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FLORISTICS AND NATURAL RESOURCES OF MOUNT EELUMSW A T

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ABSTRACT: Mount Eelum a series of Southern Hindu Kush forms a part of the Eastern boundary of Swat valley with Buner District, exhibit a thorny sub-tropical semi-Deciduous, sub tropical Chir forest and moist Temperate blue pine types of forests within the altitudinal limits of 1000 to 3000m. Sum of 149 plant species belonging to 64 families are under traditional use in the area. Problems leading to the ecological degradation of the area are deforestation, fuel wood collection, over grazing, terracing, poverty, ignorance, lack of development initiatives and ruthless exploitation of wildlife.

KEYWORDS: Mount Eelum

INTRODUCTION

The famous mountain range, Mount Eelum, forms the natural boundary between Swat and Buner Districts. The highest peaks are 3000m high. Geographically it is located 340 - 34' to 340 - 42' north latitude and 72°
15' to 720 - 30' east longitude and is located in the south of Mingora city at a distance of 10 km.

The area used to be covered with dense pine forest, however, recently large biomes of natural vegetation were denuded. Mount Eelum, which was nearest accessible forest to the largest city Mingora of the valley, suffered more due to its ruthless exploitation in various ways. The selfish interaction of people with the natural resources caused forest uprooting and weathering of rocks by chemical and mechanical means, when. The agents of denudation carry these denuded material down stream they enhance the erosion of fertile soil along with other damages to the natural resources.

MATERIALS AND METHODS

Trips were made to the area for the collection of information. Forest types were characterized according to Champion *et al.* (1965). For reporting, biodiversity and vertical zonation of vegetation, transact walks were undertaken on the representative tracts of the mountain. Literature search was also carried out in libraries. For extensive survey, procedures reported by Kent and Coker (1995) were followed generally. Plant identification was carried out in accordance with Stewart (1972), Nasir and Ali (1995) and Ali and Qaisar (1998). The identified plant materials were preserved in the herbarium of Department of Botany, Government Post Graduate Jahanzeb College Saidu Sharif Swat for future reference. Information regarding the plant use were gathered and confirmed from A wan (1978). The studies were completed in June and July 2000 and the relative information so gathered is presented in this paper.

RESULTS AND DISCUSSIONS

Results of the survey shows that among all the reported plant species 147 belong to 63 angiosperm families and 2 species belong to I gymnosperm family forming the prominent vegetation of mount Eelum (Table 1). Majority of the plants reported here are used in a variety of economic activities (Table 1). The forest types of Mount Eeluni, their potentials and problems are discussed below.

A) FOREST TYPES

Vegetationally three forest types can be differentiated in the area. Various kinds of forest types present in the area are as under.

1 THORNY SUB-TROPICAL SEMI DECIDUOUS FOREST

This vegetation type is visible on roadsides of Marghuzar. It extends up to 1000m on the southern slopes, from the sea level. Dominating species are *Acacia modesta* at lower limits and *Olea ferruginea* at higher limits. *Ficus glome rata* though not abundant in stand is the typical representative of this zone. Other evergreen features of this vegetation type are *Mallotus phillippensis and Dodonea viscosa.* Deciduous species of the zone include *Pistacia integerimma, Acacia modesta* and *Ficus palmata.* The highly degraded slopes support only the scrubs of *Adhatoda vasica,*

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Mytaenus royleanus and Periploca aphylla, associated with the grasses like Themeda anathera, Eargrestis pilosa, Saccharum munja and Digitaria stricta.

The introduced fast growing trees include *Ailanthus altissima, Robinia pseudoacacia and Brossonetia papyrifera*. Most of the slopes, where agriculture is

