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WILDLIFE HUNTING AND CONSERVATION IN NORTH-EAST INDIA-A CASE STUDY

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Northeast India is a land of rich biodiversity with 145 tribal communities. Hunting is common in Northeast India where number of tribes practice the killing of birds and wild animals, which led to the decline of the population of the species and extinction of the some species. The conservation of birds and animals cannot be controlled without a socio-cultural understanding of hunting. Indeed, overexploitation of species in demand of marketing has also effected the biodiversity. The socio-economic needs and demands of the local people is forcing towards hunting which is the major cause, wildlife hunting is seen as a difficult issue. Hunting of birds and animals is an age-old practice, which has been followed throughout the generations and is in a fashion today, which is named as HUNTING TOURISM. We are finding a way that will avoid the extinction of birds and animals by exploring the interior traditional, cultural and political issue. We are also highlighting the appliance of the socio-economic and ecological strands to provide approach towards understanding of the value of the nature in the effective area. As we see, limited information is available on this issue, we investigated the types of hunting practices in North-east India. As we know, education can play an important role in controlling the situation ahead.

Keywords: Tribe, wildlife hunting, hunting tourism, education

ОХОТА НА ДИКИХ ЖИВОТНЫХ В СЕВЕРО-ВОСТОЧНОЙ ИНДИИ. ПРОБЛЕМЫ ОХРАНЫ БИОРАЗНООБРАЗИЯ

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Северо-восточная Индия – страна богатого биоразнообразия, населенная 145 племенными общинами. Охота распространена в Северо-Восточной Индии, где многие племена практикуют убийство птиц и диких животных, что приводит к сокращению численности вида и даже вымиранию некоторых видов. Виды, пользующиеся спросом на рынке, подвержены исчезновению в первую очередь. Сохранение птиц и животных не может контролироваться без социокультурного понимания процесса охоты. Охота на диких животных – сложная, многосторонняя проблема так, как социально-экономические потребности местного населения вынуждают охотиться чтобы выжить. Охота – это вековая практика, которой в Индии следовали на протяжении поколений и которая даже сегодня в моде, только сегодня она называется охотничьим туризмом. Мы ищем способ, который позволит избежать вымирания птиц и животных, исследуя внутреннюю традиционную, культурную и политическую проблему. В своих исследованиях мы подчеркиваем важность использования социально-экономических и экологических аспектов для обеспечения

подхода к пониманию ценности природы и сохранению видов. Однако, при исследовании видов охотничьих практик в Северо-Восточной Индии по этому вопросу имеется ограниченная информация. По нашему мнению, экологическое образование местного населения может сыграть важную роль в управлении ситуацией в будущем.

Ключевые слова: племя, охота на диких животных, охотничий туризм, образование

Introduction. The practice of hunting is going fashion all over the world. That need to be legally controlled. Hunting is a tradition where wild animals or wild birds are killed for the survival in the dense rural areas. The killing requires chasing, stalking, lying in wait. The tradition of hunting wild or feral animals in the area is focused due to certain reasons. The reasons may be food, business trade, recreation. Also it is specially done to remove the predators from the area which may cause harm to human settlements. Most hunting's were done in the earlier period, when there was no accessible route for people to survive for their livelihood. Today hunting is a necessary field for controlling the wildlife population. It is very useful for wildlife management. It helps to maintain the environmental ecosystem too. Fishing and gathering of plants and mushrooms for food or other purposes are defined separate from hunting. I laughed, is hunting categorized differently the way we hunt, whether it is animals, birds or even marine animals. Interesting.

