

Preliminary Report on the Wild Fauna, Livestock and its Loss in Baltal-Thajwas Wildlife Sanctuary, Kashmir Himalaya**Tawqir Bashir^{1*} and Riyaz Ahmad²**¹**Centre of Research for Development, University of Kashmir, Hazratbal- 190006, J&K, India.**²**Wildlife Trust of India, F-13, Sector-8, National Capital Region (NCR), Noida-201301, India.***** Corresponding author: tawqir84@gmail.com****Abstract**

Conservation of wildlife species and their habitats is crucial in the present scenario of global climate change. Efficient management plays a key role towards achieving this goal provided it is based on reliable ecological information. Baltal-Thajwas Wildlife Sanctuary (WLS) located in the Kashmir Himalaya represents one such wildlife habitat where proper management plan was not yet designed. Here we present a preliminary scientific report on the wild fauna, livestock and its threats in the area. Our results validate the ecological significance of the area in terms of its faunal assemblage and biogeography, but also highlight certain issues like livestock grazing and depredation, presence of permanent yatri camps, and nomadic human settlements. We therefore recommend long-term research and monitoring in the area supported by efficient protection, conservation, and management of this unique landscape.

Keywords: Biodiversity, conservation, Kashmir Himalaya, livestock loss, wildlife, management.

Introduction

Conservation and preservation of wildlife species and their habitats has become imperative in the present scenario of global climate change (Kaeslin *et al.*, 2012). Secondary threats such as habitat destruction, overexploitation, poaching, infrastructure development, and wildlife diseases are continuously pushing the species further towards extinction worldwide (Parmesan, 1996). In high-altitude landscapes such as the Himalayas all these threats become more profound with rapid effects causing loss of potential wildlife habitats and abrupt population declines (Xu *et al.*, 2009). Given the present rate of species extinction, there still remain large portions of wildlife habitats that are unexplored. Even among those areas that are brought under protection by law, many lack proper documentation of their inhabiting biodiversity. Baltal-Thajwas WLS represents one such protected area in the Kashmir Himalayas where proper scientific assessment and documentation of wildlife and the habitat has been lacking. However, the area is known to be highly diverse constituting an array of habitat types including evergreen forests, forest scrubs, and alpine meadows supporting a rich floral and faunal diversity (Dar *et al.*, 2001). Although, the main faunal attraction of the area is the Musk deer (*Moschus cupreus*), other charismatic species such as Asiatic black bear *Ursus thibetanus*, Himalayan brown bear *Ursus arctos*, Snow leopard *Panthera uncia*, Himalayan ibex *Capra sibirica*, Himalayan monal *Lophophorus impejanus*, and Himalayan snowcock

Tetraogallus himalayensis are also known to inhabit the area many of which are listed in the IUCN red list of threatened species (IUCN, 2017). In addition, the area remains under the occupancy of nomadic grazers including large populations of livestock reared by the local communities in the adjoining areas of the sanctuary which becomes a continuous source of biotic interferences often resulting in carnivore-human conflict. In spite of such ecological significance of the area, there has been limited scientific research towards proper assessment of the diversity and threats to the species and the overall landscape. Moreover, for designing an efficient management plan for the area in a changing climate with high human interference, the approach needs to be based on reliable ecological information generated through rigorous scientific sampling (Hannah *et al.*, 2007). With this background, we therefore conducted multiple surveys in the area to generate baseline information on the same.

Study area

Baltal-Thajwas WLS lies in the Zaskar mountain range of North-West Himalayan Biogeographical zone of India (Rodgers *et al.*, 2000). Located between 34°37' N and 74°36' E in the Ganderbal district of J&K, it encompasses the famous Thajwas Glassier and remains flanked by large snow laden peaks of 'Sonamarg' (**Figure 1**). It covers an area of 210.5 km² with an altitudinal range of 3,015 to 5,466 m. The topography of the area is mostly hilly with broken rocky cliffs. The area experiences an irregular temperate climate with moderate temperature during summer and very low temperature during winter. The major part of precipitation is during winter mainly in the form of snow (Husain, 2001). The physiographical and topographical terrain of the WLS supports a mesophytic vegetation of temperate coniferous and broadleaved forests arranged in an altitudinal sequence up to alpine habitats making it more unique.

