

# A BRIEF ACCOUNT OF THE SOCIAL LIFE OF HANUMAN LANGURS

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The Hanuman langur is found in most parts of India and offers good scope for field studies. In all, 43 groups were observed over a distance of about 29 kilometres in Dharwar area. Most of the groups were bisexual but a few consisted of male members only. The average troop size was 15.1 animals. The extent of home range is determined by differences in vegetation and influences of adjacent troops. When two adjacent troops come close to one another, the leader males of both these troops begin to fight. The mother langur does not hesitate to hand over her infant to other female monkeys who try to take it. Three instances of social change in langur society have been recorded. These changes are brought about by (a) division, (b) reconstruction and (c) artificial means.

## INTRODUCTION

The present study in some measure is the outcome of a long-felt desire to study the social life of monkeys in different parts of the world in their natural environments so as to facilitate comparison with many of the facts known already about the life of the Japanese monkey, *Macaca fuscata*. One of the plans made by us to achieve this goal attracted the attention of Dr. Harold Trapido, Virologist, who was engaged in the study of Kyasanur Forest Disease at the Virus Research Centre in India. This disease affects both men and monkeys. Since the monkeys are related to this virus disease, Dr. Trapido and his colleagues at the Virus Research Centre interested themselves in a project for the study of the natural life of monkeys. This, we hope, would be a stimulator for organized primatological studies in India.

India offers good scope for an intensive study of monkeys living amidst natural and semi-natural conditions. In spite of this, few studies have been made pertaining to the socioecology of Indian subhuman Primates. These include studies on the life of the bonnet monkey (*Macaca radiata*) (Nolte 1955) and the population survey of the Rhesus monkey (*Macaca mulatta*) (Southwick *et al.* 1961). Recently, Jay (1962) has studied for nearly two years the ecology and ethology of the Hanuman langur (*Presbytis entellus*). This was also the first intensive study of Coloboids in their natural condition, except the

short-period observation on the leaf monkey (*Trachypithecus cristatus*) at Malaya by Furuya (1963).

Though the project envisaged an intensive study of both the Hanuman langur and bonnet monkey, we are presenting in this communication only the observations concerning the social life of langurs, omitting that of the macaques about which much is known already (Frisch 1959, 1963; Imanishi 1960; Itani 1961). The Hanuman langur is a monkey distributed in most parts of



FIG. 1. Hanuman langurs (*Presbytis entellus*) in the natural troop.

India and Ceylon, but in those areas where this species does not exist, the related species belonging to langurs can be found very often. The body of the Hanuman is covered with beautiful silver-gray hair. An adult male weighs about 15 kilograms. Its habitat extends from evergreen high forests to temples and human dwellings of the dry land.

Our ecological and sociological studies of the Hanuman langur in its natural condition were undertaken mainly at Dharwar area in Mysore State, India, situated to the west of the Western Ghats of the Deccan peninsula. The vegetation is mostly scrub forest. Between December and April of the year, most of the leaves of trees are shed. The highest temperature in the dry season which is between November and May has been 40 °C and the rainfall

in a year is about 1000 mm. The main food of the langur consists of leaves, buds, flowers and barks of plants. Sometimes they were seen to eat caterpillars and insect eggs found on the leaves. This shows that they are not strictly vegetarian. About 80 per cent of their day-time is spent on the trees and the rest on the ground.

### *Troop Composition*

At first a road which runs from Dharwar to the west side was selected for a distance of about 29 kilometres and all groups found living on this road

