

## Eroding Ethnozoological Knowledge among *Magars* in Central Nepal

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Though small in size, Nepal is rich in biocultural diversity. *Magar* is one of the groups of ancient population among many such groups scattered all along the rugged terrain of the country. *Magar* animal interrelationship has been studied in the present work. Data have been collected using tools such as questionnaire survey, structured interview, semi-structured interview and participatory approaches. The group is found to have rich knowledge mainly on Zootherapeutic uses of animals. Altogether 39 species of animals have been identified which of various uses to the group. There is erosion of such knowledge in the group as younger people harbor less knowledge than the older ones. Ethnozoological study on other ethnic groups of the country is essential before such valuable knowledge disappears altogether from the country.

**Keywords:** *Magar*, Ethnozoology, Nepal, Zootherapeutic knowledge

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Nepal lies between 80°4'E to 88°12'E longitude and 26°22'N to 30°27'N latitude and thus is roughly rectangular in shape. Though small in size with occupying only 0.1% land of the total land mass of the earth, it is rich in topographic, climatic, ethnic and biological diversities within a horizontal expanse of less than 200 km. The country embraces two Zoogeographic realms-the Palaerctic in the North and Oriental in the South. Specific niches formed as a result of these diversities are thus seats of unique assemblages of fauna and flora. Interacting with these diverse and unique flora and fauna in the rugged mountainous terrain of the country from time immemorial are diverse groups of ancient people called ethnic groups and *Magar* is one of the groups of ancient people<sup>1</sup>.

In spite of rich cultural and biological diversity in the country, Ethnozoological study is still in its infancy. Stray data do exist in a number of journals, books and reports but comprehensive scientific Ethnozoological study is still lacking. Present work is attempted to fill up the existing gap and thus studies and documents Ethnozoological practices of a small *Magar* community of Central Nepal. Because these animal use practices were developed by our ancestors in the process of adapting themselves in the difficult terrain of the country, the work would be useful in providing clues to new research on proper utilization,

management and conservation of biodiversity. Some of the use practices are still prevalent among the group. It is believed that the work would contribute to the scanty Ethnozoological literature of the country. As there is growing trend of erosion of such knowledge mainly because of the increasing loss of animal resources and acculturation of ancient human cultures all across the globe, present work also studies the status of such knowledge among the community. Various uses of animal are presented in tabulated form for ease (Table 1).

### Materials and methods

**Study area:** Present study was conducted on *Magars* of Kavre district of Kathmandu valley. District Kavrepalanchok is one of the 8 districts of the Bagmati zone and one of the hill districts of the Central Development Region of the country (Fig. 1). It lies towards the eastern border of Kathmandu district. Over 70% of the land of the district is covered with hills and mountains ranging from 1000m to 2500m in altitude<sup>2</sup>. *Magars* are Mongoloid in origin and have their own dialect<sup>3</sup>.

**Methodology:** Both qualitative and quantitative methods were employed in the present work. Qualitative data were employed to obtain in-depth knowledge on traditional uses of animals. In this regard, different participatory methods such as

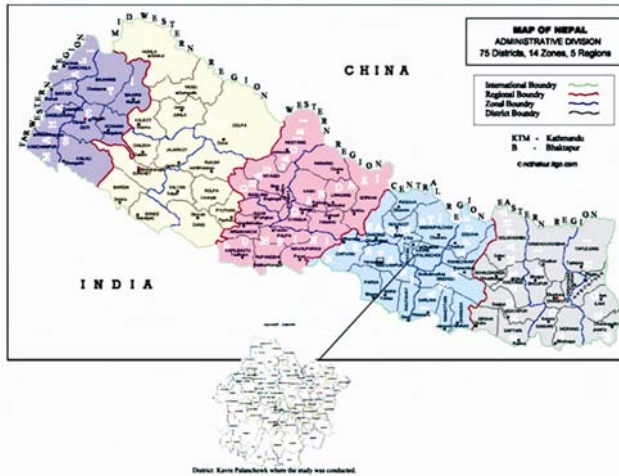


Fig. 1— Map of Nepal showing the study area

Participatory Rural Appraisal, Key Informants' Interview and Focus Group Discussion were used. For data collection prior informed consent was taken from the study group as per the CBD guidelines.

