International Journal of Agriculture and Environmental Research

ISSN: 2455-6939

Volume:03, Issue:02 "March-April 2017"

BIOTIC INTERFERENCES IN AND AROUND DACHIGAM NATIONAL PARK

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ABSTRACT

Dachigam National Park is one of the most important natural assets of Jammu and Kashmir. It is one of the most beautiful natural habitats of the world. It is famous for its varied kinds of flora and fauna and is one of the richest biodiversity parks in the temperate world. Dachigam was declared a Sanctuary by Government in 1951 and was upgraded a status of National Park on 4th February 1981. Between 1910 and 1934 all the habitations (10-villages) were removed from the catchment area and the people were resettled/relocated outside the boundaries of the reserves by the maharaja of J & K and hence got its name "Dachi-gam" which means "Ten Villages". It is located 22 kilometers from Srinagar, the capital city of the northern state of Jammu and Kashmir. Dachigam National Park is situated at 34°5'- 34°10' North-latitude and 74°50'-75°.10' East-longitude. It covers an area of 141 km^2 consisting of some of the most scenic natural beauty present on the Earth. .The Park is roughly rectangular in shape being approximately 22 km long and 8km wide. It is divided into two parts Lower Dachigam in the west which comprises one-third of the area of the park and Upper Dachigam in the east comprising rest of the park. Its altitude varies from 1600m to 4250m above mean sea level. It represents home to the only surviving sisters of the red deer species native to Europe - The Hangul (Cervus elaphus hanglu). The habitat of Hangul was once spread over vast region of this Himalayan state, however due to destruction of its habitat, hunting, poaching and other human interferences, its home range squeezed to Dachigam and some patches of Overa, Kishtwar, etc. This paper focuses on the anthropogenic threats viz. clear felling for human setlements and agriculture, over harvesting of NTFPs (non timber forest products), hunting and poaching of rare and endangered fauna, erosion, grazing, stone quarrying, deforestation, leopard and bear enclosures and departmental interferences etc. to biological diversity in the park. In the present study, an effort has been made to study the overall scenario of "Biotic Interferences In and Around Dachigam National Park. The database generated is expected to be used in conjunction with other field data for modeling the degraded parameters of Dachigam National Park in future.

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Keywords: National park, biotic interference, modeling

INTRODUCTION

Biological resources are the basis of life in the tropical world. These process viz industrialization and urbanization tends to damage this vital resource base that could be disastrous to the human race. In view of biological conservation and to minimize degradation of natural ecosystems, protected areas have been established that cover about 5% of the world's land area. Thirty four biodiversity hot spots have been identified worldwide as areas of greater biological endemism in the biosphere. Two of these are present in the Indian subcontinent, viz. the Eastern Himalayas and the Western Ghats.

Natural Resources are of much importance and of much economic value to man. Since times immemorial man has been exploiting the natural resources. Man overexploiting the natural resources in the form timber, fodder, fuel-wood, excessive grazing, medicinal plant, fish, food, tusk, antlers, etc. and other products that are being commercially used. Natural resources make considerable contribution to the economy of a country. The materials ranging from timber, pelt , horns, ivory, bones of wild animals, wild green vegetables, nuts, gums, palms, non-edible and edible oils, fiber, fodder, firewood, charcoal, medicinal and aromatic plant species, valuable gene pool etc. Without knowing it every day we utilize hundreds of products that owe their origin to natural resources. Indeed our very welfare and existence is interwoven with the welfare and existence of natural resources so much that by saving these resources we are often ensuring our own survival. Ancient human race metamorphosed into a modern race.. Forest cover started shrinking with limited flora and fauna. Introduction of exotics reflected positive and negative impact. But if we take in term of local biodiversity it actually played a negative role. Slowly and slowly it started replacing the natives.

India constitutes one of the mega biodiversity countries of the world, which is abundant with unique and diversified floral and faunal wealth. The prevailing climate coupled with physical and biotic factors have unitedly made an impact on resources of many ecosystems, which are highly complex and fragile in nature. Biotic pressure due to increasing populations periodically covers larger areas in the forests destroying timber and other properties.

Dachigam has been designated as one of the protected areas of the state. It is of the status of a National Park. During the past few decades, particularly during the recent past it has suffered a considerable damage on account of anthropogenic interferences.

Biotic Interferences in Dachigam is mainly in the form of extreme grazing and browsing by livestock, fodder extraction, deforestation, fires, poaching, extraction of medicinal plants, quarrying, human-encroachment, etc. Besides these problems several other problems like

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presence of VIP Lodge, Sheep Breeding farm, Security Forces, Fisheries Department, etc are prevalent in Dachigam National Park.

STUDY AREA

Dachigam National Park is one of the most beautiful natural habitats of the world. It is known for its varied kinds of flora and fauna and is perhaps one of the richest biodiversity parks in the temperate world. Dachigam was declared a Sanctuary by Government in 1951 and was upgraded as National Park on 4th February 1981. Between 1910 and 1934 all the habitations (10-villages) were removed from the catchment area and the people were resettled outside the boundaries of the reserves, it thus, got its name "Dachi-gam" which means "Ten Villages". Dachigam is IUCN management category II (National Park). It is teemed with flora and fauna of varied kinds. About 20 species of mammals, 112 species of birds, 50 species of trees, 20 species of shrubs and 500 species of herbs have been reported (Anonymous,1985). Therefore it is important that such a valuable biological and ecological heritage is conserved, preserved and protected for future generation.

