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Turtle-Based Ecotourism in the Betana Wetland of Nepal

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Abstract

This paper attempts to analyze turtle-based ecotourism in the Betana wetland of Koshi Province, eastern Nepal. Betana is considered a nature tourism area and tourists are enjoying undeveloped natural areas of wildlife while ecotourism is a form of tourism that involved responsible travel to natural areas, conserving the environment, and improving the well-being of the local people. Nowadays, both nature tourism and ecotourism is considered the inseparable pillar of the economic development of many developing countries, like Nepal. This paper is based on primary sources of data. Data were collected from field observation, questionnaire survey, interviews, and focus group discussions. The findings reveal that Betana Wetland is located accessible area of the East-West highway in Belbari Municipality of Morang district. The ideal condition of the wetland provides a natural habitat for turtle species. A large number of tourists visit day-by-day enjoying a good habitat of turtles. The figure indicates a total of 122100 (75.23%) tourists visited the Betana wetland to watch turtles in 2017. Indeed it was 75.57 percent in 2016. The calculated F= 20.887, P value = 3.88, and F crit= 2.717 indicates that there is a close association between the patterns and the number of tourists visiting this area in different months in 2016 and 2017. The paper concludes that a visitor spent about 2.81 hours in the Betana wetland and an hour watching and playing with turtles (68.46%) for feeding, watching (9.17%), teasing (10.85%), and trying to capture (5.84%). This paper suggests that

specific attention should be given to the conservation of the Betana wetland for establishing a spot of the turtle based-tourism.

Keywords: ecotourism, wetlands, turtles, conservation, feeding

Introduction

Ecotourism is a form of tourism that promotes tourism in the biophysical environment and supports environmentally sound practices, conservation-minded policies, and community engagement (KC, 2016). It also emphasizes community development, eradicating poverty, protecting the environment, conserving wildlife, and the traditional economic pillars of agriculture, cattle, and hunting (Duffy, 2008). The principle of ecotourism is about uniting conservation, community and sustainable travel. Ecotourism constitutes an environmental challenge for it has direct impact on all three pillars of sustainability, economic, social and environmental and these (Coghlan & Buckley, 2012).

Traveling to relatively undisturbed or uncontaminated natural areas with the specific intention of learning about, admiring, and enjoying the scenery and its wild plants and animals as well as any existing cultural manifestations (both past and present) found in these areas is the first formal and one of the most widely accepted definitions of ecotourism (Blamey, 2001).

The hard-shelled Bataguridae and Testudinidae, as well as the soft-shelled Trionychidae, make up the three families that make up the Nepalese turtle fauna. They all lack teeth and have beaks with horny sheaths. They have a poor hearing sensitivity but excellent vision. Only during the breeding season do some animals make sounds. All turtles breed on land, and they have the longest life spans of any vertebrate (Rai, 2003). Almost 75% of the Asian species are threatened, and at least 50% of the 200 species of fresh water turtles are extremely imperiled (Assessment, 2005). 17 different species of turtles have so far been identified in Nepal (Shah & Tiwari, 2004).

Some authors described *Nilssonia nigricans* which was thought to be the rarest turtle in existence in Betana wetland. This unexpected discovery of a species of turtle that is highly endangered emphasizes the need to safeguard the biodiversity hotspot in wetland areas in south-east Nepal (Peter et al., 2022). In Betana wetland there were four species of turtle recorded namely *Nilssonia hurum*, *Lissemys panctata, Pangshura smithii*and *Indotestudo elangata* (Dahal, 2019).

Most conservationists who support ecotourism do so on the grounds that it is resource-efficient and that money earned from it can fend off calls to use the natural resources involved

for more extractive economic goals. But wildlife-based ecotourism can also have good effects on travelers' willingness to contribute to wildlife conservation, as well as on their pro-conservation views and motivation to take personal conservation-related actions (Tisdell & Wilson, 2001). Ecotourism, non-consumptive wildlife-focused recreation, and rising economic affluence that support wildlife conservation have all grown in recent decades (Griffin et al., 2017).

