

Status and Distribution of Mountain Ungulates in Arunachal Pradesh

D.N.Singh

Introduction

The present Arunachal Pradesh was part of Assam till 1914, and was known as the North - East Frontier Tract till 1954 and as the North East Frontier Agency (NEFA) up to 1972 when it was given its present name. It is situated between 26° 28' N & 29° 30' N and 91° 30' E & 97° 30' E. It covers a geographical area of 83,743 km². It is the largest state in the northeastern part of India. The state is predominantly hilly and mountainous. It is flanked by Tibet to the north separated by the McMohan line, Bhutan to the west, China and Myanmar to the east, and the Indian states of Assam and Nagaland to the south. It is predominantly a tribal state consisting of 82 major tribes and sub-tribes of Indo-Mongoloid and Mongoloid lineage. (Singh, 1999). The tribal communities are fully dependent on natural resources for their sustenance and due to sparse population density, 13 persons/km² (Anon. 2001) and large tracts of hilly forest, pressures on the forest and wildlife were minimal despite traditional hunting. In recent times, however, this has rapidly changed because of pressure from increasing human population within the state, the market forces from outside the state and large development projects taken up to give a boost to the region's economy to improve the quality of life of its people. Most of the land area of the state is under tribal ownership which is

managed under their customary practices.

Physiographically, a major portion of state is divided into two sections, viz., the flood plains of the Brahmaputra and its tributaries, and the Arunachal Himalayas. The Arunachal Himalayas is further subdivided into three sub-regions - the foothills, the Greater & the Lesser sub-Himalayan Ranges, Siwaliks and Purvanchal (Singh, 1999). The hills of the Naga-Patkai ranges are included in Purvanchal.

The flora and fauna of the state predominantly have Oriental affinities. As per Rodgers and Panwar's (1988) Bio-geographic Classification the state has is classified under the 'Eastern Himalaya - Province 2D (Rodgers *et al.* 2002). Tirap and parts of Changlang district falling south of Chowkhan Pass and Noa-Dehing (Diyun) river is part of the Naga-Patkai mountain ranges. As such, bio-geographically, this belt of the state should have been included in the North East Hills (9B) Bio-geographic province of the North-East India zone in the classification of Rodgers *et al.* (2002). This state is also bio-geographically important because it falls in the transition zone between Indian subcontinent and Indo-Chinese bio-geographical regions (Dinnersten *et al.* 1997). It is the gateway to India's rich biodiversity and is among the world's 25



global biodiversity hotspots, and identified as being among 200 globally important eco-regions.

The state has a wide altitudinal variation ranging from 300 m in the foothills to about 7000 m along the Greater Himalayan Peaks in the north. The areas having altitudes more than 4,500 m are generally under perpetual snow cover. Arunachal Pradesh falls under the Upper Brahmaputra River System constituted by six river basins namely Kameng, Subansiri, Siang (the Tsangpo in Tibet), Dibang, Lohit – Tellu and Tirap river basins including sub-basins of Tawang, Sessiri and Tiso (Singh, 1999).

In addition to the variations in the climate at the local level due to relief conditions and drainage patterns, the climate of Arunachal Pradesh can be classified into three major types: the hot and humid sub-tropical climate of the South (foothills), cooler temperature zone of Lesser Himalaya, and alpine zone of the Greater Himalaya adjacent to Tibetan plateau.

It is located in one of the heaviest rainfall zones of the country. Due to complex relief features and drainage systems the rainfall pattern in the state is very complex. The annual rainfall is spread over 8-9 months and varies from 1,000 mm in higher reaches to 5,000 mm in the foothills. While it is 4,000 mm in the low land areas of Siang- Lohit valleys, it goes up to 5,000 mm in the lower parts of Siang and Dibang rivers. The Western and North-Western parts of the state receive moderate rainfall ranging from 2,500 mm to 1,000 mm annually. The pre-monsoon showers start from March. The monsoon is active from May to September. The retreating monsoon is active during October and November. The humidity during the rainy season goes up to 90%. (Singh, 1999).

