

## **8. FEEDING BEHAVIOUR**

### **8.1. Introduction**

The dietary habits of *Macaca mulatta* varied greatly depending upon where they live. They are omnivorous and often eat roots, herbs, fruits, insects, crops and small animals. They seem to choose their environment carefully in respect to food resources. Even when they are forced switch to lower quality food in the winter months, they do not exhibit higher mortality rates, although they may lose body weight (Nowak, 1991 and Parker, 1990). In general ripe fruits (74%), invertebrates along with plants (12%) and vertebrates (14%) constitute their normal dietary habits (Fa, John and Donald Lindberg, 1996).

It is essential to study feeding behaviour to understand ecological adaptations of animals to their habitat. Feeding behaviour is also important in analyzing ecological and behavioural problems of a species. Aggregation and segregation of the members of a social group is often influenced by the quality and quantity of vegetation and by the pattern of distribution of the foods resource. This chapter discusses food habits, food species, food selection technique, estimation of plant parts eaten along with drinking behaviour of rhesus macaques in the study area.

### **8.2. Methods**

Feeding behaviour was conducted by observing the animals at specific feeding situations during the course of study and by direct observation of food species consumed by them. No data was recorded when the animals were not in clear view. The manner and part of the plant species consumed by the monkeys were observed carefully.

### **8.2.1. Identification of food species**

Identification of the plant species eaten by the animals is one of the essential tasks of the investigator studying feeding behaviour. It was possible to identify a number of plant species and their parts eaten by the monkeys through direct observations with the help of binoculars at the study spot. All unknown food plants eaten by the animals were collected in a scientific manner for proper identification. At the time of sorting the local names were used for those food species whose local name were known and assigned the code numbers to other species which had no local name. Herbarium sheets were then prepared for the plants species collected following appropriate methods. The herbarium sheets were then sent to the Department of Botany, North Bengal University, for identification. Professor A. P. Das graciously helped the author in identifying the plants.

### **8.2.2. Plant parts estimation**

Observations of food species and plant parts eaten by the subjects were estimated following time sampling method (Altmann, 1974). Data were systematically collected on feeding bouts, plant parts eaten etc. by the animals during January-December, 2001. The method involved recording the food species and plant parts eaten by the animals feeding in one glance at every 5 minutes interval. Data were recorded only on the animals which were in clear view. Thus, each 5 minutes scan included the animals that were feeding immediately and were clearly with in the range of vision (Clutton, Brook and Harvey, 1976). Parts of food species adopted in this study are :

- a. Fruit : juicy fruits, nuts, seeds.
- b. Leaf : new and mature leaves.
- c. Stem : stems and twigs.
- d. Flowers : flowers and inflorescence.
- e. Bark : thick dead or partially dead surface of the trunk.
- f. Other plant parts such as roots, buds and petioles (Maruhasi, 1980).

The records of feeding behaviour were analysed by summing the total number of records of each food species and finally expressing the same in percent of the total number of feeding records collected. A total of 400 hours of observations were made on feeding behaviour which included 8072 bout of feeding.

### 8.2.3. Food selection ratio

Selection of food usually depends on taste as well as the nutritive value of the food items and most of the animals are more or less selective regarding their food items in natural habitat. Petrides (1975) reported that selected species are those which are proportionately more frequent in the diet of an animal than their availability in the environment. Stoddart and Smith (1955) used the term 'choice that animals make' for this purpose. Techniques used by different workers for determination of food preference are : A. faecal sample analysis (Clutton, Brook and Harvey, 1977), B. tracer sample analysis, C. scanning method (Altmann, 1974). The first one is more suitable for wild population while the second is of much promise but requires more adequate facilities. In this study scanning method as used by Altmann (1974) in red and black-white colobus in East Africa was followed as it appeared to be most suitable. The method provides an estimate of the proportion of time which animals spent on feeding of each food species or parts of plant. The process involves selecting an experimental plot in the study area where the major food plants are present. In this study one spot at Bachamari of Old Malda block was selected to determine food selection ratio of rhesus macaques. Plants over 2 metres in height were recorded in a sample strip of 50m X 100m = 5000 sq. mtrs. for this work.

