

Chenopodium exsuccum, a neglected species of the C. foliosum aggregate

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The taxonomy is emended and a new combination is made for *Chenopodium exsuccum* (C. Loscos) Uotila (Chenopodiaceae) from the Iberian Peninsula and northern Africa. Though infrequent, it is fairly widespread, and the only species of the *C. foliosum* aggregate in most of that area. *C. foliosum* Ascherson s.str. has been recorded from the southeastern mountains of Spain, from the Pyrenees, and from several localities in the north and west of that country. There is also one record from Algeria. In Spain, *C. exsuccum* mostly grows at lower altitudes than *C. foliosum* s.str. *Blitum virgatum* L. var. *minus* Vahl is lectotypified.

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Chenopodium exsuccum (C. Loscos) Uotila, comb. nova

Basionym: *Blitum exsuccum* C. Loscos in F. Loscos, Tratado Pl. Aragón. Supl. 8: 106 (1886). — *Chenopodium virgatum* (L.) Jessen var. *exsuccum* (C. Loscos) Jahandiez & Maire, Catal. Pl. Maroc II: 182 (1932). — Described from Spain, Aragón, Castelserás. Type not seen.

Blitum virgatum L. var. *minus* sensu Moq.-Tand., Chenopodearum Monogr. Enum.: 48 (1840) and Colmeiro, Enum. Pl. Peninsula Hispano-Lusit. IV: 520 (1888); non Vahl, Enum. Pl. I: 18 (1805).

Usually fairly small annual plants with indistinct, rather short main axis and with ascending, up to 40 cm long branches, sometimes diffusely branched. Leaf rosette poorly developed. Rosette and lowermost cauline leaves with petiole up to 4(—8) cm, lamina 3 × 2 — 6 × 4(—7) cm, triangular, weakly hastate at base, usually sparsely, and fairly coarsely and bluntly dentate to serrate. Lamina of middle cauline leaves thickish, up to 3 cm, sometimes wider than long, triangular — broadly truncate, hastate with usually entire basal lobes; middle lobe entire or with one to several teeth. Inflorescence leafy up to the top; uppermost leaves relatively broad, hastate, with middle lobe entire, seldom broadly lanceolate, entire. Glomerules up to 6(—8) mm in diameter, sessile on the main axis or on short branches. Perianths usually green and dry — sometimes reddish to purplish and succulent. Seeds 0.9—1.1 mm, roundish (length/width ratio 1.00—1.25), 0.6—0.7 mm thick, dark brown. Fig. 1.

Chenopodium exsuccum is morphologically related to *C. foliosum* Ascherson, but differs from it in growth habit, leaf shape, seed size and the usually non-succulent perianths. The glomerules on the main axis of *C. foliosum* s.str.

are purple and berry-like when ripe, but on the side branches they are often less succulent to dry.

	<i>C. foliosum</i>	<i>C. exsuccum</i>
habit	usually tall, erect — ascending, with main axis branched in middle parts	usually small, ascending (— erect), basally branched, with main axis often indistinct
lower cauline leaves	triangular — sagittate, fairly thin, densely and sharply dentate	broadly triangular — hastate, fairly thick, ± sparsely and bluntly dentate
upper cauline leaves	narrowly three-lobed or dentate, middle lobe often with several teeth	broadly three-lobed — hastate, middle lobe ± entire
glomerules	sessile, fleshy	sessile — subsessile, dry — sometimes fleshy
seed length	1.05—1.20—1.35 mm	0.85—0.97—1.10 mm
length/width	1.05—1.13—1.25	1.00—1.11—1.25
thickness	0.65—0.72—0.80 mm	0.65—0.67—0.70 mm

Although *C. exsuccum* has not been recognized by, for example, AELLEN (1960, etc.) and BRENNAN (1964), the heterogeneity of *C. foliosum* in Spain and NW Africa has been noted in many floras of that area (WILLKOM & LANGE 1861, COLMEIRO 1888, WILLKOM 1893, JAHANDIEZ & MAIRE 1932, MAIRE & QUÉZEL 1962). However, delimitation of the taxa has been

