

Potentiality of Pangolin based Ecotourism in Chuchhekhola Community Forest, Makawanpur, Nepal

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Abstract

Wildlife based tourism is propounding throughout the world where even a single species can play crucial role in promoting tourism of species inhabiting locality. Both species of pangolin, recorded in Nepal, are globally threatened creatures and found in Chuchhekhola Community Forestry (CKCF). Focus group discussion (n=5) and individual interview (n=200) were done for preliminary confirmation on presence of Pangolin and the potential pocket areas and chances of sighting in the forest. Direct field observation was carried out to record detail information, presence evidence i.e. sign or direct sighting. We recorded 43 fresh, 157 new and 346 old burrows. We calculated 2 individuals per 10 hectares based on the number of fresh burrows in the forest. Out of 200 respondents, 120 respondents were aware about this species. Out of known respondents, 60% respondents encountered with pangolin either in the forest or in agricultural field. Among them, 80% were aware its international significance. Recently constructed Pangolin Park with statue made this area renowned to local and national level and educate the about international importance of pangolin. National and international organizations were also active to explore more about this species. It is believed that that Pangolin is the center of attraction of the visitors and work as flagship species for the ecotourism promotion if the area is wisely managed

Keyword: Conservation, Habitat, Tourism, Potentiality, Burrows, Visitors.

Introduction

Pangolins are nocturnal, shy, non-aggressive, solitary and burrowing animals which have received low scientific attention. Although Pangolins are protected nationally and inter nationally, detail biological information is lacking (Suwal, 2011). Pangolin Park is made in Chuchhekhola Community Forest (CKCF) for development of Pangolin based eco-tourism. Ecotourism has become an important economic activity in all the countries of the world. It creates various direct, indirect and induced effects in the economy of the people and country. Despite

plethora prospects for tourism-led development, the tourism sector still holds measure share in Nepal's GDP. Tourism contributes about 9% supporting about 1 million jobs (WTTC, 2014).

Pangolin is considered as flagship species in (CKCF) because many peoples are visiting the park only to see its appearance. But there is no any specific area to study about Pangolin as people are not able to visit natural habitat directly. Therefore Pangolin Park has established to enlighten people about the significance of Pangolin and its link with eco-tourism. The park does not only serve for economic aspects but also in conservation and promulgation of Pangolin for its welfare. In Chuchhekhola CF Camera trapping done by NTNC, Chitwan and ZSL Amlekhjung to revealed the presence of Indian Pangolin (*Manis causicaudata*) and chinese pangolin (*Manis pentadactyla*) but no further research has been done for its conservation and habitat analysis. Many experts have said that Chuchhekhola CF can serve as potential for the touristic destination not only by the presence of Pangolin but also because of its location. Pangolin park lies on the way to Gadhi darbar (house of King Prithivi Narayan Saha's wife) and around 5 km away from the headquarter of Pradesh no. 3.

Pangolin will work as flagship species for the CF, if the area is correctly managed for ecotourism. The sustainable benefits can be obtained from the pangolin if it is conserved in its natural habitat. As it is not listed in the endangered list but now days it is considered as threatened species. So this is the time to show we should explore the pangolin as flagship and corresponding conservation and promotion of it.

Hence, the aim of this research is to assess the potentiality of Pangolin based ecotourism in Chuchhekhola Community Forestry (CKCF).

Materials and Methods

Study area

The study was conducted in Chuchhekhola Community Forest of Makawanpur District, Central Nepal. This district covers 1.64% of total land area of Nepal. It is at the distant of 1.5 km north from main city Hetauda of Makwanpur. The Chuchhekhola CF is on the way to Old Gadhi Darbar and about 1km away from Shivam cement factory. This CF has about 1000 households and they fulfill their basic needs (firewood, fodder and timber) from the forest. Parsa National Park and Chitwan National Park are two prime destinations for tourist (National and International) and the Chuchhekhola lies between the ways Parsa NP to Chitwan NP. If we develop the eco-tourism model of conservation, the CFUG can be next potential destination for tourist in Makawanpur district.

