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Assessment of human-red fox conflict in district Bagh, Azad Jammu and Kashmir

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ABSTRACT

Introduction: Red Fox (*Vulpes vulpes*) density is highly different in different region. In spite of the high value of understanding human and carnivore conflicts the excellence of data available is highly different, with most data focused in conflicts. Human-red fox (*Vulpes vulpes*) conflict was documented in different regions, therefore this study was designed to collect detailed about human-red fox conflict in the selected sites of the district Bagh.

Materials and methods: Data collected through questionnaire (n=100) that is consist of respondent profile, loss of porcupine (%), sign of red fox, human sharing land with red fox, livestock protection and effective methods to control red fox.

Results: During the study noted that people of the area have one to five hectare (ha) land size, maximum respondents (81%) told that red fox is the major cause of livestock damage and the most of informants are feel very unhappy. It is noted that most of the respondents used poison, dog and fence to remove red fox. Informant said that if the level is reduced to tolerable level, then it would be favorable for their live stock.

Conclusion: It is concluded that human-red fox conflict is present; Red Fox was damaged to livestock and in response local people were kill red fox to protect the livestock.

Key words: Red fox, Hectare, Dog, Conflict, Livestock management

INTRODUCTION

Red Fox (*Vulpes vulpes*) density is highly different, one fox/1.17/km² in Wales, 40 km² in Scotland, 30 foxes/km² in some urban areas (Haris, 1977; Macdonald, 1982; Harris and Rayner, 1986), one family/km² in farmland, 5 families/km² in the suburbs (Macdonald, 1981), three foxes/km² in Switzerland (Meia, 1994), 0.17 foxes/km² in the Mongolia (Murdoch, 2008), 0.1 foxes/km² in Arctic tundra, 1 fox/km² in Canada (Voigt, 1987) and 0.37 families/km² in The Swiss mountains (Weber *et al.*, 1999).

The Red Fox is distributed in Yemen, Uzbekistan, United Kingdom, United Arab Emirates, Turkmenistan, Turkey, Tajikistan, Syrian, Switzerland, Sweden, Sudan, Spain, Serbia, Saudi Arabia, Russian Federation, Romania, Qatar, Portugal, Poland, Pakistan, Oman, Norway, Netherlands, Nepal, Myanmar, Morocco, Montenegro, Mongolia, Monaco, Malta, Lithuania, Liechtenstein, Libya, Lebanon, Latvia, Kyrgyzstan, Kuwait, Korea, Kazakhstan, Jordan, Japan, Italy, Iraq, Iran, India, Greenland, Greece, Gibraltar, Germany, Georgia, France, Finland, Egypt, Denmark, Cyprus, Croatia, Canada, Bulgaria, Bhutan, Belgium, Bangladesh, Azerbaijan, Austria, Andorra, Algeria, Albania and Afghanistan (Hoffmann and Sillero-Zubiri, 2016).

In spite of the high value of understanding human and carnivore conflicts the excellence of data available is highly different, with most data focused in conflicts. Most data available for conflicts involving canids i.e. the red fox (*Vulpes vulpes*) (Stahl *et al.*, 2002; Moberly *et al.*, 2004). The present study has been designed to collect detailed about human-fox conflict in the selected sites of the district Bagh.

MATERIALS AND METHODS

Study area: Bagh is located 80 Kilometers from Muzaffarabad, the capital city of Azad Jammu and Kashmir. It is 160 Kilometers from Islamabad, the capital of Pakistan. The all district Bagh

is a mountainous landscape and falls in the lesser Himalayas zone, sloping from the northeast to the south-west (Figure 1). The elevation is between 1500 to 2500 meters (m) above sea level. Bagh has the two main streams. However, many rivulets flow in Bagh district (Bibi *et al.*, 2013).

