INNSPUB

International Journal of Biosciences | IJB |
ISSN: 2220-6655 (Print), 2222-5234 (Online)
http://www.innspub.net
Vol. 15, No. 6, p. 107-114, 2019

RESEARCH PAPER OPEN ACCESS

Floral diversity of yasin valley Gilgit-baltistan Pakistan

Allah Nawaz Khan[1*], Shazia Iqbal[2], Muhammad Asif Akram[1], Muhammad Sufyan[3], Tahir Irfan[1], Abdul Basit[1]

[1]*Department of Botany, Agriculture University Faisalabad, Pakistan*

[2]*Department of Botany GCU- Faisalabad, Pakistan*

[3]*College of Life Sciences China Agriculture University Beijing, China*

Key words: Floral diversity, Yasin Valley, Northern areas, Mountains, Lakes.

http://dx.doi.org/10.12692/ijb/15.6.107-114 Article published on December 18, 2019

Abstract

Present study work was conducted to analyze and investigate the current status of floral diversity in the unique part of the land known as yasin Valley located in Gilgit baltistan Pakistan. Area is famous due to its famous lakes, streams, ponds and high peak mountains. Unique geography and beautiful mountains ranges of Hindu-kush himalayas and Karakorum has different altitudes at different points. Extensive study surveyed were conducted during March 2018 to September 2019 and sample of 59 plant species belong to different families from high peaks mountains and lower valley were gathered, dried pressed for herbarium record in university agriculture Faisalabad. Floral diversity of Herbs 63%, shrubs 13% and 24% of trees were recorded.

* **Corresponding Author:** Allah nawaz khan ✉ nawazniazi409@yahoo.com

Introduction

Many study survey has been conducted in the past for the exploration of floral diversity in northern areas of Pakistan (Champion *et al.*, 1965). Forest and other vegetation zones in northern areas of Pakistan on the basis of altitude soil and temperature were classified by (Beg 1975).

Multivariate analysis of vegetation pattern and floral diversty shows huge potential in the northern areas of Pakistan (Moinuddin A. 1986).

Topography of mountains has old history and they are rich source of floral diversity. Glaciation is also main factor for producing rugged topography. (Ahmed & Qadir, 1976).

Knowledge about floristic composition of an area is important for phto-geographical studies (Jafari & Akhani, 2008). Some part of Karakorum Mountains is situated in Gilgit-Baltistan region of Pakistan. (Ali, 2008).

Unique geography and beautiful mountains ranges of Hindu-kush Himalayas and Karakorum has different altitudes at different points about 0 to 8611m along with this variety of climatic zones and that's why these mountainous ranges are enriched with variety of floral diversity.

Approximately higher plant species in Pakistan are 6,000 (Ali and Qaisar 1986). Due to diverse topography and climatic condition at different peaks, very unique kind of floral diversity exist in these areas (Abbas *et al.*, 2014).

Gilgit-Baltistan in northern areas of Pakistan is known as hub of medicinal, economical and aromatic plant species (Shinwari, 2010). Northern areas of Pakistan are spread in different elevation and floral diversity is different at different levels along with this local communities in the area mostly depend upon natural resources. (Noor *et al.*, 2014) Population of Gilgit baltistan is about 2 million while growth rate is 2.47% and 1% area is used for agriculture purposes while 99% is covered by rivers, lakes, forest, rangelands, mountains and glaciers.

The population of Gilgit-Baltistan is about 02 million with growth rate of 2.47% and hardly 1% of area is used for agriculture while the rest 99% is covered by mountains, rivers rangelands, glaciers and forest (IUCN, 2001).

Vegetation on the basis of elevation varies (Grytnes, 2003). Floral diversity depends upon environmental conditions and both change rapidly on mountainous ranges (Friend *et al.*, 1989).

Yasin valley is high mountain valley in the Hindu-Kush Mountains, in the northwest Ghizer District in the territory of Gilgit-Baltistan Pakistan. Yasin Valley is beautiful place approximately 148 km from city of Gilgit. Primary languages of Yasin Valley are khowar, Burushaki and urdu.