Table-l Some Economically Important Plants of the Area

Family	Botanical Name:	*Uses Of Plant
Acanthaceae	*Adhatoda vasica Nees.*	6,10
Adiantaceae	*Adiantum cappillus-veneris* L.	6, 13, 27
	A. incisum Frosk.	6, 13,27
	A. venustum D. Don.	6,13,27
Amaranthaceae	*Achyranthus aspera* L. *Amaranthus caudatus* L.	6,4 2,4,5
	A. viridis L.	2,4,5
Anacardiaceae	*Cotinus coggyria* Scop. *Sauromatum*	13,6, 10,24 7,6
Araceae	*venosum* (Ait) Scoth. *Hedra hilex* L.	4,6,10
Araliaceae	*Periploca aphylla* Dene. *Impatiens*	6,45
Ascelpiadceae	*bicolor* Royle. *Impatiens*	19,4, 16 4,6,19
Balsaminaceae	*brachycentra* Kar. & Ker. *Impatiens edgeworthii* Hook. *Berberis lycium* Royle	19,4,6 6,29, 10, 1 6, 29, 10, 1
Berberidaceae	*Berberis wallichii*	32,16,10,15
	Alnus nitida (Spach.) E.	6,4
Betulaceae	*Capsella bursa-pastoris* (L.) Medik	6,4
Brassicaceae	*Sisymbrium irio* L.	6,30,2,6,4
	Nasturtium Officinale R. Br.	6,10 1,6,29,36,
	Cannabis sativa L.	10 4,5
Cannabiaceae	*Viburnum nervosum.* D. Dom. *Silene*	2,4,5
Caprifoliaceae	*conodiea* L.	2,6,4
Caryophyllaceae	*Stillaria media* (L.) Chyr.	6
	Chenopodium album L.	6
Chenopodiaceae	*Chenopodium ambrosoides* L.	6,7,8
	Achillea mille folium L.	6, 34, 10
Compositae (Astraceae)	*Artimisia maritima* L.	6
	A. scoparia L.	2,6
	Calendula arvensis L.	4,5,2
	Cichorium intybus L.	6,4
	Cincus benidictus L.	4
	Onopordeum acanthium L. Sonchus	6
	asper L.	8
	Taraxicum officinale Weber. *Cuscuta*	6
	reflexa Roxb.	2,6,27
	Melothria madraspatana (L.) Long.	31,6,27
Convolvulaceae	*Pteridium equilinum* (L.) Kuhn.	1,30,6,12,10,16 1,
Cucurbitaceae	*Discoria deltoides* Wall.	10,36,29,6
Dennstaedtiaceae	*Diospyrus lotus* L.	6
Dioscoraceae	*Elaegnus umbellata* Thumb.	7
Ebenaeceae	*Equisetum arvense* L.	6
Elaegnaceae	*Euphorbia hirta* L.	6,10 10,4,1,12,29,43,38
Equisetaceae	*Euphorbia prostata* Act.	3,6
Euphorbiaceae	*Ricinus communis* L.	
	Quercus incana Roxb.	
	Hypericum perforatum L.	
Fagaceae		
Guttiferae		

Continued.. .

feasible, have been uprooted, and converted to arable terraces, and cultivated with two crops a year Le. wheat and maize. Temperate fruits like plums, apricots, peaches and walnuts can also be seen on the field boundaries. Most of the varieties cultivated here are neither of improved quality nor are they cultivated according to the approved agricultural recommendation that's why they have very poor yield and quality.

2. SUB TROPICAL CHIR FOREST

Prominent feature of this forest zone is Chir pines *(Pinus roxberghii)* inter mixed by *Olea ferruginea and Quercus incana* at the lower limits and *Pinus wallichiana* at the upper limits. Other associated species are *Bauhinia varigata, Pyrus pashia, Grevia optiva, Pistacia integerrima, Xanthoxylum aromatum* and *CUtis australis.* It extends from lOOOm to 1500m particularly on the southern faces. This zone goes up to Jawzo Kandow. The terracable land is being converted into croplands resulting in nucleation of human settlements in the forest area, which impaired the composition and structure of natural flora and the associated fauna. However, in small-protected patches where the communal lands have been divided among the inhabitants, are protected. The degraded slopes