Huntings are categorized in different ways. Treasure hunting where people go under water in search of drowned ships or in the interior of the caves in search of diamonds, pearls, jewellerys and so on. The public who follow animal rights controvert that killing animals is out of law. The environmental problem is the biggest issue in today's world. The weapons used to kill the animals and birds is harming the environment. The poisoned arrows, lead bullets which miss their target, are remained in the ground, which create toxic to the environment which do not dilute easily in the soil. When the animals or birds drink water or ingest the lead cause poisoned the immune system, which lead to death. Hunters are planning to preserve the wildlife for the future generations for further hunting. Excessive hunting at present can lead to extinction, extirpation and endangerment of the animals and birds such as great auk, bluebuck, sea cow, rhinoceros, Asian elephants, Altai argali sheep, herons, sea eagles, sea ducks etc. specially for commercial purposes. Smuggling business has recently threatening the wildlife effecting the ecosystem. A study has been released from the authority and society of wildlife that hunting and trapping can be done in a sustainable way, or else this will be most effective causing damage to wildlife population effecting the capacity of the environment.

Literature review

A Aiyadurai – International Journal of Galliformes Conservation, 2011 - academia.edu (*Wildlife hunting and conservation in Northeast India: a need for an interdisciplinary understanding*) The practice of wildlife hunting is seen as one of the significant contributors towards population decline and the possible extinction of some species. Research on wildlife hunting is at a preliminary stage in providing base line data on species presence and abundance. Hunting among tribal populations in this region is not just an entrepreneurial activity or a practice that is primarily aimed at consumption but has a larger socio-cultural link, which is missing in the academic work, produced from Northeast India.

R Woodroffe, S Thirgood, A Rabinowitz – 2005 – books.google.com (*People and wildlife, conflict or co-existence?*) This book is concerned with resolving conflicts that occur between people and threatened wildlife. Wildlife are often subject to control if they are perceived to harm the livelihoods, lives or lifestyles of people. Resolving such conflicts will be crucial to the success of conservation development plans that requires coexistence of people with wildlife. For many sensitive species, effective conservation will be near-impossible to achieve unless such conflicts can be resolved or at least mitigated.

AS Willcox, DM Nambu - Biological Conservation, 2007 – Elsevier (*Wildlife hunting practices and bushmeat dynamics of the Banyangi and Mbo people of Southwestern Cameroon*) The Banyang-Mbo Wildlife Sanctuary, an area of lowland tropical rainforest in southwestern Cameroon,

was designed by the Government of Cameroon specifically to protect 10 species, one order (*Chelonia*) of wildlife including some of the most endangered primates in Central and West Africa such as the drill (*Mandrillus leuco phaeus*) and chimpanzee (*Pan troglodytes*). The condition of bushmeat when sold by hunters, either fresh or smoked, does not appear to affect the price. Bushmeat was significantly cheaper than the alternative sources of protein available in the nearest town. Although both tribes appear to use similar weapon technologies and hunting techniques, they differ with respect to amounts harvested and bushmeat use. The tribe settled deep in the forest with no road access hunts more intensively and for commercial sale outside the region, while the tribe along the road consumes or sells most of their catch locally.

V Geist – Conservation Biology, 1988 - Wiley Online Library (How markets in wildlife meat and parts, and the sale of hunting privileges, jeopardize wildlife conservation) The reintroduction of markets in wildlife meat and parts jeopardizes North America's system of wildlife conservation. This most successful of conservation systems is based on three fundamental policies: denial of economic value to dead wildlife, allocation of surplus wildlife by law, and no frivolous use of wildlife. Game ranching, market hunting, paid hunting and advertising of hunting as sport or competition, not harvest, are undermining these policies. Agriculture in Canada advocates raising wildlife for slaughter; in the United States, it supports paid hunting. The policy of removing economic value from dead wildlife paid off in a \$60 billion service and manufacturing industry based on living wildlife. Some understanding of the historical roots of American wildlife management is vital to nature conservation. Making all citizens «de facto» as well as «de jure» shareholders in wildlife deserves broad attention.

Objectives

To prevent illegal killing, and implement any other measures necessary for controlling the situation

To study the different animals and birds of the area

To analyze towards extinction of animals due to hunting.

To find out the causes of over excessive hunting.

To promote habitat conservation to protect and restore wildlife and preserve endangered species

To study the ecological, economic and investigatory importance of the wildlife area

To focus on the conservation and protection of wildlife from the hunting

Methodology

By law. Giving protection to wild animals and birds

Restoration. To restore area used for survival of wildlife

Rewilding. Large scale conservation for wildlife aimed at storing and protecting the natural areas

Nature Reserves and Zoos.