LOCATION AND PHYSIOGRAPHY

This beautiful reserve is located only 22 kilometers from Srinagar, the capital city of the northern state of Jammu and Kashmir. It covers an area of 141 km^2 consisting of some of the most scenic natural beauty present on the Earth. Dachigam National Park is situated at 34°5'- 34°10' North-latitude and 74°50'-75°.10' East-longitude (Fig – 1). The park is roughly rectangular in shape being approximately 22km long and 8km wide. It is divided into two parts Lower Dachigam in the west which comprises one-third of the area of the park and Upper Dachigam in the east comprising rest of the park. Its altitude varies from 1600m to 4250m above mean sea level.

On the northern ridge rises the Mahadev peak (3966 meters a.s.l) and amidst 4300 meter ridges, nestles the Marsar Lake. Marsar is a glacial oligotrophic alpine lake from which flows the Dagwan River which flows into Harwan Reservoir and is major feeding source to the famous Dal Lake.

GEOLOGY

The geological evolution of Kashmir is believed to be akin to that of Himalayas, though with some local variations. Geologically the Himalaya is characterized in bulk by granite, gneiss, crystalline schist, slate quartzites and unfossiliferous limestones. Himalayan system contains the oldest rock and sedimentary of marine origin.

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CLIMATE

Under the existing topographic conditions Kashmir with its all the three temperate, sub alpine & alpine zonation enjoys a unique type of alpine temperate or sub- Mediterranean climate The climate of Dachigam is predominantly temperate-alpine and as such encompasses four distinct seasons spring (March-May), summer (June-August), autumn (September-November) and winter (December-February). The temperature varies from -13° to 37°C. The mean monthly temperature for summer is 20°C and for winters it is 3°C. Generally the lowest mean temperature during the winter ranges from -2°C to -8°C and the highest mean temperature of 37°C is also touched during summer.

The annual total rainfall ranges between 500 to 700 mm of which about 40 % is received in the form of snow during winter season. During the year the relative humidity is found to range between 40 to 95 % generally.

METHODOLOGY

The present study has been carried out during May 2004 to Mar 2005. The selected study sites were divided into different sectors and the preliminary survey was conducted as per the pressure of human habitation, grazing, erosion etc., which was followed by the recommended methodology

Weekly visits and surveys were performed to each selected area and data was collected individually in relation with the parameters mentioned above.

OBSERVATIONS

Most of the human habitations outside and within the park are to the North-West and South-West. As far as human encroachment is concerned it is important to mention the illegal establishment of a new Gujjar colony namely Mulnar in the North-West of D.N.P. This habitation has come up well inside the park. Presently there are about 42 families & the whole population is dependent on the resources of the park. Each family possesses one residential house & a cowshed. The villagers practice small-scale cultivation, herd livestock, and have other rights, including the right to various forest products. The cattle population of the area is about 350. Another habitation in the Shalkhod area behind Dara is somewhat of similar manner.It is worth mentioning that an area of 625 canals of land was allotted in favour of a local population on humanitarian grounds vide Government order numbers S-176 f 1967 dated 19.5.1967 and S-240 of 1967 dated 12.7.1967.

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Among the entire existing flora on the earth, grasses have been utilized by man for himself & for his livestock since times immemorial. Due to increasing grazing pressure the vegetation is dwindling day by day. Interference in the form of overgrazing by herds of domesticated animals in the protected areas affects vegetation as such a way as the sward suffers defoliation, the ecosystem gets robbed off of the nutrients or receive nutrients in the form of dung and urine and plant life suffers physical damage due to trampling (Duffey et. al. 1974). Uninterrupted and indiscriminate grazing often results in the invasion of non-palatable and poisonous plant species in the affected areas. These species later on establish themselves and result in decline in the production of the grazing area. Livestock is one of the most important economic resources of the local people. Every household invariably keeps a few cows and many more sheep and goats. These animals are usually kept for wool, meat and manure. Sheep's wool is used by the villagers for making shawls and blankets, while goat hair is used for making rugs. Local people, as well as people from neighboring areas, graze their livestock in the park. Migrant grazing is seasonal, from May to October. During those months, goats and sheep are herded to high-altitude pastures or thatches. Grazing of sheep and goats in what is now D.N.P. has been taking place for generations. For many local people it is more a way of life than an economic activity. The graziers come mainly from the 200 hamlets where many of the people claim traditional grazing and herb and mushroom collection rights. Graziers coming from beyond adjacent areas often pick up sheep and goats from the villages they pass through on their way to the park. Such graziers often stay in farmers' fields, so their flock can manure the fields while the graziers are given food and shelter in exchange. The graziers are paid by the other villagers, often in kind rather than cash, for taking their sheep and goats into the park.

There exists a government sheep breeding farm well inside the official boundary of the National Park occupying an area of 4.5 km^2. The farm was established in the 1961 with a foundation stock of 441 animals. Despite the erection of an eight foot high chain link fence around the farm area confining the animals to it during the winter months. However the farm continues to pose problems for their winter feeding, grass is cut in large quantities from within the park & this is done during the Hangul's rutting season & in its rutting area. During the summer months the sheep are sent to upper Dachigam areas, hence increasing the grazing pressure already present there. The presence of sheep farm naturally increases the danger of disease as was observed in 1977 when a captive Hangul in an enclosure died of 'Johne's disease' believed to have spread from the nearby sheep farm. The large scale grazing in upper Dachigam due to livestock of nomadic bakkarwal is degrading the condition of soil, making it loose & eroding it down. These highland pastures which once used to be feeding grounds of wild ungulates especially Hangul, now seem to have turned into highly denuded areas. In the lower Dachigam area local livestock enter to graze inside the park.

