

Public Opinion Regarding Human-Monkey Conflict in Shimla, Himachal Pradesh

Anita Chauhan and R. S. Pirta

*Department of Psychology, Himachal Pradesh University, Shimla 171005,
Himachal Pradesh, India*

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ABSTRACT Public opinion plays a vital role in the planning and management of wildlife. The present study explored the effects of habitat, residency, and gender on the opinions of people regarding human-monkey conflict in Shimla, Himachal Pradesh, India. For this purpose an opinion survey of 400 participants was conducted on: (a) the intensity of man-monkey conflict, and (b) measures taken to resolve this conflict. A 2x2x2 factorial design with two levels of habitat (temple, bazaar), residency (resident, non-resident), and gender (male, female) was employed. The residents of Shimla perceived more man-monkey conflict and therefore felt greater need for its effective resolution, than the non-residents. The habitat and gender neither affected the intensity nor the measures taken to resolve the conflict.

INTRODUCTION

The strategies undermining social dimensions are perhaps not efficient in reducing the human-animal conflict (Madden 2004). Therefore information about feelings, perceptions and attitudes of public towards wildlife is a prerequisite in designing optimal management strategy (Bahuguna 1986; Berkmuller 1986; Borang and Thapliyal 1993; Brown and Decker 2005; Ipara 2005; Priston 2005; Wambuguh 2008).

In Himachal Pradesh, the rhesus monkey has an image of monkey god Hanuman among the people, and a few consider langur as the incarnation of Hanuman (Kumar 1992; Pirta et al. 1997). The rhesus monkeys frequent human habitats but the Hanuman langurs are not so common in human premises in the State. Even the Hanuman langur groups inhabiting towns are not dependent on human beings for food and space, as is the case for rhesus monkeys. Therefore people are likely to differ in their attitudes towards rhesus monkeys and Hanuman langurs. The combined effect of dietary habits and religious beliefs has allured rhesus monkeys to construct their niche in the proximity of human beings, and occasionally compete with them. Among the various factors affecting the perception of human-animal conflict habitat (Teas 1978; Pandey 1993; Mohan 1997; Choudhary 2004; Distefano 2008), residency (Jackson and Wangchuk 2004; Wambuguh 2008), and gender (Guha 1989; Badola and Hussain 2003) are important.

The present study was planned to explore the opinions of the people about the level of human-

monkey conflict, and, solutions to reduce it. Additionally, we investigated the effects of habitat, residency, and gender on the opinions regarding these two dimensions of human-monkey conflict in Shimla.

METHODOLOGY

Sample

In all, 400 hundred people participated in the opinion survey, 200 were from the Hanuman temple area and 200 were from the bazaar area of Shimla, Himachal Pradesh, India. The method of sampling was incidental, particularly because the non-residents had to be chosen on the basis of availability. The participants (residents and non-residents) were selected from the temple (Jakhu) and bazaar (Summer Hill) area with equal number of males and females from these two localities in Shimla. An introduction to monkey population of Shimla and its habitat is available in Ross et al. (1993) and Pirta et al. (1997).

MATERIALS

In the present study, an opinion survey entitled "Manav-Bandar Takrav Par Aapki Rai" (Your opinion on human-monkey conflict) was developed to understand the human-monkey conflict in the city of Shimla. The items of the opinion survey were formulated (Black 1999) after a thorough study of the documents obtained from various bodies (Forest Department, Judiciary, Municipal Corporation, Legislative Assembly,

and NGO named Himachal Gyan Vigyan Samiti) involved in the resolution of the human-monkey conflict (Gulati and Sood 2003; Sood 2003; Bhureta 2006). This survey schedule consisted of 16 questions in Hindi language, and has two parts: Part-A and Part-B. In Part-A, the six questions (# 1 to # 6) were based on the activities of monkeys considered problematic by the public. The ten statements in Part-B were based on the following solutions suggested by various bodies of Shimla to reduce the human-monkey conflict: monkey population census (# 7), awareness about monkey problem (# 8), sterilization of monkeys (# 9), prohibition on feeding monkeys in public places (# 10), culling of monkeys (# 11), translocation of monkeys (# 12), patrolling by dogs (# 13), effective wastage disposal (# 14), government action (# 15), and increasing food base in forests for monkeys (# 16). A four point scale was used to measure the subject's response to each item. For Part-A the four options and the score assigned to each were: rarely (1), sometimes (2), to some extent (3), and very much (4); and, for Part-B the four options and the score assigned to each were: strongly disagree (1), disagree (2), agree (3), and strongly agree (4). Item numbers 2, 4, 11, 12, 14, and 16 were framed negatively. The range of scores for Part-A was 6 to 24, the higher score indicating greater level of human-monkey conflict; and, for Part-B it was 10 to 40, the higher score indicating greater agreement with the measures taken to solve human-monkey conflict.

