

Need for systematic ethnozoological studies in the conservation of ancient knowledge systems of Nepal – a review

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Ethnozoology deals with the study of interrelationship between the primitive human societies and the animal resources around them. Different factors like strategic location of the country along the central and eastern Himalaya, topographical and the climatic variations have given rise to diverse and unique assemblages of flora and fauna. Equally diverse are the people (59 ethnic groups), who have been interacting with these resources from the very beginning to adapt in the difficult Himalayan landscape. The knowledge as related to use, management and conservation of the animal resources, acquired during this long course of interaction, is transmitted orally from one generation to the next without being documented anywhere. The knowledge if harnessed properly could prove to be a valuable asset, which could be integrated into the modern development projects for fruitful results. But there is growing trend of depletion of biodiversity as well as cultural diversity in the country. Therefore, it is urgent to initiate organized scientific study and document such valuable and time tested ethnozoological knowledge before these culturally rich people and important faunal resources disappear.

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History of animal use by human beings dates back to the origin of human race. Animals have been providing food, medicine, and clothing to humans together with a number of other goods and services. Man's pivotal role along this long way of his civilization has helped maintain a near stable equilibrium between animal use and conservation. The knowledge acquired in this direction through a series of trials and errors over a long period of time, and consolidated by repeated practices is passed on linearly from one generation to the next without resort to any formal documentation. However, continuity of such practices have found expression in the form of culture related to religion, traditions, customs and customary laws, festivals, folktales, fine art, paintings, handicrafts, folksongs, legends and such other practices. This knowledge is also known as indigenous knowledge system. Although the relationship between human beings and bioresources is as old as the human civilization itself, the idea of studying it with a definite focus is a new scientific awareness^{1,2}. Indigenous people or the native people are the last surviving pre-industrial people in the

planet³. There are about 5,000 different indigenous or tribal groups living in 70 countries⁴. The total world population is estimated to be about 300 million. These original inhabitants are called differently in different parts of the world. It is pronounced that much of this historical and contemporary indigenous knowledge of numerous ethnic groups around the world is at much risk of being lost, as is in the case with the respective biodiversities⁵.

Many factors are presumed to be responsible for the temporal erosion of such ethnozoological knowledge. The important ones are – depletion of biodiversity due to reduction of forest area, acculturation, modern infrastructure development, penetration of market economy, modern healthcare facilities and demise of elderly people without transmitting the valuable knowledge to the younger generation. Nepal is not an exception to this grim reality. The use of animals in food, religion, medicine etc is an old practice or may be as old as societies themselves⁶. Ancient texts like *Naturalis historiae*, *Materia Medica*, and *Comendium Materia Medica* have provided detailed account on insect-derived medicines⁷⁻¹¹. However, the very concept of

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systematic and scientific documentation of such knowledge prevalent among the indigenous societies of the world was developed much later. In the recent years, many scientists have added volumes to the ethnozoological wealth of the world. Many others are in the process of making such studies in different parts of the world.

Physiographically, 86% of the land of Nepal lies in the hills and mountains, giving rise to topographical variations from less than 100 m as in the southern Terai to 8,848 m as in the northern Himalayas, within a horizontal expanse of less than 200 km. The strategic location of the country between two zoogeographical realms – Palaearctic in the North and Oriental (Indo Malayan) in the South, and its position along the Central and Eastern Himalayas, has also contributed to the diversity of biological resources. The climatic variations have further increased the diversity of habitats in terms of specific niches with unique assemblages of flora and fauna. Some of them are endemic. Nepal claims about 9% of the world's bird species, 4% of the mammals in the area of 1,47,181 sq km which is no more than 0.1% of the world's land surface¹².

The indigenous people of Nepal termed as ethnic people, have for generations coexisted with their immediate biodiversity even in difficult mountainous terrains, forming discrete groups. Although there is a difference between the indigenous or aboriginal people and ethnic communities, the former being original inhabitants and the latter being culturally-distinct people, no distinction has been made between these two groups in Nepal and are thus kept under the same rubric of ethnicity¹³. These people or the *Janajatis* are those people, who claim themselves to be *Adivasis* or first settlers of the country¹⁴. Owing to the lack of communication between different such groups, each group has remained rather isolated in its traditional area of habitation, till quite recently. Every single group spoke a different language or a different dialect, developed its own marriage and social systems and customs, and became ethnocentric in almost every respect¹⁵. About 59 such ethnic groups are known in Nepal¹⁴. While the geographical inaccessibility kept these people in isolation, the rulers kept the entire country in isolation from the rest of the world until 55 yrs ago.