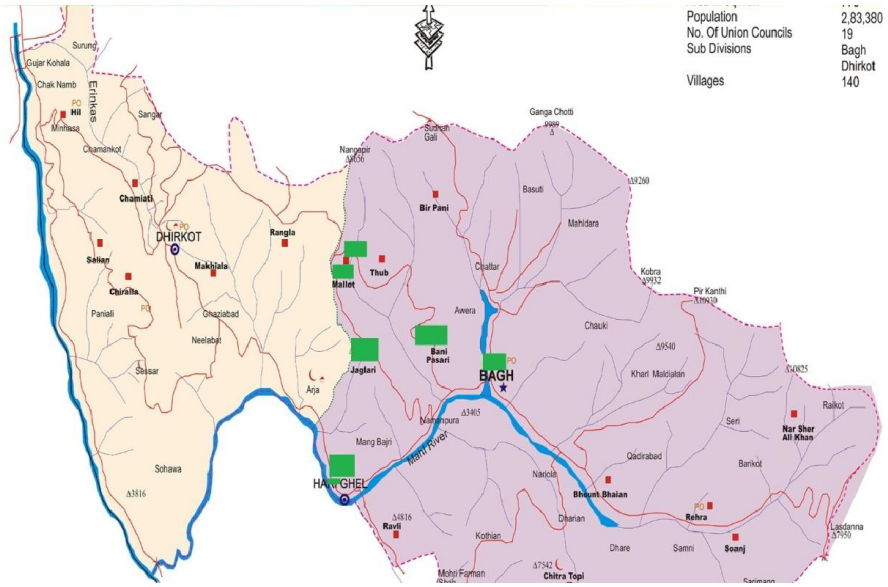

Figure 1: Study area of the District Bagh.

Methodology: In the study area asked the following questions from the respondents;

- Having agriculture?
- What is the size of agriculture?
- Respondent stay with livestock.
- Respondent's response about red fox damage.
- Sign of the red fox in the study area.
- Respondent's response about sharing of the land in the study area.
- Preventive measure to remove the red fox from the study area.
- Guarding animal used to save the livestock.

- Respondent's response about reduction of red fox number to tolerable range.

RESULTS AND DISCUSSION

Data collected from the Muslims male (56%), female (44%) respondents; they have different occupations i.e. teachers (11), businessman (26%), house wife (33%), Government employ (14%), army (2%), labor (14%) and belong to Mughal (63%), Batla (6%), Qureshi (3%), Raja (16%), Suduzai (2%), Syed (7%), Abbasi (2%) and Bhati (1%) cast, while age of the respondents as 25 to 40 (44%), 41 to 50 (18%), 50 to 60 (15%) and above 60 (23%) (Figure 2).

