was not rejected (at 90% confidence level) else it was rejected.

The hypotheses were as follows: Null Hypothesis (H_o) here was '*there is no perceptual difference among the stakeholders*' and the Alternative Hypothesis (H_1) was '*there is difference in perceptions among the stakeholders*'.

3.7.1 Limitations of the study

This study was confined only to Kaziranga National Park and the perceptual evaluation was based on three prime groups of stakeholder of tourism sector, although there could be other concerned as well. And as far as the variables of the questionnaire are concerned, only 28 key aspects were considered for the study, which are believed to be as most effective and believed to have greater impacts on the environment as suggested by Tisdel (1999).

3.8 Study Area: Kaziranga National Park, Assam

Kaziranga National Park lies between Latitudes 26°30'-26°45'N and Longitudes 93°05'-93°40'E. Kaziranga National Park originally spread over an area of 429.93 Sq. Km. with the mighty Brahmaputra river on the north and verdant Karbi Anglong hills on the south, which falls under the civil jurisdictions of Nagaon, Golaghat and Sonitpur Districts of Assam (including the additional areas).

Initiative to conserve Kaziranga was first started in the year 1905 through a preliminary notification declaring the Government's intention to make Kaziranga into a Reserve Forests. On 1st January 1974, Kaziranga was finally notified as a National Park under the provisions of Assam National Parks Act 1968. And in the year 1985, UNESCO added this biodiversity hotspot to the World Heritage Site list under criteria N (ii) and N (iv).

Table: 3.2 Conservation Timeline

Year	MILESTONE
1905	Preliminary notification prior to declaration of R.F.
1908	Declared as Reserved Forest on 3rd January 1908
1916	Game Sanctuary
1937	Opened to visitors
1950	Wildlife Sanctuary
1969	Preliminary notification prior to declaration of N.P.
1974	Declared National Park on 11-02-74 w.e.f. 01-01-74
1985	Declared as a World Heritage Site

The park contains about 15 species of India's threatened (Schedule I) mammals including world's highest population of One-horned Rhino *Rhinoceros unicornis* (1552 nos. in 1999), Asiatic Wild Buffalo *Bubalus bubalis* (1431 nos. in 2001) and Swamp Deer *Cervus duvauceli ranjitsinghi* (468 nos. in 2000) and a significant number of Tiger *Penthera tigris* (86 nos. in 2000) Other mammals include capped langur *Presbytis pileata*, a small population of hoolock gibbon *Hylobates hoolock*, leopard *P. pardus*, sloth bear *Melursus ursinus*, Indian elephant *Elephas maximus*, Ganges dolphin *Platanista gangetica*, Otter *Lutra lutra*, wild Boar *Sus scrofa*, Gaur *Bos gaurus*, Sambar *Cervus unicolor*, hog deer *C. porcinus*, Indian muntjac *Muntiacus muntjak*. Elephants and other animals migrate with the advent of the monsoon and head southwards to the Mikir Hills and beyond to avoid the annual flooding of the national park (Sinha, 1981 in UNEP-WCMC, 1985).

It is worthy to mention here that Kaziranga's magnificent bird life has been luring birders from all over the world, out of 490 avian species (Choudhury, 2003) recorded so far, 38 species are enlisted in the Red Data Book, the database on endangered flora-fauna maintained by International Union for Conservation of Nature and Natural Resources (IUCN). Some of them are as follows, rookery near Kaziranga Village. Other birds of interest include black-necked stork *Ephippiorhynchus asiaticus*, Lesser Adjutant *Leptoptilos javanicus*, Pallas's fish eagle *Haliaeetus leucoryphus*, Grey-headed fish Eagle *Icthyophaga icthyaetus*, Bengal Florican *Houbaropsis bengalensis*, Swamp partridge *Francolinus gularis*, grey peacock-pheasant *Polyplectron bicalcaratum*, Grey Pelican *Pelecanus philippensis*, Great-pied hornbill *Buceros bicornis*, Green imperial pigeon *Ducula aenea*, Silver-breasted broadbill *Serilophus lunatus* and Jerdon's bushchat *Saxicola jerdoni*.

Physical features:

Altitude: Ranges between 40m and 80m. To the south of the park, the Mikir Hills rise to about 1,220m.

Terrain: Lies in the flood plains of the Brahmaputra River. The riverine habitat consists primarily of tall, dense grasslands interspersed with open forests, interconnecting streams and numerous small lakes that are commonly known in Assamese as 'beels'. Three-quarters, or more of the area is submerged annually by the floodwaters of the Brahmaputra. Soil is mainly alluvial deposits of the Brahmaputra and its tributaries (Spillett, 1966).

Climate: Three distinct seasons can be observed. Summer, which is dry and windy, extends from mid-February to May with mean maximum and minimum temperatures of 37°C and 7°C, respectively. The monsoon season occurs from May to September when conditions are warm and humid. During winter (November to mid-February), when conditions are mild and dry, mean maximum and minimum temperatures are 25°C and 5°C, respectively (Kushwaha and Madhavan Unni, 1986).

Vegetation: The vegetation types of Kaziranga National Park has broadly been divided in to three categories i.e. Alluvial Inundated Grasslands, Tropical Wet Evergreen Forests And Tropical Semi-Evergreen Forests (Jain and Shastry, 1983), which comes under the Bio-geographical province of Burma Monsoon Forest. The western part of the park is mostly grass land (scattered by tree species like *Bombax ceiba*, *Dillenia indica*, *Careya arborea* and *Emblica officinalis)*, tall elephant grass, and cane thickets on the

higher ground, and the ox-bow water bodies (beels) are surrounded by short grasses. Their maintenance is being done both naturally and artificially i.e. by floods and by burning respectively.

In addition, the park also has a reasonable tree cover, which is predominantly covered by Evergreen as well as Deciduous trees, e.g. Kanchanjhuri, Panbari and Tamulipathar blocks, are dominated by trees such as *Aphanamixis polystachya*, *Talauma hodgsonii*, *Dillenia indica*, *Garcinia tinctoria*, *Ficus rumphii*, *Cinnamomum bejolghota*, and species of *Syzygium*. And places including Baguri, Bimali and Haldibari have abundance of tree species like *Albizia procera*, *Duabanga grandiflora*, *Lagerstroemia speciosa*, *Crateva unilocularis*, *Sterculia urens*, *Grewia serrulata*, *Mallotus philippensis*, *Bridelia retusa*, *Aphania rubra*, *Leea indica* and *L. umbraculifera*.

Map: 3.1 Kaziranga National Park

Based on Landsat data for 1986, coverage by different vegetation is as follows: tall grasses 41%,short grasses 11%, open jungle 29%, swamps 4%, rivers and water bodies 8%, and sand 6% (Kushwaha and Madhavan Unni, 1986).

Legends: According to one of the popular legends, it is believed that once the Vaishnava saint Srimanta Madhav Deva was camping near Narmara Beel (a water body, now comes under Kaziranga National Park jurisdiction), when an old childless couple namely Kazi and Rangai approached the saint seeking his blessings. In return the saint advised them to dig a big pond.

Some years later when Ahom King Swargadew Pratap Singha was passing by that area, he was offered delicious fish of the pond and accordingly the place where the pond was dug was named after the old couple later on. Another belief says that the Kaziranga is the Land of Red Goats, as in Karbi language 'Kazi' stands for Goat and 'Rangai' stands for Red.

Tourism: Though Kaziranga was made open for visitors first during the year 1937, the department of tourism came into existence later. It was in 1962 - 63 that the tourism lodge at Kohora was handed over to the Tourism department from Forests department. Although there are several other wildlife destinations across the state, Kaziranga is still considered as prime and mostly visited tourist point. The number of visitor alone in Kaziranga is larger than that of the rest of the places (parks and sanctuaries) together. In other words, nature oriented tourism in Assam is still Kaziranga centric.

Chapter IV:
FINDINGS
& ANALYSIS

Chapter IV

FINDING AND ANALYSIS

4.1 Demographic profile

4.1.1 Category of stakeholder

Table 4.1.1: Stakeholder Groups

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Tourist	287	56.8	56.8	56.8
	Service Provider	96	19.0	19.0	75.8
	Local People / NGO	122	24.2	24.2	100.0
	Total	505	100.0	100.0	

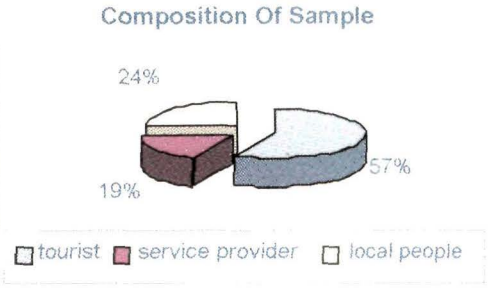

Figure 4.1.1

Majority of the respondents were tourists, comprised of almost 57%. Local people / NGO were the second largest respondent group in this study (24.2%). The smallest group of respondents was the service providers (19%).

4.1.2 Gender

Table 4.1.2: Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	316	62.6	62.6	62.6
	Female	189	37.4	37.4	100.0
	Total	505	100.0	100.0	

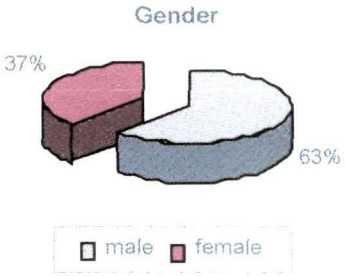

Figure 4.1.2

The number of male respondents was the largest with 62.6 % responses. The number of female respondents was comparatively less, which was around 37.4%. This segmentation would help find out gender wise perceptual differences, which might exist.

4.1.3 Age group

Table 4.1.3: Respondent's age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	below 25 yrs	170	33.7	33.7	33.7
	25 - 40 yrs	227	45.0	45.0	78.6
	41 - 60 yrs	98	19.4	19.4	98.0
	above 60 yrs	10	2.0	2.0	100.0
	Total	505	100.0	100.0	

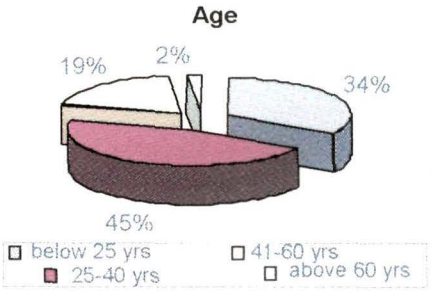

Figure 4.1.3

There are four groups of respondents as a whole based on age variations. Majority of the respondents are aged between 25 yrs to 40 yrs. The smallest group comprises of people aged 60 yrs and above. Such segmentation can be helpful in understanding the age wise variation in perceptions.

4.1.4 Educational qualification

Table 4.1.4: Educational background

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Undergraduate	165	32.7	32.7	32.7
	Graduate	215	42.6	42.6	75.2
	Post Graduate	125	24.8	24.8	100.0
	Total	505	100.0	100.0	

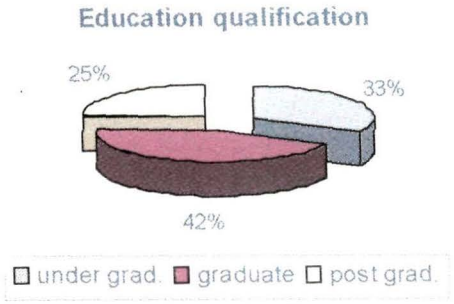

Figure 4.1.4

Since education plays a crucial role in decision-making, it can also influence perceptual variations. Based on educational qualification, the whole sample was subdivided into three categories. Overall the sample comprises of an educated group, as 67% were either graduates or post-graduates.

4.1.5 Occupation / profession

Table 4.1.5: Occupational practice

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Service holder	192	38.0	38.0	38.0
	Self employed	129	25.5	25.5	63.6
	Student / Unemployed	184	36.4	36.4	100.0
	Total	505	100.0	100.0	

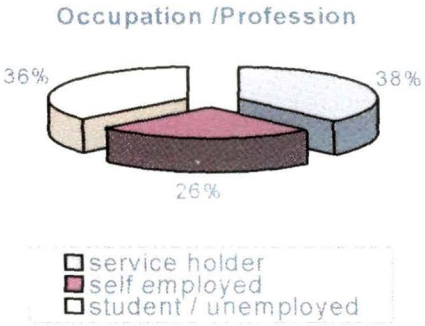

Figure 4.1.5

Segmentation of respondents based on occupational practices was also required to assess if there were any perceptual difference existing. The above table indicates that service holders and students were two large groups who responded to the questionnaires, followed by self-employed group. The respective percentages were as follows 38%, 36.4% and 25.5%.

4.1.6 Daily expenditure

Table 4.1.6 Spending limit

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	below Rs 300	153	53.3	53.3	53.3
	Rs 300 - Rs 500	84	29.3	29.3	82.6
	Rs 500 - Rs 700	23	8.0	8.0	90.6
	above Rs 700	27	9.4	9.4	100.0
	Total	287	100.0	100.0	

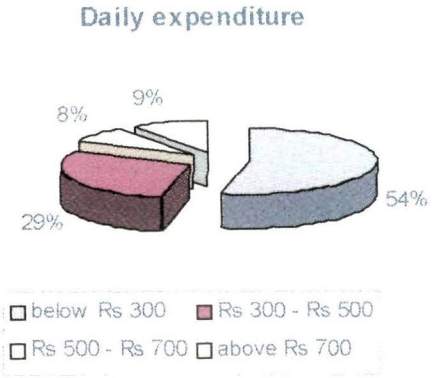

Figure 4.1.6

Responses of people with various daily expenditure budgets also may vary in their perceptions, hence respondents were categorized into four divisions based on daily expenditure limits. In this study highest number of responses i.e. 53.3% were from those who have their daily budget limited to Rs 300/-, 29.3% of the respondents spent between Rs 300/- to Rs 500/- daily, 8% of the respondents spent between Rs 500 – Rs 700/- per day and 9.4% respondents were those who spent more than Rs 700/- per day.

4.1.7 Place of origin

Table 4.1.7: Respondent's origin

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Within the state	121	42.2	42.2	42.2
	Outside the state	116	40.4	40.4	82.6
	Outside the country	50	17.4	17.4	100.0
	Total	287	100.0	100.0	

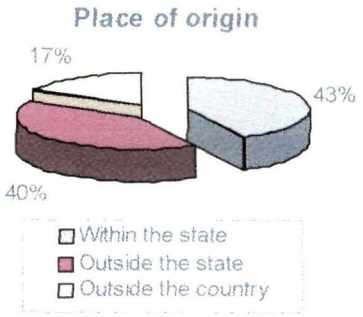

Figure 4.1.7

There was a possibility that the perception of the respondents might also vary based on their place of origin. All the responses of the study were sorted out on the basis of their originating places, namely – within the state (Assam), outside Assam and outside India. The maximum number of responses came from within the state, which was around 42.2%, followed by respondents from outside the state (40.4%), while people of foreign origin were the lowest with 17.4%.

4.2 Factor Analysis:[1]

Factor analysis was performed on the 14 statements, which tried to gauge the respondents' perception about the negative effect of certain activities on eco-tourism. These 14 statements were identified from literature review as mentioned in Chapter 2.

Factor Analysis is a generic name given to a class of multivariate statistical methods whose primary purpose is to define an underlying structure in a data matrix. It addresses the problem of analyzing the structure of the interrelationships (correlations) among a large number of variables by defining a set of common underlying dimensions known as factors.

When there are a large number of variables, there exists the possibility that the variables are not all uncorrelated and representative of distinct concepts. Instead, groups of variables may be interrelated to the extent that they are all representatives of a more general concept. Hence the use of factor analysis was justified. In this method, the variates (factors) are formed to maximize their explanation of the entire variable set and not to predict dependent variable(s). Here exploratory factor analysis was conducted to identify the patterns in the data structure because the researcher did not have any preconceived thoughts on the actual data structure.

To determine the appropriateness of using factor analysis, the Bartlett Test of Sphericity was performed. This test indicates the statistical probability that the correlation matrix has significant correlations among at least some of the variables. Further the Kaiser_Meyer_Olkin Measure of Sampling Adequacy was calculated to evaluate the appropriateness of applying factor analysis. A value of above 0.5 indicates appropriateness.

When a large set of variables is factored, the method first extracts the combinations of variables that explain the greatest amount and then proceed to combinations that account for smaller and smaller amounts of variance. In deciding when to stop (i.e. how many factors to be extracted) the latent root criterion has been used. The rationale for this technique is that the factor should account for the variance of at least a single variable if it is to be retained for interpretation. Hence factors having latent roots or eigen values more than "1" are considered.

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[1] Reference to Factor Analysis has been drawn from the book 'Multivariate Data Analysis' by Hair, Anderson, Tatham and Black (5th edition), Pearson Education.

4.2.1 Result for the whole group

Using the Principal Component Analysis alongwith varimax rotation resulted in three factors that explained only 48.46% of the variance. Although the KMO score of 0.763 indicated sampling adequacy, the result was not accepted by the researcher because of its low explanatory power.

Table 4.2.1 Total Variance Explained For The Whole Group

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumu-lative %	Total	% of Variance	Cumu-lative %	Total	% of Variance	Cumu-lative %
1	3.37	24.09	24.09	3.37	24.09	24.09	2.57	18.38	18.38
2	2.06	14.73	38.82	2.06	14.73	38.82	2.20	15.72	34.10
3	1.35	9.64	48.46	1.35	9.64	48.46	2.01	14.36	48.46
4	0.97	6.90	55.36						
5	0.94	6.70	62.06						
6	0.85	6.10	68.16						
7	0.78	5.54	73.70						
8	0.67	4.78	78.48						
9	0.61	4.36	82.84						
10	0.59	4.19	87.02						
11	0.50	3.54	90.57						
12	0.45	3.22	93.78						
13	0.44	3.13	96.92						
14	0.43	3.08	100.00						

Extraction Method: Principal Component Analysis.

Table 4.2.2 Factorials – Whole Group

Rotated Component Matrix

Variables	Component		
	1	2	3
Use of Elephant	0.00	-0.13	0.73
Motor Vehicle	0.10	0.54	
Photography	0.15	0.22	0.65
Picnicking around the park	0.09	0.76	0.06
Feeding of wildlife by visitors	0.61	0.14	0.04
Trampling of soil during elephant ride	0.35	0.09	0.53
Pedestrian & Vehicular traffic	-0.12	0.69	0.16
Souvenir collection form the park premises	0.62	0.11	0.21
Collection of fuelwood	0.76	0.06	0.09
Running of motor boats	0.38	-0.11	0.52
Waste water disposal from the resorts / restaurants	0.11	0.56	-0.17
Haphazard development activities	0.64	0.10	0.03
Trekking & camping	0.61	-0.11	0.34
Littering & dumping in & around the park	0.35	0.63	-0.35

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotated Component Matrix for overall data set was done resulting in 3 Factors.

Factor 1 Human pressure

Statement no. 5. Feeding of wildlife
Statement no. 8. Souvenir collection
Statement no. 9 Collection of fuelwood
Statement no. 12 Haphazard Development
Statement no. 13 Trekking / Camping

Factor 2 Congestion and pollution

Statement no. 2 Vehicle
Statement no. 4 Picnic
Statement no. 7 Traffic
Statement no. 11 Wastewater
Statement no. 14 Littering

Factor 3 Intrusion

Statement no. 1 Elephant Ride
Statement no. 3 Photography
Statement no. 6 Trampling of soil
Statement no. 10 Patrol Boats

A second round was also conducted for the overall data set where the eigen value was set at a minimum of 0.8. This time the analysis resulted in six factors that explained for 68.16% of the variance. It was felt that further analysis done group wise would throw up more significant findings.

The findings are as follows:

Table 4.2.1a Total Variance Explained (eigen value ≥ 0.8)

Comp-onent	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumu-lative %	Total	% of Variance	Cumu-lative %	Total	% of Variance	Cumu-lative %
1	3.37	24.09	24.09	3.37	24.09	24.09	1.80	12.85	12.85
2	2.06	14.73	38.82	2.06	14.73	38.82	1.77	12.64	25.49
3	1.35	9.64	48.46	1.35	9.64	48.46	1.71	12.19	37.68
4	0.97	6.90	55.36	0.97	6.90	55.36	1.61	11.48	49.16
5	0.94	6.70	62.06	0.94	6.70	62.06	1.36	9.70	58.86
6	0.85	6.10	68.16	0.85	6.10	68.16	1.30	9.30	68.16
7	0.78	5.54	73.70						
8	0.67	4.78	78.48						
9	0.61	4.36	82.84						
10	0.59	4.19	87.02						

11	0.50	3.54	90.57						
12	0.45	3.22	93.78						
13	0.44	3.13	96.92						
14	0.43	3.08	100.00						

Extraction Method: Principal Component Analysis

Table 4.2.1b Factorials (with eigen value ≥ 0.8)

Rotated Component Matrix

Variables	Component					
	1	2	3	4	5	6
Use of Elephant	-0.05	0.08	0.83	-0.06	-0.13	0.01
Motor vehicle	0.78	0.28	0.18	0.00	-0.14	-0.03
Photography	0.17	-0.07	0.65	0.35	0.16	0.09
Picnicking around the park	0.73	-0.01	0.03	-0.04	0.22	0.30
Feeding of wildlife by visitors	0.02	0.15	0.18	0.18	0.07	0.83
Trampling of soil during elephant ride	0.14	0.35	0.55	0.10	-0.02	0.16
Pedestrian & Vehicular traffic	0.67	-0.16	-0.03	0.26	0.29	-0.21
Souvenir collection from the park premises	0.10	0.10	0.05	0.75	0.02	0.38
Collection of fuelwood	0.09	0.48	-0.06	0.54	-0.03	0.34
Running of motor boats	-0.04	0.29	0.31	0.65	-0.03	-0.24
Waste water disposal from the resorts/ restaurants	0.08	0.00	0.03	0.04	0.91	0.00
Haphazard development activities	0.09	0.75	0.01	0.07	0.11	0.15
Trekking & camping	-0.04	0.73	0.26	0.25	-0.02	-0.03
Littering & dumping in & around the park	0.36	0.29	-0.23	-0.14	0.57	0.33

Extraction method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

The result of Rotated Component Matrix produced 6 factors

Factor 1 Traffic

Statement no. 2 Vehicle
Statement no. 4 Picnic
Statement no. 7 Traffic

Factor 2 Human pressure

Statement no. 12 Haphazard Development
Statement no. 13 Trekking/ camping

Factor 3 Pressure of tourism

Statement no. 1 Elephant ride
Statement no. 3 Photography
Statement no. 6 Trampling of soil

Factor 4 Disturbance to nature

Statement no. 8 Souvenir Collection
Statement no. 9 Collection of fuelwood
Statement no. 10 Patrol boats

Factor 5 Pollution

Statement no. 11 Wastewater

Statement no. 14 Littering

Factor 6

Statement no. 5 Feeding of wildlife

4.2.2 Result for the tourists

Using the Principal Component Analysis along with varimax rotation resulted in five factors that explained 63.47% of the variance. KMO score of 0.711 indicated sampling adequacy and the result was accepted.

Table 4.2.2 Total Variance Explained - tourists

Comp-onent	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumu-lative %	Total	% of Variance	Cumu-lative %
1	3.18	22.74	22.74	3.18	22.74	22.74	2.09	14.94	14.94
2	2.05	14.61	37.35	2.05	14.61	37.35	2.00	14.29	29.23
3	1.56	11.17	48.52	1.56	11.17	48.52	1.64	11.74	40.97
4	1.06	7.60	56.12	1.06	7.60	56.12	1.58	11.32	52.29
5	1.03	7.36	63.47	1.03	7.36	63.47	1.57	11.18	63.47
6	0.90	6.44	69.91						
7	0.73	5.20	75.11						
8	0.67	4.81	79.92						
9	0.56	4.03	83.95						
10	0.55	3.90	87.84						
11	0.49	3.53	91.38						
12	0.45	3.22	94.60						
13	0.40	2.87	97.46						
14	0.35	2.54	100.00						

Extraction Method: Principal Component Analysis.

Table 4.2.2a Factorials - Tourists

Rotated Component Matrix

Variables	Component				
	1	2	3	4	5
Use of Elephant	0.11	-0.24	0.77	0.09	0.02
Motor vehicle	0.27	0.11	0.14	0.74	-0.08
Photography	0.03	0.22	0.74	0.12	0.18
Picnicking around the park	0.08	0.61	-0.06	0.47	-0.09
Feeding of wildlife by visitors	0.36	0.63	0.06	-0.05	0.19
Trampling of soil during elephant ride	0.62	0.22	0.41	-0.04	-0.10
Pedestrian & Vehicular traffic	-0.16	0.07	0.11	0.80	0.18
Souvenir collection form the park premises	0.09	0.20	0.04	0.04	0.80
Collection of fuelwood	0.55	0.18	-0.26	0.01	0.48
Running of motor boats	0.24	-0.14	0.22	0.03	0.70

Wastewater disposal from the resorts/ restaurants	-0.19	0.75	0.10	0.01	0.07
Haphazard development activities	0.70	0.00	-0.13	0.13	0.21
Trekking & camping	0.73	-0.05	0.25	0.03	0.18
Littering & dumping in & around the park	0.18	0.63	-0.29	0.36	-0.01

Extraction method: principal component analysis.
Rotation Method: Varimax with Kaiser Normalization.

Rotated Component Matrix for tourist respondents was done resulting into 5 Factors,

Factor 1 Activities of tourists and community

Statement no. 6 Trampling of soil
Statement no. 9 Collection of fuelwood
Statement no. 12 Haphazard Development
Statement no. 13 Trekking/ camping

Factor 2 Invasion

Statement no. 4 Picnic
Statement no. 5 Feeding of wildlife
Statement no. 11 Wastewater
Statement no. 14 Littering

Factor 3 Component of tourism

Statement no. 1 Elephant ride
Statement no. 3 Photography

Factor 4 Traffic

Statement no. 2 Vehicle within the park
Statement no. 7 Traffic

Factor 5 Intrusion

Statement no. 8 Souvenir Collection
Statement no. 10 Patrol boats

4.2.3 Result for the local people:

Using the Principal Component Analysis, alongwith varimax rotation resulted in five factors that explained 69.17% of the variance. The KMO score of 0.674 indicated sampling adequacy, hence the result was accepted.

Table 4.2.3 Total Variance Explained - Local People

Comp-onent	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumu-lative %	Total	% of Variance	Cumu-lative %	Total	% of Variance	Cumu-lative%
1	3.66	26.14	26.14	3.66	26.14	26.14	2.45	17.48	17.48
2	2.18	15.59	41.73	2.18	15.59	41.73	1.85	13.20	30.68
3	1.57	11.20	52.93	1.57	11.20	52.93	1.81	12.90	43.58
4	1.25	8.90	61.84	1.25	8.90	61.84	1.79	12.81	56.40
5	1.03	7.33	69.17	1.03	7.33	69.17	1.79	12.77	69.17

6	0.80	5.73	74.89						
7	0.64	4.54	79.43						
8	0.60	4.25	83.68						
9	0.56	3.99	87.67						
10	0.51	3.63	91.30						
11	0.35	2.53	93.83						
12	0.34	2.43	96.25						
13	0.30	2.15	98.41						
14	0.22	1.59	100.00						

Extraction Method: Principal Component Analysis.

