



AFGHANISTAN II. FLORA

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ii. Flora

Ecological conditions. Meteorological records on Afghanistan have been available since the late 1950s. The findings of the meteorological centers have been applied in climatic studies, maps, and tables of precipitation (see bibliog.); and these have shown the importance of precipitation and altitude as conditioning factors for the diversity of Afghanistan's flora. Precipitation patterns define two main climate and vegetation zones. Ninety-five percent of Afghanistan's territory belongs to the "Mediterranean" zone; and the greater part of its flora pertains to the greater "Turkestan" and "Iran-Turan" regions (see Šafīq Yūnos 1353 Š./1974). A limited area—about five percent of the country, in the east and southeast—receives the impact of the Indian monsoons and belongs to the sub-tropical zone. Altitude, throughout both zones, may allow for the development of different strata of vegetation.

The importance of precipitation is evident. In the southwest, where altitude varies from 300 to 1,000 m above sea level, total annual precipitation does not exceed 100 mm. Hence the area (i.e., Rēgestān and the region south of the Helmand river) is desert. By contrast the northern plains at a similar altitude experience continental weather conditions and receive more than 200 mm of precipitation. The vegetation of this area is comparable to that of Central Asia and the Uralo-Caspian region. In Afghanistan's mountainous central regions, plains vegetation occurs between 1,200 and 2,400 m altitude, particularly in



Kabul province. Above 2,500 m, cool-climate vegetation is observed. In the higher altitudes, where little precipitation is received, only a few forms of Alpine flora occur.

Flora. Afghanistan experiences a real winter, and thus much of its small vegetation has an annual life. With the spring rainfall is observed the growth of terophytes (*Ranunculaceae*, *Brassicaceae*) and, more especially, geophytes, including such bulbs as *Muscari* (grape hyacinth, *ḡalāḡak*), *Eremurus* (desert candle, *sīč*, *serēš-e kāhī*), *Tulipa* (*lāla*), *Merendera* (*lālak-e gorg*), and *Gagea* (*zardpīāz*). This vegetation disappears with the coming of summer and the drying up of the plains. Only the xerophytes, which are generally thorny, resist the dry, warm weather of summer. Afghanistan's climate is suitable for halophyte vegetation, especially that of the families *Chenopodiaceae*, *Polygonaceae*, and *Compositae*. Afghanistan's flora (outside of the small subtropical area) belongs generally to the holarctic and floristic group termed "Irano-Turkestanian."

The following are the families of flora chiefly represented in Afghanistan, in order of numerical importance: Of the family of *Compositae*, more than 400 species are known, including about 100 species of *Artemisia* (*terk*, *kerm-botta*, *mast-yār*; *A. absinthium*: *darawna*, *afsantīn*). The *Cousinia* (*pašmak-kār*, *barḡaš*) and *Lactuca orientalis* Boiss. (oriental lettuce, *hūza*, *sandrān*, *sandrezd*) are also present in significant number. The family *Leguminosae* is attested with about 350 species. The genus *Alhagi* (camelthorn, *šotor-kār*) is most numerous; the gum-producing *Astragalus* (*loco*, milkvetch, *gīč-kār*, *bandī-botta*, *ḡirak*, *būya*, *anzarūt*) and *Glycyrrhiza glabra* L. (licorice, *šīrīnbūya*; a significant item in foreign trade) are also represented. In the *Cruciferae* family about 200 species are found, especially *Brassica* (cabbage, *owrī*; mustard, (*kardel*) and *Raphanus* (radish, *mollī*), which provide foodstuffs. In the *Gramineae* family are more than 150 species, including such important cultivated ones as wheat, rice, barley, maize, and sugar cane. Others include the genera *Agropyron* (wheatgrass, *kabal*, *čem*), *Poa* (bluegrass, *'alaf*), *Arundo* (giantreed, *ney*), *Cymbopogon* (lemongrass, *gūrgīāh*), and *Andropogon* (bluestem, *ezkar*). In the *Labiatae* family, more than 160 species are recorded from Afghanistan, e.g., *Perovskia* (*kengī*, *šin-šōbē*), *Stachys* (betony, *pādolā*), *Phlomis* (Jerusalem sage, *čalpo*), *Nepeta* (*bozbāš*), *Salvia* (*ganda-baḡal*, *kanowša*, *malangān*), *Hyssopus* (hyssop, *zūfā*), *Thymus* (thyme, *kākōtī*, *pūdīnaye kōhī*), *Ziziphora* (*kākōtī*), *Mentha* (mint, *na'nā'*, *pūdīna*), and *Origanum* (*marzanjūš*, *azūl*). The family *Umbelliferae* attests about 100 species; most