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The local inhabitants in the buffer zone of Dachigam encroach on the park mainly for fuel-wood (as a minor forest product for cooking and coal). Besides this the hill-people or Gujjars are totally dependent on forest products to sustain their livelihood and for this they over-exploit the resources present in Dachigam National Park. As per the observations made about 150 to 200 people enter the park daily for collection of fuel-wood. The three entry points, selected for watching in the month of June indicated the entry of 318 individuals during a week time period. The detailed description is depicted in fig 5. The highest number of 26 persons was found to enter on the 5th of November through Wampora entry point and the lowest of 8 from Harwan point on 9th November for collection of fire-wood. From Wampora point only the total number of individuals watched to enter illegally into the park was 136. The number of people that enter through Mulnar were 109 and the number of people that entered through Harwan was 73 for the week for collection of firewood. An individual was found to carry a head load of 35 - 40 kgs. This amounted to over 111 quintals of fuel wood per week from just only three points of entries. The fuel-wood comprised mostly of the endangered hardwood of *Parrotiopsis jacquemontiana.* This is highly priced fuel wood and has been exterminated from rest of the forests of the valley. The only surviving individuals are found in Dachigam National Park. Among other trees exploited for fuel wood by the locals include: *Morus alba, Prunus armenica, Aesculus indicus,* etc.

Indeed grasses and grasslands represent one of the most important natural resources for man from pre-history and even in present times of human population explosion and expansion grasslands are seen to cover about 23% of the total area of the globe. Moreover, of all the existing plants, grasses have been playing a major role in the life of mankind by providing food for him and forage for his livestock. But interference in the form of fodder removal from protected areas like Dachigam National Park affects vegetation severely. Site wise distribution of fodder collection at three entry points indicated the entry of 861 individuals the month of June during a week time table: 3, fig: 6. Each individual was found to extract green fodder of 30-40 kg/head, which amounted to the extraction of 258 - 344 Qtls of green fodder per week. During the extraction of green fodder some other grass species like *Dactylis glomerata*, prior to completion of its life cycle such as seed maturation are also harvested, which restricts the spread of other grass species like *D. glomerata*.

Due to rapid increase in population there has been tremendous pressure on the natural resources. In the last two decades the state's forest cover has dipped by 20%. Deforestation is the main cause of depletion of forest resources. The extending population of Mulnar inside the park has generated a severe pressure on the forest area of the park. The outstanding areas illegally exploited for timber extraction includes Tathbal and Mahadev slope of the North-West. Nomadic

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Gujjars and Bakkarwals construct their hutments in upper Dachigam by cutting *Abies and Picea species.*

Medicinal plant (jaddibooti) collection, which in this context includes the collection of medicinal herbs and of edible and aromatic plants, is considered to be one of the most serious pressures on the park. A rush of people enter the park from May to November to collect herbs. Many of the herbs are found only in the high-altitude meadows, but some are also found in forests. The peak collection season is from June/July to August/September. Nearly 60 medicinal plant species are reportedly collected from the park, but the main species collected are *Arnebia benthamii, Aconitum sp., Sassaurea lappa, S. costus, Dioscorea deltoidia, Prunella vulgaris, etc.* Herb collection is a physically strenuous, and sometimes dangerous, activity. The herbs are often found in places that are not readily accessible, are at high altitudes, and have difficult terrain, e.g., very steep slopes. A number of fatalities occur every year. The sale of herbs appears to be a principal source of monetary income for many collectors. An individual herb collector may be able to earn as much as Rs. 20,000 a year and the total household income may be much higher. As the low-input agriculture practiced by the local people does not yield sufficient food for the whole year, food and many other commodities have to be purchased. The sale of herbs is the main source of income for these people. The collectors generally sell their herbs to local shopkeepers. Local shopkeepers then sell the herbs to local herb exporters from nearby towns. The exporters in turn send the herbs to cities like Delhi and Amritsar. The final price of the herb in the city is many times higher than the price given to the herb collector from Dacigam National Park. Some of the herbs collected from the park and other nearby forests are directly used by the villagers. A strong tradition of using medicinal herbs, and a lack of allopathic medical facilities, has resulted in a heavy dependence on medicinal plants. Park authorities, other local people, and herb collectors themselves have reported that herb collection has increased significantly over the last ten years, both in terms of the quantities extracted and the number of collectors coming to the area. The number of non-right holders coming to the park has increased, and, apparently, right holders are now extracting herbs outside the areas specified in the settlement. Of all the human activities currently taking place in the park, herb collection is believed to have the most serious impact. A large number of people enter the park every year for herb collection. They disturb the animals and their habitat. Furthermore, collectors are going into new or not often visited areas as herbs are becoming scarce.

Local people, Gujjars and Bakkarwals also enter Dachigam National Park for collection of valuable miscellaneous forest products like Black Mushrooms. On an average a wet Kg of Black Mushrooms costs about Rs. 150 and dry Kg of these costs about Rs. 1200. One kg of dry Black Mushroom is generally obtained from sun drying of 4 – 6 kgs of wet Black Mushrooms. Often during the dry spring the people entering the park for Black Mushroom are a cause of

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anthropogenic forest and grassland fires in the park. This results in lot of damage, disturbance and discomfort to the faunal species. A total of 688 people entering the park illegally for the collection of miscellaneous forest products (table 4)

Fires are a natural part of many ecosystems; particularly severe natural fires may be the result of drought conditions and lightning. Since pre-historic times, humans have set fires –some of which invariably got out of control. Forest fires, bush fires and Grassland fires pose a threat to forests around the world. Anthropogenic fires are more common in modern times in the wild lands than the natural fires. Climate changes vigorously due to Forest fires. In the past decade researchers, have realized the important contribution of biomass burning and it is recognized as a significant global source of emission contributing as much as 40% of gross Carbon dioxide and 30% of tropospheric ozone (Andreae 1991). Heavy smoke during forest fires also damage the forest ecosystem. In a study in Garhwal Himalaya forested area under smoke plumes has been estimated as 130.96 km^2 or 2.96% of total forests area (Roy 2000).

