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Profile analysis of inhabitants of human-wildlife conflict affected areas in Kerala for effective conservation of wildlife

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Abstract
Human-wildlife conflict (HWC) involves any interaction between man and wildlife that has a harmful effect on either human or wildlife populations. A number of problems make wildlife a concern, especially to the socio-economic status of the communities in bordering wildlife protected areas. As a result, local people look at wildlife as a liability rather than an economic and social status advantage, thus making wildlife conservation efforts be perceived as a contradiction to the socio-economic endeavours of local communities. A study was carried out to analyse the socio-personal and socio-economic profile of conflict-affected respondents in Eastern forest circle. A field survey was undertaken in the eastern forest circle of Kerala state to assess the profile of the human-wildlife conflict affected respondents. Sixty inhabitant families among the affected group of HWC were purposively selected from Eastern Palakkad forest circle of Kerala. The circle encompasses Mannarkkad, Nilambur North, Nilambur South, Palakkad and Nenmara forest divisions as a sample of the study. Thirty non-tribal and tribal families from the affected group were selected for the study. The data were collected through personal interview method using a structured pre-tested interview schedule. A majority (68.9 %) of the respondents were elderly and there was domination by men in this venture (Non-tribal - 90%; Tribal – 60%). Over eighty per cent of the non-tribal respondents had primary school to graduate education, whereas 56.67 per cent of the tribal respondents were illiterate. A total of 66.67 per cent of non-tribal and 86.67 per cent of tribal respondents were from a nuclear family. Most of the non-tribal respondents (53.34 per cent) resided in close proximity to the forest area with 0.5 to 1 km distance, whereas, 93.33 per cent of the tribal respondents were in close proximity to the forest area with 0 to 0.5 km distance. A majority (73.33 %) of the non-tribal respondents had the primary occupation of agriculture and most of the tribal respondents (86.67 %) had petty jobs. The respondents were marginal farmers and 11-20 years of farming experience in both classes of respondents.

Keywords: Socio-economic profile, Socio-personal profile, human-wildlife conflict

1. Introduction
Human-wildlife conflict implies any interaction between human and wildlife that results in negative effects for human or wildlife populations (Madden 2004) [3]. People living in close proximity to forests suffer losses from wildlife which include economic losses resulting from crop damage, property damage and livestock depredation, human death and injury. Worldwide, overabundant ungulate populations increasingly create ecological and socio-economic costs, including damage to forestry and agriculture, crop-raiding in Africa and Asia (Naughton -Treves and Treves, 2005) [6]. The conflict between humans and wildlife is one of the most widespread and intractable issues facing conservation biologists today.
Despite this contribution realized from the wildlife sector, a number of problems make wildlife a concern, especially to the socio-economic status of the communities in bordering wildlife protected areas. These problems include; conflicts with other land uses, poaching, habitat loss, pollution, global warming and introduction of exotic species. The failure of wildlife to compete effectively with other land uses in sustaining the livelihood of the adjacent communities exacerbates these problems. As a result, local people look at wildlife as a liability rather than an economic and social status advantage, thus making wildlife conservation efforts be perceived as a contradiction to the socio-economic endeavours of local communities.
The costs inflicted by wildlife conservation to people, and the human problems constraining wildlife sector has made human-wildlife conflicts one of the major challenges calling for the attention of the conservationists. Wildlife conservation is accused of marginalizing people, denying people access to traditional and legitimate rights, property damage, and risk to human

life through an attack by wild animals and disease transmission (Shemwetta and Kidegesho, 2000) [8]. The occurrence of seasonal variation in the intensity of conflict incidents was also investigated.

2. Materials and method

The study was conducted by collecting data from five divisions of eastern forest circle buffer zone affected with HWC and were purposively selected for the study. A list of non-tribal and tribal families directly involved or affected with the attacks from the wild animals from each division was prepared from the available records of Kerala Forest and Wildlife department was prepared. A total of list twelve people from each division, six tribal and six non-tribals were selected randomly from the list of affected or HWC encountered people from each division. Interview schedule used as a tool to collect socio-economic data such as age, gender, marital status, family type, education, proximity to forest, occupation, landholding and farming experience. The data were analysed using simple statistical tools such as frequency and percentage.