Aims and objective of the study were to explore the current status of floral diversity in yasin valley Gilgit-Baltistan located in northern areas of Pakistan which was previously not fully explored. Secondly To find out vegetation pattern of floral diversity on high altitude and lower valley.

Material method

Gilgit-Baltistan is very beautiful area in Pakistan that is famous due to snow covered mountains, dense forests, attractive lakes and pastures. Gilgit City is major tourist destination in northern areas of Pakistan,

These northern regions located at 72° 75° eastern in longitude and 35° 37° north latitude. Three of the world's longest glaciers outside the Polar Regions are found in Gilgit-Baltistan.

Yasin valley is high mountain valley in the Hindu-Kush Mountains, in the northwest Ghizer District in the territory of Gilgit-Baltistan Pakistan. Yasin Valley is beautiful place approximately 148 km from city of Gilgit.

Fig. 1. Map of Gilgit-Baltistan.

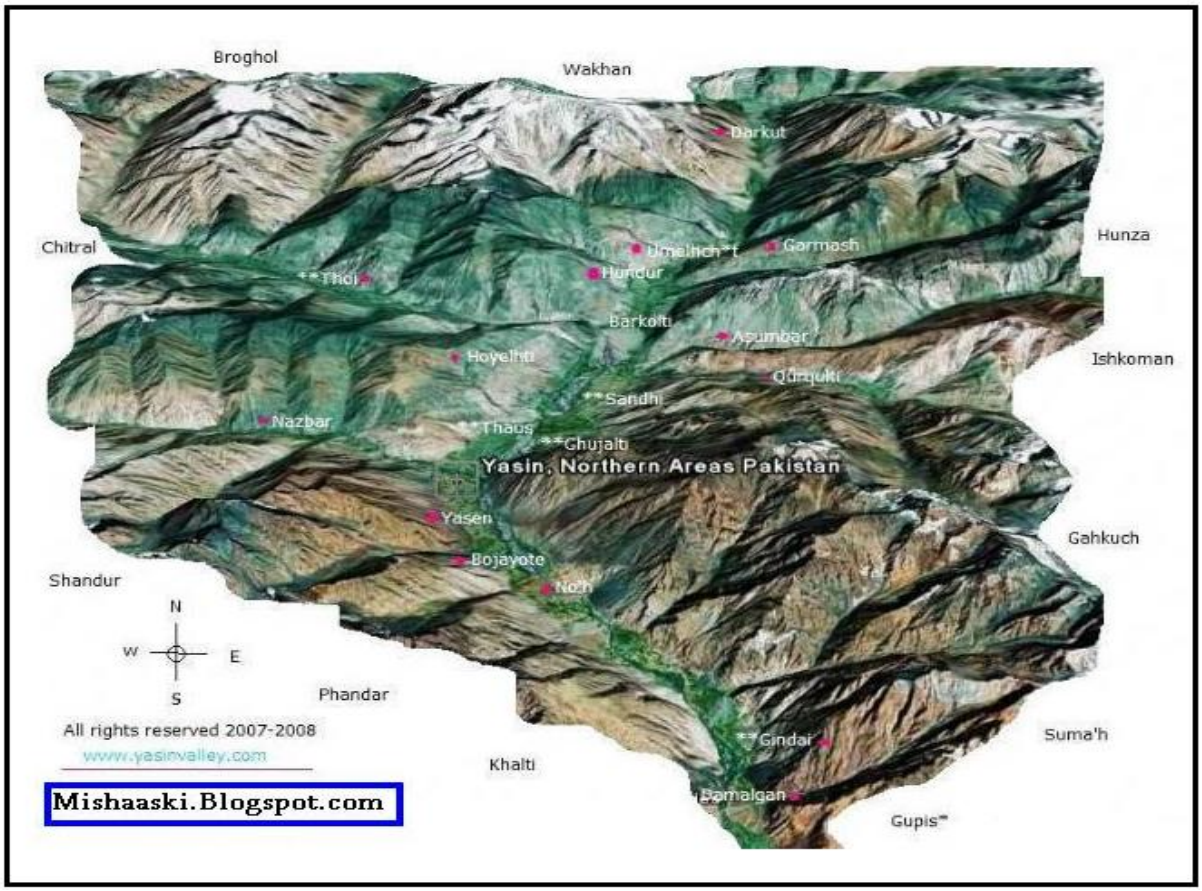

Fig. 2. Map of study area Yasin Valley northern areas Pakistan.