Total number of feeding bouts on each species and total number of trees of each species were counted in the experimental plot and converted into percentage time spent on feeding of each species (PTFS) and abundance of each species (PAS) respectively. Then selection ratio was determined dividing PTFS by PAS i.e.  $r = \text{PTFS} / \text{PAS}$ . The selection ratio for different species emphasized the strength of selectivity. Some of the plant species found at a high density were

irregularly selected whereas some tree species with low density were selected regularly.

#### **8.2.4. Total food intake**

Wet weight of green shoots taken by a single pluck was determined by comparison with an adjacent unplucked region. Number of plucks per unit time by members of different age-sex classes were recorded. The amount consumed was determined by multiplying the amount taken in a single pluck by number of plucks per unit time. Finally, this was again multiplied by average number of hours of feeding by different age-sex classes of animals.

### **8.3. Results and Analysis**

#### **8.3.1. Feeding mode of Rhesus**

Rhesus monkeys are largely vegetarian. Fruits, green leaves, flowers, seeds, barks of different plant species, grass and grains and algae constitute their normal diet. Besides, plant material, rhesus monkeys were seen to feed on unidentified small insects from the soil (Lindburgh, 1971; Krishnan, 1972). Usually the members of a group engage themselves in feeding on different parts on finding a major food species with sparse distribution. On arriving at such a tree all the members of a group exhibited some degree of excitement and soon engaged themselves in feeding which often lasted for 20-45 minutes. Young individuals were often found to feed at the terminal branches (Plate.8.1.) where as older and heavier ones mostly fed at the central or middle parts (Plate.8.2.). Lindburgh (1971) and Kali (2001) observed this type of feeding behaviour in Northern India and North Bengal respectively. Fruits and berries are picked up with the hand and brought to the mouth (Plate.8.3.) with one hand and the berries or fruits are plucked by the other. Often in presence of other members of the group they filled their cheek pouches with food and then chewed the food materials on reaching a safe spot (Plate.8.4). They fed on grass, herbs (Plate.8.5., Plate.8.6.), dropped nuts (Plate.8.7.) and fruits (Plate.8.8., Plate.8.9.) on the ground. Feeding on ground

comprised 18% of their total feeding time although it varied seasonally because in winter feeding at the ground is higher than that of summer, when green leaves and fruits are easily available. Sometimes stolen food materials were fed by them in a safe place even on the top of the boundary wall of a protected garden (Plate.8.10.). Raiding of human households for food materials are not infrequent in the non-mango season (Plate.8.11.).

### 8.3.2 Food species analysis

Altogether 61 plant species belonging 55 genera under 30 families constituted plant food spectrum of rhesus monkeys at the present study site (Table.8.1). As the study area is primarily mango orchards, 26.2% of the trees, comprising food species are mango, *Mangifera indica* belonging to Anacardiaceae. The families Gramineae (11.1%), Leguminosae (10.8%) and Solanaceae (6.2%) together accounted for 28.1% of the food plants in the area. Thus although the food species of rhesus macaques in this area comprised of 30 families and 55 genera; only 4 families and 21 genera accounted for more than 54% of the food plant species in the area. All the food plants listed in Table.8.1. were, however, not eaten equally; only several species *Mangifera indica* (Plate.8.13.), *Carica papaya*, *Phyllanthus emblica*, *Syzygium cumini*, *Musa paradisiaca* (Plate.8.10.), *Bombax ceiba*, *Artocarpus heterophyllus* (Plate.8.2), *Citrus medica* (Plate.8.12), *Psidium guajava*, *Polyalthia longifolia*, *Solanum melongena*, *Cicer arietinum*, *Oryza sativa*, *Triticum aestivum*, *Spinacia oleracea*, *Solanum tuberosum*, *Ficus carica*, *Bambusa tulda* (Plate.8.1.), *Colocasia esculenta* (Plate.8.6.), *Cucumis sativus* were observed to be consumed in large amounts. As such these food species may be regarded as 'principal food', of rhesus as used by Petrides (1975). The other food species which were found to be eaten in smaller quantities were termed as 'auxiliary food'. The 'auxiliary food' were consumed during movement from resting sites to feeding sites and vice versa. The list of large scale of food items indicates that rhesus monkeys are wide spectrum feeder.