"Recurrent fire decreases the green cover through prevention of regeneration and leads to the slow death of the forest. It also increases erosion and alters the physical and chemical properties of the soil, converting organic ground cover to soluble ash and modifying the microclimate through the removal of overhead foliage. The soluble ash is washed away in the next rain. Fires can also make trees more susceptible to insect attack." However, fire is also very important factor for the degradation of the forests, which not only convert vegetation into ash but also facilitates in the spread of weeds and the escaped exotics, new weeds, to come up more vigorously. The spread of such weeds has taken away much of the fodder resources as such obnoxious weeds cannot be grazed. Measures to control such factors have been suggested by Gadgil (1984). In general fires in wildlands result in disappearance of forests and spread of grasslands and savannas. If the fires are more frequent and the soil is shallow and rocky the result is the desertification. Prescribed fires for the management purposes in limited areas of the forests and grasslands are sometimes preferred. Frequent and intense fires are one of the most important factors affecting Dachigam landscape. These fires are always anthropogenic. Fires mostly occur during the dry spell of autumn, winter and early spring. Autumn fires in grassland areas have damaging effects on the large number of invertebrates and vertebrate species. Intense fires during winter in grasslands burn most over wintering adults and nymphs of invertebrate species. In Dachigam National Park certain people seem to apply fires in grasslands so that fresh and nutritious forage grows in spring and early summer and is utilized by them for their livestock.

One more section is reported to apply fire in the under canopy of the forest areas during autumn to burn the scrub so that there is no obstacle in collecting the Black Mushroom during spring

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periods. Nomadic Bakkarwals and local Gujjars apply fires in sub-alpine areas of the National Park during Autumn in order to prepare the landscape for livestock grazing during the ensuing Summer. Fire in the National Park sometimes spreads accidentally from the individuals illegally preparing charcoal for the winter. Frequent fires occur during the dry spell of autumn, winter & early spring. In the Park certain people seem to apply fires in grasslands so that fresh & nutritious forage grows in spring & early summer & is utilized by them for their livestock .Fire in the Park sometimes spreads accidentally from the individuals illegally preparing charcoal for the winter.

On North-western side of the park near Dara about 6 - 8 stone excavating (quarry sites) are operating under the supervision of various construction groups just outside but within the legal boundary of the Park.. The results obtained depict about 10 - 12 truck-loads of stone are excavated from these sites daily. Records indicate that quarrying in the area has been going on since 1980 or even earlier. Due to these activities the sediment gets loosened & finds its way into Lidwas Nalla, ultimately reaching Northern side of the Dal Lake. These reaches of the tributary form spawning spots for the trout during spring and summer seasons. Stone lifting in such areas hence destroys the breeding grounds of the trout fish. Despite banning of these quarries by lakes and Waterways Development Authority of Jammu and Kashmir state (LAWDA) the extraction of stones is still continuing. In future aftermath of such activities will be environmentally disastrous.

In all the mountain slopes of the areas surrounding the park, which also constitute the buffer areas, there seems to be a lot of biotic interference in the form of overgrazing by local & migratory livestock. This practice has denuded most of these buffer areas. As a result of this there is a lot of erosion of the soil. Much of the material gets washed down by summer showers to the lower reaches & into the major tributaries & finally reaching the Dal Lake. The Dal lake is the final storage of the eroded material from Dachigam National Park.

Like other environmental problems in J&K the armed conflicts of the last 15 years has also caused terrible pressures on the wild animal population. In D.N.P Indian military & armed resistance groups have been slaughtering the rare Hangul for provisions of food. In the first 3 years of military operations alone at least 400 Hanguls are reported to have been killed. The photos of buried bears provide live evidence of killing of wild animals for various benefits.

The disturbance due to the vehicular traffic entering & leaving the National Park may not be apparently pronounced but their effect on the disturbance of endangered & threatened, big game species, particularly during their rutting season are considerable (Table 6). Sadly the V.I.P guest house at Drapahama is the biggest cause of disturbance as the 5 km stretch of road leading to it runs through the core area of the park. This creates a source of daily disturbance due to the

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vehicular traffic between the main gate & the lodge at Drapahama.. As the road passes along the prime Hangul habitat, thus disturbing the threatened species, especially during their rutting season. Moreover, the waste materials coming out of the Lodge are not properly disposed off by the department of Hospitality and Protocol.

The Fisheries Department has established a Trout Fish Farm in 1905. Since then it is a source of continuous disturbance to Dachigam National Park. The feed provided to the fish is having adverse effects on physico-chemical characteristics of Dagwan Stream. A variety of chemicals are used to inhibit the growth of organisms which foul netting and other structures, reducing water flow through the cages. An increasingly significant effect of intensive fish culture is eutrophication of the water receiving aquaculture effluent. Fish excretion and fecal wastes combine with nutrients released from the breakdown of excess feed to raise nutrient levels well above normal, creating an ideal environment for algal bloom formation.

The Cement Factories along North-Western Boundaries of the Park. are having adverse impact on the natural watershed systems. Alkaline dust generated from these factories is turning the soil highly alkaline. The pH level has changed from 9 to 12.6, which effects vegetation and microorganisms severely, resulting in decreased forest productivity and reduction of natural biodiversity.

Visit to National Parks and Sanctuaries is the main attraction for tourists across the world. Increasing trend in human population has adversely affected both flora & fauna. The smoke emitting automobiles & the waste materials particularly non biodegradable polythene bags & cans left behind by the tourists become source of severe pollution in the relatively unspoiled environment of the park. As per the observations made the no. of individuals entering the park to visit these enclosures on 7th July 2004 was 900.

