

ECO-TOURISM IN DODI TAL LAKE ENVIRON: A SUSTAINABLE REVENUE SOURCE FOR MOUNTAIN COMMUNITIES OF GARHWAL HIMALAYAS

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ABSTRACT

The High altitude lake has been the center of the attraction for tourists since ancient times. After the formation of Uttarakhand state, High altitude lakes are attracting tourist around the world. In such a scenario, tourism sector has become the main source of economy of Uttarakhand. This paper explores the Ecotourism, as a sustainable revenue source for mountain communities that lives around these High altitude lakes. The present study was conducted on the distinctive feature of tourism in Dodi Tal Lake and its impact on socioeconomic status as well as impacts on the lake environment in some selected villages, Agoda (s_1), Dasda (s_2) and Dandalka (s_3). The primary data was collected with the help of assemble questionnaire and also using secondary data from diverse source. The analysis reveals that agriculture (91%) is prominent revenue source while ecotourism is as second major revenue source of these three villages. The ecotourism is being considered sustainable source of income generation and seen as fascinating task for the youth. Ecotourism has prevented the youth migration in Dodi Tal environ. Despite of agriculture, approximately 85% of the households have got their highest annual average income through tourism activities. After fully adopting tourism, changes in the traditional living standard of this area were noticed. However, the tourism practices in the Dodi Tal area has been identified as a key of environmental problems affecting the lake Environment. This finding suggests that the need of well planned and sustainable eco-tourism approach in the region. This paper endorses to create harmony between the mountain community and the high altitude lake environment.

Keywords: Eco-tourism, High altitude Lake, Sustainable Livelihoods, Environmental threat

Introduction

The High altitude lakes have an ecological, aesthetic, and socioeconomic significance, not only for those living in the mountain areas, but also for people living beyond them. Here people come in search of spirituality, religious belief, penance and peace. About 10% of the world's population depends directly and 40% indirectly

depends on mountain resources for their livelihoods and wellbeing (Schild 2008). According to Smith (1977) tourism can be classified into five categories such as ethnic tourism, cultural tourism, historical tourism, environmental tourism (ecotourism) and recreational tourism. Ecotourism is a component of sustainable tourism. In many ways, sustainable tourism exemplifies the relationship between ecotourism and sustainable development (Bansal & Kumar, 2011). Ecotourism entails a combination of conservation and tourism (the economics related with it) to benefit local communities, especially focusing on sustainability (Myburgh & Saayman, 2002). Ecotourism promotes conservation and sustainable development' (Boo, 1992). Ecotourism and particularly Community-based tourism have the potential to be more suitable livelihood option and to make substantial positive contribution to management and conservation of forest and wildlife (Kumar, 2013).

The regional dimension

High Altitude Lake, Dodi Tal (Uttarkashi) has a glorious culture of Uttarakhand and the backdrop of innumerable mythological stories of India. Therefore, the entire area attracts tourists from the ancient times. In the last few years, tourism industry has evolved in Uttarkashi and in the future, the tourism sector is the most likely to emerge as the fastest growing and employer to provide employment. But now days, the local environment and environment are being polluted due to the arrival of tourists more than the capacity in Dodi Tal and the safety standards of tourists being adopted by the tourists. Centers are being collected at metric tons abrasive waste such as polythene bags, plastic bottles, tin containers, etc. which are not easy to get rid of. The waste and sewage are free to fall in the Dodi Tal, due to which the water of holy rivers like Bhagirathi and Asi Ganga etc. are becoming poisonous and contaminated by increasing the risk of health for local residents and tourists. Since the arrival of tourists, many social virtues have started coming in uncharted hill culture, therefore a situation may arise when any tourist does not like to come to the god land of Uttarakhand. Presently, for the reimbursement of materialistic facilities, there is a lot of trouble being inflicted by tourism agencies with natural resources as a result of which, the importance, existence, environment and biodiversity of India are leading to the end and the lives of local residents in crisis is getting worse. Therefore in Uttarakhand, tourism should be developed in such a way that the environment and biodiversity conservation and natural resources have limited and continuous uses. Therefore, ecotourism executive has been formed in the context of the above facts. In the natural tourism policy of the government of India, 1988 and the Uttaranchal forest policy 2001, it has been considered as self employment important industries, so that economic development starts automatically and preserves social life, culture, biodiversity and ecosystem. So now the ecotourism is playing a key role in livelihood for the mountainous communities of the Dodi Tal area.