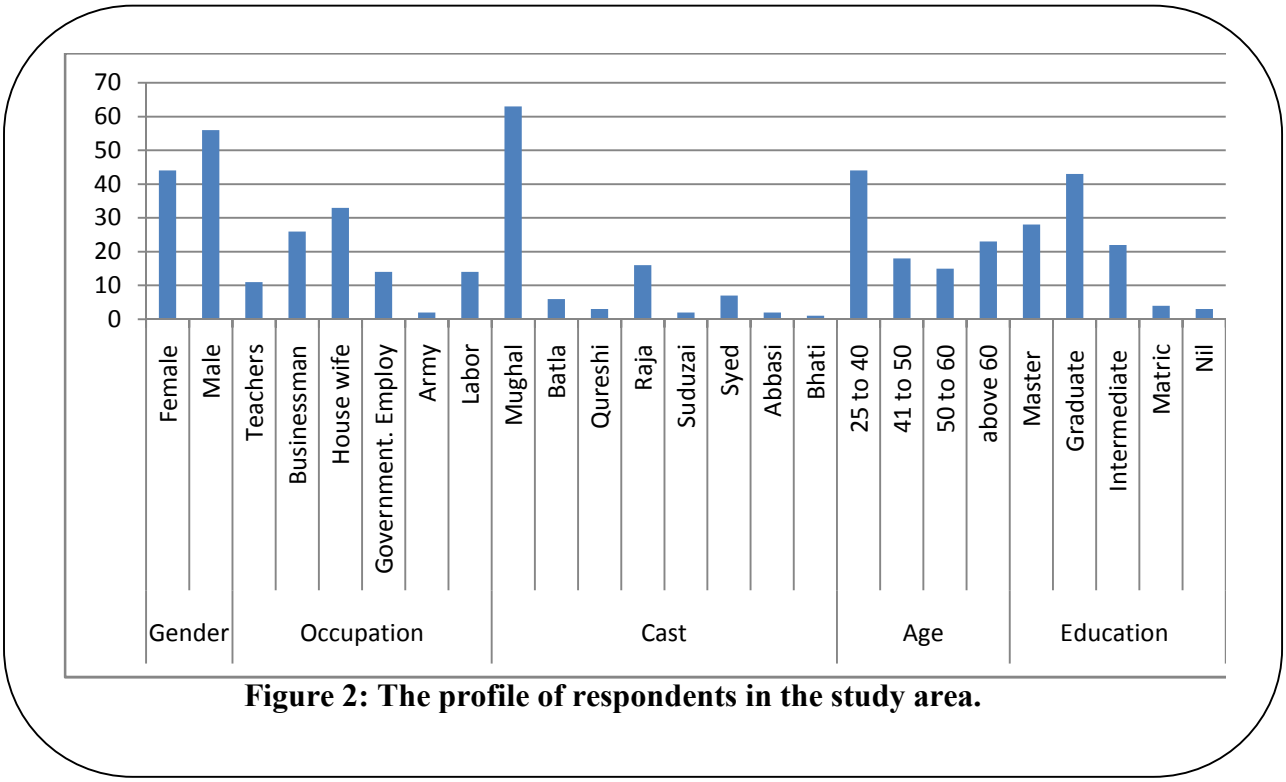

Figure 2: The profile of respondents in the study area.

During the study noted that people of the area have 1 to 5 hectare (ha) land size, and maximum people have 1.0 to 2.0 ha land size as shown in Figure 3. During the study recorded that respondent's stay with livestock morning (27%), noon (3%), evening (16%), night (4%), full day (46%), and never (4%) (Figure 4). Maximum respondents (82%) told that red fox are the

major reason of livestock damage and some (12%) said that they are damaged to livestock in lower ratio (Figure 5). Most of the respondents (53%) said that red fox are visited in agriculture daily; while other said that they visited weekly (33%), monthly (12%) and yearly (2%) (Figure 6) and the respondents are feel very unhappy (89%) and unhappy (11%) (Figure 7). According to respondents different preventive measures are used to reduce the diversity of fox i.e. electric shocks, firing, poison (Figure 8). During the study recorded that local people used dog to protect livestock as; used in past (21%), and currently used (79%) (Figure 9). During the study recorded that respondents told that if predator numbers is reduced to tolerable level then effective (according to 29% respondents), do not know (according to 4%) and in effective (62%) (Figure 10). Safeer *et al.* (2018) noted that *Hystrix indica* is damaged to agriculture district Bagh, Pakistan. Chughtai *et al.* (2018) reported the human-wild boar conflict in district Bagh, Pakistan. In spite of the high value of understanding human and carnivore conflicts the excellence of data available is highly different, with most data focused in conflicts. Researcher noted that human and red fox conflict is present all regions (Stahl *et al.*, 2002; Moberly *et al.*, 2004).

