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Floristic Composition and Ecological Characteristics of Olea-Acacia Forest of Shamshokii District Karak

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I. Introduction

Ecologically Forest is a plant community of diverse plant life in a certain unit area having similarity in their requirements. Forest vegetation is the most precious resourse that predicts need of the people in the form of food, fodder, fuel, medicine, timber, resins, and oil, etc. (Gaur, 1999). Vegetation plays a pivotal role in sustainable management by maintaining biodiversity and conserving the environment (Farooquee & Saxena, 1996). Floristic composition of any area is a prerequisitefor understanding the overall structure and function of any ecosystem. Fundamental botanical research revolves around floristic composition. A flora enumerates plants of a particular geographical area (Venu, 2002).Floristic study is prerequisite for any advanced work. Local flora is easy to handle and understand. Some floristic listing of various parts of Khyber Pakhtoonkwawa has been made (Badsha, 2011, Sha, 2011, Sher, 2011, Badshah *et al.* (1996), Wali (1966), Tareen & Qadir (1993) and Ayaz *et al.* (1993). Rashid et al. (1988), Qadir & Tareen (1987), Hussain *et al.* (1985).Literature survey reveal that no such work has been done on the vegetation of study area, the present study was undertaken to report the flora of Shamshokii Valley and its ecological characteristics. The findings might be of help to ecologists, ethno botanists and conservationists.

a) Study area

Karak is situated between 32° 47 to 33° 28 N and 70° 30 to 71° 30 E. Shamshaki Masti Khel Olea – Acacia forest area (Naveed et al.,2012) is 5763.9375 Hectares with an elevation ranging from 800 m to 1400m above sea level, Annual rainfall is frequent in summer. Mean summer temperatures varies from 23C^0 - 35C^0 and temperature may go down below freezing point in winter.

II. Materials and Methods

Plants were collected from November 2010 to 2011July .Plants were dried, preserved identified through available literature (Nasir & Ali 1971; 1995; and Ali & Qaisar 195;-2006). Leaf size and life forms were determined after Raunkier (1934) and Hussain (1989).

III. Result and Discussion

There were 110 plant species belonging to 57 families (Table.1).*Pteridophytes* were represented by only 1 family(*Adiantaceae*), Bryophytes by4 (*Marchantiaceae, Rebouliaceae, Funariacea* and *Politricaceae*) Monocots by 5 families (*Alliaceae, Asparigaceae, Cyperaceae, Liliaceae* and *Poaceae*) while the remaining 45 families were represented by the Dicots. The well represented families were *Poaceae* (11 spp.), *Asteraceae* (8 spp.) *Papilionaceae* (6 spp.), *Lamiaceae* (7 spp.), *Solanaceae* by 5 spp, *Euphorbiaceae* by 4, *Moraceae, Amaranthaceae, Brassicaceae, Alliaceae, Liliaceae, Chenopodiaceae, Mimosaceae* and *Malvaceae* by 3 spp. each. *Asparagaceae, Polygonaceae, Cucurbitaceae, Caryophyllaceae, Apocynaceae* by and *Rhamnaceae* by 2 spp.While remaining 28 Families (*Asclepiadaceae, Bignoniaceae, Boraginaceae, Buxaceae, Nyctaginacea, Urticaceae, Cascutaceae, Canabanaceae, Primulaceae, Papaveraceae, Oxaliceae, Meliacea, Oleaceae, Punicaceae, Celesteraceae, Convolvulaceae, Fumariaceae, Menispermaceae, Portulacaceae, Ranunculaceae, Rosaceae, Rubiaceae, Sapotaceae, Sapendaceae, Schrupholariacea and Salicaceae, Telliaceae, Verbinaceae and Zygophylaceae*) were represented by one spp. each.

The biological spectrum (Table 1) showed that Therophytes (47%) were the dominant followed by Nanophanerophytes (12.7%), Chamaephytes (12.7%), Geophytes (6.3%), Hemicryptophytes (10.9%), Magaphanerophytes(4.54%), Microphanerophytes (0.9%). Phytoplanktons and Parasitic plants were 0.9% each. Leaf spectra showed that Microphylls was dominant

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(52.7%), followed by Nanophylls (14.54%), Leptophylls (14.54%), Mesophylls (11.81%), and Megaphylls (2.7%).

The dominance of Therophytes (44.6%) indicated that the investigated area was under heavy biotic pressure due to deforestation and over grazing. Many plant species were decreasing in the area. It would be the moral and ethical duty of the local people to protect the plant resources. Most of the medicinal plants were uprooted for burning purposes and grazed by the livestock. It therefore, seemed appropriate to manage the grazing system. Most of the fuel wood and timber wood was extracted from these forests. Even fruiting trees were also grazed by animals and used for burning. The forests were refuge for valuable and endangered animals. Further study is needed to quantify the data and suggest plans for the conservation of the area.

