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## ***Gundelia vitekii* (Compositae), a new species from Turkey**

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### **Abstract**

*Gundelia vitekii* ARMAĞAN is described as new species for Turkey. The species differs from other species of *Gundelia* by its dark pink / red flower colour and an indumentum of arachnoid hairs. Up to now it has only be found in the province Tunceli.

**Key Words:** Compositae, *Gundelia*, *G. vitekii*, new species.

### **Introduction**

For long time the genus *Gundelia* was assumed to be monospecific, additionally described taxa systematically synonymised under *G. tournefortii* L. (e.g. KUPICHA 1975, RECHINGER 1989). In the last years new species have been described from Armenia (VITEK et al. 2010, NERSESYAN 2014) and from Turkey (VITEK et al. 2014).

The following characters have been shown as diagnostic in the genus *Gundelia*: general habit (size of plant and number of synflorescences), colour of flowers, number of flowers per cephaloid (flower complex, part of the synflorescence in the axilla of a bract), form of fruit and the forms of the spines on the fruit. The habitat also provides crucial information, as the different species are clearly connected to different vegetation types. On most of the herbarium specimens this information is lacking and many specimens are only in early stage of flowering without fruits. Therefore this investigation is mainly based on recently collected material. Photos of living plants are essential for assigning to a taxon.

During field work in the province of Tunceli (= Dersim) for preparation of a flora of Tunceli (ARMAĞAN 2015) special attention has been given to *Gundelia*, as recently two new species had been described from this area, *G. dersim* VITEK, YÜCE & ERGIN and *G. munzuriensis* VITEK, YÜCE & ERGIN (VITEK et al. 2014).

### **Material and methods**

Numerous populations of *Gundelia* have been visited, material has been collected and photos taken. The collected material has been compared with all published taxa. The terminology follows CLASSEN-BOCKHOFF et al. (1989). Herbaria are cited with their acronyms (THIERS 2015)

### **Results and discussion**

The new species *Gundelia vitekii* described here is showed to be different from all described taxa listed in VITEK (2015).

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***Gundelia vitekii* ARMAĞAN, sp.n.**

Perennial lactiferous herb with branched stem up to 60 (–70) cm. Leaves alternate, pinatilobate, pinnatipartite, or pinnatisect, spiny. Young shoots with dense arachnoid hairs (Fig. 1b), leaves possibly losing part of the indumentum later. Synflorescences normally 5 or less, globose or ovoid, up to 60 mm long and up to 40 mm in diameter, consisting of numerous cephaloids. Synflorescence completely covered with arachnoid hairs when young (Fig. 1c). Bracts spiny, normally exceeding the cephaloids, with a strong terminal spine and up to 5 lateral spines, at times with additional smaller spines in between; very rarely terminal spine markedly elongated. Cephaloid in the middle of the synflorescence consisting of 3 (–5) flowers. Corolla widely spreading, externally greenish-brownish to reddish-brownish, internally dark pink, dark red or intensive red (Fig. 2). Synflorescence at early maturity with sparse arachnoid hairs, potentially disappearing later. Single fruit complex (disseminule) normally triangular, 10 mm long and 8 mm broad, rarely conical with up to 8 mm diameter (when resulting from more than three flowers); central flower surrounded with up to 6 mm long spines originating from the involuclers, spines of the lateral flowers up to 4 mm.

Differs from all other *Gundelia* species by the dark pink to intensive red flower colour and the dense arachnoid hairs on the young shoots and synflorescences, these remain even in the young infructescence (Fig. 1a). Arachnoid hairs can also be found in *G. munzuriensis* (flowers bright pink, flower complex irregular of 3–7 flowers), very rarely in very young *G. dersim* (additional to the ring of dense tomentose hairs) and in *G. aragatsi* (hairs only in young inflorescences, flowers dark brown, plants more vigorous, synflorescences bigger, habitat ± humid alpine meadows).

Habitat: The species is found on dry and very dry stony slopes or on gravel, in mountain steppe or between *Astragalus* spiny cushion shrubs.

Type: Turkey, province Tunceli (Dersim), Tunceli Merkez, c. 8 km N of Tunceli, mountain slope NW of Tüllük Bucağı, 39°10'32"N 39°32'04"E, 1745 m s.m., 2015-05-31, E. Vitek, M. Armağan & M. Özel 15-0042 [holotype VANF, isotype W 2015-11168].

Epithet: The species is named after E. Vitek, who realized the diversity within the genus *Gundelia* and visited the area of Tunceli several times.