In Nepal, various scholars have been involved in the study of turtles. Their studies focused on the analysis of the habitat of turtles, challenges, and conservation practices of turtles' habitat (Basnet, 2020). The reviews of the existing literature have revealed that tourists were visiting the protected area for the purpose of watching the natural scenery and wildlife. But their studies have not given pace to the study of nature-based tourism on turtles. In this context, this paper focuses on the unrevealed question of what the situations of the tourists flow in the Betana wetland to watch turtles, and predict whether Betana can be established as a turtle conservation center. This paper provides an idea to promote the turtle-based tourism industry in Nepal.

Materials and Methods

Study Area

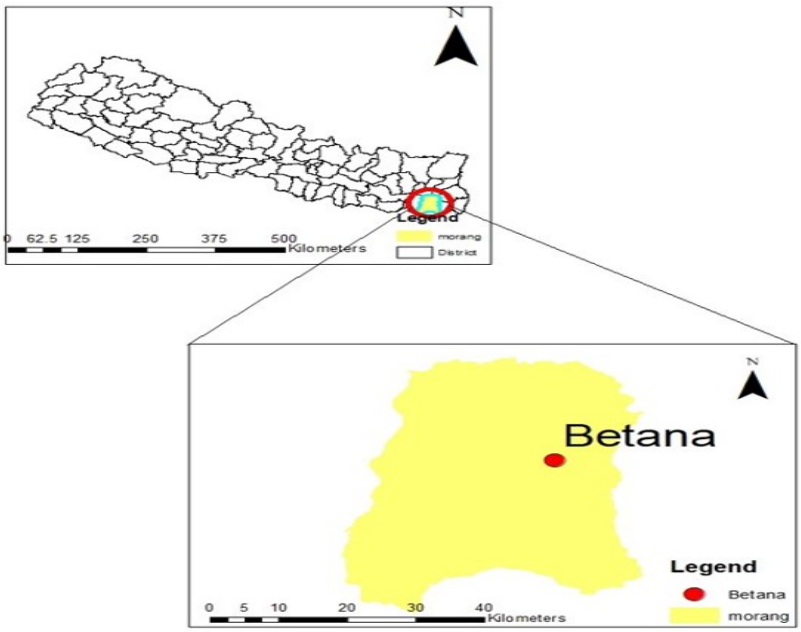
The Betana Wetland is located in the Belbari Municipality of the Morang District. It is extended in 26.66°-26.66° N and 87.42°-87.434°E with an elevation of 123 masl. It is a freshwater pond that covers about 5.5 hectares and is one kilometer away from the Belbari Bazaar. Sal forest continues to encircle the wetland region on its east, north, and west sides, while Mahendra Highway is located next to it on its south side. The pond's depth fluctuates from 0.5 to 1.5 meters during the dry season to 1 to 2.5 meters during the monsoon season (Rai, 2011). The study site offers three distinct seasons, including winter, along with alluvial soil and a tropical monsoonic environment. A year has three seasons: winter (November–February), summer (March–June), and wet (July–October). The average lowest and highest yearly temperatures are 14.2°C and 30.6°C, respectively. Annual rainfall is 1312 mm (Niraula & Singh, 2011).

Figure 1

Location map of Betana wetland

Figure 2

Betana wetland derived from Google earth



Methods and Materials

This paper is based on descriptive, and correlational designs and primary data sources. Primary data were collected from field observation, questionnaires, and interview methods. Semi-structured questionnaires were used for collecting tourist attitudes about the turtles. The interviews wereheld with the visitors and the members of the Betana wetland conservation

committee. The field observation was done in the years 2016 and 2017. The ancillary data were collected from secondary sources-official records, archive documents, and e-resources related to the activities of tourists in the wetland. The collected data were processed through Microsoft Excel and Statistical Package for Social Science (SPSS). Various table and statistical analyses were applied to measure variables and describe relationships between them.