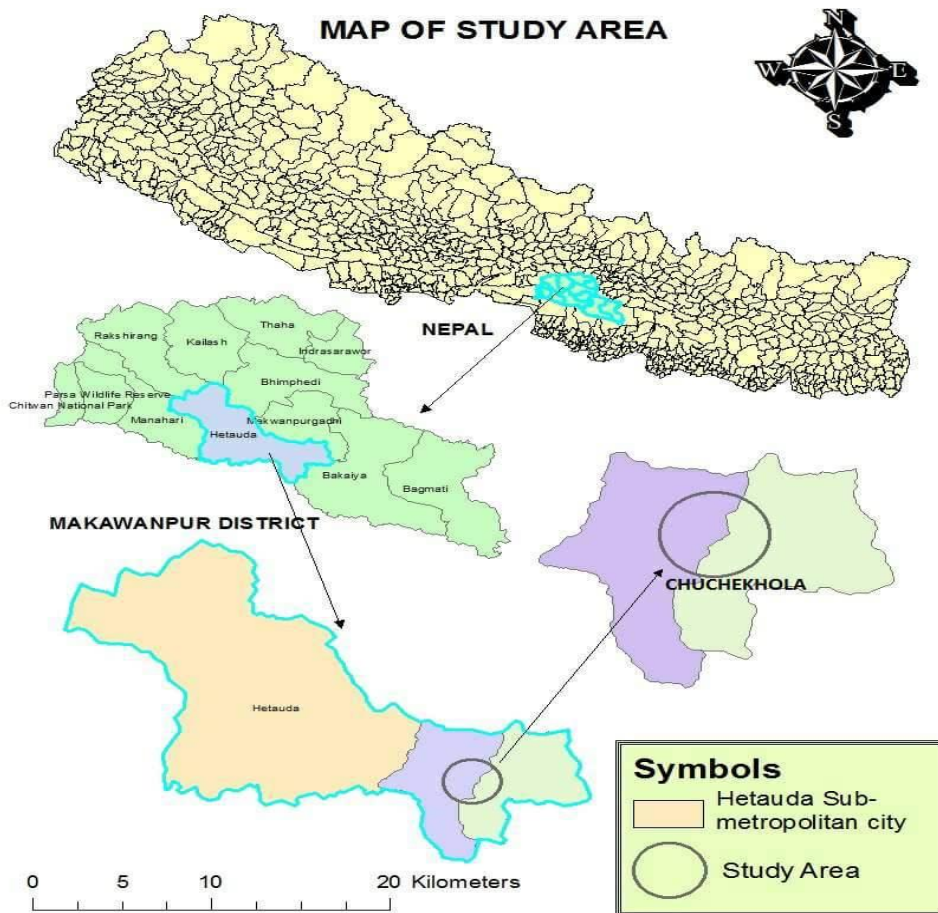


Fig.1. Chuchhekhola Community Forest

Data collection

Direct Field observation

The abundance of the burrows was counted by observing the distribution of the burrows in the area of study. Burrows were classified as living burrows (recently very active), active (active this year) and permanent burrows (more than one year old). Only living burrows were used for the density calculation i.e. one fresh burrow was noted as one Pangolin (Mahmood et al., 2011; Biggins et al., 1993). The Pangolin is spread all over the forest, so the data were collected from whole forest. The GPS points of all burrows were recorded and used to prepare distribution map of pangolin in the study area.

Questionnaire Survey & Focus group discussion

Total 200 respondents were randomly selected out of 1000 users for questionnaire survey and focus group discussions (no. =5) were carried out separately with school teachers, students, youths, community forest users and member of user committee community, to know the distribution of pangolin inside the forest as well as to find out the potential site for pangolin within the CF area, and to know the further possibilities of ecotourism.

Data analysis

The abundance of the fresh burrows was counted to estimate the population of the pangolin. For that, given formula was used.

$$\text{Population density } (N) = \frac{\text{no of the living burrows}(n) \text{ (one burrow represents one individual)}}{\text{The area of the study } (A) \text{ (ha)}}$$

The area of the study (A) (ha)

Chi square test was used to know the perception of people on Pangolin based ecotourism. Similarly, collected data were analyzed by using MSEXCEL 2007. Arc GIS10.2.2 was used to make a map to know the distribution area of Pangolin.