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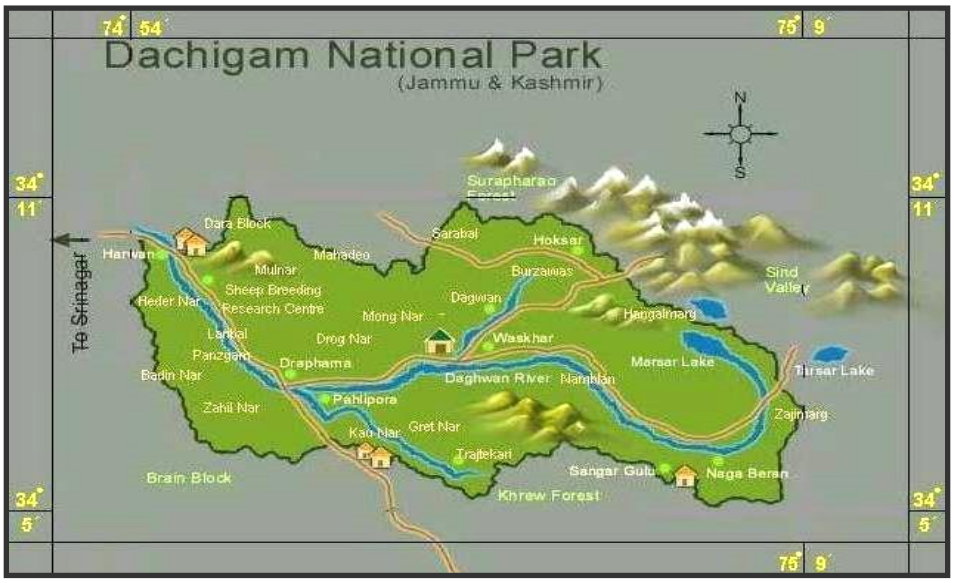

Fig - 1: Map of Dachigam National Park

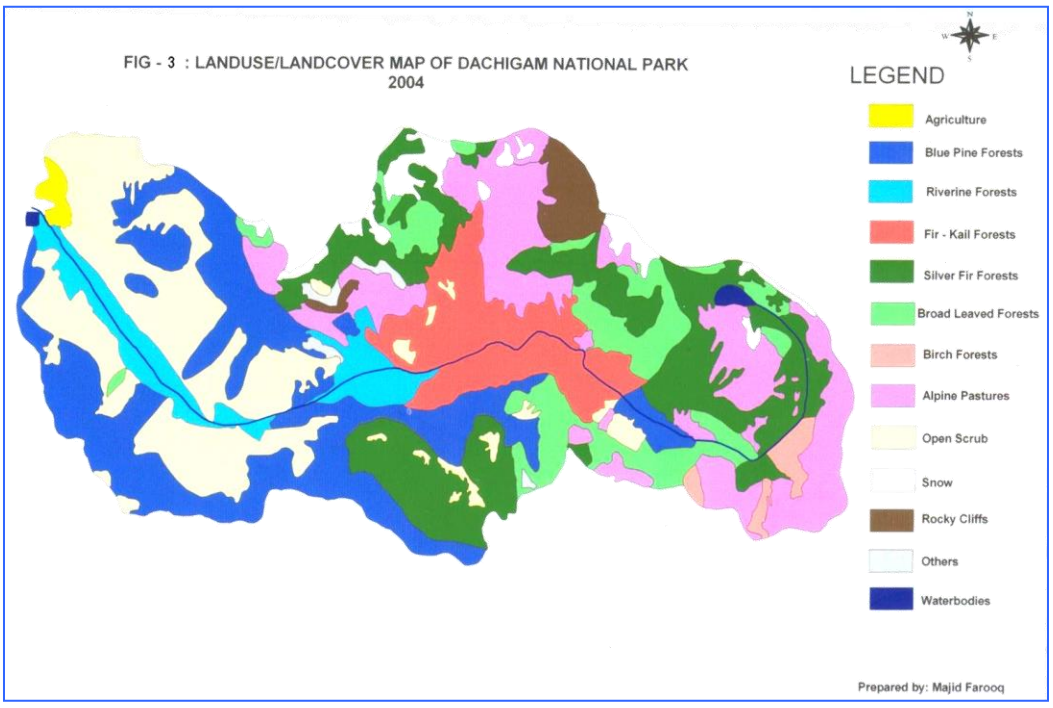

Fig: 2: Map showing landuse/landcover of Dachigam National Park

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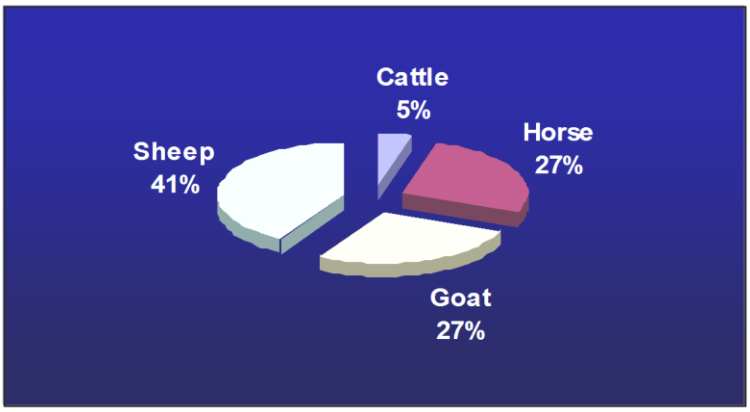

Fig – 3: Percentage of grazers in the Upper Dachigam observed during July 2004.