Education.

Study area

The NorthEast India is a part of Indo-Malayan biodiversity hot-spot (fig. 1). The region is rich in biodiversity with maximum endemic species. Such a rich biodiversity needs to be conserved. North East India is the geographical 'gateway' for much of India's flora and fauna and as a consequence, the region is one of the richest in the world in biological values. Within India, the north eastern part is the richest in floristic diversity and thus has immense valuable genetic resources which are now threatened to extinction unless urgent and proper actions are taken to conserve these valuable forest genetic resources at local, national and international level [9]. North East India comprises of seven states commonly known as the "Seven Sisters". They are Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura. Northeast India houses umpteen number of tourist attractions with its picture-perfect landscapes, cultural diversity, festivals, traditions, further augmenting the charm of the region. Arunachal Pradesh is the eastern most state of the country, which witnesses the first sunrise [10]. Rice, tea, chillies, pineapple, and

fish, are some of the cultivation done in the northeast, which is famous all over the world. Therefore, many cultures and traditions of varieties are followed by different tribes in different states of Northeast India mainly wildlife hunting is popular here in this region.

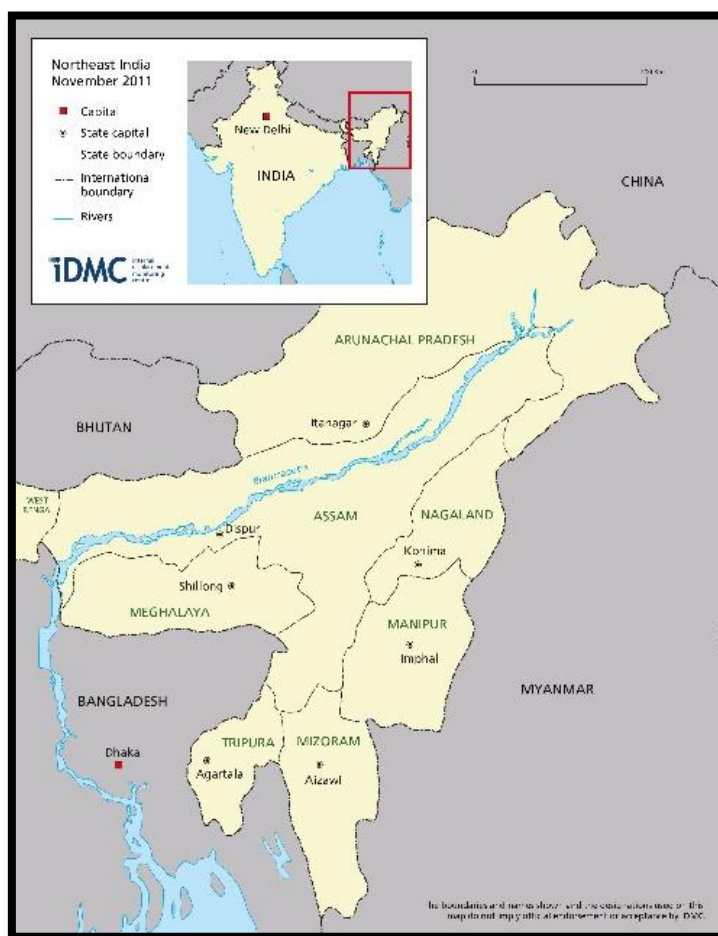


Figure 1 – Study area [11]