First of all extensive study surveyed were arranged during March 2018 to September 2019, after many months hard work and team collective participation sample of plant species from different sites like lakes, streams, lower valley and high peaks mountains were collected hard pressed-dried and dried specimens were labeled along with their voucher number.

Later mounted over herbarium sheet to maintain the record in university agriculture Faisalabad. For correct indentification and their naming of specimens aid was taken from (Flora of Pakistan) (Nasir and Ali, 1970-2003). Identified plant specimens were arranged and documented for future presentation to the entire world. Photographs of the original habitat of yasin valley Gilgit-Baltistan in northern areas of Pakistan were taken with good quality camera.

Results

Floral diversity was found to be different from ground to high elevation peaks of mountains as shown in fig 1, 2 and 3.

Table 1. Floral diversity of Herbs recorded.

Sr.no	Scientific name	Family	Habit
1	*Allium cepa*	Alliaceae	Herb
2	*Allium sativum*	Alliaceae	Herb
3	*Saussurea simpsoniana*	Asteraceae	Herb
4	*Carthamus tinctorius*	Asteraceae	Herb
5	*Artemisia maritiama*	Asteriaceae	Herb
6	*Artemisia absinthium*	Asteraceae	Herb
7	*Datura stromonium*	Asteraceae	Herb
8	*Lactuca sativa*	Asteraceae	Herb
9	*Cichorium intybus*	Asteraceae	Herb
10	*Myosotis alpestris*	Boraginaceae	Herb
11	*Heliotropium dasycarpum*	Boraginaceae	Herb
12	*Cannabis sativa L*	Cannabaceae	Herb
13	*Chenopodium foliosum*	Chenopodiaceae	Herb
14	*Cucurbita maxima*	Cucurbitaceae	Herb
15	*Cucmis sativus*	Cucurbitaceae	Herb
16	*Capparis spinosa*	Capparidaceae	Herb
17	*Euphorbia cornigera*	Euphorbiaceae	Herb
18	*Ephedra intermedia*	Ephedraceae	Herb
19	*Geranium pretense*	Geraniaceae	Herb
20	*Thymus linearis*	Labiatae	Herb
21	*Mentha royleana*	Labiatae	Herb
22	*Mentha arvensis*	Labiatae	Herb
23	*Isodon rugosus*	Labiatae	Herb
24	*Salvia nubicola*	Labiatae	Herb
25	*Abelmoschus esculentus*	Labiatae	Herb
26	*Plantago major*	Plantaginaceae	Herb
27	*Bistorta affinis*	Polygonaceae	Herb
28	*Rumex nepalensis*	Polygonaceae	Herb
29	*Primula macrophyla*	Primulaceae	Herb
30	*Delphinium brononianum*	Ranunculaceae	Herb
31	*Bergenia stracheyti*	Saxifragaceae	Herb
32	*Verbscum thapsis*	Scrophulariaceae	Herb
33	*Solanum nigrum*	Solanaceae	Herb
34	*Ferula anthrax*	Umbelliferae	Herb
35	*Carum carvi*	Umbelliferae	Herb
36	*Pleurospermum candollei*	Umbelliferae	Herb
37	*Urtica dioca*	Urticaceae	Herb

Area was found to be enriched with floral diversity; many attractive lakes in the area were habitat of many plant species. Herbs plants were dominating in the area as shown in Table 1 in which Asteracae family was dominant with large number of plant species as shown in fig 4. Tree species after herbs were dominating as shown in Table 3 in which Moraceae and Pinaceae Families were dominating as shown in fig 6. While shrub plants were recorded less in number as shown in Table 2 and fig 5.