Table - 1: Achievements till date (1999 – 2004) of Sheep Breeding Farm Dachigam

S.No.	01	02	03	04	05
	Foundation Stock 441 animals	Receipts from other sources 2939 animals	Total transfers/ distributors 12,157 animals	Live-stock strength as on 31-03-2004 1315 animals	Wool produced so far 1, 45,466.671 kg

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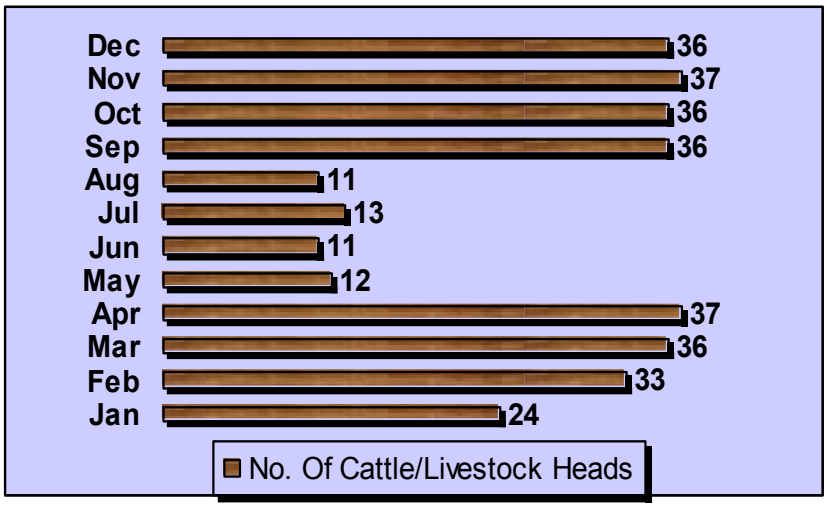

Fig - 4: Average no. of cattle/livestock heads recorded grazing (towards Mulnar, Wampora & Sheep Breeding Farm areas) illegally within the core area of D.N.P for 12 months of year 2004.

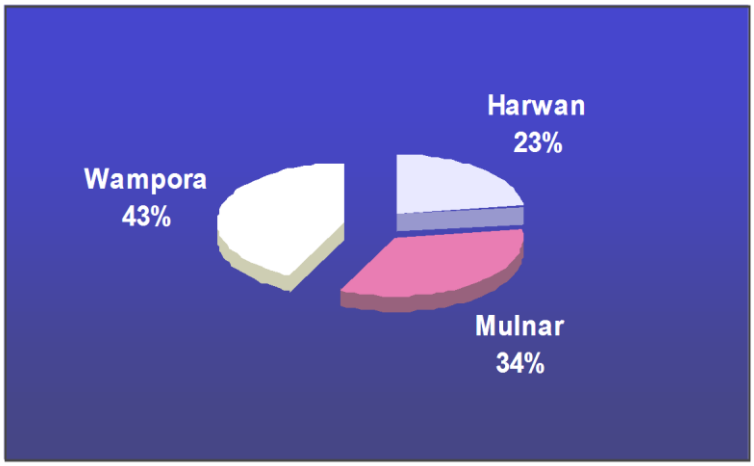

Fig - 5: Percent composition of fuel-wood extraction from three entry points in D.N.P.

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November 2004	Wampora	Mulnar	Harwan	
1st	15	15	8	
2nd	20	13	12	
3rd	18	16	15	
4th	19	18	11	
5th	26	17	8	
6th	17	14	9	
7th	19	16	10	
Total	134	109	73	**316**

Table-2: No of people entering the park for collection of firewood (approx) 30 to 40 kgs per head

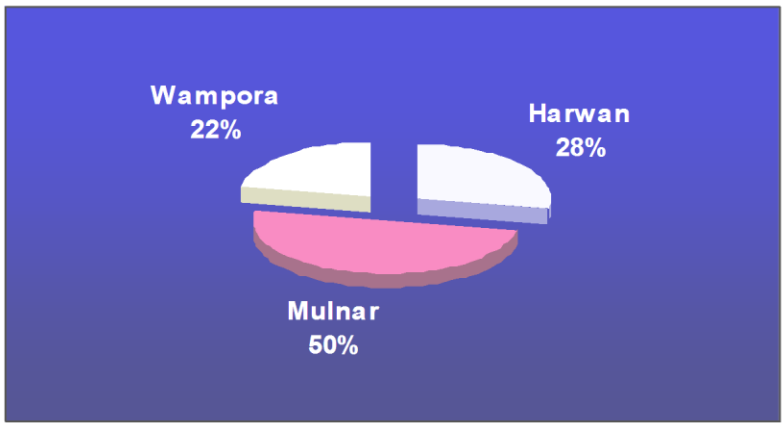

Fig - 6: Percentage composition of fodder removal from three entry points

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Table – 3: Number of people entering the park for collection of headloads of fodder/ grass (Approx) 30 to 40 Kgs /head

JUNE 2004	Wampora	Mulnar	Harwan	
1st	24	56	33	
2nd	27	60	37	
3rd	25	55	30	
4th	28	59	32	
5th	29	65	39	
6th	28	70	32	
7th	30	62	40	
Total	191	427	243	**861**

Table - 4: Number of people illegally entering the park for collection of miscellaneous forest products

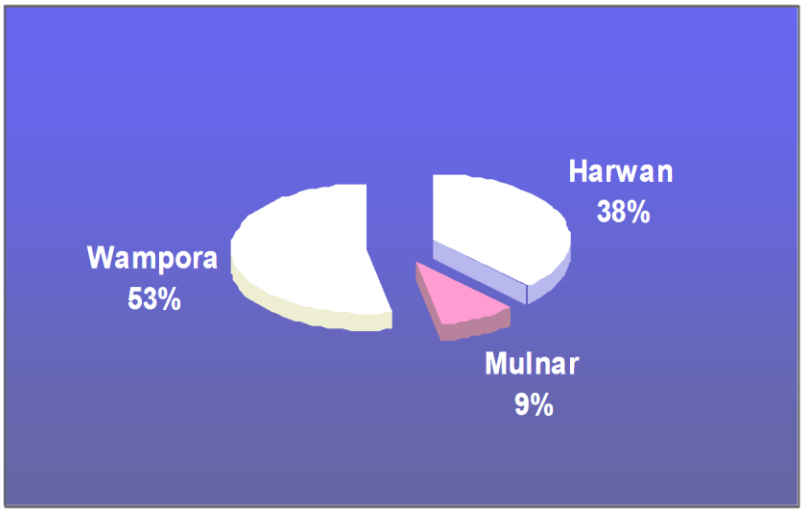

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Fig - 7: Percent composition of extraction of NTFP from D.N.P

