

Eco-Tourism as a Viable Option for Wildlife Conservation: Need for Policy Initiative in Rajaji National Park, North-West India

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Abstract-The concept of eco-tourism in protected areas and their implications for the conservation of flora and fauna are of global significance. In north-west India, as most of the protected areas are surrounded by number of villages, therefore, the involvement of local communities in nature's conservation is now-a-days widely acknowledged. Uttarakhand Himalaya in recent times harbours a good increase in eco-tourism specially in protected areas (Biosphere Reserves, National Parks and Wildlife Sanctuaries) besides, efforts done by state government in building 'tourism state' have promoted the tourism industry in general. This study aims at exploring the potential of eco-tourism in Rajaji National Park and the local people's perceptions towards the local tourism, conservation of wildlife and substitutes for their livelihood. Additionally, study provides an out sketch of potential sites already developed or can be developed for increasing options for enhancing eco-tourism besides, providing information about various tools, which can attract the tourists from various disciplines. Many historical evidences are currently hidden inside the Rajaji National Park, which includes presence of antiquities at some places, tales of rehabilitated villages and efforts done by Britishers during early 20th century, should be explored and documented. Besides, jeep safari, elephant safari, if continued and bird watching are another key features present within the park.

Famous temples of goddess Mansadevi, Chandidevi and Sureshwaridevi are also situated in this forest stretch and currently Gujjar rehabilitation programme have had a prime impact on wildlife conservation, which can be involved in eco-tourism coordination. Additionally, study has provided an outline for upliftment of tourism in adjoining protected areas and the management measures i.e. how to minimize the man – animal conflict with community participation and perceptions. Study suggested that the government should keep on emphasizing the wildlife conservation by taking into account the improvement of local people's livelihood. This study provides an insight into understanding the eco-tourism potential in the Rajaji National Park and how they relate to wildlife conservation and man – animal conflict minimization. All of these findings may have wider implications for developing predictive models of man – animal interactions and also establishes a basis for decision-making in protected area management and in policy making specially for conflict-full protected areas.

Keywords-Eco-tourism, protected area, Rajaji National Park, man–animal conflict, community participation, wildlife conservation.

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I. INTRODUCTION

Indian Himalaya with a rich biological diversity and tourism potential, categorizing under international tourism hotspot. On one hand religious places, mountaineering and expedition has raised the number of foreign and national tourists and on the other hand various national parks and wildlife sanctuaries has boosted up the tourism industry. In Uttarakhand, world famous Corbett and Rajaji National Parks has strengthened the tourism potential in lesser-Himalayan belt. The protected area network in the Himalayan region comprises three biosphere reserves, 18 national arks and 71 wildlife sanctuaries occupying 9.2% area of Indian Himalaya. It is now widely acknowledged that the integrity of protected areas can not be sustained without taking into account the views and needs of the people living adjacent to that area [1, 2]. Unless these people recognize the importance of protected areas and take a genuine interest in its conservation, it is likely that illegal activities such as poaching and logging will occur [3]. Rajaji National Park (RNP) is one of India's major destinations for nature-based tourism, with rich floral and faunal diversity. Presence of Asian elephant (*Elephas maximus*) is a prime feature, which attracts the tourists to stay connect with this area. Besides, this area is a witness to huge man – elephant conflict as most of the villages are situated adjoining to the park area and man – elephant encounter rate is also very high as rural communities are dependent upon forest resources like fuelwood and fodder. But communication gap between locals and park managers and non-involvement of local communities have created a big problem as far conservation of wildlife is concerned. The Shivalik foothills (lesser Himalayan zone) are one of the world's most spectacular landscapes, encompassing the tall grasslands and the Shorea robusta (*Sal*) forests. From tourism point of view RNP appears to be India's one of the most successful national park and increasing rate of tourists has helped to boost the infrastructure of the park. This landscape is having huge potential for eco-tourism activities and if some other potential ranges may be included in respect to enhance the tourist's flow domestic and foreign both. Protected area tourism depends on maintaining a high quality environment and cultural conditions within the area and this is essential for sustaining the economic and quality of life benefits brought by tourism besides, planning should occur within, and acknowledge, the regional context of a particular protected area [4]. This study aims at exploring the potential of eco-tourism in Rajaji National Park and the

onset of monsoon elephants starts migration towards higher elevations.

A. Religious Places within the Protected Area

Religious places like Goddess Mansa devi, Chandni devi, Sureshwari devi and Bilkeshwar temples are situated in forest areas. The visiting devotees and workers of the above-mentioned temples hinder elephant's movement. Several times it was also seen that many people enter the prohibited areas of the park and indulge in nefarious activities. Sometimes they were reported to play cards, roam here and there, burst crackers and throw stones to shoo away the elephants or other wild animals. There are many instances when religious events on large scale are organised. Hoards of visitors disturb elephants that come to drink water in the after noon hours. As during last decades the general economic condition of people has bettered, this has led to increase in the purchase power, social interactions, tourists and religious activities of the people at all levels [5].