Table 4.2.3a Factorials - Local People

Variables	Component				
	1	2	3	4	5
Use of Elephant	0.16	0.17	0.51	0.17	0.48
Motor vehicle	-0.07	0.16	0.08	0.78	0.23
Photography	0.82	0.01	0.00	0.15	0.08
Picnicking around the park	0.04	0.04	-0.04	0.82	-0.09
Feeding of wildlife by visitors	0.38	0.27	0.60	-0.11	0.16
Trampling of soil during elephant ride	0.38	-0.11	0.56	0.33	0.26
Pedestrian & Vehicular traffic	0.27	0.03	-0.47	0.50	-0.30
Souvenir collection form the park premises	0.83	0.09	0.13	0.04	0.15
Collection of fuelwood	0.72	0.23	0.08	-0.14	0.17
Running of motor boats	0.26	-0.34	0.23	0.10	0.69
Waste water disposal from the resorts / restaurants	0.10	0.35	-0.71	0.12	0.31
Haphazard development activities	0.20	0.78	0.17	0.06	0.19
Trekking & camping	0.20	0.28	-0.08	-0.09	0.80
Littering & dumping in & around the park	0.07	0.84	-0.19	0.16	-0.08

Extraction method: principal component analysis.
Rotation Method: Varimax with Kaiser Normalization.

Subsequent Rotated Component Matrix resulted in five factors

Factor 1 Damage to flora / fauna

Statement no. 3 Photography
Statement no. 8 Souvenir collection
Statement no. 9 Collection of Fuelwood

Factor 2 Spoiling scenic beauty

Statement no. 11 Wastewater
Statement no. 12 Haphazard Development
Statement no. 14 Littering

Factor 3 Damaging natural settings

Statement no. 1 Elephant ride
Statement no. 5 Feeding of wildlife

Statement no. 6 Trampling of soil

Factor 4 Traffic

Statement no. 2 Vehicle within park
Statement no. 4 Picnic
Statement no. 7 Traffic

Factor 5 Disturbance

Statement no. 10 Patrol boats
Statement no. 13 Trekking/ camping

4.2.4 Result for the service provider:

Rotated Principal Component Analysis resulted in four factors explaining 62.4% variance. The KMO score of 0.667 indicated sampling adequacy, therefore the result was accepted.

Table 4.2.4 Total Variance Explained – Service Provider

Comp -onent	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumu -lative %	Total	% of Variance	Cumu -lative %	Total	% of Variance	Cumu -lative %
1	3.5	25.0	25.0	3.5	25.0	25.0	2.4	17.0	17.0
2	2.5	17.6	42.5	2.5	17.6	42.5	2.2	16.0	33.1
3	1.6	11.5	54.0	1.6	11.5	54.0	2.2	15.4	48.5
4	1.2	8.4	62.4	1.2	8.4	62.4	2.0	14.0	62.4
5	0.9	6.6	69.0						
6	0.9	6.2	75.2						
7	0.7	5.1	80.3						
8	0.6	4.3	84.6						
9	0.6	4.1	88.8						
10	0.5	3.2	92.0						
11	0.4	2.7	94.7						
12	0.3	1.9	96.6						
13	0.2	1.8	98.4						
14	0.2	1.6	100.0						

Extraction Method: Principal Component Analysis.

Table 4.2.4a Factorials - Service Provider

Variables	Component			
	1	2	3	4
Use of Elephant	-0.18	-0.13	0.03	0.87
Motor vehicle	0.13	0.66	0.05	-0.03
Photography	-0.01	0.30	0.12	0.59
Picnicking around the park	0.81	0.24	0.00	0.09
Feeding of wildlife by visitors	0.13	-0.22	0.81	0.22
Trampling of soil during elephant ride	0.19	0.50	-0.04	0.62
Pedestrian & Vehicular traffic	0.73	0.36	0.01	-0.21

Souvenir collection form the park premises	0.09	0.41	0.70	0.01
Collection of fuelwood	0.14	0.47	0.50	0.41
Running of motor boats	-0.01	0.66	0.12	0.33
Waste water disposal from the resorts / restaurants	0.72	-0.11	-0.10	0.07
Haphazard development activities	-0.12	0.12	0.56	-0.06
Trekking & camping	-0.30	0.52	0.46	0.21
Littering & dumping in & around the park	0.67	-0.31	0.43	-0.20

Extraction method: principal component analysis.
Rotation Method: Varimax with Kaiser Normalization.

The Rotated Component Matrix resulted in following four factors

Factor 1 Disturbing Aesthetics

Statement no. 4 Picnicking around the park
Statement no. 7 Pedestrian & vehicular traffic
Statement no. 11 Wastewater disposal from the resorts / restaurants
Statement no. 14 Littering & dumping in & around the park

Factor 2 Traffic/Trespassing

Statement no. 2 Motor vehicle
Statement no. 10 Running of motorboats
Statement no. 13 Trekking & camping

Factor 3 Invasion

Statement no. 5 Feeding of wildlife by visitors
Statement no. 8 Souvenir collection form the park premises
Statement no. 9 Collection of fuelwood
Statement no. 12 Haphazard development activities

Factor 4 Tourism Activities

Statement no. 1 Use of elephant
Statement no. 3 Photography
Statement no. 6 Trampling of soil during elephant ride

4.3 Analysis of Stakeholder's Perception

The data collected with the help of the perceptual questionnaire from 505 respondents has been analysed in this chapter.

Statistics have played a vital role in drawing a meaningful conclusion. The **Chi-Square test** (cross tabulation procedure) tabulates a variable into categories and computes a chi-square statistic. This goodness-of-fit test compares the observed and expected frequencies in each category to test that all categories (stakeholders) contain same proportion of values (perceptions).

Pearson's Chi-square statistic was used in this study to find out if the perceptions are independent of the stakeholder groups. It has already been mentioned that this study deals with perceptual assessment of tourism related factors affecting biological diversity.

Expected Significance Level is usually known as the "p" value. The level of significance in simple words can be defined as the basis for deciding whether or not to reject the null hypothesis. If the null hypothesis were true, the resultant chi-square statistic (asymptotic significance level, "α" value) would be as extreme as the one observed. If the observed significance level is small enough, usually less than 0.1 or 0.05 or 0.01, the null hypothesis is rejected at 90%, 95% or 99% confidence level. In this study if p> 0.1 the null hypothesis was accepted (at 90% confidence level) else we reject it.

The Null Hypothesis (H_o) here is '*there is no perceptual difference among the stakeholders*' and the Alternative Hypothesis (H_1) is '*there is difference in perceptions among the stakeholders*'. And the level of significance set for the same is 0.1.

4.3.1 Results of the Perceptual Study

Statement 1: Excessive presence of visitors brings about behavioural changes in animals.

As p<0.1, the Chi-square test suggested rejection of the null hypothesis (H_o) and acceptance of the alternative hypothesis instead. Thus it could be said that there was difference in the perceptions of the stakeholder groups.

Table 4.3.1.1 Statement 1 - Crosstab

Count

		exessive presence of visitor					
		Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree	Total
stakeholder group	Tourist	14	46	49	117	61	287
	Service Provider	3	18	28	34	13	96
	Local People / NGO	10	20	33	37	22	122
Total		27	84	110	188	96	505

From the cross tabulation in Table 4.3.1.1 it is observed that tourists who disagreed with the statement (20.9%) were relatively less than those who agreed with the statement (62%), while 17.07% of them did not have any clear-cut opinion on this. On the other hand, the rest two non-tourist groups namely service providers and local people though agreed largely (48.9% & 48.3%) to the said statement; 21.8% & 24.59% respondents disagreed respectively, while 29.1% & 27% were still not sure if presence of excessive tourists can really affect animal behaviour. The percentage of these two stakeholder groups who disagreed form as much as 22% and 25% respectively.

It is important to note that the majority of non-tourist respondents (i.e. Service Provider & Local People) did not see excessive tourists as a cause for concern. Tourists appeared

to be concerned because they were the ones who could likely to face the consequences of behavioural changes in animals.

Table 4.3.1.2 Statement 1 - Chi square result

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.350[a]	6	.055
Likelihood Ratio	12.452	6	.053
Linear-by-Linear Association	4.231	1	.040
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 18.25.

Varied perceptions of the stakeholder groups can be attributed to varied dependency (benefits) of the groups on Kaziranga. Tourism being the potential source of their livelihood for the community and service providers, they would prefer having more tourism. In Kaziranga a large number of households depend on or are somehow related to tourism industry either directly or partially e.g. in travel agencies, in accommodation sectors, in caterings, in jeep & elephant safaris, in shops, etc. On the other hand those who visit Kaziranga National Park (KNP) are concerned about its natural and aesthetic beauty. It is worth mentioning here that KNP is being visited largely because of its unspoilt nature; Kaziranga is in fact rated among the top nature reserves in the world in terms of diverseness of life it harbours. This UNESCO notified World Heritage Site has celebrated its centenary during the year 2005 setting a milestone in the history of nature conservation. Kaziranga also holds the world's largest population of Unicorn Rhino, more than 70 percent of the world's Asiatic Wild Buffalo and Swamp Deer population and a significant numbers of Tiger apart from a rare and magnificent collection of flora and fauna.

Statement 2: Food scarcity among wildlife results from developmental activities.

Table 4.3.2.1 - Statement 2 - Crosstab

Count

		food scarcity due to developmental acivity					
		Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree	Total
stakeholder group	Tourist	23	44	53	122	45	287
	Service Provider	8	22	25	27	14	96
	Local People / NGO	11	28	32	39	12	122
Total		42	94	110	188	71	505

The null hypothesis (H_o) was rejected, and the alternative hypothesis accepted as the p value i.e. 0.067 is less than the expected level of significance (0.1). Thus it

Table 4.3.2.2 - Statement 2 - Chi-square result

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.604[a]	8	.067
Likelihood Ratio	14.836	8	.062
Linear-by-Linear Association	7.261	1	.007
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.98.

could be said that was difference in the stakeholder perception.

42.7% of one of the key non-tourist group i.e. Service providers agreed to the statement, while 31.25% disagreed and the rest of them were still not sure about the possibility of food scarcity due to developmental activities. The other group (Locals) tilted towards agreeing with the statement (41.8% agreed or strongly agreed) and 31.96% of them either disagreed or strongly disagreed. However a major fraction of tourists (58.1%) supported this fact and stressed on minimal developmental activity, 18.4% tourists were not sure about this fact, while 23.34% tourists tended to disagree.

Although developmental activities are essential for the well being of an area, haphazard and unsustainable forms of development can destroy nature too. For this very reason, the tourists are not in favour of developmental work that would lead to food scarcity among wildlife. Though it is not very evident, a keen observation will show that developmental activities already have contributed to food scarcity among animals in and around Kaziranga through the development of stone quarries, stone crusher, tea estates, tourist resorts, etc.

On the other hand the service providers and locals are little sceptical about development related issues, which they believe is a must for their native, Kaziranga. Development has become a common concern for all of us now; people from all walks of life want development in their respective fields of work. On top of that, developing countries like India seek faster development in almost every sector, be it education, be it economy, be it social sector, be it health & hygiene, be it transportation, be it communication, etc. Without infrastructure development, it would be difficult to attract and accommodate tourists.

Statement 3: Developmental activities (construction) lead to rapid change in land use pattern and destruction of wilderness areas.

Table 4.3.3.1 – Statement 3 - Crosstab

Count

		destruction of wilderness areas due to construction activity					
		Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree	Total
stakeholder group	Tourist	16	37	51	118	65	287
	Service Provider	2	24	16	30	24	96
	Local People / NGO	7	19	28	46	22	122
Total		25	80	95	194	111	505

The Chi square statistic indicated that the null hypothesis (H_o) cannot be rejected, 'p' value was 0.297 which was greater than the expected significance level (0.1).

Hence it was concluded that the responding stakeholders was no perceptual difference in this statement. All of them agreed that construction activities would affect the biodiversity of Kaziranga.

Table 4.3.3.2 Statement 3 - chi square result

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.266[a]	6	.297
Likelihood Ratio	7.189	6	.304
Linear-by-Linear Association	2.223	1	.136
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 18.06.

Though, 64% tourists agreed to the statement, 17.77% of them were yet to realize the importance of construction activities in terms of changing land-use pattern, whereas 18% of them disagreed as well. About 56% respondents each from service providers and local people agreed with the statement, while 27% and 21% of them showed disagreement over this issue respectively.

The classic example of land use pattern is the ever-expanding team cultivations and other agricultural practices, which completely alters the natural landscape to a monoculture. In addition, shortening cycles of slash and burn (*Jhum*) cultivation practices are also altering land use patterns mostly in adjoining hills, which are now under proposed additions to the Kaziranga National Park. The need of the hour is to balance development need with the need for sustainability.

Statement 4: Forcing the 'Mahout' (in case of elephant ride) to go closer to the animals may cause unexpected situations like attacking by the animals.

Result of Chi square test indicated that the resultant Asymptotic Significance value (0.661) was greater than the 0.1; therefore null hypothesis (H_o) could not be rejected. Thus it was concluded that there was no difference in the perception of the stakeholders.

Table 4.3.4.1 Statement 4 - Crosstab

Count

		forcing the mahut to get elephant closer to the wildlife					
		Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree	Total
stakeholder group	Tourist	10	17	68	103	89	287
	Service Provider	2	4	20	36	34	96
	Local People / NGO	6	7	27	51	31	122
Total		18	28	115	190	154	505

The stakeholder groups particularly the tourists agreed (66.55%) that going closer to the animals during an elephant ride can evoke animals to attack, whereas 23.69% percent of them were not sure of it. Although the other two non-tourist groups too gave positive consent towards the above fact, they were a bit a skeptical, as such accidents occur only once in a blue moon. However 20.8% of Service providers and 22.1% of Local people have responded indifferently on this matter. On the other hand, the service providers (73%) and locals (67%) showed agreement on this matter. Service providers normally insisted that tourists avoid pressurizing 'mahouts' to move closer to animals as it causes irritation in the animals; more so in case of females with babies. And Kaziranga has been a witness to such fatal incidents. One such fatal accident occurred in the year 2001, killing an American lady. Besides, similar unexpected situations (being chased away by irritated animals particularly by Rhinos & Elephants) have been faced by the research scholar himself on several occasions.

Table 4.3.4.2 Statement 4 - chi square result

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.116[a]	6	.661
Likelihood Ratio	4.219	6	.647
Linear-by-Linear Association	.127	1	.722
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.74.

Life is precious for all and no one would wish to risk his/her life irrespective of whether one is a tourist, or a service provider, or a local person. Safety is a priority for everyone. Going closer to wild animals not only puts one's life at risk but also disturbs and at times frightens (mental shock) the animal, which is not ethical too.

Statement 5: Various disturbances including noise pollution can bring about behavioural changes in animals. The Chi square statistics in the tables below clearly indicates that the null hypothesis may not be rejected and rather accepted it as the asymptotic significance level (0.569) exceeded the expected level of

Table 4.3.5.1 Statement 5 - Crosstab

Count

		noise pollution can bring about beahvioural chnage in animals					
		Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree	Total
stakeholder group	Tourist	5	7	57	131	87	287
	Service Provider	3	4	18	49	22	96
	Local People / NGO	2	4	30	52	34	122
Total		10	15	105	232	143	505

significance (0.1). This indicates that the responses are similar irrespective of the stakeholder groups.

It is noteworthy to mention here that irrespective of the stakeholder group, awareness level on impacts of noise pollution was very significant with 76% tourists, 74% service providers and 70% local people. However, 20% tourists, 19% service providers and 25% locals were indifferent on noise pollution. Noise has been defined as the sound (unintelligible or dissonant) that has a disagreeable auditory experience and noisy situation occurs due to loud conversation of visitors within the park (expression of excitement), vehicular traffic particularly during jeep safaris (diesel jeeps are more noisy), picnic parties (mostly organized in the fringe areas), etc.

Table 4.3.5.2 Statement 5 - Crosstab repeat

Count

		noise pollution can bring about beahvioural chnage in animals				
		Disagree	Indifferent	Agree	Strongly Agree	Total
stakeholder group	Tourist	12	57	131	87	287
	Service Provider	7	18	49	22	96
	Local People / NGO	6	30	52	34	122
Total		25	105	232	143	505

Noise has been considered as a health hazard; apart from reduction of mental peace (causing distressful conditions) over-exposure to noise can cause hearing problems both in animals and human being as well and disrupts environmental health. Since diversity of living beings is commonly known as Biodiversity, hence all its components get equal importance when it comes to any possible impact of noise pollution. Noisy situations (loud conversation and noisy vehicles, particularly those diesel fuelled) many a times lessen visitors' chances to sight animals during safaris, hence the park authority has made it mandatory to use only petrol-fuelled vehicle during safaris as a measure to reduce noise pollution.

Table 4.3.5.3 Statement 5 - chi square result

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.808[a]	6	.569
Likelihood Ratio	4.701	6	.583
Linear-by-Linear Association	1.311	1	.252
N of Valid Cases	505		

a. 1 cells (8.3%) have expected count less than 5. The minimum expected count is 4.75.

Statement 6: Loss of animal habitat (homes of wildlife) ultimately leads to permanent disappearance of the species and destruction of the eco-system.

Since the observed significance level of Chi Square statistic (p = 0.002) is less than the alpha value (0.1), the Null hypothesis was rejected and the alternate hypothesis accepted.

Table 4.3.6.1 Statement 6 - Crosstab

Count

		destruction of eco-system due to habitat loss					
		Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree	Total
stakeholder group	Tourist	3	11	22	113	138	287
	Service Provider		9	16	40	31	96
	Local People / NGO		2	20	60	40	122
Total		3	22	58	213	209	505

Rejection of Null Hypothesis (H_o) in this case meant that all the responding stakeholder groups had differences in their opinions on the said issue. The tourists (87.45%) and the other two non-tourist groups i.e. service providers (74%) & locals (82%) agreed on the matter of habitat loss. Although a significant fraction of service providers (17%) & locals (16%) were indifferent on this matter.

Table 4.3.6.2 Statement 6 - Crosstab repeat

Count

		destruction of eco-system due to habitat loss				
		Disagree	Indifferent	Agree	Strongly Agree	Total
stakeholder group	Tourist	14	22	113	138	287
	Service Provider	9	16	40	31	96
	Local People / NGO	2	20	60	40	122
Total		25	58	213	209	505

Although there was dissimilarity in the stakeholders' perceptions, the comparative responses otherwise show high signs of environmental awareness among the stakeholders and their growing concern over the ecological state of the area. Environmental conservation is now a serious concern. It is perhaps realized by all of us now that overuse of resources for any purpose, including tourism related activities, could lead to habitat loss, which is an indication of evanescence of the ecosystem.

Table 4.3.6.3 Statement 6 - chi square result

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.393[a]	4	.002
Likelihood Ratio	16.915	4	.002
Linear-by-Linear Association	9.993	1	.002
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 15.78.

This slight perceptual variation can be attributed to the feeling among a section of stakeholders that the kind of benefits or support they are getting from the forest resources directly or indirectly, might come to an end; in case of ecosystem destruction. This will eventually affect the future of nature tourism in Kaziranga.

Statement 7: Habitat loss and food scarcity can cause migration of wildlife.

Table 4.3.7.1 Statement 7 - Crosstab

Count

		wildlife migration due to habitat loss					
		Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree	Total
stakeholder group	Tourist	3	20	39	134	91	287
	Service Provider	2	10	11	38	35	96
	Local People / NGO	1	2	15	63	41	122
Total		6	32	65	235	167	505

Chi-square test shows that the Null Hypothesis (H_o) cannot be rejected as the resultant p value (0.298) is greater than the expected level of significance (0.1).

Table 4.3.7.2 Statement 7 - chi square

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.893[a]	4	.298
Likelihood Ratio	5.083	4	.279
Linear-by-Linear Association	1.205	1	.272
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 19.58.

Responding to the wildlife migration issue, 78% tourists with, 76% service providers and 85% local people showed agreement. This indicated that the responding groups have a common view on the possibility of animal migration occurring due to loss of habitat and food scarcity. They were very much concerned about the gradually diminishing wildlife habitat and food scarcity among animals.

Kaziranga is known for its rich diversity of flora & fauna and the tourism here is all about nature's bounty.

Growing environmental and social consciousness among the stakeholder groups have given rise to the concern of conserving nature from further deterioration as it might lead to habitat loss & food scarcity and eventually migration of animals. If the animals happen to migrate (even if it is temporal), this industry would collapse at any time. Temporal dispersion of wildlife can usually be noticed during the beginning of monsoon and immediately after the monsoon. During this period the tourist routes are water-clogged and the safaris are often conducted via alternate routes, often trampling grassy vegetation and other seedlings, disturbing the normal regular movement of the animals.

Statement 8: Activities like grazing, trespassing, etc. inside the park can lead to the introduction of unwanted/ harmful plant variety and transmission of various types of diseases from animal to animal.

Table 4.3.8.1 Statement 8 - Crosstab

Count

		transmission of diseases & introduction of weeds due trespassing & grazing of domesticated animals					
		Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree	Total
stakeholder group	Tourist	1	16	55	138	77	287
	Service Provider	1	10	21	43	21	96
	Local People / NGO		6	17	71	28	122
Total		2	32	93	252	126	505

Table 4.3.8.2 Statement 8 - chi square result

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.442[a]	6	.150
Likelihood Ratio	8.989	6	.174
Linear-by-Linear Association	.001	1	.978
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.46.

The resultant asymptotic significance level ($p = 0.150$) is greater than the expected significance level (0.1) therefore we could not reject the Null Hypothesis (H_0), which indicated no perceptual difference among the stakeholders.

Majority of the tourists (74.91%) agreed with the statement, while 19.16 % were indifferent or unaware of this fact. Trespassing and grazing of domestic animals is not at all a healthy practice and it can alter the ecology of the park. Similar to that of the first group, other two groups of respondents i.e. Service providers (66.66%) and the Local People (81.15%) have also agreed. 22% service providers and 14% local people were not sure of this issue. Grazing and trespassing activities usually bring about various negative consequences. In most cases certain infectious diseases transmit from domesticated to wild or vice-versa due to grazing of domesticated animals (cows & buffaloes) within the park area and animal dung mainly helps in dissemination of unwanted plant variety (weeds) and diseases at times. Besides, movement of domesticated animals (mainly elephants during safaris and patrolling) too result in similar consequence.

The service providers, particularly the forests department, already have had bitter experiences in managing weed species (mainly the *Mimosa sp.*) and controlling diseases among wild fauna. The Mimosa is already a nuisance to Kaziranga, as this fast growing weed i.e. *Mimosa sp.*, covers up the grazing areas of rhinos and other herbivores

replacing the common grass varieties on which these animals feed-on causing a tremendous pressure on the grassland ecology of Kaziranga. Consequently animals do not graze on the Mimosa affected areas and migrate locally towards better grazing areas, it becomes difficult for the tourist to sight them and thus reduces visitor satisfaction. However, the growing awareness of such consequences has made the stakeholders realize their respective responsibilities.

Statement 9: Behavioural change in animals brings about danger to tourists and the locals.

Table 4.3.9.1 Statement 9 - Crosstab

Count

		behavioural change can bring about danger to tourists					
		Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree	Total
stakeholder group	Tourist	4	29	69	126	59	287
	Service Provider	1	11	23	49	12	96
	Local People / NGO	2	7	25	62	26	122
Total		7	47	117	237	97	505

The results of the Chi-Square statistic indicated that Null Hypothesis (H_0) is not to be rejected as the observed p value (0.388) is higher than the expected significance level (0.1).

This indicates that the perceptions of all three respondent groups have a commonality. The three groups have largely agreed (tourists 64%, service provider 64% & locals 72%) to the possibility of risk likely to be caused due to change in behaviour of animals. However, a significant section of the respondents seemed indifferent over this issue of behavioural change.

Behavioural change in animals is perceived as a threat and related to *risk of life*, and is the key reason behind the consensus of the stakeholder groups, who have significantly refused to say no to it. Kaziranga has witnessed several tragic incidents that occurred due to behavioural change of animals particularly among pet elephants. There have been instances of pet-elephant attacking its own '*mahout*' (keeper) and even locals and tourists. During the Kaziranga Centenary Celebration 2005, one mahout was killed by his own elephant. Another noteworthy consequence of behavioural change in animals

Table 4.3.9.2 Statement 9 - chi square result

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.321[a]	6	.388
Likelihood Ratio	6.767	6	.343
Linear-by-Linear Association	1.054	1	.305
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.27.

is that apart from causing harm to human beings, similar circumstance will bring risk to its own life. As a precautionary measure, every tourist vehicle is supposed to be provided with armed forest guards; however this is not happening all the time. When an animal becomes somewhat tamed (feral sign) due to continued presence of human beings, it begins to trust humans and such a situation can provide an edge to the poachers and threaten the life of the animal.

Statement 10: Increasing tourism activity leads to rise in local population resulting in negative ecological impacts.

Table 4.3.10.1 Statement 10 - Crosstab

Count

		population rise can cause ecological degredation					
		Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree	Total
stakeholder group	Tourist	10	33	56	113	75	287
	Service Provider	3	17	22	40	14	96
	Local People / NGO	3	14	35	41	29	122
Total		16	64	113	194	118	505

The value of observed level of significance (0.111) is slightly greater than alpha value 0.1, which suggests not to reject the null hypothesis.

This implies that the respondents have a similar reaction to this statement and they believe in possible adverse affects of the increasing tourism based population. Rapid population growth can be witnessed in tourist destinations like Kaziranga due to various reasons. One such reason is migration of both skilled and non-skilled workers in search of jobs and the flow of job seekers continues until the sector becomes exhausted. Such an unexpected population growth causes shortage of resources in a very short span. When population grows, need for food and shelter too grow simultaneously. To meet such needs pressure mounts on nature gradually, eventually causing irreversible damage to the ecosystem.

The tourists are more concerned about any sort of ecological degradation that can eventuate from population growth in Kaziranga as a consequence of expanding tourism industry. Such

Table 4.3.10.2 Statement 10 - chi square result

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.346[a]	6	.111
Likelihood Ratio	10.575	6	.102
Linear-by-Linear Association	1.576	1	.209
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 15.21.

degradation would diminish the attractive features of the area. 65.5% tourists agreed to the statement, while 19.51% have shown ignorance over the matter. The other two sets of respondents (i.e. Service Providers and Local People) have also agreed to this fact with 56.25% and 57.37% positive responses respectively. However, 23% service providers and 29% local people showed ignorance as well on this matter.

Tourists usually prefer to make visitation to places those are rich in natural beauty and have a hassle free environment (i.e. away from the crowds, pollution, etc.), where they can actually relax and find mental peace apart from fun and enjoyment. In addition, awareness has also been generating among the masses regarding the consequences of population growth (other than ecological problems) such as cultural pollution.

Statement 11: Eco-tourism highlights the cultural / natural heritage of an area.

The outcomes of Chi Square test suggest that the Null Hypothesis (H_0) be accepted, as the asymptotic significance level (0.522) is greater than the alpha value (0.1). While accepting the null hypothesis it can be concluded that the stakeholder groups have a common perception that cultural and natural heritages of a place is brought into focus through promotion of eco-tourism activities.

Table 4.3.11.1 Statement 11 - Crosstab

Count

		ecotourism enhances nature conservation anf cultural development					
		Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree	Total
stakeholder group	Tourist	2	18	62	146	59	287
	Service Provider		7	20	44	25	96
	Local People / NGO	3	9	28	49	33	122
Total		5	34	110	239	117	505

71.42% tourists have a strong belief that eco-tourism can actually promote & highlight cultural and natural resources of in and around Kaziranga. The service providers and the local people too are positive regarding the issue with 71.8% and 67.2% responses respectively. While 22% tourists, 21% service providers and 23% locals opined indifferently.

Table 4.3.11.2 Statement 11 chi square result

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.170[a]	6	.522
Likelihood Ratio	5.154	6	.524
Linear-by-Linear Association	.002	1	.961
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.41.

Traditional customs and cultural ethnicity of the host community of a particular

tourist destination are something that lures people even more than the physical beauty of the place. Based on these resources tourism can boom like anything. The adjoining *Karbi* and *Missing* villages in Kaziranga are being visited frequently by the foreign visitors in particular for their well-known ethnic features. Karbis and Mishings have very distinctive cultural backgrounds and are famous for various traditions from cuisine to handicrafts and perhaps that is why service providers and the local people are comparatively more concerned about this. Although there is a growing concern for eco-tourism, especially about the importance of natural and cultural heritage, a section of the visitors complained of experiencing no trend of environment friendly tourism in Kaziranga.