Analysis and discussion

Hunting is a major threat to Indian wildlife, especially in the northeastern states. In Northeast hunting has a traditional and cultural importance, which should be taken into consideration by conservation efforts. Limited information is available on this issue, and in order to establish a baseline for efforts aimed at education and implementation of conservation programmes, in this study we investigated various aspects of hunting practices in this area. The general voting of people and detailed interviews of several hunters, the exploration of the demography of hunters, hunting areas, hunting preference for season and animals, methods of hunting, reasons for hunting and willingness to cease hunting shows the way the hunters follow hunting tradition. The education could be an important method for controlling the biological conservation efforts in northeast India [3]. Hunting is a serious threat to wildlife worldwide. The rainforest-rich Northeastern state of India, a biodiversity hotspot, is an area severely affected by indigenous hunting. The state has several indigenous tribes who hunt for food, trade, culture and leisure. The 51 villages across four tribes hunt for species and hunting practices. 33 mammalian species are also hunted, of which only 11 were reported by hunters. The other 22 species were observed during casual visits, festivals and informal discussions. Of the species hunted 20 are endangered, vulnerable or near threatened on the IUCN Red List. Villagers now travel longer distances to hunt than they did a decade ago, suggesting a decline in wildlife populations around villages. The extent of offtake of mammals was related to the altitude of the village and the use of guns. Villagers living at higher altitudes and with guns appeared to hunt more. Additional research is required to estimate offtake and consumption

rates of wild meat. Increasing conservation awareness and community-based conservation projects may assist in controlling the severity and extent of this hunting problem [5]. Cultures often take new forms and manifest in different ways. However, practices and customs linked to culture take a long time to change. Often they are resistant and slow to change. Take the case of Pahi (name changed). Although he belongs to a small tribe of about 300 people scattered in 15 villages next to the Sino-Indian border in Arunachal Pradesh in North East India, his story encapsulates the reality of hunting in many states in this region. Pahi showed a compact disc and some brochures published by the Wildlife Protection Society of India in which the Dalai Lama appeals to Buddhists to stop hunting wildlife. Under the influence of the Dalai Lama's plea, Pahi was determined to give up hunting that year. But a year later, he narrated the story of a leopard skin he sold to a member of the defense services. The price was not cash but 15 cases, or 180 bottles, of alcohol. In this frontier area, illegal trade in leopard and tiger skins from India to Tibet is a common knowledge.

Enhanced security and an international spotlight on the trafficking of rhino and tiger body parts have forced smugglers to shift to small mammals like pangolins. Pangolin scales are used in Chinese traditional medicines, much like rhino horns and tiger parts. Besides pangolins, the Tockay gecko is also being smuggled into China, following the same route used by traffickers of rhino horns – through Manipur and Burma to Yunnan province of China [14].

“There are types of punishments for poaching animals, but our law enforcement agencies were not much concerned about the killing of wildlife till recently,” said Talukder. “Wildlife trafficking should be seen as a national security threat and not merely of smuggling animals.”

While wildlife hunting in North East India is linked to culture, it continues to express itself in new ways with the commercialization of wild meat, emerging local markets for wild meat and wildlife products and changing cultural norms. Change is seen in places near and far away from the border. “We are Animists first and then Buddhists,” said a member of a tribe that was hunting bear gall bladders in Arunachal Pradesh in 2015. The gall bladders, which are used in traditional Asian medicine, would later be sold in Assam, northeast India. Set against this backdrop, is the Wild Life (Protection) Act, 1972, which executed a generic writ against hunting of scheduled wildlife – those animals listed under this Act. Hunting of scheduled animals is generally prohibited unless special permission is obtained from the Chief Wildlife Warden (only for special circumstances) and/or if the animal species is classified as vermin. In some cases there is very little awareness that this Act exists. In most cases, enforcement of the letter and spirit of this Act is not practically possible as several members of resident communities find hunting to be culturally acceptable.

The story of hunting in the North East is much more complex than the simple act of killing a leopard or other wild animals for cash or barter. Spending time in villages in the North East, anyone can realize that wild meat has multiple significance. It is offered as a bride price during weddings and regarded as a status symbol. In central Arunachal Pradesh, during wedding ceremonies men gift orange bellied squirrels (*Dremomys lokriah*) to the bride's family. Wildlife products or meat are even gifted to visiting officials to gain goodwill and to establish or affirm relationships of patronage. Sometimes visiting government officers are presented with animal skins that are used as decorative items at their homes. Many such conversations about hunting in the North East have remained undocumented. One possible reason for this could be the limited interactions between people of mainland India and the North East, and the restricted entry into many of this state.