More than 6-7 lacs people visit Mansa devi temple every year. In other temple more than 50,000 people visit annually. The crowd is seen especially on the occasion of Shivratri and Sawan Purnima fairs. As per news paper reports more than forty lakh people visited Hardwar area during Sawan Purnima and Kanwar Mela and in 2008, which happens to fall in the months of July and August. Many other religious places are also situated within the park area and it can be easily inferred from present investigation that frequent movement of elephant was hindered by presence of local as well as outside people. During the present investigation it was also observed that in a few places elephant's time budget has changed causing irregularity in their natural activities.

B. Historical Places

Many places of historical interest are present inside the park area like presence of memorial of a female elephant (Rampyari) at Kansrao, which was constructed during 1922, presence of antiquities at Gohri forest (Amla shroath), historical tale of Sonar Kothi hilltop and the history of various villages, which were once situated inside the park and the historical wells, which were constructed before 1877 (Fig. 4 F&G). All of these should have to be explored and publicized, which may be helpful in conservation. As far antiquities are concerned, there is an urgent need for conservation as some of them are slowly obliterated and this aspect should be taken seriously, so that we can conserve our natural heritage. Besides, proper documentation of such sites have also to be ensured and included in management plan, which could be helpful in knowing the history of the park with importance of our cultural heritage and diversity. The natural and cultural environment within the protected area should form the basis for all other uses and values affecting the park and its management and these fundamental assets must not be put at risk⁴.

C. Elephant Safari

Despite jungle tour on jeep as major, wildlife safari on elephant is one of the key attraction among tourists (specially international tourists) (Fig. 4 H&I). In Chilla zone before 2007 elephant safari was conducted on two elephants named Arundhati (she died in October 2007) and Raja (an 18 year old tusker) but after the death of Arundhati elephant safari was entirely discontinued as Raja was observed to be aggressive sometimes with the increase in age. During 2007 (November) – 2008 (June) and 2008 (November) – 2009 (June), tourists could not enjoy the elephant safari and many of them diverted towards Corbett National Park as a number of elephants are there and are managed by forest department and some tour operators / managers. Keeping the view, park officials brought three female elephants from Delhi Zoo Authority (named Radha, Rangili and Mamta), but all of them are below the age of 20 years and very unfit for safari as they are first time experiencing the jungle life. Training is ongoing to educate them for safari and a male elephant (Yogi, aged 08 years) is also under training but it will take time to prepare them completely for tourism activities. It can be concluded that elephant safari have a huge potential to attract the tourists and in generating the revenue.

D. Bird Watching

RNP has huge potential for bird-watchers as number of migratory birds arrives inside the park every year specially from October to March. Available literature estimated that of the species, which breeds in Europe and northern part of Asia, about 40 percent are migrants. Some bird species from higher elevation (greater than 2500 meters) also visit here during winter as part of their migration. Most of the birds arrives from Europe, Russia, south-east China, Northern part of America and some other countries having extreme cold climatic conditions during winter (polar regions / north polar regions). Besides, several birds also arrive and stay here from late October to March from higher Himalayan regions of country (Jammu & Kashmir, Himachal Pradesh and high altitude areas of Uttarakhand state). During the last one decade the large flocks of migratory is continue to decrease and in last two years small flocks were observed in this area. It may be due to climatic change scenario or any other factor is influencing their migration; need to be studied and documented on annual basis.

Mycteria leucocephale (Painted Stork), *Ciconia nigra* (Black Stork), *Tadorna ferruginea* (Ruddy Shelduck), *Anas platyrhynchos* (Mallard), *Netta rufina* (Red Crested Poachard), *Larus argentatus* (Herring Gull), *Muscicapa strophiyanta* (Orange Gorgetted Flycatcher), *Gyps himalayensis* (Himalayan Griffon Vulture), *Ceryle lugubris* (Himalayan Pied Kingfisher), *Anhinga rufes* (Darter), *Tringa glareola* (Wood Sandpiper), *Zootheres daume* (Golden Mountain Thrush) and *Motacilla flava* (Yellow Wagtail) are some common migrant birds seen inside the RNP area. River Ganges is flowing through the park area and several islands are situated in between it, and therefore, favourable environment attracts number of birds to stay within. In RNP, Dudhia, Jhabargarh and Gohri forest are supposed to be best

places for observing bird in natural environment besides; riparian corridors inside the park are other favourable habitats for birds, where their different behaviours can be observed proficiently specially during dawn and late evening hours. Because RNP is having typical topography spread from 250 – 1100 m asl, therefore, altitude-wide distribution of migratory birds is another important feature, which attracts the bird-watchers to stay connect with this protected area. Several islands situated in between river Ganges and few of its tributaries are the prime habitat for most of the migratory birds and their large flocks can be observed specially during late winters.

E. Gujjar Rehabilitation Programme

In view of the provision of Wildlife (Protection) Act, 1972 and after a long strenuous effort done by government Gujjars are resettled outside from the RNP area and they are relocated to two rehabilitation sites namely Gaidikhatta and Pathri and still this programme is ongoing in few of the forests. Generally all of the Gujjar deras were mostly situated near to the water sources inside the forest area. Besides, they are responsible for lopping of many important fodder plant species like *Ficus bengalensis*, *Ficus religiosa*, *Ficus rumphii*, *Embllica officinalis*, *Bridelia retusa*, *Anogeissus latifolia*, *Aegle marmelos*, *Dendrocalamus strictus*, *Bauhinia variegata*, *Grewia oppositifolia*, *Lagerstroemia parviflora*, *Ooginia oogenensis*, *Garuga pinnata*, *Schleichera oleosa*, and *Lannea coromandelica*. All of these reasons have restricted the wildlife to some extent to move frequently within their home range. One important point, which was observed during the study period is that animals are currently utilizing all of the internal corridors, which passes through the abandoned deras of Gujjars. Besides, wild animals are currently utilizing all of the available waterholes to fulfill their routine requirements through out the day. Regeneration potential of forest has got strengthen just after the relocation of Gujjars as lopping and grazing by their cattle's was completely stopped after this programme.