To obtain qualitative data, Questionnaire Survey and Structured Interview methods were employed. Thus, data on demography, livestock and socio-economy were gathered by employing household level Questionnaire Survey. For the survey, 10% households of the total 299 households of the study area were selected by simple random sampling method. Structured Interview method was employed to one informant from each sampled household to obtain data on education level, different side occupations, animal husbandry and Ethnozoological knowledge. Livestock unit per household was calculated after Shekhar where cow, ox, buffalo and goat/sheep were assigned 1, 1, 1.5 and 0.2 unit respectively<sup>4</sup>.

To study the trend of the Ethnozoological knowledge, a test was performed with the hypothesis that younger people have as much Ethnozoological knowledge as the older people of the ethnic group. For this Ethnozoological knowledge of each informant gathered by Structure Interview method was gauged in terms of the number of citations (spontaneous quotation by informants both in terms of number of animals and number of uses) made by him. The highest number quoted spontaneously in both the categories was taken as 100 % and percentage of each number reported by each informant was then calculated. Graphs were plotted with informants of different ages in x- axis and percentages of animals and uses cited in y- axis. Correlation-regression

analysis was used to test the hypothesis. It was assumed that greater the number of animals as well as uses as spontaneously quoted by the informant more was his Ethnozoological knowledge.

**Animal Identification:** Smaller animals of the Invertebrate group were captured and identified with the help of Standard Taxonomic Keys from home and abroad<sup>5-9</sup>. The animals were set free after identification. Larger animals were identified according to folk description of each specimen and for conformation; photographs of these animals were taken and shown to them. Standard Taxonomy keys were used in case of need<sup>10-13</sup>. Most of the animals are identified up to species level and very few animals could be identified only up to generic level. Name of the authorities are provided as far as possible by referring to Standard Taxonomic keys.

## Results

### 1. Socio-economic data of the study group

**Literacy status:** Literacy rate among the study group is 66.7% which is higher than the district average rate of 64%. But not a single person has attained education higher than the intermediate level (Fig.2).

**Family size and occupation:** Average family size is 6.7. The main occupation is agriculture (n=30). Besides agriculture other side occupations are wage earning (33%), service (37%), business (3%), students (7%), others (3%) and none (17%). Fig. 3 illustrates different types of occupation in *Magar* community.

**Agriculture and land holding size:** Almost all of them have agriculture as their main occupation. Main crops produced are rice, wheat, maize and millet and potato (Fig. 3). Land holding sizes vary from 0.1ha to less than 2.0 ha (Fig. 4). Average land size of the group is 0.40 ha per family. About 47% of the people (n=30) have land holding sizes varying from 0.2- <0.5. Only 3% of the people have land sizes of 1-<2 hectares. A positive correlation ( $r=0.724$ ,  $df=28$ ,  $p=.000$ ) has been observed between land holding sizes and total annual harvest in the community.

**Animal husbandry:** Higher percentages of people (67%) keep cows for milk and manure. Besides these values, cows are given sacred status and are worshipped as goddesses. Products like milk, manure, urine are also used for various purposes specially to sanctify the house and the adjoining areas. None of the families has kept oxen for these are not necessary for draught purpose in the area. Goats and poultry are kept by 33% and 47% of the people respectively.

About 10% of them have kept pigeons. Pigeons are normally used in faith healing processes. Fig. 5 shows different livestock holdings in *Magar* community and Fig.6 shows per family livestock number. Per family livestock unit is 2.4.

**2. Magar Ethnozoology**

*Magars* have reported altogether 39 genera of animals with 50 different uses. Reported Animals fall into 5 use categories namely-animals used as food, medicine, ethnomusicology, religious and magico-religious values, aphrodisiacal, and aesthetic values. Table 1 explains traditional uses of animals as reported by the informants during structured interview and semi-structured interview processes. Animals are presented in common English names, zoological names, local names or vernacular names along with their various uses. In case of medicinal uses, methods of preparation of medicine and its application for locally identified disorders or ailments have also been provided. Of the total animals reported, 7.69% belong to the Invertebrate group and 92.31% to the Vertebrate group. Of Vertebrates, all of them belong to 5 different Classes of Phylum Chordata with 5.13%, 5.13%, 5.13%, 35.9%, and 41.03% of these falling into Classes Teleostomii, Amphibia, Reptilia, Aves and Mammalia, respectively (Table 2). More than half (62%) of the animals reported have medicinal value. 18% of the animals are used in magico-religion and 12% as food animals. A few animals (2%) have ethno-musical value and the rest 6% have aesthetic and aphrodisiacal values (Table 3).

