



Socio-Economic Profile of the Human-Wildlife Conflict Affected Farmers of Tamil Nadu

K Senthilkumar^{1*}, P Mathialagan² and C Manivannan³

ABSTRACT

Human-wildlife conflict (HWC) arises when there is a compulsion to share common limited resources, such as land, game, livestock or fish. There has been more livestock loss in areas where people took their livestock to graze inside a reserve. Hence, a study was conducted to find out the socio-economic profile of the human wildlife conflict affected farmers in Tamil Nadu. Majority of the respondents were old aged, marginal land holders, educated up to secondary level, possessed medium unit of livestock, practiced agriculture and livestock as their primary occupation, had medium level of annual income and residing at 0.5 to 1 km away from the forest area. Nearly two-third of the farmers possessed medium level of knowledge with regard to various HWC. Among the human-elephant conflict farmers, half of the population had medium level of knowledge on HWC.

Key Words: - Age, Annual income, Education, Human-wildlife conflict, Knowledge.

INTRODUCTION

Forests in Tamil Nadu occupy 22,877 sq. km., which is 17.59 per cent of the State's geographical area (Government of Tamil Nadu, 2013). In order to undertake complementary activities of biodiversity conservation and development of sustainable management, biosphere reserves are demarcated into three inter-related zones *viz.*, natural or core zone, manipulation or buffer zone and a transition zone outside the buffer zone (Ministry of Environment, Forests and Climate Change, GoI, 2013). A buffer zone of two km, for country's national parks and wildlife sanctuaries having an area of 200 sq. km. or more, is mandatory.

Human-wildlife conflict (HWC) arises when there is a compulsion to share common limited resources, such as land, game, livestock or fish (Schwerdtner and Brend, 2007 and Graham *et al*, 2012). There has been more livestock loss in areas where people took their livestock to graze inside a reserve. Effective and economically viable mitigation methods are required to minimize elephant-human conflicts to provide relief to

suffering farmers as well as promoting more positive attitudes towards elephant conservation (Chelliah *et al*, 2010). Systematic assessment of the extent and scale of hidden impacts in different human-wildlife conflict scenarios are needed (Barua *et al*, 2013) yet academic engagement with how human-wildlife conflicts affect psycho-social wellbeing, particularly of rural communities, is sparse (Chauhan and Chowdhury, 2002) especially perceptual studies on Human-wildlife conflict by the farmers in India are very limited.

Keeping these points in mind, a study was undertaken to find out the socio-economic profile of the farmers affected with human wildlife conflict.

MATERIALS AND METHOD

Among the 37 districts of Tamil Nadu state, the study was purposively carried out in Erode (human-gaur conflict), Coimbatore (human-elephant conflict), Krishnagiri (human-wild pig conflict) and Chingelpet (human-monkey conflict) district of Tamil Nadu state due to the high incidence of human-wildlife conflict in these districts on the

*Corresponding author Email : senthilkumar.k.wls@tanuvas.ac.in

¹Assistant Professor & Section Head, Pig Breeding Unit, Postgraduate Research Institute in Animal Sciences, Tamil Nadu Veterinary and Animal Sciences University (TANUVAS), Kattupakkam, Tamil Nadu

²Former Professor and Head, Dept. of Veterinary & Animal Husbandry Extension education, Madras Veterinary College, Chennai-7

³Professor and Head, University Publication Division, TANUVAS, Chennai-51

Table 1. Socio-economic profile of the human-wildlife conflict affected farmers of Tamil Nadu. (N=240)

Sr. No.,	Characters	Frequency	Per cent
1	Age		
	Young (16-29 yr)	24	10.4
	Middle (29-42 yr)	96	40
	Old (Above 42 yr)	120	49.6
2	Gender		
	Male	186	77.5
	Female	54	22.5
3	Religion		
	Hindus	219	91.3
	Muslims	15	6.3
	Christians	6	2.4
4	Marital status		
	Married	225	93.8
	Widow/Widower	13	5.4
	Unmarried	2	0.8
5	Education		
	Illiterates	11	4.6
	Primary	55	22.9
	High school	21	8.8
	Higher Secondary	135	56.2
	Graduate	18	7.5
6	Family type		
	Nuclear family	162	67.50
	Joint family	78	32.50
7	Occupation		
	Agri + Animal Husbandry	238	99.2
	Agriculture alone	2	0.8
8	Annual Income		
	Low	81	33.7
	Medium	99	41.3
	High	60	25.0
9	Proximity to forest		
	Between 1 km and 2 kms	70	29.20
	0.5 to 1 km	162	67.50
	Below 0.5 km	8	3.33