Family	Botanical Name:	*Uses Of Plant
Iridaceae	*Iris versicolor* L.	18,6
Juglandaceae	*Juglans regia* L.	33, 1,4,6,17,18,19,12,35,41,10 6,31
Labiatae	*Ajuga bracteosa* Wall. Ex. Benth.	6,31
	A. parviflora Beth.	38,27,10,39,4,6 17,6,3
	Isodon rugosus (Wall, ex Benth.) Codd.	6,17,3
	Mentha spicata L.	6,39
	Mentha sylvestris L.	39,6
	Micromeria biflora (Ham.) Bth.	18,6, 17,21
	Origanum vulgare L.	6
	Ocimum basilicum L.	35,6
	Salvia moorcraftiana Roxb. *Asparagus adscendens* Roxb.	2,4,5
Liliaceae	*Malva neglecta* Wall.	2,4,5
Malvaceae	*Malva muritiana* L	6,4,2,5
	Malva sylvestris L.	31,12,7
Meliaceae	*Cedrela serrata* Royle.	16,4,6,30, 10
	Melia azedrach L.	1,4,10,6 1,4,12,30,10, 15,
Moraceae	*Ficus palmata.*	16 1,4, 12,30, 10, 15
	Morus alba L.	6,10,38,27
	Morus nigra L.	6,18
	Myrsine africana L.	4,36,10,29 21,
Myrsinaceae	*Mirabilis jalapa* L.	18,29, 10 21,
Nyctaginaceae	*Fraxinus excerlsior* L.	18,29, 10
Oleaceae	*Jasminum humile.*	4, 1,38, 10, 16
	Jasminum officinale.	6
	Oleaferruginea Royle.	35,6 30,37,38,10,12,41
	Paeonia emodi Wall.	24,37,24,45,46,44 4,2,5
Paeoniaceae	*Astragalus anisacanthus* Boiss.	4, 14, 6, 5
Papilionaceae	*Dalbergia sisso* Roxb.	36,10,4,29
	Indigofera geradiana Wall. Ex baker.	28, I, 10, 26, 30, 11, 13, 18
	Lathyrus aphaca L.	26,30, 10, 11, 13, 18
	Medicago denticulata L.	6, 4, 10, 29
	Robinia pseudoacacia L.	4,6
	Pinus roxberghii Sargent.	4,6
Pinaceae	*Pinus wallichiana* A.B. Jackson.	4,6
	Pistacia integerrima Stewart. *Plantago lanceolata* L.	16,30, 12, 18
Pistaciaceae	*Plantago major* L.	
Plantaginaceae	*Plantago ovata* Forssk.	
	Platanus orientalis L.	
Platanaceae		

Continued.. .

Family	Botanical Name:	*Uses Of Plant
Poaceae	*Aristida adscensionis* Nees.	4,5,24
	A. *cynantha* ex. Stued.	4,5,24
	Chrysopogon aucheri (Boiss) Stapf. *Chrysopogon*	4,5,24
	gryllus. (L.) Trin. *Chrysopogon montanus* Trin.	4,5,24
	Cenchrus pennisetiformis (Hoechest) Stued.	4,5,24
	Cenchrus cilliaris L.	4,5
	Cynodon dactylon L.	4,5
	Desmostachya bipinnata(L.) Stapf. *Phragmites*	4,5,18
	communis Trin.	4,5
	Sacchrum monja Roxb.	37
	Sacchrum spontaneum L.	36,37, 13
	Sorghum helepense (L.) Pers.	37,13
	Rumex acetosa L.	4,5
Polygonaceae	*Polygonum viviparum* L.	2,6
	Rheum webbianum Royle.	6,4
	Rumex dentatus L.	6
	Protulaca oleracea L.	2,6
Portulaceae	*Punica granatum* L.	2,6
Punicaceae	*Anemone obtusiloba* D. Don.	**1,29,10,6,17**
Rananculaceae	A. *rupicola* Comb.	4,13
	Aquilegia pubijlora Wall.	4,13
	Dilphinium pyramidale Royle. *Rananculus*	6
	muricatus L.	18
	Ziziphus jujuba Mill.	4,6
Rhamnaceae	*Cotoneaster affinis* (Lindl.) Schn. *Cotoneaster*	33, 1,~ 10,36,37,4 6,
Rosaceae	*microphylla* Wall. *Cotoneaster numularia* Fisah	10, 37
	& Mey. *Fragaria indica* Andrews.	10,6, **1,25**
	Pyrus pashia Ham.ex D.Don.	10, 6, 25
	Rosa brunonii Lindl.	6, 1
	Rubus fruticosus L.	42,10,29
	Rubus idaeus L.	36,44
	Rubus ulmifolius Schott.	36,29, **1,6**
	Rubus ellipiticus Smith.	36,29, 1,6
	Zanthoxylum armatum DC.	29,1,6
	Populus ciliata Wall.	**29,1,6** 25,36,29,17,6
Rutaceae	*Populus euphratica* Oliv.	10, 38, 16, 13
Salicaceae	*Populus nigra* L.	14,30,37,13,15,38,37 30,37,
	Salix babylonica L.	10, 15
	Berginia ciliata (Haw.) Scernb.	13, 16,4, 10,32, 12 6,18
Saxifragaceae		