Though it is unfortunate, another truth was also revealed during the study. It was seen that among the locals the pursuit for educational qualification had significantly dropped down as the booming tourism industry made livelihood relatively easy, enabling a less qualified person to make modest earning.

Statement 12: Eco-tourism enhances socio-economic status of local people.

The results of the Chi-square test suggested that the Null Hypothesis (H_0) is not to be rejected, as the asymptotic significance level (0.959) is greater than the expected level of significance (α=0.1).

Table 4.3.12.1 Statement 12 - Crosstab

Count

		ecotourism enhances socio-economic status					
		Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree	Total
stakeholder group	Tourist	2	17	46	126	96	287
	Service Provider		6	14	38	38	96
	Local People / NGO		9	20	49	44	122
Total		2	32	80	213	178	505

The acceptance of H_0 indicates that the respondents opine along a similar line i.e. they all understand the importance of Eco-tourism as a promoter of socio-economic status of the locals. While responding to the query 77.35% tourists, 79.16% service providers and 76.22% locals have shown agreement.

Table 4.3.12.2 Statement 12 - chi square result

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.511[a]	6	.959
Likelihood Ratio	1.499	6	.960
Linear-by-Linear Association	.052	1	.819
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.46.

All the three stakeholder groups show similarity in

their views regarding the socio-economic benefits of eco-tourism, as it is a common fact that the first ever benefit a tourist destination gets is employment and economic sustenance. The tourists (Eco-tourists) usually understand positive aspects of eco-tourism and contribute to both socio-economic upliftment of the host community and to the tourism development in various ways. When a tourist visits a destination s/he not only pays money (for his accommodation, food, sightseeing, entry fee, etc); through her/him by word of mouth the area gets exposure & publicity. The local people get information and knowledge about other similar areas. In other words the tourists practically impart awareness among the hosts.

The definition of eco-tourism itself says *it is an environmentally responsible travel to wilderness areas, which simultaneously supports nature conservation and sustains the well being of local people*. Eco-tourism in fact increases the responsibility of all the stakeholders of tourism industry towards the environment and to each other as well. However, from a layman's viewpoint both mass tourism and eco-tourism bring in economic prosperity. It has been seen that even a less qualified person can have modest earnings by participating in eco-tourism activities. Awareness usually helps one to develop a positive attitude (pro-environmental), as one realises the importance of natural environment and its role in sustaining the eco-tourism industry as a whole. Though man-made environment does play a vital part in tourism, nature still has lots to do in making a visitation more worthy. And it has been well said that eco-tourism in simple words is in nature, about nature and for nature.

Statement 13: Eco-tourism also encourages community participation in nature conservation efforts.

The observed level of significance of Chi Square test is ($p = 0.870$) is greater than the alpha (α) value 0.1; hence the Null Hypothesis (H_0) cannot be

Table 4.3.13.1 Statement 13 - Crosstab

Count

		ecotourism encourages community participation in conservation efforts					
		Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree	Total
stakeholder group	Tourist	5	16	47	144	75	287
	Service Provider	3	3	21	43	26	96
	Local People / NGO	3	7	25	56	31	122
Total		11	26	93	243	132	505

rejected. Thus there is no perceptual difference among the stakeholder groups and all agree to what is being meant in the said statement.

Table 4.3.13.2 Statement 13 – chi square result

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.491[a]	6	.870
Likelihood Ratio	2.477	6	.871
Linear-by-Linear Association	.501	1	.479
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.03.

The stakeholders i.e. tourists, service providers & locals practically do not have difference in their perceptions with 76.3%, 71.8% & 71.3% positive responses respectively. While there were fraction of respondents, who opined indifferently on the matter of community participation and eco-tourism. And 16% tourists, 22% service providers and 20% locals had a neutral say. For the stakeholders, it is encouraging that eco-tourism too can encourage people (host population) in conservation efforts. The concept of eco-tourism says the stakeholders of the tourism industry are solely responsible for the conservation of nature, maintenance of infrastructure and well being of the locality. Hence it becomes compulsory for all of them to take care of all that they inherited from nature, on top of that it is also ethical to look after and nurture the very thing on which eco-tourism is based.

Local people are the actual participants of conservation efforts. Supported by the service providers they aggressively promote community based conservation efforts, as it would help the eco-tourism grow more. Similar efforts have been found to be very successful and effective in drawing positive support from the host community for the conservation of nature in countries like Ecuador, Peru and several other South American countries. This can also be correlated to the concept of sustainable development; the 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.

The visitors however are of the opinion that locals are many a times deprived of their rights or benefits that they were supposed to have received from the tourism industry. This happens because of the presence of middlemen and entrepreneurs / tour operators who are not local.

Statement 14: Eco-tourism helps in generating awareness and collection of funds for conservation of nature.

Table 4.3.14.1 Statement 14 - Crosstab

Count

		ecotourism generates awareness & funds for conservation					
		Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree	Total
stakeholder group	Tourist	3	21	42	156	65	287
	Service Provider		3	15	46	32	96
	Local People / NGO		9	29	45	39	122
Total		3	33	86	247	136	505

Chi-Square test suggests rejection of the Null Hypothesis as the observed significance level (0.008) is less than the expected value (0.1). Now since the H_0 is rejected we can accept the alternate hypothesis instead. That means there is perceptual difference among the stakeholders.

The tourists have shown utmost concern for this crucial fact of eco-tourism with 77% responses in support of the statement, while the service providers and local people agreed on the same with 81% and 69% respectively. However, a few fraction of the respondents i.e. 15% tourists, 16% service providers & 24% local people were indifferent on the issue. It is believed by them that through frequent visitation of tourists and exposure of Kaziranga to the outside world have helped generate environmental awareness and funds to contribute to conservation initiatives.

Table 4.3.14.2 Statement 14 – chi square result

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.721[a]	4	.008
Likelihood Ratio	13.833	4	.008
Linear-by-Linear Association	.238	1	.626
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 23.19.

However, a section of the respondents are not yet clear that eco-tourism can actually help generate environmental awareness as well as funds. The locals and the service provider may have the feeling that they might have to contribute their earnings towards nature conservation, which is again a sign of lower awareness level. The link between eco-tourism and sustainability is not yet embedded in the minds of the stakeholders.

Further growth of eco-tourism is only possible, when awareness is generated among the masses particularly among these three stakeholders of tourism industry. Current practice of mass tourism can only be replaced by its pro-environment form i.e. Eco-tourism, provided awareness is allowed to spread. For any sort of initiative to grow, fund is a must

and conservation of nature too is not an exception. Adoption of eco-tourism would be a welcome move at this particular place (Kaziranga) to exploit its multifaceted use for further development.

Eco-tourism is one of the fastest growing industries in the world now, with its dual featured credibility i.e. sustaining socio-economy and natural sustainability. A significant proportion of revenue earned through this trade is contributing to managing natural areas.

The chi-square tests so far indicate that in most cases when it comes to possibility of ecological degradation the stakeholders show perceptual similarity. There concern is higher in case of tourism related activities those are responsible for certain ecological disruption. Only in two occasions differences in perception were marked i.e. 'developmental activities, particularly construction work can lead to rapid change in the land-use pattern and destruction of wilderness areas' and 'the presence of excessive visitors bring about behavioural changes in animals'.

But the responses are equally divided in case of developmental activities cause food scarcity among wildlife, various disturbances including noise pollution also bring about behavioural changes in animals, behavioural change in animals bring about danger to the visitors and the local people, increasing tourism activities lead to rise in the local population resulting in negative ecological impacts, eco-tourism enhances the socio-economic status of the local people and Eco-tourism also encourages community participation in nature conservation efforts.

However a significant number of respondents were also quite apprehensive of recreation activities related to tourism industry for the possible negative impacts on the environment. It reveals the need for some regulatory measures to avoid environmental degradation. Incidentally, a large section of the stakeholders believe that presence of excessive visitor in Kaziranga is unlikely to be harmful for the environment. It is also reasonably possible that this fact has been overlooked due to large revenue collection attributed to large number of tourist flow.

The stakeholders have realized that to some extent eco-tourism can be helpful for both conservation and socio-economic development of our society. Their responses show that community participation can be very useful for conservation of our cultural and natural heritage.

It can be inferred from the stakeholders' perceptions that awareness exists about environmental and biodiversity issues, in the context of tourism activities. They seem to be quite sensitive about tourism related factors affecting biodiversity of Kaziranga National Park.

4.4 Appraising impacts

Taking into consideration of various demographic parameters like gender, age group, education, occupation, daily budget and place of origin; perception of the respondents on the following three issues were studied. These issues were identified by grouping characteristically similar statements /activities.

(i) Effect of **development** on wildlife

(ii) **Tourism** and its relation with human component i.e. excessive pressure of tourism activities

(iii)**Effect of Eco-tourism** operations on tourism destination.

'Effect of **Development** on Wildlife' has been defined as combinations of the following statements.

a) *Statement 2*: Food scarcity among wildlife results from developmental activities.

b) *Statement 3*: Developmental activities (construction) lead to rapid change in land use pattern and destruction of wilderness areas.

c) *Statement 6*: Loss of habitat (homes of wildlife) ultimately leads to permanent disappearance of the species and destruction of the ecosystem.

d) *Statement 7*: Habitat loss and food scarcity can cause migration of wildlife.

'**Tourism** and its relation with human component' comprised of the following statements.

a) *Statement 1*: Excessive presence of visitors brings about behavioural changes in animals.

b) *Statement 4*: Forcing the *mahout* (in case of elephant ride) to go closer to the animals may cause unexpected situations like attacking by the animals.

c) *Statement 5*: Various disturbances including noise pollution can bring about behavioural changes in animals.

d) *Statement 8*: Activities like grazing, trespassing, etc. inside the park can lead to the introduction of unwanted / harmful plant variety and transmission of various types of diseases from animal to animal.

e) *Statement 9*: Behavioural change in animals brings about danger to tourists and the locals.

f) *Statement 10*: Increasing tourism activity leads to rise in local population resulting in negative ecological impacts.

'Effect of **eco-tourism** operations on the tourist destination' comprised of the following statements.

a) *Statement 11*: Eco-tourism highlights the cultural / natural heritage of an area.

b) *Statement 12*: Eco-tourism enhances socio-economic status of the local people.

c) *Statement 13*: Eco-tourism also encourages community participation in the nature conservation efforts.

d) *Statement 14*: Eco-tourism helps in generating awareness and collection of funds for conservation.

4.4.1 Gender wise analysis

H_0 : There is no difference in perception among male and female respondents.

H_1: There is difference in perception among male and female respondents.

Group 1 (Development):

*

Table 4.4.1.1

Group 1 (Development)	Disagree		Agree		Indifferent		p value	
	Male %	Female %	Male %	Female %	Male %	Female %		
S.2: Food Scarcity	30.4	21.2	48.7	55.6	20.9	23.3	0.078	R
S.3: Eco-Destruction	23.7	15.9	58.9	63	17.4	21.2	0.094	R
S.6: Habitat Loss	4.11	6.35	84.2	82.5	11.7	11.1	0.530	NR
S.7: Migration	8.54	5.82	80.7	77.8	10.8	16.4	0.121	NR

Gender wise analysis showed that 48.7% male respondents have agreed to the fact that *food scarcity can result among wildlife due to developmental activities*, while 30.4% males have disagreed. 55.6% of the female respondents agreed to it while 23.3% of them were still not sure of such consequence. The results of chi-square test revealed that similarities do not really exist between the perceptions of male and female group. The earlier observations had indicated that there was perceptual difference among the stakeholder groups. That means the respondents had different lines of thinking. Analysis made gender wise, also suggest perceptual dissimilarities among male and female respondents.

* R= Reject Hypothesis (H_o)
NR= Null hypothesis can not be rejected (H_1)

A large number of female respondents (63%) have agreed that *construction activities destroy wilderness by bringing in rapid change in land use pattern* but 21.2% of them are indifferent about it. However, 58.9% males have agreed to the same and 23.7% have disagreed. Regarding the responses of both male and female respondents a very distinct difference has been marked, and the results of the chi-square test also indicated that there was perceptual difference. The previous findings had indicated that the stakeholder groups did not have perceptual differences and they thought along the same line. However, when the same was analysed gender wise, the findings were quite different. The female respondents mostly agreed with the statement, whereas the males in considerable numbers disagreed on the matter of eco-destruction.

Disappearance of the species and thereby destruction of the ecosystem is a consequence of habitat loss was agreed by majority of male respondents (84.2%), while 11.7% have shown their indifference regarding the same. 82.5% female respondents too supported the above fact. The corresponding chi-square test also leads us to the conclusion that perceptual differences among various stakeholders did not exist. Earlier observations had also indicated that there was perceptual difference among the stakeholder groups.

80.7% male and 77.8% female respondents respectively believed that h*abitat loss and food scarcity among wildlife can cause animal migration.* However, 16.4% females were not sure of the fact, similarly 10.8% male respondents too showed uncertainty regarding the same. Similarly the chi-square test suggested that the null hypothesis be accepted.

Out of four statements, it was observed that apart from the issue of animal migration and habitat loss, gender wise there existed dissimilarities in the perceptions on effect of development on wildlife.

Group 2 (Tourism activity):

Table 4.4.1.2

Group 2 (Tourists)	Disagree		Agree		Indifferent		p value	
	Male %	Female%	Male %	Female%	Male %	Female %		
S.1: Ex. Visitor	23.7	19	57.9	53.4	18.4	27.5	0.046	R
S.4: Mahout	6.96	12.7	69.3	66.1	23.7	21.2	0.091	R
S.5: Noise	5.38	4.23	75	73	19.6	22.8	0.627	NR
S.8: Weed & Diseases	7.28	5.82	76.3	72.5	16.5	21.7	0.307	NR
S.9: Behaviour	8.86	13.8	69.9	59.8	21.2	26.5	0.052	R
S.10: Population	19	10.6	57.9	68.3	23.1	21.2	0.023	R

Under group II, responding to the statement *Excessive presence of visitors brings about behavioural changes in animals* 57.9% male respondent agreed, 23.7% disagreed and 18.4% of them showed indifference. While 53.4% of the female respondents have responded positively, rest 19% and 27.5% have disagreed and showed indifference about the same respectively. As per the chi-square statistics there was no similarity in perception of males and females. According to the earlier observation there was perceptual difference among the stakeholder groups, which was an indication of the fact that the entire sample did not think along the same line.

However regarding *forcing the mahout during elephant-ride to go closer to the animals might cause unexpected situations like attacking by the animal*, 69.3% males and 66.1% females have agreed, while 23.7% and 21.2% male and female respondents were found to be unsure of this. Though, the stakeholders apparently seemed to have a common perception over the said fact, the chi-square resulted in an opposite conclusion. The observations made earlier gave an indication that there was no perceptual difference among the stakeholder groups. It was thought that the entire sample opined along the same line. However during gender wise analysis a different finding was revealed.

75% of the male respondents have agreed that *disturbances including noise pollution can bring about behavioural changes in animals,* while 73% of the female group too have similar view. However, views of 19.6% male & 22.8% female respondents were indifferent. The results of the chi-square test also suggested that there was no perceptual difference.

In response to the statement that various human induced activities such as *trespassing, grazing of domesticated animals inside the park can lead to the introduction of unwanted / harmful plant varieties and transmission of various types of disease from animal to animal* 76.3% male respondents and 72.5% female respondents respectively have agreed. The chi-square test accepted the null hypothesis, thus indicating that there was no perceptual difference.

Behavioural change in animals brings about danger to tourists and the locals. 69.9% male and 59.8% female respondents agreed to this statement respectively, while 21.2% males and 26.5% females opined indifferently on the same. The remaining 8.86% males and 13.8% females disagreed with the above statement. The chi-square test pointed to perceptual difference. It was earlier observed that there was no difference in the

perception of the stakeholder groups and all the respondents shared similar thoughts regarding the same. However gender wise analysis showed a different picture. A considerable percentage of the female respondents reacted indifferently, while the male respondents in majority agreed to the statement. The two gender groups were not alike in their thinking.

The corresponding response to the statement *Increasing tourism activity leads to rise in local population resulting in negative ecological impacts* indicate that 68.3% female and 57.9% male respondents showed indifference. However 23.1% male and 21.2% female respondents respectively disagreed to the same. The chi-square statistic too indicated that there was perceptual difference. Although the earlier observation suggested that there was no perceptual difference among the stakeholder groups, the gender wise analysis revealed differences in their perception regarding the above statement.

Thus it can be concluded that gender wise it was a divided group. There existed perceptual difference on issues related to tourism activities.

Group 3 (Eco-tourism):

Table 4.4.1.3

Group 3 (Eco-tourism)	Disagree		Agree		Indifferent		p value	
	Male %	Female%	Male %	Female%	Male %	Female%		
S.11: Culture	7.28	8.47	71.5	68.8	21.2	22.8	0.790	NR
S.12: Socio-Economy	6.01	7.94	78.8	75.1	15.2	16.9	0.582	NR
S.13: Community Conservation	7.91	6.35	75.3	72.5	16.8	21.2	0.415	NR
S.14: Funds	6.01	8.99	77.5	73	16.5	18	0.376	NR

71.5% male respondent and 68.8% female respondents positively believe that *Eco-tourism highlights the cultural and natural heritage of an area*, however 21.2% male and 22.8% female respondents respectively showed indifference over this matter. The χ^2 test as well indicated that the there was no perceptual difference among the stakeholder's opinion.

According to 78.8% male respondents and 75.1% female respondents *Eco-tourism enhances socio-economic status of local people.* The chi-square test as well indicated a similar conclusion, i.e. there was no difference in perception of the respondents.

Responding to the statement eco-*tourism also encourages community participation in nature conservation efforts,* 75.3% male respondents and 72.5% female respondents

have agreed to it. The chi-square value indicated that there was no difference in perceptions among the stakeholders.

In response to the statement *eco-tourism helps in generating awareness and collection of funds for conservation,* 77.5% male respondents and 73% female respondents agreed. Similarly the corresponding chi-square test too suggested commonness of views among respondents.

The above findings indicated that both the gender groups believed eco-tourism activities can positively contribute (both directly and indirectly) towards conservation of cultural and natural heritages of Kaziranga and it also mobilises community participation through awareness generation. Eco-tourism generates funds to initiate conservation too.

Over all it can be seen that in most cases percentage of the male respondents those who agreed was higher than that of female respondents. The males were found to be more concerned regarding habitat loss, migration of wild animals, excessive presence of visitor, going too close to animals during elephant rides, noise pollution, introduction of unwanted plant species, behavioural change, promotion of cultural and natural heritage, eco-tourism's contribution for socio-economic upliftment, community participation in conservation, generation of awareness, and revenue. The female respondents showed their concern towards food scarcity, destruction of ecology, and population rise.

4.4.2 Age wise analysis

H_0 : There is no difference in perception among the respondents of different age groups.

H_1: There is difference in perception among respondents of different age groups.

Group 1 (development):

Table 4.4.2.1

Group (Development)	Disagree (%)				Indifferent (%)				Agree (%)				p value	
	↓ 25 yrs	25-40 yrs	41-60 yrs	↑ 60 yrs	↓ 25 yrs	25-40 yrs	41-60 yrs	↑ 60 yrs	↓25 yrs	25-40 yrs	41-60 yrs	↑ 60 yrs		
S.2: Food Scarcity	24.1	31.7	22.4	10	17.1	25.6	23.5	0	58.8	42.7	54.1	90	0.006	R
S.3: Ecological Destruction	16.5	25.6	17.3	20	12.4	22	23.5	10	71.2	52.4	59.2	70	0.009	R
S.6: Habitat Loss	6.47	4.41	3.06	0	8.24	11.9	16.3	10	84.7	83.7	80.6	90	0.354	NR
S.7: Migration	8.24	9.25	3.06	0	13.5	12.8	12.2	10	78.2	78	84.7	90	0.533	NR

Cross tabulation of responses according to age groups has revealed that the majority of each age group agreed that *Food scarcity among wildlife results from developmental activities*; 58.8% respondents aged below 25 yrs, 42.7% respondents aged between 25-40 yrs, 54.1% respondents aged between 41-60 yrs and 90% respondents of age above 60 yrs have all agreed on the issue of food scarcity. However the χ^2 test indicated that there was perceptual difference among the different age groups. The earlier observation also indicated difference among perceptions of the stakeholder groups. The age wise analysis indicated that though most respondents of age below 25 years agreed to the statement, a significant percentage of age group 25-40 years disagreed with the same. Hence it could be concluded that respondents of various age groups have thoughts of their own regarding the matter of food scarcity.

For the second statement, *Developmental activities (construction) can lead to rapid change in land use pattern and destruction of wilderness areas,* the stakeholders have agreed in large numbers; e.g. 71.2% from below 25 years, 52.4% of respondents aged between 25-40 years, 59.2% of 41-60 years and 70% respondents above 60 years of age have consented positively on the said statement. χ^2 test indicated that there was difference among the views of the stakeholder groups. It was observed earlier that there was no perceptual difference among the stakeholder groups and therefore it was concluded that the entire sample had a common view. But when the analysis was made on the basis of age groups, the differences in perceptions had been found. A significant proportion of the 25-40 age group disagreed to the statement, while majority respondents of the age group below 25 years agreed with the same. Although, various age groups seemed to have no apparent differences, subtle differences existed.

Loss of habitat (of wildlife) ultimately leads to permanent disappearance of the species and destruction of the ecosystem is a statement that had wide acceptance by the respondents, which can be clearly indicated with the help of the agree percentage i.e. 84.7% below 25 years, 83.7% of 25-40 years, 80.6% of 41-60 years and 90% are of above 60 years. The chi-square test has indicated that there was no perceptual difference among the respondents.

About 78.2% respondents of age below 25 years, 78% of 25-40 years, 84.7% of 41-60 years and 90% respondents of above 60 years age clearly agreed on *Habitat loss and*

food scarcity can cause migration of wildlife. The chi-square test also suggested the same results i.e. similarity in stakeholders' opinion.

From the above findings it can be concluded that respondents of different age groups have varied view on the fact that developmental activities can affect the natural environment (including biodiversity). As far as habitat loss and migration is concerned all the age groups had common perception. But they differ in their perception regarding food scarcity and ecological destruction. Hence it can be concluded that the respondents were divided in their perception about the impact of developmental activities.

Group 2 (Tourism activity):

Table 4.4.2.2

Group 2 (Tourism activity)	Disagree (%)				Indifferent (%)				Agree (%)				p value	
	↓ 25 yrs	25-40 yrs	41-60 yrs	↑ 60 yrs	↓ 25 yrs	25-40 yrs	41-60 yrs	↑ 60 yrs	↓ 25 yrs	25-40 yrs	41-60 yrs	↑ 60 yrs		
S.1: Excessive Visitor	22.4	22.9	20.4	10	17.1	22.9	27.6	20	61	54.2	52	70	0.465	NR
S.4: Mahout	9.41	8.81	9.18	10	23.5	20.3	26.5	30	67	70.9	64.3	60	0.905	NR
S.5: Noise	4.71	6.17	3.06	0	15.9	21.1	30.6	0	79	72.7	66.3	100	0.044	R
S.8: Weed & Diseases	8.24	7.93	2.04	0	16.5	19.4	19.4	20	75	72.7	78.6	80	0.443	NR
S.9: Behaviour	11.2	12.3	5.1	20	20	26.9	22.4	0	69	60.8	72.4	80	0.096	R
S.10: Population	18.2	16.3	10.2	20	21.8	22.5	24.5	10	60	61.2	65.3	70	0.672	NR

Responding to the statement *excessive presence of visitors brings about behavioural changes in animals* 61% respondents of age below 25 years had positively reacted. Similarly the respondents of other age groups i.e. 25-40 years (54.2%), 41-60 years (52%) and respondents above 60 years (70%) too agreed to the above-mentioned fact. The χ^2 test also indicated that there was no perceptual difference among the different age groups.

In response to the statement *Forcing the 'mahout' (in case of elephant ride) to go closer to the animals may cause unexpected situation like attacking by the animals,* 67% of the respondent, aged below 25 years, 70.9% of ages between 25-40 years, 64.3% of 41-60 years and 60% of age 60 years & above supported respectively. The chi-square test indicated that there was no difference in perception among the age groups.

Regarding the statement *'Noise pollution can bring about behavioural changes in animals'*, 79% respondents of age below 25 years, 72.7% of age between 25-40 years, 66.3% of age between 41-60 years and 100% of age above 60 years were found to agree

on the noise issue. The chi-square test however indicated that there was difference in opinions of the respondents. The earlier observation revealed that there was no perceptual difference among the stakeholder groups. Although the three stakeholder groups thought alike, further age-wise analysis showed variance in perception.

75% respondents of below 25 years age, 72.7% between 25-40 years, 78.6% between 41-60 years and 80% respondents of age above 60 years age agreed that various human induced activities such as *trespassing, grazing of domesticated animals inside the park can lead to the introduction of unwanted/harmful plant varieties and transmission of various types of disease from animal to animal.* The chi-square test (p value) indicated that there was no perceptual difference among the age groups.

Behavioural change in animals brings about danger to tourists and the locals. This statement was accepted by 69% respondents of age below 25 years, 60.8% of age group 25-40 years, 72s.4% of age group 41-60 years and 80% respondents of age above 60 years respectively. Regarding the issue of behavioural change, χ^2 test indicated rejection of the null hypothesis. It was earlier observed that there was no difference in the perception of the stakeholder groups. It was concluded that the entire sample thought along the same line. However age group wise analysis indicated that there was a difference in their perceptions. A significant percentage of the 25-40 years age group appeared to be indifferent. Majority of the senior group agreed with the statement. Though apparently the four groups seemed to have no difference, subtle differences existed.

60% respondents of age below 25 years, 61.2% of age 25-40 years, 65.3% of age 41-60 years and 70% of respondents aged above 60 years have agreed that *increasing tourism activity leads to rise in local population resulting in negative ecological impacts.* Although apparently the perceptions seemed to be very similar among various stakeholder groups, but the chi-square test indicated that there existed a perceptual difference.

A large section of the respondents believed that tourism activities could lead to ecological destruction and it appeared that the opinion was more or less the same. All the age groups agreed that presence of excessive visitors, going too close to animals, grazing and trespassing activities and increase of local population were indeed harmful.

But the respondent groups differed in their opinion regarding effect of noise pollution and behavioural change in animals.

Group 3 (Eco-tourism):

Table 4.4.2.3

Group 3 (Eco-tourism)	Disagree (%)				Indifferent (%)				Agree (%)				p value	
	↓ 25 yrs	25-40 yrs	41-60 yrs	↑ 60 yrs	↓ 25 yrs	25-40 yrs	41-60 yrs	↑ 60 yrs	↓ 25 yrs	25-40 yrs	41-60 yrs	↑ 60 yrs		
S.11: Culture	7.06	7.93	8.16	10	22.9	22.9	17.3	20	70	69.2	74.5	70	0.951	NR
S.12: Socio-Economy	7.06	4.85	10.2	10	19.4	17.2	8.16	0	73.5	78	81.6	90	0.096	R
S.13:Community Conservation	7.06	5.29	12.2	10	21.2	15.9	21.4	0	71.7	79	66.3	90	0.108	NR
S.14: Funds	7.06	7.49	7.14	0	20.6	15.9	14.3	10	72.3	77	78.6	90	0.733	NR

70% respondents of age below 25 years, 69.2% of age between 25-40 years, 74.5% of age between 41-60 years and 70% aged above 60 years positively believed that *Eco-tourism highlights the cultural and natural heritage of an area.* Similarly the χ^2 test as well indicated that the there was no perceptual difference among the stakeholder's opinion.