However, access is becoming easier and things are changing. For one, key border areas are being connected by roads. However, this often opens up access to hunting routes too. In many cases, forest officers have expressed their reservations about opening roads and highways within the protected areas they manage. But often, taking biodiversity concerns on board in any national policy evaluation runs the risk of creating an anti-national road. In several instances, traders from outside these states set up shops and often deal with wildlife products. New ways of capital are also being created from wildlife products. Often non-resident settlers, external market forces and personal or professional favours for government officers create this demand. For example, in the Mishmi hills in Arunachal Pradesh, in 2008, a doctor bartered a jar of the malted milk drink Horlicks that was bought at a subsidised rate from the Army canteen in exchange for an otter skin. On visiting the

doctor in 2012, people found that the skin was displayed as a wall hanging in the drawing room. Hunting is thus not a simple practice of the exchange of gifts but has social underpinnings that are intimately interrelated with cultural and socio-political processes. There are numerous other reasons why people hunt in many states in the North East. This includes hunting to protect their crops from being raided by wildlife, or to secure additional income.

Hunting is also done as a leisure activity. Although some view poverty as an important driving force behind hunting, the wildlife trade continues because of affluent consumers, locally and for the international market. For instance, interviewees in one study site in Arunachal Pradesh reported that otter hunting is a relatively recent phenomenon in their area. Hunters acquire serrated metal leg-hold traps that are laid near the riverbanks from men in neighboring Myanmar. Hence, global factors can reduce the small-scale efficacy of the prohibitive laws related to hunting.

In the North East, a clearer image will emerge when we seek to understand whether hunting is a way of life, a livelihood issue, a socio-cultural dimension of living, part of a trade network, or all these put together in varying degrees of complexity. So hunting by a small tribe living in remote villages in the Himalayas can no longer be described simply as indigenous hunting for subsistence. The interaction between middlemen and resident hunters for trade and business is also part of a larger socio-economic fabric. As for the leopard skin, Pahi did not barter the alcohol for more skins. He arranged a lottery for the liquor, instead, earning Rs 36,000. His story and that of hunting in North East India is caught between the complexities of markets, traditions, conservation ethos and the law. There is no right and wrong and certainly no easy answers [7].

Although wildlife protection came into force in the late 1970s, hunting for subsistence dropped in northeast India only when farmed meat became easily available. Cultural disdain for hunting may have also played a role. In the Northeast, however, it continues to be a way of life.

Hunting provides their main source of meat, recreation, medicine, and ornaments. Even if farmed meat became available, most hunters say they love the spirit of the chase and the gamey flavour of wild meat to give up hunting. When it is so ingrained in their culture, it is a challenge to convince them of the need to desist from taking wildlife.

Home-reared poultry, pigs and mithun are insufficient and expensive as a regular source of meat and are reserved for festive occasions and sale. So the tribes of the Northeast hunt wild ungulates and primates. Despite hunting being a widespread and intense activity, the local diet is largely rice and boiled leaves with spicy chutney. They eat animal protein less frequently than do mainland Indians. When the human population was low, weapons were traditional and the main use of wild meat was sustenance, hunting was sustainable. But that's not the case anymore. In the Northeast, the Forest Department controls a fraction of the forests. The rest is owned by communities. Besides farming and small-scale entrepreneurship, there is no other opportunity for employment in large parts of the region. Modern weapons are now easily available to the growing human population. Hunting has become a pastime as well as a means of earning a living. Animals such as tigers, elephants, musk deer, bears, and otters fetch high prices on the black market. For predators such as tigers, hunting delivers a double-blow: not only are they targeted for their highly-priced body-parts, their prey is also being wiped out. In 1984, Jared Diamond, the author of *Collapse*, listed over-hunting as one of the "evil quartet", or "four horsemen of the ecological apocalypse". Indeed, in many parts of the region, forests look pristine but are empty of large mammals. Although the forests of the Northeast and Southeast Asia are similar, fewer numbers of large animals are found here.