Materials and Methods

Study Area

The Garhwal Himalaya has rich water resources in the form of several streams, rivers and lakes. A high altitude lake, Dodi Tal (Uttarkashi) is very important freshwater ecosystem of the Garhwal Himalaya. It is located between latitude $30^{\circ} 52' 31.99''$ N and longitude $78^{\circ} 31' 12.47''$ E at an altitude of 3,075 m asl. The three villages: Agora, Dasda and Dhandlaka (Bhatwari block) Uttarkashi, which are located nearest to the Dodi Tal were considered for the study, which are situated between $30^{\circ} 50' 49.50''$ N, $78^{\circ} 28' 58.58''$ E at 2300- 2540 m asl. It is surrounded by dense oak (*Quercus*) forest and mountains at three sides. The lake is fed by two snow fed streams originated from an alpine meadow - Bakariya Khagi Pass (**Figure 1**). The only outlet of Dodi Tal partially forms the river Asi Ganga, an important tributary of Bhagirathi river. Dodi Tal, the lake with a lot of mythological history is known to the birth place of Lord Ganesha.

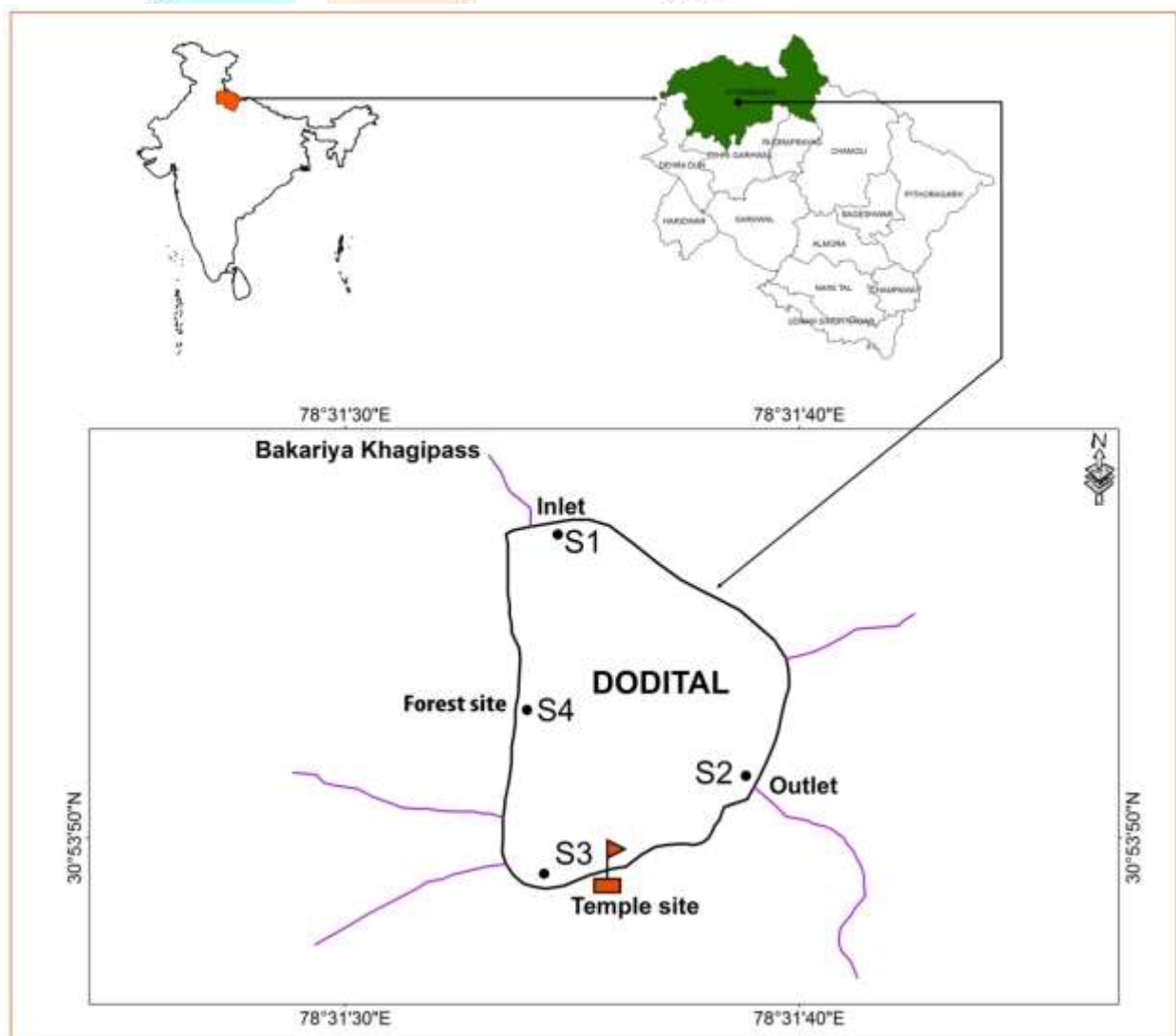


Figure 1: Location map of the Study area

Data collection

The qualitative analysis was conducted using both primary and secondary data in 2014- 2015. A primary survey was conducted to assess various variables in three villages for entire households (160), which encapsulate Socio-economic data, livelihood practices, tourism activities and annual income used for the description of Dodi Tal regions. Thirty questionnaires were distributed in each of the three villages randomly within each category. The secondary data were collected from different Government departments such as Forest Department, Department of Tourism, District Statistical Department, Gram Panchayat, etc, Annual income and type of tourists influx Bar and Pie Charts were used for the illustrations.

Results and Discussion

Socio-economic statuses

Socio-economic status shows the scenario of livelihood standard of that Dodi Tal environment.

Human pressure: village population

The total 160 household with a population of 771 individuals both male and females comprises of three villages. The total population is composed of 51% of female and 49% of male individuals A total of 78% of individuals are literate while 28% are illiterate The female literacy rate was 59%, while male literacy rate was 83% among the population (**Figure 2**). This is the total population of this region. But increasing the number of tourists, this fragile ecosystem may be harmed. Therefore, the carrying capacity can be sustained by the ecotourism approach.

