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NEW SPECIES AND NEW RECORDS FOR THE FLORA OF GILGIT- BALTISTAN, PAKISTAN

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ABSTRACT

A thorough inventorying of the plant biodiversity of the Haramosh and Bugrote valleys of Gilgit-Baltistan during the years 2001-2007 revealed four species new to science, while five genera and seven species as new records for Gilgit-Baltistan, while another five species as new records for the district Gilgit. Notable are the records of Saharo-Sindian elements like *Periploca aphylla* Decne. and *Withania coagulans* (Stocks) Dunal from these high altitude localities, indicating.

Key-words: New species, new records, Flora of Gilgit-Baltistan, Pakistan.

INTRODUCTION

Although most parts of Pakistan have been visited by different plant collectors from the British era to the recent times, but no area has yet been studied exhaustively. That is, the plant exploration had been extensive rather than intensive. Gilgit is among the areas mentioned by Stewart (1972) as little known floristically. The Haramosh and Bugrote valleys lie in the northeastern side of the capital city Gilgit, between 35.50-36.50°N and 74.54°E covering an area of 2340 square Kilometers. Ethnobotanical details for these valleys have elaborately described by Khan and Khatoon (2007).

The study area lies at the confluence of three great mountainous ranges, i.e. the Karakorum, Hindukush, and Himalayas. This is why more than 50% of the study area is mountainous and 3500m above sea-level, replete with several high peaks and glaciers. These valleys had not been thoroughly explored by any one in the past. An intensive exploration was therefore expected to yield some interesting results.

MATERIALS AND METHODS

Thorough field surveys of the natural ecosystems and agroecosystems of both valleys were made in the years 2001-2007. Plant specimens were collected with detailed field information including habit, habitat, altitude, and abundance. Representative plant species in their natural habitat were photographed. The collected specimens were identified with the help of Flora of Pakistan (Nasir and Ali, 1970-89; Ali and Nasir, 1989 - 1991; Ali and Qaiser, 1993 - 2009), Stewart (1972) and some other relevant Floras of the neighbouring areas. The specimens have been deposited in the Karachi University Herbarium (KUH).

RESULTS

The present study has revealed a rich plant biodiversity comprising 560 species in 258 genera belonging to 68 families. This includes the discovery of four species new to science, seven new specific records for the province of Gilgit-Baltistan and five new specific records for the district Gilgit. Besides this, the following five genera have been recorded for the first time from Gilgit-Baltistan: *Cistanche* Hoffmanns. & Link., *Caralluma* R.Br., *Periploca* L., *Withania* Pauquy and *Steptorrhamphus* Bunge. Any species of these genera had not been previously collected from Gilgit-Baltistan.

Species new to Science

1. *Cicerbita* sp. nov. (Compositae)

District Gilgit: Khatun-Rung, Khaltarow, Haramosh, 20.8.2004, *Sher Wali Khan* 666, 665 (KUH).

2. *Cistanche* sp. nov. (Orobanchaceae)

District Gilgit: Jalalabad, Bugrote, 20.5.2006, *Sher wali Khan* 811A and B (KUH).

The above mentioned specimens do not match with any known species in the Flora of Pakistan or any other Flora of the nearby areas, therefore considered as new species which would be described later.

The following two species have been described from the material collected in the present study

3. *Hieracium sherwalii* S. Abedin and Zamarrud in Pak.J.Bot. 40(1): 5 – 8-2008.
Holotype: District Gilgit: Haramosh, Khun Plataeu, Khaltarow, open meadow 3500 m, 30.7.2007, *Sher Wali Khan and Shabbir Hassan* 934 (KUH).
4. *Taraxacum qaiseri* S. Abedin in Pak.J.Bot.39 (5): 1417 – 1433-2007.
Holotype: District Gilgit: Taterkachi, Khaltarow, Haramosh, Common 3500 m. 2.8.2003, *Sher Wali Khan and Shabbir Hassan* 397 (KUH).