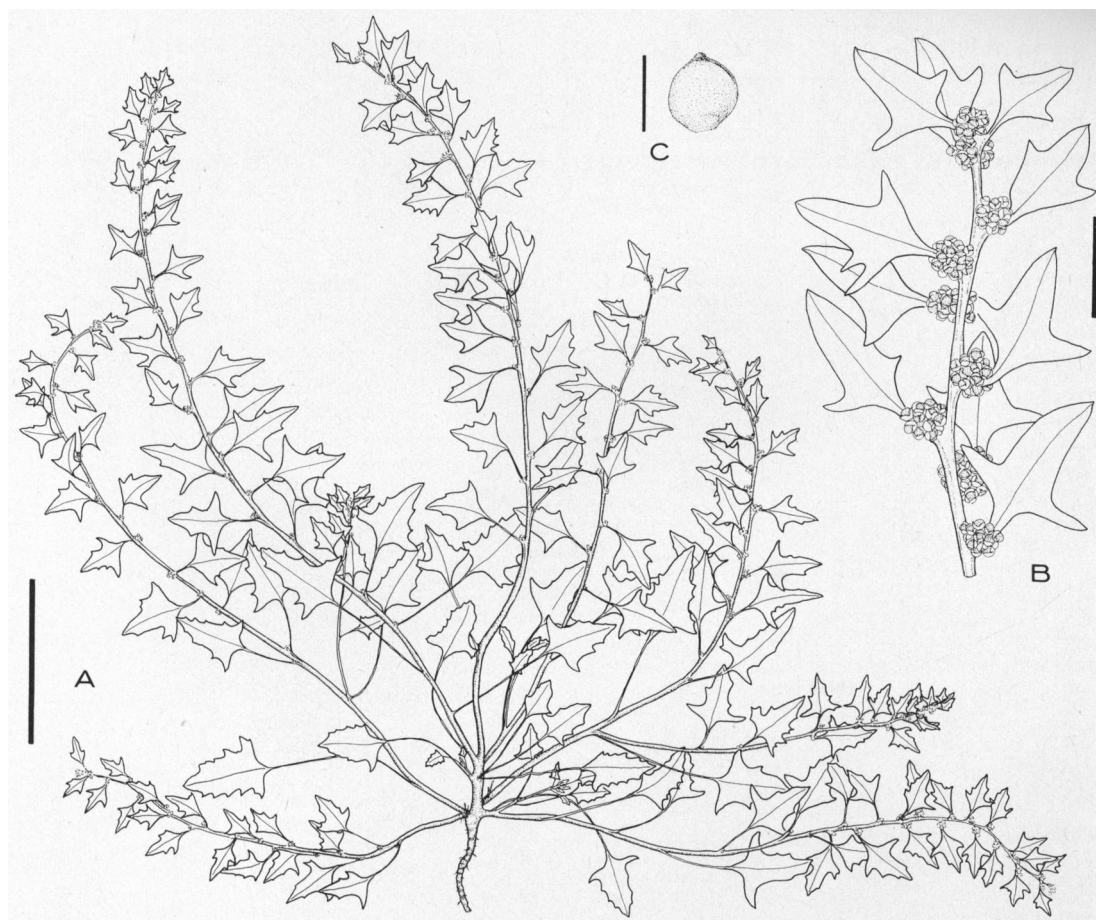


Fig. 1. *Chenopodium exsuccum*. A. Habitus of a flowering plant (1896 Murbeck; S). Scale 5 cm. B. Top of a fruiting branch (1894 Reverchon; S). Scale 1 cm. C. Seed (1858 Cosson; P). Scale 1 mm. — Del. Marja Koistinen.

vague due to the fact that dry glomerules were generally used as the main or only character in distinguishing the deviating race. Further, because of the small size of the plants and the idea that they represent an extreme form, they were often considered conspecific with *Blitum virgatum* var. *minus* Vahl, even by AELLEN (1960), who combined the epithet *minus* with *C. foliosum* at forma level. However, Vahl's taxon must be lectotypified with the specimen in Herb. Vahl (C) labelled: "*Blitum virgatum minus*, Hort. Paris" [manu Vahl], which is *C. foliosum* s.str.

