

Examining Hanuman Langur's Social Activities (*Semnopithecus entellus*) at Hiretara (R) and Dhamdha(U) Chhattisgarh

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Abstract: Observing the social relations of Hanuman langurs (*Semnopithecus entellus*) from 2020 to 2021 at Hiretara(R) and Dhamdha(U) CG. The study was mostly based over in field observations from dawn to sunset, and information was gathered by sampling a focus animal for 10 minutes. Seven groups of Hanuman langurs were discovered in both urban and rural environments throughout the research period. Some behavioural actions, including sleeping, feeding, grooming and moving, providing for the parents, entertaining, yielding, and fighting, attacking was noted. They engaged with one another through play, submission, grooming, parental care, and violence. Urban and rural environments had different social relationships. Most aggressive behaviours were seen in rural areas and were typically displayed by males. In order to encourage new-borns, children, and sub-adults, adults played. Between age groups, a significant seasonal fluctuation in grooming was seen. Many females than males were involved in parenting and grooming. Within a group, allomothering was also observed. Within a group, dominant males were given more submission. The most time was spent resting (46% of total activity budget) by langurs of target groups, followed by feeding (19%), grooming (11%), locomotion (14%), and other activities (10%).

Key words: Social interactions, pampering, grooming and allomothering, hanuman langurs.

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I. Introduction:

Hanuman langurs exhibit social behaviors through grooming, aggressiveness, submission, playing, mating, and parental care. They groom themselves to remove trash and insects from their bodies to keep them clean and neat, as well as to satisfy their nutritional needs for protein since insects are thought to be an excellent source of that food (Rahman 2012). Sometimes more than one person is connected with grooming, where they interact. High-ranking women do, however, groom themselves more than lower-ranking women do (Borries *et al.* 1994). Additionally, females and people with low status tend to groom men more frequently (Ahsan and Khan 2006). Male-female interactions are favorable in inter sex partnerships because they are more common than intersex ones. Female memberships are stable within a group, and they are maternally connected (Mohnot and Srivastava 1992); however, this is less true in bigger groups (Newton 1994, Koenig 2000). They give birth and raise their children. Among langurs, all parenting begins when the young reach the age of two. High-ranking langurs are the ones who use dominance rituals the most (Rajpurohit and Rajpurohit 2005). Males, who have the highest social position in this scenario, are actively involved in dominance struggles, territorial defense, exhibiting, and vocalization (Ahsan and Khan 2006). The male with the highest rating is the one who has the most children, followed by the male in second place (Launhardt *et al.* 2001). Following the installation of the highest ranked invader as the new resident male of the invaded troop, weaned male youngsters are then taken away (Rajpurohit and Rajpurohit 2003). Infants, adolescents, and sub-adults can occasionally be seen running, jumping, and engaging in pretend combat. Poor langur's behave in a subservient manner toward their superiors. High-ranking individuals of a group are more likely to interact in an aggressive or subservient manner (Rajpurohit and Rajpurohit 2005). Different levels of hostility within a group include visual and tactile threat, gestures, displacement, charges and chases, and physical attacks (Bogges 1976).

Study Site: In Chhattisgarh's Durg district, the Hiretara village is part of the Dhamdha. Hiretara has a Total land area of around 462.78 hectares (1143.55 acres). which has around 169 households in total. Dhamdha is the closest settlement to Hiretara (12 km). The total area of the city: 1507.96 hectares, Dhamdha is located

at 21.45°N 81.32°E.^[1] It has an average elevation of 280 m (920 ft).

Objective of the Study: Only in a few regions of the state are there very fragmented records of information and statistics on Indian langurs. To yet, no research has been done on the social interactions of grey langurs. The goal of the current study was to evaluate the social behaviour of grey langurs, including daily activities, interpersonal interactions, nutritional preferences, reproductive preferences, parental care, and interspecific connections with people.