**3. Trends of Ethnozoological knowledge in the study area**

To find out whether there was degradation of Ethnozoological knowledge in the new generations in *Magar* ethnic group or not, a test was performed with the hypothesis that younger people have as much Ethnozoological knowledge as the older people. Correlation-regression analysis was used to test the hypothesis. Ethnozoological knowledge of each informant was gauged in two different ways during structured interview:

- i. Number of animals reported
- ii. Number of use practices reported

The result of correlation-regression analysis is plotted in Figs. 7 & 8, respectively. As the age of the informants and Ethnozoological knowledge in terms of both number of animals and also number of use practices reported are positively correlated ( $r=0.367$ ;  $df=28$ ;  $p=0.046$  and  $r=0.418$ ;  $df=28$ ;  $p=0.021$ , respectively) at 95% level of significance, the null hypothesis is rejected and alternate hypothesis that there is degradation of the traditional knowledge has been proved to be true among *Magars* of the study area.

**Discussion**

Since the *Magars* of Magar Gaun of Kavrepalanchok district have literacy rate of 66.7% which is higher than the district average (64%) and much higher than the national average (54%), more than one third of them work at local level governmental and non-governmental offices of the

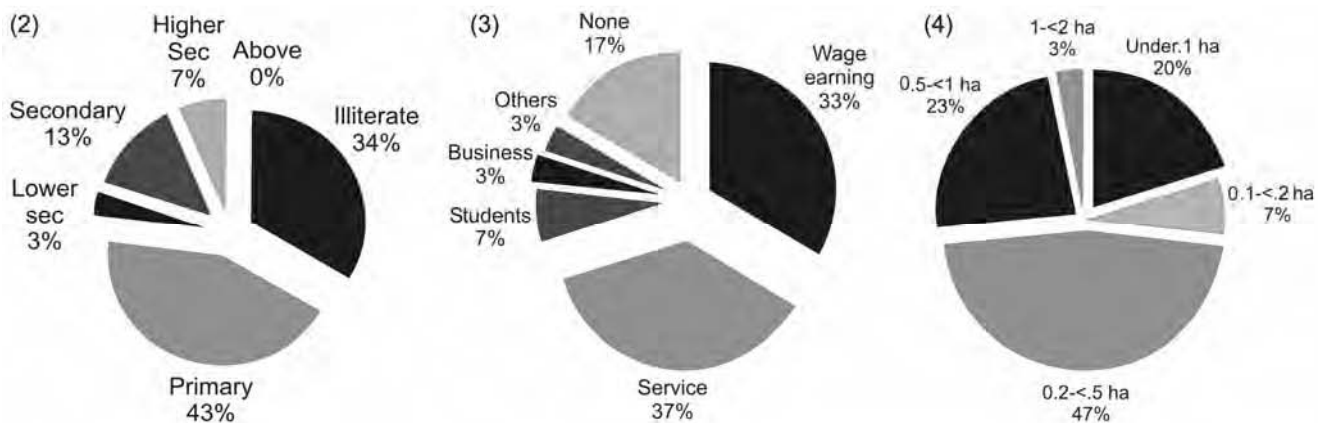


Fig. 2—Education status in the group (n=30). Source: Questionnaire Survey; Fig. 3— Other economic activities besides agriculture in *Magar* community based on questionnaire survey (n=30); Fig.4— Land holding sizes in *Magar* community based on questionnaire survey, n=30