The bulk of the region consists of shales, schist and conglomerates. The soil is acidic in the lower elevations of the valleys due to high rainfall. However, it is rich in humus contents.

The vegetation can be classified in six forest types - five broad types with a distinct sixth secondary forests type, which is largely man made (Anon., 1999). They are:

1. *Tropical Forests*
 - (a) Tropical Evergreen Forests
 - (b) Tropical Semi-evergreen Forests
2. *Sub- Tropical Forests*
3. *Pine Forests*
4. *Temperate Forests*
 - (a) Temperate Broad Leaved Forests
 - (b) Temperate Conifer Forests
5. *Alpine Forests*
6. *Secondary Forests*
 - (a) Degraded Forests
 - (b) Bamboo Forests
 - (c) Grasslands

Its location adjacent to the Tibetan Plateau and the wide variation in climatic and altitudinal conditions offer congenial environments for a wide variety of fauna including mountain ungulates. However, information about their status and the individual species present in the state is poor, because of the remote mountainous habitat and also the lack of requisite infrastructure available with the Forest Department. The research and inventory works carried out by the Forest Department and other agencies active in the field of wildlife conservation is negligible and so, the information available today does not provide the correct picture about the status of





mountain ungulates. Therefore, an attempt has been made to assess the status of the mountain ungulates in Arunachal Pradesh on the basis of the Management Plans / Working Plans, Forest Department publications and records as well as field information and other relevant publications.

Arunachal Pradesh has two National Parks and 11 Wildlife Sanctuaries spread over 9,897 km² (11.81% of geographical area of the state) for protection and conservation of its flora and fauna. The state has more PAs in its southern parts covering foothill tropical evergreen forests and mid-elevation subtropical forests. The mountain ungulates are residents of higher altitudes and its habitat is mostly along the Northern parts of the state bordering the Tibetan plateau. It has not been protected adequately under the PA network. There are more mountain ungulate habitats outside the protected areas than inside. Therefore, the status of mountain ungulates outside the protected area should also be looked into. The information about the mountain ungulates in different protected areas is given in Table 1.

Status of Mountain Ungulates outside the Protected Areas:

The ideal habitats of mountain ungulates are the high altitude areas in the northern portion of the state bordering the Tibetan Plateau. The Zoological Survey of India has recorded presence of Serow (*Nemorhaedus sumatraensis*), Red Goral (*Nemorhaedus baileyi*), Mishmi Takin (*Budorcas taxicolor*), Musk Deer (*Moschus chrysogaster*) and Bharal (*Pseudois nayaur*) in the state (Ghosh *et.al*, 1987). The wild Yak (*Bos grunniens*) is found in the higher reaches of the state particularly areas bordering Tibetan

plateau (sighted and photographed by the Author). However, the ecological status in the wild is not clear. The Musk Deer is found through out the state in the alpine zone. The local people of the Dibang Valley district have informed the author about the occurrence of two varieties of musk deer. One of them is bigger and is found at lower elevations and has bigger musk pods whereas the other variety is a smaller one and is found at higher elevations but have smaller musk pods. This fact however needs to be substantiated.

For better protection of these high altitude fauna outside the present protected area network, the Wildlife Institute of India has recommended extension of some existing PAs and creation of few new one's (Rodgers and Panwar, 1988). Based on these recommendations the Forest Department has identified some high priority conservation areas, that includes: Zimithang, Jang, Thingbu-Mukto, Taksing, Mechuka, Jorging, Metang, Maibung and Ditchu. These areas do not have much human presence and can be easily taken up for conservation purposes under protected area network.