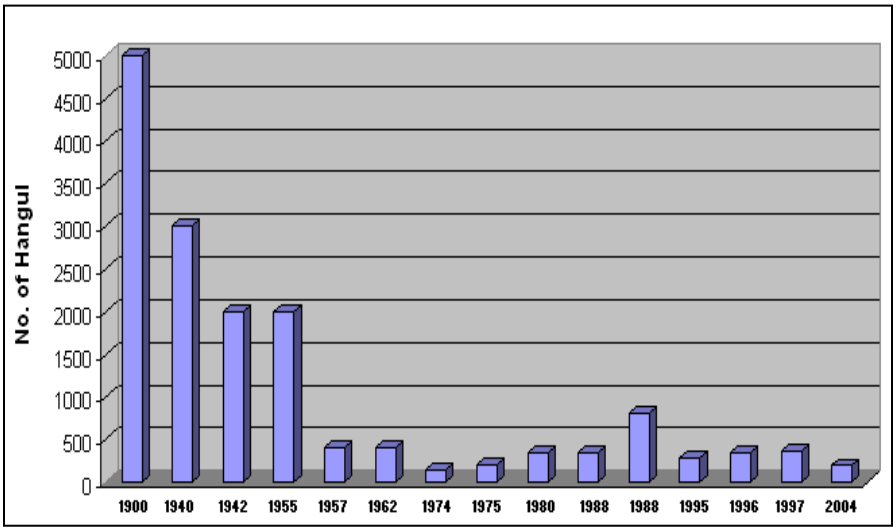

Fig - 8: Fig showing decline of Hangul over years

Year	No. of Hangul	Reference
1900	5000	Gee, 1965
1940	3000	Gee, 1965
1947	2000	Deptt. Of Wildlife Protection
1954	300	Gee, 1965
1957	400	Gee,1965
1958	550	Deptt. Of Wildlife Protection
1960	250	Gee, 1965
1962	200	Gee, 1965
1965	280	Gee, 1965
1968	384	Deptt. Of Wildlife Protection
1969	200	Schaller, 199
1970	170	Halloway, 1971
1972	200	Deptt. Of Wildlife Protection
1975	200	Deptt. Of Wildlife Protection
1977	250	Kurt, 1977
1978	320	Deptt. Of Wildlife Protection
1980	380	Deptt. Of Wildlife Protection
1982	470	Deptt. Of Wildlife Protection
1983	525	Deptt. Of Wildlife Protection
1984	605	Deptt. Of Wildlife Protection
1986	725	Deptt. Of Wildlife Protection
1987	815	Deptt. Of Wildlife Protection

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1988	818	Deptt. Of Wildlife Protection
1992	140	Deptt. Of Wildlife Protection
1994	200	Deptt. Of Wildlife Protection
1995	290	Deptt. Of Wildlife Protection
1996	338	Deptt. Of Wildlife Protection
1997	373	Deptt. Of Wildlife Protection
1998	360	Deptt. Of Wildlife Protection
1999	325	Deptt. Of Wildlife Protection
2000	470	Deptt. Of Wildlife Protection
2001	483	Deptt. Of Wildlife Protection
2002	500	Deptt. Of Wildlife Protection
2003	195	Deptt. Of Wildlife Protection

Table- 5: Table showing the decline of Hangul population

Source: Population Estimation of Hangul In Central & South Division of Kashmir Region; Infotech & publicity wing of Department of Wildlife Protection Jammu and Kashmir Government – 2004

S. No.	Department	No. Of Vehicles
1.	SHEEP BREEDING FARM	2
2.	HOSPITALITY & PROTOCOL	4
3.	FISHERIES DEPARTMENT	5
4.	SECURITY FORCES	6
5.	VISITORS & OTHERS	31
	Total	48

Table – 6: Average no. of vehicles entering the core area of the park daily through gate no. 1 as recorded in July.

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Fig – 9: A view of Mulnar Village coming up illegally inside D.N.P

Fig - 10: Upcoming Shalkhud village behind north Boundary of Dachigam National Park

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Fig - 11: Permanent Human Settlements in Mulnar

Fig 12: Intense grazing in upper reaches of Dachigam.

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Fig - 13: Typical Illegal grazing on higher reaches of Dachigam National Park

Fig - 14: Cattle grazing in higher reaches of Dachigam National Park

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Fig - 15: Illegal grazing inside the Dachigam National Park

Fig 16: Illegal browsing in Dachigam National Park.