According to 73.5% respondents of age below 25 years, 78% of age between 25-40 years, 81.6% of age between 41-60 years and 90% of respondents above age 60 years believed that *eco-tourism enhances socio-economic status of local people.* Although the views appear to be similar, however the results of the chi-square test indicated an opposite conclusion, i.e. there was difference in perception of the respondents. Earlier observations had indicated existence of perceptual similarities among the stakeholder groups and it was concluded that the different stakeholder groups have a common say over the matter of socio-economy. This analysis made age group wise show that majority of respondents of age above 60 years agreed with the statement, but a significant percentage of the respondents of age below 25 years appeared indifferent.

Responding to the statement, eco-*tourism also encourages community participation in nature conservation efforts,* 71.7% respondents of age below 25 years, 79% of age between 25-40 years, 66.3% of ages between 41-60 years and 90% of ages above 60 years have agreed to it. The chi-square test result indicated that there was no difference in perceptions among the different age groups.

72.3% respondents of age below 25 years, 77% of age between 25-40 years, 78.6% of age between 41-60 years and 90% of age above 60 years agreed with the statement *Eco-tourism helps in generating awareness and collection of funds for conservation.* Similarly the results of the chi-square test also suggested commonness of views among respondents.

The above findings indicate that the different age groups are unanimous in their opinion that eco-tourism activities positively contributes (both directly and indirectly) towards conservation of biological diversity of Kaziranga and promote awareness for community participation. Eco-tourism was believed to highlight the culture and heritage of the surrounding area. However the age groups differed in their perception regarding enhancement of socio-economic status of the local. It may be because of lack of signs of materialistic indicators in the vicinity such as eye-catching constructions or shopping complex, etc.

It was observed in the above findings that senior respondents were most concerned in most instances. In case of food scarcity, habitat loss, migration of wildlife, excessive presence of visitor, noise pollution, introduction of unwanted species and transmission of diseases during grazing with domesticated animals, change in behaviour, growing population, and eco-tourism's role in socio-economic advancement, community led conservation, generating revenues, and awareness creation the 60 years or above group showed highest concern. However the rest of the respondents belonging to other three age groups were divided in their opinions. The respondents of ages below 25 years and of ages 60 years or above shared a common view regarding eco-tourism's contribution towards highlighting natural and cultural features. The under 25 years age group was more concerned on destruction of ecosystem, whereas the respondents of age group 25-40 years were more concerned about possible harm while going too closer to animals. The group 41-60 years however did not opine strongly on any case.

Overall, the pro-environmental concern of the senior-most respondents (i.e. 60yrs and above) were found to be higher in most instances, particularly on issues such as food scarcity, habitat loss, migration of wildlife, excessive presence of visitor, noise pollution, eco-tourism's contribution socio-economic upliftment, community conservation and generation of funds for conservation.

4.4.3 Education wise

H_0: There is no difference in perception among the respondents of different educational backgrounds.

H_1: There is difference in perception among respondents of different educational backgrounds.

Group 1 (Development):

Table 4.4.3.1

Group 1 (Development)	Disagree (%)			Indifferent (%)			Agree (%)			p value	
	U.G.	Graduate	P.G.	U.G.	Graduate	P.G.	U.G.	Graduate	P.G.		
S.2: Food Scarcity	17.5	38.6	19.2	20.6	23.2	20.8	61.8	38.1	60	0.000	R
S.3: Destruction of Ecosystem	13.9	26.9	19.2	15.1	21.3	19.2	70.9	51.6	61.6	0.004	R
S.6: Habitat Loss	4.84	6.04	3.2	13.9	10.6	9.6	81.2	83.2	87.2	0.562	NR
S.7: Migration	8.48	6.51	8	12.1	14.8	10.4	79.3	78.6	81.6	0742	NR

Responding to statement no. 2 i.e. *food scarcity among wildlife results from developmental activities* 61.8% of under graduate respondents 38.1% of graduate respondents and 60% of post graduate respondents have agreed. The χ^2 test suggested rejection of the null hypothesis; hence it can be concluded that there exists perceptual difference. It was evident from the above observation that perceptual differences existed among the stakeholder groups. This analysis, which was based on the level of education of the respondents revealed that majority of the under graduate and post graduate respondents agreed to the statement, while on the other hand majority of the graduate respondents either disagreed or were indifferent.

70.9% of undergraduates, 51.6% of graduate and 61.6% of postgraduate respondents have agreed to the statement, *Developmental activities (construction) lead to rapid change in land use pattern and destruction of wilderness areas.* However, the χ^2 test suggests that there was perceptual difference among various education levels. The earlier analysis had indicated that the different stakeholder groups had also shown similar perception this statement. But the analysis based on the level of education showed that, the undergraduate respondents mostly agreed to the statement, whereas a considerable number of graduate respondents showed disagreement and indifference to the same.

Loss of habitat (home of wildlife) ultimately leads to permanent disappearance of the species and destruction of the ecosystem. 81.2% of undergraduate respondents, 83.2%

of graduate and 87.2% of postgraduate respondents believed in this statement. And the result of the chi-square test too indicated that there should not be any difference in perception among the respondents.

Reacting to the statement *habitat loss and food scarcity can cause migration of wildlife* 79.3% of undergraduates, 78.6% of graduates and 81.6% of postgraduate respondents have agreed to it. The chi-square test also indicated that there was no perceptual difference between the different educational groups.

The above findings indicated that a majority of the respondents irrespective of their educational qualification have agreed to the possibility of detrimental effects of developmental activities on the environment, leading to habitat loss and migration of the animals. But the groups did not have the same opinion on loss of wilderness resulting in food scarcity, which was an indication of divided perception among the different educational level groups of respondents.

Group 2 (Tourism activity):

Table 4.4.3.2

Group 2 (Tourism activity)	Disagree (%)			Indifferent (%)			Agree (%)			p value	
	U.G.	Graduate	P.G.	U.G.	Graduate	P.G.	U.G.	Graduate	P.G.		
S.1: Excess Visitor	22.4	23.7	18.4	21.2	25.1	16.8	56.4	51.2	64.8	0.185	NR
S.4: Mahout	10.9	10.2	4.8	17.6	24.2	27.2	71.5	65.6	68	0.129	NR
S.5: Noise	4.85	6.04	3.2	14.5	22.3	26.4	80.6	71.6	70.4	0.096	R
S.8: Weed & Diseases	10.3	5.51	4	19.4	16.3	20.8	70.3	78.1	75.2	0.152	NR
S.9: Behaviour	12.7	10.7	8	17	24.2	29.6	70.3	65.1	62.4	0.122	NR
S.10: Population	20	13.9	13.6	21.2	25.1	19.2	58.8	60.9	67.2	0.295	NR

56.4% undergraduate, 51.2% graduate and 64.8% postgraduate respondents believed that *excessive presence of visitors bring about behavioural change in animals.* The chi-square test also indicated that there was no perceptual difference between the different educated groups.

Responding to the statement *Forcing the mahout during the elephant ride to go closer to wildlife may cause unexpected situations like attacking by the animals,* 71.5% undergraduate, 65.6% graduates and 68% postgraduate respondents agreed. Based on the result of the chi-square test, it can be concluded that there was no perceptual difference among the educational groups.

Disturbances such as *Noise pollution can bring about behavioural changes in animals* was accepted by 80.6% under graduate, 71.6% graduate and 70.4% postgraduate respondents. The chi-square test however suggested rejection of null hypothesis. Though apparently there seemed to be perceptual alikeness among the three responding groups of stakeholders, the level of education wise analysis suggested a different conclusion. The undergraduate respondents predominantly agreed with the statement, while a significant proportion of the highest qualified groups were found to be indifferent in their views. Hence the conclusion is that perceptual differences did exist among the different education levels.

Human interventions such as *Trespassing, grazing of domesticated animals inside the park can lead to the introduction of unwanted / harmful plant varieties and transmission of various types of disease from animal to animal* has been largely accepted by 70.3% of under graduate, 78.1% of graduate and 75.2% post graduate respondents. The chi-square test too indicated perceptual similarity.

70.3% of undergraduates, 65.1% of graduates, and 62.4% of post graduates agreed that *Behavioural change in animals brings about danger to tourists and the locals.* Similarly the chi-square test also suggested acceptance of the null hypothesis, meaning there was no perceptual difference among the educated groups.

Increasing tourism activity leads to rise in local population resulting in negative ecological impacts. This statement has been accepted by 58.8% undergraduates, 60.9% graduate and 67.2% post graduate respondents. The asymptotic significance level as well indicated similar perception on the issue of population increase.

The above findings indicated that most respondents irrespective of the level of education, whether an undergraduate, graduate or postgraduate, support the fact that tourism activities significantly affect the ecology of a tourist destination. The only point of non-agreement was on the effect of noise on animal behaviour. Hence it can be concluded that there was a common consensus among the respondent groups regarding the impact of tourism activities.

Group 3 (Eco-tourism):

Table 4.4.3.3

Group 3 (Eco-tourism)	Disagree (%)			Indifferent (%)			Agree (%)			p value	
	U.G.	Graduate	P.G.	U.G.	Graduate	P.G.	U.G.	Graduate	P.G.		
S.11: Culture	7.88	8.837	5.6	23.6	23.3	16.8	68.5	67.9	77.6	0.383	NR
S.12: Socio Economy	6.67	6.047	8	21.8	15.3	8.8	71.5	78.6	83.2	0.051	R
S.13: Community Conservation	7.27	6.512	8.8	20.6	19.1	14.4	72.1	74.4	76.8	0.671	NR
S.14: Funds	5.45	7.907	8	16.4	20	12.8	78.2	72.1	79.2	0.388	NR

Eco-tourism highlights the cultural and natural heritage of an area was agreed by 68.5% of undergraduate, 67.9% of graduate and 77.6% of postgraduate respondents. The chi-square test also indicated that there was no variation in the perceptions of the stakeholders regarding the said issue.

71.5% undergraduate, 78.6% graduate, while 83.2% postgraduate respondents have readily agreed that *eco-tourism enhances socio-economic status of local people.* Although a large majority seemed to agree, this conclusion was however opposed by the result of the chi-square test, as it said there was difference in views of the stakeholders. It was earlier observed that there was a perceptual similarity among the different stakeholder groups, but the educational qualification wise analysis indicated otherwise.

Responding to the statement *Eco-tourism encourages community participation in nature conservation efforts,* 72.1% of undergraduates, 74.4% of graduates, while 76.8% of postgraduate respondents agreed respectively. The chi-square test also indicated that the groups did not have different perceptions.

The statement, *Eco-tourism helps in generating awareness and collection of funds for conservation* received positive response in large numbers i.e. 78.2% of undergraduates, 72.1% of graduates, and 79.2% of postgraduates agreed to this fact. The chi-square test results as well suggested similarity in perception.

Excluding one statement, the respondent groups agreed on the rest of the statements. Most respondents were quite positive regarding the fact that eco-tourism directly contributes towards conservation initiatives by enhancing the local cultural and natural resources, by community participation and by generating awareness, and revenue but

there was lack of agreement over eco-tourism's role on socio-economic upliftment. This can however be attributed to a possibility of respondents not being socio-economically benefited from tourism. Hence perceptual similarity was observed.

It has been evident from the above findings that higher the education, higher was their concern. The most qualified group (post graduates) were mostly concerned about food scarcity, loss of habitat, migration of wildlife, excessive visitor, behavioural change in animals, population rise and eco-tourism as the promoter of natural and cultural heritage, socio-economic advancement, community led conservation and in revenues & awareness generation. The other two groups had lower concern relatively; the undergraduate respondents have shown highest concern in case of destruction of ecology, possible harm due to going too closer to wildlife, noise pollution, and the graduate respondents however showed their concern only to introduction of unwanted taxa. Hence it could be concluded that education wise respondents had differences in their views.

4.4.4 Occupation wise

H_0: There is no difference in perception among the respondents of different occupations.

H_1: There is difference in perception among respondents of different occupations.

Group 1 (Development):

Table 4.4.4.1

Group 1 (Development)	Disagree (%)			Indifferent (%)			Agree (%)			p value	
	Serv	Self	Stud	Serv	Self	Stud	Serv	Self	Stud		
S.2: Food Scarcity	27	31	24.5	17.7	27.1	22.3	55.7	41.9	53.3	0.111	NR
S.3: Ecological Destruction	18.8	30.2	16.3	17.7	22.5	17.4	63.5	47.3	66.3	0.007	R
S.6: Habitat Loss	4.17	5.43	5.43	11.5	12.4	10.9	84.4	82.2	83.7	0.965	NR
S.7: Migration	7.81	8.53	6.52	14.6	10.9	12.5	77.6	80.6	81	0.833	NR

Responding to the statement *Food scarcity among wildlife results from developmental activities* 55.7% of service holders, 41.9% of self employed respondents and 53.3% of students (who are basically unemployed) agreed to it. The chi-square test also gave indication of similarity in perception existing among the groups.

Developmental activities (construction) that can lead to rapid change in land use pattern and destruction of wilderness areas. In response to this statement 63.5% of

service holders, 47.3% of self-employed respondents and 66.3% of students agreed. Although, the cross tabulation showed alikeness in the views of the respondents irrespective of occupational practices, the chi-square test suggested rejection of null hypothesis, implying that there was difference in perception. Earlier findings showed that there was no perceptual difference among the stakeholder groups. However the occupation wise assessment showed that a large majority of student respondents agreed to the statement, while the respondents who were self-employed significantly showed disagreement and indifference.

84.4% of service holders, 82.2% of self-employed respondents and 83.7% of students have agreed to the statement *Loss of habitat (home of wildlife) ultimately leads to permanent disappearance of the species and destruction of the ecosystem.* The chi-square test too suggested that there was no difference in perceptions among the various occupation groups.

Responding to the statement *Habitat loss and food scarcity can cause migration of wildlife* 77.6% of service holders, 80.6% of self-employed respondents and 81% of students have agreed on the issue of animal migration. The results of the χ^2 - test also indicated similarity among the stakeholders' perception.

The above findings indicated that except one instance, where the null hypothesis was rejected, the respondent groups unanimously agreed that developmental activities result in food scarcity among animals, habitat loss and migration of wildlife. Hence it can be concluded that respondents possessed a similar perception.

Group 2 (Tourism activity):

Table 4.4.4.2

Group 2 (Tourism activity)	Disagree (%)			Indifferent (%)			Agree (%)			p value	
	Serv.	Self	Stud	Serv	Self	Stud	Serv	Self	Stud		
S.1: Ex. Visitor	17.2	22.5	26.6	26.6	23.3	15.8	56.3	54.3	57.6	0.057	R
S.4: Mahout	9.9	10.1	7.61	20.8	21.7	25.5	69.3	68.2	66.8	0.772	NR
S.5: Noise	3.65	6.2	5.43	21.4	24.8	17.4	75	69	77.2	0.418	NR
S.8: Weed & Diseases	4.69	9.3	7.07	20.3	16.3	17.9	75	74.4	75	0.523	NR
S.9: Behaviour	10.9	11.6	9.78	25.5	20.2	22.8	63.5	68.2	67.4	0.817	NR
S.10: Population	15.6	15.5	16.3	19.8	21.7	25.5	64.6	62.8	58.2	0.713	NR

Excessive presence of visitors brings about behavioural change in animals. 56.3% of service holders, 54.3% of self-employed respondents and 57.6% of student have agreed

to it. The chi-square test also suggested that there was perceptual difference among the different occupations. Earlier observations had shown that there was no similarity among the different stakeholder groups.

Responding to statement *Forcing the mahout during the elephant ride to go closer to wildlife may cause unexpected situations like attacking by the animals,* 69.3% of service holders, 68.2% of self-employed respondents and 66.8% of students have agreed with it. A very low percentage in each group showed indifference as well as disagreement in their views. The chi-square test also indicated that there was no perceptual difference among the respondents.

75% of service holders, 69% of self-employed respondents and 77.2% of student respondents have agreed that disturbances such as *Noise pollution can bring about behavioural changes in animals.* The asymptotic significance level indicated that there was no difference in the perceptions of the groups.

Trespassing, grazing of domesticated animals inside the park can lead to the introduction of unwanted / harmful plant varieties and transmission of various types of disease from animal to animal. 75% of service holders, 74.4% of self-employed respondents and 75% of students have agreed to it. The chi-square test also indicated that differences in the perceptions of the stakeholders did not exist.

63.5% of service holder, 68.2% of self-employed respondents and 67.4% of student, believe that *Behavioural change in animals brings about danger to tourists and the locals.* At the same time the chi-square test indicated that no perceptual difference actually existed among the respondents.

Increasing tourism activity leads to rise in local population resulting in negative ecological impacts. 64.6% of service holders, 62.8% of self-employed respondents and 58.2% of students have agreed to it. The chi-square test too suggests that the groups opined along similar lines.

The respondents seemed to have perceptual similarity in all except one case. Out of six issues under the Development Group, respondents did not agree on one issue. It can be concluded from the above findings that the respondents mostly believed that tourism activities could actually harm environmental condition of Kaziranga through noise

pollution, trespassing and grazing activities. It was also felt that behavioural change might occur in animals, which may harm tourists as well as locals.

Group 3 (Eco-tourism):

Table 4.4.4.3

Group 3 (Eco-tourism)	Disagree (%)			Indifferent (%)			Agree (%)			p value	
	Serv	Self	Stud	Serv	Self	Stud	Serv	Self	Stud		
S.11: Culture	5.21	10.1	8.7	18.2	20.2	26.6	76.6	69.8	64.7	0.096	R
S.12: Socio Economy	7.29	6.2	6.52	14.6	10.1	21.2	78.1	83.7	72.3	0.104	NR
S.13: Community Conservation	3.65	10.1	9.24	16.1	14	23.9	80.2	76	66.8	0.011	R
S.14: Funds	3.65	10.1	8.7	14.6	15.5	21.7	82.8	74.4	69.6	0.020	R

76.6% of service holders, 69.8% of self-employed respondents and 64.7% of students agreed that *Eco-tourism highlights the cultural and natural heritage of an area.* Though there seemed to be perceptual similarity among various stakeholders, the chi-square test indicated a completely different conclusion. Thus there is perceptual difference. A closer look showed that although most of the respondents agreed to the statement, a noteworthy percentage of the each group reacted indifferently to the same.

Eco-tourism enhances socio-economic status of local people. 78.1% of students, 83.7% of self-employed respondents and while 72.3% of students agreed to it and the chi-square test indicated that the null hypothesis be accepted. Thus there was no perceptual difference among the three groups.

Responding to the statement *Eco-tourism encourages community participation for conservation,* 80.2% of service holders, 76% of self-employed respondents and 66.8% of students have agreed to this. The results of chi-square test (p value) indicated that there was perceptual difference among the respondents' opinions. Earlier observations indicated that there was no perceptual difference among the stakeholders, hence conclusion was made that stakeholders thought alike on the above issue. However occupation wise analysis indicated difference in their perceptions.

The Statement *Eco-tourism helps in generating awareness and collection of funds for conservation has been agreed to* by 82.8% service holders, 74.4% self-employed respondents and 69.6% students. The chi-square test rejected the null hypothesis, thus leading to the conclusion that there was difference of perception among the three groups. It had earlier been observed that the stakeholder groups thought alike on this

aspect of eco-tourism. However, the occupation wise analysis suggested existence of dissimilarities among respondents.

Based on the above findings it can be concluded that there was perceptual difference among the respondent groups. Respondents from various occupations have different perceptions regarding the role of eco-tourism in highlighting cultural and natural resources, community participation in conservation initiatives and generation of awareness and revenue. It is evident from this result that the groups barely agreed with each other on their opinion of eco-tourism as an appropriate alternative.

Overall findings in this section have indicated that service holders are the most concerned respondents. They showed their concern on issues like food scarcity, habitat loss, possibility of unexpected situation while going too close to the wildlife, introduction of unwanted species & transmission of diseases, population rise and eco-tourism's role in promoting cultural and natural heritage, community participation in conservation, generation of awareness and funds. Next to the service holder group the students (unemployed) have shown a higher level of awareness, they were more concerned about ecological destruction, migration of animal, excessive presence of visitors, noise pollution and introduction of unwanted species and transmission of diseases. The respondents who were self-financed have shown concern to behavioural change in animals and eco-tourism's role in generating socio-economic upliftment. Hence it can be concluded that the holders of different occupations had different perceptions.

4.4.5 Daily expenditure wise

H_0 : There is no difference in perception among the respondents of different spending limits.

H_1: There is difference in perception among respondents of different spending limits.

This analysis was done with responses received from the tourists only. The tourists were divided into the following groups based on their daily budget.

Shoestring	< Rs. 300/- per day per head
Economy	Rs. 300/- – < Rs. 500/- per day per person.
Executive	Rs. 500/- – < Rs. 700/- per day per person.
Elite	> Rs. 700/-

Group 1 (Development):

Table 4.4.5.1

Group 1 (Development)	Disagree (%)				Indifferent (%)				Agree (%)				p value	
	↓ Rs 300	Rs 300 - 500	Rs 500 - 700	↑ Rs 700	↓ Rs 300	Rs 300 - 500	Rs 500 - 700	↑ Rs 700	↓ Rs 300	Rs 300 - 500	Rs 500 - 700	↑ Rs 700		
S.02: Food Scarcity	23.5	26.2	8.7	25.9	17.6	19	21.7	18.5	58.8	54.8	69.6	55.6	0.755	NR
S.03: Ecological Destruction	17.6	23.8	8.7	14.8	15.7	20.2	21.7	18.5	66.7	56	69.6	59.3	0.573	NR
S.06: Habitat Loss	6.54	1.19	8.7	3.7	9.15	7.14	0	7.41	84.3	91.7	91.3	88.9	0.360	NR
S.07: Migration	11.8	5.95	0	0	14.4	14.3	17.4	3.7	73.9	79.8	82.6	96.3	0.088	R

Responding to statement *Food scarcity among wildlife results from developmental activities*, 58.8% of the respondents of the shoestring group, 54.8% of the respondents of the economy class, 69.6% of the executive class and 55.6% of the respondents of elite class agreed with it. The chi-square test indicated that differences among stakeholder perception did not exist.

Developmental activities (construction) lead to rapid change in land use pattern and destruction of wilderness areas. 66.7% respondents of shoestring budget, 56% respondents of economy class, 69.6% of executive class and 59.3% respondents of elite class agreed to it. Perceptual similarity among these groups was also supported by the result of chi-square test, which was indicative of acceptance of the null hypothesis.

The statement *Loss of habitat (home of wildlife) ultimately leads to permanent disappearance of the species and destruction of the ecosystem* has been agreed by 84.3% respondents of shoestring budget, 91.7% respondents of economy class, 91.3% of executive class and 88.9% respondents of elite class. The result of the chi-square test indicated that there was no difference in perception among the groups.

73.9% respondents of shoestring budget, 79.8% respondents of economy class, 82.6% of executive class and 96.3% respondents of elite class agreed that *Habitat loss and food scarcity can cause migration of wildlife.* The chi-square test also statistic indicates that there was perceptual difference in the opinions of the respondents. The previous findings had indicated that the stakeholders had similar perception over the matter of wildlife migration and there was no perceptual difference among the respondents. However, the above analysis indicated otherwise.

The above findings indicate that there was very little variation in the respondents' perception. Most respondents agreed to a common conclusion regarding effect of developmental activities on natural environment, except regarding the wildlife migration.

Group 2 (Tourism activity):

Table 4.4.5.2

Group 2 (Tourism activity)	Disagree (%)				Indifferent (%)				Agree (%)				p value	
	↓ Rs 300	Rs 300 - 500	Rs 500 - 700	↑ Rs 700	↓ Rs 300	Rs 300 - 500	Rs 500 – 700	↑ Rs 700	↓ Rs 300	Rs 300 - 500	Rs 500 - 700	↑ Rs 700		
S.01: Excess Visitor	23.5	17.9	13	22.2	13.7	27.4	17.4	3.7	62.7	54.8	69.6	74.1	0.057	R
S.04: Mahout	9.8	10.7	4.35	7.41	20.9	28.6	34.8	14.8	69.3	60.7	60.9	77.8	0.474	NR
S.05: Noise	5.88	3.57	0	0	17.6	27.4	13	14.8	76.5	69	87	85.2	0.232	NR
S.08: Weed/ Diseases	6.54	8.33	0	0	22.2	17.9	13	11.1	71.2	73.8	87	88.9	0.277	NR
S.09: Behaviour	10.5	16.7	8.7	3.7	24.2	23.8	17.4	29.6	65.4	59.5	73.9	66.7	0.527	NR
S.10: Population	19.6	9.52	8.7	11.1	23.5	17.9	8.7	11.1	56.9	72.6	82.6	77.8	0.051	R

In response to the statement *Excessive presence of visitors brings about behavioural change in animals* 62.7% of shoestring budget, 54.8% respondents of economy class, 69.6% of executive class and 74.1% respondents of elite class agreed to it. Although, majority of respondents agreed to the said statement, the variation in response was quite clear. The results of Chi-square test also clearly indicated that difference existed in stakeholder perception. The earlier observations had indicated that the stakeholder groups did not posses any perceptual commonality on this issue. However, when the analysis was made daily expense wise the results came out differently and the perceptual difference was oberved. A significant percentage of the economy group reacted indifferently, while most respondents from the elite groups agreed to the statement. Hence the conclusion can be made that the responding groups vary in their views.

Responding to the statement *Forcing the mahout during the elephant ride to go closer to wildlife may cause unexpected situations like attacking by the animals,* 69.3% respondents of shoestring budget, 60.7% respondents of economy class, 60.9% of executive class and 77.8% respondents of elite class have agreed. The corresponding

chi-square test also indicated that there was no perceptual difference among the responding stakeholders.

Disturbances such as *Noise pollution can bring about behavioural changes in animals,* agreed to by 76.5% respondents of shoestring budget, 69% respondents of economy class, 87% of executive class and 85.2% respondents of the elite class. The results of the chi-square test suggest that there was no difference in perception of the groups.

The statement *Trespassing, grazing of domesticated animals inside the park can lead to the introduction of unwanted / harmful plant varieties and transmission of various types of disease from animal to animal,* agreed to by 71.2% respondents of shoestring budget, 73.8% respondents of economy class, 87% of executive class and 88.9% respondents of elite class. According to the findings of chi-square test the groups had similar opinions.

65.4% of respondents of shoestring budget, 59.5% of respondents of economy class, 73.9% of executive class and 66.7% of respondents of elite class have agreed to the statement that *Behavioural change in animals brings about danger to tourists and the locals.* The chi-square test also indicated that the null hypothesis might be accepted.

Increasing tourism activity leads to rise in local population resulting in negative ecological impacts, 56.9% of respondents of shoestring budget, 72.6% of respondents of economy class, 82.6% of executive class and 77.8% respondents of elite class have agreed to it. The chi-square test however indicated rejection of null hypothesis. Based on the previous observations it was accepted that there was no perceptual difference among the stakeholder groups and the respondents did share a common view regarding the matter of behavioural change. The findings of the daily expenses based analysis resulted in that fact that perception of the respondents did vary significantly.

Overall it can be concluded that the responses are more or less inclined towards the fact that tourism activities can lead to environmental degradation. The respondent groups were however equally divided on their opinions on issues such as presence of excessive visitors and tourism induced population rise. The respondents on the other hand felt that going too closer to wildlife, noise pollution, trespassing & grazing activities, behavioural change in animals can disturb the ecological system.