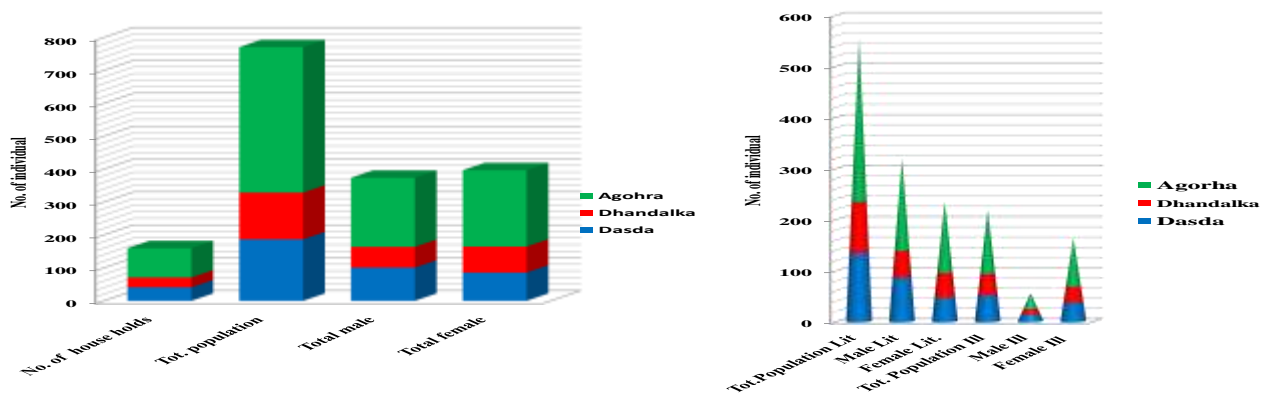


Figure 2: Demographic and Literacy profile of the households

Village livelihood practices and Annual average income

All households were involved in different types of livelihood practices. Most of the households generating income from agriculture (91%), tourism (85%) and husbandry (61%) for their livelihood in this region. Some

households are also benefiting from laboring (53%) and Govt. services. From these sectors, the households are fulfilling their needs with good earning. The data indicate that the average income is increasing by the most of the agriculture but tourism is also gradually becoming good source of earning. The average annual income of households in these three villages was estimated approximately INR 36,700 The average annual income of households engaged in Tourism related actions has grown up to many fold than the households dependent only on agriculture and animal husbandry (**Figure 3**). The living standard of community is rising due to earning from tourism. But there is also a negative effect on Dodital environ. In such a situation, ecotourism should be an initiative.