Northeast India is part of a global biodiversity hotspot and also two Endemic Bird Areas. The region has the highest faunal diversity in India. Many among these are threatened. The categories included are 'Critically Endangered', 'Endangered' and 'Vulnerable'. Of the 11 'Critically Endangered' species of mammals listed for India, seven have been recorded in this region. Of the 57 'Vulnerable' species of birds in India, 42 have been recorded in the Northeast. Among reptiles, 10 species in India are included in the 'Vulnerable' category of which eight are found in this region. Overall, 54% of threatened mammals, 68% of birds and 63% of reptiles in the country have been recorded in the Northeast. Many species have become endangered because of habitat loss and

fragmentation, poaching, small original range, habitat alteration, pollution, disturbance in specialised habitat and diseases [12]. Kaziranga National Park in the northeast Indian state of Assam is a world heritage site, notified by the UNESCO in 1985. The park holds the world's largest population of the greater one-horned rhinoceros and provides refuge to a large number of wild animals including the endangered Royal Bengal tiger and the Asian elephant.

Paradoxically, new species of birds and mammals are still being discovered such as the Arunachal macaque, a leaf deer, and a black barking deer. The very remoteness of the place that preserved the forests is only now revealing its secrets to science. Even as scientists discover these animals, they are in danger of being hunted to extinction. The primary challenge is to enable the tribes to realize that wild fauna are of greater value alive than dead. For example, following the discovery of *Bugun Liocichla*, a new species of babbler, by a community-based eco-tourism project based at Eaglenest Wildlife Sanctuary, there was widespread international attention and appreciation. Such affirmative action enables local tribesmen who have grown up seeing anything that flies or walks as food, to appreciate their natural beauty and ecological value.

In Chizami, Nagaland, the North East Network, a NGO previously engaged with public health, women's rights and promoting traditional methods of farming, is now working to reduce the impact of hunting. Two years ago, teachers from seven districts were trained using specifically tailored education programs to inculcate a love and appreciation of nature and wildlife in school kids. This was followed by the establishment of a nature club whose twenty members, aged 10 to 14, have sworn not to hunt or eat wild meat. At an exhibition of their wildlife and nature photographs, the children spontaneously requested their parents to pledge never to hunt, kill or eat wild animals.

However, Chizami is close to the state capital, Kohima, and is well connected to hospitals, schools, and employment opportunities. Since hunting was merely a pastime during the fallow agricultural season, it may have been easier to make people understand.

In Arunachal, where basic facilities are lacking in most parts of the state, at least hunting for recreation and economic opportunity can be reduced by providing employment opportunities, and increased policing of the international trade in animal parts. But this is easier said than done. Some of the extensive forest cover would necessarily have to be traded for setting up industries. Infrastructure projects such as dams are seen by many as a source of revenue. The total forest cover of the country is 19%, of which Arunachal contributes 2%. With forests said to soak up the carbon fumes of our consumptive lifestyles, is this a trade-off worth making? Is the cure worse than the disease?

There's unlikely to be one solution for the entire region. Getting communities to eschew hunting may need to work program by program, location by location. But for many forests, time may be running out. Yet, there is no option but to negotiate and work with tribal communities, as more than half the forest land is owned by them. Instead of being modern-day missionaries, conservationists can at best be the facilitators, providing advice, expertise and new imaginative ideas while inspiring communities to make a commitment to protect their biodiversity. (8) Sometimes people say that on the basis of hunting of a particular species, we can conserve and protect the vast diversity of animal and bird species, than to some extent hunting is very important for conservation.

from 981–2000 m. It is situated within the Indo-Burma biodiversity hotspot (Fig. 1). The forest type at Chizami is mainly sub-tropical pine forest with some northern sub-tropical broad-leaved wet hill forest (Naro & Sondhi 2014). The village shares its boundary with Pholami Village on the north, Khomi, Sumi and Losami villages on the north-east, Lai Village of Manipur in the east, Thetsumi Village in the south, Enhulumi Village in the west and Porba and Sakraba villages in the north-west. It is one of the largest and oldest villages of the Chakhesang tribe, with a population of 3,968 individuals, 793 households (Census of India 2011) and 19 clans (Lohe 2011). Most of the villagers depend on agriculture for their livelihood. Jhum cultivation is practiced but most of the cultivation of Nagaland (Fig. 1). Phek District covers an approximate 2000 m. It is situated within the Indo-Burma biodiversity hotspot (Fig. 1). The forest type at