Chenopodium exsuccum is one of the Ibero-Mauritanian species (see QUÉZEL 1978), and its area (according to the specimens seen) appears in Fig. 2. It is probably the only taxon of the *C. foliosum* aggregate that is native in

northern Africa, where it is fairly common in the Atlas mountains and rare in the adjacent plains of Morocco (also in the Rif Mts.), Algeria and Tunis (see MAIRE & QUÉZEL 1962). The only specimen of *C. foliosum* s.str. seen by me from N Africa is from Oran, on cultivated ground, and possibly introduced. According to MAIRE & QUÉZEL (1962), whose delimitation of the two taxa seems reliable, *C. foliosum* s.str. is recorded only from "Haut Tell orannais, Daya".

BOULOS (1979) doubts whether *C. foliosum* occurs in Libya, but JAFRI & RATEEB (1979) report it from three localities in that country. The description and figure given by the latter authors are insufficient to show which of the two species is represented, but the Libyan finds

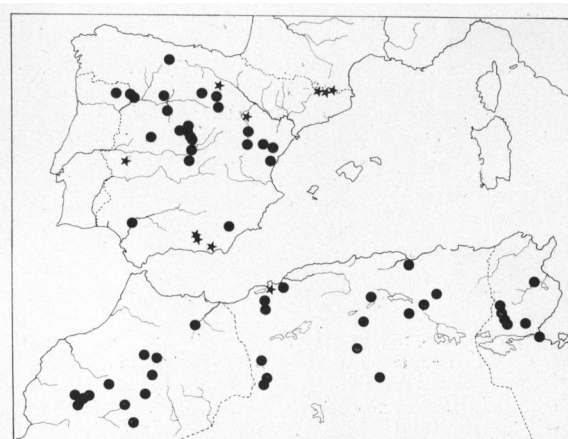


Fig. 2. Distribution of *Chenopodium exsuccum* (dots) and *C. foliosum* s.str. (asterisks) in the Iberian Peninsula and in northern Africa, according to the specimens seen. Note. *C. foliosum* s.lat. is also reported from Libya (JAFRI & RATEEB 1979).

probably represent *C. exsuccum*. However, introduced occurrences of *C. foliosum* s.str. are known from many areas, e.g., South Africa and North America, and might also be possible in North Africa.

In Spain, *Chenopodium exsuccum* seems to be rather rare, though possibly fairly frequent locally in several areas. There is only one record from the southwestern part of the country. In Portugal, the species aggregate has been reported only from the northeastern corner (e.g., AMARAL FRANCO 1971), and the specimens seen by me are *C. exsuccum*. In Spain (and the adjacent parts of France), *C. foliosum* s.str. grows in the Pyrenees, and in the mountains of Sierra Nevada and Sierra de Gador in the southeast. There are also several finds from more lowland areas in the provinces of Zaragoza, Logroño and Cáceres.

The altitudes reported for *C. exsuccum* in N Africa are (near sea level—)700—3100(—3200) m, those in Spain ca. 500—1500 m. In the Iberian Peninsula *C. foliosum* s.str. may inhabit relatively high mountains as it seems to do in, e.g., central Europe (the Alps), southeastern Europe, Anatolia in Turkey and Cyprus. The finds in the Sierra Nevada and Sierra de Gador were made at 2000—2500 m and in the Pyrenees at 1200 m.

