

5. HABITAT

5.1. Introduction

Macaca mulatta live in a wide range of habitats. They show a significant degree of adaptability. They seem to be equally comfortable in arid deserts, dense forests, flat plains, mountaneous regions with temperatures below freezing point, hot-humid mangroves and in human ecosystems – rural, semi-rural and densely populated concrete forests with asphalt paths. Eminent primate biologist C.H. Southwick believed that any habitat with abundant trees for shelter, permanent water and food sources potentially can serve as a suitable habitat for monkeys.

Since recent past monkeys in general and rhesus macaques in particular are sharing human ecosystems and becoming more and more dependant on cultivated land, orchards and gardens as a primary source of food. This study finds support from incidence of higher rhesus population in the blocks with higher mango cultivation and production areas in the district.

Roadside survey of rhesus monkeys in Bengal studied by Southwick, Ghosh and Louch (1964). Southwick, Beg and Siddiqi (1961b) also reports on habitat of rhesus monkey at transportation routes and forest areas in North India. Report on desert habitat also forwarded from Prakash (1958) in Rajasthan. Mukherjee and Gupta (1965) brought forward the forest habitat of rhesus in the Sundarbans. Kali (2001) studied on grassland and forest habitat of rhesus macaques in Baikunthapur Forest Division, Jalpaiguri, West Bengal.

5.2. Methods

Habitat survey of rhesus monkeys was conducted mainly in the blocks with extensive and moderate mango cultivation areas of the district. Overwhelming abundance of monkeys observed in blocks with extensive mango cultivation areas such as English Bajar, Ratua-II and Old Malda. In fact about 98% (Table.5.1) of the total rhesus population of the district was found in these areas.

Systematic field study for cropland, orchard and village was conducted from 06.30 hour to 11.00 hour and 13.00 hour to 18.00 hour with the aid of a field assistant following Southwick et al. (1961a). The work was conducted by walking, cycling in the study area. On occasions local people helped in the work. On sighting a group, their number, age-sex composition and their locations were carefully recorded.

5.3. Results and Discussions

5.3.1. Habitat types in the present study area

In the present study five distinct categories of habitats were demarcated depending mainly on food source. The categories are mango orchard (Plate.5.1.), crop field, grassland (Plate.5.2.), human household (Plate.5.3.) and roadside (Plate.5.4.). Some of the features of the habitats are given below.

- I. **Mango orchard** : There are over 1,18,710 mango orchards covering an area of 24,560 hectares in the district. In the present study the orchards in the extensive and moderate mango cultivation areas in three blocks each were studied. More than 70% of the orchards belong to extensive and moderate cultivation areas. The orchard areas are dotted with ponds & ditches which are mostly perennial and serve as water source to the monkeys although the water level descends down in the mango season. The monkeys start visiting the orchards (Plate.5.1.) even before they come to bloom during February-March and assumes an important part until the end of the mango season i.e. July-August.
- II. **Crop fields** : The total crop field area of the monkey infested blocks is 21,770 hectares. A variety of crops are grown both in the summer and winter seasons. These include paddy, wheat, maize, *Cicer*, pisum, lens, potato, brinjal and many others. About 40% of the cropland area produce multiple crops in a year. The crop fields are situated at a distance of less than half a Km to a maximum of 5 Km from household and orchards. Rivers, irrigation

canals and ponds supply necessary water for irrigations in the crop fields. These water sources are also utilized by the monkeys.

- III. **Grassland** : Grassland (Plate.5.2.) cover more than 30,000 hectares in the monkey infested areas. The important grass, herb and shrub genera in this sector are *Cynodon*, *Digitaria*, *Imperata*, *Spinacia*, *Lycopersicon*, *Saccharum* etc. The ponds, marshy areas and rivers are the main source of water (Plate.5.6.) for the grazing cattle and monkeys. Most grassland (Plate.5.5.) are located at 5 to 7 Km from households and orchards.
- IV. **Household** : The human habitations in the village areas were mostly patchy intervened by crop field, mango orchard and grassland. The pattern of households in the township areas are, however, concentrated and clustered. Most (more than 70%) households in the village are mud-walled and thatched, while the rest are brick-walled with tin or concrete-roofs. Some of this houses are protected by high brick-walls. Usually the houses are rather close to the orchards and cultivated fields. Some of the house-holders maintain a kitchen garden along with plantations of fruit trees. Thus at the time of food scarcity in the non-mango season the monkeys do not hesitate to trespass in to the household (Plate.5.3.) for food.
- V. **Roadside** : Most village roads (Plate.5.4.) are of mud, brick and asphalt roads are found in townships. The roads are generally 6ft - 20ft in width. Irrigation canals and ditches are commonly seen to run along one or both side of the road. At the crossing of roads shops, temples and markets are often found. Bullock-carts, tractors, cycle-vans etc. ply along the village roads while motorcars, buses, tractors are common in township roads. The monkeys usually reside on the roadside trees at junction of roads where shops, temples and market places are situated specially in the non-mango season.