### 8.3.3. Food selection

One of the important aspects of feeding behaviour is food selection. The animal decides to consume a certain species 'X' in preference to species 'Y' and 'Z' under certain situation. The animals also decides on the amount to be consumed of the selected species. Frequent feeding on certain species may be due in part to its availability, but availability is not the whole story since many commonly available food items may be consumed little. Table. 8.2. shows percent abundance of tree species, percent time spent on them by monkeys and selection ratio. A selection ratio of more than unity indicates preference. Food selection ratios were done in the experimental area where 17 plant species were selected during the period from May to June, 2001. The experimental plot (Bachamari) was situated in Old Malda block and although dominated by *Polyalthia* (PAS = 6.8%), *Dalbergia* (PAS = 6.8%), *Areca* (PAS = 6.2%) and *Bombax* (PAS = 6.1%), showed lower rate of feeding, i.e. 0.32%, 0.31%, 0.26% and 0.19% respectively (Table. 8.2.). At the same time some species with parallel abundance were regularly selected, i.e. *Syzygium*, *Psidium*, *Artocarpus*. Some of the species found at moderately high density were irregularly selected while some genera with the same density were regularly selected, i.e. *Ficus*, *Phyllanthus* etc. It is to be noted that trees with intermediate density had a intermediate selection ratio, i.e. *Acacea*, *Delomix*, *Litchi*.

Besides selection ratio on trees, 11 most common grass, shrub and herbaceous genera were collected for identification as important source of food sources. Table.8.3. shows 3 grass genera, 5 herb genera and 3 shrub genera. *Cynodon* was found to be the most important food source among the grasses. *Oryza* and *Zea* were found as important food source among the five herb genera. Similarly among the shrubs *Citrus* and *Bambusa* were important.

### 8.3.4. Diet and Seasonal variation

Rhesus groups were observed to feed on 61 plant species under 30 families from March, 2001 to December, 2001, excluding two rainy months i.e. July and

August. The study was divided into two halves : I. Spring and early summer (March to June), II. Autumn and early winter (September to December). The records of different parts eaten were systematically collected to analyse diet quantitatively (Table.8.5. and Table.8.6.). The diet of rhesus monkeys include : fruits, leaves, flowers, stems, barks, buds, roots, petioles, some unidentified plant parts and small soil insects. The animals also consume a number of grass species also reported by Mukherjee and Gupta (1965), Lindburgh (1971) and Kali (2001).

Table.8.5. shows that in the spring – summer months i.e. March to June the monkeys spent about 82% of their feeding time on fruits and leaves. On the other hand they spent more or less similar proportion of time (75%) on leaves and stems in autumn – winter months (September to December, Table.8.6.). Over all the monkeys fed predominantly on fruits in the spring – summer months and leaves in the autumn – winter months. Percent time spent on other plant parts in the two seasons varied from item to item. Similar difference in plant part consumption has also been reported by Roonwal (1956), Lindburgh (1971) and Kali (2001).

The diet of rhesus is similar to that of *Macaca radiata* (Bertrand, 1969), *Macaca assamensis* (Fodden, 1971) and *Macaca silenus* (Sugiyama, 1971). Unlike these species *Macaca nemestrina* (Corner, 1941; Bertrand, 1969) and *Macaca fascicularis* (Fodden, 1971) are reported to be omnivorous rather than predominantly vegetarian. The diet of *Macaca fuscata yakui* (Maruhasi, 1980) is essentially fruits and is close to that observed in the present study.

### 8.3.5. Total Food Intake

Both intensity of feeding and time spent in feeding are maximum in mothers with infants and as such they consumed maximum amount of food i.e. 122.9 gms per hour during the feeding period (Table.8.4.) Higher rate of consumption by mothers was possibly required for regaining health after giving birth of the young and for milk production. The food consumption of adult males were lower than that of the adult females with or without infants. It may be mentioned that the infants suckled their mother's milk besides their diet of fruits, leaves, shoots and

grass in relation to their body weight. It is well known that animals with smaller body size requires more energy per unit of body weight as compared to the large bodied animals because of higher metabolic rate.