Chenopodium exsuccum and *C. foliosum* s.str. possibly do not differ markedly from each other

in their ecological requirements. Both grow in gravelly places in mountains, in open semi-natural vegetation, the margins of arable land, roadsides, etc. However, *C. exsuccum* has been recorded remarkably often from calcareous soil.

Chenopodium foliosum s.str. is commonly grown in botanical gardens, and in olden times was cultivated in central Europe, perhaps also in southwestern Europe, being probably used as a salad plant or cooked like spinach. It often escaped from cultivation and became naturalized. Some of the occurrences in the Iberian Peninsula may also have originated in this way.

Perhaps due to its less succulent glomerules, *C. exsuccum* was probably cultivated only occasionally. But it has been grown in several botanical gardens; according to the specimens seen, at least in Modena, Munich, Tübingen and Oxford. The specimen from Switzerland, Kt. Vaud, Bugnax (Herb. Cuénod; G) probably originates from Tunis.

Selected specimens

Material from the following herbaria has been checked: B, BC, BM, C, COI, E, FI, G, G-PAE, H, K, LD, LISE, LISU, M, MA, MAF, MPU, OXF, P, S, UPS. Representative specimens are listed below.

C. exsuccum

Portugal. Trás-os-Montes e Alto Douro: Caçarelhos, 1909 *Sampaio* (LISU); Duas Igrejas, 1909 *Sampaio* (LISU); Vimioso, Serapicos, 1929 *Miranda Lopes 1075* (COI); Macedo de Cavaleiros, Talinhos, 500 m, 1966 *Silva & Rainha & Martins 7866* (LISE).

Spain. Leon: Riaño, 1050 m, 1972 *Buttler 16941 & Erben* (H). Burgos: Castrillo de la Reina, 1914 *Font Quer* (BC). Valladolid: Castromonte, 1906 *Sennen* (M); Olmedo, no date, no coll. (MA). Soria: Centenera de Andaluz, 950 m, 1973 *Zubizarreta 5421* (M); Covaleda, 1975 *Rivas Martinez et al.* (MAF). Avila: Sierra de Gredos, Bohoyo, 1863 *Bourgeau* (BM, E MA, LD, P). Madrid/Segovia: Guadarrama, 1833 *Atchley 217* (K). Madrid: Casa de Campo, 1852 *Lange* (G, K, UPS); El Pardo, 1892 *Mas y Guindal* (MAF); El Escorial, 1841 *Reuter* (MA); Hoyo de Manzanares, 1926 *Aterido* (MA); Aranjuez, no date, no coll. (MAF). Toledo: Montes de Mora, ca. 830 m, 1959 *Sandwith 5598* (K). Teruel: Monreal del Campo, no date, *Benedicto* (BC); Sierra de Pinar de Albarracín, 500 m and 1500 m, 1894 *Reverchon* (B, BM, FI, LD, M, OXF, P, S); Alcalá de la Selva, c. El Peñón, 1946 *Sierra* (BC). Castellón: Vistabella del Mestrat — Tossal Masinet, 1953 *Vigo* (BC); Segorbe, no date, *Pau* (MA). Sevilla: Sevilla, 1804 *Rodriguez* (MA). Almería: Vélez Rubio, Sierra del Castillón, 800 m, 1899 *Reverchon* (B, E).

Morocco. Haut Atlas central: Toubkal, Rifugei Neltner, 3100 m, 1951 *Rauh 259* (M); Reraya, near Sidi

