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## ***Gundelia microcephala* (Compositae) – a taxon deserving rank of species**

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### **Abstract**

*Gundelia tournefortii* var. *microcephala* BORNMÜLLER is a distinct taxon raised to the rank of species. Its distinguishing characters and distribution are discussed.

**Key Words:** Compositae, Gundelieae, *Gundelia*, *G. microcephala*; Flora of Iran and Iraq.

### **Introduction**

*Gundelia tournefortii* was described by LINNAEUS (1753) based on the information given by TOURNEFORT (1718). The genus was thought to be monospecific, other taxa described being put in synonymy (e.g. RECHINGER 1989, KUPICHA 1975). Recently it was detected that the genus consists of diverse, and clearly distinguishable, taxa (VITEK et al. 2010). The characters of *Gundelia tournefortii* L., s. str., have been stated (VITEK & JARVIS 2007, VITEK & al. 2017), several species have been re-established (VITEK & al. 2017, VITEK & NOROOZI 2017b) or described (VITEK et al. 2010, 2014; NERSESYAN 2014; ARMAĞAN 2016; FIRAT 2016, 2017; VITEK & NOROOZI 2017a).

A number of infraspecific taxa have been published, and their taxonomic status and rank require assessment, one of these infraspecific taxa is *G. tournefortii* var. *microcephala* BORNMÜLLER.

### **Material and methods**

The collections of *Gundelia* in the herbaria IRAN, JE, K, TARI and W have been examined. The type of var. *microcephala* has been compared with other material of the genus. The given characters are based on the material examined, for the characters the terminology of CLASSEN-BOCKHOFF & al. (1989) is used. The localities of the material have been located, the coordinates have been taken from Google Earth Pro with an exactness of 1–10 km, which is of little importance for the scale of the given distribution map (Fig. 5). Dubious specimens – but probably belonging to this taxon – are listed as ‘ambiguous’.

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Fig. 1: Specimen of *Gundelia microcephala* (18.4.1982, Assadi & Aboohamzeh [TARI 38657]).

## Results

### *Gundelia microcephala* (BORNM.) VITEK, comb.n. et stat.n.

≡ *G. tournefortii* var. *microcephala* BORNM., Beih. Bot. Centralbl., Abt. 2, 20: 157 (1906).

Type: Inter Kermanschahan et Bagdad, prope Khanegyn (Chanekin) [= Chanaqin] ad fines Persiae, Grenzstation, [34°22'55"N, 45°27'59"E.] 3. 4. 1894, Strauss s.n. [JE 00015288!] (<http://herbarium.univie.ac.at/database/detail.php?ID=265144>).

Original description: “multo ramosior, capitulis 3-plo ac in typo minoribus” (BORN-MÜLLER 1906). The first character provided, “many branches”, obviously refers to the branching in the upper part of the stem; the small “capitula” [= synflorescences] are a unique character in the genus.

Characters: Perennial herb with one to few stems. Most specimens are only of branches, but a few sheets show the complete plant, probably up to 60 (–?) cm tall. Basal leaves deeply divided with narrow segments, leaves higher up on the stem less divided (Fig. 1, 2), the leaves with felty hairs on the veins (Fig. 3). Synflorescences not densely packed together, consisting of few, partial synflorescences with 6–7 flowers (Fig. 3), in the young state covered with hairs. The corolla colour is given on a few sheets as “yellow”, “outside red-brown – inside deep yellow”, “purple + yellow”. The few available ‘fruits’ are broadly cone-shaped, compound of 6–7 florets, c. 8 mm long (excluding spines), spines of the central floret longer, c. 5 mm long (Fig. 4).

Ecology: The available label information is varied: “Dry steppe”, “in a cornfield in red loam”, “mixed *Quercus persica* woodland”, “grasshills”, “soil clay” or “sheltered vegetation of herbs among big limestone boulders, not or little pastured” show a broad range of dry habitats.