Need for systematic studies on ethnozoology

In the past, forest area of Nepal has been greatly reduced from an expanse of 6.079 m ha in 1964 -

4.269 m ha in 1998, thus accounting for an average shrinkage of 54,852 ha/yr¹⁶. Deforestation has caused increasing loss and/or fragmentation of original habitats thereby affecting the lives and habits of wild animals. Over the years, 24 species of mammals, 27 species of birds, 9 species of reptiles, 2 species of insects and 13 species of plants have become endangered in Nepal¹⁶. Many of the faunal resources are getting fast depleted without being studied scientifically. Therefore, there is an imperative need to systematically study and document the ethnozoological knowledge and practices of these ethnic people, before more faunal resource disappear from the country and cross-boundary migrations and/or intermingling of ethnic groups erode or erase the culture-specific ancient knowledge systems. Systematic recording and documentation of such knowledge and practices could be of immense use in planning future developmental activities because these practices and knowledge, as were developed by original people to feed and shelter and also protect themselves, could be extrapolated to benefit the present generation¹⁷. Indigenous knowledge in the mountain ecosystem is an important natural resource and facilitates developmental process in a cost-effective, participatory and sustainable way¹⁸. Documentation of such time tested indigenous knowledge in the mountainous landscape like Nepal will be of immense use in the future developmental planning in the country.

Ethnozoological studies

At present, serious ethnozoological study is in its infancy in Nepal. Although there are some scattered/casual records on ethnozoology as related to socio-anthropological reports of some areas of Nepal, organized scientific study is still lacking. Use of plants and animals to cure human ailments is an old practice even in Nepal as in other parts of the world. The book *Chandra Nighantu* is such an ancient handwritten herbal encyclopedia consisting of medicinal recipes of plants and animals to cure different human disorders¹⁹. There has been little documentation of ethnozoological knowledge on some of the vertebrates of the country. Data on the other uses of fish besides food are not available²⁰. An account on the use of amphibians and reptiles for food and medicine among the traditional people in different parts of the country is available²¹. Different uses of some of the herpeto-faunal species as food and medicine have also been reported²⁰⁻²⁵. Though the

country harbours a rich diversity of birds (over 870 spp), ethnozoological studies on these have not been carried²⁰. Ethno-ecological study of *Tharu*, an ethnic group of southern plain (Terai) region of the country and ethnobiological study of a nomadic tribe, *Raute* from western Nepal was carried^{26,27}. Religious values of the *Naga* (serpent) to the traditional societies and how the lesser deities like *Nagas* attract people's attention in Nepal have also been reported²⁸. Brief ethnozoological notes on some of the mammals have been provided^{20,29}. Some of the sacred animals of Nepal and India have also been listed³⁰. Ancient societies developed different mechanisms to conserve animals considered important to them. Some of the animals were incorporated in their religion by giving them the sacred status. Scientific study on such in-built conservation mechanisms of the original societies is still wanting.

Discussion

Such studies on ethnozoology need to use both qualitative and quantitative approaches of methodology. The quantitative data may be obtained by employing different techniques such as questionnaires surveys and structured interviews. Likewise, the qualitative data may be gathered by emic approach, applying different tools. Data on demography, socioeconomic status, and livestock may be obtained using questionnaires from household samples adopting the simple random sampling technique. Since a particular ethnic group is a culturally homogeneous group, a sample of 10% of the total households may be an adequate representative one. To know the trends of ethnozoological knowledge in the study area, a stratified random sampling procedure may be applied and ethnozoological data from the strata of different age group people may be obtained by the structured interview method. The age of informants may range from 16-86 yrs.

Different tools of participatory approaches such as semi-structured interviews, participatory rural appraisal, key informant's interviews and focus group discussions may be used to gather different types of qualitative data. Participatory Rural Appraisal (PRA) is a suitable method to gather information on village resources and their distribution, cropping calendar, festival calendar, and animal uses during different festivities. Some of the people are more observant and knowledgeable than the others. These may serve as key informants of the area. Additional ethnozoological data from the key informants and

from other knowledgeable people of the village may also be gathered by applying semi-structured interview technique. Qualitative data on ethnozoology may also be obtained³¹. Animal photographs need to be taken in the field, for identification of the animals, which would not be seen around. Standard taxonomy keys may be referred in case of confusion^{20,21,32-34}. Socioeconomic data may carefully be linked with ethnozoological data to find out the role of animals in their household economy.

Conclusion

Systematic ethnozoological studies would help us to know the animal resource use practices of our ancestors and provide vital information on the survival strategies adopted by them to adjust themselves to the difficult mountainous terrains of Nepal. In view of the fact that animal products like liver, insulin, fibrinogen and different hormones are increasingly being used in modern medicine, ethnozoological data could well serve as the basis for further research. This in turn, could lead to the discovery of new generation pharmaceuticals and nutraceuticals of animal origin. These data would also provide the basis for formulating appropriate policies for the conservation of endangered fauna and their judicious and sustainable product development for rational human usage. In view of the burgeoning trend of global and regional depletion of biodiversity as related to change in human cultures, there is urgent need for documentation of ethnozoological knowledge as well as past/present practices of ethnic groups of the country. Scientific investigations to test the efficacy of some of the crude drugs derived from animal source/s as developed by the ethnic groups for wider application may be undertaken and if found feasible, large-scale sustainable product development may be recommended. Despite fairly stringent wild-life protection and/or conservation laws, if there is protracted practice of using some of the endangered animals, such practices may be banned. To make sustainable use of these animals, their population should increase. The possibilities and practices of captive breeding by the integration of traditional and modern methods may be explored and appropriate policy/s may be formulated.

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