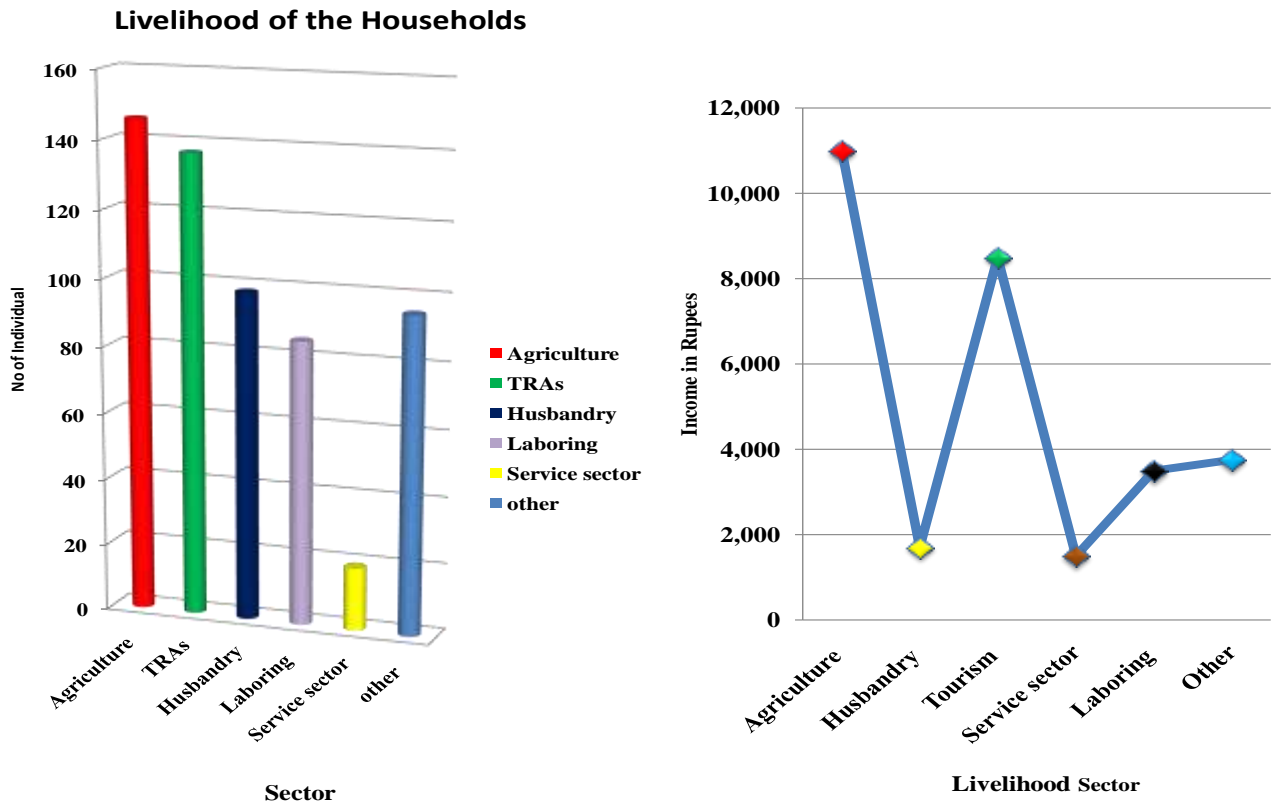


Figure 3: Livelihood and Annual average income of the households

Tourism related action and Tourist influx: average floating population

Present study revealed that most of the households involved tourism related action such as guide (35%), Cook (15%), porter (15%), Dhaba owner (9%), Group organizer (9%) lodge owner (7%), mule owner (6%) etc. and tourist activities like trekking, mountaineering, rock climbing, skiing, angling, camps, etc., are running smoothly in the area of Dodital. Because of these tourism activities, Dodital environment is having a bad effect. It is thus mandatory to pay attention to the ecotourism activities. Those activities like local crafts, traditional music and study of historical places should be encouraged by ecotourism.

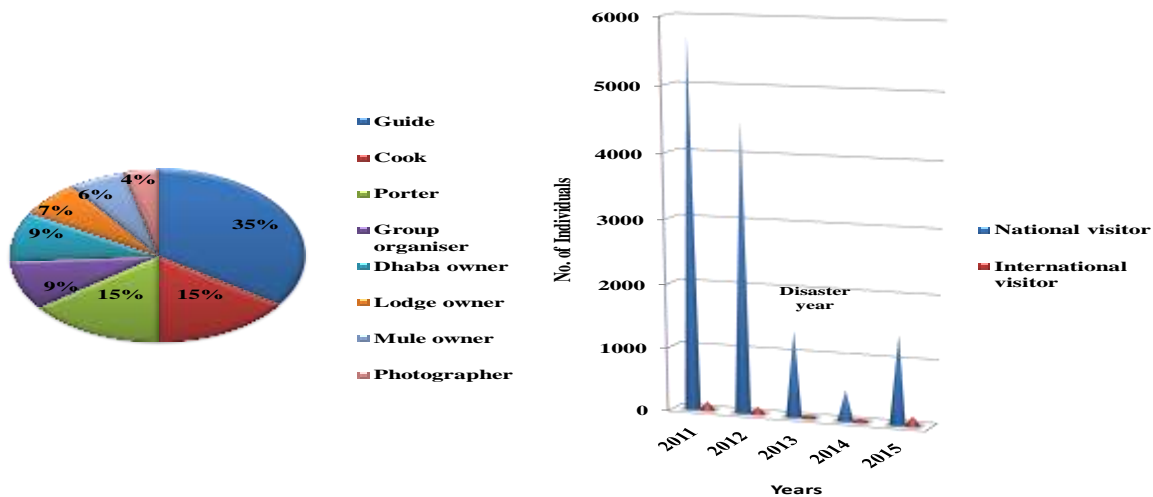


Figure 4: Tourism related actions and Tourist influx of Dodi Tal

Table 1: Tourist influx: average floating population, *Source: District tourism department*

Year	No of tourist		Total
	National visitor	International visitor	
2011	5681	133	5814
2012	4503	109	4611
2013 (disaster year)	1353	20	1373
2014	478	46	524
2015	1407	148	1555
Total	13422	456	13877

Tourism influx data above (table 1) showed that average floating population was 13422 national and 456 international tourists in Dodi Tal during 2011-2015. But due to the disaster in 2013-2014, there was huge decline in the number of tourist. In such a situation it appears that natural disasters have a direct impact on tourism. We can say that the reason for such a destructive disaster is also an unplanned tourism activities like over infrastructure, cutting tree, over population influx, over demand from natural resources etc. in such a case, sustainable ecotourism can be redressal process.

