

***Chenopodium* (Chenopodiaceae) in Gilgit Agency, Northern Pakistan**

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Abstract Four species of the genus *Chenopodium* L. from Gilgit Agency, northern Pakistan, are reported with a key, a description, related literature, details of examined specimens and taxonomical notes for each species. The species are *Chenopodium album*, *C. botrys*, *C. foliosum*, and *C. opulifolium*.

Key words: Chenopodiaceae, *Chenopodium*, Pakistan.

In the course of a floristic study of the family Chenopodiaceae of Pakistan, the authors have obtained results which clarify the taxa of the *Chenopodium* in northern Pakistan. Part of these studies are described herein.

Gilgit Agency is situated in the northern part of Pakistan between longitudes 72°30' and 76°03' East and latitudes 35°50' and 37°05' North. It is surrounded by Afghanistan and China in the north, Skardu and Kashmir in the east, Kohistan and Kaghan in the south, and Chitral in the west. The altitude of the valley is 1,500 m with several high peaks.

The genus *Chenopodium* was established by C. Linnaeus in 1753. J. D. Hooker worked on the chenopods of the Indian subcontinent in 1886. The genus has been treated in some small floras by a few workers dealing mostly with species of the plain areas.

Materials and Methods

Specimens of *Chenopodium* L. collected from the study area and deposited in the Herbarium of Pakistan Museum of Natural History (PMNH) were identified. The literature cited for each species was restricted to the original description, critical works, and floristic works on adjacent regions and the Himalayas. Specimens in the Quaid-I-Azam University Herbarium, Islamabad (ISL), were also studied.

Results

***Chenopodium* L.**

Sp. Pl. 218. 1753; Gen. Pl. ed. 5. 103. 1754; Benth. & Hook. Gen. Pl. 3: 51. 1880; Hook. f., Fl. Brit. Ind. 5: 3. 1886; Kashyap & Joshi, Lahore Distr. Fl. 211. 1936; Brenan in Turrill & Milne-Redhead, Fl. Trop. E. Afr. Cheno. 2. 1954; in Tutin *et al.*, Fl. Europ. 1: 92. 1964; Aellen in Davis, Fl. Turk. 2: 300. 1966; Jafri & Rateeb in Jafri & El-gadi, Fl. Libya, 58: 1. 1978; Long in Grierson & Long, Fl. Bhutan 1 (2): 216. 1984; Polunin & Stainton, Flow. Himal. 340. 1985. (Lectotype: *Chenopodium rubrum* L.; vide, Britton & Brown, Ill. F. N. U. S. ed. 2. 2: 9. 1913).

Usually annual herbs, sometimes perennial; often farinose or pubescent, rarely glabrous. Leaves alternate, mostly petiolate, linear-oblong to broad, frequently lobed or dentate. Flowers in cymose clusters or glomerules arranged in spicate or paniced racemes, usually hermaphrodite, ebracteate. Perianth segments often 5, free or + united, usually green. Stamens mostly 5, basally connate. Ovary superior, globose, stigmas commonly 2. Fruit an utricle, with thin membranous pericarp, often included. Seed mostly horizontal, embryo annular, endosperm copious.

Contains about 125 species, mostly in the temperate regions of the world. Represented in Pakistan by about 10 species and 4 in the study area.

Key to the species

- 1a. Plants glandular-hairy; flowers in dichasial cymes, inflorescence often long and spikelike.....1. *Chenopodium botrys*
- 1b. Plants mealy or +glabrous, flowers in glomerules.....2
- 2a. Glomerules dense, globose; perianth becoming red and fleshy in fruit
.....2. *C. foliosum*
- 2b. Glomerules arranged in elongate inflorescences, perianth not becoming red and fleshy in fruit.....3
- 3a. Leaves usually much longer than broad, seeds smooth.....3. *C. album*
- 3b. Leaves usually slightly longer than broad, seeds minutely pitted
.....4. *C. opulifolium*

Enumeration

1. *Chenopodium botrys* L.