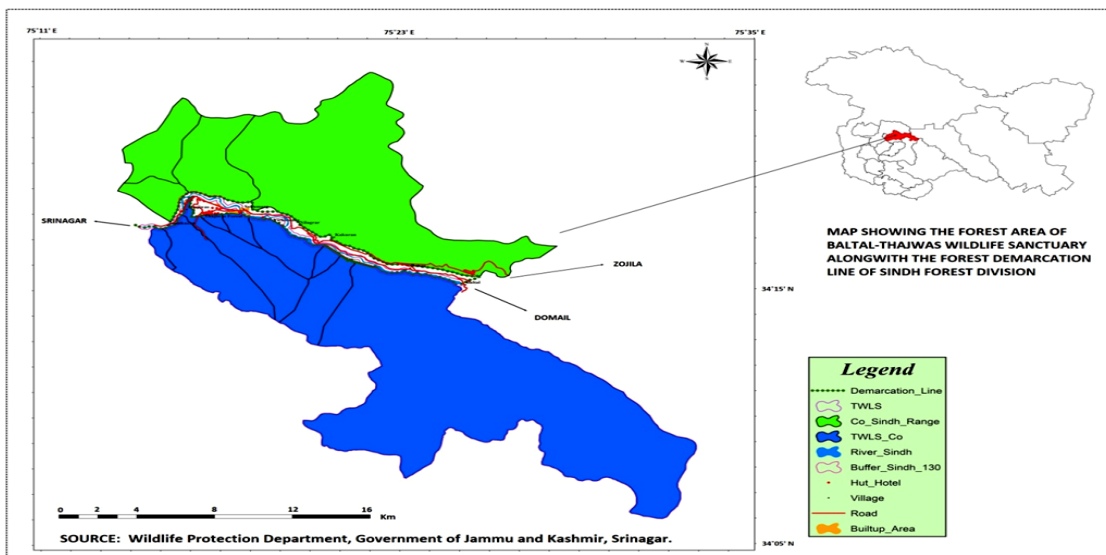


Figure 1: Location of Baltal-Thajwas WLS and the adjoining forest division.

Methodology

Preliminary survey of the area was done during August, 2014. This included sign surveys and trail monitoring during which sampling was done mainly along natural trails in the area. This included extensive sampling in *Thajwas*, *Mali* and *Happat gund* areas of the WLS. This was followed by an intensive sampling exercise carried out during October, 2014. The main aim of the secondary survey was to document the presence of wild fauna and to assess threats to their habitat. In order to acquire maximum possible coverage of the area, surveys were done in two teams each visiting different areas of the sanctuary, thereby increasing the sampling effort. Same survey design was followed by both the teams which included walking along natural trails, ridges and *nullahs* (Chundawat, 1992). Important observations such as sightings and signs of the wild fauna encountered, if any were recorded. In addition, information on the extent and magnitude of livestock grazing and other threats to the wildlife and their habitat in the area was also recorded. These field surveys were carried out in different parts of the WLS covering areas such as *Sarbal*, *Baltal*, *Dumeel*, *Rail pathri*, *Mangi kottha*, *Bradimarg*, *Phyangdu*, *Sangam*, *Kala Mata*, *Rainur*, *Zojilla phadd*, *Pohal pathri*, *Naye*, and *Ranga doori*.

