

Gundelia tehranica (Compositae), a new species from Iran

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Abstract

Gundelia tehranica is described from Iran, the characters are discussed.

Key Words: Flora of Iran; Compositae, *Gundelia*, *Gundelia tehranica*; new species.

Zusammenfassung

Gundelia tehranica wird aus dem Iran beschrieben, die Merkmale werden diskutiert.

Introduction

For a long time the genus *Gundelia*, described by LINNÉ (1753), was thought to be monospecific, additionally described taxa (e.g. AL-TAEY & HOSSAIN 1984) being put in synonymy (e.g. RECHINGER 1989, KUPICHA 1975). The detailed story of the genus is given by HIND (2013).

Gundelia tournefortii was typified (VITEK & JARVIS 2007), the characters have been defined (VITEK et al. 2017). New species are described from Armenia and from Turkey in VITEK et al. 2010, 2014, NERSESYAN 2014 and ARMAĞAN 2016.

In Flora Iranica (RECHINGER 1989) *Gundelia tournefortii* is the only accepted species, and *Gundelia rosea* HOSSAIN & AL-TAEY is given as synonym. These new insights raise the question, whether other species may be found in Iran.

Material & Methods

During the last years photos of *Gundelia* from Iran either sent to the authors or, found from the internet have been analysed. Populations suspected to be different from the hitherto described species have been visited during field studies in 2015 and 2016. Specimens have been collected and analysed.

Results

There are several records which could be undescribed species. For one of these entities the available materials and information is sufficient to describe it as new species. Herbaria are given with their abbreviations in Index Herbariorum (THIERS, continuously updated).

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Fig. 1: *Gundelia tehranica*, synflorescence; a) in flower, b) with young fruits (Vitek et al. 15-0135).



Fig. 2: *Gundelia tehranica*, habitat; a) in the background is the city of Tehran, b) the growth form imitating a thorny cushion plant is well exhibited (near Vitek et al. 15-0137).

***Gundelia tehranica* VITEK & NOROOZI, sp.n. (Figs. 1–3)**

Description (terminology follows CLASSEN-BOCKHOFF et al. 1989): Plants perennial, up to 80 (–90) cm high, with 3–5 (–8) branches, branched again, bearing up to 30 synflorescences; basal leaves up to 100 cm long; leaves very stiff, slightly felt-like hairy with a few arachnoid hairs; synflorescence with few scattered arachnoid hairs (Fig. 1a); bracts with a strong central spine and at least the lower ones with lateral spines, the upper ones broadened at base; partial synflorescence in the central part of the synflorescence compound of 7–8 flowers; flowers inside yellowish, outside brownish; fruits conoid to obovate, 10–12 mm long (without spines); all flowers of the partial synflorescence form spines when developing fruits, these spines adhere to a crown-like structure; spines of different length, up to 5 mm long, the spines of the central flower slightly longer (Fig. 3).



Fig. 3: *Gundelia tehranica*, fruits (Vitek et al. 15-0137).

Gundelia tehranica differs from *G. tournefortii* by the bracts bearing lateral spines, the less dense indumentum in the synflorescence, by the number of flowers in one partial synflorescence (7–8 versus 5–7) and the size of the fruits. From all other species *Gundelia tehranica* differs by the yellow flower colour and the number of flowers in the partial synflorescences.

Type: Iran, Tehran, Tuchal Mt., above Velenjak, 2200–2300 m, 35°49'26"N, 51°23'30"E, 6. 5. 2016, J. Noroozi [holotype W 2016-0011195, isotypes E, G, IRAN, NY, TARI, W 2016-0011196].

Epithet: The species is found in the outskirts of Tehran.

Habitat: dry (gravel) slopes, dry fields, near the city occasionally sub-ruderal at roadsides (Fig. 2), 1700–2600 m a.s.l., preferably slopes from 0 to 40°.

Accompanying species: *Acinos graveolens*, *Alyssum minus*, *Alyssum szowitsianum*, *Arrhenatherum kotschyi*, *Asperula glomerata*, *Astragalus macropelmatus*, *Astragalus microcephalus*, *Astrodaucus orientalis*, *Bromus danthoniae*, *Bromus tectorum*, *Callipeltis cucullaris*, *Centaurea virgata* subsp. *squarosa*, *Convolvulus gracillimus*, *Crepis sancta*, *Crucianella gilanica* subsp. *elbursensis*, *Festuca sclerophylla*, *Heli-chrysum oligocephalum*, *Hypericum scabrum*, *Lamium amplexicaule*, *Lappula microcarpa*, *Marrubium cuneatum*, *Minuartia meyeri*, *Papaver dubium*, *Phlomis olivieri*, *Polygonum polycnemoides*, *Prangos uloptera*, *Psathyrostachys fragilis*, *Scariola orientalis*, *Senecio glaucus*, *Stipa arabica*, *Taeniatherum caput-medusae*, *Tulipa montana*, *Viola occulta*.