As per the observations of our previous surveys (before the resettlement of Gujjars) it was observed that the Gujjars children used to make loud noise during day time while playing nearer to their deras. Besides, they also kept their surroundings cleared from trees or shrubs for better visibility of wild animals. Sometimes it was also reported that if elephant came nearer to their deras they used to burn the fire woods and screamed to deter the animal. Gujjars generally used all of the rough routes present inside the park for their entire day activities and few routes among them are the internal corridors for elephants to cross the forest beats

in which elephant's had faced difficulties to pass on during the day hours. Their presence throughout the day brought in outsider on foot, by bicycle and motorcycle (where rough route is available) for various transactions, leading to enormous disturbance in the wildlife habitat throughout the year. A noticeable effect on the forest was seen just after the relocation programme.

The major changes primarily comprises of enhancement of wilderness in those places, which were used by Gujjar as their deras. It was inferred from the results of the study that their abandoned deras are presently replaced by huge variety of vegetation like *Saccharum spontaneum*, *Saccharum munja*, *Holarrhena antidysenterica*, *Trewia nudiflora*, *Murraya* spp., *Cynodon dactylon*, *Syzygium cumini* etc. Besides, the water holes are presently completely recharged with natural water and are being used by wildlife. Before the commencement of Gujjar rehabilitation programme elephants must scarify the feeding grounds in order to feed on the short grasses due to domestic buffaloes being grazed and looping of trees by Gujjars besides, during the day time wild animals are unable to drink water as most of the natural water sources are present near to their shelters [6].

This drastic favourable change in Rajaji's ecosystem need to be exposed and can be used as a model demonstration site for capacity building of wildlife professionals, locals, GOs, NGOs, stakeholders and officials staff too. In connection to this regular monitoring of areas, where abandoned shelters are present is highly required so that the current status of habitats (flora and fauna) could be known. On the other hand Gujjar rehabilitation site has to be monitored properly time to time keeping their livelihood requirements point of view and should be documented respectively.

IV. STATUS OF MAN – ANIMAL CONFLICT

After establishment of the RNP in 1983, all interferences of local villagers were banned besides, restriction on many traditional rights have created a huge problem regarding to their

livelihood. In RNP elephants are prime cause of conflicts as elephants raid crops during night and still there is not a single successful strategy with forest officials, which can control this phenomenon. The factors that contribute to the killing of humans by elephants are the presence of people into elephant's habitat to collect firewood and fodder, conflict over water and cultivation of palatable crops near the forest boundary. In between years 1986 to 2008, elephants have killed approximately 70 persons and injured 43 persons in and around the Rajaji National Park area. On the other hand from 1987 to 2004, more than 134 elephants succumbed in the wild to various reasons (train accident, poaching, electrocution, fallen through hillock, disease, bull fight and natural). In RNP, still leopard attack on livestock is not the major problem as far as conflict is concerned. Besides, till today no incident has occurred regarding to tiger attack on livestock outside the park area whereas, sometimes tiger attacks on cattle of Gujjars (which are living in Haridwar forest division adjoining to Chilla area)

was observed when their movements were inside the park area.

Crop depredation by wild animals (blue bull, wild boar, monkey, elephants, spotted deer, sambhar etc.) was another major conflict observed in this area. Besides, delay in compensation, big communication gap and restriction of local people to collect fuelwood and fodder are another factors, which has enhanced the conflict among park managers and local people. It is suggested that meetings should be organized properly in each village on regular basis, so that their views and perceptions can be achieved and their indigenous knowledge could be implement in preparation of management / action plan. Currently non involvement of local villagers at all levels is acting as a barrier in forest management practices and conservation. Villagers living on the fringes of the national park area entirely dependent upon local forest resources and keeping this in mind, there is an urgent need for activities that provide alternative livelihood opportunities for locals, promote biological diversity conservation and simultaneously address the combined problems of conservation efforts.

V. APPROACHES FOR PROMOTING COMMUNITY-BASED ECO-TOURISM

Eco-tourism requires participation and cooperation among various stakeholders. An effective and appropriate management plan for eco-tourism in protected areas requires an understanding and appreciations of all stakeholder groups. Local community participation is another major factor, which is supposed to be a central component of sustainable eco-tourism. Looking into the current scenario of eco-tourism in RNP following recommendations has been proposed.