Procedure

The data were collected in March and April 2008. The investigator visited the residences and shops of the native people in temple and bazaar areas. The non-residents were intercepted while they were moving in the Jakhu temple or at the

bazaar. The opinion survey entitled "Manav-Bandar Takrav Par Aapki Rai" was administered individually to all the participants. The opinion survey sheet was presented to the participant after obtaining his/her consent. The participant's task was to read the statements carefully and mark a tick on any of the four options given below each item. The administration of this survey schedule to one individual took approximately five minutes. The same procedure was followed for all participants. The conditions for seeking the responses varied considerably, from roadsides to residences. The cultural and economic background of residents could not be controlled.

RESULTS

An independent measure, 2x2x2 ANOVA was used to analyze the scores on the opinions of the people regarding human-monkey conflict. Separate analyses were performed on the scores for Part-A and Part-B. The results obtained on Part-A which measured the intensity of human-monkey conflict are given in table 1 and table 2. The main effects of habitat and gender were not significant, but residency significantly affected the intensity of human-monkey conflict [$F(1,392) = 92.29$, $p < .01$]. The mean score of the residents

Table 1: Perceived intensity of human-monkey conflict in Shimla (Part-A; score can range from 6 to 24).

Variables		N	Mean $\pm$ S.D.
Habitat	Temple	200	15.97 $\pm$ 2.74
	Bazaar	200	15.66 $\pm$ 2.48
Residency	Resident	200	16.95 $\pm$ 2.37
	Non-resident	200	14.68 $\pm$ 2.35
Gender	Male	200	15.72 $\pm$ 2.77
	Female	200	15.90 $\pm$ 2.44

Table 2: Summary of 2x2x2 independent measure analysis of variance on perceived intensity of human-monkey conflict (Part-A).

Source of variance	SS	DF	MS	F	Significance
Habitat	9.92	1	9.92	1.79	NS
Residency	513.02	1	513.02	92.29	.01
Gender	3.42	1	3.42	.62	NS
Habitat X Residency	4.62	1	4.62	.83	NS
Habitat X Gender	3.42	1	3.42	.62	NS
Residency X Gender	3.42	1	3.42	.62	NS
Habitat X Residency X Gender	9.92	1	9.92	1.79	NS
Error	2179.18	392	5.559		
Total	2726.94	399			

Table 3: Perceived level of agreement on measures to resolve human-monkey conflict in Shimla (Part-B; score can range from 10 to 40).

Variables		N	Mean±S.D.
Habitat	Temple	200	27.00 ±2.65
	Bazaar	200	27.29 ±2.61
Residency	Resident	200	27.63 ±2.65
	Non-resident	200	26.65 ±2.52
Gender	Male	200	27.00 ±2.77
	Female	200	27.29 ±2.48

of Shimla ($M=16.95\pm2.37$) was greater than the mean score of the non-residents ($M=14.68\pm2.35$). None of the interactions had significant effect. The results of the survey of opinions about the measures to resolve human-monkey conflict (Part-B) are given in table 3 and table 4. The main effect of residency on the measures to resolve human-monkey conflict was significant [$F(1,392) = 14.35$, $p<.01$]. The mean score of the residents of Shimla ($M=27.63\pm2.65$) was greater than the mean score of the non-residents ($M=26.65\pm2.52$). The main effects of habitat and gender, and the interaction effects were not significant. In addition, item-wise analysis was done for the opinions of participants regarding the measures taken to resolve the human-monkey conflict (Table 5).

Table 4: Summary of 2x2x2 independent measure analysis of variance on perceived level of agreement on measures of human-monkey conflict (Part-B).

Source of Variance	SS	F	MS	F	Significance
Habitat	8.41	1	8.41	1.26	NS
Residency	96.04	1	96.04	14.35	.01
Gender	8.41	1	8.41	1.26	NS
Habitat X Residency	.64	1	.64	.09	NS
Habitat X Gender	1.21	1	1.21	.18	NS
Residency X Gender	21.16	1	21.16	3.16	NS
Habitat X Residency X Gender	2.56	1	2.56	.38	NS
Error	2623.16	392	6.69		
Total	2761.59	399			

Table 5: Item-wise responses of participants (%) on measures taken to resolve the man-monkey conflict (Part-B).

Item No.	Item Description	Strongly disagree	Disagree	Agree	Strongly agree
#7	Monkey population census	6.25	7.75	68.5	17.5
#8	Awareness about monkey problem	3.5	5.25	64.75	26.5
#9	Sterilization of monkeys	7.25	19.00	49.5	24.25
#10	Prohibition on feeding monkeys in open places	4.75	6.25	48.75	40.25
#11	Culling of monkeys	22.75	53.25	14.5	9.5
#12	Translocation of monkeys	14.5	52.5	27.25	5.75
#13	Patrolling by dogs	12.25	46.25	35.75	5.75
#14	Effective wastage disposal	8.25	50.5	32.75	8.5
#15	Government action	3.75	6.75	55.25	34.25
#16	Increasing food base in forests for monkeys	12.00	32.5	41.25	14.25

DISCUSSION

Our results indicate that, irrespective of habitat and gender, all the participants perceived intensity of human-monkey conflict at moderate level (Part-A). Furthermore, the average score in Part-B indicate a moderately favorable response to the measures being taken to resolve this conflict.

