

HUMAN-RHESUS MONKEY CONFLICT AT RAMPUR VILLAGE UNDER MONOHARDI UPAZILA IN NARSINGDI DISTRICT OF BANGLADESH

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Conflicts between humans and non-human primates are recognized as major issues in conservation of primates. Crop damage caused by primates is one of the most wide spread and common examples of human-non-human primate conflicts in areas where local people are mainly subsistence farmers (Hill 1998). Various forms of human-wildlife conflicts occur with various negative results, including damage to crops and property, habitat destruction, injuries and death of people and wildlife, and livestock depredation. However, in Asia in general and in Bangladesh in particular, conflicts between humans and the Rhesus Macaques (*Macaca mulatta* Zimmermann, 1780) are on the increase (IUCN 2009). No published paper is available on the crop damage by primates in human settlement areas in Bangladesh except Khatun et al. (2013) on Common Langurs (*Semnopithecus entellus*). Increasing conflict between humans and Rhesus Macaques is a growing problem for both species in Bangladesh. Many people have been badly scratched, injured and bitten by Rhesus Monkeys in urban and/or suburban areas such as Bormi (Gazipur), Dhamrai (Dhaka), Charmuguria (Madaripur), Chandpur and Chashnipeer-ermazar (a shrine in Sylhet) in Bangladesh (M.F. Ahsan pers. obs. 1980–1998;

Hasan et al. 2013). Monkeys destroy home gardens, fruit trees and crops. On the other hand, monkeys are also beaten, injured and killed by the local people. These interactions may increase the risk of bidirectional disease transmission (Jones-Engel et al. 2008). The present study deals with the human-Rhesus monkey conflicts in Rampur Village under Khidirpur Union Parishad of Monohardi Upazila under Narsingdi District in Bangladesh (24°14.226'N & 90°43.250'E). The major objectives of the study were to: (i) know the major food species of Rhesus monkeys in the study area; (ii) find out the crops damaged by the monkeys; (iii) assess crop damage; (iv) determine possible causes for human-monkey conflicts; and (v) point out possible conservation measures in the study area.

Methods: The following methods were employed in this study:

Group size and composition: One group of Rhesus Macaques was studied and its group size and composition were recorded from April to September 2012. The macaques were observed with naked eyes. Four age-sex classes were recognized to characterize macaques: adult male, adult female, juvenile and infant (Southwick et al. 1961). The group size was counted once in a month either during morning (0600–0090 h) and/or late hours of daylight (1500–1800 h) especially when they were crossing a road and/or open field.

Data collection: Information on human-Rhesus monkey conflict was collected through filling in a self-prepared questionnaire survey in Rampur Village (Appendix 1). A total of 40 persons were randomly



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selected for the interview. The aims and objectives of the study were explained to the interviewees to establish rapport and to gain their confidence for participating in this research. The interviewees were the household head, the wife of the household head or with resident adults (≥ 18 years), who were willing to participate in the interview as a representative of the family. Each interview was conducted in Bengali. It took 10-20 minutes to complete one questionnaire.

Results:

History and composition of the troop: Three groups of Rhesus monkeys were presently living in and around the study area. An elderly man informed us that during the 1940s, the British rulers brought a few Rhesus monkeys as pets to Rampur Village. After the division of British India, the British rulers left the area and those pet monkeys became feral. There were 26 animals in the study group and the composition was four (15.38%) adult males, six (23.07%) adult females, 10 (38.07%) juveniles and six (23.07%) infants.

Food consumed and crops damaged by the monkeys:

The study group of Rhesus Macaques consumed plants part of 10 species as food, of which fruits were from eight species, leaves from three, and inflorescence and seeds from one species each during the study period (Table 1). The macaques usually roamed behind the police sub-station where they found shelter in the bushy bamboo area. This area was also least disturbed by humans and it also harboured some seasonal fruit trees. The major crops damaged by the Rhesus macaques in the study area were: (i) betel leaf fields (*Piper betel*), (ii) paddy fields (*Oryza sativa*), (iii) inflorescence of banana (*Musa spp.*), (iv) inflorescence of bamboos (*Bambusa vulgaris*), (v) brinjal fields (*Solanum melongena*), (vi) potato fields (*Solanum tuberosum*), (vii) jackfruit (*Artocarpus heterophyllus*) and (viii) inflorescence of pumpkins (*Cucurbita maxima*). Eighty percent of the respondents reported that the crop most damaged by the monkeys was betel (Images 1, 2 & 3); 60% claimed banana as the second highest and 50% said vegetables were the lowest.

Human-monkey conflicts: Most of the respondents (80%) claimed that the monkeys have been present in the study area for about 50 years and 20% gave the estimate as 25 years; at the same time 100% respondents answered that conflicts between humans and Rhesus were present in the area. Regarding the main cause of conflicts, 70% interviewees mentioned that the scarcity of food for the monkeys in the area and 30% as habitat loss as the main reasons for conflicts.