1. Involvement of various stakeholders (local communities, park managers, tourists – national and international, hotel owners, travel and tour operators, guide, NGOs, research institutions, education / university departments, media and tourism department) is highly required during policy making or during structuring any management plan for park or for local people (like construction of electric fencing or wall on the outskirts of villages).
2. Training should be provided to tour operators time to time (jeep owners) regarding to risk factors and safety measures.
3. Forest department rest houses may be provided to tourists easily at different locations of the park, if required. It may be ensure that all the required basic facilities should be given to tourists during their stay with park.
4. A basic training about wildlife conservation should be given to tourists during their visit inside the forest and for this 2 to 3 instructors should be kept by park authorities. Sometimes, it was also observed that some tourists (Indian & Foreigner) are unaware of timing of wildlife / bird sighting and that could be one of the disadvantages and for resolving this all the tourists should be instructed by the authorities.
5. Trained guide should be deputed with each and every vehicle so that each tourist can enjoy the wilderness and can know more about the geographical conditions, wildlife and vegetation components. It was observed during our talks with tourists that they want to know in details about various components of the park (flora, fauna, avian diversity and wildlife distribution) but due to lacking of resource persons they can't receive such information. Besides, training should be provided time to time to guides. At the time of appointments of guides preferences should be given to locals or the person from nearby village and with the consultation of village community and village pradhan (head).
6. Sometimes it was also observed that some tourists stay for longer while watching the elephants in jungle, which could be dangerous and for that guide should be responsible to controlled tourism. It may also be ensured that tourist complete whole of the track within the proper / given time (maximum 03 hours).
7. Some important historical places like presence of gravestone of Rampyari (an female elephant) at Kansrao forest, presence of evidences of abandoned shelters of Gujjars and impact of Gujjar rehabilitation programme, historical records of presence of various villages, historical wells, watch towers etc. should be explored and communicated to tourists (providing information about the incident). It should be helpful in documenting the historical database of the park – our natural heritage, which is important too.
8. Safari charges / rates should be fixed by park authorities with consultation of jeep owners and should be monitored properly and if possible rates should be displayed on notice board, so that tourists can know all with full transparency. In this process tour managers have to assist the park managers, which will be beneficial for them also.
9. All the basic primary facilities regarding to hospital service should be organized near to tourist zones so that at the time of emergency primary treatment can be given to tourists.
10. Currently only one canteen is running at Chilla entry gate, and at peak tourist season it alone can not provide better hospitality, therefore, it is recommended that at least two canteen should be maintained, which can accommodate and facilitate tourists properly at reliable government approved rates.
11. A small document, which consists knowledge of local region, flora and fauna of the park, special features, best season, accommodation, about area and basic information about park is highly required, which was several times demanded by visitors.

VI. PRIORITY INTERVENTIONS FOR PROMOTING ECO-TOURISM

1. Still no any policy is present, which confirm the tourist's tracks and open areas for tourism, therefore, appropriate conservation - favour policy is required to ensure the controlled tourism activities.
2. Provide information and resource network for visitors, tour operators, park managers, planners, educators, GOs, NGOs etc. about different issues of eco-tourism.
3. Codes of conduct must be implemented and properly monitored.
4. All the stakeholders and concerned people must be involved in policy making and the planning need to be fully community-based and transparent.
5. As currently park officials are facing huge conflict with local villagers, and for resolving that community participation is highly required so that direct benefits will be shared with them.
6. To undertake capacity building work with local communities in order to facilitate their active participation at all levels of the eco-tourism activities. Suggestions of various stakeholders and subject experts should be taken for that.
7. Promoting local markets and providing contractual employment to locals.
8. Providing accurate information to the tourists about various forest area and the opportunities they can enjoy.
9. Jeeps should be released inside the park area at an interval of 15 – 20 minutes, so that traffic pressure can be reduced to some extent.
10. Day specific events like world environment day (05th June), world tourism day (21st September), wildlife week (01-07th October) should be celebrated among local people (villagers, school children and stakeholders) so that interactions can be made more comfortably and with the aim of community participation.

Code of Ethics

A. Dos

1. Visit in small groups, 4-5 persons in a jeep
2. Dress in favour of forest (green/blue) and always wear shoes
3. Pay respect to local culture and religion
4. Avoid noise while traveling through the forest
5. Keep non-biodegradable wastes with vehicle and deposit it outside the park at proper place
6. Friendly behaviour with assisting staff
7. Buy local products, promote local market
8. Follow rules and regulations of the protected areas
9. Respect our natural heritage – the forest
10. Pay proper fees while visiting to the park area

It was observed during long-term studies, that only few bulls and cow elephants are attempting aggressiveness towards humans while their movements was in the tourist

11. Feel each and every thing inside the forest as like your home as these national park is also a home to several wild animals
12. If observed any particular feature, wildlife or comments for betterment of park, please mention it in visitor's book available with reception room
13. If any animal is on the way, allow first the animal to pass the way and while observing any animal on rest watch silently as wild animal have very acute sense of hearing

B. Don't

1. Smoke and drink alcohol
2. Bring fire-arms inside the forest
3. Leave vehicle nor walk here and there
4. Give any eatable item to wild animals
5. Throw candy wrappers, chips wrappers and cold-drink or water bottles
6. Speak loudly
7. Tease wild animals
8. Go in wrong trails
9. Stay longer in front of wild elephants
10. Burn match (match-box) inside the forest
11. Leave the rest house during night and pollute the surroundings while stay inside the forest
12. Throw the eatable items while passing / traveling through Haridwar – Dehradun railway track as 16 kilometers (from Motichur to Kansrao) of this track passes in between RNP area and this is home to several wild animals and one of the crucial corridors for elephant movement towards Chilla area
13. Compel the jeep driver to move fast or to stop for a long while traveling through the forest
14. Be disappointed even if you do not see any animal. It is a matter of chance and always remember that you are inside animal's habitat

VII. RISK MANAGEMENT

All wildlife safaris involve some level of risk specially in potential elephant's habitats and management of such risk is an important component of eco-tourism coordination. Elephant charging on tourist vehicle, blockade of track due to movement of elephants, fear among tourists due to elephant's voice and close encounter with elephants are some incidence observed inside the park area and sometimes it can cause a negative impact to achieve objectives. In RNP, encounter with elephants is only the risk for tourists and for management following recommendations should be considered.