Table 2. Floral diversity of Shrubs recorded.

Sr. no	Scientific name	Family	Habit
1	*Berberis orthobotrys*	Berberidaceae	Shrub
2	*Onosma hispida*	Boraginaceae	Shrub
3	*Juniperus communis*	Cupressaceae	Shrub
4	*Rhododendron anthopogon*	Ericaceae	Shrub
5	*Ribes alpestre*	Grossulariaceae	Shrub
6	*Spiraea canesens*	Rosaceae	Shrub
7	*Haplophyllum gilesii*	Rutaceae	Shrub
8	*Daphne mucronata*	Thymelaeaceae	Shrub

Table 3. Floral diversity of Trees recorded.

Sr. no	Scientific name	Family	Habit
1	*Pistacia khinjuk*	Anacardiaceae	Tree
2	*Juniperus excelsa*	Cupressaceae	Tree
3	*Elaeagnus angustifoli*	Elaeagnaceae	Tree
4	*Juglan nigria*	Juglandaceae	Tree
5	*Morus nigra*	Moraceae	Tree
6	*Morus alba*	Moraceae	Tree
7	*Ficus carica*	Moraceae	Tree
8	*Picea smithiana*	Pinaceae	Tree
9	*Pinus wallichiana*	Pinaceae	Tree
10	*Punica granatum*	Punicaceae	Tree
11	*Prunus armeniaca*	Rosaceae	Tree
12	*Prunas amygdalus*	Rosaceae	Tree
13	*Salix denticulate*	Salicaceae	Tree
14	*Vitis vinifera*	Vitaceae	Tree

Discussion

In present research work that was conducted to explore floral diversity of yasin valley Gilgit-Baltistan located in northern areas of Pakistan it was noted that valley was enriched with floral diversity due to its unique kind of geographical position, many beautiful lakes, streams and high peak mountain were important habitat for flora and fauna diversity.

Fig. 3. Habitat of Yasin Valley.

Saussurea simpsonian, Carthamus tinctorius, Artemisia maritiama, Artemisia absinthium, Datura stromonium, Lactuca sativa, Cichorium intybus, Myosotis alpestris, Heliotropium dasycarpum Herb species were dominating in the area with maximum number of plant species while Tree plants *Pinus wallichiana, Picea smithiana, Morus nigra, Morus alba, Ficus carica* were doiminating only in some sites of the area. Shrubs were recorded less in number. Overgrazing, overexploitation and deforestation were the limiting factors for plant species in result habitat was degrading.