Table 1—Traditional uses of animals in *Magar* ethnic group

Common name & local name	Zoological name	Uses	Consensus Index*
Earthworm "Gadeula"	<i>Pheretima</i> sp.	The animal is ground to fine paste and given to the person suffering from chronic illness. Children suffering from measles and typhoid are also given ground earthworm orally for relief.	x
Crab "Gangato"	<i>Himalayapotamon atkinsonianum</i> Brandis <i>Barytelphusa lugubris</i> (Woodmason)	Crab soup is favored for its nutritive value.	x
Slug "Chiplekira"	Slug spp.	Medicinal value: It is believed that the soup increases the memory power of a person. Raw slug is good for nourishment for T.B. patients. Patients of chronic illness also eat raw slug for nourishment. Raw slug is mixed with bone powder and boulder dust to make a kind of plastering material and applied at the site of fracture to keep the bone pieces intact. It takes a few weeks to become normal.	xxx
Fish "Sahar"	<i>Tor tor</i> (Ham)	Fish products like oil and bile extracts are applied at wounds and burns or taken orally to cure gastritis and other gastro-intestinal ailments	x
Hill Trout "Asala"	<i>Schizothorax</i> spp.	Children are usually given to eat fish fries and fingerlings for nourishment.	xx
Frog "Paha"	<i>Hoplobatrachus tigerinus</i> (Daudin)	Cooked meat is relished with taste. Besides its food value, cooked frog is also eaten to cure piles and dysentery.	x
Liebig's frog "Man Paha"	<i>Paa liebigii</i> (Gunther)	Dried frog is soaked in water and rubbed against the hard surface of boulders to obtain smooth paste. The paste is then applied at the wounds and burns. The paste also removes the scars and makes texture of the skin smooth and soft.	x
Common lizard "Gohoro"	Monitor <i>Varanus bengalensis</i> (Daudin)	Cooked meat is eaten for nourishment.	xx
Golden Monitor lizard "Sun gohoro", "Rani gohoro"	<i>Varanus flavescens</i> (Hardwicke & Gray)	Skin is used in making musical instrument.	xx
Fowl "Kukhura"	<i>Gallus gallus</i> (Linn)	Fat is used in burns and cracks. Bile is applied as an antiseptic in fresh cuts and wounds. Fowl eggs are mixed with cow's milk and slugs and the mixture is eaten by the person suffering from severe burns.	xxx
Common Quail "Battai"	<i>Coturnix coturnix</i> (Linnanus)	The bird is usually eaten by the asthma patients. However, some people believe that bird meat produces the disease epilepsy. It is believed that the one who eats the meat is sure to suffer from the disease.	x
Starling "Saraun"	<i>Sturnus malabaricus</i> (Gmelin) <i>S.vulgaris</i> (Linn).	Cooked bird is eaten by the person to cure piles and dysentery.	x
Egret "Bakulla"	<i>Casmerodius albus</i> (Linn)	Cooked bird is eaten by asthma patients. Body part except head and tail is cooked and eaten by the person suffering from chronic dysentery. Raw blood is taken by the patients of blood dysentery.	x
Peafowl "Mayoor"	<i>Pavo cristatus</i> (Linn).	Beautiful tail feathers of the bird have both decorative and magico-religious values and are thus kept in the house. It is believed that these feathers bring good luck to the people of the house. Feathers are used in medicines as well. A small quantity of powdered feather dust is mixed with water and filtered. The filtrate is then given to the children suffering from measles, typhoid and other chronic ailments.	x

Contd.