Results and Discussion

During the preliminary survey we recorded sighting of Himalayan griffon vulture (n = 3) at *Mali*. This area was also used by *Bakarwals* for their livestock grazing. We recorded three *Bakarwal* settlements in the *Mali* area comprising of 18 households with about 600-700 livestock (goat and sheep), 40 horses and 30 dogs in total, reporting about 35-40 incidents of depredation by bears. Another *Bakarwal* settlement was recorded in the *Happat gund* area which included about 1,200 livestock but did not report any loss to bears. During the intensive survey we recorded sighting of Himalayan ibex (n = 4), Himalayan brown bear (n = 2), Himalayan marmot *Marmota himalayana* (n = 16), Himalayan vulture *Gyps himalayensis* (n = 1), Himalayan snowcock (n = 2), and Bearded vulture *Gypaetus barbatus* (n = 3) at *Rainur*, *Zojilla phadd*, *Bradimarg*, *Phyangdu*, *Sangam Top*, *Kala Mata*, and *Pohal pathri*, respectively. Besides sightings, we also recorded indirect evidences (scats, pellet groups, tracks) of animal presence including Asiatic black bear, red fox *Vulpes vulpes*, musk deer, and leopard *Panthera pardus* at *Dumeel Nardd*, *Rail pathri*, *Bradimarg*, *Sangam Top*, *Kala Mata*, and *Ranga doori* areas. Moreover, we also encountered major permanent *Yatri* transit camp locations at *Rail pathri*, *Mangi kottha*, *Bradimarg Top*, and *Kala Mata*. These camp sites were located in the prime habitat of the wild fauna of the sanctuary hence need to be properly managed on seasonal basis. Due to the advent of winter, most of the grazing grounds in the upper reaches of the sanctuary were vacated by livestock herders. As a result of which a large congregation of livestock ([goat and sheep] ~ 1,500) was found grazing near *Baltal* area. Still, we recorded few settlements of herders at *Thajwas* and the adjoining areas. Moreover, while talking to herders, they validated the presence of both bear species (black bear and brown bear) in the area, and considered these as main conflict animals causing major threat to their

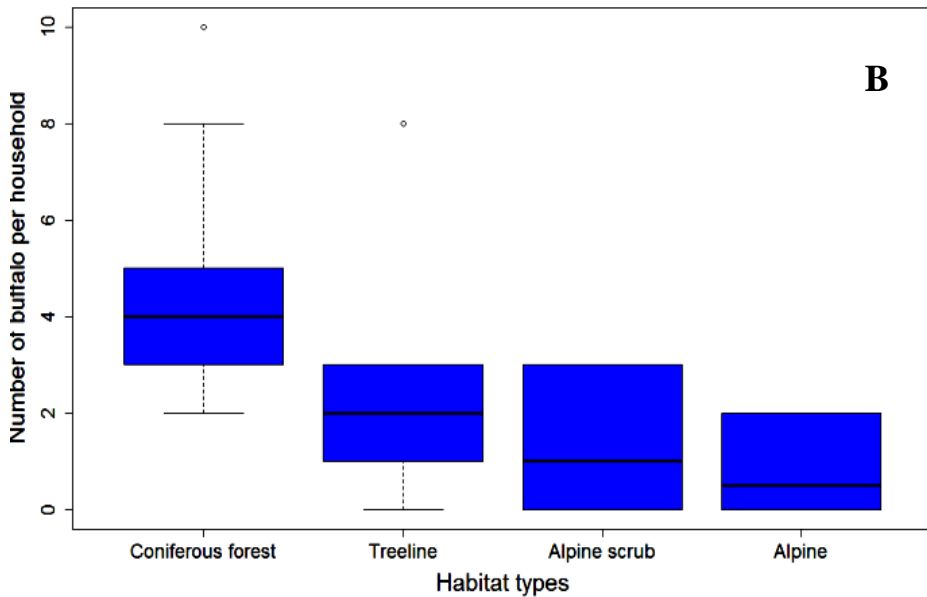
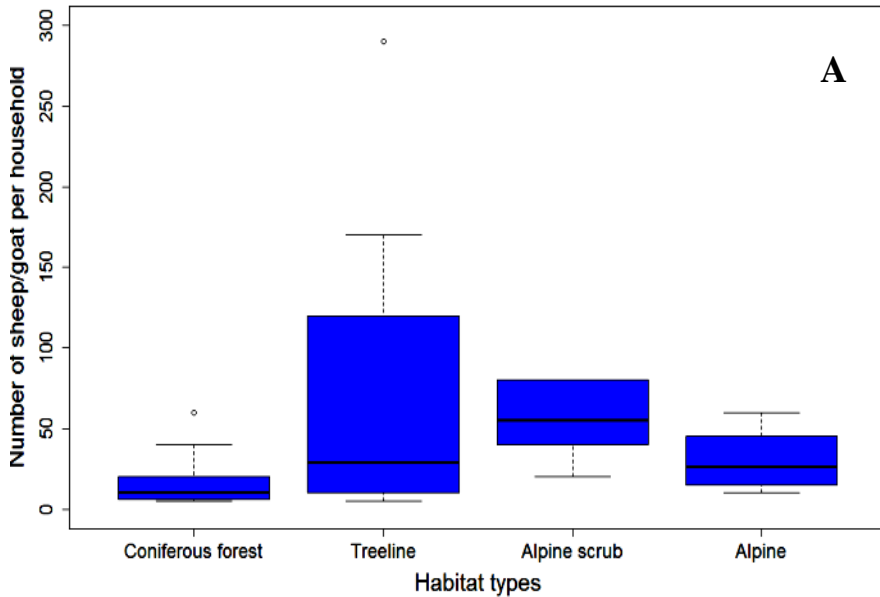
livestock, and responsible for almost all their livestock losses, also reported earlier (Sathyakumar, 2001). Livestock herders and settlements were observed at *Mali*, *Happat gund*, *Baltal-dumail*, *Thajwas* and *Sarbal* areas. We observed that on an average each herder family kept around 75 individuals of sheep/goat, four horses, and two buffaloes as livestock and pack animals, along with three guard dogs, respectively (**Table 1**).