### **8.3.6. Drinks**

Rhesus monkeys were observed to drink from all kinds of water sources such as rivers, ponds, ditches and even from irrigation channel. No particular period of the day can be pointed out as their "drinking time", however, they were found to drink at the early morning, mid-day and late after noon hours. Often they were observed to drink during intervals between feeding bouts when water sources were available in the vicinity.

Drinking pattern (Plate.8.16.) depended on the kind of water sources they were drinking from. When they drank from rivers, streams and pools their fore limbs were in the water bodies but the hind limbs were on the bank (Plate.8.14.). While crossing the rivers or sloppy bank of water source (Plate.8.15) they drank standing at knee-deep water. Again when they drank from small water bodies they just lowered their shoulders leading the mouth into the water source while maintaining their position on the hind limbs at the bank. They immersed their lips (Plate.8.17.) into water and sucked up water. Most often they drank for only few seconds at a time. On occasions they drank continuously for about 28 seconds. Drinking generally lasted 13 to 28 seconds in adults, 8 to 15 seconds in juveniles and 6 to 10 seconds in infants (Table.8.7.).

They were observed to drink clear and mud-free water. Authorities differed regarding drinking capacity of rhesus. Mukherjee (1969) is of opinion that rhesus drink at least two to three times a day. Kali (2001) noted that during the hot months they drink more often. It was also observed that, almost all the members of the group drank water (Plate.8.18.) whenever they came in contact with a large water source such as river or ponds.

Table.8.1. Food species of rhesus monkey at Malda district.

| Sl. No. | Food species                                     | Family         | % of food species |
|---------|--|----------------|-------------------|
| 1.      | <i>Mangifera indica</i>                          | Anacardiaceae  | 26.2              |
| 2.      | <i>Areca catechu</i>                             | Arecaceae      | 02.1              |
| 3.      | <i>Acacia catechu</i>                            | Arecaceae      |                   |
| 4.      | <i>Andrographis paniculata</i>                   | Acanthaceae    | 01.1              |
| 5.      | <i>Colocasia esculenta</i>                       | Aeraceae       | 01.2              |
| 6.      | <i>Polyalthia longifolia</i>                     | Annonaceae     | 01.2              |
| 7.      | <i>Brassica campestris</i>                       | Brassicaceae   | 03.8              |
| 8.      | <i>Brassica naigra</i>                           | Brassicaceae   |                   |
| 9.      | <i>Brassica oleracea</i><br>Var. <i>Botrytis</i> | Brassicaceae   |                   |
| 10.     | <i>Brassica oleracea</i><br>Var. <i>Capitala</i> | Brassicaceae   |                   |
| 11.     | <i>Bombax ceiba</i>                              | Bombacaceae    | 01.4              |
| 12.     | <i>Carica papyra</i>                             | Caricaceae     | 01.3              |
| 13.     | <i>Enhydra fluctuans</i>                         | Compositae     | 01.2              |
| 14.     | <i>Terminalia chebula</i>                        | Combretaceae   | 01.2              |
| 15.     | <i>Terminalia bahera</i>                         | Combretaceae   |                   |
| 16.     | <i>Trichosanthus dioica</i>                      | Cucurbitaceae  | 03.0              |
| 17.     | <i>Cucumis sativus</i>                           | Cucurbitaceae  |                   |
| 18.     | <i>Lagenaria siceraria</i>                       | Cucurbitaceae  |                   |
| 19.     | <i>Cucurbita peopo</i>                           | Cucurbitaceae  |                   |
| 20.     | <i>Raphanus sativus</i>                          | Cruciferae     | 01.2              |
| 21.     | <i>Spinacia oleracea</i>                         | Chinopodiaceae | 01.1              |
| 22.     | <i>Phyllanthus emblica</i>                       | Euphorbiaceae  | 02.1              |

