# BEHAVIOURAL STUDY OF MACACA NEMESTRINA, A WILD MONKEY SPECIES OF TRIPURA

**Abstract:**

Tripura, a small hill locked state of north-eastern part of India lies under the Indo-Burma biodiversity hotspot region, where large number of monkey species present belonging to class Mammalia. Among several monkey species Macaca nemestrina which is commonly known as pig-tailed macaque exists in a small number within the forests of Tripura. The pig-tailed macaque lives in groups, where various numbers of male and female individuals remains. A social interaction exists among the family members of the groups. The activity pattern during this study showed a kind of communal interaction remains among the family members within the whole family of pig-tailed macaque monkey, but the foraging and feeding activity showed discrete nature of behaviour within the same group.The analysis of various activity time recorded presented the maximum devotion of this species towards resting (49.87%) followed by movement (26.55%). Other indirect social behaviour observed like allo-grooming, auto-grooming, playing and fighting comprises7.90%, 8.04%, 4.00% and 3.58% respectively. During sunny day's macaque's activity like resting time is high compared to others activity. The preferable enlisted food choices in natural habitat give an idea of their feeding habit. Such behavioral studies on pig-tailed macaque may be helpful for creating conservation strategies, as destruction of their natural habitat and food sources are increasing day by day.These findings are key indicators for taking conservation strategies of the concern species.

**Keywords:** Behavioural study, Macaca nemestrina**,** pig-tailed macaque, Tripura.

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## I. INTRODUCTION

Tripura, a small state of north-eastern India lies under the region of Indo-Burma biodiversity hotspot and harbour a good number of different monkey species including Macaca nemestrina (Mukherjee et al., 1993). Among several monkey species Macaca nemestrina which is commonly known as pig-tailed macaque exists in a small number within the forests of Tripura. This species is commonly available throughout all the north-eastern states of India including Tripura. Besides these, it is found to be available in Bangladesh, Cambodia, Thailand, Vietnam, China and Myanmar (Groves, 2005). This diurnal species spends much of its time foraging on the ground, but also occupies all levels of the forest canopy. It can survive by eating a variety of fruits, seeds, young leaves, buds, shoots of trees of forest. But this macaque is also considered as an opportunistic feeder due to its feeding behaviour on fungus and animal preys like insects, river crabs, nestling birds etc (Nila et al., 2014). In few places, various macaque earned a reputation as a serious pest due to its tendency for destruction of crops (Marchal and Hill, 2009; Das and Mandal, 2015).

The pig-tailed macaque lives in groups, where multiple numbers of male and female individuals remains. A social interaction exists among the family members of the groups (Choudhury 2010; Choudhury et al.,2023). Dorsal body colour generally varies from greyish-olive to russet in appearance with a darker forehead and crown. The ventral side of the body is mostly greyish in colour, but the lower abdomen is slightly reddish in appearance. The face and hindquarters are pinkish-brown. Usually, males are bigger and heavier than females in weight and size. The breeding season of pig-tail macaque remains throughout the whole year, but the reproductively peak period arises within the month of January to May. Generally, after 162 to 186 days of gestation period the birth of single offspring happens, and then the young is nursed for 8 to 12 months (Ha et al., 2011).

Pig-tailed macaque is well distributed species throughout the major forested areas of Tripura. But day by day destruction of their forest habitats is bringing a tremendous threat to this species. This species is listed under CITES Appendix II and Schedule II under the Wildlife (Protection) Act, 1972 (Choudhury, 2003; Chetry et al. 2003) amended up to 2010. There is a lacking exists in scientific literatures about the social and communicational behaviour of pig-tailed macaque. The understanding of the social interaction among the family members of this macaque in wild condition is very important which was not properly evaluated till date. Therefore, a basic approach was undertaken in this study to understand the behavioral activity of the pig-tailed macaque in forest area. This study may help in future to take appropriate measures for conservation of the species.

## II. METHODOLOGY

1. **Study Area and Sampling Process:** The observations were made near Chabimura under Amarpur Forest Division of Gomati district of Tripura during pre-monsoon period in the month of April. The behavioural activity of the pig-tailed macaque was observed by following the scan sampling method. But a petite modification was carried out in the sampling method for observing the subjects of the group. The sampling was conducted for 12 hours during 6.00 am to 6.00 pm. Various behavioral activity patterns were recorded during the observed period. The group of pig-tailed macaque which was

 

observed had 09 individuals comprising two adult males, three adult females and four juveniles.

2. **Results and Discussion:** During entire day, the activity pattern of the whole family of pig-tailed macaque monkey observed which revealed a kind of communal interaction remains among the family members, but the foraging and feeding activity showed discrete nature of behaviour within the same group. They had been conducting their whole day activity within a social group, but it does not exist during the sharing of food resources. The analysis of various activity time recorded throughout the entire day presented the maximum devotion of this species towards resting (49.87%) phenomenon followed by movement (26.55%). Other indirect social behaviour observed like allo-grooming, auto-grooming, playing and fighting comprises7.90%, 8.04%, 4.00% and 3.58% respectively (Table.1). These behaviors were very less compared to major behaviors of movement and resting. Female were take rest with infant. The most obvious correlation exists between resting and movement and also resting and grooming. Playing and fighting behaviour was distributed evenly with an extremely lower percentage.