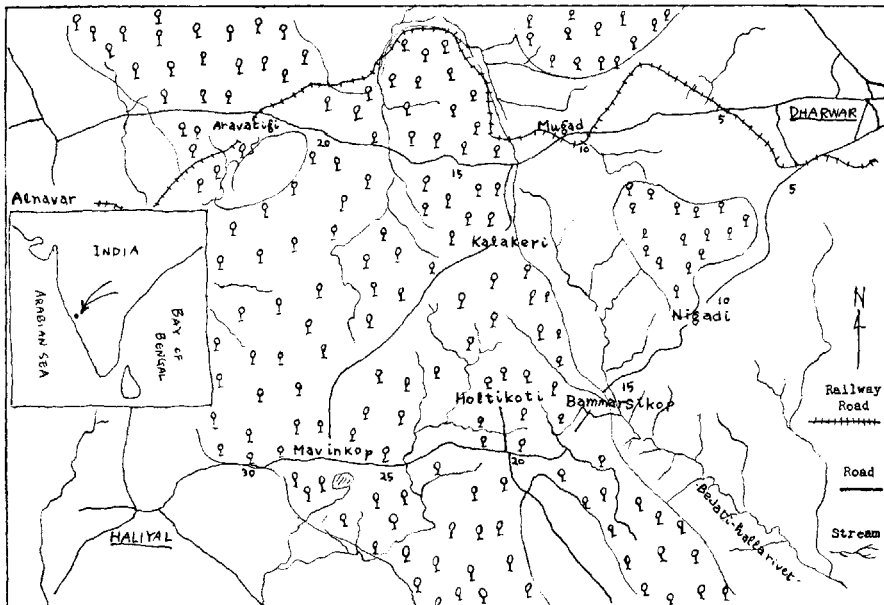


FIG. 2. The map of Dharwar-Haliyal and Dharwar-Alnavar zones which formed the focus of study.

♀ represents the forest parts and the rest of the area comprises of grass-land, cultivated fields and hamlets. The numericals on the road show the kilometric distance from Dharwar.

were recorded (June–September 1961). Within this distance 43 groups were observed. There were two kinds of groups. Thirty-eight groups were bisexual and the rest were parties of males only. Most bisexual troops had only one adult male but a few had two, three or four adult males. Even these had one big full adult male, the other males being young adults. Two troops had over five big males but some of these males were probably not permanent members of the troop. The average troop size was 15.1 animals. Roughly half the troop consisted of adult females and the rest were juveniles and infants.



FIG. 3(a). Forest of Dharwar after rainy season.



FIG. 3(b). Forest of Dharwar in dry season.

*Home Range and Inter-troop Relation*

In the second stage of the study, some particular troops were selected at about 21 kilometres from Dharwar town for more intensive study. All troops in this study were followed every day from morning till evening for 73 days and the exact home range of all the troops was determined. The extent of home range seen in different troops appears to be determined not so

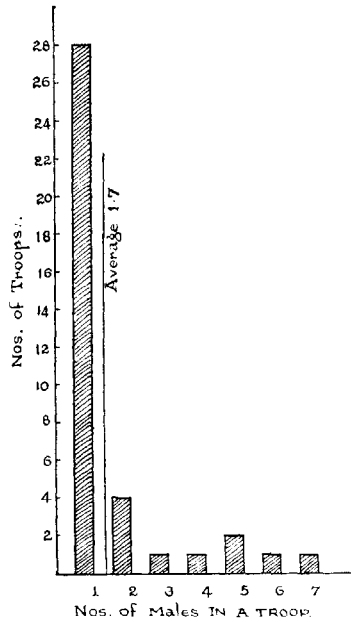


FIG. 4. Numbers of adult males in a bisexual troop (June-September 1961).

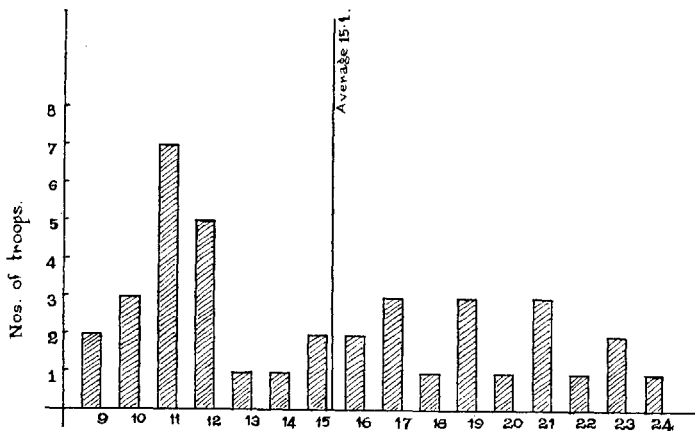


FIG. 5. The size of the bisexual troop (June-September 1961).