- Chamarouch, 2360 m, 1923 *de Litardière* (MPU); Dj. Afougnour, 1876 *Ibrahim* (FI, K, P); Ait Messane, Arround, ca. 2200 m, 1926 *Lindberg* 3799 (H). Mgoun: Azilal, 1400 m, 1923 *Jahandiez* 9 (E, G, LD, LISU, MPU). Anti Atlas: Sarhro, Iknoune, Taourite, 1954 *Sauvage* (MPU). Haut Atlas oriental: Haut Rhevi, above Assoul, 1949 *Joly et al.* (MPU); Georges du Dades, 1939 *Weiller* (MPU). Moyen Atlas — Ayachi: Daiet Ifrah, Taya, 1650 m, 1923 *Jahandiez* 547 (LD), Laghzeft, 2200 m, 1924 *Jahandiez* 725 (G); Aghbalou Larbi, 2100 m, 1924 *Jahandiez* 848b (E, M); Kheneg Merzoul, 1950 m, 1936 *Maire* (MPU); Ayachi, Bonad-mam, 1953 *Sauvage* (MPU). Morocco oriental: Bni-Bou-Yahya, 900 m, 1934 *Sennen & Mauricio* (MPU).
- Algeria. Prov. Oran: Dj. Beguiral, 1919 *Faure* (M, LD); Sidi-bel-Abbes, 1879 *Warion* (FI); Magenta, 900 m, 1930 *Faure* (K, LD); Tircount, Faidjet el Beloum, ca. 1200 m, 1901 *Hochreutiner* 443 (G); Dj. Aissa, ca. 1800 m, 1901 *Hochreutiner* 401 (G). Prov. Ain-Sefra: Ain-Sefra, 1899 *Chevallier* 362 (E, FI, G, LD, MPU, P); Dj. Mekter, 2050 m, 1913 *Maire* (MPU); Ain-Ben-Khelil, 1856 *Cosson* (P). Prov. Alger: Kabylie, Kerrata, 700—800 m, 1896, 1898 *Reverchon* (E, G, LD, MPU, P), 1898 *Krebs* (B); N of Zahrez Cherqui, Ben Toumi, 1939 *Dubuis* (MPU); Oued Sadouri, Bou Saâda — Biskra piste, 1937 *Simpson* 37205 (BM). Prov. Ghardaia: Djelfa, 1854 *Beboud* (P); Berriane (Mzab), 1858 *Cosson* (P); Laghouat, no date, *Letourneur* (FI). Prov. Constantine: El-Kantra, 1892 *Neyraud* 742 (MPU); El Kantra, Batna, 1853 *Perrandierè* (MPU); Batna, N of Dj. Tougour, 1853 *Balansa* (G).
- Tunis. Fériana, 1886 *Letourneur* (P); Fériana, Thelepte, 1884 *Robert* (MPU); Gafsa, Gafsa, 1909 *Pitard* 1357 (G); Gafsa NW, Maâjen Bel Abbès, 1968 *Boulos* 2787 (G); El Hafay, 1896 *Murbeck* (S); Kairouan, 1896 *Murbeck* (LD); Gabès (Nefzaoua), Oued Zarkin, 1909 *Pitard* 3047 (G).
- C. foliosum* s.str.
- France. Pyrenées orientales: Mont-Louis, 1839 *Bubani* (FI).
- Spain. Gerona: Pto de Tosas, 1200 m, 1953 *Rawdon* 201 (K). Lerida: La Cerdanya, La Molina, 1926 *de Bolòs & de Garganta* (BC). Logroño: Viguera — Torrecilla, no date, *Žubia* (MA), Torrecilla near Panzares, no date, no coll. (MA). Zaragoza: Paniza, Puerto de Paniza, 1955 *Borja* (MA). Cáceres: Isola de la Pe de Cáceres, no date, *Rivas Mateos* (MAF). Granada: Sierra Nevada, Jerez del Marquesado, 1908 *Pau* (MA); Peñones de San Francisco, prope Alberque, 2500 m, 1950 *Roivainen* (H, S); Sierra Nevada Road, above Parador Nacional, 2400—2500 m, 1974 *Merxmüller* 29560 & *Lippert* (M); Río Monachil, 2100 m, 1978 *Roivainen* (H). Almería: Sierra de Gádor, Pozo de Paterna, 2000 m, 1921 *Grn* 273 (MA).
- Algeria. Oran, lieux cult., 1909 *Faure* (E).

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