Results and Discussion

Tourist Arrival Trends

The numbers of tourists in Betana were recorded with their motive of visit. We aimed to know why tourists arrived in Betana, what are their motives, and in which months their frequencies reached the peak.

Table 1

Number of tourists arrival in 2016 and 2017

SN	Months	Tourists arrival in 2016			Tourists arrival in 2017		
		Number of tourists visited	Number of tourists who observed turtle	Percentage of tourists who observed turtle	Number of tourists visited	Number of tourists who observed turtle	Percentage of tourist who observed turtle
1	July	10209	8400	82.28	9209	6400	69.50
2	August	10400	8607	82.76	11400	9601	84.22
3	September	11305	10300	91.11	11545	10300	89.22
4	October	14987	12600	84.07	15000	12701	84.67
5	November	12100	10308	85.19	13600	11209	82.42
6	December	15900	12234	76.94	15889	12560	79.05
7	January	20400	11208	54.94	21406	12210	57.04
8	February	17400	10100	58.05	18408	11111	60.36
9	March	13200	10105	76.55	13300	10200	76.69
10	April	15160	12087	79.73	14160	12287	86.77
11	May	9153	7888	86.18	9177	6578	71.68
12	June	9100	6555	72.03	9188	6943	75.57

Total	159314	120392	Average = 75.57	162282	122100	Average=75.23
Standard Deviation	3548.503752	1872.958056		3801.386984	2347.077603	
Standard Error	1024.364798	540.6764188		1097.365899	677.5429428	

Source: Field Survey, 2016-017 and calculation by Microsoft Excel

Table 1 shows the number of tourists arriving in the Betana wetland in 2016. The table revealed that the maximum number of tourists arrived in the month of January and the lowest in June. Indeed, the result indicates that the largest number of tourists observed turtles in the month of September (91.1%) and the lowest number in January (54.9%). It can be concluded that an average of 75.57% of tourists visited the Betana wetland for observing turtles in 2016. Similarly our findings reflected that maximum number of tourists visited in Betana wetland was in the month of January and least number in May. The standard deviation of tourists was 3801.38 and standard error was 1097. Among the visitors most of the tourists observed turtle. The data shows that maximum number of visitors were in September (89.22%) and least percentage was in January (57.04%). In totality 75.23% of tourists of Betana observed turtle in the year 2017. This paper also used ANOVA to show the significance of calculated values. The result indicates that the calculated value (F= 20.887, P value = 3.88 and F crit= 2.717) is greater than the critical value and the null hypothesis rejected. It means there was the association in the pattern of visiting number of tourists in different months of 2016- 2017. In Betana wetland a total of 159314 tourists arrived in 2016 and the number slightly increased in next study year 2017 and reached to 162282. The number of turtle observers also increased from 2016 to 2017 in the same ratio.

The finding of others studies shows that a total of 753002 tourists visited Nepal from foreign countries in 2016. It was 40% increased comparatively to the previous year. Similarly in the year 2017 the total number of tourists arrival was 940218. It was about 25% increased comparatively to the previous year (MOCTC, 2019 a). Among the tourists including internal also 395791 visited National Parks and Wildlife Reserve to watch the wildlife in Nepal in 2018. Similarly about 429764 tourists visited the protected areas of Nepal in the year 2019 (MOCTC,

2019 b). There was high probability and scope of tourisms in wetlands of terai including Jamunkhadi within 100 Kilometers distance from Betana. There was a reason behind it that availability of sightseeing spots, tourism interest place, small and beautiful jungle, open lane, picnic spot, mini-zoo etc. (Mishra, 2020).

Time Spent for Observing Turtles

Tourists enter in to Betana wetland area and enjoy in different activities. We follow some tourists and watched their activities whether they were watching turtle and enjoying with them. Then, **w**e asked and observed 50 sampled tourists daily for 15 days in each month in 2017.