Socio-Economic Profile of the Human-Wildlife Conflict

10	Land Holdings		
	Small	38	15.8
	Marginal	180	75.0
	Large	22	9.2
11	Livestock possession		
	Low	51	21.3
	Medium	178	74.2
	High	11	4.5
12	ICT tools possession		
	Low	29	12.1
	Moderate	196	81.7
	High	15	6.3
13	Farming experience		
	Low	39	16.3
	Medium	178	74.2
	High	23	9.5
14	Number of HWC exposures		
	1-4 exposures	33	13.8
	5-8 exposures	137	57.1
	9-10 exposures	68	28.3
	More than 10 exposures	2	0.8
15	Number of training underwent		
	Animal Husbandry Training	43	17.9
	No training	197	82.1
16	Farmers courage		
	Drove away the intruding wild animals	163	67.9
	Running away	39	16.3
	Fire signaling	26	10.8
	Nocturnal guarding	12	5.0
17	Information seeking behaviour		
	Low	19	7.9
	Medium	210	87.5
	High	11	4.6

basis of data collected from Tamil Nadu Forest Department. Farmers who had at least one wildlife conflict incidence in their lifetime were selected for the study. Sixty farmers were selected randomly from each district, thus a total of 240 farmers were selected from four districts for the study.

RESULTS AND DISCUSSION

Age and gender

It could be noted that nearly one-half of the respondents belonged to old age at the time of enquiry, followed by 40 per cent of them in middle age and 10.4 per cent in young age categories (Table 1). This was in agreement with findings of Wang *et al* (2006) who stated that most of the respondents belonged to old age group. Since the respondents were practicing farmers who were performing agriculture for long time, considerable number among them were found to be old aged. About 77.5 per cent of male farmers followed by 22.5 per cent of female farmers were affected. The reason for this might be due to involvement of male in agriculture was more than the females.

Religion and marital status

The data (Table 1) revealed that 91.3 per cent of farmers were Hindus followed by Muslims (6.3 %) and Christians (2.4 %). Further, 93.8 per cent of the respondents were married followed by 5.4 per cent of widow and very negligible amount (0.8 %) of unmarried farmers. This was mainly due to the reason that most of the unmarried were working in the nearby town and their fathers only were doing agriculture.

Education and family type

The data (Table 1) revealed that more than one-half of the respondents were educated up to higher secondary level followed by primary level (22.9 %), high school level (8.8 %), graduate level (7.5 %) and illiterates (4.6 %). Hence, the farmers in the conflict area were mostly educated and were in line with the findings of Nekaris *et al*

(2013) who reported that almost 97.0 per cent of the interviewees had attended school, at least to junior secondary stage. Nearly two-thirds (67.50 %) of the farmers maintained nuclear family and the rest (32.50 %) were leading joint family. This finding was in line with the findings of Sudheendra (2003) who reported that nearly 62 per cent of the respondents had nuclear type of family.

Occupation and annual income

Majority (99.20%) of the respondents were practicing agriculture along with livestock as their primary occupation. A meager percentage of respondents (0.8 %) had agriculture alone as their primary occupation. This deferred with findings of Mishra (2003) who opined that majority of the respondents (56.15 %) were engaged in agriculture. The findings (Table 1) revealed that 41.3 per cent of the respondents belonged to medium income group followed by low income group (34.2 %) and high income group (24.6 %). The farmers were keeping livestock with agriculture. This might be the reason for two-thirds belonged to middle and high income groups. This finding deferred with the findings of Sudheendra (2003) who found that an overwhelming share (96.67%) of the beneficiaries of Joint Forest Management Programme was below poverty line.

Proximity to forest and land holding

It was found that most (67.5%) of the respondents were found to be in 0.5 to 1 km proximity to forest followed by 29.20 per cent respondents below 0.5 km and 3.30 per cent respondents between 1 km and 2 km. It could be observed that human-wildlife conflict was more in 0.5 to 1 km proximity to the forest area. A two-thirds (75.0 %) of the respondents possessed marginal land holdings while 15.8 per cent belonged to small category and 9.2 per cent with large land holdings. Agriculture and animal husbandry being the primary occupation and human-wildlife conflict being the criteria for selection of respondents might be the reason for this result.

Socio-Economic Profile of the Human-Wildlife Conflict

Livestock and ICT tools possession

Almost two-thirds (74.2 %) of the respondents maintained moderate livestock units followed by low (21.3 %) and high (4.5 %) livestock units (Table 1). This might be due to marginal land holdings possessed by the respondents and reduced grazing facilities in the study area. Likewise, it was observed that 81.7 per cent of respondents possessed moderate ICT tools followed by low (12.1 %) and high (6.3 %) ICT tools. Most of the respondents possessed television (93.30 %), mobile phones (87.50 %) and Radio (48.30 %) which indicated that communication facilities/tools in the study area was good and moderate. This finding was in accordance with the findings of Bhattarai and Fischer (2014) who inferred from their study on Human-tiger (*Panthera tigris*) conflict and its perception in Bardia National Park, Nepal that majority (86.60 %) of the respondents in the study area possessed mobile phones than landline telephone.