Methodology of the Study: Different groups of grey langurs at village Hiretara and DhamdhaDurg, Chhattisgarh were observed and the data were collected through Simple Observation Method and Random Sampling Method from April 2020 to April 2021. They were observed for their daily behaviours and their impact on socio-economic status of the villagers (urban or rural). The native territory and social behaviors of the groups of grey langurs were observed and other information's were collected from the farmers, various fruit sellers and grocery shop owners by asking personal interview. Their feeding behaviours were observed and the major plant families including number of plant species were also recorded. The major plants consumed by langurs were identified with the help of available literatures and authentic reference books.

Data Analysis: In an excel spreadsheet; the information was roughly distributed evenly across all of the focal points for each day, month, and season. Using a t-test, seasonal variance in grooming was investigated. The results included the exact P values for each analysis. MS-Excel and SPSS were used to examine each piece of data (version 16).

Result and Discussion: In the present study, different groups of Hanuman langurs at village Hiretara and DhamdhaDurg Chhattisgarh were observed. Their daily behaviour as well as their impact on socio-economic status of the villagers residing in both urban and rural areas was observed. The different behaviours of the langurs studied include feeding, social, aggressive, parental, Grooming and reproductive. Our study also focuses on different group sizes of langur including adults, juveniles and infants in both rural and urban areas. The recorded data were listed in the table given below. The percentages of interactive behaviour of langurs were recorded in both rural and urban areas. The present study focuses on group sizes of the langurs which include adult, juveniles and infants.

The study revealed that out of the different groups, langurs inhabiting in rural areas are of biggest group size as compared to urban areas. The number of adult females group was found highest both in rural and urban area as compared to the number of males. Similar result was revealed by Kumar and Singh (2018) for biodiversity of Monkey in Mainpat area Sarguja district, Chhattisgarh in India focusing on group size of Grey langur and Rhesus macaque.

Table1: Group Size in Rural and Urban area

S.No.	Sites	Groups	Adults		Juveniles		Infants	Total
			(M)	(F)	(M)	(F)		
1.1	Rural (Hiretara)	H1	04	14	08	06	07	39
		H2	07	9	10	14	8	48
1.2	Urban (Dhamdha)	D1	08	13	09	10	09	49
		D2	03	04	03	03	04	17

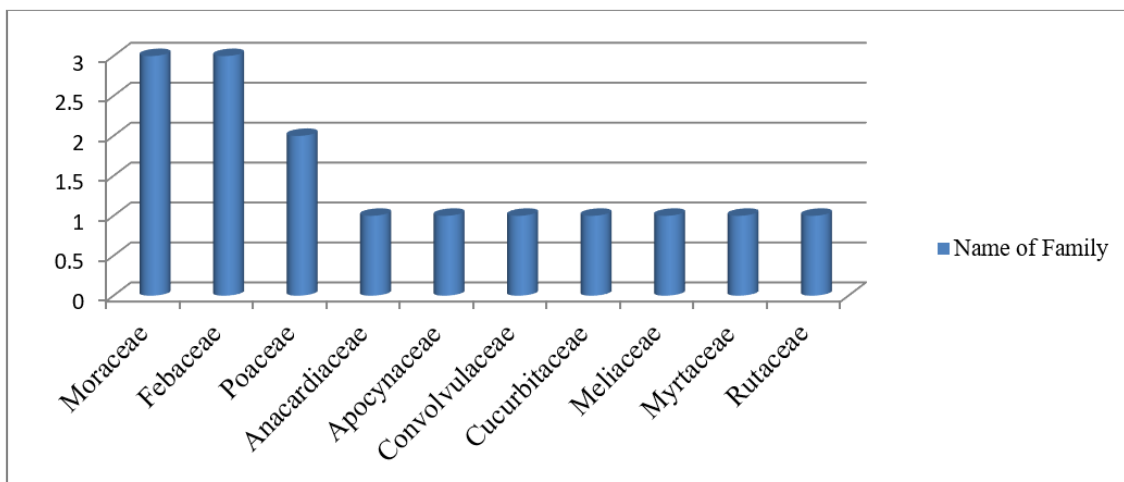
Graph1: Group Size in Rural and Urban area