Table 1 : Floristic list, Life form and Leaf size classification of some plants of Olea-Sanatha Forest Shamshaki ,District Karak.

No	Phylum	Family	Botanical Name	Local name	Life form	Leaf size	Habit	Habitate	Occurence	Economic Uses
1	Algea	Chlorophyceae	Spirogyra spp	Ghorhbaiy	Phytoplankton		fillamentous	Stream beds	common	Md
2	Lichens	Crustose Lichens	White, gray ,yellow and orange colored crustose lichens		LCh		Crust like	Rock/tree barks	common	-----
3	Bryophytes	Liverworts	Marchantia spp		BrCh		Flate	Open places	rare	------
4		Mosses	*Funaria spp & polytricum spp*		Br Ch	Le		Moistplaces	abundent	-------
5	*Ptridophytes*	*adianthaceae*	*Adianthem incisum Forsk.H*		*H*	*Na*	*Herb*	*Shady places*	*Rare*	-------
6	*Monocots*	*alliaceae*	*Allium griffithium Bioss*	*Paharhi piyaz*	*G*	*Mic*	*herb*	*Open places*	*Rare*	*Md*
7			*Asphodilus tenoifolius Cav*	*piyazakai*	*G*	*Na*	*herb*	*Open places*	*common*	*Fd*
8		*Asparagaceae*	*Asparagus officinalis Wall.*	*laychagha*	*Ch*	*Le*	*shrub*	*Shady places*	*common*	*Fd*
9		*Poaceae*	*Cymbopogon jawarancus*	*Sargarhi*	*H*	*Na*	*herb*	*Open land*	*common*	*Fd*
10			*Aristida*	*washa*	*T*	*Mic*	*herb*	*Open land*	*common*	*Fd*
11			*Avena sativa*	*karyanrha*	*T*	*Mic*	*herb*	*Cultivated field side*	*common*	*Fd*
12			*Bromus japonicas Thumb exMurr.*	*washa*	*H*	*Mic*	*Herb*	*Hill side*	*common*	*Fd*
13			*Cenchrus ciliaris*	*washa*	*H*	*Mic*	*Herb*	*Open land*	*common*	*Fd/FW*
14			*Cynodon dictylon L.pers.*	*bayrawa*	*H*	*Mic*	*Herb*	*Cultivated Field Side*	*commen*	*Fd*
15			*Saccharum spontaneum*	*kana*	*Ch*	*Na*	*Herb*	*Hill side*	*common*	*RT/FW*
16			*S. bengalense Ritz*	*kaee*	*Ch*	*Na*	*Herb*	*Hill side*	*common*	*RT/FW*
17			*Desmostachya bipinnata*	*drab*	*H*	*Mic*	*Herb*	*Hill side*	*common*	*Fd*
18			*Dictylatum annulatumStafl.*	*wakha*	*H*	*Mic*	*Herb*		*common*	*Fd*
19			*Achnatherun thurberianum*	*wakhan*	*H*	*Mic*	*Herb*	*Cultivated Field side*	*common*	
20		*Cypiraceae*	*Cypirus rotendus*		*G*	*Mic*	*Herb*	*Cultivated n field side*	*common*	*RT*
21			*Cypirus spp*	*Wakhan*	*G*	*Mic*	*Herb*	*Hill side*	*common*	*RT*
22		*Liliaceae*	*Polygonatum verticilatumAll*	*Noo e alm*	*G*	*Mic*	*Herb*	*Stream bed*	*V. rare*	-------
23			*Unidentified sp*	*Shandai*	*G*	*Mic*	*Herb*	*Shady places*	*Rare*	-------
24	*Dicotyledon*	*Amaranthaceae*	Amaranthus viridis	*Ranzaqa*	*T*	*Mic*	*Herb*	*Cultivated field side*	*common*	*Fd*
25			Achyranthus aspera L.	*Kurashkay*	*T*	*Mes*	*Herb*	*Cultivated field side*	*common*	*Fd*
26			Digera muricata	*Sur golai*	*T*	*Mic*	*Herb*	*Cultivated field side*	*common*	*Fd*
27		*Anacardiaceae*	*Pistacia integerrima J.L.Stewart ex* Brandis	*Sroon*	*Ch*	*Mic*	*Tree*	*Hill side*	*Rare*	*FW*
28		*Apocynaceae*	*Caralluma edulisEdgew.*	*Pawana*	*T*	*Le*	*Herb*	*Hill side*	*Rare*	*Fd*
29			*Cynanchum auriculatum*	*Lewanai perwata*	*T*	*Mic*	*Herbaceous Climber*	*On trees*	*Rare*	*P*
30		*Asclepiadiaceae*	*Calotropis procera (wild) R.Br.*	*Spelmakai*	*Ch*	*Mes*	*shrub*	*Open field*	*common*	*FW*