| Sl. No. | Food Species                    | Family      | % of food species |
|---------|---------------------------------|-------------|-------------------|
| 23.     | <i>Cynodon dactylon</i>         | Gramineae   | 11.1              |
| 24.     | <i>Saccharum officinarum</i>    | Gramineae   |                   |
| 25.     | <i>Triticum aestivum</i>        | Gramineae   |                   |
| 26.     | <i>Oryza sativa</i>             | Gramineae   |                   |
| 27.     | <i>Impereta cylindrica</i>      | Gramineae   |                   |
| 28.     | <i>Cicer arietinum</i>          | Gramineae   |                   |
| 29.     | <i>Digitaria sanguinalis</i>    | Gramineae   |                   |
| 30.     | <i>Zea maize</i>                | Gramineae   |                   |
| 31.     | <i>Bambusa tulda</i>            | Gramineae   |                   |
| 32.     | <i>Acacea auriculiformes</i>    | Leguminosae | 10.8              |
| 33.     | <i>Pisum sativum</i>            | Leguminosae |                   |
| 34.     | <i>Dalbergia sisso</i>          | Leguminosae |                   |
| 35.     | <i>Lens culinaris</i>           | Leguminosae |                   |
| 36.     | <i>Caesalpinia pulcherrima</i>  | Leguminosae |                   |
| 37.     | <i>Delomix rigia</i>            | Leguminosae |                   |
| 38.     | <i>Dolichos lablab</i>          | Leguminosae |                   |
| 39.     | <i>Vigna sinesis</i>            | Leguminosae |                   |
| 40.     | <i>Musa paradisiacal</i>        | Musaceae    | 02.1              |
| 41.     | <i>Melia azadirachta</i>        | Meliaceae   | 01.4              |
| 42.     | <i>Syzygium cumini</i>          | Myrtaceae   | 03.6              |
| 43.     | <i>Psidium guajava</i>          | Myrtaceae   |                   |
| 44.     | <i>Artocarpus heterophyllus</i> | Moraceae    | 02.7              |
| 45.     | <i>Ficus carica</i>             | Moraceae    |                   |
| 46.     | <i>Abelmoschus esculentus</i>   | Malvaceae   | 01.4              |
| 47.     | <i>Pinus roxburghii</i>         | Pinaceae    | 01.1              |

| Sl. No. | Food Species                   | Family        | % of food species |
|---------|--------------------------------|---------------|-------------------|
| 48.     | <i>Cocos nucifera</i>          | Palmae        | 02.3              |
| 49.     | <i>Phoenix sylvestris</i>      | Palmae        |                   |
| 50.     | <i>Calamur rotang</i>          | Palmae        |                   |
| 51.     | <i>Punica granatum</i>         | Punicaceae    | 01.1              |
| 52.     | <i>Citrus medica</i>           | Rutaceae      | 02.2              |
| 53.     | <i>Litchi chinensis</i>        | Sapindaceae   | 01.2              |
| 54.     | <i>Solanum tuberosum</i>       | Solanaceae    | 06.2              |
| 55.     | <i>Lycopersicon esculentum</i> | Solanaceae    |                   |
| 56.     | <i>Solanum melongena</i>       | Solanaceae    |                   |
| 57.     | <i>Corchorus olitorius</i>     | Tiliaceae     | 02.2              |
| 58.     | <i>Corchorus capsularis</i>    | Tiliaceae     |                   |
| 59.     | <i>Centella asiatica</i>       | Umbelliferae  | 01.1              |
| 60.     | <i>Zingiber officinale</i>     | Zingiberaceae | 01.7              |
| 61.     | <i>Curcuma longa</i>           | Zingiberaceae |                   |

Table.8.2. Abundance of some food species and their Selection (Area = 100m X 50m) Ratio at Bachamari of Old Malda block of the district.