Langurs are used to take various types of foods during day time and consume different parts of the plant like roots, leaves, bark, flower, pods etc. The majority of the plants consumed by the langurs were listed in the table given below. The langurs mainly consumed by the plants belong to family Moraceae, Poaceae, Anacardiaceae, Apocynaceae, convulvaceae, Rutaceae. The other plant families consumed by langurs include Cucurbitaceae, Meliaceae, Myrtaceae. Their feeding behaviour were seemed to be influenced with respect to seasonal variations which were observed during summer, rainy and winter season. Maximum plants consumed in all the three season were Ficus (Moraceae), Buteamonas (Fabaceae), Cassia fistula (fabaceae), Saccharum (Poaceae), Magnifera (Anacardiaceae), Carrisacarandus (Apocynaceae), cuscutareflexa (convulvaceae), citrus (Rutacea). Similar observations were reported by Prafulla et al., 2005. in which they studied the behaviour of langurs and also focuses on some important floral diversity of Khandagiri and udaygiri hills which are

consumed by langurs. Similarly Borah et al., 2021 reported feeding ecology of capped langur (*Trachypitheus*) in Sri sarguja Assam district in which they reported various plant species and their parts eaten by capped langur in different seasons which was in relevance with the present study. Similarly the Dietary response of a group of Francoisilangur*Trachypithicusfrancoisi* in a fragmented habitat in the country of Fusc, china were studied by Youbang Li et al., 2009 in which they reported that langurs spent 61.6% of their feeding time on four staple species, while they spent 38.4% of their feeding time on 36 plant species that were either seasonally or rarely consumed food items.

Table2: Major plant species consumed by Hanuman Langur's (*SemnopithecusEntellus*) at Hiretara(R) and Dhamdha (U) Chhattisgarh

S.N.	Plant species	Family	Local name	Seasons (2020 to 2021)		
				Summer	Rainy	Winter
1.	<i>Ficusreligiosa</i>	Moraceae	Peepal	+	+	+
2.	<i>Ficusbenghalensis</i>	Moraceae	Bargad	+	+	+
3.	<i>Ficusracemosa</i>	Moraceae	Gular	-	+	+
4.	<i>Buteamonosperma</i>	Fabaceae	Palash	+	+	+
5.	<i>Canjanuscanjan</i>	Fabaceae	Arhar	-	-	+
6.	<i>Cassia fistula</i>	Fabaceae	Amaltas	+	-	-
7.	<i>Saccharum officinarum</i>	Poaceae	Sugarcane	+	+	+
8.	<i>Dendrocalamus strictus</i>	Poaceae	Bamboo	-	+	+
9.	<i>Mangiferaindica</i>	Anacardiaceae	Mango	+	+	+
10.	<i>Carissa carandas</i>	Apocynaceae	Karoda	+	+	+
11.	<i>Cuscutareflexa</i>	Convolvulaceae	Amarbel	+	+	+
12.	<i>Cucurbita maxima</i>	Cucurbitaceae	Pumpkin	+	-	+
13.	<i>Azadirachtaindica</i>	Meliaceae	Neem	-	+	+
14.	<i>Syzygiumcumini</i>	Myrtaceae	Jamun	-	+	+
15.	<i>Citrus limon</i>	Rutaceae	Lemon	+	+	+