Group 3 (Eco-tourism):

Table 4.4.5.3

Group 3 (Eco-tourism)	Disagree (%)				Indifferent (%)				Agree (%)				p value	
	↓ Rs 300	Rs 300 - 500	Rs 500 - 700	↑ Rs 700	↓ Rs 300	Rs 300 - 500	Rs 500 - 700	↑ Rs 700	↓ Rs 300	Rs 300 - 500	Rs 500 - 700	↑ Rs 700		
S.11: Culture	5.88	5.95	13	11.1	28.1	16.7	8.7	11.1	66	77.4	78.3	77.8	0.098	R
S.12: Socio Economy	6.54	7.14	4.35	7.41	20.9	14.3	4.35	3.7	72.5	78.6	91.3	88.9	0.190	NR
S.13: Community conservation	4.58	7.14	13	18.5	20.3	14.3	8.7	7.41	75.2	78.6	78.3	74.1	0.084	R
S.14: Funds	7.84	7.14	4.35	18.5	18.3	13.1	8.7	3.7	73.9	79.8	87	77.8	0.182	NR

66% of the respondents of shoestring budget, 77.4% of respondents of economy class, 78.3% of executive class and 77.8% of respondents of elite class have agreed that *Eco-tourism highlights the cultural and natural heritage of an area.* The results of the chi-square test however indicated that the null hypothesis be rejected. The earlier analysis had indicated perceptual similarities among the respondents. It was believed that the entire sample thought along the same lines. However the analysis made, based on the limits of daily expenses, showed that there was difference in their perceptions.

Eco-tourism enhances socio-economic status of local people 72.5% of the respondents of the shoestring budget, 78.6% of the respondents of the economy class, 91.3% of the executive class and 88.9% respondents of the elite class agreed to it. The chi-square test indicated that there was no perceptual difference.

Responding to the statement *Eco-tourism encourages community participation for conservation,* 75.2% respondents of the shoestring budget, 78.6% respondents of the economy class, 78.3% of executive class and 74.1% respondents of the elite class agreed. Though there seemed to exist perceptual similarity among the various groups, the results of the chi-square test indicated that perceptual difference did exist among them. The earlier analysis revealed that there was no perceptual difference among the stakeholder groups and they shared a common belief on this issue. However when analysed on the basis of daily expenditure level, it was found that a variation in their views was visible.

The statement *Eco-tourism helps in generating awareness and collection of funds for conservation* agreed by 73.9% respondents of shoestring budget, 79.8% respondents of economy class, 87% of executive class and 77.8% respondents of elite class

respondents. Moreover, the chi-square test also indicated the acceptance of the null hypothesis.

The above cross tabulated results suggested that though the groups had perceptual similarity regarding the role of eco-tourism in socio-economic enhancement, generation of awareness and revenue, they do not opine along a similar line on issues like enhancement of cultural & natural resources and ensuring community participation in conservation. Hence it can be concluded that the groups were equally divided in their opinions.

It has been revealed from the above analysis that the shoestring budget group did not opine strongly on any issue. The executive group was the most alert group, with highest concern for issues like food scarcity, ecological destruction, noise pollution, behavioural change in animals, tourism induced population rise, and eco-tourism's role in highlighting natural & cultural heritage and supporting socio-economic development. The economic class group however shown concern for wildlife habitat loss, eco-tourism as a promoter of community participation in conservation and generator of revenue and awareness. While on the other hand the elite group was more concerned regarding excessive presence of visitors, probable harm while going too close to wildlife, and introduction of unwanted species and transmission of diseases.

4.4.6 Place of origin wise

[This analysis was also based on tourist responses only]

H_0: There is no perceptual difference among the respondents of different places of origin.

H_1: There is difference in perception among respondents of different places of origin.

Group 1 (Development):

Table 4.4.6.1

Group 1 (Development)	Disagree (%)			Indifferent (%)			Agree (%)			p value	
	State	Outside state	Outside country	State	Outside state	Outside country	State	Outside state	Outside country		
S.2: Food Scarcity	23.1	28.4	12	20.7	15.5	20	56.2	56	68	0.201	NR
S.3: Ecological Destruction	17.4	23.3	10	14.9	20.7	18	67.8	56	72	0.163	NR
S.6: Habitat Loss	8.26	3.45	0	9.09	9.48	0	82.6	87.1	100	0.020	R
S.7: Migration	9.92	4.31	12	14	15.5	8	76	80.2	80	0.271	NR

Responding to statement *Food scarcity among wildlife results from developmental activities*, 56.2% of the respondents belonging to Assam, 56% from outside the state of Assam, while 68% from outside the country of India have agreed. The chi-square test was indicative of acceptance of null hypothesis i.e. no perceptual difference existed among the respondents.

Developmental activities (construction) can lead to rapid change in land use pattern and destruction of wilderness areas, has been agreed to by 67.8% respondents belonging to the state, 56% from outside the state of Assam and 72% from outside the country. The result of the chi-square test indicated that there was no similarity among the respondent groups; implying there was perceptual difference among them.

The statement *Loss of habitat (home of wildlife) ultimately leads to permanent disappearance of the species and destruction of the ecosystem* has been agreed by 82.6% respondents belonging to the state, 87.1% from outside the state and 100% respondents from outside the country. Though apparently there seemed to be similarity among the views of the respondents, the asymptotic significance level indicated otherwise. The earlier analysis suggested that there was no perceptual difference among the stakeholder groups. The place of origin wise analysis was however indicative of a different conclusion. The respondents from outside the country agreed mostly to the issue of habitat loss, while a sizeable percentage of respondents who are from outside the state as well as from Assam opined indifferently or disagreed.

76% of respondents belonging to the state, 80.2% of respondents from outside the state of Assam, while 80% from outside India agreed that *Habitat loss and food scarcity can cause migration of wildlife.* The chi-square test suggested the acceptance of null hypothesis, hence it can be concluded that there was no perceptual difference among the respondents.

The three groups of tourists differed only on the issue of habitat loss. They however tend to hold similar views on consequence of food scarcity, destruction of eco-system and animal migration. Hence it can be concluded that they had almost similar perceptions.

Group 2 (Tourism activity):

Table 4.4.6.2

Group 2 (Tourism activity)	Disagree (%)			Indifferent (%)			Agree (%)			p value	
	State	Outside state	Outside country	State	Outside state	Outside country	State	Outside state	Outside country		
S.1: Excessive Visitor	26.4	18.1	14	9.09	24.1	20	64.5	57.8	66	0.017	R
S.4: Mahout	10.7	7.76	10	19	27.6	26	70.2	64.7	64	0.573	NR
S.5: Noise	8.26	0.86	2	15.7	25.9	16	76	73.3	82	0.015	R
S.8: Weed / Diseases	7.44	3.45	8	19	21.6	14	73.6	75	78	0.530	NR
S.9: Behaviour	11.6	11.2	12	15.7	31	28	72.7	57.8	60	0.076	R
S.10: Population	23.1	11.2	4	27.3	16.4	8	49.6	72.4	88	0.000	R

Excessive presence of visitors brings about behavioural change in animals. 64.5% respondents belonging to Assam, 57.8% respondents from outside the state of Assam, 66% from outside India agreed. The asymptotic significance level suggested that there was perceptual difference among various stakeholders. It was earlier observed that there was perceptual difference in the perception of the respondent groups. The present analysis based on their place of origin indicated that the respondents from outside the country agreed to this fact, while a significant number of respondents from within the state showed disagreement over the issue. Therefore it can be concluded that although apparently respondents seemed to have displayed similar thinking, perceptual differences did exist.

Responding to the statement *Forcing the mahout during the elephant ride to go closer to wildlife may cause unexpected situations like attacking by the animals,* 70.2% of the respondents belonging to Assam, 64.7% of the respondents from outside the state of Assam, while 64% from outside India agreed. The corresponding result of chi-square test also indicated similarity in perception.

Disturbances such as *noise pollution can bring about behavioural changes in animals.* 76% of respondents belonging to Assam, 73.3% respondents from outside the state of Assam and 82% of respondents from outside India agreed to it. Although seemingly, the views of the respondents appeared similar, the chi-square test indicated that similarity in perceptions among the stakeholders did not exist. From the earlier analysis, it was seen that the responding stakeholder groups shared a common thought regarding

noise pollution. Based on that it was concluded that there was no perceptual difference among the samples. However, when the analysis was made place of origin wise the respondents from outside the country agreed with the statement and on the other hand a significant percentage of the respondents of the other two groups (both domestic in nature) showed indifference or disagreement.

Trespassing, grazing of domesticated animals inside the park can lead to the introduction of unwanted / harmful plant varieties and transmission of various types of disease from animal to animal. 73.6% of respondents belonging to Assam, 75% of respondents from outside the state and 78% respondents from outside the country of India agreed to it. The chi-square test also indicated that there was no difference in perception.

72.7% of respondents belonging to Assam, 57.8% of respondents from outside the state of Assam and 60% respondents from outside India have agreed to the statement *Behavioural change in animals brings about danger to tourists and the locals.* However, the chi-square test suggested rejection of null hypothesis. Observations made earlier showed a sign of commonality among stakeholder perceptions, which later on led to the conclusion that perceptual difference did not exist among the respondents. However the findings of the analysis made place of origin wise have indicated that respondents had different perceptions. While majority of the tourists from Assam agreed to it, the percentage of agreement in the other two groups was not very high.

Increasing tourism activity leads to rise in local population resulting in negative ecological impacts. 49.6% of respondents belonging to Assam, 72.4% of respondents from outside the state of Assam and 88% respondents from outside India agreed to it. Though there appeared to be a similarity among the respondent groups in their perceptions, the chi-square test indicated that there was perceptual difference. Majority of the respondents from outside the country agreed to the statement, while on the other hand a significant proportion of respondents from within the state showed indifference and disagreement regarding population rise. Hence it can be concluded that there was perceptual difference among these groups.

The above findings indicate that the respondent groups are divided in their opinions, their perception varies according to their place of origin. Only in case of going too

closer to animals and introduction of unwanted taxa and transmission of diseases the groups reacted along a similar line. The groups differed in their opinions on excessive presence of visitor, noise pollution, possibilities of harming the visitors as well the locals due to behavioural change in animals and tourism induced population rise.

Group 3 (Eco-tourism):

Table 4.4.6.3

Group 3 (Eco-tourism)	Disagree (%)			Indifferent (%)			Agree (%)			p value	
	State	Outside state	Outside country	State	Outside state	Outside country	State	Outside state	Outside country		
S.11: Culture	6.61	8.62	4	24.8	20.7	16	68.6	70.7	80	0.540	NR
S.12: Socio Economy	7.44	5.17	8	25.6	8.62	10	66.9	86.2	82	0.003	R
S.13: Community conservation	5.79	10.3	4	22.3	13.8	8	71.9	75.9	88	0.061	R
S.14: Funds	8.26	8.62	8	14.9	15.5	12	76.9	75.9	80	0.982	NR

68.6% of respondents from Assam, 70.7% of respondents from outside the state of Assam and 80% of respondents from outside India agreed that *Eco-tourism highlights the cultural and natural heritage of an area*. Similarity in perception among various respondent groups was again supported by chi-square test.

The statement, *Eco-tourism enhances socio-economic status of local people* was agreed to by 66.9% of respondents from Assam, 86.2% of respondents from outside the state of Assam and 82% of respondents from outside India. The results of the chi-square test however indicated a difference in perception. The earlier analysis indicated that there was no perceptual difference among the various stakeholder groups and all the respondent groups thought in a similar line. Origin wise analysis indicates that majority of respondents from outside the state agreed with the statement, while one-third of respondents from within the state viewed it indifferently or disagreed with it.

Responding to the statement *Eco-tourism encourages community participation for conservation*, 71.9% of respondents from Assam, 75.9% of respondents from outside the state of Assam and 88% of respondents from outside India agreed to it. However results of the chi-square test indicated that perceptual difference existed among the respondents. Regarding community participation, the earlier analysis suggested that stakeholders did have a common say and there was no difference in their perceptions. However this is only a partial fact, the present findings indicate that though respondents

from outside the country agreed, a significant percentage of the respondents from Assam showed indifference and disagreement over the same.

Eco-tourism helps in generating awareness and collection of funds for conservation. 76.9% of respondents from Assam, 75.9% of respondents from outside the state of Assam and 80% of respondents from outside India agreed to it. Moreover, the chi-square test suggests the acceptance of the null hypothesis, indicating that there was no difference in perceptions.

The respondents showed no perceptual difference on issue of eco-tourism as a highlighter of natural & cultural heritage and generator of funds and awareness. However, the perceptions of the respondent groups were divided over the issues of eco-tourism's role in socio-economic development and community participation in conservation. Hence it can be concluded that the groups did not show perceptual similarity.

The tourist's responses revealed that there were some extent of differences in perception between the foreign visitors and domestic tourists. The visitors from abroad opined very strongly over issues such as food scarcity among animals, ecological destruction, loss of habitat, excessive presence of visitor, noise pollution, transmission of diseases and introduction of unwanted species, tourism induced local population rise, eco-tourism's role for promoting local cultural and natural heritage, community participation for conservation and generating revenue and awareness. However, the respondents from within the state showed their concern on possibility of danger while approaching the animals from close quarters and due to behavioural change in animals. The respondents from outside the state on the other hand are more concerned on migration of wildlife due to habitat loss and food scarcity and role of eco-tourism in enhancing socio-economic development.

Chapter V:
CONCLUSION & SUGGESTIONS

Chapter V

CONCLUSIONS AND SUGGESTIONS

5.1 Discussion

The survey revealed many facts related to factors pertaining to tourism activities affecting biological diversity of Kaziranga National Park.

The factor analysis provided a perceptual assessment (ref 4.2.1) and resulted in three factors, which explained for 48.46% of the variance. The test was further repeated taking eigen value 0.8 (minimum). This result explained 68.16% of the variance resulting into 6 factors, as shown below:

Table 5.1 Factor Composition (overall)

Factor	Meaning
1. Traffic	Statement no. 2 Vehicle within the park Statement no. 4 Picnic Statement no. 7 Traffic
2. Human Pressure	Statement no. 12 Haphazard Development Statement no. 13 Trekking & camping
3. Pressure of tourism	Statement no. 1 Elephant ride Statement no. 3 Photography Statement no. 6 Trampling of soil
4. Disturbance to nature	Statement no. 8 Souvenir Collection Statement no. 9 Collection of fuelwood Statement no. 10 Patrol boats
5. Pollution	Statement no. 11 Wastewater disposal Statement no. 14 Littering
6. Baiting/ indulging animals	Statement no. 5 Feeding of wildlife

When the same exercise was done with responses of tourists only five distinctive factors emerged (ref 4.2.2), as shown below:

Table 5.2 Factor Composition (tourists)

Factor	Meaning
1. Activities of tourists and local communities	Statement no. 6 Trampling of soil Statement no. 9 Collection of fuelwood Statement no. 12 Haphazard Development Statement no. 13 Trekking & camping
2. Invasion	Statement no. 4 Picnic Statement no. 5 Feeding of wildlife Statement no. 11 Wastewater disposal Statement no. 14 Littering
3. Component of tourism	Statement no. 1 Elephant ride Statement no. 3 Photography
4. Traffic	Statement no. 2 Vehicle within the park Statement no. 7 Traffic
5. Intrusion	Statement no. 8 Souvenir Collection

	Statement no. 10 Patrol boats

Factor analysis of the responses of local people resulted in five factors (ref 4.2.3), as shown below:

Table 5.3 Factor Composition (local people)

Factor	**Meaning**
1. Damage to flora and fauna	Statement no. 3 Photography Statement no. 8 Souvenir collection Statement no. 9 Collection of Fuel wood
2. Spoiling scenic beauty	Statement no. 11 Wastewater disposal Statement no. 12 Haphazard Development Statement no. 14 Littering
3. Damaging natural settings	Statement no. 1 Elephant Statement no. 5 Feeding of wildlife Statement no. 6 Trampling of soil
4. Traffic	Statement no. 2 Vehicle within the park Statement no. 4 Picnic Statement no. 7 Traffic
5. Disturbance	Statement no. 10 Patrol boats Statement no. 13 Trekking & camping

Analysis was made based on the third group of stakeholder i.e. service provider and it resulted in four factors (ref 4.2.4), as shown below:

Table 5.4 Factor Composition (service provider)

Factor	**Meaning**
1. Disturbing aesthetics	Statement no. 4 Picnic Statement no. 7 Traffic Statement no. 11 Wastewater Statement no. 14 Littering
2. Traffic / trespassing	Statement no. 2 Motor vehicle within the park Statement no. 10 Patrol boats Statement no. 13 Trekking & camping
3. Invasion	Statement no. 5 Feeding of wildlife Statement no. 8 Souvenir collection Statement no. 9 Collection of fuel wood Statement no. 12 Haphazard development
4. Tourism activities	Statement no. 1 Elephant ride Statement no. 3 Photography Statement no. 6 Trampling of soil

When these factors are placed together, the following comparative table is formed.

Table 5.5 Factors And Their Corresponding Issues

Factors	Tourists	Service provider	Local people	Overall
1	St. 6 Trampling of soil St. 9 Collection of fuelwood St. 12 Haphazard Development St. 13 Trekking & camping	St. 4 Picnicking around the park St. 7 Traffic St. 11 Waste water disposal St. 14 Littering & dumping	St. 3 Photography St. 8 Souvenir collection St. 9 Collection of Fuel wood	St. 2 Vehicle within the park St. 4 Picnicking around the park St. 7 Traffic
2	St. 4 Picnicking around the park St. 5 Feeding of wildlife St. 11 Wastewater disposal St. 14 Littering & dumping	St. 2 Vehicle within the park St. 10 Patrol boats St. 13 Trekking & camping	St. 11 Wastewater disposal St. 12 Haphazard Development St. 14 Littering & dumping	St. 12 Haphazard Development St. 13 Trekking & camping
3	St. 1 Elephant ride St. 3 Photography	St. 5 Feeding of wildlife St. 8 Souvenir collection St. 9 Collection of fuel wood St. 12 Haphazard development	St. 1 Elephant ride St. 5 Feeding of wildlife St. 6 Trampling of soil	St. 1 Elephant ride St. 3 Photography St. 6 Trampling of soil
4	St. 2 Vehicle within the park St. 7 Traffic	St. 1 Elephant ride St. 3 Photography St. 6 Trampling of soil	St. 2 Vehicle within the park St. 4 Picnicking around the park St. 7 Traffic	St. 8 Souvenir collection St. 9 Collection of fuel wood St. 10 Patrol boats
5	St. 8 Souvenir Collection St. 10 Patrol boats		St. 10 Patrol boats St. 13 Trekking & camping	St. 11 Wastewater disposal St. 14 Littering & dumping
6				St. 5 Feeding of wildlife

From the above table, taking the top two factors into consideration, we find that the following variables appear to be common*.

St. 4 Picnicking around the park
St. 11 Waste water disposal from the resorts / restaurants
St. 12 Haphazard Development
St. 13 Trekking & camping
St. 14 Littering& dumping in & around the park

The Chi square test tried to find out if there was perceptual similarity among the stakeholders on the factors contributing to ecological degradation of Kaziranga National Park. The perceptual responses can be summarised in the following table.

5.6 Table: Perceptual Similarity And Difference

Perceptually similar	**Perceptually different**
St.1 Excessive presence of visitors brings about behavioural changes in animals.	St.2 Food scarcity among wildlife results from developmental activities.
St.3 Developmental activities (construction) lead to rapid change in land use pattern and destruction of wilderness areas.	St.6 Loss of animal habitat (homes of wildlife) ultimately leads to permanent disappearance of the species and destruction of the eco-system.
St.4 Forcing the 'Mahout' (in case of elephant ride) to go closer to the animals may cause unexpected situations like attacking by the animals.	St.14 Eco-tourism helps in generating awareness and collection of funds for conservation of nature.
St.5 Various disturbances including noise pollution can bring about behavioural changes in animals.	
St.7 Habitat loss and food scarcity can cause migration of wildlife.	
St.8. Activities like grazing, trespassing, etc. inside the park can lead to the introduction of unwanted/ harmful plant variety and transmission of various types of diseases from animal to animal.	
St.9 Behavioural change in animals brings about danger to tourists and the locals.	
St.10 Increasing tourism activity leads to rise in local population resulting in negative ecological impacts.	
St.11 Eco-tourism highlights the cultural /	

* If the variable features in at least three groups, it is considered to be common.

natural heritage of an area.	
St.12 Eco-tourism enhances socio-economic status of local people.	
St.13 Eco-tourism also encourages community participation in nature conservation efforts.	

Besides, there was an attempt to determine perceptual similarities and differences based on parameters namely gender types, age group, educational qualification, occupation, daily budget/expenditure and place of origin of the respondents. The findings are as follows:

Table 5.7 * Perception And Respondent Groups

Statement	Parameters under consideration						Perception
	Gender	Age	Education	Occupation	Daily Budget	Origin	
Group I: Development							
2: Food Scarcity	R	R	R	NR	NR	NR	Divided
3: Ecological destruction	R	R	R	R	NR	NR	Difference
6: Habitat loss	NR	NR	NR	NR	NR	R	No Difference
7: Migration	NR	NR	NR	NR	R	NR	No Difference
Group II: Tourism Activities							
1: Excessive visitor	R	NR	NR	R	R	R	Difference
4: Mahout	R	NR	NR	NR	NR	NR	No Difference
5: Noise	NR	R	R	NR	NR	R	Divided
8: Weed/Disease	NR	NR	NR	NR	NR	NR	No Difference
9: Behaviour	R	R	NR	NR	NR	R	Divided
10: Populations	R	NR	NR	NR	R	R	Divided
Group III: Eco-tourism							
11: Culture	NR	NR	NR	R	R	NR	No Difference
12: Socio-economy	NR	R	R	NR	NR	R	Divided
13: Community conservation	NR	NR	NR	R	R	R	Divided
14: Funds	NR	NR	NR	R	NR	NR	No Difference

It was observed from Table 5.7 that irrespective of the demographic profiles of the respondents, perceptual similarities were recorded in case of statements 4, 6, 7, 8, 11 and 14. This is an indication of the fact that they feel similarly on issues such as

* R => Rejection of null hypothesis (H_0)
NR => Null hypothesis can not be rejected (H_1)

'visitors going too closer to wild animals during elephant rides', 'habitat loss' followed by 'wildlife migration' owing to disturbances caused by growing tourism activities, 'effect of grazing of domestic cattle in the periphery of the national park and trespassing activities of the locals', 'affirmative aspects of promoting of cultural and natural heritage through eco-tourism' and its contribution in 'generating public awareness and revenues'.

The respondent groups feel that these activities can have significant negative impacts on the environment except regulated actions pertaining to the promotion of cultural & natural tourism and the role of eco-tourism activities in negating certain ill effects and its contribution towards conservation of nature.

On issues such as, 'developmental activities induced food scarcity among animals', 'behavioural change in animals', 'population explosion in and around of tourist destination' 'positive socio-economic change' and 'eco-tourism's role in initiating community conservation' the stakeholders were divided over their perceptions. That indicates no consensus among the stakeholders regarding some critical issues and their role in both environmental and social change.

And on the other hand, stakeholder displayed perceptual difference on issues namely, 'presence of excessive visitor' and 'developmental activities that can cause damage to wilderness'.

To make the findings of the study more meaningful and constructive, the statements/activities concerned were divided into three broad groups namely 'development', 'tourism activities' and 'ecotourism' and the perceptual similarity of stakeholder's opinions was judged group wise. It was thought that demographic parameters too are equally responsible for varying stakeholder's perception. On the issue of 'Development', there is no difference in opinion observed over demographic parameters such as 'type of occupation', 'daily budget' and 'place of origin', whereas difference in perception existed in case of 'gender', 'age' and 'education' wise interpretations.

In case of age wise, education wise, occupation type wise and daily budget wise assessment indicated no perceptual difference over 'tourism activities'. However, based on gender and place of origin the results showed perceptual difference over 'tourism activities'.

Similarly on the issue of 'Eco-tourism', no difference in perception was recorded on parameters namely 'gender', 'age' and 'education'. However, differences in perception were noticed in 'occupation type', 'daily budget' and 'place of origin'.

Here it appears that a common thread is running through parameters such as 'age', 'education', 'occupation' and 'daily budget'; while variations in terms of 'gender', and 'place of origin'.

Owing to the varied stakeholder's perception, drawing a conclusive remark on issues related to natural environment, tourism and human beings is difficulty. However, this study has revealed people's growing concern on several occasions, which are thought to be detrimental to the natural environment of the area and its wellbeing. This can certainly contribute to shaping their future in terms of tourism development in Kaziranga.

5.2 Major findings and suggestions

While assessing the perception of the stakeholder groups on certain tourism related issues revealed various types and levels of concerns 6 factors were identified from Table 5.5. It indicates the fact that necessary measures are needed to regulate activities such as picnicking around the park, disposal of waste water in the park periphery and in the rivulets flowing through Kaziranga, haphazard developmental activities, trekking & camping activities and littering & dumping within the park premises. These are the dominant factors, as perceived by tourists that affect the biodiversity of Kaziranga National Park. This finding leads to fulfilment of the first objective of the study.

Tourism being a multilateral industry involving various stakeholder groups, it becomes necessary to maintain a democratic system of planning by taking everyone's concern into consideration. The findings of this study too proved the complexity of tourism industry. If in some cases, opinions are similar then in some other cases they are poles apart as indicated by Table 5.6 and Table 5.7. Thus it can be concluded that overall, the respondents had perceptual similarity, but they were divided in their perceptions demographic profile wise. This finding leads to the fulfilment of the second objective.

Keeping in view the differences in approach among the stakeholders, a two way mechanism is being suggested where common concerns will be dealt uniformly, and on

the other hand measures should be taken to minimise differences on point to point basis in order to translate Kaziranga into a tourism model.

To deal with the mixed responses received from the responding stakeholder groups and giving both agreement & disagreement equal importance, a multi pronged tourism development strategy (Figure 5.1) is designed. Stakeholder perception has been taken as the foundation of this model. This framework partly fulfils the third objective.

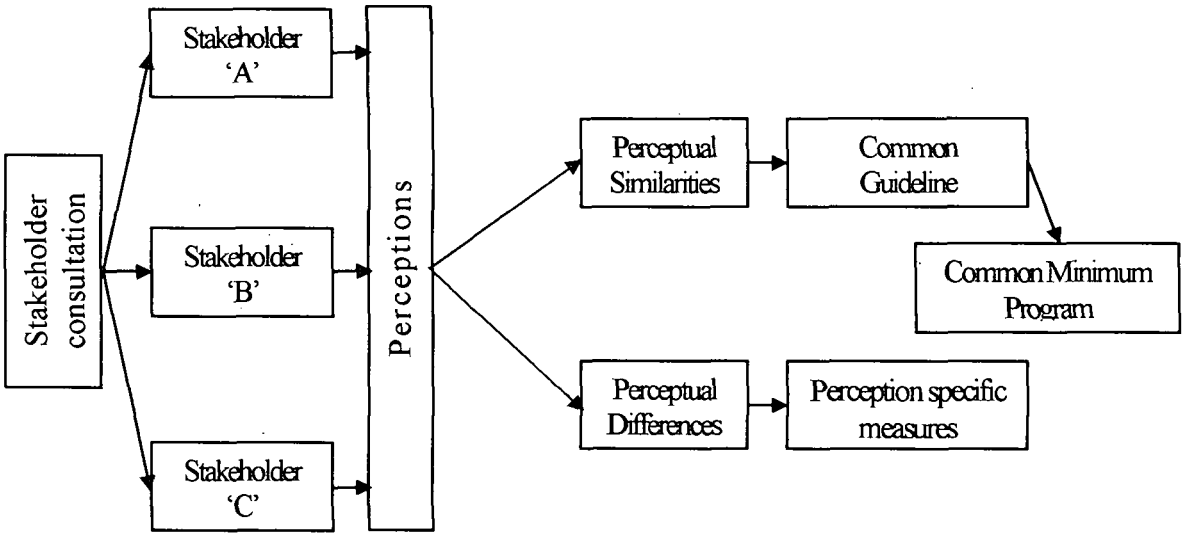

Figure 5.1: Stakeholder Based Planning For Tourism Development.