Guides get trained entirely, be properly equipped, and if required they communicate the situation to nearby forest field station through wireless sets.

Don't make close encounter with elephants, if elephants are on the track, wait silently at appropriate distance until elephants moved away.

zone and who are recognized too, therefore, if we displayed information about their movements with known physical features (with the help of photographs) that will help the

jeep drivers to alert and drive cautiously at the particular spots.

□ If necessary (when charging attempts of bulls increases during musth period); particular tracks must be closed for tourists.

□ During the encounter with elephants or when passing / traveling along the elephants, guides / tour operators must ensure the critical situations and converse the tourists properly so that tourists don't create threat in their mind and enjoy the journey comfortably.

□ Seek scientific advice from subject experts / researchers working with the park area and tour operators concerning risks and how to prepare for them.

Looking into the tourist's influx, it can be concluded that tourism status in RNP is enhancing day-by-day (Table 3), whereas during 2008-2009 due to Bombay tragedy (Taj hotel blast) and Lok Sabha elections the increasing rate of tourists was found to be decreased to some level. Comparatively dualism in policy like allowing tourism in Chilla area but not in Ranipur – Dholkhand – Kansrao area and Motichur – Kansrao area is another dimension, which has declined the eco-tourism aspect from conservation efforts. In-effective policy regarding to tourism (non-fixation of rate list for jeep safari, entry timings and returning timings) is making negative impact among visitors as they invest enormous money to enjoy wilderness and learn from nature. Ecotourism zones may be planned in such a way so that tourists can grasp a maximum knowledge on the area at the same time besides, the aim of eco-tourism can be achieved by creating a healthy environment among all its stakeholders [7].

The area around the RNP has a number of natural attractions, which have high potential for eco-tourism. Jhilmil Jheel Conservation Reserve (Swamp deer conservation reserve), Rishikesh city, Dehradun city, Neelkanth temple, world famous Gayatri teerth – Shantikunj, Har ki Pauri at Haridwar, Mussoorie Wildlife Sanctuary, Patanjali Yogpeeth / Vishwavidhyalaya of

Honorable Yog Guru Baba Ramdev, Mansa Devi temple (inside the RNP area), Chandī Devi temple (inside the protected area), Daksh Mahadev temple and Sati Kund are some of the places of tourist interest. In RNP, tourists have been visiting more commonly since 1991, whereas in Corbett National Park tourism activities started nearly at the dawn of 1960 and out of seven, three forest zones (Dhikala, Bijrani and Jhirna) has been opened for tourists every year. As tourists are only aware of Chilla zone in RNP, therefore, setting up of tourist information center at Haridwar city and tourist guidance, in particular areas like Motichur and Kansrao has a clear potential of diverting some of the tourists who currently only have the option of safari in Chilla. This lacking of alternatives already shows signs of over-crowding in peak tourism season at Chilla zone (March-June).

RNP, Haridwar and Lansdowne forest division also consists of various forest tracks [Kaudia – Bindhvasini (08 kms.), Kaudia – Kimsaar – Dharkot (24 kms.), Shyampur – Pili village (04 kms.) and Laldhang – Kotdwar (24 kms.)], which need to be publicized and may be explored to tourists. Ensuring participation of school students through organisation of small awareness camps is another conservation effort, which can be done. The implementation of community – based eco-tourism projects to enhance nature conservation in RNP will be beneficial to conserve forest as well as wildlife. Rajaji and its adjoining protected habitat in general, can't be based on the assumption of wildlife conservation and community – based eco-tourism. This link has to be developed based on a detailed analysis of the existing local resources and the wider socio-economic context. Participation of local communities in policy making further ensures the long-term survival of wildlife besides, based on appropriate strategy if we provide substitutes to local people, the commitment will be useful in reducing anthropogenic pressure from forest specially from the crucial wildlife corridors.

Table 1: Some potential ranges and tracks for promoting eco-tourism in Rajaji National Park (some routes may be constructed and opened for tourists).