Chizami is mainly sub-tropical pine forest with some northern sub-tropical broad-leaved wet hill forest (Naro & Sondhi 2014). The village shares its boundary with Pholami Village on the north, Khomi, Sumi and Losami villages on the north-east, Lai Village of Manipur in the east, Thetsumi Village in the south, Enhulum Village in the west and Porba and Sakraba villages in the north-west. It is one of the largest and oldest villages of the Chakhesang tribe, with a population of 3,968 individuals, 793 households (Census of India 2011) and 19 clans (Lohe 2011). Most of the villagers depend on agriculture for their livelihood. Jhum cultivation is practiced but most of the cultivation

Conclusions

Nature can be conserved by controlling the deforestation. Planting trees to create new forest, which provides shelter and food for wildlife, can also protect natural habitat of animals by developing wildlife sanctuaries. Hunting in illegal means has destroyed the nature cycle and killed many endangered species of animals. As our research are concerned, we have taken Northeast India forest area into consideration. Because Northeast India has rich resources of flora and fauna. Man has destroyed them to quite an extent. Wildlife conservation is the practice of protecting wildlife and their natural resources in order to prevent species from going extinct. Several steps have been taken in the area to save wildlife which include Nature destruction, degradation, fragmentation, over exploitation, poaching, hunting, pollution and climate change. Wildlife conservation includes all human efforts to preserve wild animals from extinction. It involves the protection and wise management of wild species of their environment. Some species have become extinct due to natural activities. The progress of man throughout has been beneficial for the human race but it is the wildlife that has suffered through the years. Inventions of sophisticated weapons, industrialization, urbanization, and even increasing human population have been some of the major causes for dwindling of our rich resources. Hunting, clearing of forests, drawing of swamps and damming of rivers for irrigation and industry - this is what we appraise of man's progress. These activities have vastly reduced the natural habitats of our wildlife and many species are endangered or nearly extinct. People who hunt animals, the forestry should put restrictions to the amount of species of animals that should be hunted each year. By this restriction, there will be a level of conservation of species. There should be focus on the statistics of the birth rate of the animals and birds each year, which is very important to sustain the system of hunting in a particular time. We expect and urge to the government to take serious steps in this regard and try to stop killing and smuggling wild life. Animals are not only the part of beauty of green land, but they are the national identity and heritage of our country.

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HYDROCHEMICAL ANALYSIS OF TES RIVER IN UVS PROVINCE, WESTERN MONGOLIA

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The main purpose of this research was to assess the monthly changes of water quality of Tes River water in terms of suitability for drinking and agricultural uses. For this purpose, water samples were collected monthly from the Tes River for 3 years during 2013-2016 and analyzed for important major quality parameters. Dataset consisted of values of pH, Oxidation Reduction Potential (ORP) electric conductivity (EC), hardness, mineralization, major soluble cation and anion and salinity.

Result hydrochemical analysis of the Tes River water indicates that the water belongs to bicarbonate class, calcium group, I type, low alkalinity, medium mineralized, soft water. Based on trilinear diagrams, the main water type was Ca(HCO₃)₂ for all 3 years. According to the correlation coefficient (r), significant positive correlations appear between HCO₃⁻ and Na⁺ + K⁺ (r = 0.83) as well as HCO₃⁻ and Ca²⁺ (r = 0.58). The pH values were suitable for agriculture and drinking uses. Mineral concentrations of investigated quality parameters of the Tes River water were within the permissible limits recommended by World Health Organization (WHO) and Mongolian National Standard (MNS) on drinking water quality.

Key words: TDS of water, hardness, chemical composition, correlation coefficient, Tes River