The first and foremost need for a balanced and unbiased strategic tourism planning is that all the pros and cons are studied in tune with that stakeholder need. Further based on the availability of resources and the feasibility to utilise them for tourism activities, packages can be made. As a precaution, necessary measures should always be in place to avoid any negative impact of tourism activities. In addition, sufficient awareness would also reduce possibility of over/mis-utilisation of resources on which tourism industry of Kaziranga is based.

Since tourism activities also contribute to the degradation of the tourism spot and inadvertently destroy the biodiversity if the place, certain policy and regulatory measures would help in curtailing unwanted tourism activities. Such measures may help in reducing biodiversity loss.

Based on the preliminary observations made, feedback (common perception) received during the study and literature review, a set of suggestions (common guidelines) are being readied that would help in reducing the negative impacts on biodiversity.

Following few suggestions are put forward taking care of findings reflected in Tables 5.6 and 5.7. This completes the third objective.

1. Legal norms must be revised and enforced to regulate developmental activities in and around the park. The park needs solution to issues like habitat loss and animal migration and controlling of haphazard development.
    - ❖ Regulate construction of hotels, restaurants and tourist resorts, which can lead to destruction of natural settings (loss of habitat and change in land use pattern) and create problems associated with wastewater disposal
    - ❖ Rope in the adjoining areas for trekking and camping (but in a regulated and non-destructive manner)
2. Check on pollution resulting from waste dumping and waste-water disposal. This will help to regulate littering and aquatic pollution.
    - ❖ Suitable arrangement of waste and waste-water treatment facility must be made.
3. To reduce pressure of tourism activities on Kaziranga to prevent it from becoming a mass tourism destination. I
    - ❖ Try to maintain a continuous but regulated flow of tourist through out the season
    - ❖ Provide alternatives as cultural/ rural tourism by promoting ethnic culture, tribal traditions like costumes and cuisine
4. To regulate excessive tourism – (to deal with associated problems of over-crowding)
    - ❖ To fix the number of visitors to be carried in one vehicle
    - ❖ To regulate the number of vehicles to be allowed at one go
5. To set norms and Code of Conduct (CoC) for safari operators to make their operations eco-friendly, so that pollution is reduced.
    - ❖ Vehicles they use should be noise free, run on less polluting fuels

6. To take precaution to avoid any confrontation with the animals or situations that can lead to behavioural change in animals – (will solve the problem of visitors going closer to wildlife)
    - ❖ To make mandatory for the safari groups/ tourist guides / mahout to follow code of conduct (CoC) while taking tourists inside the park
    - ❖ Points to be included in the CoC - to maintain safe distance from the wildlife during jeep safaris and elephant ride, refrain from feeding animals
7. To introduce penalty against any form of unlawful activities in order to reduce disturbance to the natural environ and prevent spread of harmful/unwanted flora.
    - ❖ Anyone who does not follow code of conduct and specific rules set by the park authority will be heavily punished
    - ❖ Any other activity that is not in the interest of Kaziranga National Park will also be penalised
    - ❖ Trespassing, fuel wood collection, souvenir collection and grazing of domesticated animals to be treated as a serious offence
    - ❖ Awareness propaganda (regarding the above) to be enhanced

Another thing that should come into consideration is the monitoring of tourism activities, assessment of possible as well as existing impacts of tourism on biological diversity, and thereby framing measures to mitigate these impacts. Monitoring is always essential in all sort of developmental projects including tourism, as in this process the natural settings usually get altered and to what extent this alteration is acceptable to nature is unknown to us. A rigorous assessment can help appraise these changes and thereby lead to suggestion of necessary measures.

In the process of planning and decision-making, the host community being the most important stakeholder group should certainly play a crucial role. Though there has been a remarkable progress in the field of nature-based tourism in Assam, proper form of eco-tourism venture having community participation is still lacking. The existing projects have unfortunately failed to develop the crucial links between Tourism, Community & Conservation. An ample amount of literature suggest that the working mechanism of eco-tourism is essentially dependent on its various stakeholders i.e. local community, tourists, service providers, policy makers, professionals, researchers and

government agencies. Since every stakeholder group has an important and crucial role to play in the whole system, it becomes necessary to have a balance among them in order to maintain the smooth functioning of eco-tourism triangle. As the indigenous people have the highest amount of stakes over the forest resources, their involvement in eco-tourism planning and development is always encouraged, so that their fundamental needs for income and employment can be met. Unfortunately, in most of the cases, stakes of the indigenous people have always been ignored and their rights over the natural resources deprived. It has already been mentioned that eco-tourism is considered as an effective tool for preservation of biological resources and the local communities can play the most crucial role in the appropriate application of this tool.

The following figure tries to summarize the various inter linkages and dynamics of tourism.

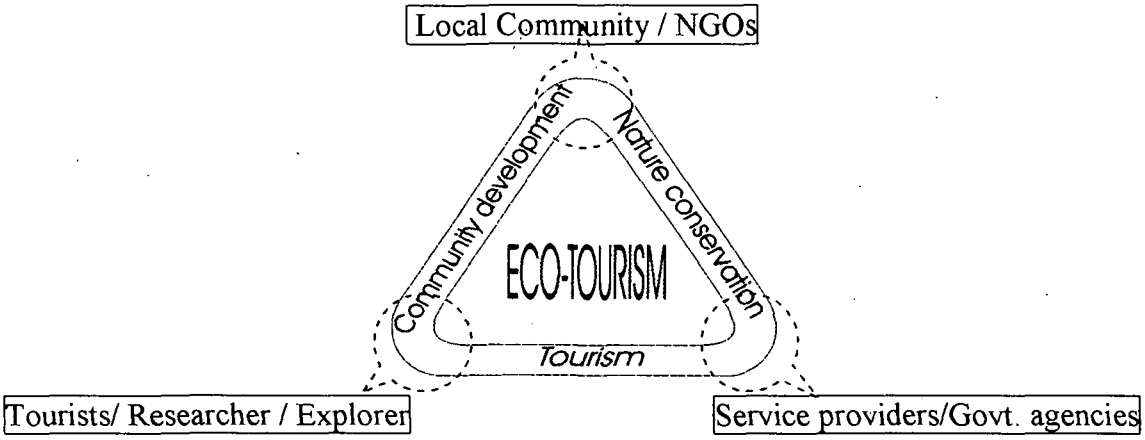

Figure 5.2: The Eco-tourism Triangle

5.3 Contribution to the body of knowledge

While trying to achieve objectives of this study, its findings have definitely contributed to the existing rich information base of Kaziranga National Park. Moreover, it has tried to reduce the gap that was observed during literature survey regarding the lack of research encompassing biodiversity and the perception of stakeholders. This study has brought in these two issues together, specially in the context of Kaziranga National Park. The uniqueness of this research lies in the fact that it has attempted to link social science with the science of nature by studying people's perception towards tourism development and conservation of biodiversity.

However, it would be more significant for this report to be able to bring in some attitudinal change among tourists & locals, inspire further research in this line, initiate

one or two conservation efforts at community level and above all facilitate policy change for the sustainability of wildlife tourism is Kaziranga.

5.4 Scope for further studies

This study can open up avenues for other relevant and useful researches in the line of the relationship between tourism and biodiversity.

a) A comparative study on stakeholder perception and physical impacts of tourism activities on biodiversity.

b) A study to assess potentials and the prospects of cultural tourism in the vicinity of Kaziranga National Park.

c) A study on behavioural structure of native people and foreigners concerning ecotourism and nature conservation.

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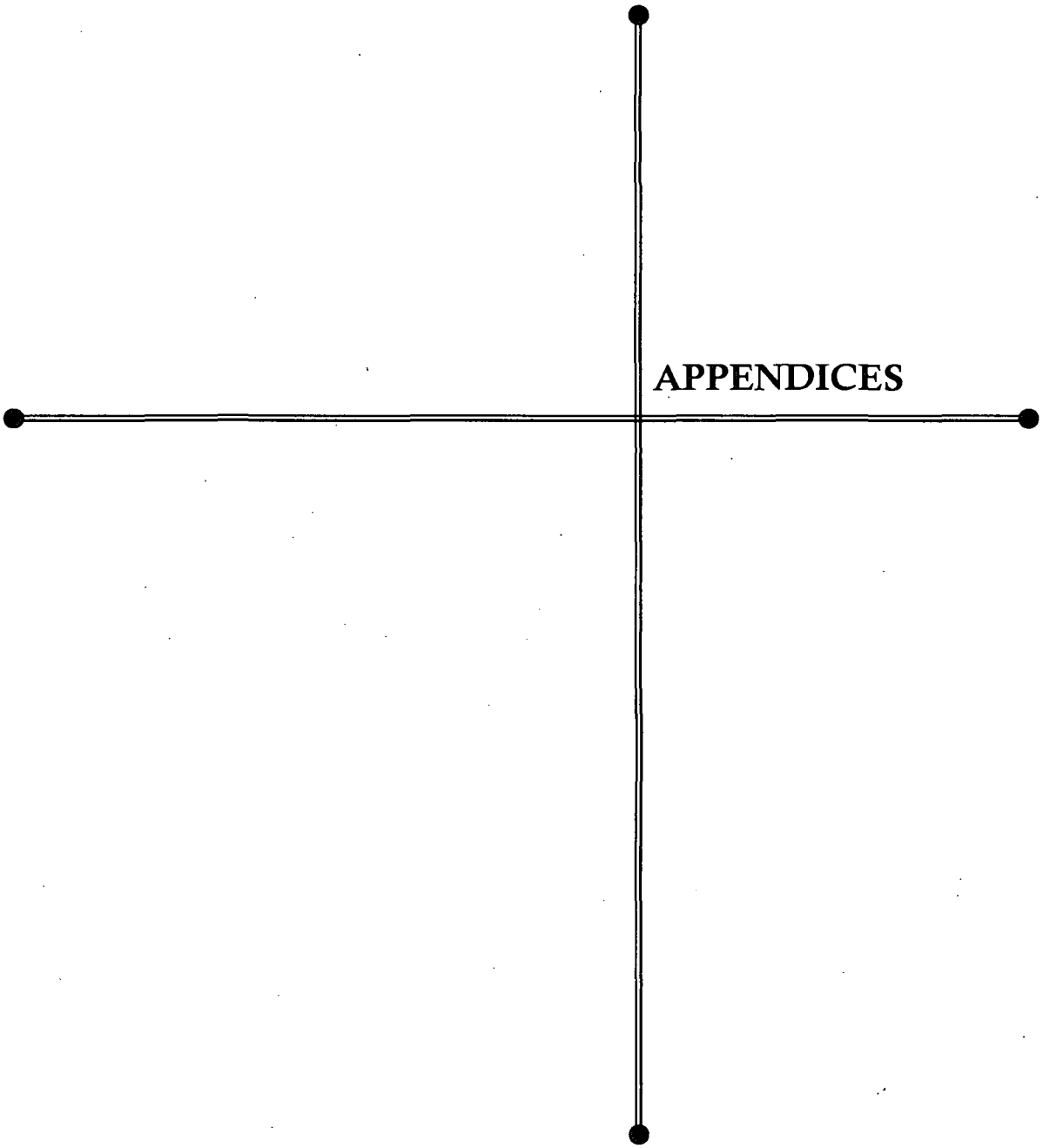
APPENDICES

Annexure 1

Questionnaire

'Tourism Related Factors Affecting Biodiversity: A case study of Kaziranga National Park'

No.	Date

Dear

Sir / Madam,

I am a Research Scholar currently undertaking this survey as part of my Doctoral Study (Ph. D.) on the above topic, would like to solicit your kind cooperation in filling this questionnarie and writing down your opinions reflecting your feelings on your visit to Kaziranga National Park.

I assure you that every care shall be taken to keep your responses confidential and the aggregate results shall be used for academic purpose only.

Thanking you,

Pranab Jyoti Patar
Deptt. of Business Administration, Tezpur University,
Assam, India 784 028 [email : ppatar@tezu.ernet.in]

In your opinion to what extent do the following factors NEGATIVELY affect the biodiversity of an "Ecologically rich tourist destination":

Please use 'X' mark wherever required	1	2	3	4	5	6	7
(1 indicates 'no effect', while 7 indicates 'maximum effect')							
1. Use of Elephant for moving within the Park (Elephant ride)							
2. Use of motor vehicles (for Animal safari) within the Park							
3. Photography from close quarters							
4. Picnicking around the national park							
5. Feeding of wildlife by the visitors in & around the park							
6. Trampling (compressing) of soil & flora during Elephant ride							
7. Pedestrian & vehicular traffic around the Park							
8. Collection of souvenirs like flowers, fungi, etc. from the premises.							
9. Collection of fuel wood							
10. Running of power boats for patrolling purpose							
11. Wastewater from the resorts / hotels around the Park							
12. Haphazard developmental activities (especially construction of building, roads) in & around Kaziranga NP							
13. Trekking / camping activities (camp fire) around the Park							
14. Littering / dumping of garbage in & around Kaziranga NP							

Please give your OPINION on the following:

Please use 'X' mark wherever required

** Abbreviations:* SD – Strongly Disagree, D – Disagree, I – Indifferent, A – Agree, SA – Strongly Agree.

	SD	D	I	A	SA
1. Presence of excessive visitors bring about behavioural changes in animals					
2. Food scarcity among wildlife results from developmental activities					
3. Developmental activities (construction) can lead to rapid change in land-use pattern and destruction of wilderness areas					
4. Forcing the 'mahut' (in case of Elephant ride) by the visitors to go closer to the animals may cause unexpected situations like attacking by the animals.					
5. Various disturbances including noise pollution can bring about behavioural changes in animals					
6. Loss of habitat (homes of wild animals) ultimately leads to permanent disappearance of the species and destruction of the eco-system.					
7. Habitat loss & food scarcity can cause migration of wildlife					
8. Activities like grazing, trespassing, etc. inside the park can lead to the introduction of unwanted / harmful plant variety and transmission of various types of diseases from animal to animal.					
9. Behavioural change in animals brings about danger to tourists and the locals					
10. Increasing tourism activity leads to rise in local population resulting in negative ecological impacts					
11. Eco-tourism highlights the cultural / natural heritage of an area					
12. Eco-tourism enhances socio-economic status of local people					
13. Eco-tourism also encourages community participation in nature conservation efforts					
14. Eco-tourism helps in generating awareness and collection of funds for conservation					

Your over all view on the environment of Kaziranga National park: .....

.....

.....

.....

Demographic profile:

Category of Stakeholder: ( ) Tourist ( ) Service provider ( ) Local people / NGO

Gender: ( ) Male ( ) Female

Age Group: ( ) Below 25 yrs. ( ) 25 yrs – 40 yrs. ( ) 41yrs – 60 yrs. ( ) Above 60 yrs.

Education: ( ) Undergraduate ( ) Graduate ( ) Post Graduate

Occupation: ( ) Service holder ( ) Self employed ( ) Student / Unemployed

Daily Budget: ( ) Below Rs 300 ( ) Rs 300 - Rs 500 ( ) Rs 500 - Rs 700 ( ) Above Rs 700

Place of origin: .....

– THANK YOU FOR YOUR KIND PARTICIPATION –

Annexure 2
Results of Gender Wise Cross Tabulation

Gender Wise Analysis – Group 1 (Development)

Gender * food scarcity due to developmental activity

Crosstab

Count

		food scarcity due to developmental acivity			
		Disagree	Indifferent	Agree	Total
gender	Male	96	66	154	316
	Female	40	44	105	189
Total		136	110	259	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.114[a]	2	.078
Likelihood Ratio	5.231	2	.073
Linear-by-Linear Association	3.527	1	.060
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 41.17.

Gender * destruction of wilderness areas due to construction activity

Crosstab

Count

		destruction of wilderness areas due to construction activity			
		Disagree	Indifferent	Agree	Total
gender	Male	75	55	186	316
	Female	30	40	119	189
Total		105	95	305	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.733[a]	2	.094
Likelihood Ratio	4.857	2	.088
Linear-by-Linear Association	1.876	1	.171
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 35.55.

Gender * destruction of eco-system due to habitat loss

Crosstab

Count

		destruction of eco-system due to habitat loss			
		Disagree	Indifferent	Agree	Total
gender	Male	13	37	266	316
	Female	12	21	156	189
Total		25	58	422	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.268[a]	2	.530
Likelihood Ratio	1.234	2	.539
Linear-by-Linear Association	.470	1	.493
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.36.

Gender * wildlife migration due to habitat loss

Crosstab

Count

		wildlife migration due to habitat loss			
		Disagree	Indifferent	Agree	Total
gender	Male	27	34	255	316
	Female	11	31	147	189
Total		38	65	402	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.218[a]	2	.121
Likelihood Ratio	4.180	2	.124
Linear-by-Linear Association	.119	1	.730
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 14.22.

Gender Wise Analysis – Group 2 (Tourism Activities)

Gender * excessive presence of visitor

Crosstab

Count

		exessive presence of visitor			
		Disagree	Indifferent	Agree	Total
gender	Male	75	58	183	316
	Female	36	52	101	189
Total		111	110	284	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.157[a]	2	.046
Likelihood Ratio	6.059	2	.048
Linear-by-Linear Association	.001	1	.977
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 41.17.

Gender * forcing the mahut to get elephant closer to the wildlife

Crosstab

Count

		forcing the mahut to get elephant closer to the wildlife			
		Disagree	Indifferent	Agree	Total
gender	Male	22	75	219	316
	Female	24	40	125	189
Total		46	115	344	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.789[a]	2	.091
Likelihood Ratio	4.642	2	.098
Linear-by-Linear Association	2.206	1	.137
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 17.22.

Gender * noise pollution can bring about behavioural change in animals

Crosstab

Count

		noise pollution can bring about beahvioural chnage in animals			
		Disagree	Indifferent	Agree	Total
gender	Male	17	62	237	316
	Female	8	43	138	189
Total		25	105	375	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.935[a]	2	.627
Likelihood Ratio	.935	2	.626
Linear-by-Linear Association	.027	1	.871
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.36.

Gender * transmission of diseases & introduction of weeds due trespassing & grazing of domesticated animals

Crosstab

Count

		transmission of diseases & introduction of weeds due trespassing & grazing of domesticated animals			
		Disagree	Indifferent	Agree	Total
gender	Male	23	52	241	316
	Female	11	41	137	189
Total		34	93	378	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.361[a]	2	.307
Likelihood Ratio	2.334	2	.311
Linear-by-Linear Association	.181	1	.671
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.72.

Gender * behavioural change can bring about danger to tourists

Crosstab

Count

		behavioural change can bring about danger to tourists			
		Disagree	Indifferent	Agree	Total
gender	Male	28	67	221	316
	Female	26	50	113	189
Total		54	117	334	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.901[a]	2	.052
Likelihood Ratio	5.827	2	.054
Linear-by-Linear Association	5.796	1	.016
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 20.21.

Gender * population rise can cause ecological degredation

Crosstab

Count

		population rise can cause ecological degredation			
		Disagree	Indifferent	Agree	Total
gender	Male	60	73	183	316
	Female	20	40	129	189
Total		80	113	312	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.520[a]	2	.023
Likelihood Ratio	7.818	2	.020
Linear-by-Linear Association	7.340	1	.007
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 29.94.

Gender Wise Analysis – Group 3 (Eco-Tourism)

Gender * ecotourism enhances nature conservation and cultural development

Crosstab

Count

		ecotourism enhances nature conservation anf cultural development			
		Disagree	Indifferent	Agree	Total
gender	Male	23	67	226	316
	Female	16	43	130	189
Total		39	110	356	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.472[a]	2	.790
Likelihood Ratio	.469	2	.791
Linear-by-Linear Association	.468	1	.494
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 14.60.

Gender * ecotourism enhances socio-economic status

Crosstab

Count

		ecotourism enhances socio-economic status			
		Disagree	Indifferent	Agree	Total
gender	Male	19	48	249	316
	Female	15	32	142	189
Total		34	80	391	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.082[a]	2	.582
Likelihood Ratio	1.067	2	.586
Linear-by-Linear Association	1.079	1	.299
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.72.

Gender * ecotourism encourages community participation in conservation efforts

Crosstab

Count

		ecotourism encourages community participation in conservation efforts			
		Disagree	Indifferent	Agree	Total
gender	Male	25	53	238	316
	Female	12	40	137	189
Total		37	93	375	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.760[a]	2	.415
Likelihood Ratio	1.747	2	.417
Linear-by-Linear Association	.052	1	.820
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 13.85.

Gender * ecotourism generates awareness & funds for conservation

Crosstab

Count

		ecotourism generates awareness & funds for conservation			
		Disagree	Indifferent	Agree	Total
gender	Male	19	52	245	316
	Female	17	34	138	189
Total		36	86	383	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.957[a]	2	.376
Likelihood Ratio	1.917	2	.383
Linear-by-Linear Association	1.856	1	.173
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 13.47.

Annexure 3
Results of Age Wise Cross Tabulation

Age Wise Analysis – Group 1 (Development)

Age group * food scarcity due to developmental activity

Crosstab

Count

		food scarcity due to developmental acivity			
		Disagree	Indifferent	Agree	Total
age group	below 25 yrs	41	29	100	170
	25 - 40 yrs	72	58	97	227
	41 - 60 yrs	22	23	53	98
	above 60 yrs	1		9	10
Total		136	110	259	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.948[a]	6	.006
Likelihood Ratio	20.050	6	.003
Linear-by-Linear Association	.005	1	.942
N of Valid Cases	505		

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 2.18.

Age group * destruction of wilderness areas due to construction activity

Crosstab

Count

		destruction of wilderness areas due to construction activity			
		Disagree	Indifferent	Agree	Total
age group	below 25 yrs	28	21	121	170
	25 - 40 yrs	58	50	119	227
	41 - 60 yrs	17	23	58	98
	above 60 yrs	2	1	7	10
Total		105	95	305	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.958[a]	6	.009
Likelihood Ratio	17.330	6	.008
Linear-by-Linear Association	3.089	1	.079
N of Valid Cases	505		

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 1.88.

Age group * destruction of eco-system due to habitat loss

Crosstab

Count

		destruction of eco-system due to habitat loss			
		Disagree	Indifferent	Agree	Total
age group	below 25 yrs	12	14	144	170
	25 - 40 yrs	10	27	190	227
	41 - 60 yrs	3	16	79	98
	above 60 yrs		1	9	10
Total		25	58	422	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.659[a]	6	.354
Likelihood Ratio	7.031	6	.318
Linear-by-Linear Association	.002	1	.965
N of Valid Cases	505		

a. 3 cells (25.0%) have expected count less than 5. The minimum expected count is .50.

Age group * wildlife migration due to habitat loss

Crosstab

Count

		wildlife migration due to habitat loss			
		Disagree	Indifferent	Agree	Total
age group	below 25 yrs	14	23	133	170
	25 - 40 yrs	21	29	177	227
	41 - 60 yrs	3	12	83	98
	above 60 yrs		1	9	10
Total		38	65	402	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.084[a]	6	.533
Likelihood Ratio	6.522	6	.367
Linear-by-Linear Association	2.303	1	.129
N of Valid Cases	505		

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is .75.

Age Wise Analysis – Group 2 (Tourism Activities)

Age group * excessive presence of visitor

Crosstab

Count

		exessive presence of visitor			
		Disagree	Indifferent	Agree	Total
age group	below 25 yrs	38	29	103	170
	25 - 40 yrs	52	52	123	227
	41 - 60 yrs	20	27	51	98
	above 60 yrs	1	2	7	10
Total		111	110	284	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.634[a]	6	.465
Likelihood Ratio	5.797	6	.446
Linear-by-Linear Association	.087	1	.768
N of Valid Cases	505		

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 2.18.

Age group * forcing the mahut to get elephant closer to the wildlife

Crosstab

Count

		forcing the mahut to get elephant closer to the wildlife			
		Disagree	Indifferent	Agree	Total
age group	below 25 yrs	16	40	114	170
	25 - 40 yrs	20	46	161	227
	41 - 60 yrs	9	26	63	98
	above 60 yrs	1	3	6	10
Total		46	115	344	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.154[a]	6	.905
Likelihood Ratio	2.131	6	.907
Linear-by-Linear Association	.085	1	.770
N of Valid Cases	505		

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is .91.

Age group * noise pollution can bring about behavioural change in animals

Crosstab

Count

		noise pollution can bring about beahvioural chnage in animals			
		Disagree	Indifferent	Agree	Total
age group	below 25 yrs	8	27	135	170
	25 - 40 yrs	14	48	165	227
	41 - 60 yrs	3	30	65	98
	above 60 yrs			10	10
Total		25	105	375	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.916[a]	6	.044
Likelihood Ratio	15.077	6	.020
Linear-by-Linear Association	.849	1	.357
N of Valid Cases	505		

a. 3 cells (25.0%) have expected count less than 5. The minimum expected count is .50.

Age group * transmission of diseases & introduction of weeds due trespassing & grazing of domesticated animals

Crosstab

Count

		transmission of diseases & introduction of weeds due trespassing & grazing of domesticated animals			
		Disagree	Indifferent	Agree	Total
age group	below 25 yrs	14	28	128	170
	25 - 40 yrs	18	44	165	227
	41 - 60 yrs	2	19	77	98
	above 60 yrs		2	8	10
Total		34	93	378	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.822[a]	6	.443
Likelihood Ratio	7.656	6	.264
Linear-by-Linear Association	1.446	1	.229
N of Valid Cases	505		

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is .67.

Age group * behavioural change can bring about danger to tourists

Crosstab

Count

		behavioural change can bring about danger to tourists			
		Disagree	Indifferent	Agree	Total
age group	below 25 yrs	19	34	117	170
	25 - 40 yrs	28	61	138	227
	41 - 60 yrs	5	22	71	98
	above 60 yrs	2		8	10
Total		54	117	334	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.750[a]	6	.096
Likelihood Ratio	13.525	6	.035
Linear-by-Linear Association	.558	1	.455
N of Valid Cases	505		

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 1.07.

Age group * population rise can cause ecological degradation

Crosstab

Count

		population rise can cause ecological degredation			
		Disagree	Indifferent	Agree	Total
age group	below 25 yrs	31	37	102	170
	25 - 40 yrs	37	51	139	227
	41 - 60 yrs	10	24	64	98
	above 60 yrs	2	1	7	10
Total		80	113	312	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.034[a]	6	.672
Likelihood Ratio	4.450	6	.616
Linear-by-Linear Association	1.664	1	.197
N of Valid Cases	505		

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 1.58.

Age Wise Analysis – Group 3 (Eco-Tourism)

Age group * ecotourism enhances nature conservation and cultural development

Crosstab

Count

		ecotourism enhances nature conservation anf cultural development			
		Disagree	Indifferent	Agree	Total
age group	below 25 yrs	12	39	119	170
	25 - 40 yrs	18	52	157	227
	41 - 60 yrs	8	17	73	98
	above 60 yrs	1	2	7	10
Total		39	110	356	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.623[a]	6	.951
Likelihood Ratio	1.679	6	.947
Linear-by-Linear Association	.059	1	.808
N of Valid Cases	505		

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is .77.

Age group * ecotourism enhances socio-economic status

Crosstab

Count

		ecotourism enhances socio-economic status			
		Disagree	Indifferent	Agree	Total
age group	below 25 yrs	12	33	125	170
	25 - 40 yrs	11	39	177	227
	41 - 60 yrs	10	8	80	98
	above 60 yrs	1		9	10
Total		34	80	391	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.766[a]	6	.096
Likelihood Ratio	12.905	6	.045
Linear-by-Linear Association	.919	1	.338
N of Valid Cases	505		

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is .67.