Other specimens: Iran, province Tehrân, N of Tehran, Tuchal Mt., above cable car station at 2400 m, 35°50'08"N 51°24'33"E, 2015-06-11, Vitek,E., Noroozi,J. & Rainer,H. 15-0135 [W 2015-0008567, K, L]; – province Tehrân, N of Tehran, Tuchal Mt., below cable car station at 2400 m, 35°49'50"N 51°24'25"E, 2015-06-11, Vitek,E., Noroozi,J. & Rainer,H. 15-0137 [W 2015-0008566, MA, P]; – province Alborz, road Karaj – Tschalus, 12 km NE Karaj, 2 km NNE Vineh, 35°55'01"N 51°02'58"E, 2015-06-09, Vitek,E., Noroozi,J. & Rainer,H. 15-0056 [W 2015-0008582].

Additional observations: Iran, province Tehrân, Tehran, Shahid Behesti University, in front of the university building, 1745 m, 35°48'14"N, 51°23'27"E, 2015-06-10, Vitek,E., Noroozi,J. & Rainer,H.; – province

Tehrán, N of Tehran, Tuchal Mt., besides road to the cable car station, 1895 m, 35°49'18"N 51°23'59"E, 2015-06-11, Vitek,E., Noroozi,J. & Rainer,H.

Discussion

The new described *Gundelia tehranica* is perfectly adapted to dry climate and to high pressure from grazing. When growth is undisturbed the plant as a whole looks similar to a thorn cushion plant which is a very common growth form in arid zones (e.g. Tragacanthic species of *Astragalus*), only the synflorescences poke out on top (Fig. 1b).

The distribution area is not known sufficiently. Up to now the species is known from the provinces Tehran, Ardebil and Alborz, but, based on available photos *Gundelia tehranica* can probably be found in southern Iran too (provinces Lorestan, Esfahan, Kohgiluyeh and Boyer-Ahmad, e.g. in the Zagros mountains – <http://photos.v-d-brink.eu/Flora-and-Fauna/Asia/Iran-Central-Western/i-KGjthkV>).

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References

- AL-TAEY R.A. & HOSSAIN M., 1984: Studies in *Gundelia*: 1. A new species from Iraq. – Notes Roy. Bot. Gard. Edinburgh 42: 39–44.
- ARMAĞAN M., 2016: *Gundelia vitekii* (Compositae), a new species from Turkey. – Ann. Naturhist. Mus. Wien, B, 118: 129–134.
- CLASSEN-BOCKHOFF R., FROEBE H.A. & LANGERBEINS D., 1989: Die Infloreszenzstruktur von *Gundelia tournefortii* L. (Asteraceae). – Flora 182 / 5–6: 463–479.
- HIND N., 2013: *Gundelia tournefortii*. – Bot. Mag. 30: 114–138.
- KUPICHA F.K., 1975: *Gundelia*. – In: DAVIS P.H., MATTHEWS V.A., KUPICHA F.K. & PARRIS B.S. (eds.): Flora of Turkey and the East Aegean Islands 5: 325–326.
- LINNÉ C., 1753: Species plantarum exhibentes plantas rite cognitatas ad genera relatas cum differentiis specificis, nominibus trivialibus, synonymis selectis, locis natalibus, secundum systema sexuale digestas; Tom. 1–2. – Holmiae: Salvius.
- NERSESYAN A., 2014: *Gundelia armeniaca* NERSESYAN (Compositae) – a new species from Armenia. – Ann. Naturhist. Mus. Wien, B, 116: 191–196.
- RECHINGER K.H., 1989: *Gundelia*. – In: RECHINGER K.H. (ed.): Flora Iranica 164: 107–109.
- THIERS B. (continuously updated): Index Herbariorum: A global directory of public herbaria and associated staff. – New York Botanical Garden's Virtual Herbarium. – <http://sweetgum.nybg.org/science/ih/>.
- VITEK E., FAYVUSH G., TAMANYAN K. & GEMEINHOLZER B., 2010: New taxa of *Gundelia* (Compositae) in Armenia. – Ann. Naturhist. Mus. Wien, B, 111: 85–99.
- VITEK E. & JARVIS C.E., 2007: The typification of *Gundelia tournefortii* L. (Compositae). – Ann. Naturhist. Mus. Wien, B, 108: 267–272.

- VITEK E., LESCHNER H. & ARMAĞAN M., 2017: *Gundelia tournefortii* L. (Compositae) – an approach. – Ann. Naturhist. Mus. Wien, B, 119: 227–233.
- VITEK E., YÜCE E. & ERGIN C., 2014: *Gundelia dersim* and *Gundelia munzuriensis* (Compositae), two new species from Turkey. – Phytotaxa 161: 130–138.