Results

Status of Pangolin

During the field survey, GPS Points of every burrow made by the pangolin were recorded. All together 546 burrows were found in 238.04 ha of forest area. Among the burrows 43 were fresh burrows, 157 were new and 346 were very old .So, permanent burrows and active burrows were discarded for this study and only the living burrows was used for the calculation of pangolin density in study area as done by (Chalise, 2012). 2 Pangolin per 10 hectares are found in Chuchhekhola community forest.

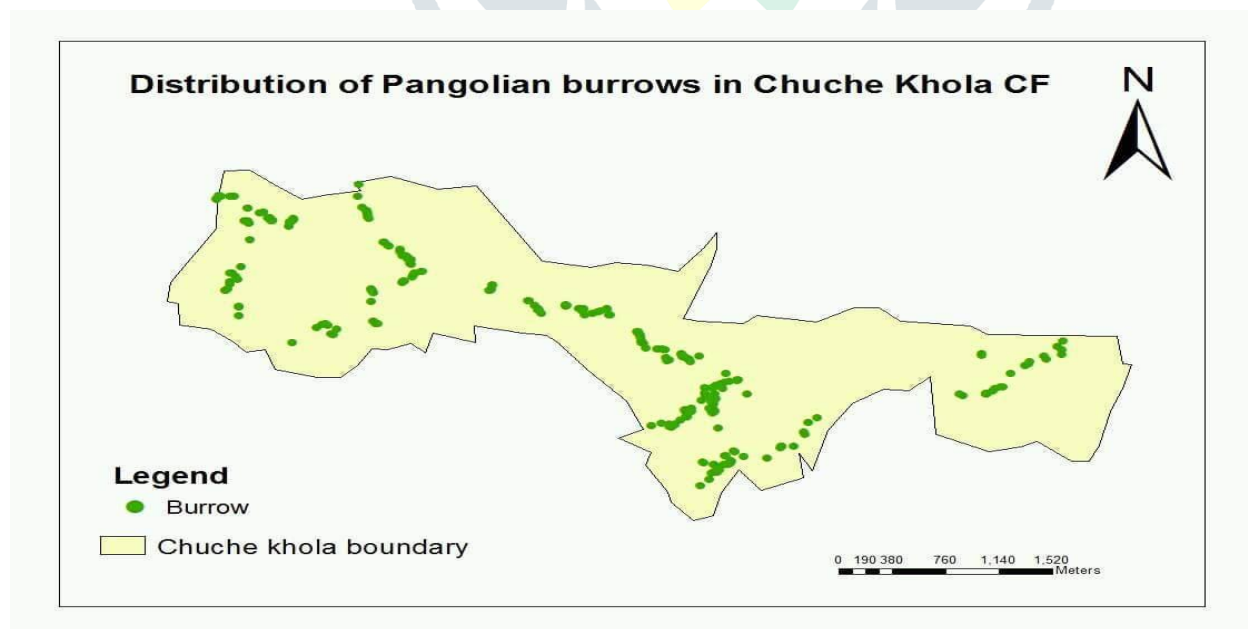


Fig. 2. Burrows distribution in CKCF

Recognition of Pangolin

Among the total respondent almost 60 % of the respondents said that they know the Pangolin if they see it and 40 % were unable to recognize it. Out of the known respondents, 60% of them were encountered with pangolin once, 10% twice and rest 30 % many times. Majority of the respondents said they have seen the natural moments and activities of the pangolin during their life time many times. Only, 50% people of the study area knew that, this species is protected species and has internationally significance. Out of 120 known respondents, 90% respondent said that, they have seen pangolin in the forest and 10% said that they have seen pangolin in the agricultural land. Majority of people believed that Pangolin lived in the forest and few of them believed that they can live in agricultural land too.