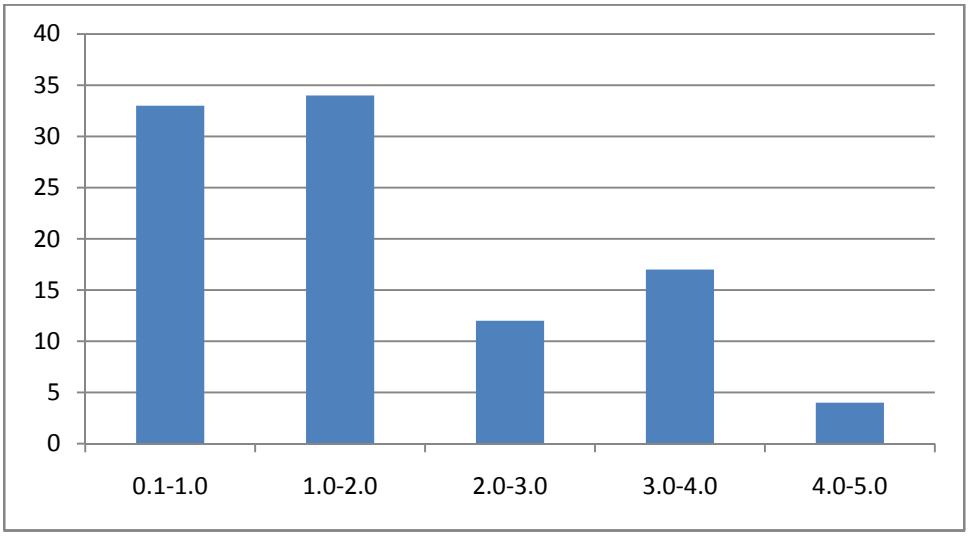

Figure 3: Agriculture size in the study area.

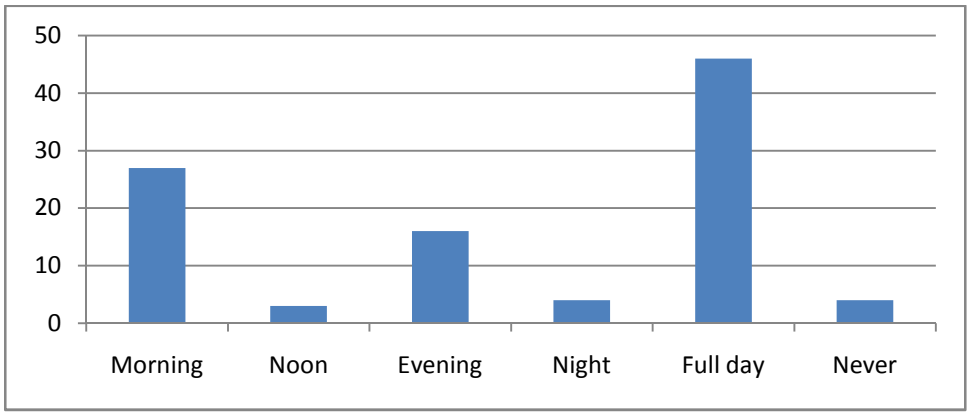

Figure 4: Respondent stay with livestock.

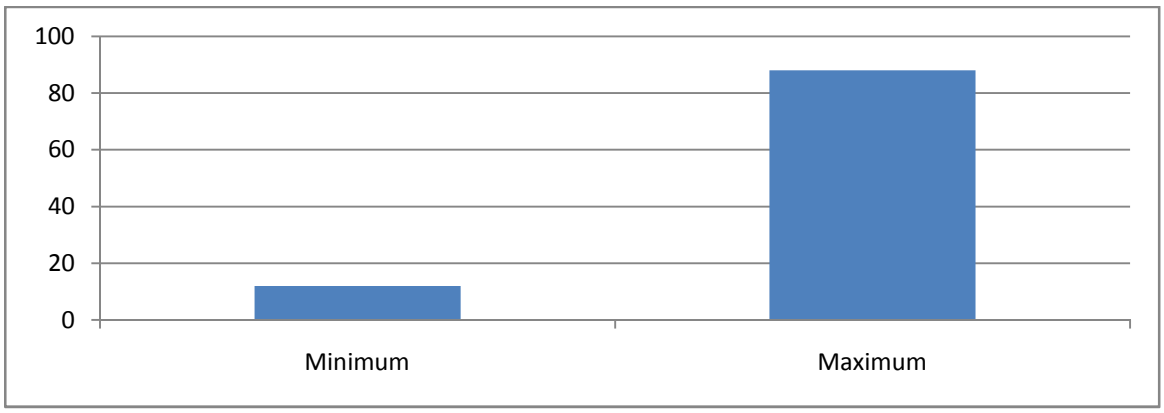

Figure 5: Respondents response about red fox damage.