much by troop size but mainly by differences in vegetation and influences of adjacent troops. Each home range could be divided technically into two parts. The first is the main part used frequently by the troops and the other part is used only occasionally. Very often, home ranges overlap each other but the main parts are less affected. When two adjacent troops come close to one another during the course of their daily movement, the leader males of both these troops begin to fight. In most cases, this kind of fight is not

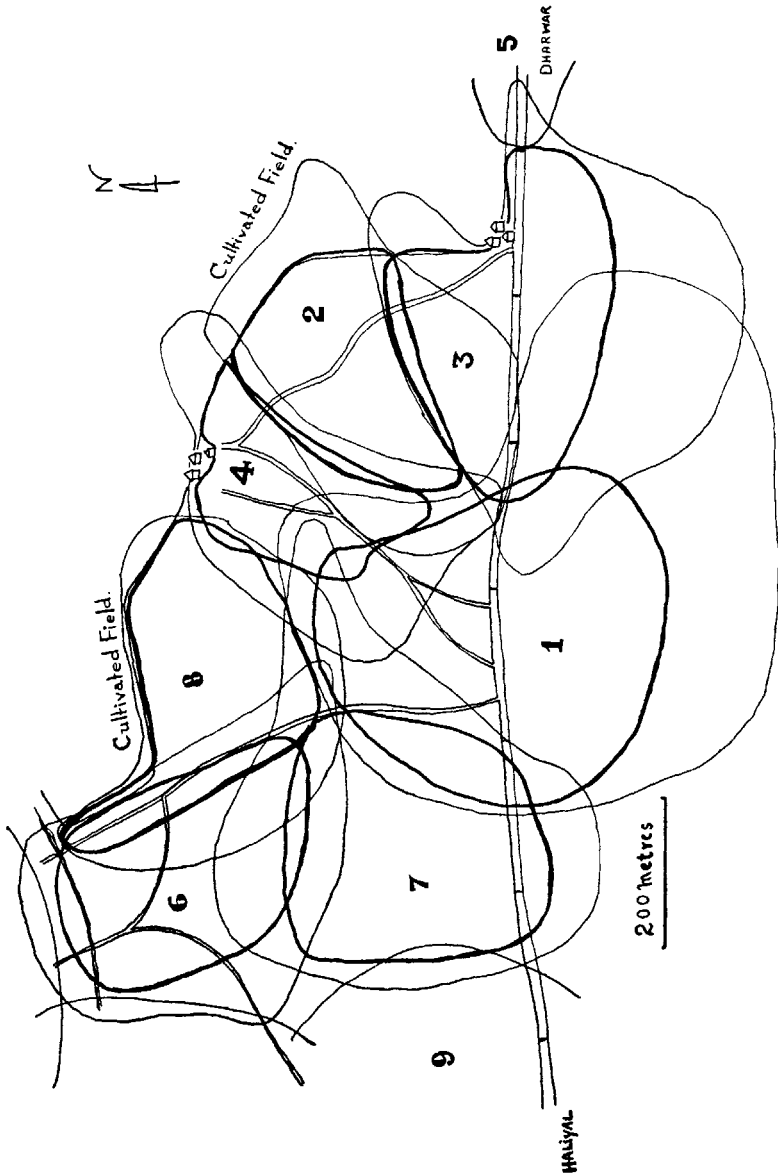


FIG. 6. The home ranges of eight (1-8) troops of *P. entellus*. The thin black line outlines the entire home range while the thick one shows the main part.

severe but is more of a demonstration. In the ecological sense, the main part can be said to belong to the territory, the extent of which in this case is 8.9 hectares in average.

TABLE I

*The composition and the area of the home range of the eight troops (November 1961)*

Troop number	Composition (individuals)				Home range (hectares)		
	Full adult ♂	Young adult ♂	Full adult ♀	Juveniles and infants	Total	Territory	Home range
I	1	2	11	10	24	15.8	31.5
II	1	—	7	9	17	6.5	13.9
III	1	—	6	5	12	9.7	18.5
IV	1	—	8	1	10	5.0	10.3
V	1	—	8	11	20	—	—
VI	1	—	6	3	10	8.0	12.5
VII	1	—	13	2	16	10.4	19.0
VIII	1	—	11	4	16	7.1	11.9
Average	1	0.3	8.8	5.6	15.6	8.9	16.8