| Name of the species             | PTFS | PAS  | Selection ratio : PTFS/PAS |
|---------------------------------|------|------|----------------------------|
| <i>Mangifera indica</i>         | 21.7 | 10.8 | 02.10                      |
| <i>Areca catechu</i>            | 01.4 | 06.2 | 00.26                      |
| <i>Polyalthia longifolia</i>    | 02.2 | 06.8 | 00.32                      |
| <i>Bombax ceiba</i>             | 01.2 | 06.1 | 00.19                      |
| <i>Carica papaya</i>            | 15.2 | 08.2 | 01.85                      |
| <i>Phyllanthus emblica</i>      | 06.7 | 04.4 | 01.52                      |
| <i>Acacea auriculiformes</i>    | 02.2 | 04.3 | 00.51                      |
| <i>Dalbergia sisso</i>          | 02.1 | 06.8 | 00.31                      |
| <i>Caesalpinia pulcherrima</i>  | 01.1 | 04.3 | 00.25                      |
| <i>Delomix rigia</i>            | 01.8 | 04.4 | 00.41                      |
| <i>Melia azadirachta</i>        | 01.7 | 04.2 | 00.40                      |
| <i>Syzygium cumini</i>          | 11.9 | 06.6 | 01.80                      |
| <i>Psidium guajava</i>          | 13.2 | 06.7 | 01.97                      |
| <i>Artocarpus heterophyllus</i> | 09.1 | 05.8 | 01.57                      |
| <i>Ficus carica</i>             | 05.2 | 04.4 | 01.18                      |
| <i>Cocos nucifera</i>           | 01.1 | 04.8 | 00.23                      |
| <i>Litchi chinensis</i>         | 02.2 | 05.2 | 00.42                      |

\* PTFS = Percent time spent feeding on each species.

\* PAS = Percent abundance of each species.

Table.8.3. Percent time spent on feeding of some of the most common genera of grasses, herbs and shrubs in the study area.

| Genus            | Type  | Percent time spent in feeding |
|------------------|-------|-------------------------------|
| <i>Cynodon</i>   | Grass | 38.5                          |
| <i>Digitaria</i> | "     | 31.2                          |
| <i>Imperata</i>  | "     | 30.3                          |
| <i>Oryza</i>     | Herb  | 32.2                          |
| <i>Zea</i>       | "     | 22.1                          |
| <i>Brassica</i>  | "     | 09.1                          |
| <i>Cicer</i>     | "     | 17.1                          |
| <i>Solanum</i>   | "     | 19.5                          |
| <i>Saccharum</i> | Shrub | 25.8                          |
| <i>Bambusa</i>   | "     | 33.5                          |
| <i>Citrus</i>    | "     | 40.7                          |

Table.8.4. Total food intake (green-leaves) in gms. per hour by different age-sex classes of rhesus monkey.

| Classes                    | No. of Plucks per hour (N) | Average wet weight of single pluck (W) [in gms.] | Amount of green leaves eaten per hour (A=N X W) [in gms.] |
|----------------------------|----------------------------|--|---|
| Adult Male                 | 1020                       | 0.089  | 90.8  |
| Adult Female               | 1130                       | 0.088  | 99.4  |
| Adult Female (with infant) | 1280                       | 0.096  | 122.9   |
| Juvenile                   | 840                        | 0.072  | 60.5  |
| Infant                     | 440                        | 0.044  | 19.4  |

Table.8.5. Percent time spent on feeding of plant-parts irrespective of species in spring-summer months in 2001.

| Month   | Plant-parts |      |      |        |      |      |        |
|---------|-------------|------|------|--------|------|------|--------|
|         | Fruit       | Leaf | Stem | Flower | Bark | Seed | Others |
| March   | 51.2        | 20.6 | 11.3 | 12.3   | 00.4 | 03.9 | 00.3   |
| April   | 70.1        | 11.9 | 09.6 | 04.4   | 00.1 | 03.2 | 00.7   |
| May     | 76.9        | 09.8 | 08.4 | 02.1   | 00.2 | 01.7 | 01.0   |
| June    | 78.3        | 07.8 | 09.4 | 00.8   | 00.4 | 02.8 | 00.5   |
| Average | 69.1        | 12.5 | 09.7 | 04.9   | 00.3 | 02.9 | 00.6   |

Table.8.6. Percent time spent on feeding of plant-parts irrespective of species in autumn-winter months in 2001.