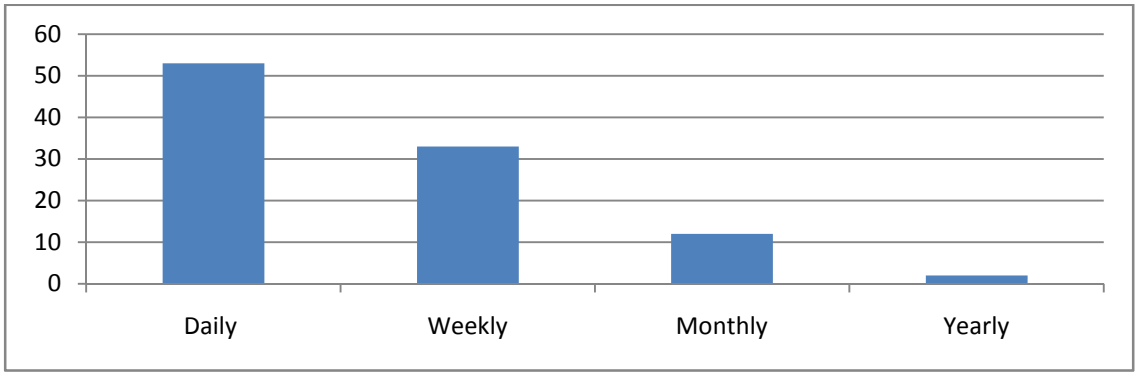

Figure 6: Sign of the red fox in the study area.

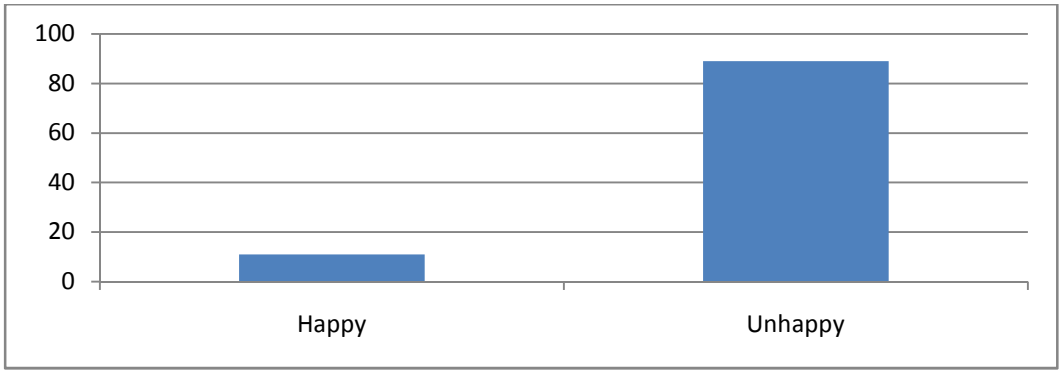

Figure 7: Respondents response about sharing of the land in the study area.

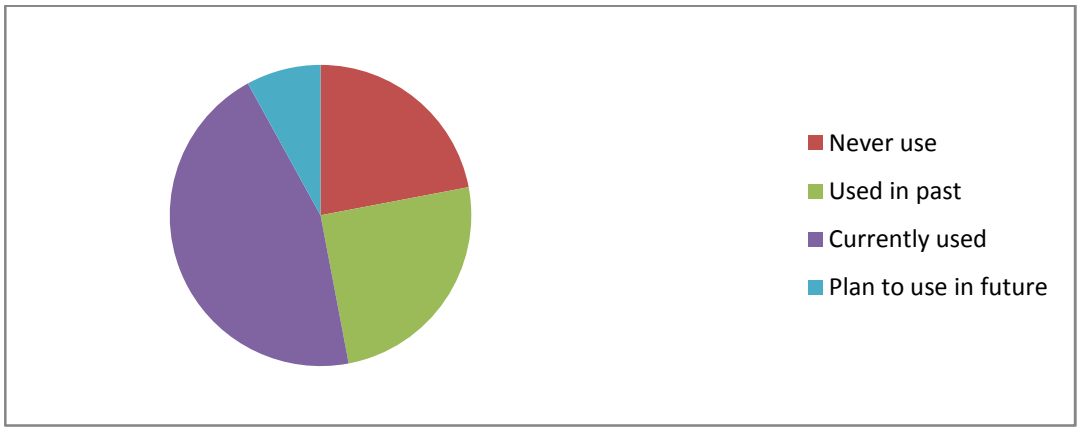

Figure 8: preventive measure to remove the red fox from the study area.