Table: 1 Mean number of livestock and dogs in different places in the study area

Place	Sheep/Goat	Buffalo	Horse	Dog	Livestock lost
<i>Mali</i>	50.00 ± 10.95	1.00 ± 0.63	4.00 ± 0.32	4.00 ± 0.45	5.00 ± 1.31
<i>Mali Up</i>	2.00 ± 0.94	0.80 ± 0.41	2.50 ± 0.52	1.20 ± 0.19	2.00 ± 0.94
<i>Happat Gund</i>	1200.00 ± 0.00	3.00 ± 0.00	15.00 ± 0.00	3.00 ± 0.00	1.00 ± 0.00
<i>Baltal-Dumail</i>	140.00 ± 43.50	3.20 ± 1.32	6.00 ± 1.31	3.00 ± 0.63	5.00 ± 2.05
<i>Thajwas</i>	17.70 ± 8.13	4.60 ± 1.16	4.00 ± 0.61	2.60 ± 0.38	0.80 ± 0.46
<i>Sarbal</i>	12.20 ± 3.15	1.40 ± 0.40	1.60 ± 0.68	3.00 ± 0.32	0.40 ± 0.40

While trying to understand the patterns of livestock holding by herders at different elevations and habitats, we observed that the number of sheep and goat was highest in the alpine scrub forest (**Figure 2**). It also increased with elevation till the alpine scrub habitat. This may be related to the quality of forage available to the livestock and accessibility of the area as a result of which herders intend to use most of this habitat for livestock grazing. The number of buffaloes owned by each household also varied at different habitat types. It decreased continuously as we moved up along the elevation gradient. Increasing trend in buffalo holding by herders at lower elevation and near habitation could be related to their economic value (dairy products) which they sell in the nearby market as a source of income. However, the number of horses per household did not vary much in different habitat types. Although, more number of horses were kept by herders residing in lower elevation coniferous forests, because these are often used to carry tourists in the area, as an alternative source of their livelihood. The number of dogs on the other hand per household varied in different habitat types. Also, their number increased with elevation till the alpine scrub forest with very few dogs in the alpine habitat. This could be due to the perceived threat of livestock depredation by wild animals in the alpine scrub area in response to which herders keep more watch dogs to guard their livestock from predators. The boxplot showing the number of livestock losses in different habitats also shows the same trend, hence explains the reason for the presence of more guard dogs in the alpine scrub area (**Figure 3**). On an average, each herder family was observed to have lost at least two animals due to depredation by wild animals. Number of livestock lost per household was the highest in the alpine scrub forest. It also increased with elevation till the alpine scrub habitat. This is directly related to the number of livestock grazing in this area. As