S. No.	Routes/Tracks	Distance (Kms.)	Key Features
Chilla Forest			
1.	Forest road from Chilla hydro-electric power house [Jhabargarh] to Dogadda rau* [Gohri forest] along river Ganga	03	Huge potential for migratory bird watching during November to March and wildlife sighting
2.	Khara - Dayara rau track via Luni / Rawasan forest	13	Natural habitat for tiger, sloth bear, elephant and leopard besides barking deer, sambhar, spotted deer and wild boar sighting is very common
3.	Mundal (Gara shroath) - Soni shroath / dogadda shroath	05	Habitat for tiger, leopard and elephants besides, barking deer, sambhar, spotted deer and wild boar sighting is very common
4.	Chilla - Rawasan / Luni forest chowki track	23	Ideal Habitat for tiger and sloth bear, migratory routes for elephants towards Lansdowne forest
5.	Khara (Patthar Ghati) – Rawasan / Luni forest	14	Ideal Habitat for tiger and sloth bear, migratory routes for elephants towards Lansdowne forest

Motichur Forest			
1.	Forest motor road from Motichur to Kansrao	14	Sal dominant area, ideal habitat for elephant, leopard and barking deer
2.	Forest road from Motichur to Beribara via Beribara ghata	17	Dense forest with rich fodder species, elephant's movement is quite frequent during early summer
3.	Motichur - Kansrao - Cherring cross track	22	Long stretch, which open at Mohand forest, RNP.
4.	Motichur - Danda track	04	Elephant's habitat with typical topography
5.	Kansrao - Satyanarayan [Motichur forest] track, which runs parallel to Haridwar – Dehradun railway track	08	Ideal habitat for elephants and barking deer, elephant's movement is more common during dry season
Haridwar Forest			
1.	Ranipur - Dholkhand track	22	Unique forest stretch with rich wildlife. One of the most important elephant's habitat besides, leopard, barking deer, sambhar, spotted deer, wild boar and langur are common species found
2.	Haridwar – Kharkhari by pass track (if maintained and controlled)	06	Elephant's movement has been restricted to some extent. Species like spotted deer, sambhar, barking deer are very common
3.	Ranipur chowki to Sureshwari devi temple track	0.5	Elephant's movement is very common during monsoon and early winter besides, leopard and several deer species are commonly found
4.	Rawli - Hathi kund track	02	Ideal habitat for elephants but under anthropogenic pressure. Leopard, blue bull, spotted deer, sambhar, barking deer and primates are very common species found
5.	Chirak to Chirak rao's grasslands	02	Ideal habitat for elephants but under anthropogenic pressure. Leopard, blue bull, spotted deer, sambhar, barking deer and primates are very common species found

* rau term is used to define seasonal water streams.

Table 2: Some potential sites where watch towers (machans) can be constructed for promoting eco-tourism in Rajaji National Park.

S. No.	Location of watch towers	Forest	Distance from range headquarter (Kms.)
1.	Jhabargarh [in between power plant and soni shroath, adjoining to river Ganges]	Chilla	0.5
2.	Ghasiram [already constructed, need to be maintained regarding visibility point of view]	Chilla	01
3.	Mundal [situated, need to be re-constructed at more height]	Chilla	08
4.	Khara [near to forest chowki]	Chilla	13
5.	Luni [near to forest chowki]	Chilla	19
6.	Mitthawali [adjoining to Mitthawali river]	Chilla	14
7.	Koyalpura chowki [adjoining to Motichur river]	Motichur	06
8.	Koyalpura water hole [already constructed, need to be maintained]	Motichur	09
9.	Kansrao [near abandoned anti-poaching tower]	Motichur	16
10.	Ranipur [existing, need to be re-constructed at more height]	Haridwar	0.3
11.	Chirak [just 1.5 kms. towards south from chowki near to chirak rau]	Haridwar	5.5

Table 3: Number of national and international tourists visited to Chilla forest of the RNP since 2004 and revenue generated through tourism.

S.No.	Year	Number of tourists visited		Number of students visited		Total number of tourists visited	Revenue (INR)
		National (Indian)	International (Foreigner)	National (Indian)	International (Foreigner)		
1.	2004-2005	9090	1100	-	-	10190	11,18570.00
2.	2005-2006	13185	1651	-	-	14836	15,84770.00
3.	2006-2007*	13593	2155	718	43	16509	17,56885.00
4.	2007-2008*	15957	1940	963	04	18864	18,19505.00
5.	2008-2009	15525	1888	1875	NIL	19288	17,45723.00

* separately during 2006-2007, 201 Indian tourists and 206 Foreigner tourists enjoyed elephant riding / safari for six months whereas during 2007-2008, 09 Indian and 06 Foreigner tourists enjoyed elephant riding/safari only for one month and just after that safari on elephants has been discontinued.

Source: Office, Chilla forest range, RNP.