| Month     | Plant-parts |      |      |        |      |      |        |
|-----------|-------------|------|------|--------|------|------|--------|
|           | Fruit       | Leaf | Stem | Flower | Bark | Seed | Others |
| September | 12.7        | 58.7 | 23.4 | 02.3   | 01.1 | 01.2 | 00.6   |
| October   | 10.1        | 60.2 | 22.4 | 04.7   | 01.0 | 01.1 | 00.5   |
| November  | 19.2        | 50.8 | 22.2 | 05.1   | 01.3 | 00.6 | 00.8   |
| December  | 32.1        | 41.3 | 19.3 | 04.9   | 01.1 | 00.7 | 00.6   |
| Average   | 18.5        | 52.7 | 21.8 | 04.2   | 01.1 | 00.9 | 00.6   |

Table.8.7. Duration of drinking (in seconds) in different age-class of rhesus monkey.

| Age Class | No. of <sup>Sighting</sup><br>Sighting | Minimum | Maximum | Average |
|-----------|--|---------|---------|---------|
| Adult     | 165                                    | 13      | 28      | 20.5    |
| Juvenile  | 90                                     | 08      | 15      | 11.5    |
| Infant    | 75                                     | 06      | 10      | 08.0    |



Plate.8.1. Young individual at the top of a *Bambusa tulda* during feeding.



Plate.8.2. Adult male in the middle portion of Jackfruit tree during feeding.



Plate.8.3. Banana picked up with the hands and brought to the mouth by the adult male.



Plate.8.4. An adult female of a small group in resting phase chewing food materials in her cheek-pouches.



Plate.8.5. One adult male and female along with one juvenile feeding on herbs.



Plate.8.6. Adult male at *Colocasia* plantation during feeding in the morning session.



Plate.8.7. Monkeys feed on nuts dropped on the ground.

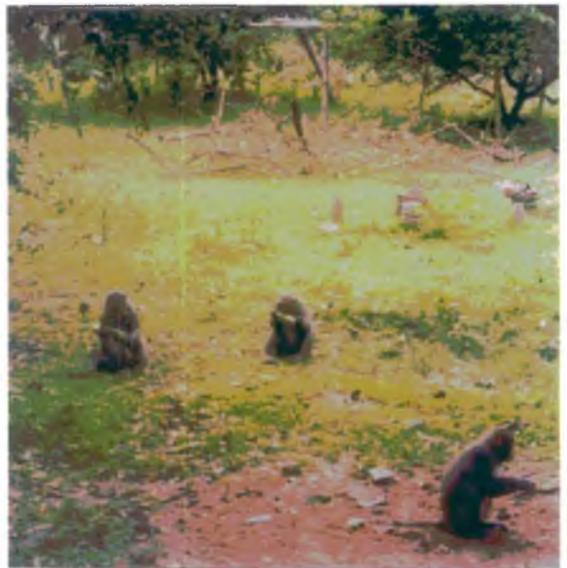


Plate.8.8. An adult female with her infant feeding on bananas while the juvenile chewing food materials stored in cheek-pouch.



Plate.8.9. An adult female with her infant feeding on mango.



Plate.8.10. An adult male feeding on a banana stolen from a garden sitting on the boundary wall that is studded with glass spikes for protection.



Plate.8.11. A hungry adult male fed on brinjal in the kitchen of a household in non-mango season.



Plate.8.12. An adult female feeding on *Citrus* leaves beneath the tree in the morning hours.



Plate.8.13. A mango tree (*Mangifera indica*) an important food species with mature fruits. Bamboo poles are used to support the terminal branches to avoid breakage due to the weight of the fruits.



Plate.8.14. During drinking an adult female step up forelimbs in the water but the hindlimbs on the bank.



Plate.8.15. An adult male is drinking from a pond at knee deep water in the morning session.



Plate.8.16. A juvenile drinking in an upside down position while hanging from a bamboo stump.



Plate.8.17. An adult male immersed his lips into water of a pond and sucked up.



Plate.8.18. Group drinking with a larger water source.