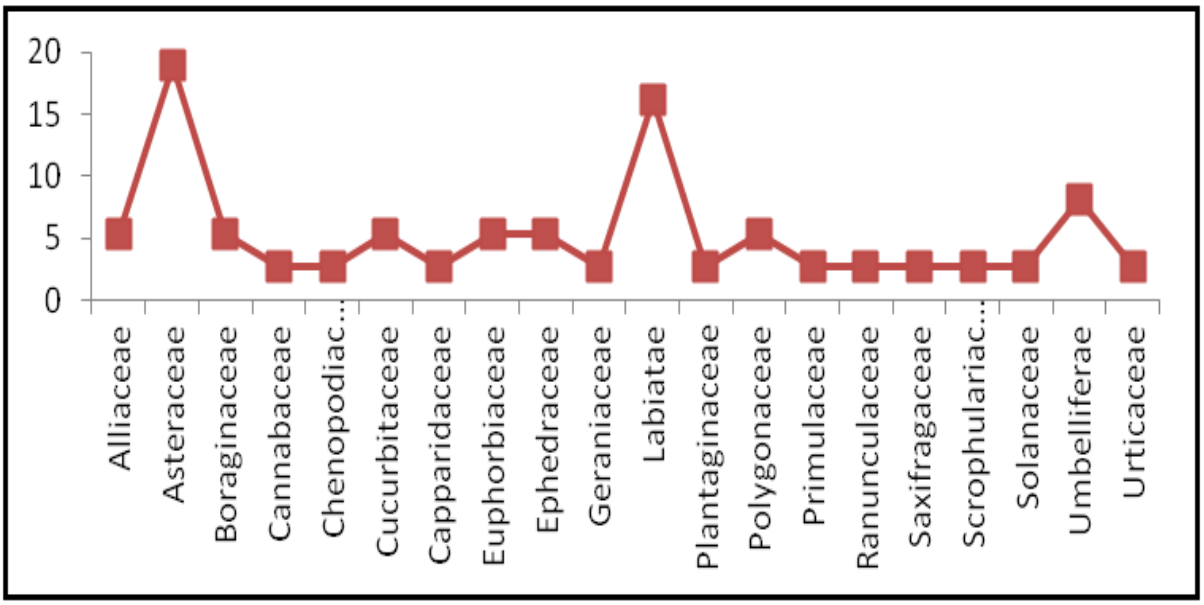

Fig. 4. Perecentage % of Plant families of Herb in Yasin Valley.

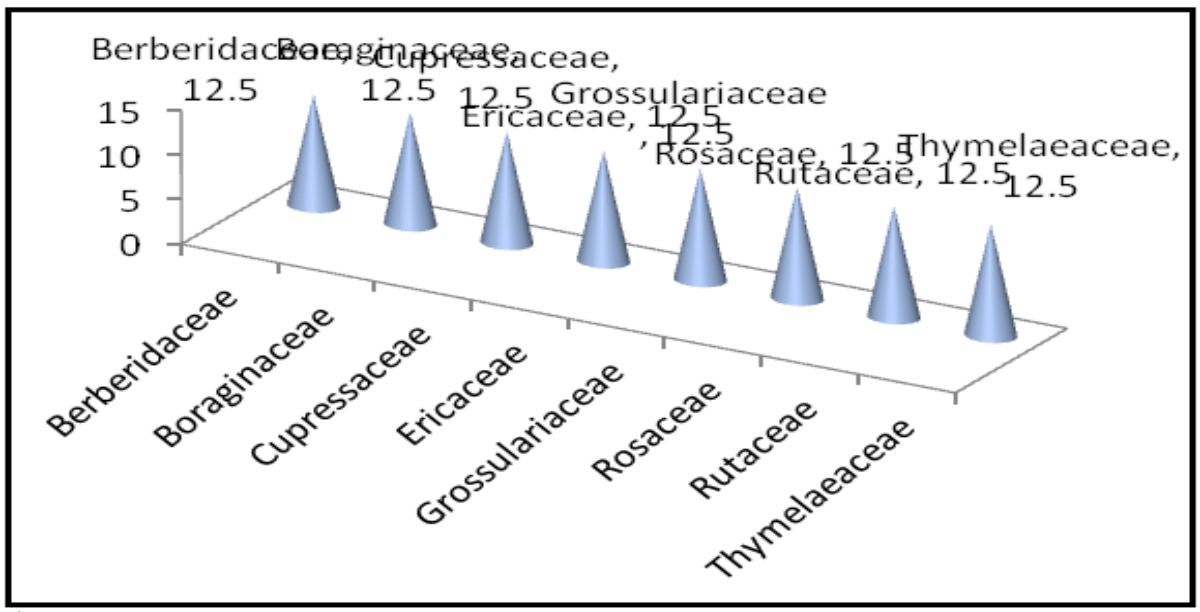

Fig. 5. Perecentage % of Plant families of shrubs in Yasin Valley.

In earlier studies it was noted that Mountainous ranges Gilgit-Baltistan in northern areas of Pakistan is known as hub of medicinal, economical and aromatic plant species (Shinwari, 2010) Northern areas of Pakistan are spread in different elevation and floral diversity is different at different levels along with this local communities in the area mostly depend upon natural resources. (Noor *et al.*, 2014) Population of Gilgit baltistan is about 2 million while growth rate is 2.47% and 1% area is used for

agriculture purposes while 99% is covered by rivers, lakes, forest, rangelands, mountains and glaciers. Overgrazing, deforestation are the main factors in the area that are degrading natural resources.