3. Results and discussion

The results of the study performed were presented through Table 1 displaying the socio-economic profile of human-wildlife conflict-affected non-tribal and tribal respondents

3.1 Age

The profile of the respondents of the study sample was tabulated (Table 1). It can be observed that 46.67 per cent of the non-tribal respondents were above 50 years of age, followed by 41 – 50 years (36.67 per cent), 31 – 40 years (13.33 per cent) and balance respondents were below 30 years (3.33 per cent). Tribal respondents were (33.33 per cent) above 50 years of age, followed by 41 – 50 years & 31-40 years (30 per cent) and balance respondents were below 30 years (6.67 per cent). These findings are similar to the results of Senthilkumar (2015) [7] studied the perception of people towards HWC in Tamil Nadu and he reported that most of the respondents fell in the higher age group category

3.2 Gender

The result presented in Table 1 revealed that the excessive dominance of males was evident in both respondents (Non-tribal – 90 per cent; Tribal – 60 per cent). The findings of the present study are similar to that of Karthick and Ramakrishnan (2018) [2] found that men were mostly affected by HWC issues when compared to women. Among those affected 80 per cent deaths reported as a consequence of HWC in the O'valley Forest Range, Gudalur Forest Division and Tamil Nadu were that of men. Male members of the family mostly involved in agricultural farming activity than female, so that male members were mostly affected with HWC.

3.3 Marital status

The results of the study performed were presented through the table 1 revealed that among the conflict-affected non-tribal and tribal respondents most of them were married (Non-tribal – 96.67 per cent; Tribal – 90 per cent).

3.4 Family type

It is evident that the majority of the conflict-affected non-tribal (66.67 per cent) and tribal (86.67 per cent) respondents belonged to the nuclear family (Table 1). Similar reported found in northern Karnataka, a study conducted an analysis of Joint Forest Management Programme on knowledge and perception, Sudheendra (2003) [9] found that nuclear type of family contributed 62 per cent of the respondents.

3.5 Education

It is evident from table 1 that majority of the non-tribal respondents (33.34 per cent) had a middle school education, followed by illiterate and graduate (20 per cent) middle school (13.33 per cent) and high school education and primary education (13.33 per cent). Majority of the tribal respondents (56.67 per cent) were illiterate, followed by those with primary education (33.33 per cent) and middle school education (10 per cent). This result is in accordance with findings of Senthilkumar (2015) [7] noticed that more than one-half of the respondents were educated up to a higher secondary level which just 22.9 per cent had by primary level education. He observed that the farmers in the conflict area were mostly educated.

3.6 Proximity to forest

Table 1 revealed that 53.34 per cent of the non-tribal respondents resided in close proximity of forest area within 0.5 to 1 km of the forest, followed by 0 to 0.5 km (33.33 per cent), 1 to 2 km (10 per cent) and 3 to 5 km (3.33 per cent), whereas, 93.33 per cent of the tribal resided in close proximity to forest area (0 to 0.5 km), followed by 0.5 to 1 km (6.67 per cent) and no tribal respondents were staying more than 1 km away from the forest area. Similar findings were reported by Because of wildlife conflict, the distance between forest and cultivable land reduces by 92 per cent (Anand *et al*., 2008) [1].

3.7 Occupation

3.7.1 Primary occupation

The results indicated that conflict-affected non-tribal respondents had primary occupation (73.33 per cent) as agriculture, followed by 16.67 per cent with petty jobs (Tapping, Cooli, and driver) and remaining possessed (10 per cent) government job. Conflict-affected tribal respondents had primary occupation (86.67 per cent) as petty jobs (Tapping, Cooli, and driver), followed by 10 per cent with agricultural and 3.33 per cent with a government job (Table 1). Senthilkumar (2015) [7] concluded that most of the respondents (99.20 per cent) were engaged in agriculture along with livestock rearing as their primary occupation.

3.7.2 Secondary occupation

The results indicated that among the conflict-affected non-tribal respondents had a secondary occupation as agriculture (13.33 per cent) followed by business (10 per cent). Tribal respondents had a secondary occupation as firewood and honey collection (30 per cent) followed by agriculture and business (3.33 per cent). There was 63.34 per cent of tribal respondents and 76.67 per cent of non-tribal respondents without any secondary occupation. (Table 1).

3.8 Landholding

The data in above table 1 showed that both classes of respondents were marginal farmer (Non-tribal - 46.66 per cent; Tribal - 96.67 per cent), followed by non-tribal respondents were large farmers and small farmers (26.67 per cent). Only 3.33 per cent of tribal respondents were a small

farmer. Similar findings were reported by Nath *et al*. (2015) [5] reported that the average cultivable landholding of the farmers living in the forest periphery of the Manas National Park was 0.99 hectares.