**Table.1: Average Percentage of Time Spent on Various Activities of Pig-Tailed Macaque Monkey within a Day.**

| **Activity** | Summer |
|---|---|
| Movement | 26.55% |
| Resting | 49.87% |
| Allo-grooming | 7.90% |
| Auto-grooming | 8.04% |
| Playing | 4.00% |
| Fighting | 3.58% |

3. **Grooming:** Grooming was observed during the day time. The pick time for grooming was in the afternoons.For grooming activity sun was required sufficient,the pick.time for grooming was in the mid-noon & afternoon time. Auto-grooming is presumed to be a non-functional behavior in this study as it did not show hygiene interaction during the observation. Allo-grooming was observed maximum between male/females, females/ infants (Fig.1). Grooming activity between male/male and female/female is noticed as very less depending on the age and size of the animals.

**Figure 1:** Allo-gromming Behaviour of Pig-Tailed Macaque Monkey During Study Period.

 

4. **Breeding:** The sexual and mating behaviour of macaques was observed during the study time (Fig.2). Aggressive behavior was recorded during the study. Although, babies are very special in the colony and kept under watchful observation.

**Figure 2:** Mating Behaviour of Pig-Tailed Macaque Monkey

5. **Feeding:** Feeding behaviour is an important behavior of the daily activity budget. They take natural food present in nearby forest area, but sometimes in search of food they moves close to human habitats and invades as well. The Macaque's were observed to utilize every layer of canopy in the range of the tree. The pick feeding time was in the morning and afternoon time (Fig.3).During this observation natural feed by Macaque's are considered to be leaves, flower and buds of various plants like: Bambusa affinis (leaves), Naicha (leaves) followed by Dumor (leaves), Chamal (fruits) and Bhura (barks and leaves) etc (Table.2).

**Figure 3:** Feeding Behaviour of Pig-Tailed Macaque Monkey

**Table.2: List of Natural Food Items Used by Pig-Tailed Macaque.**

| Sl. No. | Species | Parts to be used |
|---|---|---|
| 1 | Terminalia bellirica (Bahera) | Leaves |
| 2 | Terminalia bellirica (Bahera) | Leaves |
| 3 | Trema orientalies L (Naicha) | leaves |
| 4 | Tchima walichi (Kanak) | Leaves |

| | | |
|---|---|---|
| 5 | Ficus hispida L. (Dumor) | Leaves |
| 6 | Mallotus sp. (Bhura) | Leaves & Barks |
| 7 | Bambusa affinis | Leaves |
| 8 | Aritocurpus chaplasa (Chamal) | Fruits |

6. **Resting, Playing and Fighting:** During observation it was noticed that the pig-tailed macaque spent maximum of its day time in resting phase (49.87%), whereas the playing and fighting behavior is very less restricted to 4.00% and 3.58% within the whole day activity pattern or activity budget (Fig.4).

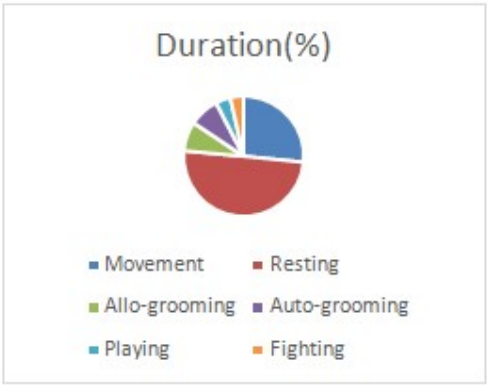


**Figure 4:** Percentage of Daily Activity Budget of Pig-Tailed Macaque

## III. CONCLUSION

The components of ecosystem mostly affect the behaviour of pigtailed macaque. Macaque provides protection to their physical habitat. Generally, percentage of time spent on the ground was four times higher than that on trees. During sunny days Macaque's activity like resting time is high compared to others activity. The preferable enlisted food choices in natural habitat give an idea of their feeding habit. Such behavioral studies on pig-tailed macaque may be helpful for creating conservation strategies, as destruction of their natural habitat and food resources are increasing day by day. The pigtail monkey was found to be an arboreal deep forest animal and due to this reason their social behavioral interaction studies has an significance, which can further be utilized to compare and understand the behavioral response pattern of other primates present in natural as well as in captive enclosures. These findings of species-specific data are important for conservation of the species.

## IV. ACKNOWLEDGEMENT

The authors are thankful to the Principal, Rammohan College, Kolkata, West Bengal and college authority of Ramkrishna Mahavidyalaya, Kailashahar, Tripura for encouragement and moral support.

Funding Source: None
Conflict of interest: No such conflict of interest is there to declare.

 

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