THREATS

The main threats to the conservation of mountain ungulates in the state are:

1. **Poaching:** The tribal people of the state practice hunting of mountain ungulates for meat, hide and trophies. The traditional conservation ethics amongst local tribal communities, included taboos on hunting of wild animal with younger calves or pregnant females. However, nowadays these taboos are fast eroding. Moreover, due to use of firearms for hunting - instead of bows and arrows,

traps and snares - which were used earlier, hunting intensity has increased. In the high altitudes, the alternatives available for food are limited. Therefore, mountain ungulates are one of the major source of protein for the tribal people. In the past, the low population density of the tribal people compared with large forest area did not pose any immediate threat to wild populations. However, over the years, due to various reasons, the population of the people has gone up thereby increasing the demand and the consequent pressure on the mountain ungulates among others. In the case of the musk deer, it is the high economic value of musk in international markets and lack of other income-generation opportunities for local people which have considerably increased its poaching for musk.

2. **Absence of Forest Personnel:** The northern portion of the state does not have the minimum basic network of Forest Beat and Range Offices for this vast area. Most of these areas do not have any presence of the forest personnel in whatever manner. In the existing few Range and Beat Offices the sanctioned posts of the field personnel are negligible compared to the vast territorial jurisdiction earmarked for that Beat/ Range for protection. The communication facilities are non-existent – no communication sets, no vehicles, no roads. Out of few sanctioned posts, many posts continue to remain vacant for years. The staff posted do not join duty because of adverse and harsh conditions prevailing in those areas. There is nothing to cater their basic necessities like medical facilities,

school, communication and other basic facilities. As a result of this, the pressure of poaching and hunting in the interiors of the state is very high and the entire area is practically unguarded and unprotected.

3. **Shifting Cultivation:** Shifting cultivation (Slash and Burn) in the state is practiced up to an altitude of 2,000m covering around 2,705 km² area which accounts for 3.2% of its geographic area (Singh, 1999). The shifting cultivation is very common along the slopes in the valleys of Ranga, Subansiri, Siang, Dibang and Tirap in the Subansiri, Papumpare, Siang, Lohit, Tirap and Changlang districts. It covers areas from tropical wet evergreen forests to pine forests. Earlier, the cycle of shifting cultivation was 3 years in Tirap and Changlang districts, 6 years in Lohit and Siang districts and 10 years in the Subansiri district. However, it has now come down to 2 to 4 years almost everywhere. This is responsible for the reduction and also fragmentation of the habitat. In the past, when the interval cycle of shifting cultivation was long, it was somewhat beneficial for some of the mountain ungulates. However, in its present form it is causing immense damage to the habitat of mountain ungulates.
4. **Developmental Activities:** The planners and leaders of this remote and backward state are trying hard to develop the infrastructure sector in the state to accelerate the pace of economic development. Consequently, construction of roads, bridges, dams, hydel power projects and development of townships has been taken up on a large scale. Such developmental



Table 1 Protected Areas of Arunachal Pradesh

S. No.	PROTECTED AREA	DISTRICT	AREA (km ²)	Year of Establishment	Mountain Ungulates Observed / Reported
1	Namdapha National Park	Changlang	1807.82	1983	Serow, Goral, Takin, Musk Deer, Bharal, Himalayan Tahr
2	Mouling National Park	Upper Siang	483.00	1986	Serow, Goral, Takin, Musk Deer
3	Pakke Wildlife Sanctuary	East Kameng	861.95	1977	Serow, Goral
4	Eaglenest Wildlife Sanctuary	West Kameng	217.00	1989	Serow, Goral
5	Itanagar Wildlife Sanctuary	Papum Pare	140.30	1978	Serow
6	Tale Valley Wildlife Sanctuary	Lower Subansiri	337.00	1995	Serow, Goral
7	Kane Wildlife Sanctuary	West Siang	55.00	1991	No Reports
8	D' Ering Wildlife Sanctuary	East Siang	190.00	1978	No Reports
9	Yordi – Rabe Supse Wildlife Sanctuary	West Siang	491.61	1996	Serow, Goral
10	Mehao Wildlife Sanctuary	Diabang Valley	281.50	1980	Serow, Musk Deer
11	Dibang Wildlife Sanctuary	Diabang Valley	4149.00	1991	Serow, Goral, Takin, Musk Deer
12	Kamlang Wildlife Sanctuary	Lohit	783.00	1989	Serow, Goral, Takin
13	Sessa Orchid Sanctuary	West Kameng	100.00	1989	Serow, Goral
14	Dihang – Dibang Biosphere Reserve	Dibang Valley Upper Siang West Siang	5111.5	1998	Serow, Goral, Takin, Musk Deer