From above discussion it can be easily concluded that yasin valley is enriched with floral diversity, floral diversity is different at different sites of the Valley. Climatic condition in the Valley differs seasonally and they have a large impact on floral diversity. Streams, lakes, mountains have different kind of floral diversity. Attractive topography of the area attracts many visitors and study researchers to investigate about biodiversity of the very beautiful part of the land known as yasin valley.

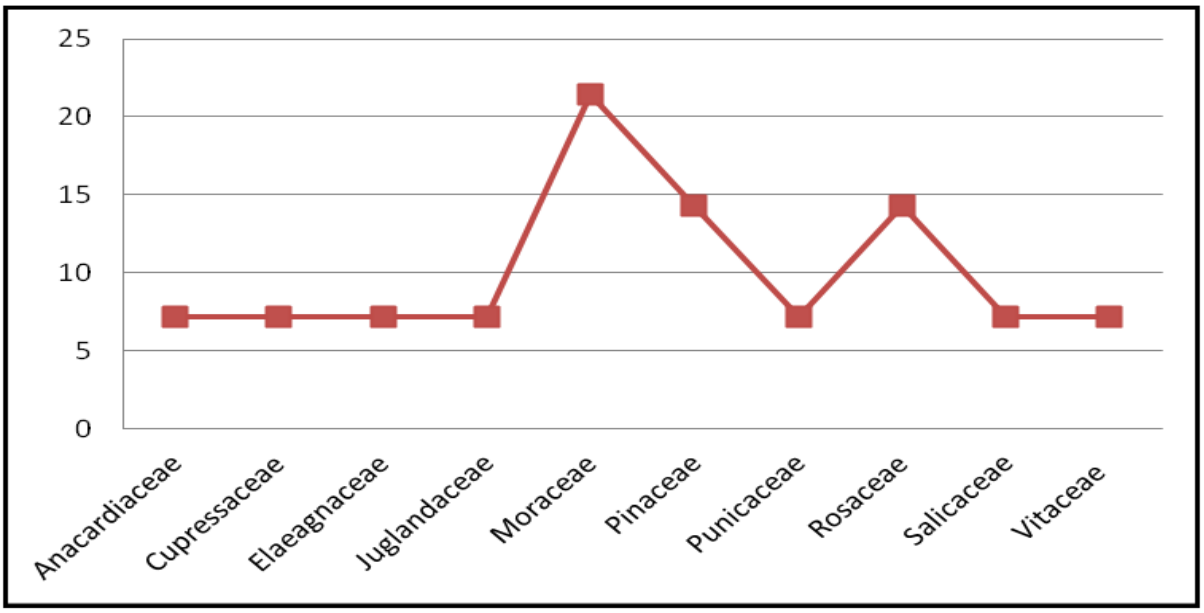

Fig. 6. Perecentage % of Plant families of Tree in Yasin Valley.