Households perception on role of tourism in livelihood

The survey data revealed that (56.50%) households perception on tourism as excellent in education, changes in life style, youth empowerment, minimizing youth migration, awareness, scientific research or communication. But at same time (8.70%) of households perception are average, they believed that tourism has a bad effect on their

culture and traditions due to changes in their living standard. through the ecotourism, the culture and traditions can be conserved in the region.

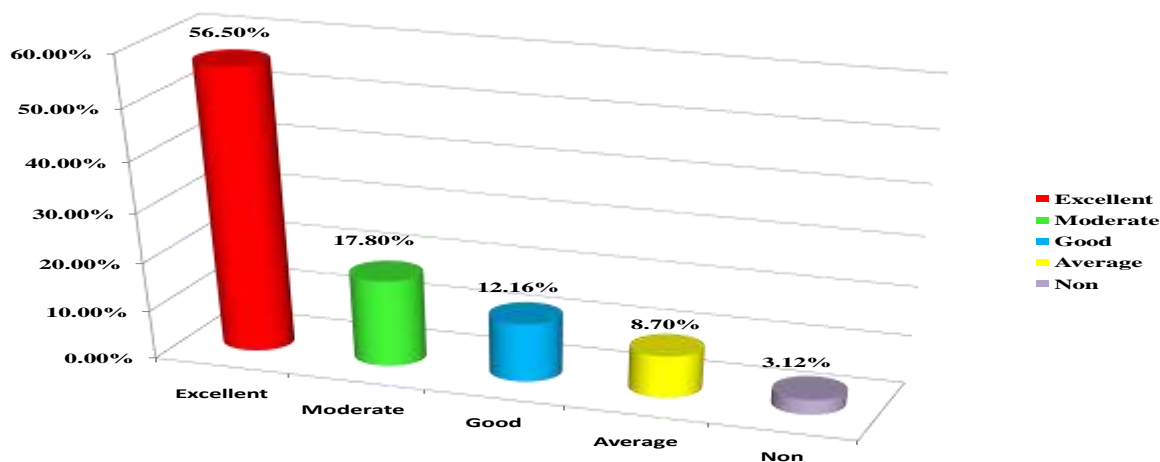


Figure 5: Households perception on role of Tourism in livelihood

Drivers of degradation

Though the lake does not have any point source of anthropogenic pollution, it is largely affected by the activities of tourists. Every year, the lake is visited by thousand of school/college's student and international tourists during autumn and summer breaks. These student groups and tourist from different countries used to stay at the lake for two to three days. During this, solid waste generate is done by most like bottle, canes, plastic and food wrappers. Digging of neighboring catchment for fitting of tents not only accelerates the soil erosion but also the aesthetic beauty of the lake. Other factor is religious congregation. There is a temple devoted to lord Ganesha here. There is large congregation of people around the lakes for fulfilling the religious faiths. On the one day of Ganesh chaturthi (birthday of lord Ganesha), thousands of people from Gharwal used to assemble at the bank of Dodi Tal every year. The people take holy bath in the lake water and perform religious rituals. By doing this they also contribute substantially to the degradation of the aquatic environment of the lake Dodi Tal.

The environmental impacts of mountain tourism have been noted in numerous previous publications, particularly deforestation and forest degradation caused by tourism related activities (e.g., Godde, Price, & Zimmerman, 2000; Kreutzmann, Beg, Zhaozhi, & Richter, 2009; Kruk & Banskota, 2007; Nyaupane & Chhetri, 2009).

Conclusion

Ecotourism is a sustainable initiative to increase the employment for the mountain community as well as to save the environment. To transform such imagination into reality, there is a dire need for natural resources conservation and tourism appropriate policies. A well planned eco-tourism practices and their promotion for the region will work as a tool for sustainable social and economic development.

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