projects in these hilly areas have, however, been taken up without adequate environmental considerations. The result is deforestation, soil erosion and damage to the ecological balance. Horticultural plantations and agriculture is being taken up along steep slopes. All these activities are a potent threat to the future of ungulates. The tribal people of the region are backward and their quality of life needs to be improved definitely to keep them in the national mainstream and also at par with the developments taking place in the other parts of the country. However, a judicious balance needs to be maintained between developmental and environmental considerations for the benefit of one and all.

5. **Awareness Programmes:** The tribal people living in the higher reaches of

the state are not aware of the provisions of the Wildlife (Protection) Act, 1972 and other legal enactments in this regard. Most of the habitat of the mountain ungulates is categorized as Unclassed State Forests (USF). The individual tribal communities have been exercising traditional rights over these areas since long. The attempts of the Forest Department to control and manage the USF areas are being met with strong resistance from the local communities. Moreover, in dealing with such cases the tribal customary law is given preference over the statutory law. They still feel that the wildlife available in their areas is meant for their use, as has been the practice since generations. As such they feel it as their right to freely use wildlife found in their areas for their sustenance. Therefore, awareness programmes in these areas have to



be taken up by the agencies other than the Forest Department also on a large scale. Moreover, other alternatives for these people have to be introduced to remove the demand and to save the mountain ungulates.

Arunachal Pradesh is economically not developed. This state does not have its own resources to generate enough revenue to meet the demands for its all round development. It depends upon the Central grants and assistance for its ongoing development projects. The financial resources available with the state are spent upon priority areas like infrastructure and social security. As such, the state is not left with any surplus resources at its command to spare for forestry and the wildlife sector. For a backward state like Arunachal Pradesh, the investment on forestry and wildlife is not on its priority. Therefore, the allocation for the forestry and wildlife sector in the annual plans of the state is negligible. The result is complete neglect of this sector. The Government of India and other conservation agencies should come forward to help the state government set up infrastructure needed for this sector. The state government on its own is not in a position to provide necessary financial requirements for the forestry and wildlife sector.

The research, survey and conservation education activities in the state have to be strengthened. For this purpose, different Government agencies and non-governmental organizations working in the field of biodiversity conservation

should come forward to undertake/initiate research and conservation education/awareness programmes in the remote and inaccessible areas of the state. This is required to create at least baseline data which would help for the planning of the required protection measures on sound scientific principles.

References:

Anon. (1999), *Arunachal Forest*, Department of Environment & Forests, Govt. of Arunachal Pradesh, Itanagar.

Anon. (2001). *Provisional Population Totals : India . Census of India 2001, Paper I of 2001*, the Registrar General of India, New Delhi

Champion, H.G. and Seth, S.K. (1968). *A revised Survey of the Forest Types of India*, Publication Division, Delhi.

Dinnerstein, E. (1997). *A Framework for Identifying High Priority Areas and Actions for Conservation of Tigers in the Wild*. WWF, WCS, NFWF.

Ghosh, A.K. (1987), *Qualitative Analysis of Faunal Resources of Proposed Namdapha Biosphere Reserve*, Zoological Survey of India, Calcutta.

Rodgers W. A. and Panwar, H.S. (1988), *Planning a Wildlife Protected Area Network in India*, Wildlife Institute of India, Dehradun.

Rodgers W. A., Panwar, H.S. and Mathur, V.B. (2002), *Wildlife Protected Area Network in India: A Review (Executive Summary)*. Wildlife Institute of India, Dehradun.

Sen A.K., (2000), *Biodiversity of Mouling National Park*, Department of Environment of Forest, Arunachal Pradesh.

Singh S. (1999), *A Resource Atlas of Arunachal Pradesh*, Department of Planning, Govt. of Arunachal Pradesh, Itanagar.