### *Interspecies Relation*

The same habitat is also shared by the bonnet macaques. But their troop size is larger and home range larger by three or four times, in comparison with that of the Hanuman langur. In spite of the larger troop size, the over-all population density of the bonnet is lower than that of the langur. The bonnets live separately from the langurs but very often the members of these two species are seen to mix together since they live in the same habitat. In spite of this, there was not a single case of fighting between them. Sometimes troops of these two different kinds follow the same routine all through the day, though they pretend to ignore the mutual presence of one another. Bonnet monkeys prefer fruits and insects to leaves but by and large there do not seem to be any marked differences in the food habits of these two species. On the other hand, in the case of some species of *Colobus* and *Cercopithecus*, Haddow (1952) feels that there is a good deal of variation in the diets of the differing species.

### *New-born Infant*

The new-born langur infant has black hair and pale pink skin. Before it begins to walk, many females who do not have babies of their own, and even

subadult females are eager to snatch an infant from the lawful custody of its mother. The mother does not hesitate to hand over her infant to anybody who tries to take it, be it even to a member of another troop, even if the infant is only half-a-day old and screams violently. This phenomenon has also been observed by Jay (1962). In the case of Japanese monkeys and also some others, though many young females try to take the infant, the mother rarely parts with it. During the age of one to five months, the colour changes and the infant becomes similar to that of the juveniles. Three months after birth,



FIG. 7. The two natural troops of *Macaca radiata* (whitish face) and *Presbytis entellus* (black face) mix together without much antagonism.

the infants become active, play around and even pay attention to other infants. After about six months, they begin to eat leaves imitating their mothers. It takes about five or six years for reaching adulthood.

### *Social Organization*

For a study of the social organization of Japanese monkeys in their natural condition, we have been adopting three fundamental methods: (1) individual identification, (2) continuous observation for long periods—at least for one year and (3) artificial feeding. In many places in India the third



method was not essential, as one could get close to the monkeys without disturbing them, but the other two methods were necessary.

In contrast to the macaques, the Hanuman langurs exhibit neither a strict functional ranking order nor show a differentiation in their social organization into central and peripheral parts. Except that one big adult male leads the troop, there is no evidence of any other social differentiation. During the second half of the study, we baited some langur troops and observed that dominance-subordination relationships could be easily made out as a manifestation of aggressive and defensive behaviour of the animals struggling for food.



FIG. 8. The mother (left) hands her infant over to subadult females (centre and right) without special care. The infant has still black hair and pale brown skin.

In contrast with this, the troops made up entirely of males show less rigidity in their organization and no functional ranking order. Theirs is a loose gathering. Sometimes they cohere together and at other times they may split up into three or four subdivisions. Once nearly 60 animals were found moving together and often we have seen only two. The male party moves over a range which is three or four times larger in comparison with that of a bisexual troop but its moving range may overlap that of a bisexual troop. A single leader male of the bisexual troop is often able to chase away

an entire male party of five or more animals. The same leader male is, on the other hand, less aggressive when he clashes with an adjacent bisexual troop.

*Social Change*

*A. Division*

Many instances of changes in langur society have been observed. The first example related to the division of the troop. One day (17 August 1961), a solitary male who might have been in a male party came in contact with a bisexual troop (the 40th troop) which consisted of one adult male, six adult



FIG. 9. Monkeys gather during the baiting and struggle for getting the good food first.

females and five juveniles (females) and two infants. The solitary male who was slightly stronger than the leader male of the 40th troop fought and defeated the latter. Later, in spite of many severe injuries suffered by both of them, the solitary male decamped with most of the members of the 40th troop except the male and an adult female. But within a few days three females and a juvenile female came back to their erstwhile leader and continued in their original home range.

*B. Reconstruction*

The second example deals with the reconstruction of a troop. There was a big bisexual troop (the 30th troop) which consisted of one adult big

male, six subadult and juvenile males, nine adult females, three juvenile females and five infants. There was also a male party which consisted of six full-grown males and one young adult male.