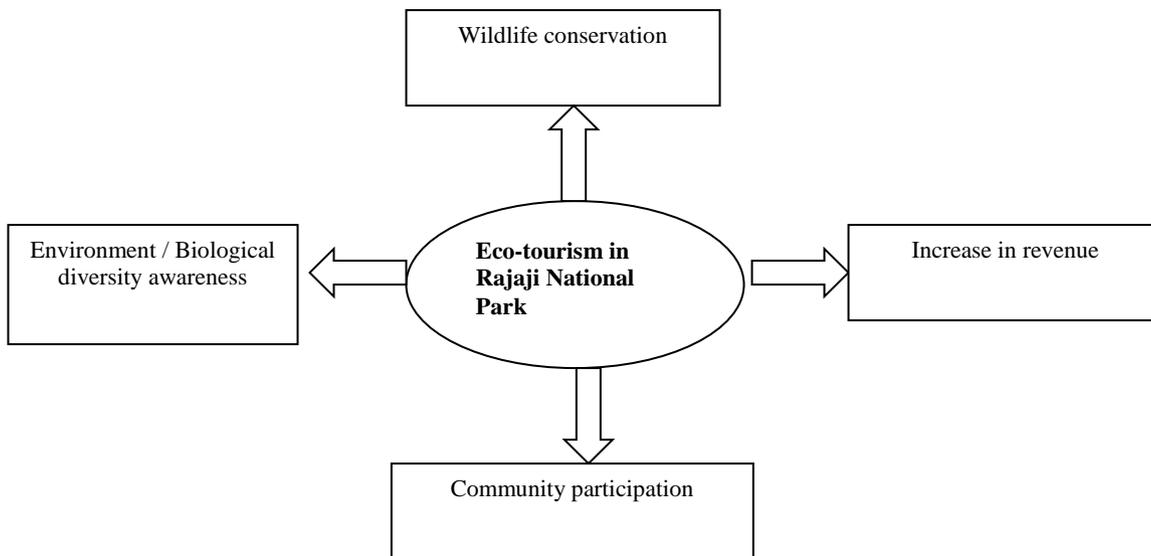


Fig. 2. Benefits from eco-tourism in Rajaji National Park

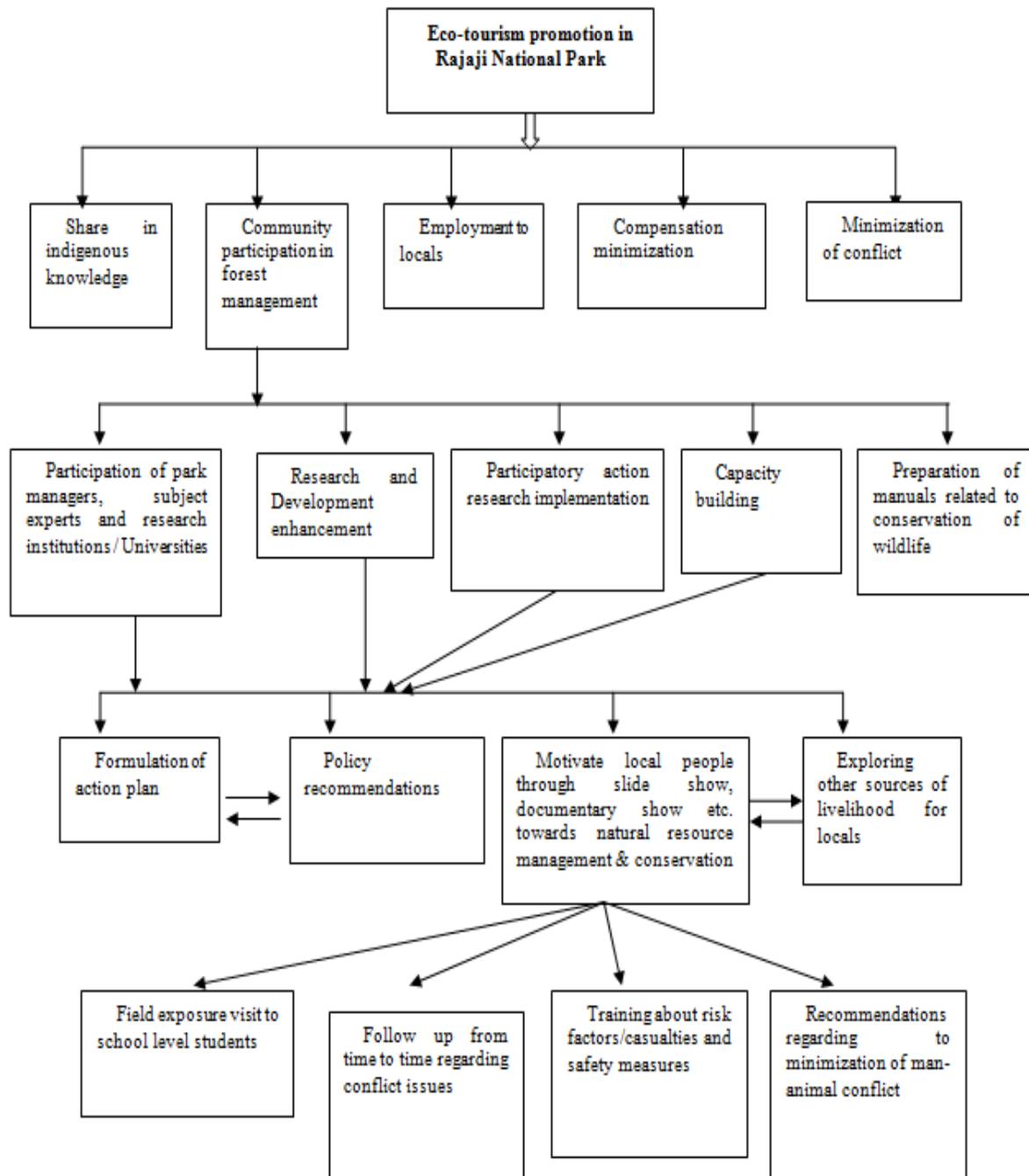


Fig.3. Applications and framework for eco-tourism potential and promotion in Rajaji National Park.

