



# Constraints in participatory management perceived by the inhabitants of human-wildlife conflict (HWC) affected areas in Kerala\*

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## Abstract

Human-Wildlife Conflict (HWC) can be explained as an interaction between humans and wildlife where negative consequences, whether perceived, exists for one or both the parties when the action of one has an adverse effect on the other. The human population residing the forest buffer zones sharing a common geographical border with it are considered to be more affected with HWC. These populations encompassing the tribal and non-tribal communities usually manage the HWC by external assistance and internal efforts by the affected one. The present study was conducted in such a community so as to identify the above type of affect to identify the constraints in management of HWC encountered by tribal and non-tribal the inhabitants associated with the Eastern Palakkad forest circle of Kerala state in India. A total of sixty respondents including thirty non-tribal and tribal families each from the affected people were purposively selected for study various division of Palakkad forest area. The responses were recorded initially with group discussion, pilot study etc., and the final schedule was used as the scale with final statement to analyse the constraints of the respondents using Garret ranking method. The constraints faced by encountering HWC and implementing control measure. Most of the non-tribal and tribal respondents perceived HWCs to be caused by water scarcity during the summer period and inadequate food availability due to climate change and deforestation, shrinkage of grassland/pasture land, lack of proper barriers (solar fence, trench) and proximity to forest land as the major constraints.

**Keywords:** Constraints, Human-wildlife conflict, Conservation, Participatory management

Kerala, in the south-western state of India, possesses a forest area of 11309.50 Sq.km which occupies 29.1 per cent of its land area. The participatory management of HWC involves a

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common outlook with diversities in objectives and entrust the affected folk with the decision-making process and governance. It accelerates conservation by allowing local people to participate in natural resources management and empowers them through sustainable use of forest produces and benefit-sharing. It also leads to poverty alleviation and sustainable economic development of the human population associated with wildlife habitat in the buffer zone (Scherl *et al.*, 2004; Balint, 2006). In India, studies of India's Joint-Forest Management (JFM) programs have shown that despite attempts to reduce marginalization of people along lines of caste, ethnicity, and gender, the participation of people in these groups remains limited in many cases (eg., Sarin 1998; c.f., Agarwal 2000; Menzies 2003). Rohini *et al.* (2016) reported a total of 277 incidents of crop depredation, 12 incidents of property damage, three human injuries and one human death due to conflict from June 2014 to May 2015 in Nilambur, Western Ghats of Kerala. Such kind of heavy impact conflicts lead to an impairment of various measures for the conservation of wildlife which in turn affect the existence of a diverse range of wildlife and resources of the state. Several methods have been taken up successfully by stakeholders. These include methods that are direct, indirect and participatory in nature. In Bolivia, communities were involved in *chaku* (wildlife drives), a multimodal repellent procedure in which large numbers of community members move through grazing areas making noise, holding lit firecrackers, and generally clearing the way of predators and grazing competitors (Treves *et al.*, 2009).

HWC could be generally explained as the interaction between humans and wildlife where negative consequences, whether perceived, exists for one or both the parties when the action of one has an adverse effect of the other party (Conover, 2001). Management of human-wildlife conflict is one of the important challenges to the wildlife researchers, conservationists and forest managers. The major reason for human-wildlife conflict could be due to the invasion of agriculture fields on the forest fringe areas and various developmental activities in the forest region. Fragmentation

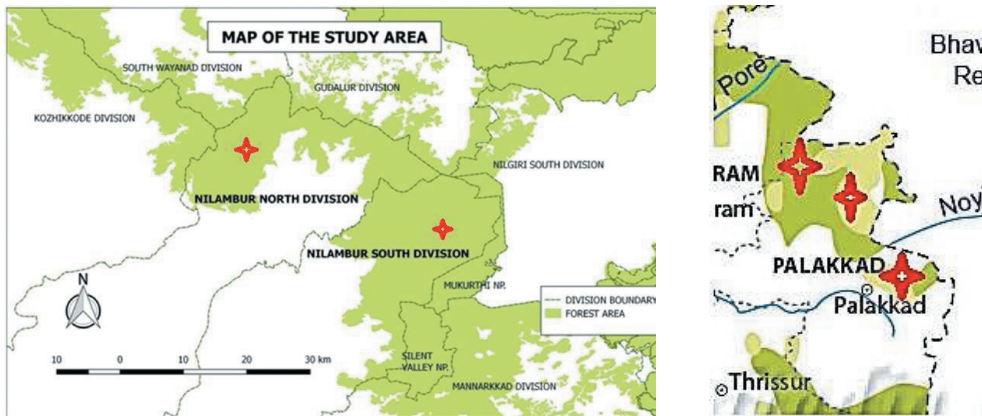
of habitats evading to trapping of elephants in isolated patches with cultivation all around is mentioned as the a factor responsible for crop-raiding in South India. Further, factors such as degradation of habitat, competition for water, movement pattern, palatability and nutritive value of crops also lead to crop depredation. The Eastern Forest circle, Kerala has a sizeable wildlife population and viable habitat. The term conservation refers to the protection, care, management and maintenance of ecosystems, habitats, wildlife species and populations, within or outside of their natural environments, in order to safeguard the natural conditions for their long-term permanence (IUCN, 1980). An in-depth investigation of the views, beliefs, perceptions and constraints in HWC and wildlife conservation are essential for introducing any scientific intervention for further improvement in the existing management system so as to prevent conflicts. Hence, the present study was carried out to identify the constraints in HWC.