Ecotourism potentiality

Chi square test was conducted to verify key to know the people's perception on Pangolin based ecotourism. For that total 200 respondents of different age, gender and education level were selected randomly to know the respondents views on the promotion of ecotourism due to the presence of Pangolin. The st. chi square value is 0.83 which means most of the respondents said ecotourism can be promoted through the conservation of habitat of the pangolin in the community forestry.

Table: 1. Perception of people on Pangolin based ecotourism

Respondents		Percentage (%)			Chi sq. value	D.F.	st.chi sq. value	S/NS
		3	2	1				
Gender	Male	56.60	0.00	44.40	4.983	2	0.83	S
	Female	41.70	27.30	9.10				
Age	Young	50.00	0.00	50.00	5.35	2	0.83	S
	Middle	72.70	0.00	27.30				
	Old	60.00	15.00	25.00				
Education	Illiterate	66.70	11.10	22.20	4.78	2	0.83	S
	Literate	54.50	18.20	27.30				

Note: [S indicates for significant and NS indicates for non-significant at 0.05% level]

More than 80% local people said that there were few people visit this place before. After the establishment of the Pangolin Park huge flow of tourists carrying different enthusiasm about the pangolin is increasing day by day. Therefore, we can say that, this area has the potentiality for eco-tourism development.

Discussion

Pangolin distribution was almost uniform in the forest but soil type, vegetation density and types, wetness of the soil and termite mound presence have influenced in distribution. The new burrow of Pangolin was mostly recorded in place where human disturbances were low and the burrows recorded usually have south facing entrance (Wu et al. 2004). GPS point of Pangolin burrow had taken to show the distribution in the forest. According to IUCN, (2012), No density estimates are currently available for pangolin from south-east Asia (Manhood et al., 2015). However, on the basis of active, permanent and living burrow counts the forest having 238.4 ha of land in which 546 burrows were found. Among them 43 were living, 157 were active and 346 were permanent burrows listed (Mahmood et al., 2011; Biggins et al., 1993). In our survey, each fresh burrow represent for 1 Pangolin so that total 43 Pangolin present in Chuchhekhola CF and almost 2 Pangolin were found in each 10 ha.

Since the research of Pangolin status in Chuchhekhola CF had not been conducted yet. But Presence of Pangolin is proven by the Camera Trapping held by ZSL in 2012 (Community Forest Constitution, 2070-2075) and NTNC Chitwan in 2018. Research on impacts of eco-tourism is merely available (Sanhay, 2002) because focus of eco-tourism is confined to protected areas and National Parks. Knowing the facts we attempted to conduct research on tourism based pangolin conservation in Chuchhekhola Community Forest Users Groups. Pangolin Park, constructed on the southern belt, was the prime attraction for the tourist, where people can amass knowledge about the Pangolin. People came to visit the area were not only interested to see the Park but also to see their natural habitat i.e. burrows made by them and surrounding environment. That park was equipped with two Pangolin statues, so that people just came to see the park can have imaginative figure of Pangolin on their brain. The people near the Park area were known about the Pangolin behavior and it is a protected animal of Nepal and it is illegal to kill or hunt (Janawali et. al, 2011) but People who were far from the Park were totally unknown and were involved in poaching because of their poor economic conditions (Semiadi et al. 2009). Therefore, CF committee developed a strategy of eco-tourism as a conservation tool. In Group discussion with Chairperson and committee members, they revealed their experiences before and after management of forest on tourism basis. People became aware and sanitized their self with the increasing counts of tourist in their surroundings. Tourism can be the ultimate esteem to uplift their current living standard (TILES, 2016), considering Pangolin as flagship species.

Conclusion

Chuchhekhola Community Forest is the first Community Forest of Makawanpur district in which the existence of pangolin has proved. A large number of permanent and active burrows indicate that the Chuchhekhola Community Forest is historically a natural habitat of Pangolin. The majority of respondents have seen the Pangolin and some of them have encountered pangolin many times. They also know that Pangolin is an

internationally significant species so they have constructed Pangolin Park to aware of the people about this species. This Park is also the center of attraction and local people believe that ecotourism can be promoted through the conservation of Pangolin in the Community Forestry.

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