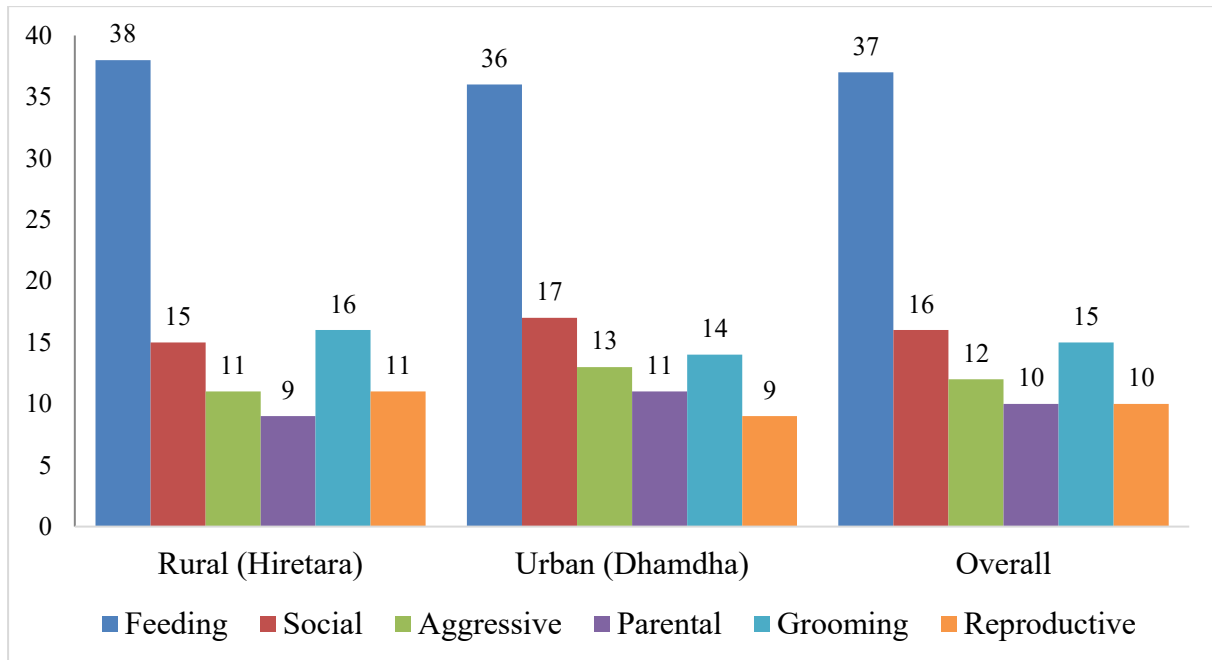


Graph2: Dominance of plant families in Rural and Urban areas.

During our study period it has been observed that langurs showed their daily behavioural activities like feeding, social, aggressiveness, reproductive, grooming, parental care, movement, playing and submission were reported to begin early in the morning with the “whoops” by dominant male. Out of their activity time budget, they spent their highest time for feeding with 38% in rural area and 36% in urban area with the average value of 37% in feeding activity followed by 16% for social, 15% for Grooming, 12% for aggressive and 10% for reproductive and parental care. The study group showed distinct variations in the whole day activity profiles which is also reported by that Golden langur spent their highest time (23.5%) on feeding in their diurnal activity Bhattacharya et al., 2018. And also reported the 40% of total time for feeding of wild foraging vervets out of their whole activity (Brennan et al., 1985; Lee P.C. et al., 1986). (Malik, 1986; Seth & Seth, 1986; Chopra et al., 1992). Alam et al., 2014 also studied about the social interaction of Hanuman langur (*Semnopithecus entellus*) at keshabpur district of Bangladesh and reported that Hanuman langurs spent more or less time in aggression (14.0 %) and parental care 16.3% which was quite similar to the present study.

Table3: Percentage of Time spent in interactive behaviour of langur's

S.N.	Behaviour	Time spent %		
		Rural (Hiretara)	Urban (Dhamdha)	Overall
1.	Feeding	38%	36%	37%
2.	Social	15%	17%	16%
3.	Aggressive	11%	13%	12%
4.	Parental	9%	11%	10%
5.	Grooming	16%	14%	15%
6.	Reproductive	11%	9%	10%



Graph3:Percentage of Time spent in interactive behaviour of langur's

II. Conclusion:

Various modes of social interaction were studied in the present study like feeding, parental care, aggression, reproductive behaviour etc. From the above study it can be concluded that overall percentage of feeding behaviour was found to be highest among other social behaviours studied and also feeding has a pronounced effect on their interactions. Thus by conserving their favorite tree species on which they feed the Hanuman Langur could be conserved and managed in their natural habitat.

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