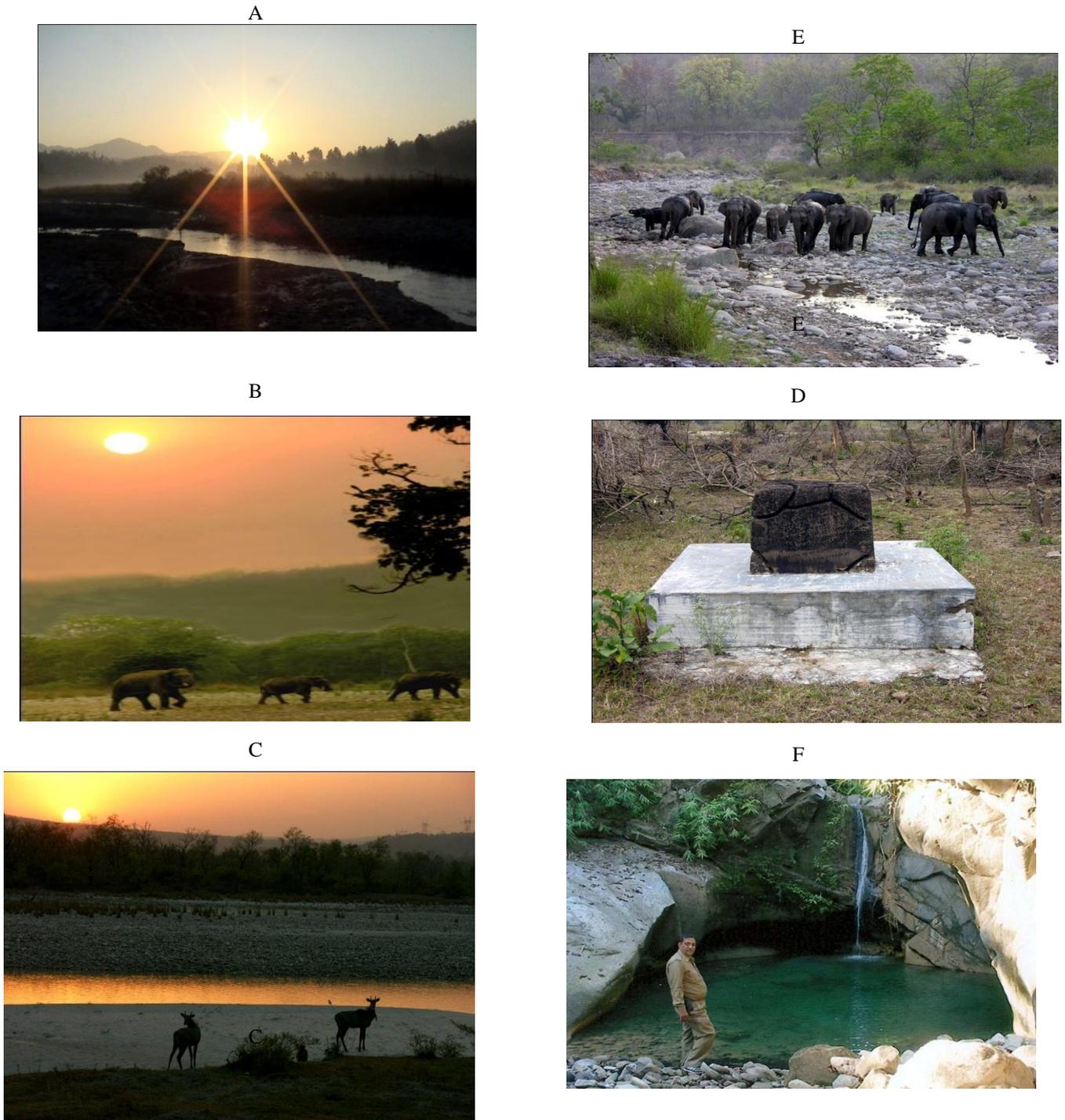


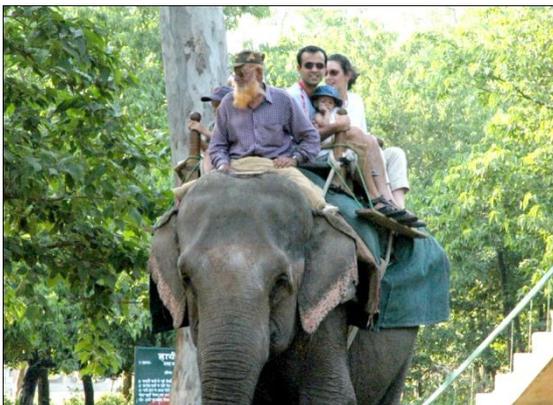
Fig. 4 A. A beautiful view of dawn inside Rajaji National Park. B. Elephants during sunset at Rajaji National Park. C. Sunset at Chilla forest, Blue bulls are standing near to river Ganges. D. Dayara rau: a magnificent ecosystem inside the Rajaji National Park. E. Elephants at Luni river in the Rajaji National Park. F. Historical Monument of a female elephant named 'Rampyari' at Kansrao forest constructed to the memory of Major Stanley Skinners during 1922.



G



H



I

Fig. 4 G. Natural heritage: antiquities at Gohri forest, Rajaji National Park, figure of lord Ganesha and goddess Lakshmi are carved over to a big rock surface. H. Wildlife safari – tourists inside the Rajaji National Park. I. Elephant ride:

tourists enjoying the wilderness on elephant back during 2007 at Chilla tourist zone.

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