Table 1—Traditional uses of animals in *Magar* ethnic group— *Contd.*

Common name & local name	Zoological name	Uses	Consensus Index*
Magpie “ <i>Lampucchre</i> ”	<i>Urocissa</i> spp.	Oil obtained from the bird flesh is massaged in the scalp of the hair for good hair growth.	x
Sparrow “Ghar Bhangera”, “Rukh Bhangera”	<i>Passer</i> spp. <i>P.domesticus</i> (Linn). <i>P.montanus</i> (Linn).	It is believed that cooked meat fo these birds increase sexual desire in a person.	x
Duck “ <i>Haans</i> ”	<i>Anas</i> spp.	Villagers with weak eyesight eat the duck eggs.	x
Whistling Thrush “ <i>Kalchaude</i> ”	<i>Myophonus caeruleus</i> (Scopoli)	Flesh and eggs are eaten by the people suffering from dysentery.	x
Kaliz pheasant “ <i>Kaliz</i> ”	<i>Lophura leucomelana</i> (Latham)	It is a highly preferred bird for its food value. It is also a major crop pest of the region.	x
Lapwing “ <i>Huttityaun</i> ”	<i>Vanellus indicus</i> (Boddaert)	The eggs of the bird have medicinal value and are thus eaten by patients of chronic illness like typhoid and T.B.	x
Magpie Robin “ <i>Dhobi chara</i> ”	<i>Copsychus saularis</i> (Linnaeus)	These birds are kept in the house to drive off “disease causing elements”.	x
Pigeon “ <i>Parewa</i> ”	<i>Columba</i> spp.	Asthma patients consume the cooked soup of the bird for relief.	x
Fish owl “ <i>Hoochil</i> ”	<i>Ketupa</i> spp.	Eggs of these birds are used to ward off “ <i>disease causing elements</i> ” by faith healers.	x
Jackal “ <i>Syal</i> ”	<i>Canis aureus</i> (Linn).	Flesh of jackal is mixed with paddy grains and little amount of yeast and left for fermentation. Alcohol thus released by fermentation process is then trapped by the distillation process. Thus obtained alcoholic beverage popularly called “ <i>Syalako raksi</i> ” is supposed to be of high medicinal value. This alcohol is used in body massaging to be relieved from aches due to gout and arthritis or even taken orally for relief. Cooked flesh is eaten to cure ailments like arthritis, rheumatic pain, gout, etc. Jackal products like meat and alcohol are usually thought to be effective on humans of opposite sex. In other words, female jackal products like “alcohol” and meat are given to cure the male patients and vice versa.	xxx
Barking deer “ <i>Mriga</i> ” “ <i>Ratuwa</i> ”	<i>Muntiacus muntjac</i> (Zimmermann)	Fresh blood is given to the bed-ridden patient for speedy recovery and also to the patients of chronic blood dysentery. Legs and gall bladder are cooked to make soup which is then given to the person suffering from high fever.  Small pieces of foetus filled uterus are sun dried. These are then used in making charms. The charms are worn by TB patients or tied around the neck in case of small children suffering from some unknown illness and constant crying ( <i>Runche lageko</i> ).	x
Deer “ <i>sambar</i> ” or “ <i>Jaratyo</i> ”	<i>Cervus unicolor</i> (Kerr)	Faith healers use horns of the animal in their treatment therapy. These are also kept in the rural households as decorative items. Bones are boiled to make thick and concentrated soup, which is taken orally to cure various ailments like rheumatism, backache et cetera.	x
Porcupine “ <i>Dumsi</i> ”	<i>Hystrix indica</i> (Kerr) <i>H. brachyura</i> (Linnaeus)	Gastrointestinal tract along with the inner contents of porcupines usually in the months of March and April is boiled with water to make soup. The soup is then taken orally to cure asthma and TB. Spines are used in opening pus filled wounds and boils to let the pus drain out. Porcupine meat is eaten by the community as protein supplement.	xx

*Contd.*

Table 1—Traditional uses of animals in *Magar* ethnic group— *Contd.*

Common name & local name	Zoological name	Uses	Consensus Index*
Black cat "Kalo Biralo"	<i>Felis bengalensis</i> (Kerr)	It is believed that if a person carries a piece of dried black cat placenta in his pocket and plays the cards, he is sure to win the game and make good amount of money.	xx
One-horned Rhinoceros "Gainda"	<i>Rhinoceros unicornis</i> (Linnaeus)	Urine has medicinal value and is consumed orally to cure a number of ailments like asthma, gastritis, TB, etc.	xx
Black Goat "Kalo Boka"	<i>Capra hircus</i> (Linnaeus)	Drops of milk are put in the eye to treat the cataract. Milk is given to the small children to treat measles. Body is also massaged with the milk for relief from body aches.	xx
Salak "Salak"	<i>Manis pentadactyla</i> (Gray)	Cooked meat is given to the person suffering from heart and lungs problem. Fresh blood of the animal may also be given instead of cooked meat.	x
Sheep "Bhenda"	<i>Ovis ammon hodgsoni</i> (Blyth)	Fat is applied in burns, cracked skin.	x
Domestic cow "Gai"	<i>Bos domesticus</i>	Cow urine is sprayed in and around the house to sanctify the area. Small children, who have habit of crying for prolonged period without any obvious reason, are given cow urine bath to correct such habit. In <i>Nepali</i> a term called <i>Runche Lageko</i> is used for the problem. Cow dung is cooked and applied in the affected area in case of sprains and strains	xxx
Tiger "Bagh"	<i>Panthera tigris tigris</i> (Linnaeus)	Pieces of different organs of body like whisker, bone, claw etc. are used by faith healers in their treatment therapy. They make charms by their special technique out of these parts. The charms are then worn by people suffering from physical and mental problems. It is believed that the charms drive away the evil spirits and enemies. Pelt is displayed in the house as decoration item.	xx
Hare "Kharayo"	<i>Lepus nigricollis</i> (Cuvier)	Pelt is used as decorative item. A piece of skin is heated and applied at the aching joints in case of rheumatism.	x
Buffalo "Bhainsi"	<i>Bubalus bubalis</i> (Linn)	Its dung is cooked and applied externally in sprains and strains. Milk is highly preferred because of its high fat content.	x
Bat "Chamero"	<i>Myotis</i> spp.	Bat is preserved in cooking oil and the oil is popularly known as "Chamero ko tel"(bat oil). The oil is used in massaging the scalp in the head for good hair growth.	x
Sloth bear "Rato bhalu"	<i>Melurus ursinus</i> (Shaw)	Bile is consumed to cure ailments such as tuberculosis. Water soaked bone piece is rubbed against the stone to obtain its paste which is then applied externally to cure sprains and strains. Its meat is cooked and eaten to cure arthritis. Pelt is used as bed spread and is used by persons suffering from rheumatic arthritis.	xx
Wild boar "Bandel"	<i>Sus scrofa</i> (Linn)	Tusks are used in faith healing. Charms are made out of tusk pieces and are tied around the neck in children for their general well-being. Bile is used as antiseptic solution in cuts and wounds.	x