3.9 Farming Experience

Data in table 1 revealed that both classes of respondents had 11-20 years of farming experience (Non-tribal - 36.67 per cent; Tribal - 56.67 per cent). Thirty per cent of non-tribal respondent reported 21-30 years of farming experience followed by more than 30 years of farming experience (23.33 per cent). Tribal respondents reported that below 10 years of farming experience (23.33 per cent) and 21-30 years of farming experience (20 per cent). The similar report found by Meena *et al*. (2014) [4] reported that indigenous measures were developed by farmers to counter the menace of Nilgai in Rajasthan. They also reported that among the affected farmers, 66.57 per cent of them had medium farming experience while 22.00 per cent and 11.47 per cent had a high and lower level of experience in agricultural farming respectively

Table 1: Socio-economic profile of respondents

Sl. No	Variable	Non-tribal		Tribal	
		(f)	(%)	(f)	%
1	**Age**				
	(a) < 30 Years	1	3.33	2	6.67
	(b) 31-40 Years	4	13.33	9	30
	(c) 41-50 Years	11	36.67	9	30
	(d) > 50 Years	14	46.67	10	33.33
2	**Gender**				
	(a) Male	27	90	18	60
	(b) Female	3	10	12	40
3	**Marital Status**				
	(a) Unmarried	0	0	0	0
	(b) Married	29	96.67	27	90
	(c) Widow	1	3.33	3	10
4	**Family Type**				
	(a) Nuclear	20	66.67	26	86.67
	(b) Joint	10	33.33	4	13.33
5	**Education**				
	(a) Illiterate	6	20	17	56.67
	(b) Primary school	4	13.33	10	33.33
	(c) Middle school	10	33.34	3	10
	(d) High school	4	13.33	0	0
	(e) Graduate	6	20	0	0
6	**Proximity of Forest**				
	(a) 0 to 0.5 km	10	33.33	28	93.33
	(b) 0.5 to 1 km	16	53.34	2	6.67
	(c) 1 to 2 km	3	10	0	0
	d) 2 to 3 km	0	0	0	0
	(e) 3 to 5 km	1	3.33	0	0
7	**Primary Occupation**				
	(a) Agriculture	22	73.33	3	10
	(b) Government job	3	10	1	3.33
	(c) Business	0	0	0	0
	(d) Petty jobs (Toddy tapping, Cooli, driver etc.,)	5	16.67	26	86.67
	(e) Firewood and Honey collection	0	0	0	0
8	**Secondary Occupation**				
	(f) Agriculture	4	13.33	1	3.33
	(g) Government job	0	0	0	0
	(h) Business	3	10	1	3.33
	(i) Petty jobs (Toddy tapping, Cooli, driver etc.,)	0	0	0	0
	(j) Firewood and Honey collection	0	0	9	30
	(a) No subsidiary occupation				
9	**Landholding**				
	(a) Landless (no land)	0	0	0	0
	(b) Marginal farmer (up to 2.5 acres)	14	46.66	29	96.67
	(c) Small farmer (2.6 to 5 acres)	8	26.67	1	3.33
	(d) Large farmer (above 5.1 acres)	8	26.67	0	0
10	**Farming Experience**				
	(a) Below 10 years of experience	3	10	7	23.33
	(b) 11-20 years of experience	11	36.67	17	56.67
	(c) 21 -30 years of experience	9	30	6	20
	(d) More than 30 years of experience	7	23.33	0	0

(f)- Frequency; % - Percentage

4. Conclusion

The present study indicated that the majority of respondents were an old aged group (above 50 years) and there was significant male domination in this venture. In terms of education, non-tribal respondents had a middle school education and more than half of tribal respondents were illiterate. Non-tribal and tribal respondents belonged to the nuclear family type and resisted in close proximity to the forest area. Most of the non-tribal respondents were having their primary occupation as agriculture and tribal respondents as petty jobs (Tapping, Cooli and driver). The respondents were marginal farmers and 11-20 years of farming experience in both classes. In Eastern circle forest area conflict affected community people suggested that agricultural allied activities carried over by aged people. It may be due to the fact that the proximity to this animal might have influenced the emotional level leading to a positive mind set. There is no availability of cultivation land to tribal respondents. Which may have compelled the tribal to seek other jobs including daily wages (petty jobs, cooli, etc.,). It is comparative that the farming experience leads to a mature approach making them proactive towards conservation.

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