In the case of the age group of animals in relation

Table 1. Plant parts eaten by Rhesus monkeys at Rampur Village of Monohadi Upazila under Narsingdi District in Bangladesh during April to September 2012

	Family	Scientific name	Common name	Plant parts eaten
1	Anacardiaceae	<i>Mangifera indica</i>	Mango	Fruit pulp, flower, leaves
2	Bombaceae	<i>Litchi chinensis</i>	Lichee	Fruit pulp, seeds
3	Cucurbitaceae	<i>Cucurbita maxima</i>	Pumpkin	Flower
4	Graminae	<i>Bambusa vulgaris</i>	Bamboo	Leaves
5	Moraceae	<i>Artocarpus heterophyllus</i>	Jackfruit	Fruit pulp
6	Musaceae	<i>Musa sapientum</i>	Banana	Fruit, inflorescence
7	Myrtaceae	<i>Syzygium cumini</i>	Black Berry	Fruit, leaves
8	Rhanaceae	<i>Zizyphus mauritiana</i>	Plum	Fruit pulp
9	Solanaceae	<i>Solanum tuberosum</i>	Potato	Fruit (tuber)
10	Solanaceae	<i>Solanum melongena</i>	Brinjal	Fruit



Image 1. An adult female with her infant resting inside a betel leaf field



Image 2. Damaged in betel leaf vines by Rhesus Macaques



Image 3. An adult male eating Jackfruit (*Artocarpus heterophyllus*)

to conflicts with humans, 70% respondents answered that adult monkeys were responsible and 30% said juveniles. For mitigation of conflicts with monkeys, 60% respondents answered striking with sticks, 10% reported fear and 30% replied as throwing stones.

Reducing conflicts and conservation of monkeys:

Eighty percent of the respondents mentioned that there was no need of translocation of monkeys whereas 20% claimed the need for translocation of monkeys for reducing conflicts with humans. They built fences using jute sticks and wires for protection of their crops and also for reducing conflicts. Eighty percent of the respondents in the study area opined that conservation of monkeys is necessary, but 20% opposed it. For conservation purpose, 80% respondents recommended a reserved space for monkeys and 20% felt they should be left as present.

Discussion: Rhesus Macaque is largely vegetarian and its diet includes leaves, flowers, fruits, berries, plants, seeds, grains and grasses, pond algae, insects, spiders and crabs (Blanford 1888–91; Roonwal & Mohnot 1977; Ahsan 1984, 1994). In Bangladesh, Ahsan (1984) reported that Rhesus Macaques consumed fruits of 40 different plant species, leaves of 37 species, flowers of 23 species, buds of 20 species, stipules of six species, juice of four species, petioles of three species, young shoot and seed of one species.

Damage to agricultural crops have been reported and have become a serious management problem involving many wildlife species in different parts of the world (Chalise 1997 in Nepal; Miah et al. 2001 in Bangladesh). Rhesus Macaques raid jackfruits during April and May, targeting mature and ripe fruits and sometimes the jackfruits and pineapples (*Annona sativus*) are left scratched and/or half-eaten (Aziz & Feeroz 2007) and

they also damage bananas (Miah et al. 2001). Conflicts occur when the monkeys try to snatch food and clothes from the local people and from the houses; sometimes they become aggressive and bite people, when they are stopped from taking away food and household items (Devi & Saikia 2008). The adult males are more prone to conflicts with humans than adult females and the conflicts occur when macaques invade human settlements and damage agricultural crops (Devi & Saikia 2008). Habitat destruction, increasing monkey population and improper waste disposal are the major causes of conflicts with humans in Assam in India (Devi & Saikia 2008). In Assam, more than 69% interviewed population preferred translocation of monkeys and about 22% of them suggested that sterilization of male monkeys and some methods of birth control such as immune contraception should be applied for reducing conflicts (Devi & Saikia 2008).

Conclusion: Massive cutting of fruit trees and plantation of exotic commercial species, which do not supply any food to monkeys, have compelled the monkeys to enter into human residential areas and crop fields, and that has created conflicts between humans and monkeys. Some restricted areas (especially government 'khas' lands) may be identified and planted with some fruiting trees for the survival of monkeys and for reducing conflicts with humans.

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Appendix 1. Questions and answered addressed to the respondents

Questions	Answers
(1) Is there any monkey present in your area?	(1) Yes (2) No
(2) How long are monkeys living in this area?	(1) 25 years (2) 50 years
(3) Is there any conflict occur between human and monkey?	(1) Yes (2) No
(4) Why does conflict occur?	(1) Habitat loss (2) Food scarcity
(5) Which age group of the monkeys is responsible for the highest conflict with human?	(1) Adult (2) Juvenile
(6) How do you mitigate conflict with monkey?	(1) Strike with stick, (2) fear appearance, (3) Throw stone
(7) Do we need to initiate conservation activities?	(1) Yes (2) No
(8) How do we need to initiate conservation activities?	(1) Keep them as it is now, (2) Limit/allocate some places for monkeys
(9) Do we need to translocation monkeys for reducing conflicts?	(1) Yes (2) No
(10) Which crops do monkeys damage most?	(1) Betel leaf, (2) Banana, (3) Vegetables