Age group * ecotourism encourages community participation in conservation efforts

Crosstab

Count

		ecotourism encourages community participation in conservation efforts			
		Disagree	Indifferent	Agree	Total
age group	below 25 yrs	12	36	122	170
	25 - 40 yrs	12	36	179	227
	41 - 60 yrs	12	21	65	98
	above 60 yrs	1		9	10
Total		37	93	375	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.425[a]	6	.108
Likelihood Ratio	11.830	6	.066
Linear-by-Linear Association	.344	1	.557
N of Valid Cases	505		

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is .73.

Age group * ecotourism generates awareness & funds for conservation

Crosstab

Count

		ecotourism generates awareness & funds for conservation			
		Disagree	Indifferent	Agree	Total
age group	below 25 yrs	12	35	123	170
	25 - 40 yrs	17	36	174	227
	41 - 60 yrs	7	14	77	98
	above 60 yrs		1	9	10
Total		36	86	383	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.579[a]	6	.733
Likelihood Ratio	4.280	6	.639
Linear-by-Linear Association	1.495	1	.221
N of Valid Cases	505		

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is .71.

Annexure 4
Results of Educational Qualification Wise Cross Tabulation

Educational Qualification Wise Analysis – Group 1 (Development)

Educational qualification * food scarcity due to developmental activity

Crosstab

Count

		food scarcity due to developmental activity			
		Disagree	Indifferent	Agree	Total
educational qualification	Undergraduate	29	34	102	165
	Graduate	83	50	82	215
	Post Graduate	24	26	75	125
Total		136	110	259	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	32.055[a]	4	.000
Likelihood Ratio	32.217	4	.000
Linear-by-Linear Association	.699	1	.403
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 27.23.

Educational qualification * destruction of wilderness areas due to construction activity

Crosstab

Count

		destruction of wilderness areas due to construction activity			
		Disagree	Indifferent	Agree	Total
educational qualification	Undergraduate	23	25	117	165
	Graduate	58	46	111	215
	Post Graduate	24	24	77	125
Total		105	95	305	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.568[a]	4	.004
Likelihood Ratio	15.757	4	.003
Linear-by-Linear Association	3.602	1	.058
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 23.51.

Educational qualification * destruction of eco-system due to habitat loss

Crosstab

Count

		destruction of eco-system due to habitat loss			
		Disagree	Indifferent	Agree	Total
educational qualification	Undergraduate	8	23	134	165
	Graduate	13	23	179	215
	Post Graduate	4	12	109	125
Total		25	58	422	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.977[a]	4	.562
Likelihood Ratio	3.022	4	.554
Linear-by-Linear Association	1.626	1	.202
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.19.

Educational qualification * wildlife migration due to habitat loss

Crosstab

Count

		wildlife migration due to habitat loss			
		Disagree	Indifferent	Agree	Total
educational qualification	Undergraduate	14	20	131	165
	Graduate	14	32	169	215
	Post Graduate	10	13	102	125
Total		38	65	402	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.965[a]	4	.742
Likelihood Ratio	1.981	4	.739
Linear-by-Linear Association	.162	1	.688
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.41.

Educational Qualification Wise Analysis – Group 2 (Tourism Activities)

Educational qualification * excessive presence of visitor

Crosstab

Count

		exessive presence of visitor			
		Disagree	Indifferent	Agree	Total
educational qualification	Undergraduate	37	35	93	165
	Graduate	51	54	110	215
	Post Graduate	23	21	81	125
Total		111	110	284	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.201[a]	4	.185
Likelihood Ratio	6.262	4	.180
Linear-by-Linear Association	1.291	1	.256
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 27.23.

Educational qualification * forcing the mahut to get elephant closer to the wildlife

Crosstab

Count

		forcing the mahut to get elephant closer to the wildlife			
		Disagree	Indifferent	Agree	Total
educational qualification	Undergraduate	18	29	118	165
	Graduate	22	52	141	215
	Post Graduate	6	34	85	125
Total		46	115	344	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.137[a]	4	.129
Likelihood Ratio	7.726	4	.102
Linear-by-Linear Association	.056	1	.814
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.39.

Educational qualification * noise pollution can bring about behavioural change in animals

Crosstab

Count

		noise pollution can bring about beahvioural chnage in animals			
		Disagree	Indifferent	Agree	Total
educational qualification	Undergraduate	8	24	133	165
	Graduate	13	48	154	215
	Post Graduate	4	33	88	125
Total		25	105	375	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.876[a]	4	.096
Likelihood Ratio	8.146	4	.086
Linear-by-Linear Association	1.968	1	.161
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.19.

Educational qualification * transmission of diseases & introduction of weeds due trespassing & grazing of domesticated animals

Crosstab

Count

		transmission of diseases & introduction of weeds due trespassing & grazing of domesticated animals			
		Disagree	Indifferent	Agree	Total
educational qualification	Undergraduate	17	32	116	165
	Graduate	12	35	168	215
	Post Graduate	5	26	94	125
Total		34	93	378	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.707[a]	4	.152
Likelihood Ratio	6.541	4	.162
Linear-by-Linear Association	2.942	1	.086
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.42.

Educational qualification * behavioural change can bring about danger to tourists

Crosstab

Count

		behavioural change can bring about danger to tourists			
		Disagree	Indifferent	Agree	Total
educational qualification	Undergraduate	21	28	116	165
	Graduate	23	52	140	215
	Post Graduate	10	37	78	125
Total		54	117	334	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.281[a]	4	.122
Likelihood Ratio	7.423	4	.115
Linear-by-Linear Association	.176	1	.675
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 13.37.

Educational qualification * population rise can cause ecological degradation

Crosstab

Count

		population rise can cause ecological degredation			
		Disagree	Indifferent	Agree	Total
educational qualification	Undergraduate	33	35	97	165
	Graduate	30	54	131	215
	Post Graduate	17	24	84	125
Total		80	113	312	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.925[a]	4	.295
Likelihood Ratio	4.816	4	.307
Linear-by-Linear Association	2.813	1	.093
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 19.80.

Educational Qualification Wise Analysis – Group 3 (Eco-Tourism)

Educational qualification * ecotourism enhances nature conservation and cultural development

Crosstab

Count

		ecotourism enhances nature conservation anf cultural development			
		Disagree	Indifferent	Agree	Total
educational qualification	Undergraduate	13	39	113	165
	Graduate	19	50	146	215
	Post Graduate	7	21	97	125
Total		39	110	356	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.174[a]	4	.383
Likelihood Ratio	4.322	4	.364
Linear-by-Linear Association	2.046	1	.153
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.65.

Educational qualification * ecotourism enhances socio-economic status

Crosstab

Count

		ecotourism enhances socio-economic status			
		Disagree	Indifferent	Agree	Total
educational qualification	Undergraduate	11	36	118	165
	Graduate	13	33	169	215
	Post Graduate	10	11	104	125
Total		34	80	391	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.437[a]	4	.051
Likelihood Ratio	9.794	4	.044
Linear-by-Linear Association	2.376	1	.123
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.42.

Educational qualification * ecotourism encourages community participation in conservation efforts

Crosstab

Count

		ecotourism encourages community participation in conservation efforts			
		Disagree	Indifferent	Agree	Total
educational qualification	Undergraduate	12	34	119	165
	Graduate	14	41	160	215
	Post Graduate	11	18	96	125
Total		37	93	375	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.351[a]	4	.671
Likelihood Ratio	2.409	4	.661
Linear-by-Linear Association	.215	1	.643
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.16.

Educational qualification * ecotourism generates awareness & funds for conservation

Crosstab

Count

		ecotourism generates awareness & funds for conservation			
		Disagree	*Indifferent*	*Agree*	*Total*
educational qualification	Undergraduate	9	27	129	165
	Graduate	17	43	155	215
	Post Graduate	10	16	99	125
Total		36	86	383	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.138[a]	4	.388
Likelihood Ratio	4.253	4	.373
Linear-by-Linear Association	.120	1	.729
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.91.

Annexure 5
Results of Occupation Wise Cross Tabulation

Occupation Wise Analysis – Group 1 (Development)

Occupation / profession * food scarcity due to developmental activity

Crosstab

Count

		food scarcity due to developmental activity			
		Disagree	Indifferent	Agree	Total
occupation / profession	Service holder	51	34	107	192
	Self employed	40	35	54	129
	Student / Unemployed	45	41	98	184
Total		136	110	259	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.517[a]	4	.111
Likelihood Ratio	7.598	4	.107
Linear-by-Linear Association	.054	1	.817
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 28.10.

Occupation / profession * destruction of wilderness areas due to construction activity

Crosstab

Count

		destruction of wilderness areas due to construction activity			
		Disagree	Indifferent	Agree	Total
occupation / profession	Service holder	36	34	122	192
	Self employed	39	29	61	129
	Student / Unemployed	30	32	122	184
Total		105	95	305	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.990[a]	4	.007
Likelihood Ratio	13.674	4	.008
Linear-by-Linear Association	.321	1	.571
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 24.27.

Occupation / profession * destruction of eco-system due to habitat loss

Crosstab

Count

		destruction of eco-system due to habitat loss			
		Disagree	Indifferent	Agree	Total
occupation / profession	Service holder	8	22	162	192
	Self employed	7	16	106	129
	Student / Unemployed	10	20	154	184
Total		25	58	422	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.585[a]	4	.965
Likelihood Ratio	.593	4	.964
Linear-by-Linear Association	.088	1	.767
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.39.

Occupation / profession * wildlife migration due to habitat loss

Crosstab

Count

		wildlife migration due to habitat loss			
		Disagree	Indifferent	Agree	Total
occupation / profession	Service holder	15	28	149	192
	Self employed	11	14	104	129
	Student / Unemployed	12	23	149	184
Total		38	65	402	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.462[a]	4	.833
Likelihood Ratio	1.472	4	.832
Linear-by-Linear Association	.634	1	.426
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.71.

Occupation Wise Analysis – Group 2 (Tourism Activities)

Occupation / profession * excessive presence of visitor

Crosstab

Count

		exessive presence of visitor			
		Disagree	Indifferent	Agree	Total
occupation / profession	Service holder	33	51	108	192
	Self employed	29	30	70	129
	Student / Unemployed	49	29	106	184
Total		111	110	284	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.188[a]	4	.057
Likelihood Ratio	9.430	4	.051
Linear-by-Linear Association	.930	1	.335
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 28.10.

Occupation / profession * forcing the mahut to get elephant closer to the wildlife

Crosstab

Count

		forcing the mahut to get elephant closer to the wildlife			
		Disagree	Indifferent	Agree	Total
occupation / profession	Service holder	19	40	133	192
	Self employed	13	28	88	129
	Student / Unemployed	14	47	123	184
Total		46	115	344	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.801[a]	4	.772
Likelihood Ratio	1.807	4	.771
Linear-by-Linear Association	.000	1	.982
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.75.

Occupation / profession * noise pollution can bring about behavioural change in animals

Crosstab

Count

		noise pollution can bring about beahvioural chnage in animals			
		Disagree	Indifferent	Agree	Total
occupation / profession	Service holder	7	41	144	192
	Self employed	8	32	89	129
	Student / Unemployed	10	32	142	184
Total		25	105	375	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.914[a]	4	.418
Likelihood Ratio	3.959	4	.412
Linear-by-Linear Association	.003	1	.960
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.39.

Occupation / profession * transmission of diseases & introduction of weeds due trespassing & grazing of domesticated animals

Crosstab

Count

		transmission of diseases & introduction of weeds due trespassing & grazing of domesticated animals			
		Disagree	Indifferent	Agree	Total
occupation / profession	Service holder	9	39	144	192
	Self employed	12	21	96	129
	Student / Unemployed	13	33	138	184
Total		34	93	378	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.211[a]	4	.523
Likelihood Ratio	3.219	4	.522
Linear-by-Linear Association	.156	1	.693
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.69.

Occupation / profession * behavioural change can bring about danger to tourists

Crosstab

Count

		behavioural change can bring about danger to tourists			
		Disagree	Indifferent	Agree	Total
occupation / profession	Service holder	21	49	122	192
	Self employed	15	26	88	129
	Student / Unemployed	18	42	124	184
Total		54	117	334	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.556[a]	4	.817
Likelihood Ratio	1.567	4	.815
Linear-by-Linear Association	.513	1	.474
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 13.79.

Occupation / profession * population rise can cause ecological degradation

Crosstab

Count

		population rise can cause ecological degredation			
		Disagree	Indifferent	Agree	Total
occupation / profession	Service holder	30	38	124	192
	Self employed	20	28	81	129
	Student / Unemployed	30	47	107	184
Total		80	113	312	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.121[a]	4	.713
Likelihood Ratio	2.113	4	.715
Linear-by-Linear Association	.834	1	.361
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 20.44.

Occupation Wise Analysis – Group 3 (Eco-Tourism)

Occupation / profession * ecotourism enhances nature conservation and cultural development

Crosstab

Count

		ecotourism enhances nature conservation anf cultural development			
		Disagree	Indifferent	Agree	Total
occupation / profession	Service holder	10	35	147	192
	Self employed	13	26	90	129
	Student / Unemployed	16	49	119	184
Total		39	110	356	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.875[a]	4	.096
Likelihood Ratio	7.925	4	.094
Linear-by-Linear Association	5.744	1	.017
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.96.

Occupation / profession * ecotourism enhances socio-economic status

Crosstab

Count

		ecotourism enhances socio-economic status			
		Disagree	Indifferent	Agree	Total
occupation / profession	Service holder	14	28	150	192
	Self employed	8	13	108	129
	Student / Unemployed	12	39	133	184
Total		34	80	391	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.683[a]	4	.104
Likelihood Ratio	7.768	4	.100
Linear-by-Linear Association	.678	1	.410
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.69.

Occupation / profession * ecotourism encourages community participation in conservation efforts

Crosstab

Count

		ecotourism encourages community participation in conservation efforts			
		Disagree	Indifferent	Agree	Total
occupation / profession	Service holder	7	31	154	192
	Self employed	13	18	98	129
	Student / Unemployed	17	44	123	184
Total		37	93	375	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.080[a]	4	.011
Likelihood Ratio	13.594	4	.009
Linear-by-Linear Association	9.171	1	.002
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.45.

Occupation / profession * ecotourism generates awareness & funds for conservation

Crosstab

Count

		ecotourism generates awareness & funds for conservation			
		Disagree	Indifferent	Agree	Total
occupation / profession	Service holder	7	26	159	192
	Self employed	13	20	96	129
	Student / Unemployed	16	40	128	184
Total		36	86	383	505

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.639[a]	4	.020
Likelihood Ratio	12.043	4	.017
Linear-by-Linear Association	8.840	1	.003
N of Valid Cases	505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.20.

Annexure 6
Results of Daily Budget Wise Cross Tabulation

Daily Budget Wise Analysis – Group 1 (Development)

Daily budget * food scarcity due to developmental activity

Crosstab

Count

		food scarcity due to developmental acivity			
		Disagree	Indifferent	Agree	Total
daily budget	below Rs 300	36	27	90	153
	Rs 300 - Rs 500	22	16	46	84
	Rs 500 - Rs 700	2	5	16	23
	above Rs 700	7	5	15	27
Total		67	53	167	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.413[a]	6	.755
Likelihood Ratio	4.040	6	.671
Linear-by-Linear Association	.016	1	.898
N of Valid Cases	287		

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 4.25.

Daily budget * destruction of wilderness areas due to construction activity

Crosstab

Count

		destruction of wilderness areas due to construction activity			
		Disagree	Indifferent	Agree	Total
daily budget	below Rs 300	27	24	102	153
	Rs 300 - Rs 500	20	17	47	84
	Rs 500 - Rs 700	2	5	16	23
	above Rs 700	4	5	18	27
Total		53	51	183	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.776[a]	6	.573
Likelihood Ratio	4.991	6	.545
Linear-by-Linear Association	.000	1	.995
N of Valid Cases	287		

a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is 4.09.

Daily budget * destruction of eco-system due to habitat loss

Crosstab

Count

		destruction of eco-system due to habitat loss			
		Disagree	Indifferent	Strongly Agree	Total
daily budget	below Rs 300	10	14	129	153
	Rs 300 - Rs 500	1	6	77	84
	Rs 500 - Rs 700	2		21	23
	above Rs 700	1	2	24	27
Total		14	22	251	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.591[a]	6	.360
Likelihood Ratio	9.153	6	.165
Linear-by-Linear Association	1.335	1	.248
N of Valid Cases	287		

a. 5 cells (41.7%) have expected count less than 5. The minimum expected count is 1.12.

Daily budget * wildlife migration due to habitat loss

Crosstab

Count

		wildlife migration due to habitat loss			
		Disagree	Indifferent	Agree	Total
daily budget	below Rs 300	18	22	113	153
	Rs 300 - Rs 500	5	12	67	84
	Rs 500 - Rs 700		4	19	23
	above Rs 700		1	26	27
Total		23	39	225	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.003[a]	6	.088
Likelihood Ratio	15.418	6	.017
Linear-by-Linear Association	8.348	1	.004
N of Valid Cases	287		

a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is 1.84.

Daily Budget Wise Analysis – Group 2 (Tourism Activities)

Daily budget * excessive presence of visitor

Crosstab

Count

		exessive presence of visitor			
		Disagree	Indifferent	Agree	Total
daily budget	below Rs 300	36	21	96	153
	Rs 300 - Rs 500	15	23	46	84
	Rs 500 - Rs 700	3	4	16	23
	above Rs 700	6	1	20	27
Total		60	49	178	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.210[a]	6	.057
Likelihood Ratio	12.892	6	.045
Linear-by-Linear Association	.858	1	.354
N of Valid Cases	287		

a. 3 cells (25.0%) have expected count less than 5. The minimum expected count is 3.93.

Daily budget * forcing the mahut to get elephant closer to the wildlife

Crosstab

Count

		forcing the mahut to get elephant closer to the wildlife			
		Disagree	Indifferent	Agree	Total
daily budget	below Rs 300	15	32	106	153
	Rs 300 - Rs 500	9	24	51	84
	Rs 500 - Rs 700	1	8	14	23
	above Rs 700	2	4	21	27
Total		27	68	192	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.566[a]	6	.474
Likelihood Ratio	5.675	6	.461
Linear-by-Linear Association	.119	1	.730
N of Valid Cases	287		

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 2.16.

Daily budget * noise pollution can bring about behavioural change in animals

Crosstab

Count

		noise pollution can bring about beahvioural chnage in animals			
		Disagree	Indifferent	Agree	Total
daily budget	below Rs 300	9	27	117	153
	Rs 300 - Rs 500	3	23	58	84
	Rs 500 - Rs 700		3	20	23
	above Rs 700		4	23	27
Total		12	57	218	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.080[a]	6	.232
Likelihood Ratio	9.912	6	.128
Linear-by-Linear Association	2.078	1	.149
N of Valid Cases	287		

a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is .96.

Daily budget * transmission of diseases & introduction of weeds due trespassing & grazing of domesticated animals

Crosstab

Count

		transmission of diseases & introduction of weeds due trespassing & grazing of domesticated animals			
		Disagree	Indifferent	Agree	Total
daily budget	below Rs 300	10	34	109	153
	Rs 300 - Rs 500	7	15	62	84
	Rs 500 - Rs 700		3	20	23
	above Rs 700		3	24	27
Total		17	55	215	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.505[a]	6	.277
Likelihood Ratio	10.500	6	.105
Linear-by-Linear Association	5.218	1	.022
N of Valid Cases	287		

a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is 1.36.

Daily budget * behavioural change can bring about danger to tourists

Crosstab

Count

		behavioural change can bring about danger to tourists			
		Disagree	Indifferent	Agree	Total
daily budget	below Rs 300	16	37	100	153
	Rs 300 - Rs 500	14	20	50	84
	Rs 500 - Rs 700	2	4	17	23
	above Rs 700	1	8	18	27
Total		33	69	185	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.132[a]	6	.527
Likelihood Ratio	5.442	6	.488
Linear-by-Linear Association	.217	1	.641
N of Valid Cases	287		

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 2.64.

Daily budget * population rise can cause ecological degradation

Crosstab

Count

		population rise can cause ecological degredation			
		Disagree	Indifferent	Agree	Total
daily budget	below Rs 300	30	36	87	153
	Rs 300 - Rs 500	8	15	61	84
	Rs 500 - Rs 700	2	2	19	23
	above Rs 700	3	3	21	27
Total		43	56	188	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.513[a]	6	.051
Likelihood Ratio	13.118	6	.041
Linear-by-Linear Association	8.130	1	.004
N of Valid Cases	287		

a. 3 cells (25.0%) have expected count less than 5. The minimum expected count is 3.45.

Daily Budget Wise Analysis – Group 3 (Eco-Tourism)

Daily budget * ecotourism enhances nature conservation and cultural development

Crosstab

Count

		ecotourism enhances nature conservation anf cultural development			
		Disagree	Indifferent	Agree	Total
daily budget	below Rs 300	9	43	101	153
	Rs 300 - Rs 500	5	14	65	84
	Rs 500 - Rs 700	3	2	18	23
	above Rs 700	3	3	21	27
Total		20	62	205	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.705[a]	6	.098
Likelihood Ratio	11.012	6	.088
Linear-by-Linear Association	.654	1	.419
N of Valid Cases	287		

a. 3 cells (25.0%) have expected count less than 5. The minimum expected count is 1.60.

Daily budget * ecotourism enhances socio-economic status

Crosstab

Count

		ecotourism enhances socio-economic status			
		Disagree	Indifferent	Agree	Total
daily budget	below Rs 300	10	32	111	153
	Rs 300 - Rs 500	6	12	66	84
	Rs 500 - Rs 700	1	1	21	23
	above Rs 700	2	1	24	27
Total		19	46	222	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.712[a]	6	.190
Likelihood Ratio	10.468	6	.106
Linear-by-Linear Association	3.124	1	.077
N of Valid Cases	287		

a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is 1.52.

Daily budget * ecotourism encourages community participation in conservation efforts

Crosstab

Count

		ecotourism encourages community participation in conservation efforts			
		Disagree	Indifferent	Agree	Total
daily budget	below Rs 300	7	31	115	153
	Rs 300 - Rs 500	6	12	66	84
	Rs 500 - Rs 700	3	2	18	23
	above Rs 700	5	2	20	27
Total		21	47	219	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.137[a]	6	.084
Likelihood Ratio	10.218	6	.116
Linear-by-Linear Association	1.171	1	.279
N of Valid Cases	287		

a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is 1.68.

Daily budget * ecotourism generates awareness & funds for conservation

Crosstab

Count

		ecotourism generates awareness & funds for conservation			
		Disagree	Indifferent	Agree	Total
daily budget	below Rs 300	12	28	113	153
	Rs 300 - Rs 500	6	11	67	84
	Rs 500 - Rs 700	1	2	20	23
	above Rs 700	5	1	21	27
Total		24	42	221	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.850[a]	6	.182
Likelihood Ratio	9.026	6	.172
Linear-by-Linear Association	.046	1	.829
N of Valid Cases	287		

a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is 1.92.

Annexure 7
Results of Place Of Origin Wise Cross Tabulation

Place Of Origin Wise Analysis – Group 1 (Development)

Place of origin * food scarcity due to developmental activity

Crosstab

Count

		food scarcity due to developmental acivity			
		Disagree	Indifferent	Agree	Total
place of origin	Within the state	28	25	68	121
	Outside the state	33	18	65	116
	Outside the country	6	10	34	50
Total		67	53	167	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.981[a]	4	.201
Likelihood Ratio	6.475	4	.166
Linear-by-Linear Association	1.540	1	.215
N of Valid Cases	287		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.23.

Place of origin * destruction of wilderness areas due to construction activity

Crosstab

Count

		destruction of wilderness areas due to construction activity			
		Disagree	Indifferent	Agree	Total
place of origin	Within the state	21	18	82	121
	Outside the state	27	24	65	116
	Outside the countr	5	9	36	50
Total		53	51	183	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.526[a]	4	.163
Likelihood Ratio	6.832	4	.145
Linear-by-Linear Association	.009	1	.926
N of Valid Cases	287		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.89.

Place of origin * destruction of eco-system due to habitat loss

Crosstab

Count

		destruction of eco-system due to habitat loss			
		Disagree	Indifferent	Agree	Total
place of origin	Within the state	10	11	100	121
	Outside the state	4	11	101	116
	Outside the countr			50	50
Total		14	22	251	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.645[a]	4	.020
Likelihood Ratio	17.390	4	.002
Linear-by-Linear Association	9.348	1	.002
N of Valid Cases	287		

a. 2 cells (22.2%) have expected count less than 5. The minimum expected count is 2.44.

Place of origin * wildlife migration due to habitat loss

Crosstab

Count

		wildlife migration due to habitat loss			
		Disagree	Indifferent	Agree	Total
place of origin	Within the state	12	17	92	121
	Outside the state	5	18	93	116
	Outside the country	6	4	40	50
Total		23	39	225	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.159[a]	4	.271
Likelihood Ratio	5.580	4	.233
Linear-by-Linear Association	.378	1	.539
N of Valid Cases	287		

a. 1 cells (11.1%) have expected count less than 5. The minimum expected count is 4.01.

Place Of Origin Wise Analysis – Group 2 (Tourism Activities)

Place of origin * excessive presence of visitor

Crosstab

Count

		exessive presence of visitor			
		Disagree	Indifferent	Agree	Total
place of origin	Within the state	32	11	78	121
	Outside the state	21	28	67	116
	Outside the country	7	10	33	50
Total		60	49	178	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.094[a]	4	.017
Likelihood Ratio	12.665	4	.013
Linear-by-Linear Association	.270	1	.603
N of Valid Cases	287		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.54.

Place of origin * forcing the mahut to get elephant closer to the wildlife

Crosstab

Count

		forcing the mahut to get elephant closer to the wildlife			
		Disagree	Indifferent	Agree	Total
place of origin	Within the state	13	23	85	121
	Outside the state	9	32	75	116
	Outside the country	5	13	32	50
Total		27	68	192	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.912[a]	4	.573
Likelihood Ratio	2.962	4	.564
Linear-by-Linear Association	.498	1	.480
N of Valid Cases	287		

a. 1 cells (11.1%) have expected count less than 5. The minimum expected count is 4.70.

Place of origin * noise pollution can bring about behavioural change in animals

Crosstab

Count

		noise pollution can bring about beahvioural chnage in animals			
		Disagree	Indifferent	Agree	Total
place of origin	Within the state	10	19	92	121
	Outside the state	1	30	85	116
	Outside the country	1	8	41	50
Total		12	57	218	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.333[a]	4	.015
Likelihood Ratio	12.797	4	.012
Linear-by-Linear Association	1.023	1	.312
N of Valid Cases	287		

a. 2 cells (22.2%) have expected count less than 5. The minimum expected count is 2.09.

Place of origin * transmission of diseases & introduction of weeds due trespassing & grazing of domesticated animals

Crosstab

Count

		transmission of diseases & introduction of weeds due trespassing & grazing of domesticated animals			
		Disagree	Indifferent	Agree	Total
place of origin	Within the state	9	23	89	121
	Outside the state	4	25	87	116
	Outside the country	4	7	39	50
Total		17	55	215	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.168[a]	4	.530
Likelihood Ratio	3.369	4	.498
Linear-by-Linear Association	.339	1	.560
N of Valid Cases	287		

a. 1 cells (11.1%) have expected count less than 5. The minimum expected count is 2.96.

Place of origin * behavioural change can bring about danger to tourists

Crosstab

Count

		ehavioural change can bring abou danger to tourists			
		Disagree	Indifferent	Agree	Total
place of origin	Within the state	14	19	88	121
	Outside the state	13	36	67	116
	Outside the countr	6	14	30	50
Total		33	69	185	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.451[a]	4	.076
Likelihood Ratio	8.709	4	.069
Linear-by-Linear Association	2.997	1	.083
N of Valid Cases	287		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.75.