Known distribution: Iraq (NE to E) and Iran (W to S) (Fig. 5).

**Seen specimens:** Iraq, Arbil, 20.4.1932, E.R. Guest (Rustam 2126) [K 2×] [36°11'34"N, 44°00'32"E]; – Kirkuk, on the road to Baba Gurzar [? Baba Gurgur] oil wells, c. 1500 ft., 4.1.1931, E.R. Guest (Rustam 1374) [K] [35°30'21"N, 44°21'49"E]; – Kari Domlan hills, Kirkuk, 1300 ft., 30.4.1933, E.R. Guest (Rustam 4291) [K] [35°27'12"N, 44°22'58"E]; – near Tikrit, 7.4.1969, S. Omar & H. Hamid (National Herbarium of Iraq 36284) (sandy clay soil) [K] [34°35'38"N, 43°41'16"E]; – Syrian Desert, about 65 km W Ramadi, c. 80 m, 9.3.1955, E.R. Guest & A. al-Rawi (National Herbarium of Iraq 13959) [K] [33°16'53"N, 42°36'14"E]; – H1, 160 km E of Rutba, 440 m, 29.3.1962, K. Alizzi 31575 [K] [33°15'02"N, 41°58'09"E]; – Badra, 18.3.1947, Gillett 6615 [K] [32°59'24"N, 45°49'45"E]; – near Daltowak, 3.1929, F.A. Rogers (Rustam 0287) [K] [?];

**Iran,** Kermanshah, Ghassr–Chirine [Qasr-e Shirin], 1.4.1951, Scharif [IRAN 10108/1, 10108/2, 10108/3, 10108/4] [34°30'56"N, 45°34'45"E]; – Kermanshah, Ilam, Imam Hassan, 11.4.1951, Scharif [IRAN 10109/1, 10109/2] [33°38'06"N, 46°24'57"E]; – Kermanshah, Mehran, Halat, 100 m, 27.3.1948, Behboudi [IRAN 10111/1, 10111/2, 10111/3] [33°06'53"N, 46°10'18"E]; – Khuzestan, Eizeh [Izeh], Rasvand, 830 m, 11.5.1986, V. Mozaffarian 63085 [TARI] [31°49'07"N, 49°52'26"E]; – Khuzestan, Izeh, Abkhogan, 1400 m, 1.5.1973, Riazzi 9525 [TARI] [31°49'07"N, 49°52'26"E]; Route d'Izeh, 23 km E, Haft-gel, 17.4.1959, H. Pabot 662 [TARI] [31°23'19"N, 49°45'41"E]; – Kohgilouyeh va Boirahmad, near Dehdasht, 500 m, 18.4.1982, Assadi & Aboohamzeh [TARI 38657] [30°47'21"N, 50°34'06"E]; – Fars, ca. 40 km W of Nura-bad, near Babamonir, 1300–1500 m, 14.4.1982, Assadi & Aboohamzeh [TARI] [30°04'15"N, 51°12'17"E]; – Bushehr, 86 km on road from Genaveh to Dogonbadan, 350 m, 5.3.1978, Runemark & Mozaffarian 27310 [TARI] [29°35'26"N, 50°33'14"E]; – Fasa – Atashkadeh, 1580 m, 1.5.1972, H. Foroughi 4198 [TARI] [28°56'12"N, 53°38'14"E]; – Esfahan, Borujen, Lordegan, Bar-Aftab, 1550 m, 18.5.1983, M. Nowroozi 2579 [TARI] [28°14'53"N, 55°43'59"E].



Fig. 2: Specimen of *Gundelia microcephala*, upper part of plant, (18.5.1983, M. Nowroozi 2579 [TARI]).



Fig. 3: Specimen of *Gundelia microcephala*, detail of synflorescence (18.4.1982, Assadi & Aboohamzeh [TARI 38657]).