\* The consensus index reflects the spontaneous quotation frequencies for different remedies: x: use quoted by less than 10% of the informants; xx: use quoted by more than 10% and less than 40% of the informants; xxx: use quoted by more than 40% of the informants.

Table 2—Number and percentage of animals belonging to different taxonomic groups with their traditional uses as reported by *Magars*

	Invertebrata		Teleostomii		Amphibia		Chordata Reptilia		Aves		Mammalia	
	Genera	Use	Genera	Use	Genera	Use	Genera	Use	Genera	Use	Genera	Use
No	3	4	2	2	2	3	2	2	14	16	16	23
%	7.69	8	5.13	4	5.13	6	5.13	4	35.9	32	41.03	46

Table 3—Number and percentage of uses of different use categories in *Magar* group

Medicine		Food		Magico-religion & religion		Ethnomusical instrument		Aesthetic& other uses		Total uses
No	%	No	%	No.	%	No.	%	No	%	
31	62	6	12	9	18	1	2	3	6	50

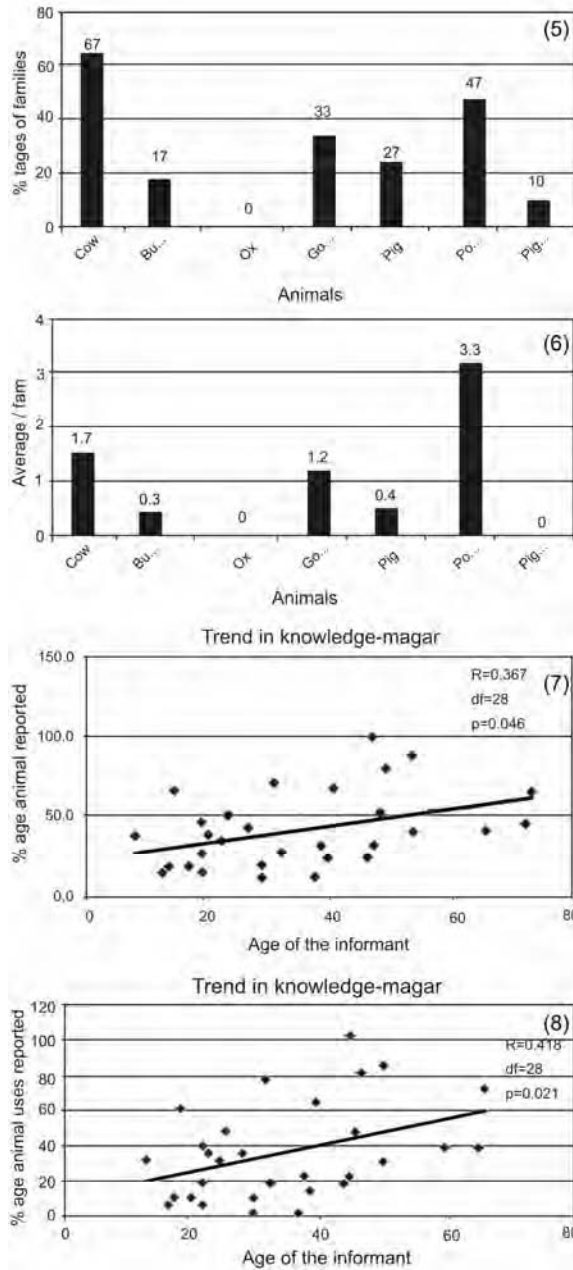


Fig.5— Different types of livestock holding in percentages; Fig.6— Per family number of animals in *Magar* community based on questionnaire survey (n=30) Livestock unit per family: Cow 1.7 + Buffalo 0.45 + Goats 0.24=2.4 units (cow=1unit, buffalo=1.5units, ox=1unit and goat=0.2unit); Fig.7— Ethnozoological knowledge reporting on number of animals; Fig. 8— Ethnozoological knowledge reporting on number of use practices

vicinity besides their main involvement in agriculture. Being agricultural societies, the family size is also higher (6.6). Much larger family sizes are noticed in other ethnic societies as well. Per family land holding is 0.4ha. A positive correlation between land holding sizes and annual agricultural production ( $r=0.724$ ,  $df=28$ ,  $p=.000$ ) indicates that the land is properly utilized by them. Higher percentages of people (67%) have raised cows. Like other Hindus, *Magars* too have kept cows in the sacred status and thus worship these on a regular basis. Some of them worship on a daily basis and some do so during other special occasions. Cow milk and milk products are highly valued. Other products such as urine and dung are utilized in sanctifying the house and the surroundings.

About 62% of the total animals reported are used in curing human ailments (Table 1). Medicinal value of earthworm has been reported from other places of the world<sup>14,15</sup>. The history of earthworm use in China as medicine is as old a 4000yrs<sup>16</sup>. Indigenous way of making plastering material out of slug (*Limax* spp), mammalian bone powder and local boulder dust is very interesting and is specific to the community. Many birds such as *Coturnix* sp., *Casmerodius* sp., *Sturnus* spp., *Urocissa* spp., *Myophonous* sps, *Vanellus* sps, *Pavo* spp, *Passer* spp. are of tremendous medicinal value to the community. Parts, products or whole of the body of these animals are used in curing human ailments such as asthma, cough, cold, tuberculosis, dysentery, typhoid, hair