New records

The species collected for the first time from Gilgit-Baltistan are given in the Table-1, while the species collected for the first time from the district Gilgit are given in the Table-2.

Table 1. Species new to Gilgit-Baltistan.

S. No.	Species with Family	Present locality	Previously reported distribution in Pakistan
1.	*Silene staintonii* S. A. Ghazanfar **(**Caryophyllaceae)	Khun Plataeu, Khaltaarow, Haramosh	Chitral (Ghazanfar and Nasir, 1986)
2.	**Periploca aphylla* Decne. (Asclepiadaceae)	Bulahdas, Khaltarow, Haramosh	Kashmir,Chitral, Waziristan, N.W.F. Province, Punjab, Sindh and Balochistan (Ali,1983)
3.	**Caralluma tuberculata* N. E. Brown Asclepiadaceae)	Asmani-Mord, Haramosh, on way to Skardu	Sindh, Punjab, Balochistan and N.W.F. Province (Ali, 1983)
4.	*Aloitis smithii* Omer **(**Gentianaceae)	Khun Plataeu, Khaltaarow, Haramosh	Chitral (Omer, 1995)
5.	**Withania coagulans* (Stocks) Dunal (Solanaceae)	Brum-Douyn, Haramosh, on way to Skardu	Sindh, Balochistan, Punjab, Peshawar and Waziristan (Nasir, 1985)
6.	**Steptorrhamphus crambifolius* Bunge (Compositae)	Khaltarow, Haramosh	Balochistan and Chitral (Rechinger, 1977; Stewart, 1972)
7.	*Elymus dentatus* (Hook.f.) T.A.Cope (Poaceae)	Khun Plataeu, Khaltaarow, Haramosh	N.W.F. Province and Kashmir (Cope, 1982)

*A new record of the genus as well.

Table 2. Species new to the district Gilgit.

S. No.	Species with family	Present locality	Previously reported distribution in Pakistan
1.	*Aquilegia nivalis* Falc.ex Baker (Ranunculaceae)	Khaltarow, Haramosh	Kashmir, Hazara and Astore (Riedl and Nasir, 1991)
2.	*Ranunculus stewartii* H. Riedl (Ranunculaceae)	Khaltarow, Haramosh	Baltistan (Riedl and Nasir, 1991)
3.	*Sorbus gilgitana* McAll. (Rosaceae)	Khaltarow, Haramosh	Astore (McAll, 2005)
4.	*Primula inayatii* Duthie (Primulaceae)	Khaltarow, Haramosh	Hazara, Kashmir and Astore (Nasir, 1984)
5.	*Pseudomertensia moltkioides* var. *primuloides* (Royle ex. Benth.) Kazmi	Khaltarow, Haramosh	Kashmir, Hazara and Astore (Nasir, 1989)

DISCUSSION

The results of the present study reinforce the need for the intensive local inventories and monitoring to correctly assess our plant wealth and to understand the trends of change in plant biodiversity with the changing climatic patterns and anthropogenic activities.

Although the Flora of Pakistan is considered as an inventory of the vascular plants of whole Pakistan, but in fact it provides a base-line rather than a complete inventory. While the accounts of a few families are yet to be published, those published till now are actually based upon the material collected till 1970s and 1980s. According to Hedge (1991), any Flora cannot be definitive as new facts, information, and new records are always coming to light. This is exactly what we have found in this study. Not only species new to science have been discovered, but also about a dozen such species have been collected which were previously not reported from the study area. There are two possible reasons for this. Firstly as mentioned earlier the area had not been subjected to intensive study in the past; and secondly, the species continue to change their range of distribution (increase or decrease) with time in response to a multitude of factors. In the present time, one of the most important factors is the climate change due to global warming. The new records reported here include certain species that were previously reported from lower latitudes and lower altitudes; such as *Cistanche* sp., *Caralluma tuberculata* N. E. Brown, *Periploca aphylla* Decne. and *Withania coagulans* (Stocks) Dunal. The later two are typical Saharo-Sindian elements, previously reported only from lower latitude plains of Balochistan, Sindh, and Punjab.

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