mentioned above, this area was observed to be most used by herders, hence experienced maximum number of livestock depredation incidents.



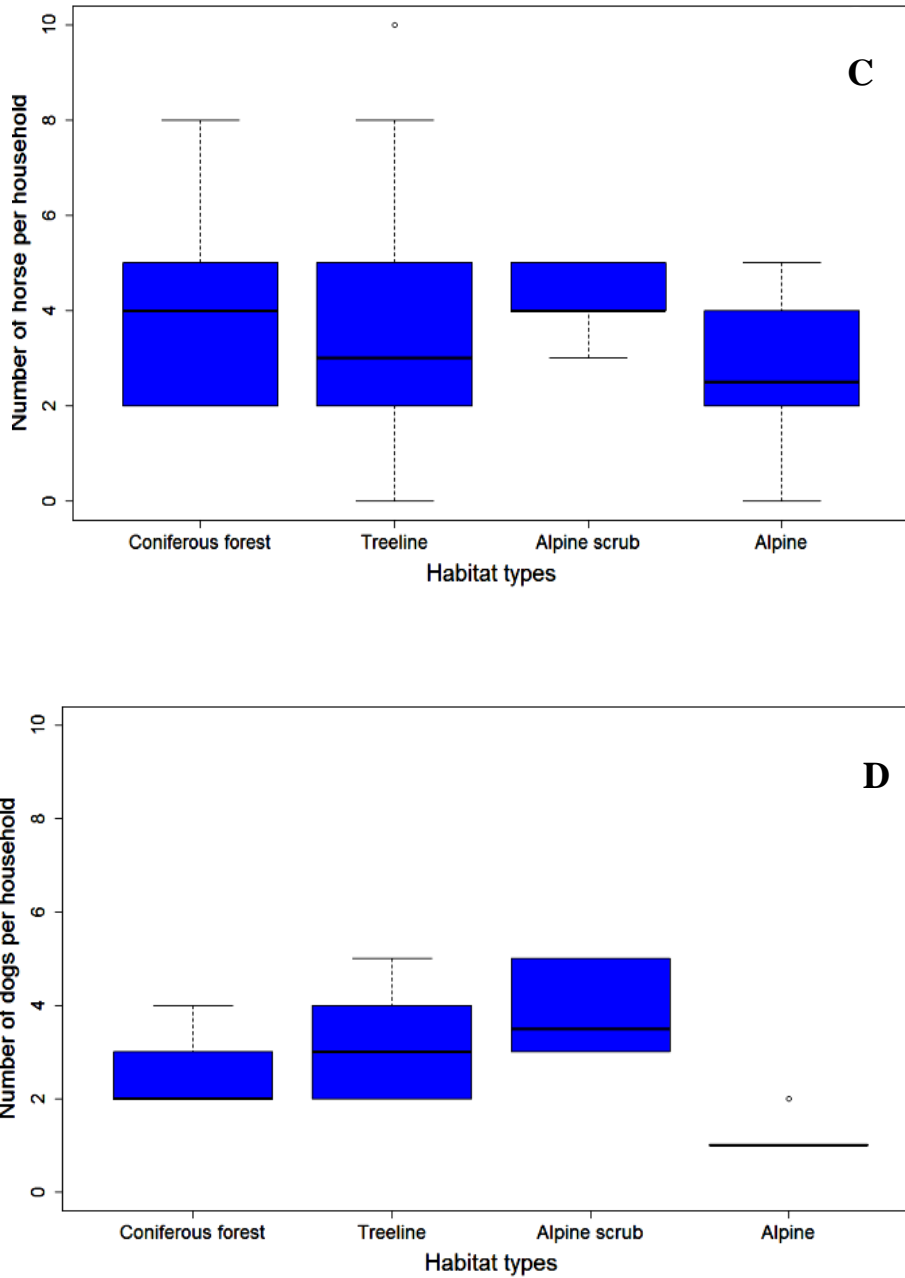


Figure 2: Boxplots (A, B, C & D) showing the patterns of livestock holding by herders at different habitats.

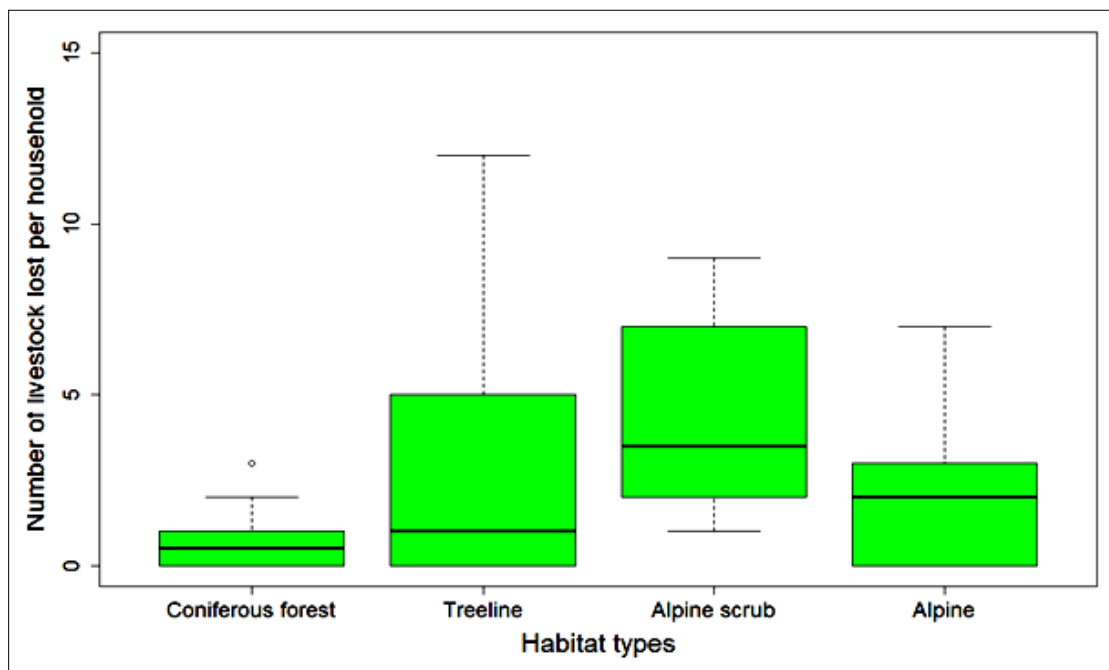


Figure 3: Boxplot showing the pattern of livestock lost to depredation at different habitats.

Our surveys validated the ecological significance of the area in terms of its faunal assemblage as well as its biogeography, but also highlighted certain issues prevailing in the area in the form of livestock grazing and depredation, presence of permanent yatri camps, and nomadic human settlements which need to be managed and regulated efficiently. Immediate attention and action is required from the government and the managers to safe guard this unique and rich biodiversity zone having huge significance even beyond its boundaries as it harbors important wildlife species and important wildlife corridors to the Sindh forest Division in the Zanskar Range, Kashmir forest Division, upper Dachigam National Park, and the adjacent forests of Overa and Aru Wildlife Sanctuary (Suhail, 2000; Naqash and Sharma, 2011). We therefore recommend long-term research and monitoring in the area supported by efficient protection, conservation, and management of this unique landscape.

Acknowledgements

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