Sp. Pl. 219. 1753; Hook. f., *op. cit.* 5: 4. 1886; Bamber, Pl. Punj. 387. 1916; Brenan, *op. cit.* 93. 1954; Kitamura, F. & Fl. Nep. Himal. 121. 1955; Fl. Afghan. 99. 1960; Pl. West Pakistan & Afghan. 40. 1964; Aellen, *op. cit.* 2: 300. 1966; Stewart, Ann. Cat. Vasc. Pl. W. Pak. Kashm. 220. 1972; Jafri & Rateeb, *op. cit.* 58: 13. 1978; Hara *et al.* Enum. Flow. Pl. Nepal 3: 170. 1982; Dhar & Kachroo, Alpine Fl. Kashm. Himal. 166. 1983; Long, *op. cit.* 1(2): 218. 1984; Polunin & Stainton, *op. cit.* 340. 1985; Kaul, Weed Fl. Kashmir Vall. 247. 1986. Type: Described from Europe, Herb. Linn. 313/12 (LINN).

Chenopodium ilicifolium Griff., Ic. Pl. As. t. 521. 1854.

Glandular-hairy, aromatic herbs. Leaves ovate to oblong, 1–5 cm long, pinnatifid having 4–6 pairs of lobes, petiolate. Flowers in dichasial cymes, often in a long, terminal, leafless, spike-like inflorescence or few-flowered and axillary. Perianth segments acuminate, almost keelless. Stamens 1–4, stigmas 2, filiform. Seeds + smooth with obtuse margins, c. 6 mm in diam., blackish brown. Flowering period May to September. Common.

Specimens examined. Aliabad, 29 July 1987. S. Malik & M. Ashfaq 017209 (PMNH); Haiderabad, +8,000', 19 Oct. 1987. Q. Din 018528 (PMNH); Jageer Basin, 26 July 1986. Z. Khan

& M. Ashfaq 015188 (PMNH); Karimabad (Hunza), 31 July 1986. R. Awan, Q. Din, & Manzoor 015678 (PMNH); Nagar, 28 July 1987. S. Malik & M. Ashfaq 017168 (PMNH); Naltar, 4 Aug. 1986. M. Rashid, Q. Din, & Manzoor 016314 (PMNH); 10 miles from Naltar towards Gilgit, 10 July 1980. M. N. Chaudhri *et al.*, 118030 (ISL).

Distr. Mediterranean area, Central & East Europe, and Asia.

2. *Chenopodium foliosum* (Moench) Ashers.

Fl. Brandenb. 1: 572. 1863; Kitamura, *op. cit.* 112. 1955; *op. cit.* 99. 1960; *op. cit.* 41. 1964; Brenan in Tutuin *et al.*, *op. cit.* 1: 93. 1964; Aellen, *op. cit.* 2: 301. 1966; Stewart, *op. cit.* 221. 1972; Jafri & Reteeb, *op. cit.* 58: 11. 1978; Hara *et al.* *op. cit.* 3: 170. 1982; Dhar & Kachroo, *op. cit.* 166. 1983; Polunin & Stainton, *op. cit.* 340. 1985; Kaul, *op. cit.* 247. 1986.

Blitum virgatum L., Sp. Pl. 4. 1753.

Chenopodium virgatum (L.) Ambarosi, Fl. Tyrol. Austr. 2: 179. 1857, non Thunb. 1815.

Monocarpus foliosus Moench, Meth. Bot. 342. 1794.

Chenopodium blitum Hook. f., *op. cit.* 5: 5. 1886; Bamber, *op. cit.* 347. 1916.

Annual (or perennial) herbs, glabrescent, leafy, 20–50 cm tall. Stem reddish green, glaucous. Lower leaves triangular to hastate or rhomboid, 2–5 cm long; upper narrow and smaller. Flowers in axillary, dense, sessile, globose, glomerules. Perianth segments 3–5, green at first, becoming fleshy and red in fruit. Seeds reddish-brown, densely punctate-pitted, c. 1 mm in diam. Flowering period June to August.

Specimens examined. 30 km from Gilgit, 3 Aug. 1968. Z. Khan & Ashfaq 016099 (PMNH); Khunjab pass, +15,000', 6 Oct. 1987. Z. Khan *et al.* 018083 (PMNH); Naltar, 5 Aug. 1976. Shahazad *et al.* 30719 (ISL); Naltar, +8,000', 3 Aug. 1986. S. Malik *et al.* 016017 (PMNH).

Distr. Europe, North Africa, and West & Central Asia.

3. *Chenopodium album* L.