Farming experience and HWC exposures

It was observed that almost three-fourths (74.2 %) of the respondents had medium level of farming experience. Nearly, 16.3 per cent of respondents had 25 yr of experience (low) in farming followed by 9.6 per cent of respondents with more than 50 yr of farming experience (high). Majority (57.1 %) of the respondents possessed 5-8 exposures per year followed by 9-10 exposures (28.3 %), 1-4 exposures (13.8 %) and more than 10 exposures per year (0.8 %). About one-fifth (17.9 %) of the farmers underwent training in animal husbandry while 82.1 per cent of the respondents never undergone any training.

Farmer's courage and information seeking behaviour

It could be observed that majority (67.9 %) of the respondents drove away the intruding wild animals followed by running away (16.3 %), fire signaling (10.8 %), and nocturnal guarding (5.0 %). The result proved that the sons of the soil in Tamil culture are brave and courageous since time immemorial. This was in accordance with the findings of Nekaris *et*

al (2013) who conducted an ethnoprimateological study and recorded that majority of the respondents drove away the intruding monkey from their agricultural farm using various tools. Majority (87.5 %) of the farmers were having medium level of information seeking behavior followed by low (7.9%) and high (4.6%) . Similar observations were made by Prasannakumar (1995) who found that majority (43.33 %) of the Joint Forest Management Programme (JFMP) participant farmers had medium level of contact with the officials of the forest department for seeking information.

CONCLUSION

Thus, it could be stated that majority of the respondents possessed medium unit of livestock belonged to nuclear family, had agriculture and livestock as primary occupation, medium level of annual income, located between 0.5 to 1 km proximity to forest and were marginal landholders. Their ICT tool possession was found to be medium and most of them were old aged with secondary level of education. Majority of the human-wildlife conflict affected farmers were old aged, marginal landholders, educated up to secondary level, possessed medium unit of livestock, practiced agriculture and livestock as their primary occupation, had medium level of annual income and residing at 0.5 to 1 km away from the forest area.

REFERENCES

- Barua M, Bhagwat S A and Jadhav S (2013). The hidden dimensions of human-wildlife conflict: Health impacts, opportunity and transaction costs. *Biol Conservat* **157**: 309-316.
- Bhattarai B R and Fischer K (2014). Human-tiger *Panthera tigris* conflict and its perception in Bardia National Park, Nepal. *Oryx* **48**(4): 522-528.
- Chelliah K, Kannan G, Kundu S, Abilash N, Madhusudan A, Baskaran N and Sukumar R (2010). Testing the efficacy of a chilli-tobacco rope fence as a deterrent against crop-raiding elephants. *Current Sci* **99**(9), 1239-1243.
- Chauhan NPS and Chowdhury S (2002). Evaluation of electric fences for their efficacy in controlling elephant damage in Northern West Bengal and suggesting improvements. *Indian forester* **128**(2): 179-188.

- Government of Tamilnadu (2013). Policy Note on Forest, Forest Department. 1.
- Graham M D, Adams W M and Kahiro G N (2012). Mobile phone communication in effective human elephant–conflict management in Laikipia County, Kenya. *Oryx* **46**(1): 137-144.
- Ministry of Environment and Forests and climate change, Govt. of India (2013). Retrieved from: <http://envfor.nic.in>, Accessed on: 18-11-2019
- Mishra C, Allen P, McCarthy T O M, Madhusudan M D, Bayarjargal A and Prins H H (2003). The role of incentive programs in conserving the snow leopard. *Conserv Biol* **17**(6): 1512-1520.
- Nekaris K A I, Boulton A, and Nijman V (2013). An ethnoprimateological approach to assessing levels of tolerance between human and commensal non-human primates in Sri Lanka. *J Anthropol Sci* **91**: 1-14
- Prasannakumar G T, (1995). *Knowledge and perception of Joint Forest planning and management by participant farmers in Uttar Kannada district*. M.Sc., (Agri) Thesis (unpubl.) University of Agricultural Sciences, Bangalore.
- Schwerdtner K and Bernd G (2007). A conceptual framework for damage compensation scheme. *Biol Conserv* **134**: 354-360.
- Sudheendra (2003). *A critical analysis of joint forest management programme on knowledge and perception among beneficiaries in northern Karnataka*. Unpublished Ph.D., Thesis. UAS, Dharwad.
- Wang S W, Lassoie J P and Curtis P D (2006). Farmer attitudes towards conservation in Jigme Singye Wangchuck National Park, Bhutan. *Environ Conserv* **33** (02): 148-156.

Received on 6/04/2020

Accepted on 15/05/2020