### Materials and Methods

A total of sixty respondents including thirty non-tribal and tribal families each from the affected folk were purposively selected for study from various divisions of Palakkad forest area. The list of non-tribal and tribal families directly involved or affected by the attacks by wild animals from each division was prepared from the available records of the Kerala Forest and Wildlife Department was prepared. A total of twelve people from each division, six tribal and six non-tribal, were purposively selected from the list of affected or people from each division. The responses were recorded initially with group discussion, pilot study *etc.*, and the final schedule was used as a scale with final statements to analyse the constraints of the respondents using Garret ranking method. The constraints faced by the tribal and non-tribal families encountering human wildlife conflict are discussed below.

### Results and Discussion

Data presented in Table 1 revealed that 90 per cent of non-tribal respondents perceived both water scarcity during the summer period and inadequate food availability due to climate change and deforestation as the



**Fig. 1.** Map showing the location of the study

major constraints. Shrinkage of grassland/pasture land and lack of proper barriers (solar fence, trench) were perceived as next major constraint by 83.33 per cent and 73.33 per cent of respondents respectively. Other constraints perceived by the respondents included proximity to forest land (66.67 %), encroachment to the forest area (60 %), migration of settlements to deep forest areas (53.33 %), recommended technologies are costlier for management of wildlife conflicts (46.67 %) and lack of awareness and training of stakeholders (40 %).

Data presented in Table 1 revealed that majority of the tribal respondents (96.67 per cent) perceived water scarcity during the summer to be a major constraint. Other constraints are inadequate food availability due to climate change and deforestation (86.67 per cent), shrinkage of grassland/pasture land (73.33 per cent), lack of proper barriers (solar fence, trench) (66.67 per cent), encroachment to the forest area (63.33 per cent), inadequate financial support (56.67 per cent) and lack of awareness and training of stakeholders (43.33 per cent).

**Table 1.** Distribution of the non-tribal and tribal respondents based on the HWC constraints perceived by them

S. No.	Statement	Non-tribal		Tribal	
		Percentage (%)	Rank	Percentage (%)	Rank
1	Water scarcity during the summer period	90	I	96.67	I
2	Inadequate food availability due to climate change and deforestation	90	I	86.67	II
3	Shrinkage of grassland/pasture land	83.33	II	73.33	III
4	Lack of proper barriers (solar fence, trench)	73.33	III	66.67	IV
5	Proximity to forest land	66.67	IV		
6	Encroachment to the forest area	60	V	63.33	V
7	Migration of settlements to deep forest areas	53.33	VI		
8	Recommended technologies are costlier for management of wildlife conflicts	46.67	VII		
9	Inadequate financial support			56.67	VI
10	Lack of awareness and training of stakeholders	40	VII	43.33	VII

Similar report by Ramkumar *et al.* (2014) pointed out the major reasons for human-elephant conflict as non-availability of food plants in forest, water scarcity (29.2 per cent), increase of elephant population (15.5 per cent) and elephant's preference for agricultural crop (13.9 per cent) over forest plants.

### Conclusion

Most of the non-tribal respondents perceived water scarcity during the summer period, inadequate food availability due to climate change and deforestation as the major constraints in controlling HWC. The shrinkage of grassland/pasture land, lack of proper barriers (solar fence, trench), proximity to forest land, encroachment to the forest area, migration and encroachment human settlements to deep forest areas, costlier technologies in managing HWC introduced and lack of awareness and training of stakeholders were the other perceived constraints. Almost all the tribal respondents perceived that water scarcity during the summer period as the major constraint followed by inadequate food for animals inside forest, deforestation, shrinkage of grassland/pasture land, lack of proper barriers (solar fence, trench), encroachment to the forest area, inadequate financial support to control HWC and lack of awareness and training to the stakeholders as other constraints in that order. It is worth to note that the tribal people did not feel the proximity to forest to be a constraint.

Most of the non-tribal respondents perceived that lack of awareness about conservation of wildlife, lack of training, inadequate financial support and costlier recommended technologies in management etc., to be the major constraints, whereas most of the tribal respondents perceived lack of awareness in conservation of wildlife, inadequate financial support for conservation, costlier recommended technologies etc., as major constraints.

The above findings regarding the constraints perceived by tribal and non-tribal families in the management of HWC throws light on the need for modification of policy and programme to address the issues as perceived

by the affected people. The above findings are supported by Ramkumar *et al.* (2014) who pointed out that non-availability of food plants in the inside the forest, water scarcity, increase in elephant population and elephant's preference to agricultural crop over forest plants as food as the major constraints in controlling human wildlife conflict. With the information collected from the respondents of study area it can be concluded that, strict measures and proper management facilities should be provided for effectively minimising HWC.

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