**Ambiguous specimens:** Iran, S.Lorestan-Sheshom, 700–750 m, 33°06'N 47°43'E, 27.4.1927, M. Jacobs 6431 [K]; – Lorestan, 1 km S of Bagh-i-Sarab, mouth of Kashgan R. gorges, inter Khorramabad et Andimishk, ca. 2850 ft., 18.4.1960, H.E. Wright Jr. & A.M. Bent 418-101 [K] [32°53'44"N, 47°34'36"E]; – Sushtar [Shūshtar], 15 km Masjedasalyman [Masjed Soleyman] road, 200 m, 15.3.1972, H. Foroughi 3134 [TARI] [31°59'18"N, 48°59'54"E]; – Kerman, between Mahan and Kerman, ca. 1900 m, 6.5.1977, M. Assadi [TARI] [30°08'52"N, 57°09'47"E]; – Khuzestan, Behbahan, 320 m, 14.3.1986, V. Mozaffarian [TARI] [30°35'36"N, 50°14'29"E]; – Bushehr, 61 km on road from Kazerun to Dalaki, 250–300 m, 28.2.1978, Runemark & Mozaffarian 26810 [TARI] [29°28'28"N, 51°24'17"E].

### Discussion

The characteristic of this taxon is the very small synflorescence (2–3 cm). Seeing this taxon first time, the first assumption was that this might be a single plant or a population with reduced size of synflorescences because of a specific ecological niche. However, in



Fig. 4: Fruits of *Gundelia microcephala* (11.5.1986, V. Mozaffarian 63085 [TARI])

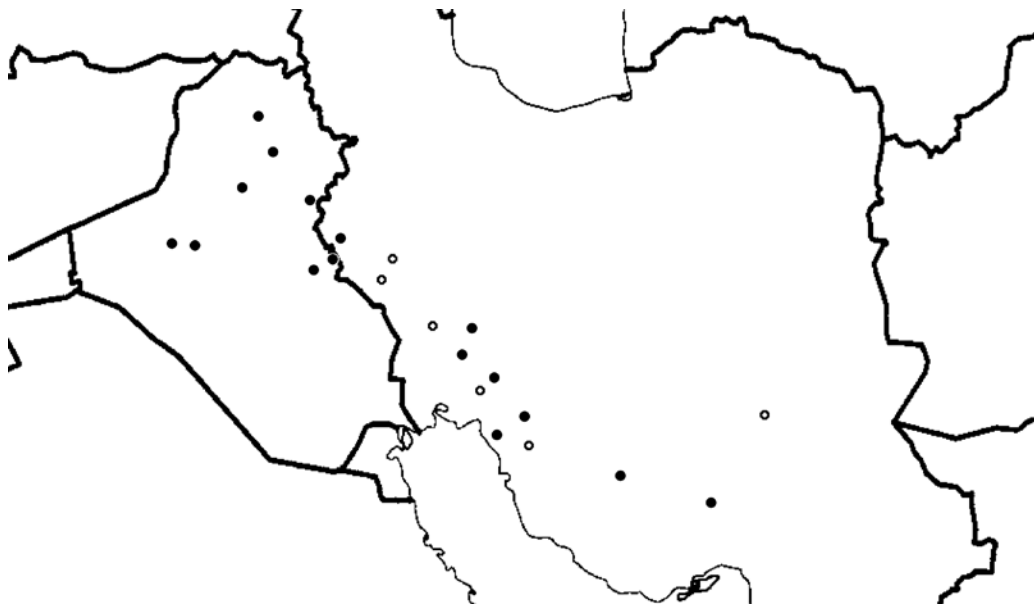


Fig. 5: Distribution of *Gundelia microcephala*, seen specimens ●, ambiguous specimens ○.

the herbaria visited numerous specimens with the same characteristics have been found. The analyses also showed a well-defined distribution area in Iraq and Iran. Therefore, the rank of this taxon is changed to species level.

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