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where soil land is deep is occupied by *Myrsine africana, Berberis lycium, Indigofera hetrantha, Rubus fruticosus. Rubus* ideus and *Rubus ellipiticus.* The highly drained exposed and shallow soil is inhabited by *Sophora angustifolia, Periploca aphylla, Rumex acetosa, Origanum vulgare, Trichodesma indicum, Ajuga brateosa, Micromeria biflora* and *Lotus comiculatus.* The moist stream beds *Debregeasia silicifolea, Salix tetrasperma, Vitex negundo* at the lower limits and *Salix tetrasperma, Alnus nitida, Diospyrus lotus* and *Populus alba* at the upper limits.

Chir pines generally occupy the steep exposed faces of mountains, which are heavily exposed to grazing, fuel wood, timber wood, lopping and fire for fodder production. All the practices have greatly degraded the structure and composition of floral and faunal diversity. Most of the area of this zone has been converted into open ridges with shallow soil and

Family	Botanical Name:	*Uses Of Plant
Scrophulariaceae	*Varbascum thapsus* L.	6
	Veronica ciburia (L.) Less.	6 10,4,13,15,30,29
Simarubaceae	*Ailanthus altissima* (Mill.) Swingle. *Solanum*	2,6
Solanaceae	*nigrum* L.	6
	Solanum xanthocarpum Schard & Wendl.	7,6
	Withania somnifera Dunal.	6, 7
	Datura metel L.	6, 7
	Datura stramonium L.	6,10
Thymeleaceae	*Daphne mucronata* Royle.	6, 12,30, 16
Ulmaceae	*Celtis australis* L.	1,37 .
	Celtis laevigata Willd.	6,4
Umbelliferae	*Eryngium biebersteinianum* Nevski.	6
	Trachyspermum ammi.	2,6 2,6
Utricaceae	*Urtica diocia* L.	6
	Urtica pilulefora L.	8,6 6,2
Valerianaceae	*Valeriana wallichii* Jones.	6,2
Verbenaceae	*Vitex negundo* L.	1,4,6 6
Violaceae	*Viola serpens* Wall.	
	Viola kashmiriana W. Bkr.	
Vitaceae	*Vitis vinifera* L.	
Zyghophyllaceae	*Tribulus terristris* L.	

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*KEY TO USES OF PLANT

1. Wild fruit	13. Soil binder	25. Sticklhandles	37. Utensils
2. Pot herb	14. Soil fertilizer	26. Timber	38. Construction
3. Beverage	15. Wind Break	27. Cushion plant	39. Bee attractants
4. Fodder	16. Shade tree	28. Resin	40. Smoking medicine
5. Hay Fodder	17. Spice/flavoring agent	29. Fence	41. Wood carving
6. Medicine	18. Ornamental	30. Furniture	42. Root stock
7. Poison	19. Dye	31. Fish poison	43. Charcoal
8. Green Pesticide	20. Ink	32. Soil reclamation	44. Fishing Checks
9. Graveyard things	21. Incense/perfume	33. Dry fruits	45. Snuff ash
10. Fuel wood	22. Paper	34. Brooms	46. Granary/Basketry
11. Torch Wood	23. Beads	35. Miswak	
12. Agricultural tools	24. Packing! roping	36. Hedge plant	

sparse vegetation cover of *Aristida cynantha, Periploca aphylla, Adhatoda vesica* and *Narium odorum along with Selaginella.*

3. MOIST TEMPERATE BLUE PINE FOREST

Blue pines *(Pinus wallichiana)* form the main feature of this zone. It can be observed above a village Methra Pindi 1500m and on the southern slopes. On northern slopes, it is associated with Chir pine at its upper limits. This transitional type of forest can be observed from Methra Pindi to Jawzo Sar. On northern slopes, *Pinus wallichiana* is associated with *Quercus incana* at its lower limits and *Quercus dilatata* in the upper limits.