Though their home ranges did not overlap, when they met on 31 May 1962, the male party attacked the 30th troop and inflicted injuries on its leader male. Soon after this clash a few females chose to follow the victorious males of the male party. But matters did not end there. Next day also the male party came back and fought again and again with the 30th troop. This fighting continued for 10 days till a time came when not only the injured and weakened leader male but also other male juveniles including even an

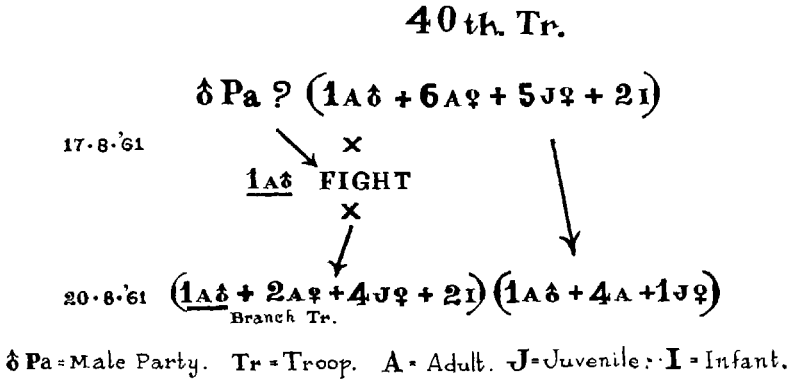


FIG. 10. The scheme of the social change of the 40th troop of *P. entellus*.

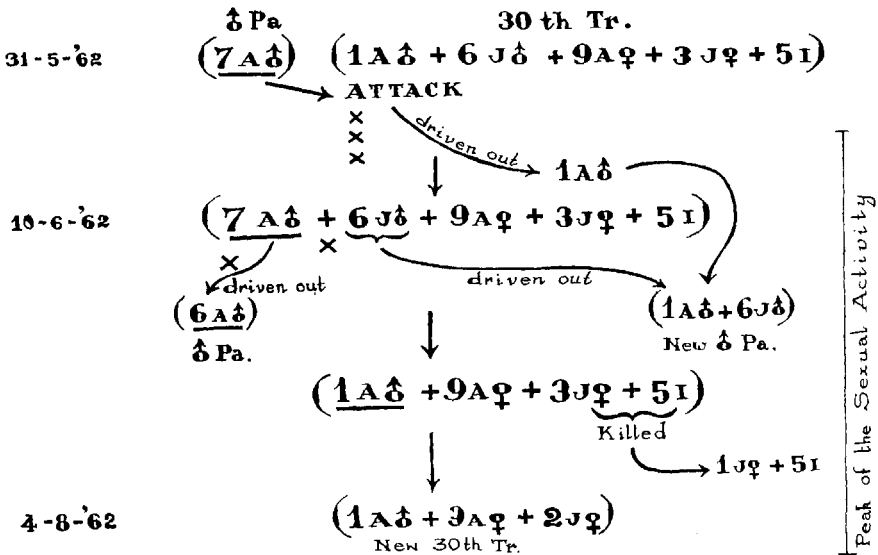


FIG. 11. The scheme of the social change of the 30th troop of *P. entellus*.

one-year-old male were ousted from their home range. All the females including the mother of the one-year-old ousted male juvenile stayed together with the attacking male group. In the following week six males of the male party were also ousted out. Within about two months after this happening, one juvenile female and all the five infants were bitten by the strongest new leader male. These unfortunate infants did not get the expected protection from their respective mothers. Finally, one big male, nine adult females and two juvenile females remained in the reconstructed troop. From the beginning of June, sexual behaviour could be observed. The sexual activity reached the peak period soon and it lasted until the beginning of August (Prakash 1962).