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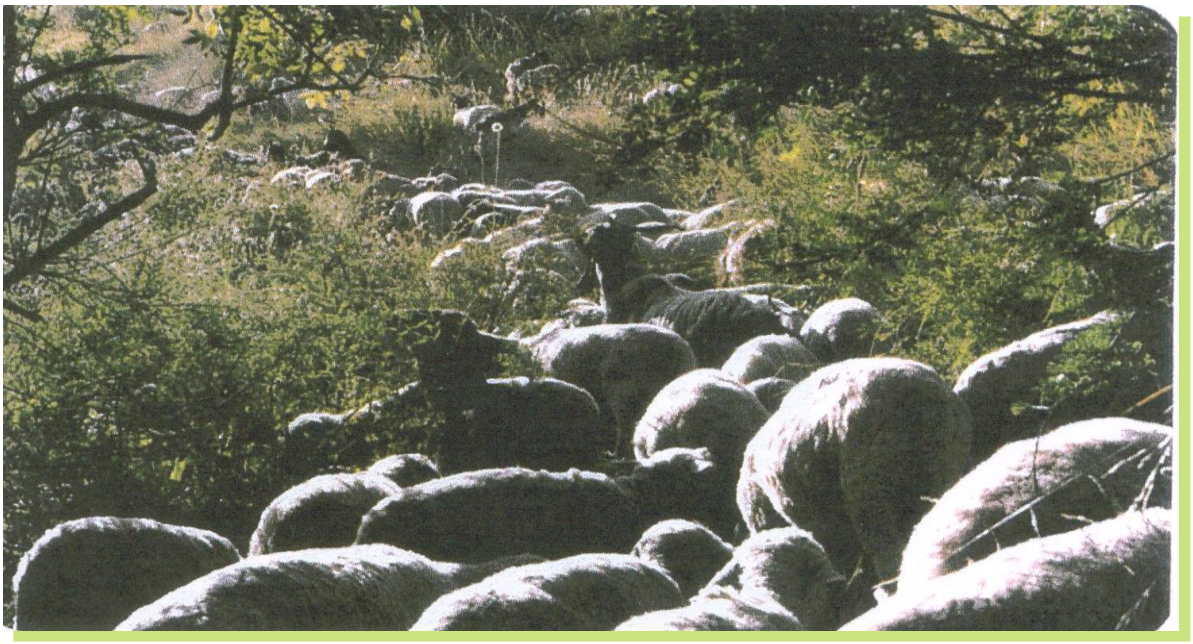

Fig - 17: Typical illegal grazing by livestock of nomads in Dachigam National Park.

Fig- 18: Glimpse of Sheep breeding farm within core area of Dachigam National Park

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Fig - 19: Illegal removal of fuelwood and fodder from Dachigam National Park

Fig - 22: Women busy with collection of fodder in buffer zone of Dachigam National Park.

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Fig - 23: Men employed by Sheep Farm engaged in fodder collection in core area of D.N.P.

Fig-24: Women with headloads of fodder extracted illegally from Dachigam National Park

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Fig - 25: Deliberately blown up fire in upper reaches of Dachigam National Park

Fig - 26: Outcome of intensive grazing

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Fig - 27: Quarrying in an area results in loosening of the rock and sediments of the landscape of Dachigam National Park.

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Fig - 28: Core area occupied by Security Forces inside D.N.P.

Fig - 29: Draphama VIP Lodge – Biggest concern for wildlife of D.N.P.

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Fig- 30: Deforestation within Dachigam National Park

Fig - 31: A carcass of Black Bear lying in core area of Dachigam national Park.

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Fig - 32: Broken fencings are common sights in Dachigam National Park.

Fig - 33: Polythene and other wastes lying just outside the Draphama VIP Lodge.

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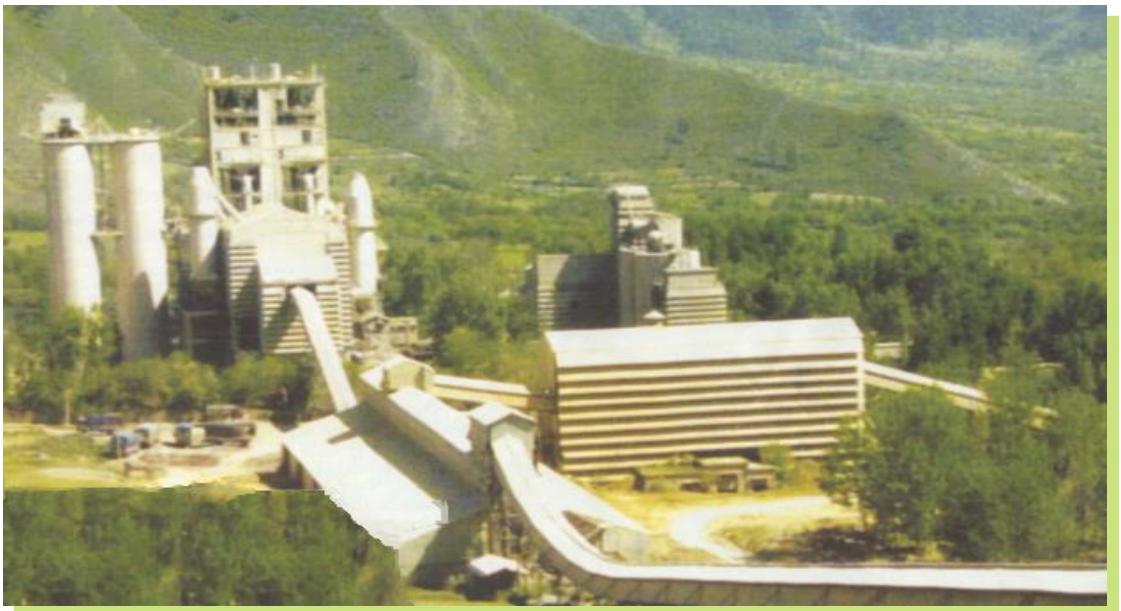

Fig- 34: Cement Factory at Khonmo produces enough dust to harm the vegetation of Dachigam National Park

Fig - 35: Leopard & Bear enclosures within National Park are destroying its serenity of Dachigam.

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Fig - 36: VIP's escorted by large number of security guards disturbing wilderness in D.N.P.

Fig - 37: Fisheries Deptt. occupying core area of Dachigam National Park.