Table 2

Time spent by tourists to observe turtle

S.N.	Months	Time of tourist spent in Betana wetland (in hours)	Time spent to watch turtle (in hours)	Percentage of spent time
1.	July	3	1.5	50
2.	August	3	1.25	41.6667
3.	September	2.5	1	40
4.	October	2	0.75	37.5
5.	November	2.25	0.50	22.2222
6.	December	4	1	25
7.	January	4	0.75	18.75
8.	February	3	1	33.3333
9.	March	2	0.5	25
10	April	2.5	1.25	50
11	May	2.5	1	40
12	June	3	1.5	50
	Total	33.75	12	
	Annual Average	2.8125	1	35.71
	Standard Deviation	0.666785027	0.337099931	
	Standard Error	0.192484258	0.097312368	

Source: Field study in 2017 and calculation by Microsoft Excel

Time spent by a tourist in Betana wetland in a day was recorded month wise. In July, April and June a tourist spent maximum (50%) and least (18.75%) in January. The time used by tourist to watch the turtle was 35.71%.

A tourist utilized 2.80 hours in visiting Betana wetland in average annually (standard deviation = 0.667, standard error= 0.192) and it was spent about an hour (standard deviation = 0.337 and standard error= 0.0973) for watching turtle which was 35.71% of total time spent inside Betana.

The regression of total time used and time allocated to watch the turtle was calculated which was multiple R= 0.30333, R square= 0.092013, Adjusted R square= 0.00121, Standard error =0.667, total observation =12, P value intercept = 0.00542 and X variable 1,= 0.337. From the regression analysis it can be stated that there will be 33% error if predicted on the basis of existing trend.

The study in Jamunkhadi wetland and tourism spot Jhapa, it was found that most tourists spent 3 or 4 hours and no tourists spent night in the spot (Mishra , 2020). The other study in Chitwan recorded that the visitors in Chitwan National Park used time in different activities like boating, wildlife watching, entertainment, elephant riding, jungle visiting etc. for few hours a day (Bhusal, 2009).

The next study found that in Nepal, the tourists stayed for 10 to 13 days for the past 10 years. It was estimated that six percentage of tourist enjoyed in rural areas rest in protected areas (Nepal, 2000).

Activities of Tourists with Turtles

We had curiosity that by reaching close to the habitat of turtle what the tourists performed. By keeping in mind what they did with turtle we followed 100 numbers of tourists and observed their activities with the turtle. The average of all tourists' activities was calculated and tabulated as following and it was generalized for each individual.

Table 3

Activities and allocated time of tourists with turtle

S.N.	Activities	Time spent (in minutes)	Percentage
1	Feeding	41	68.46
2	Watching only	5.5	9.17
2	Teasing	6.5	10.85
3	Trying to capture	3.5	5.84
4	Calling by shaking the water but not giving anything	3.5	5.84
	Total	60	100

Source: Field study in 2017 and calculation by Microsoft Excel

Table 3 shows that the tourists who were turtle watchers also mostly spent their time (68.46%) for feeding the turtle. For watching only 9.17% and for teasing 10.85% time was spent by tourists. Similarly, some used time for trying to capture and calling them but not giving anything (5.84% for each).

The activities of tourists may harm the turtle. They may be disturbed in different regards. So we compared to the findings of others in regarding with the effects to wildlife. In the research work in central zoo, the activities of visitors to the Ostrich were observed. They teased that bird and the bird showed some abnormal and different behaviour. The visitors during their movement affected the Ostrich (Sharma et al., 2020). Visitors had a 20% greater influence on deviant behavior and a 3% greater impact on social, mating, and aggressive behavior in the short term effects. Visitors were found to impact a 30% rise in aberrant behavior in the study on long-term effects (Mallapur, 2005).The next research showed the feeding activity of tourist to the wildlife could improve their activeness. The findings showed that providing live fish to Humboldt penguins could improve their behavioral welfare (Fernandez et al., 2021).