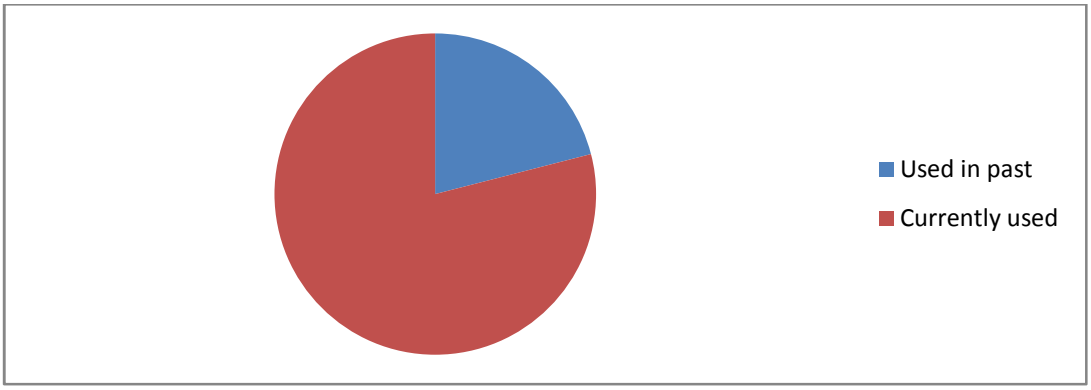

Figure 9: Guarding animal used to save the livestock.

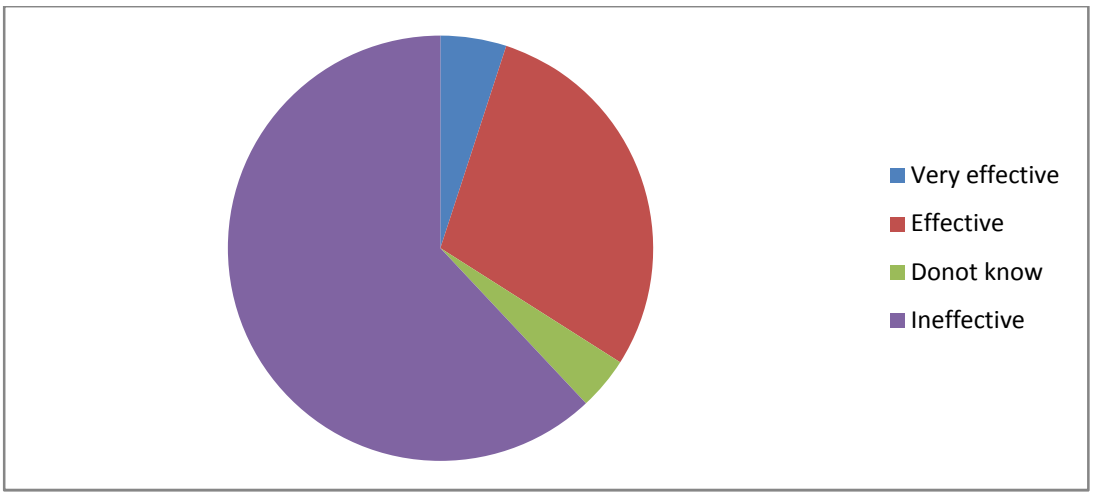

Figure 10: Respondents response about reduction of red fox number to tolerable range.

Conclusion: It is concluded that human-red fox conflict is present; Red Fox was damaged to livestock and in response local people were kill red fox to protect the livestock.

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Availability of data: We have included all relevant data in the manuscript that were collected during the field survey.

Authors' contributions: Azad designed this study and also performed the research; Altaf and Altaf helped in data write up. Manzoor and Yasrub were analyzed article and approved as final manuscript.

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