C. Artificial Change

In late June of 1962, the one and only adult male of the 2nd troop was artificially removed as an experimental measure to see if there would be any change in the social organization of the said troop. No male from any male

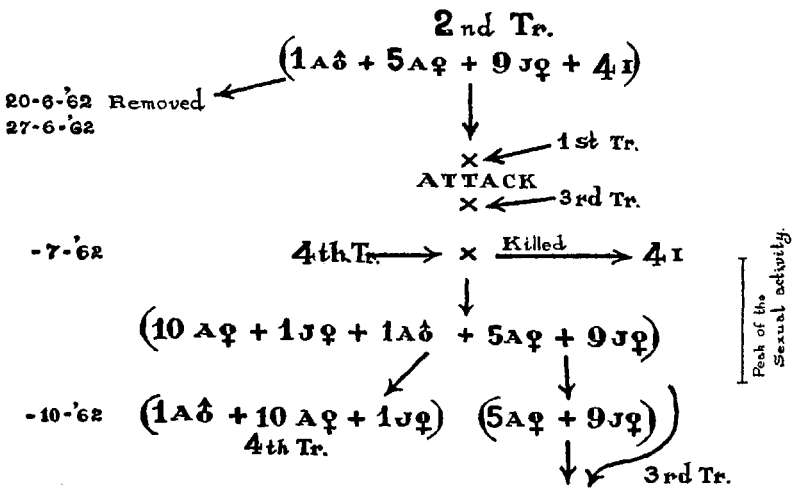


FIG. 12. The scheme of the social change of the 2nd troop of *P. entellus*.

party tried to join this 'female troop' which consisted of five adult females, nine subadult and juvenile females and four infants. For several days after the experiment, no change in their daily activity was discernible and no monkey exhibited fear as a result of the absence of the male overlord who protected and led the troop. No member also deserted the troop. One week after the incident, leader males of adjacent troops recognized the fact that there was no male in the 2nd troop and attacked it. The most severe attack was by the male of the 4th troop. He bit all the four infants of the 2nd troop, as a result of which they succumbed to the injuries. The mothers of these

infants literally deserted them during this happening. After these incidents, he copulated with most of the females including the mothers who had lost their infants. The male of the 4th troop became the leader male of the 2nd troop and tried to integrate the 2nd and 4th troops but monkeys of the 2nd troop persisted to move only within their own range as before and monkeys of the 4th troop did likewise except for their male. He never succeeded in integrating the two troops.

#### DISCUSSION

Such incidents occurred throughout a year. Sometimes, after each incident, the sexual activity of the individuals reached a peak. The formation or reconstruction of a new bisexual troop can be related to the sexual urges of the males of a male party and such social happening itself may stimulate and activate the sexual activity of males and females. The newly joined leader male bit harshly all the infants leaving the mothers quite unharmed. This male copulated with many of the mothers who were bereft of their infants by his savage act. The females appeared to become sexually excited after the loss of their infants and copulation ensued. This behaviour bears a correlation to the fact that generally a female langur delivers a baby once in two or three years. The absence of a baby acts as a trigger to the female for the sexual act. In addition, such an unprovoked attack can visibly and forcibly show to the members of the troop the ability of an aggressive male to organize and become a recognized leader.

Mothers do not bestow any special care over their injured infants and even desert them. That apart, mothers even hand over their infants to other female monkeys without any sort of hesitation. This 'baby-passing' is in consonance with a known observation that in many species of monkeys the infants are allowed to be handled for some length of time by adults other than the mother. This degree of tolerance is well pronounced in the langur mother who will allow other females to hold or touch infants. Adult langur males show very little interest in infants. The presence of young infants acts as a considerable cohesive factor in primate sociality and even affects the patterns of interaction among the group members.

The formation of a new male party or further enlargement of an already existing male party can take place by the chasing away of some males from their native troop.

Some of these phenomena are quite different from those seen in Japanese monkeys and other macaques which have a highly organized group structure. In a troop of Japanese monkeys, as well as other macaques, there are many adult males and females as well as juveniles and infants in a troop. The organized ranking order among adult males helps them coexist and contributes to the strength and stability of the troop. Japanese monkeys have no exclusive all-male troops but solitary males who are not the members of any

troop are often seen. The troop is too strong to attack for them (Frisch 1959; Imanishi 1960; Itani 1961). Only a few cases of the division of a troop after the increase of its population could be seen during the 10 years of study of Japanese monkeys (Sugiyama 1960; Furuya 1960).

The processes of these social changes may have many keys which can elucidate the social organization of this kind of animals. From the data collected thus far, the social organization of the Hanuman langur seems to be simpler and less stable than that of the macaques and more detailed information about the latter and the other Primates should be of profound interest.

#### ACKNOWLEDGEMENTS

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