Knowledge and Attitude towards Turtle (Why should we conserve turtle?)

The visitors might have general information about the turtle, its status and behaviour. We made a concept whether the visitors stood for the conservation of turtle or not. What might be their thinking on the behave of turtle, Keeping it in mind we followed 135 visitors who after the

completion of their visit we talked/ interviewed them and their response was tabulated as following.

Table 4

Attitude of visitors depending on academic qualification to turtle

S.N.	Academic qualification of respondents	Response of visitors				Total
		Habitat became fragile	Going to disappear	For economic development	Due to asthetic value	
1.	Master's degree and above	2	4	5	1	12
2.	Bachelor's degree	3	5	6	3	17
3.	Intermediate(+2 level)	7	7	8	6	28
4.	SLC	10	11	11	3	35
5.	Below SLC	12	12	11	8	43
	Total	34	39	41	21	135

Source: Field visit in 2017

The visitor's answers were mainly in two themes that for economic development and for the asthetic importance. There was no association between qualification of respondents and their attitude towards turtle. The calculated chi square = 4.77, tabulated value= 21.03, significance level= 0.05 and degree of freedom =12.

Similar study in Ghodaghodi lake of Kailali to examine the public response for the conservation showed that the majority of respondents said they would be prepared to help protect Ghodaghodi Lake, but only 12% of them-mostly mountain settlers-had ever taken part in organized conservation efforts. The attitudes of educated males from upper castes and those from the mountains who had previously taken part in formal management operations were more pro-conservation than those of other groups (Sah & Heinen, 2001). The next research with this regard concluded that due to ecotourism, locals' income and spending have increased. People's quality of life had improved due to participation in ecotourism, more education, an increase in productive human capital, and an increase in income (KC et al., 2015). Gyawali also tested public thinking on turtle conservation in Nepal and it was found that Male respondents were

more likely to participate in turtle slaughter than female respondents, and respondents with higher educational levels were generally more supportive of turtle conservation (p-value 0.05).The majority of responders support turtle conservation. They thought turtles should be protected for their tourism potential (Gyawali, 2019).

Conclusion

This study was launched in 2016 and 2017 for the twelve month in Betana wetland with the aim to record the number of turtle lover-visitors, to find what activities do the visitors perform and to test the public thinking towards turtle. A huge number of tourists visit the wetland daily and this wetland is a good habitat of turtle too. We did field observation, follow random sampling method for selecting the respondents, made structured questionnaire, interview and focal group discussion to collect data. It was found that in the year 2016 a total of 159314 tourists visited Betana wetland among them 75.57% (n= 120392)watched turtle. In next year 2017, a total of 162282 tourists were entered and among them 75.23% (n= 122100) watched turtle. The flow of visitors and the percentage of turtle lover were in similar pattern. There was the association in the pattern of visiting of number of tourists in different months of the year 2016 and 2017 (F= 20.887, P value = 3.88 and F crit= 2.717).Each visitor spent about 2.81hours (two hours 49 minutes) in Betana wetland in average annually and he/she consumed time of an hour to see and play with turtle. Hence the time spent for turtle watching was about 35.71% in average. From the regression analysis it can be stated that there will be 33% error if it is predicted on the basis of existing trend. The turtle watchers mostly spent their time (68.46%) for feeding, secondly watching (9.17%) for teasing (10.85%) and for trying to capture (5.84%). Regarding with the response or attitude of people towards turtle, there was no association between qualification of respondents and their attitude towards turtle. Respondents with high qualification and low, revealed similar answer and their ratio also stood on the proportionally. The calculated chi square = 4.77, tabulated value= 21.03, significance level= 0.05 and degree of freedom =12. By interpreting the result it can be suggested that specific attention should be given for the conservation of turtle and Betana wetland can be established as a spot for turtle based-tourism. Further study about impacts of tourism on turtle is pointed out.

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