Blue pine is social in nature and has given rise to good humus deposition providing habitat for variety of floral and faunal diversity. The floral stand present luxuriant growth with good stratification and physiognomy. Associated trees, of this zone are *Quercus incana, Diospyrus lotus, Comus macrophylla* and *Pyrus pashia.* The sub flora includes bushes of *Sarcococca sa ligna, Myrsine africana, lsodone rugosus, lndigofera gerardiana* and *Berberis lycium.* Streams in this zone have fair distribution of *Alnus nitida* whereas; the ground flora includes the species of *Valeriana wallichii, Viola serpens, Rumex nepalensis, Geranium wallichianum. Delphinium aquiligifolium, Mentha longifolia. Hypericum*

perforatum and Ajuga parviflora. Climbers like Rosa moschata, Jasminum humile, Jasminum officinale and *Hedra hilex* are of common incidence.

B) THREATS TO NATURAL RESOURCES Major threats to which the ecological resources of Mount Eelum are exposed are presented below:

1. DEFORESTATION

In the recent past, all the area was covered with such a thick forest that blocked the way of intruders. Elders of the area tell us a popular pushto proverb," *Che Mar Loi She No Eelum Tha Zee"* means that when snake becomes huge and find no shelter it ultimately finds its way to the Mount Eelum. Nowadays Mount Eelum is exposed to severe deforestation pressure. In the recent past the commercial utilization of the communal forest resources has been banned by some of the communities, however, the unsettled land tenure dispute is still a threat to natural resources and provided free hand to cut trees from the communal forests, to meet domestic needs. If the situation remains unchecked, the remaining forest will not be available after a few years.

2. FUEL WOOD CONSUMPTION

The fuel wood requirements of the whole valley entirely met from the forest. Mostly the people prune and lop the forest trees for firewood. Dead and decayed branch collection is also common. Sometime they cut the whole tree for fuel wood purposes. Fuel wood collection is a major threat to the natural resources of the area. According to the survey, the people prefer oak trees for fire wood purposes and that is why its density in the existing forest is very low.

According to the results of fuel wood consumption survey the average daily consumption of a household in Mount Eelum valley is about 15 kg. For entire population in Mount Eelum, it is about 7170 kg per day. Beside local consumption, about 2000 kg per day of pine's wood is taken from Mount Eelum to district Buner, Mingora and surrounding villages.

3. OVER GRAZING

Livestock grazing is another major threat to the natural resources of the area. About 2500 livestock heads are an integral part of the lives of the local population. There is no restriction on livestock grazing in the area. In addition to livestock owned by the local community, nomads bring their livestock to the valley for grazing in summer. They enter the valley from Buner, Swat and other surrounding areas. This free grazing practice has exceeded the carrying capacity of the rangelands and has caused a tremendous decline in natural regeneration of pastures for wildlife of the area.

4. TERRACING

Agriculture is the major economic activity in the area. Plains in the area are scarce and 80% population of the locality depends upon terrace cultivation, for their existence. To meet the requirements of growing population, the people have cleared slopes of moderate steepness and still cutting is carried on, that is why fallen trees are seen every where. An agricultural activity on slopes provided a line of attack for various agents of denudation, resulting in irreversible loss of precious soil.

5. POVERTY

A worst socioeconomic condition of the local inhabitants triggers them to cut trees for commercial purposes. This hidden felling of trees is practiced especially in the side valleys of Murghuzar and other upper reaches of the valley, which are near to District Buner. This exposes steep slopes to soil erosion and other environmental hazards. For commercial exploitation, the Timber Mafia uses several routs for the transportation of timber. Among the routes followed, three routes Qadar Nagar, Gokand and Karakar are on Buner side and two routes Marghuzar and Sangar are on Swat side.

6. IGNORANCE

Local community is not only illiterate but also unaware of the ecological and Economical importance of the natural resources of the area. This lack of awareness is the major cause for the over exploitation of natural resources of the area.

7. LACK OF DEVELOPMENTAL INITIATIVES

Since the merger of Swat with Pakistan in 1969, no scientific management of the natural resources and socioeconomic uplift of the area have ever under taken, either by Govt. or any NGO. No development had been made in the fields of communication, education, health, irrigation and community organization.

8. RUTHLESS EXPLOIT A TION OF WILDLIFE

Wildlife population and diversity in species is depleting firstly due to hunting and poaching by local community and then destruction of habitat for the wild life because of deforestation and livestock grazing.

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