31		Asteraceae	Launea procumbens (Roxb.) Amin	Tarezsha	T	Mes	herb	Hill side	common	Fd
32			Calendula arvensis L.	Zairh gwall	T	Mic	herb	Open places	common	Fd
33			Carthamus oxycantha M.B.	Azghi boota	T	Mic	herb	Open places	common	FW
34			Conyza canadensis L.	Harhsaasi	T	Le	herb	Open fields	v. common	FW
35			Cichorium intybus L.	boota	Mēs	Mes	herb	Cultivated field side	common	Fd
36			Sonchus asper L.	Kandiari	T	Na	herb	Cultivated field side	v. common	Fd
37			Taraxacum officinale Weber.	Zairh gullai	T	Mic	herb	Cultivated Field side/open fields	v. common	HN/Md
38			Xanthium strumarium L.		Ch	Mes	herb	Open fields	common	Fd
39		Berberidaceae	Berberis lyceum	Zerh larga	Np	Mic	Small Tree	Hill side	common	Md/RT
40		Brassicaceae	Brassica compestris L.	Wree, sharhsham	T	Mes	Herb	Cultivated field side	v. common	Fd
41			Capsella bursa-pestoris medic	Akhso bota	T	Mic	Herb	Cultivated field side	common	Fd
42			Lepidium sativumL.	boota	T	Mic	Herb	Cultivated field side	common	Fd
43		Bignoniacea	Tecomella undolata	Raddoon	T	Mic	Tree	hill Side	Rare	RT
44		Boraginaceae	Onosma hipida	bota	NP	Na	Herb	Open fields	common	Fd
45		Buxusaceae	Buxus papilosa	shamshood	NP	Mic	Tree	Hill Iside	common	Md
46		Canabanaceae	Cannabis sativa L.	bhaang	T	Mic	Herb	open fields	common	Md/FW
47		Caryophyllaceae	Stellaria media (L.) Cry.	wakha	T	Na	Herb	Cultivatd field side	common	Fd
48			Silene conoidea	bota	T	Mic	Herb	Cultivated field side	common	Fd
49		Celesteraceae	Gymnosporia royleana(Wall.)Lawson.	soorAghza	NP	Mic	Shrub	Hill Side	common	
50		Chenopodiaceae	Chenopodium album L.	Harh sooba	T	Mic	Herb	Open fields	common	Fd
51			Chenopodium murale L.	Toorasaray	T	Le	Herb	Cultivated fieldside	common	fd
52			Arva javanica (Burm. f.) Juss. ex Schultes	sperai	T	Na	Herb	Open places	common	Fd
53		Convolvulaceae	Convolvululus arvensis	perwata	T	Mic	Herb	Cultivated field side	common	Fd
54		Cuscutaceae	Cuscuta reflexa Roxb.	chambarh	Par	Le	Parasitic climber	Epiphyte	common	Md
55		Cucurbitaceae	Citrullus colocynthis	Tharkha maran	T	Le	Herb	Open fields	common	Md
56			Luffa cylindrica (L.) Roem.	thoray	T	Mac	Herb	Open field	common	Fd
57		Euphorbiacea	Riccinis communis L.	arand	Np	Mac	Tree	Open field	Rare	Md/FW
58			Euphorbia helioscopia Mewski	bota	T	Na	Herb	Open places	common	FW
59			Euphorbia prostrata L.	bota	H	Le	Herb	Open places	common	FW
60			Euphorbia hirta	bota	H	Le	Herb	Open places	common	FW
61		Fumariaceae	Fumaria indica (Hsskn) H.N.	bota	T	Le	Herb	Cultivated field side	common	Fd
62		Lamiaceae	Ajuga parviflora Benth.		T	Mic	Herb	Hill side/field side	common	Md
63			Leucas aspera	bota	T	Na	Herb	Under trees	v .common	Hn
64			Otostegia limbata Bth.	Boota	Np	Mic	Shrub	hillside	v. common	Md/FW