5.3.2. Habitat : Food Resource

It has been observed that monkey population increased in both the extensive and moderate mango cultivation areas in the mango season and declined in the non-mango season throughout the study period i.e. 1995-2002 (Table.5.1.). The table also shows that the percent sightings of monkey population is always higher in extensive mango cultivation areas than in moderate cultivation areas in both mango and non-mango seasons.

Due to gradual but consistent encroachment of forest area by the human beings wildlife habitat is shrinking every year. This situation is not peculiar to Malda or India but is a global phenomenon that compels the animals to invade crop fields, orchards and gardens in search of food causing man-animal conflict. The degree of the conflict depends on the magnitude of human encroachment of wildlife habitat which is a function of human growth rate.

5.3.3. Habitat : Season

Season exerts a profound effect on the habitat both in the biotic and abiotic component. Abundance of food and quality of shelter, the habitats provide are a function of season.

Table.5.2. shows the effect of mango and non-mango season on percent sightings as per habitat types. It is observed that mango orchards are preferred over any other habitats irrespective of season. More than 45% monkeys were sighted in the mango orchards. The point to be noted that about 18% monkeys were sighted in the mango orchards even in the non-mango season higher than those for all other habitats except grasslands. Again a clear shift in preference infavour of the habitat types other than mango orchards in the non-mango season is also observed. Table.5.3. once again shows that the monkeys prefer mango orchards over any other habitat as also the shift of preference to other habitats in the non-mango season. Percent sightings in the crop fields in the non-mango season dropped from 16.24 in the mango season to 13.57 in the non-mango season

when a variety of vegetables are grown may be due to enhanced vigilance and protection of crop fields during that period. The over all percent sightings in grassland was always comparatively higher than other habitat types except mango orchards is rather unexpected and may be due to the fact that grasslands provide some essential food materials which must be procured. Percent sightings in grassland was highest in the non-mango season.

Table.5.1. Number of monkeys sighted in extensive and moderate mango cultivation areas in mango and non-mango season over 7 year study (1995-2002) in Malda district, West Bengal, India.

Study Year	Mango Season			Non Mango Season		
	BEMC Area	BMMC Area	Total	BEMC Area	BMMC Area	Total
1995-96	477	19	496	380	07	387
1996-97	554	00	554	437	06	443
1997-98	600	21	621	328	00	328
1998-99	632	11	643	466	12	478
1999-00	722	00	722	427	07	434
2000-01	809	17	826	563	00	563
2001-02	840	00	840	631	08	639
Total	4634	68	4702	3232	40	3272

* Mango season : February to July; Non-mango season : August to January.

* BEMC : Blocks with extensive mango cultivation (English Bajar, Ratua-II and Old Malda).

* BMMC : Blocks with moderate mango cultivation (Manikchak, Kaliachak-I and Ratua-I).

Table.5.2. Habitat-wise number and percent sightings of monkeys at different habitats in mango and non-mango seasons in extensive and moderate mango cultivation areas from 1995 to 2002.

Habitat	Mango Season		Non-mango Season		Overall	
	No. of monkeys	% of sightings	No. of monkeys	% of sightings	No. of monkeys	% of sightings
Mango orchard	2972	82.17	645	17.83	3617	45.35
Crop field	796	65.62	417	34.38	1213	15.21
Grassland	647	39.74	981	60.27	1628	20.41
Human Household	214	29.07	522	70.93	736	09.22
Roadside	273	35.00	507	65.00	780	09.78

Table.5.3. Season-wise number and sightings of monkeys at different habitats in mango and non-mango seasons in study area from 1995 to 2002.

Habitat	Mango Season		Non-mango Season	
	No. of monkeys	% of sightings	No. of monkeys	% of sightings
Mango orchard	2972	60.62	645	21.00
Crop field	796	16.24	417	13.57
Grassland	647	13.20	981	31.93
Human household	214	04.37	522	16.99
Roadside	273	05.57	507	16.51



Plate.5.1. Monkey at Mango orchard.



Plate.5.2. Monkeys at Grassland habitat.



Plate.5.3. Monkeys at human household.



Plate.5.4. Rhesus group at roadside habitat.



Plate.5.5. A rhesus group by the side of a pond beneath a bamboo grove in a grassland.



Plate.5.6. A thirsty male on a bamboo stump inundated by rain water.