However, an important finding of the study is that the local residents perceived they were affected more by monkey menace (Part-A) than the visitors (non-residents) coming to Shimla for short duration. The residents also differed from the non-residents in their opinions regarding the measures to resolve the conflict (Part-B). It is expected because local people are more affected by the surrounding environment than the visitors coming for a short period. A number of studies have explored the issue of native versus non-native and have reported that the perceptions of natives about their natural resources were different from those of non-natives, and they could identify problems and their solutions more effectively (Pandey 1993; Head 2000; Ipara 2005; Priston 2005; Wambuguh 2008).

A general conclusion from our opinion survey is that the people in Shimla, irrespective of gender and habitat, are moderately concerned about the

human-monkey conflict, as indicated by the medium range of the scores in table 1. Therefore, the severity of this problem as highlighted by certain groups suggests that the human-monkey conflict has political connotations. There were at least two indications of it. First, a report compiled by Bhureta (2006) on behalf of the Himachal Gyan Vigyan Samiti, a voluntary organization raising this issue by mobilizing peasants, lacked utterly in scientific vigour on: (a) the density of monkey population in Himachal Pradesh; and (b) the damage done by these non-human primates to human property and/or crops.

Second, the forest department of Himachal Pradesh, on the other hand, was under intense pressure from judiciary (Sood 2003) and certain other sections (Bhureta 2006) to find out a solution to man-monkey conflict (Pundir 2007; Sharma 2007). Therefore, an action plan was haphazardly prepared by the forest officials Gulati and Sood (2003) for the control and management of rhesus macaques in Shimla town and nearby areas. The data reported much earlier by Pirta et al. (1997) on the rhesus monkey and Hanuman langur populations in Himachal Pradesh was literally incorporated as the baseline of this document. In addition, they collected data on rhesus monkey population and people's perceptions towards monkeys in Shimla and adjacent area, but the major emphasis was on short-term and long-term measures to curb the 'monkey menace,' with a huge financial outlay of Rs.156.98 lakhs for five years, about half of it was alone for the sterilization of rhesus monkeys. A team of experts headed by S M Mohnot, a well-known primatologist, submitted a report (see Mohnot and Chhangani 2005) that endorsed the measures suggested by Gulati and Sood (2003) and strengthened the belief that there was 'monkey menace' in Himachal Pradesh.

Since then, the plan has been implemented. However, our observations and media reports suggest that the efforts are far from its goal, the elimination of 'monkey menace', as is clear from the findings of the survey on rhesus monkey population in Shimla in 2008 (Chauhan and Pirta 2010). Despite the translocation, sterilization, and awareness creation programs, a large rhesus monkey population of more than 800 animals is thriving in this city. But efforts are on to transfer the ineffective methods to other parts of the State, which only substantiate the preceding observation that the issue has political overtones, and

lack community approach. For this there is need to obtain unbiased public opinion about the measures to curtail human-monkey conflict, which is a global issue (Hill 2000; Estrada 2006; Eudey 2008; Isabirye-Basuta and Lwanga 2008; Nahallage et al. 2008; Marchal and Hill 2009), rather focusing the problem in a biased manner as 'monkey menace.' In our analysis, we found that people in this small sample also perceive the problem in terms of larger issues, which involves the cultural and emotional aspects too.

This apprehension derives from the item-wise analysis of people's opinions about human-monkey conflict (Part-B), based on the measures suggested by the judiciary, forest department, municipal corporation, legislative assembly, department of environment, and Himachal Gyan Vigyan Samiti (see Table 5). It suggests that though people to some extent agree with most of the solutions suggested by these bodies to resolve the man-monkey conflict, they disagree with measures such as culling and translocation of monkeys. Therefore, it is important to note that the various measures taken in Shimla to resolve man-monkey conflict, on the one hand, have several components of community approach, which we find in various studies in this area (Pirta 1993; Rastogi 1995; Jackson and Wangchuk 2004; Priston 2005), but on the other hand, there is dissonance over some crucial measures (culling and translocation), the latter feelings have support from the scientists as well (Naess 1986; Pirta et al. 1997; Sprague and Iwasaki 2006; Mittermeier et al. 2007).

CONCLUSION

The residents of Shimla perceived more conflict with monkeys as compared to the non-residents coming for short duration. They had better understanding of the conflict and were able to identify the problem more effectively. Moreover, there were no differences in the opinions of male and females, and people did not differ in their opinions in the temple and the bazaar areas.

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