65			Salvia aegyptiaca	bota	H	Mic	Herb	Open places	common	Fd
66			Ocimum basilicum L.	boobrai	Ch	Mic	herb	Cultivated field sides	Rare	Md
67			Salvia argenta	Drashaal	T	Mac	herb	Openplaces	common	Fd
68			Isodon roguses (Wall. ex D. Don)	Boi bota	Ch	Mic	herb	Hill side	v. common	HN
69		Malvaceae	Malva officinalis	shastari	T	Mic	Herb	Cultivated field side	common	Fd
70			Malva neglecta Waller.	tiklay	T	Mic	Herb	Cultivated field side	common	Fd
71			Malvastrum coromandelianum(L) Grub.	boti	H	Mic	Herb	Cultivated field side	common	Fd
72		Meliaceae	Melia azedarach L.	bakarhan	Mp	Mic	Tree	Open places	common	FW
73		Menispermaceae	Cocculus pendulus	Kamar perwata	Np	Mic	Shrubby Climber	On rocky cliffs	common	FW
74		Mimosaceae	Acacia modesta Wall.	Paloosa, wanna	Mp	Le	Tree	hillside	v. common	HN/FW
75			Acacia nilotica (L.) Delile.		Mp	Le	Tree	Open places	common	HN/Fd
76		Moraceae	Morus nigra	Toor toot	Mp	Mes	Tree	Open places	common	Fd/Md
77			M. alba	Speen toot	Mp	Mes	Tree	Open places	common	Fd/Md
78			Ficus palmata	Inzar	P	Mes	Tree	Hillside	common	Fd/Md
79		Nyctaginaceae	Boerhaavia diffusa L.	bota	H	Mic	Herb	Open places	common	FW
80		Papilionaceae	Astragallus oblongifolia	Gull bota	T	Le	Shrub	Hillside	common	HN
81			Lathyrus aphaca L.	Zanglimatar	T	Mic	Shrub	Cultivated field side	common	Fd
82			Medicago minima (L.) Grub.	Sooba	T	Na	Herb	Cultivated field side	common	Fd
83			Medicago denticolata L.	shpathlaray	T	Na	Herb	Cultivated field side	common	Fd
84			Vicia sativa L.	boota	T	Na	Herb	Cultivated field side	common	Fd
85			Sophora millis subsp. griffthii	Gajarail	NP	Le	Huge Shrub	Hill side	common	FW
86		Primulaceae	Anagalis arvensis	Gul boti	T	Le	Herb	Cultivated field side	common	Fd
87		Oleaceae	Olea ferruginea	Shoona,Zaitoon	P	Mic	Tree	Hillside	v. common	Md/FW
88		Oxaliceae	Oxalis corniculata	Tarwaka	G	Mic	Herb	Cultivated field side	common	HN
89		polygonaceae	Rumex hastatus	Leewanai sooba	T	Mic	Herb	Cultivated field side	common	Fd
90			Polygonum aviculare	bota	T	Mic	Herb	Open places	common	Fd
91		Portulacaceae	Portulaca olearaceae L.	waarkhorha	H	Na	Herb	Cultivated field side	common	Fd
92		Punicac eae	Punica granatum L.	Anar	P	Na	Shrub	Hill side	common	Md
93		Ranunculaceae	Clematis montana	Perwata	Np	Mic	Weedy climber	On tree	Rare	FW
94		Rosaceae	Cotoneaster nummularia Fish & Mey.	Mamorha	Np	Mic	Shrub	Hill side	common	Fd
95		Rhemnaceae	Ziziphus numularia	Karkarhana	Np	Mic	Shrub	Hillside	common	HN/Fd
96			Z. mouritiana	Bera	mp	Mic	Tree	Hillside	common	HN/Fd
97		Rubiaceae	Gallium aparine L.	Shin boota	T	Le	herb	Cultivated field side	Rare	Fd
98		Sapindaceae	Dodonaea viscosa	Zerha wanny,Sanatha	Np	Mic	shrub	Hill side	Dominant	FW

99		Sapotaceae	Monotheca buxifolia	Gurgura	P	Mic	Shrub/ Tree	Hillside	V. common	Fd
100		Salicaceae	Salix alba	Waley	P	Mic	Tree	Along stream	rare	FW
101		Scrophulariaae	Verbascum thapsus L.	Drashal	T	Mes	Herb	Hillside	rare	FW
102		Solanaceae	Solanum surratense Burm.f	Marghonaiy	T	Mic	Herb	Open places	common	HN
103			Datura innoxia Mill.	Barbaka	Ch	Mes	Shrub	Open places	common	Poisonous
104			Solanum nigrum L.	Kachmacho	T	Mic	Herb	Shady places	common	Fd
105			Withania somnifera (L.) Dunal.	Payshanga	Ch	Mes	Herb	Open places	common	Md
106			Withania cogulanse	Shapyaanga	Ch	Mic	shrub	Open places	v. common	Md
107		Tiliaceae	Grewia oppositifolia	Pastawana	NP	Mes	Shrub	Open places	common	FW
108		Verbenaceae	Vitex negundo L	Varmandi	NP	Mic	Shrub	Along stream	v. common	FW
109		Zygophyllaceae	Tribulus terrestris L.	Maarkondy	T	Mic	Herb	Open places	common	Fd