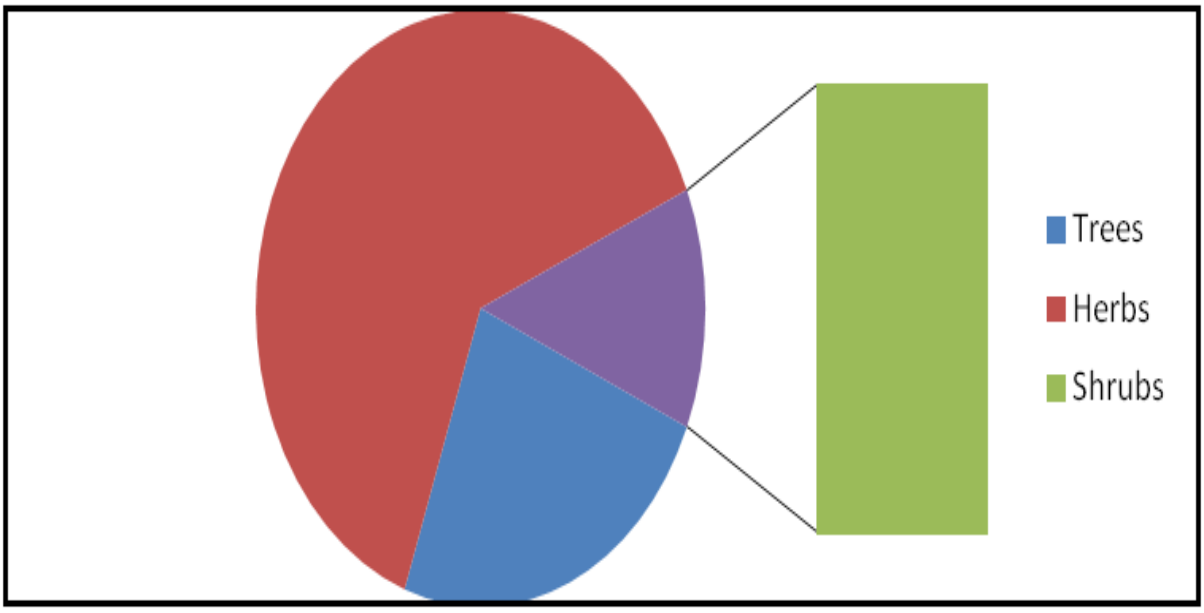

Fig. 7. Recorded floral diversity % of Herbs 63%, shrubs 13% and 24% of trees.

Overgrazing, overexploitation and deforestation are degrading our natural resources. Highly conservative rules are requested to be implemented from Government and policy makers of Biodiversity conservation.

References

Abbas Q, Khan SW, Khatoon S, Hussain SA, Hassan SN, Hussain A, Hussain I. 2014. Floristic biodiversity and traditional uses of medicinal plants of Haramosh valley Central Karakoram National Park of Gilgit district, Gilgit-Baltistan Pakistan. Journal of Biodiversity and environmental sciences **5,** 75-86.

Ahmed M, Qadir SA. 1976. Phytosociological studies along the way of Gilgit to Gopies, Yasin and Shunder. Pakistan Journal of Forrestory **26,** 93-104.

Ali SI, Qaiser M. 1986. A phytogeographical analysis of the phanerogams of Pakistan and Kashmir. Proceedings of the Royal Society of Edinburgh, Section B: Biological Sciences **89,** 89-101.

Ali S. 2008. Significance of Flora with special reference to Pakistan. Pakistan journal of botany **40 (3),** 967-971.

Beg AR. 1975. Wildlife Habitats of Pakistan. Pakistan Forest Institute, Preshawar. Bulletin, p 1-56.

Champion SH, Seth SK, Khattak GM. 1965. Forest types of Pakistan. Forest types of Pakistan p 233.

Friend AD, Woodward FI, Switsur VR. 1989. Field measurements of photosynthesis, stomatal conductance, leaf nitrogen and δ 13 C along altitudinal gradients in Scotland. Functional Ecology **3(1),** p 117-122.

Grytnes JA. 2003. Species-richness patterns of vascular plants along seven altitudinal transects in Norway. Ecography **26(3),** 291-300.

IUCN. International Union for Conservation of Nature, 2001. Species Survival Commission, International Union for Conservation of Nature, & Natural Resources. Species Survival Commission. IUCN Red List categories and criteria. IUCN.

Jafari SM, Akhani H. 2008. Plants of jahan nama protected area, Golestan province, N. Iran. Pakistan Journal of Botany **40(4),** 1533-1554.

Moinuddin A. 1986. Vegetation of some foothills of Himalayan range in Pakistan. Pakistan Journal of Botany **18(2),** 261-269.

Nasir E, Ali SI. 1970-2003. Flora of Pakistan (fasicles series 1-202 Department of Botany, University of Karachi, Pakistan.

Noor A, Khatoon S, Ahmed M, Razaq A. 2014. Ethnobotanical study on some useful shrubs of Astore valley, Gilgit-Baltistan Pakistan. Bangladesh Journal of Botany **43(1),** 19-25.

Rasool G. 1998. Medicinal Plants of the Northern Areas of Pakistan: Saving the plants that save us.

Shinwari ZK. 2010. Medicinal plants research in Pakistan. Journal of medicinal plants.