Place of origin * population rise can cause ecological degradation

Crosstab

Count

		population rise can cause ecological degredation			
		Disagree	Indifferent	Agree	Total
place of origin	Within the state	28	33	60	121
	Outside the state	13	19	84	116
	Outside the country	2	4	44	50
Total		43	56	188	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	27.606[a]	4	.000
Likelihood Ratio	29.242	4	.000
Linear-by-Linear Association	26.612	1	.000
N of Valid Cases	287		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.49.

Place Of Origin Wise Analysis – Group 3 (Eco-Tourism)

Place of origin * ecotourism enhances nature conservation and cultural development

Crosstab

Count

		ecotourism enhances nature conservation anf cultural development			
		Disagree	Indifferent	Agree	Total
place of origin	Within the state	8	30	83	121
	Outside the state	10	24	82	116
	Outside the country	2	8	40	50
Total		20	62	205	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.109[a]	4	.540
Likelihood Ratio	3.223	4	.521
Linear-by-Linear Association	1.355	1	.244
N of Valid Cases	287		

a. 1 cells (11.1%) have expected count less than 5. The minimum expected count is 3.48.

Place of origin * ecotourism enhances socio-economic status

Crosstab

Count

		ecotourism enhances socio-economic status			
		Disagree	Indifferent	Agree	Total
place of origin	Within the state	9	31	81	121
	Outside the state	6	10	100	116
	Outside the country	4	5	41	50
Total		19	46	222	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.694[a]	4	.003
Likelihood Ratio	15.656	4	.004
Linear-by-Linear Association	4.432	1	.035
N of Valid Cases	287		

a. 1 cells (11.1%) have expected count less than 5. The minimum expected count is 3.31.

Place of origin * ecotourism encourages community participation in conservation efforts

Crosstab

Count

		ecotourism encourages community participation in conservation efforts			
		Disagree	Indifferent	Agree	Total
place of origin	Within the state	7	27	87	121
	Outside the state	12	16	88	116
	Outside the country	2	4	44	50
Total		21	47	219	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.020[a]	4	.061
Likelihood Ratio	9.258	4	.055
Linear-by-Linear Association	2.174	1	.140
N of Valid Cases	287		

a. 1 cells (11.1%) have expected count less than 5. The minimum expected count is 3.66.

Place of origin * ecotourism generates awareness & funds for conservation

Crosstab

Count

		ecotourism generates awareness & funds for conservation			
		Disagree	Indifferent	Agree	Total
place of origin	Within the state	10	18	93	121
	Outside the state	10	18	88	116
	Outside the country	4	6	40	50
Total		24	42	221	287

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.400[a]	4	.982
Likelihood Ratio	.414	4	.981
Linear-by-Linear Association	.051	1	.821
N of Valid Cases	287		

a. 1 cells (11.1%) have expected count less than 5. The minimum expected count is 4.18.

Annexure 8

A Framework For The Study Of Tourism & Environmental Stress:

(Source: Singh, 1985 / adapted from OCED)

Sr. No.	Stressor activities	Stress	Primary responses environmental	Secondary response (reaction) human
1	Permanent environmental restructuring	Restructuring of local environments, expansion of built environments – land taken out for primary production	Change in habitat, change in population of biological species	Individual – impact on aesthetic values collective measures
	a) Major construction activity expansion, transport network, tourist facilities, marinas, ski-lifts; sea walls		Change in health & welfare of man. Change in visual quality	Expenditure on environmental improvements; Expenditure on management of conservation; designation of wildlife conservation, and parks. Controls on access to recreational lands.
	b) Generation of waste residuals Urbanisation / transport.			
2	Generation of Waste residuals Urbanisation / transport.	Pollution leading emissions, effluent discharges, solid waste disposal, noise (traffic, aircraft).	Change in quality of environmental media, air / water, soil. Health of biological organism, Health of Humans.	Individual Defensive Measures – locals / air conditioning recycling of waste materials protest and attitude change tourists / change of attitude towards the environment / decline in tourists revenue collective / defensive measures. Expenditure of pollution abatement by tourists related industries cleanup of rivers and beaches.
3	Tourists activities: skiing, hunting, birding, collecting souvenirs	Trampling of vegetation and soils. Destruction of species.	Change in habitat, change in population, of biological species.	Collective, defensive measures – Expenditure on management of conservation, designation wildlife conservation and national parks. Controls on access to recreational lands.
4	Effect on population dynamics. Population growth	Populations density (seasonal)	Congestion Demand for natural resources, land & water energy.	Individual – Attitudes to over crowding and the environment, collective growth in support services, e.g. water, supply, electricity.

Annexure 9

Environmental Impacts Of Mass Tourism

Environmental components	Tourism development & tourist activities	Environmental consequences
1. Atmosphere	Increased travelling to tourist destination by motor car, tour buses, taxis	Air and noise pollution especially in peak seasons – loss of recreational value, adverse impact on plants and animals.
2. Vegetation	Chopping trees for resort construction and increased use of firewood; though less use of fire in parks and forests, pedestrian and vehicular traffic at tourist spots, campsites, trails etc.; collection of flowers, plants and fungi	Structural alteration of communities leaving fewer trees to mature and provide shelter for the site; conflagrations in forested areas, decline of diversity of plant species, constant trampling leads to disappearance of fragile species and damage of tree roots, reduction in reproduction rates on vegetation, increased soil erosion and damage to plant habitat; changes in species composition, disappearance of rare species
3. Wildlife	Chasing wildlife to view and photograph Development of highways and travels through natural areas	Disruption of feeding and breeding; disruption of predator – prey relationships. Relocation of feeding and breeding areas, even destruction of wildlife habitats and disturbance of wildlife migration.
4. Ecosystem	Construction of tourists accommodation, sewage system etc. trekking	Disturbance of plant and animal life, disruption of soil stability; reduction in number of diversity of plants and animals, soil erosion caused by trampling, littering etc.
5.Human made environments e.g. human settlements e.g. historic & religious monument	Expansion of hotel development including follow up infrastructure like restaurant bars, entertainment facilities etc. Excessive use for recreational and tourists purposes	Displacement of people, loss of amenity to remaining residents through traffic congestion, increased pollution, unpleasant architecture. Over crowding leads to excessive trampling, littering, etc.

Source: Pleumeron, A., 1997 (as referred in Singha & Sahoo, 2003).

Annexure 10

Government Role In Planning For Sustainable Tourism (Wearing and Neil, 1999)

To achieve the aims and objectives of sustainable eco-tourism a set of guidelines were developed at the GLOBE'90 conference held in Vancouver for the role of government in the planning and implementation of sustainable tourism. Summary of these guidelines is as follows:

(a) Ensure all the government departments involved in tourism are briefed on the concept of sustainable development so that they can carry out necessary measures. The respective ministers (e.g. environment and natural resources) should collaborate to achieve sustainable tourism development,

(b) Ensure that national and local tourism development agreements stress on a policy of sustainable tourism development,

(c) Include tourism in land-use planning,

(d) Undertake area and sector-specific research into environmental, cultural and economic effects of tourism,

(e) Support the development of economic models for tourism to help define appropriate levels and types of tourism for natural and urban areas,

(f) Assist and support lower levels of governments in developing tourism strategies and conservation strategies and in integrating the two,

(g) Develop standards and regulations for environmental and cultural impact assessments and monitoring of existing and proposed tourism developments, and ensure that carrying capacities defined for tourism destination reflect sustainable levels of development and are monitored and adjusted appropriately,

(h) Apply sectoral and / or regional environmental accounting systems to the tourism industry,

(i) Create tourism advisory boards that involve all stakeholders (e.g. the public, indigenous populations, industry, NGOs) and design and implement public consultation techniques and processes to involve all stakeholders in tourism-related decisions,

(j) Ensure that tourism interests are represented at major caucus planning meetings that affect the environment and the economy,

(k) Design and implement educational and awareness programmes to sensitise people to sustainable tourism development issues,

(l) Develop design and construction standards to ensure that tourism development projects do not disrupt local culture and natural environments,

(m) Enforce regulations relating to illegal trade in historic objects and crafts; unofficial archaeological research and desecrate of sacred sites,

(n) Regulate and control tourism in environmentally and culturally sensitive areas (Ceballos-Lascurian 1996).

Annexure 11

A Basic Planning Process For Tourism Development

(Source: Ceballos-Lascurian, 1996 in Fennel, 1999)

i) Study preparation: includes the assessment of the type of planning required and the preparation of terms of reference

ii) Determination of objectives: Includes the national or regional government's general eco-tourism policy / strategy, and include development priorities, temporal considerations, heritage, marketing and annual growth

iii) Survey: A complete evaluation and inventory of existing resources must be made, especially those related to the attraction base. The ultimate aim of this inventory is to link attractions to various market segments and forms of development.

iv) Analysis and Synthesis: Involves studying historical background of tourism in the region, analysing constraints to development, legal and risk management considerations, financing, tax incentives, protection of cultural and natural features and other economic-related variables (contribution to GNP, and complementarity with other sectors of the economy)

v) Policy and Plan Formulation: From an analysis of the synthesis, policies must be structured to reflect the economic, social, and ecological needs of the region. Alternative policies should be developed to assess how each fits with the country's overall development policy, from which final policies are derived in the areas of infrastructure, human resources, transportation, inter-sectoral coordination, establishment of councils and committees, tax incentives and subsidies, and the creation of tourism programmes,

vi) Recommendations: The result is a plan that indicates attractions, tourism development areas, transportation linkages, tour routes, and design and facility standards. Also, recommendations are made for implementation, zoning, land use plans for the future, economic benefits, education and training, ecological and social impacts, private industry incentives and legislation.

vii) Implementation and Monitoring: Prior to implementation, the policies and overall plan should be reviewed and ratified legally. Formal review periods should be established and committees or corporations should be developed to help implement or guide the implementation of the various developments.

Annexure 12

Eco-tourism travel essentials: planning guidelines for eco-tourism

(Wearing and Neil, 1999)

- To encourage community, environmental and tourism constituencies to work together towards a common goal.
- The success of eco-tourism depends on the conservation of nature and it is critical for everyone involved with eco-tourism to realise that intact natural resources are the foundation.
- Eco-tourism sites need revenue for protection and maintenance, much of which can be generated directly from entry fees and sale of products. Many protected areas charge nominal and no entrance fees and provide few, if any, auxiliary services. Eco-tourists also desire gift shops, food services and lodging services and expect to pay for them.
- Eco-tourists are a valuable audience for environmental education. In many parks, opportunities are missed to provide environmental education. Whether 'hard core nature tourists' or 'new' visitors with little background in natural history, all tourists can enhance their appreciation of the area through information brochures, exhibits and guides.
- Eco-tourism will contribute to rural development when local residents are brought into the planning process. For eco-tourism to be a tool for conservation and rural development, a concerted effort must be made to incorporate local populations into development of the tourism industry. In some cases, tourism to protected areas is not benefiting the surrounding populations because they are not involved.
- Opportunities are emerging for new relationships between conservationists and tour operators. Traditionally, these groups have not worked together; often they have been in direct opposition. However, as more tourists come to parks and reserves, tour operators have the opportunity to become more actively involved with the conservation of these areas through education for their clientele and donations to park management (Boo, 1990).

Annexure 13

The negative environmental consequences of tourism (Holden 2000)

Issue	*Problems*	*Examples*
Resource usage: tourism competes with other forms of development and human activities for natural resources, especially land and water; the use of natural resources subsequently leads to the transformation of ecological habitats and loss of flora and fauna	Indigenous and local people can be denied access to natural resources upon which they base their existence and livelihoods. Land transformations for tourism development can directly destroy ecological habitats. The use of resources for tourism involves an 'opportunity cost' as they are denied to other sectors of economic development.	• Airport construction in tourism and destination areas such as London and Malta uses large areas of farmland • Draining of coastal wetlands in Kenya for hotel developments • Loss of beach and coral reef ecosystems in the Caribbean • Deforestation of mountain sides associated with tourism in the European Alps and Himalayas • Lowering of water table below the level of local wells as in Goa, India • Induced change to ecological habitats and a subsequent reduction in the number of species of flora and fauna as in Scotland and the European Alps • Exclusion of indigenous people from their land, such as the Massai people from the Massai Mara Nature Reserve in Kenya
Human behaviour towards the destination environment	Local people encouraged by the revenues to be gained from tourisms may display ignorance and / or a disregard for the environment and indulge in inappropriate behaviour. This can lead to range of negative consequences for the physical and cultural environments.	• Disruption to eating and breeding patterns of wildlife animals in the Massai Mara Nature Reserve, Kenya • Local people breaking off coral to sell to tourists off the Mombassa coast • Dynamiting of fish in the Amazon to provide entertainment for tourists • Tourists walking over coral in the Caribbean • Increased crime, prostitution and drug taking in many destinations • Offence caused in Muslim cultures by western tourists wearing inappropriate dress while visiting mosques and other cultural sites,
Pollution • Water • Noise • Air • Aesthetic pollution	A range of different types of pollution can result from tourism. These can impact on different spatial scales from local to global. In destinations the effects of pollution are often associated with the level of tourism development and the degree of planning of implementation and environmental management controls.	• Problems of human waste disposal generated by tourism in the Mediterranean and the Caribbean • Air pollution problems in the European Alps and the contribution of jet engine emissions to global warming and ozone problems • Noise pollution of air balloons in the Serengeti Park in Africa • Many Coastal areas such as in parts of the Mediterranean and the Caribbean have had the their coastlines transformed by standardised construction of tourist accommodation and are indistinguishable from each other

Annexure 14

Environmental and pollution control and conservation of natural resources

(Source: Malhotra, 1998)

1. Cultural resources, both natural and man-made, have great value for tourism. They should be properly listed and documented with the help of available technology and the concerned organisations.
2. There is a lit of pressure on these resources and pollution emanating from different human activities, like settlements, industries, mining, etc. requires special study and attention, if the ancient cultural heritage of destinations is not to be damaged.
3. Preservation and maintenance also require in-depth study and proper financing, since ancient heritage is subject to the depredations of both natural and human factors.
4. Many countries indicate linkages with town and country planners, for the implementations of Master Plans, and for the identification of conservation zones.
5. Municipal laws on property rights and building bye-laws regarding floor space index and open spaces have also been studied, indicating that whilst the basic requirements of air, light and other health requirements were covered, the effect of building on altering the climate, hydrology, vegetation and land characteristics, to incorporate environmental concerns, were not given sufficient attention. Here the Forest Services were generally brought in as co-ordinators.
6. A heritage-conservation area has been defined as an area of special architectural, historical and cultural interest or an area, which is geographically and ecologically unique. Such area can be small or can include whole towns, streets or groups of buildings, features, archaeological interest, water-ways, beaches, forests, mountains, etc.
7. Within a designated area, the conservation of its cultural identity is an integral component of all developmental schemes. In this way, the quality of life of those living and working in such zones will improve, and they will have an increased income from crafts, trade and tourism.
8. Both developed (Britain) and developing (Sri Lanka) countries have enacted legislation, enabling them to declare certain areas as heritage conservation areas to ensure their special character. Area Development Authorities are set-up to co-ordinate the architectural, social and economic life of the region. Particularly, the Area Development Authority is to constantly review physical and economic characteristics. The size, composition and distribution of the population, civil amenities, water and sewage and communication and transport system and traffic management are other significant aspects. The Archaeological Survey and the Anthropological Survey organisation are also co-ordinated to meet the needs of conservation-heritage zones.

9. Conservation and Pollution control measures suggested by World Tourism Organisation are:

a) Providing for pedestrian zones at holiday resorts (Shopping malls, public parks, playgrounds, etc.), b) Encouraging the resident population, through contests and other activities, to decorate their houses and balconies, c) Co-ordinating tourist recreation with the social cultural activities of the local population, though information and publicity campaigns. d) Applying multiple-use concepts of facilities wherever possible, e) Awarding National Quality seals of approval for tourist recreation facilities to operators of accommodation units and other travel services. f) Many countries have also initiated the formation of Heritage Bodies and Art and Cultural funds, which then serve to identify conservation – heritage zones, and co-ordinate funding, for which tax relief to contributors are given by concerned governments.

Annexure 15

The Connection Between The Destination And Environmental Factors (Anon/n.d.)

CONTRIBUTORY FACTORS	DEMAND FOR MATERIAL IMPROVEMENTS BY GROWING POPULATIONS	CHANGING TOURIST DEMAND		INEQUITABLE LAND USE
UNDERLYING PROBLEM	OVERUSE OF RELATIVELY SMALL AREAS OF LAND AND OCEAN THAT FREQUENTLY ARE FRAGILE			
ENVIRONMENTAL STRESS EXAMPLES	PRESSURE ON COASTS • Caribbean • Kenya • Mediterranean	PRESSURE ON MOUNTAINS • Himalayan • Alps	PRESSURE ON NATIONAL PARKS • East Africa • Himalayas	PRESSURE ON CITIES • Venice
POTENTIAL ADVERSE ENVIRONMENTAL CONSEQUENCES	• Beach erosion • Loss of land from traditional uses • Destruction of coral reefs • Loss of attraction • Loss of Mangrove swamps • Pollution of sea	• Loss of vegetation • Landslides / avalanches • Loss of attraction • Loss of attraction	• Soil erosion • Loss of vegetation • Landslides • Adverse effect on wildlife	• Congestion • Pollution / litter • Aesthetic degradation • Changing land use
TREATS TO THE WELLBEING OF HOSTS	• Loss of land • Loss of traditional activities • Loss of familiar environment • Loss of resource base for tourism	• Loss of fuel wood • Loss of resource base for tourism	• Local population excluded from traditional activities • Loss of resource base for tourism	• Loss of homes • Loss of familiar environment
POSSIBLE ACTION TO INCREASE SUSTAINABILITY	• Increase community involvement • Consider scale of tourism: establish and work within carrying capacity level. Introduce measures to combat pollution/ congestion / degradation. Ensure all new buildings harmonize with physical and cultural environment. Protect the most vulnerable areas.		• Increase fuel efficiency thus reduce rate of deforestation	

Annexure 16

Charter For Sustainable Tourism - Outline Of Principles And Objectives

(Source: Martin 1995)

1) Tourism development should be based on the criteria of sustainability. It should be: ecologically bearable; economically viable; and ethically and socially equitable for local communities.
2) Tourism should contribute to sustainable development and be integrated with all aspects of the environment, respecting fragile areas and promoting the assimilation of impacts so that these lie within capacity limits.
3) Tourism must consider its effects on the cultural heritage and traditions of local communities.
4) Participation of all actors in the process is essential.
5) Conservation of the natural and cultural heritage involves cooperation, planning and management.
6) The satisfaction of tourists and preservation of destinations should be determined together with local communities and as per sustainability principles.
7) Tourism should be integrated into local economic development.
8) Tourism development should improve the quality of life.
9) Planning tourism is important.
10) Equity of the benefits and burdens of tourism should be sought.
11) Special priority should be given to environmentally and culturally vulnerable areas and areas already degraded.
12) Alternative forms of tourism compatible with sustainable principles should be promoted.
13) Research should be promoted.
14) Environmentally compatible management systems should facilitate a sustainable tourism policy.
15) The travel industry should promote sustainable development, exchange experiences, etc.
16) Particular attention should be paid to transportation and the use of non-renewable energy.
17) Codes of conduct should be established for the main actors,
18) All necessary measures should be implemented to promote awareness of sustainable tourism among all involved in tourism.

Annexure 17

Advantages Of Sustainable Tourism Development

(Eagles et. al. 2001, adapted from FNNPE' 93).

For conservation of protected areas

- Greater public's and local peoples' awareness of protected areas and the environment
- Political support which can help to attract funding & support the designation of new protected areas
- Conservation of natural & cultural features through restoration projects and direct practical help
- Additional finance from the tourism sector and from businesses.

For the tourism sector

- Government support for businesses and employment
- Development of new, high quality, environmentally-sound products, based on nature and culture with a long-term future
- Reduction in development costs through partnerships with protected areas
- Improvement of company image
- Attraction of customers looking for environmentally-sound holidays
- Increased tourist awareness of the need to protect the environment, cultural and social values.

For local people and society

- Improved income and living standards
- Revitalisation of local culture and traditional crafts and customs
- Support for rural infrastructure and facilities
- Improved economy
- Avoids or stabilises emigration of local population
- Makes local population aware of the need to protect the environment and cultural and social values
- Improved physical and psychological health
- Promotion of harmony between people from different areas, facilitating the exchange of ideas, customs and ways of life

Disadvantages of Non-Sustainable Tourism Development (Eagles *et al* 2001, Adapted from FNNPE' 93).

For conservation and protected areas

- Environmental damage (such as erosion, disruption of wildlife, destruction of protected species)

- Excessive visitor pressure
- Pollution (such as noise, litter and exhaust fumes)
- Consumption of available management resources, diverting attention away from other management priorities

For local people

- Disturbance and damage to ways of life and social structure
- Higher costs, especially for housing and land
- Weakening or loss of traditional cultures for society
- Pressures on resources.

Annexure 18

A Sustainable Tourism Action Plan for Protected Areas

(Eagles et. al. 2001, adapted from FNNPE' 93).

Summarised in the following checklist are all they key areas in which efforts to develop and implement a sustainable tourism action plan must be made. A sustainable tourism action plan should be part of the protected area's management plan.

- Item 1: State clear objectives for sustainable tourism for each park.
- Item 2: Compile an inventory of natural and cultural features, as well as of existing tourism use and potential. Map and analyse the information.
- Item 3: Involve local people. This is key.
- Item 4: Work in partnership with local people, the tourism sector and other regional and local organisations.
- Item 5: Utilise zoning to identify and plan for areas where higher levels of tourism impacts may occur without harming areas of ecological significance.
- Item 6: Develop the limits of acceptable use for all parts of the protected area, set environmental standards, and ensure they are met.
- Item 7: Determine which tourism activities are compatible with the protected area and which are not, and develop related policies.
- Item 8: Assess the environmental, economic, social and cultural impacts of proposals for tourism development.
- Item 9: Develop education and interpretation programs for visitors and local people that increase understanding and appreciation of the area's environment, culture, heritage and important issues.
- Item 10: Design methods to channel visitors through desired areas with minimal negative impacts.
- Item 11: Survey and analyse tourist markets and visitors' needs and expectations. Ideally, this occurs both before and after developing ideas for new forms of tourism.
- Item 12: Brainstorm tourism products to be potentially developed and influence types of visitors choosing to visit. Identify the values and image of the protected area on which to base sustainable tourism and outline a promotional strategy for them.
- Item 13: Establish a program for monitoring the protected area and its use by visitors. At appropriate intervals evaluate the success of the plan in ensuring that tourism use maintains environmental standards. Revise the plan as needed.
- Item 14: Assess resource needs and sources, including provisions for training.
- Item 15: Implement the plan.

Annexure 19

Trend Of Revenue Collection From Tourism In Kaziranga National Park
(Source: Assam Tourism, Kaziranga)

Year	Revenue collection *	Number of visitors *			No. of visitors in around KNP		
		Indian	Foreign	Total	Indian	Foreign	Total
1962-63	Rs. 2,775/-		-		-		-
1963-64	Rs. 11,202/-	-		-		-	
1964-65	Rs. 17,385/-		-		-		-
1965-66	Rs. 19,654/-	-		-		-	
1966-67	Rs. 21,406/-		-		-		-
1967-68	Rs. 24,561/-	-		-		-	
1968-69	Rs. 25,536/-		-		-		-
1969-70	Rs. 27,008/-	-		-		-	
1970-71	Rs. 30,746/-		-		-		-
1971-72	Rs. 30,502/-	-		-		-	
1972-73	Rs. 34,443/-		-		-		-
1973-74	Rs. 37,169/-	-		-		-	
1974-75	Rs. 44,077/-		-		-		-
1975-76	Rs. 68,891/-	-		-		-	
1976-77	Rs. 80,126/-		-		-		-
1977-78	Rs. 65,981/-	-		-		-	
1978-79	Rs. 74,345/-		-		-		-
1979-80	Rs. 55,060/-	-		-		-	
1980-81	Rs. 33,420/-		-		-		-
1981-82	Rs. 47,756/-	-		-		-	
1982-83	Rs. 35,961/-		-		-		-
1983-84	Rs. 53,343/-	-		-		-	
1984-85	Rs. 62,631/-		-		-		-
1985-86	Rs. 1,15,858/-	-		-		-	
1986-87	Rs. 1,41,906/-		-		-		-
1987-88	Rs. 1,64,281/-	-		-		-	
1988-89	Rs. 2,23,819/-	5385	03	5388	-		-
1989-90	Rs. 2,06,406/-	4549	18	4567		-	
1990-91	Rs. 1,84,395/-	3334	59	3393	-		-
1991-92	Rs. 2,18,298/-	4112	44	4156		-	
1992-93	Rs. 2,96,668/-	4584	47	4631	-		-
1993-94	Rs. 3,35,234/-	5336	64	5400		-	
1994-95	Rs. 3,64,158/-	5294	32	5326	-		-
1995-96	Rs. 3,87,842/-	5758	184	5942		-	
1996-97	Rs. 3,07,975/-	4309	150	4459	-		-
1997-98	Rs. 2,73,978/-	3258	121	3406	2255	453	2708
1998-99	Rs. 3,02,638/-	3664	106	3770	3268	753	4021
1999-00	Rs. 2,71,046/-	3978	132	4110	3947	657	4604
2000-01	Rs. 4,69,934/-	4096	125	4221	5021	562	5583
2001-02	Rs. 4,32,795/-	4108	118	4226	3925	564	4489
2002-03	Rs. 4,95,575/-	4483	83	4566	4907	473	5380
2003-04+	Rs. 4,90,590/-	4647	83	4730	10,559	1115	11,574

* Indicates Banani, Banshree & Kunjabon (Assam Tourism) / + Indicates up to April, 2004

PHOTO DOCUMENTATION

...evidence of biodiversity and tourism activities

Plate 1: Evidence of heavy traffic (safaris) on the animal paths (dondis)

Plate 2: Pollution - Dust n smoke yielded due to safaris

Plate 3: Never-ending convoy of safari cars

Plate 4: Over crowded safari point

Plate 5: Picnicking by the bank of a rivulets that flows through KNP

Plate 6: Over crowding in a picnic spot adjoining KNP

Plate 7: Safari track on the "community toilets" of the Rhinos

Plate 8: Elephant Safari: a possible cause of trampling of grass n vegetation

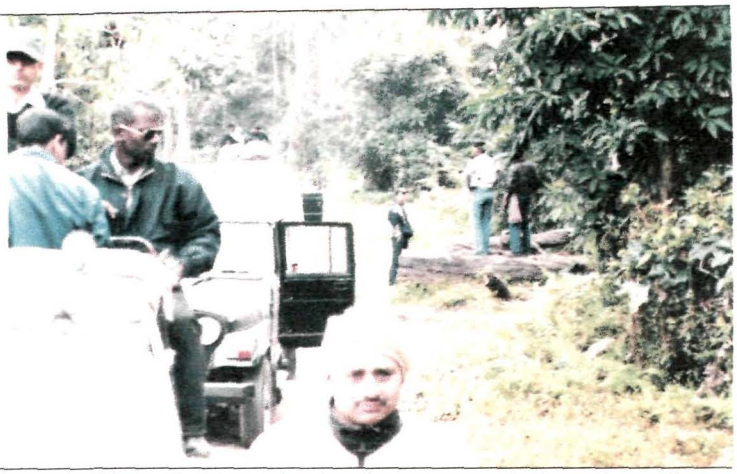

Plate 9: Unauthorised stopover during the safaris

Plate 10: Wetlands covered with unwanted weed - Ipomea

Plate 11: Mimosa – another harmful herb

Plate 12: Cattle grazing in the park neighbourhood