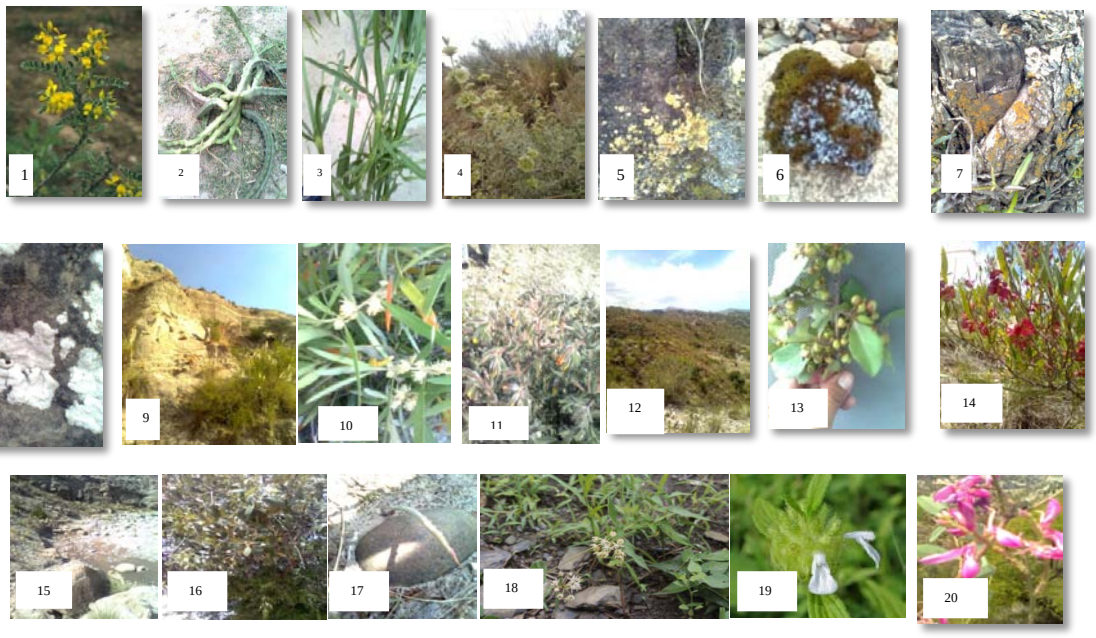
Table 2 : Summary of life form and leaf size classes and Economic uses of some plants of Olea-Sanatha forest Shamshooki, Karak.

Economic Uses	Perentage
Fodder	50.9%
Medicinal	16.36%
Fuel wood	22.72%
Roof Thaching	5.45%
Honey bee Nector	9.09%
Poisonous plants	0.90%

Life Form Classes	Percentage
Therophytes (T)	47 %
Chamaephytes (Ch)	12.7 %
Hemicryptophytes (H)	12.7 %
Geophytes (G)	6.36 %
Parasite (Par)	0.9 %
Phanarophytes(Ph)	5.45%
Nanophanerophytes(NP)	12.7%
Mega-Phanerophytes (MP)	4.54 %
Microphanerophytes (mp)	0.90%
Phytoplankton (Phpk)	0.9%

Leaf Size Classes	Percentage
Nanophylls (Na)	14.54 %
Leptophylls (L)	14.54 %
Microphylls (Mic)	52.7 %
Mesophylls (Mes)	11 .81 %
Megaphylls (Mac)	2.7 %

PLATES



1. *Sophora millis,*
2. *Caralluma edulis,*
3. *Polygonatum verticillatum,*
4. *Otostegia lambata,*
5/6/7/8. *Colorful Crustose lichens*
9. *Sedimentary Rocks*
10. *Buxus papilosa*
11. *Onosma hispida*
12. *Area showing Vegetation*
13. *Mytenus roylena*
14. *Dodonaea viscose*
15. *Algea,*
16. *Olea ferruginea*
17. *Unidentified Liliacea Plant*
18. *Cynanchum auriculatum*
19. *Leucas aspera*
20. *Astragalis oblongifolia*

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