Sp. Pl. 219. 1753; Hook. f., *op. cit.* 5: 3. 1886; Bamber, *op. cit.* 364. 1916; Kashyap & Joshi, *op. cit.* 213. 1936; Brenan, *op. cit.* 6. 1954; *op. cit.* 1: 94. 1964; Kitamura, *op. cit.* 121. 1955;

op. cit. 99. 1960; *op. cit.* 40. 1964; Allen, *op. cit.* 2: 304. 1966; Stewart, *op. cit.* 220. 1972; Jafri & Rateed, *op. cit.* 58: 19. 1978; Hara *et al.* *op. cit.* 3: 170. 1982; Dhar & Kachroo, *op. cit.* 166. 1983; Long, *op. cit.* 1(2): 218. 1984; Polunin & Stainton, *op. cit.* 340. 1985; Kaul, *op. cit.* 246. 1986. Type: Described from Europe, Herb. Linn. 318/8 (LINN).

A meary annual, up to 1 m tall. Leaves variable, longer than broad, the lower ovate-rhombic or oblong with toothed or sinuate margins, upper narrow and $\pm$ entire. Flowers tiny, green, glomerules axillary and terminal, in $\pm$ elongate inflorescences. Perianth segments keeled, mealy enclosing the utricle, green, not becoming fleshy. Seeds rounded, compressed, c. 1 mm in diam., smooth. Flowering period May to August. Very common.

Specimens examined: Chalt village, 7,000', 22 Oct. 1987. M. Rashid *et al.* 018810 (PMNH); Chilas, +3,400', 25 July, 1986, Z. Khan *et al.* 015105 (PMNH); Gilgit area, 23 Oct. 1987. Z. Khan & Venturers 018920 (PMNH); Gulmit area of Hunza, +8,500', S. Malik *et al.* 015394 (PMNH); Kargah Nullah, 8 Aug. 1986. Z. Khan & M. Ashfaq 016383 (PMNH); Karimabad-Dramshal, 5 June 1977. M. A. Khan & M. Afzal 56873 (ISL); Khudabad, +9,000', 15 Oct. 1987. S. Malik *et al.* 018418 (PMNH); Khyber village, 9,000', 15 Oct. 1987. S. Malik *et al.* 018380 (PMNH); Nagar area, 28 July 1987. S. Malik & M. Ashfaq 017154 (PMNH); Naltar valley, 9,000', 23 Oct. 1987. Z. Khan *et al.* 021605 (PMNH).

Distr. Europe, Asia, North Africa, introduced in North America, and elsewhere. Cosmopolitan weed.

4. *Chenopodium opulifolium* Schrad. ex Koch et Zig

Cat. Pl. Palat. 6. 1814; Hook. f. *op. cit.* 5: 3. 1886; Bamber, *op. cit.* 387. 1916; Brenan, *op. cit.* 6. 1954; *op. cit.* 1: 94. 1964; Kitamura, *op. cit.* 99. 1960; Aellen, *op. cit.* 2: 302. 1966; Hara *et al.* *op. cit.* 3: 170. 1982; Stewart, *op. cit.* 221. 1972. Type: Described from Arhilgen, Germa-

ny.

Erect annuals, 30–70 cm tall, grey-farinose. Leaves mostly rhombic-ovate, slightly longer than broad, trilobed, 1–4 cm long, openly sinuate, $\pm$ obtuse, upper leaves narrow and toothed. Glomerules in axillary and terminal panicles, grey-farinose. Perianth segments prominently keeled. Seeds minutely pitted, blackish, shining, c. 1 mm in diam. Flowering period May to August.

Specimens examined. Kargah Nullah, 8 Aug. 1986. Z. Khan & M. Ashfaq 016382 (PMNH), Gilgit area, +4,500', Z. Khan & Venturers 019063 (PMNH); Minapin, 1 Aug. 1986. Z. Khan & M. Ashfaq 015823 (PMNH).

Distr. Europe, Asia, and North Africa.

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パキスタン、ギルギッド地域の アカザ属 (アカザ科)

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パキスタンの北部、ギルギッド地域に生育するアカザ属の4種類 (*Chenopodium album*, *C. botrys*, *C. foliosum*, and *C. opulifolium*) について、種類の検索表を示し、各々の種類について、調べた標本を基に外部形態を記載し、関係する文献をあげ、また、国外での分布を示した。