notable is *Ferula assafoetida* L. (*heng*, *alqōza*), an item of export to India. *Chenopodiaceae* halophytes are common, especially *Salsola* (Russian thistle, '*alaf-e šōra*'), *Arthrophytum* (*sīāhšōrak*, *ošlān*), *Halostachys*, and *Halocaris*. Besides the *Apiaceae*, other short-lived terophytes are found: over forty species of *Euphorbiaceae*, especially *Crozophora tinctoria* L. (*qaraborāq*), which furnishes dyes for the carpet industry; over seventy species of *Ranunculaceae*; about eighty

species of *Scrofulariaceae*; more than sixty species of *Boraginaceae*; *Rubiaceae*; *Plantaginaceae*; *Solanaceae*, especially such Hyoscyami as *H. muticus* L. (*bangdēvāna-ye kōhī*), *H. senecionis* Willd. (*bang-dāna ye kōhī*), *H. pusillus* L. (*bangak-e dēvāna*), and also *Datura* L. (*dātūrā*). The family *Zygophyllaceae* is represented mainly by *Zygophyllum fabago* Boiss. (Syrian bean-caper, *qīč*) and *Peganum harmala* L. (*espan*, *sarmal*). The *Ephedra* species attests the *Ephedraceae* (called *hōm* in Herat).

BIBLIOGRAPHY

The methodical study of Afghanistan's wild plants began with W. Griffith, *Itinerary Notes on Plants Collected in the Khasyah and Bootan Mountains 1837-38*, in *Afghanistan 1839, 1841*, Calcutta, 1848.

See also his *Journals of Travels*, Calcutta, 1847.

In the wake of the Second Anglo-Afghan War was published J. E. T. Aitchison, "On the Flora of Kuram Valley," *J. Linn. Soc. Bot.* 18, 1881, pp. 1-113; 19, 1882, pp. 139-200.

There followed a long gap until the major publications of the 1950s: Otto H. Volk, *Klima und Pflanzenverbreitung in Afghanistan*, Den Haag, 1954.

Karl-Heinz Rechinger, *Symbolae Afghanae* 1-5, in *Det kong. Danske videnskabernes Selskab Biologiske Skrifter* 8/1, 1954; 8/2, 1955; 9/3, 1957; 10/3, 1959; 13/4, 1963.

Idem, *Flora Iranica*, Graz, 1965.



The results of the Kyoto University Scientific Expedition, 1955, were published in *Acta Phylotaxonomica et Geobotanica* 16, 1956, pp. 131-42; 17, 1957, no. 1, pp. 14-16, no. 2, pp. 46-51; 1958, no. 3, pp. 73-75, no. 5, pp. 131-42; and in S. Kitamura, *Flora of Afghanistan, Results of the Kyoto University Scientific Expedition to the Karakorum and Hindukush*, 1955, Kyoto, 1960.

Idem, ed., *Additional Reports*, Kyoto, 1966.

On climatic and geographical factors, see: N. M. Hermann, *Le climat de l'Afghanistan*, Paris, 1965.

Hermann, J. Zillhardt, and P. Lalande, *Recueil de données des stations météorologiques de l'Afghanistan*, Kabul, 1971, and *Cartes climatiques de l'Afghanistan*, Kabul, 1974.

Ġ. J. 'Arež, "Geography of Afghanistan," *Kabul Times Annual*, Kabul, 1970.

Idem, "Eqlīm-e ḥayātī-ye Afġānestān," *Geographia* (Kabul University) 3, 1351 Š./1972.

M. Šafīq Yūnos, "Moṭāle'a-ye bīyū-žiyūġrāfi-e Māhīpar elā Jalālābād az negāh-e nabātāt," *Afġān ṭebbī maġalla* 19, 1353 Š./1974.