loss, eye sight loss, etc. Ethnomedicinal value of birds have been reported by a few scientists from some of the indigenous communities of India<sup>17</sup>. Altogether 16 genera (more than 40% of the total number) of different uses have been reported from Class Mammalia. Out of 16 species of animals, 14 species have medicinal values besides other values. Parts/products used in curing locally diagnosed ailments are flesh, fresh blood, gall bladder with bile, urine, stool, milk, fat, gastrointestinal tract along with its contents, spines, whisker, claws, pelt, tusks, and fetus. Locally diagnosed ailments are found to be gout, arthritis, blood dysentery, fever, chronic illness, body ache, asthma, tuberculosis, gastritis, measles,

cataract, heart and lungs related problem, burns, wound, cracked skin, sprains and strains. *Magar* group is not the only group that uses animals in curing wide variety of locally identified ailments; there are more such reports from other ethnic groups, tribes and tribals from Nepal, India and abroad<sup>18-21</sup>.

A positive correlation of a person's age and his Ethnozoological knowledge shows that there is degradation of Ethnozoological knowledge among the young members of the group. This finding is in line with the modern trend of degradation of traditional knowledge across the globe.

### Conclusion

Socioeconomic status of the group is as low as that of other ethnic groups of the country. But the Ethnozoological knowledge of the group is none the less. This finding is in line with the fact that most marginalized people of the world treasure rich Ethnobiological knowledge because of their livelihood dependencies on the surrounding biological resources.

List of Ethnozoological animals given in this study is not exhaustive. It is imperative to carry out similar studies on other ethnic groups of the country before these ancient people lose their cultural traits where the Ethnobiological knowledge is deeply rooted. Some of the smaller animals of no obvious significance to modern human beings carry a lot of Zootherapeutic values to these ancient people. More Ethnozoological studies on other such smaller animals need to be carried out to find out active ingredients responsible for healing. Mass cultivation and commercialization of such animals could uplift the poor socio-economic condition of the people.

This study will also be useful in providing baseline data for further research. Some of the animals such as jackal (*C. aurius*), in this study, are of important medicinal value with high consensus index. Such animals are thus the most sought after resources. These animals should be given high priority of conservation. To let the people continue their traditional way of healing, possibilities of captive culture of such animals should also be explored.

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