Other material seen: Turkey, province Tunceli (Dersim), Pülümür, 39 km NE Tunceli, road to Kocatepe, 1.8 km NW Kovuklu, 1580 m s.m., 39°25'21"N/39°45'4"E, 2013-06-17, E. Vitek, E. Yüce, C. Ergin & H.H. Makal 13-0273 [W 2013-0006173, Tunceli University]; —, Pülümür, 39 km NE Tunceli, road to Kocatepe, 3.5 km ENE of Kocatepe, 1520 m s.m., 39°25'10"N/39°44'13"E, 2013-06-17, E. Vitek, E. Yüce, C. Ergin & H.H. Makal 13-0298 [W 2013-0006179, Tunceli University]; —, Pülümür, 35 km NNNE Tunceli, road Kocatepe - Sarıgül Köyü, 1.3 km SW of Kocatepe, 1910 m s.m., 39°23'45"N/39°41'34"E, 2013-06-17, E. Vitek, E. Yüce, C. Ergin & H.H. Makal 13-0301 [W 2013-0006149, Tunceli University]; —, Pülümür, 35 km NNNE Tunceli, road Kocatepe - Sarıgül Köyü, 1.3 km SW of Kocatepe, 1910 m s.m., 39°23'45"N/39°41'34"E, 2013-06-17, E. Vitek, E. Yüce, C. Ergin & H.H. Makal 13-0302 [W 2013-0006171, Tunceli University]; —, Pülümür, c. 39 km NNE Tunceli, side valley from road to Kocatepe to village Karagöz, 0.8 km SSW Dağbek, 1565 m s.m., 39°25'33"N/39°43'22"E, 2014-06-02, E. Vitek, E. Yüce & U. Cakilcioglu 14-138 [W 2014-0014914, Tunceli University]; —, Pülümür,



Fig. 1: *Gundelia vitekii*: characteristic indumentum of arachnoid hairs: a) synflorescence in early fruiting stage (Vitek et al. 14-138), b) detail of young shoot (Armağan et al. 15-0042), c) early stage of synflorescence (Armağan et al. 15-0042).





Fig. 2: *Gundelia vitekii*, synflorescences. a) 5. 6. 2014, M. Armağan, b) Vitek et al. 14-138, c) Armağan et al. 15-0042.

c. 39 km NNE Tunceli, side valley from road to Kocatepe to village Karagöz, 0.8 km SSW Dağbek, 1565 m s.m., 39°25'33"N/39°43'22"E, 2014-06-02, E. Vitek, E. Yüce & U. Cakilcioglu 14-139 [W 2014-0014913, Tunceli University]; —, Ovacık, 27.5 km N Tunceli, road Aşağıtorunoba - Agdat, 1825 m s.m., 39°21'7"N/39°29'33"E, 2013-06-18, E. Vitek, E. Yüce, C. Ergin & H.H. Makal 13-0382 [W 2013-0006172, Tunceli University]; —, Ovacık (Pulur), c. 17.8 km NE of Ovacık, S above small river dam, near locality called Şahverdi, 1515 m s.m., 39°26'50"N/39°23'22"E, 2014-06-03, E. Vitek & E. Yüce 14-147 [W 2014-0014907, Tunceli University]; —, Ovacık (Pulur), c. 18.3 km NE of Ovacık, c. 0.5 km NNE of small river dam, near locality called Şahverdi, 1500 m s.m., 39°26'57"N/39°23'32"E, 2014-06-03, E. Vitek & E. Yüce 14-150a [W 2014-0017015, Tunceli University]; —, Ovacık (Pulur), c. 18.8 km NE of Ovacık, E above locality called Şahverdi, 1635 m s.m., 39°27'10"N/39°23'52"E, 2014-06-03, E. Vitek & E. Yüce 14-157 [W 2014-0017028, E. HUB, Tunceli University]; —, Ovacık (Pulur), c. 19.5 km NE of Ovacık, c. 1.2 km ENE above locality called Şahverdi, 1770 m s.m., 39°27'17"N/39°24'17"E, 2014-06-03, E. Vitek & E. Yüce 14-162 [W 2014-0017018, Tunceli University]; —, Ovacık (Pulur), c. 19.5 km NE of Ovacık, c. 1.2 km ENE above locality called Şahverdi, 1770 m s.m., 39°27'17"N/39°24'17"E, 2014-06-03, E. Vitek & E. Yüce 14-163 [W 2014-0017017, Tunceli University]; —, Ovacık (Pulur), c. 19.5 km NE of Ovacık, c. 1.2 km ENE above locality called Şahverdi, 1770 m s.m., 39°27'17"N/39°24'17"E, 2014-06-03, E. Vitek & E. Yüce 14-165 [W 2014-0017024, Tunceli University]; —, Ovacık (Pulur), c. 20 km NE of Ovacık, c. 1.6 km ENE above locality called Şahverdi, 1820 m s.m., 39°27'24"N/39°24'32"E, 2014-06-03, E. Vitek & E. Yüce 14-167 [W 2014-0017022, Tunceli University]; —, Ovacık (Pulur), c. 20 km NE of Ovacık, c. 1.6 km ENE above locality called Şahverdi, 1820 m s.m., 39°27'24"N/39°24'32"E, 2014-06-03, E. Vitek & E. Yüce 14-168 [W 2014-0017026, Tunceli University]; —, Tunceli Merkez, c. 8 km N of Tunceli, mountain slope N of Tüllük Bucağı, 39°10'30"N 39°32'53"E, 1745 m s.m., 2015-05-30, E. Vitek, M. Armağan & M. Özel 15-040 [W 2015-11153].

Observation (photo): Turkey, province Tunceli, Pülümür, NE of Çakırkaya, 1760 m, 39°26'08"N 39°45'29"E, 5. 6. 2014, M. Armağan (Fig. 2a).

## Discussion

The new species *Gundelia vitekii* ARMAĞAN forms sparse populations of scattered individuals in dry to very dry habitats. It does not form populations as dense as *G. dersim* or *G. munzuriensis* (VITEK et al. 2014: fig. 1, 4). This can be explained by the difficulties for each plant to establish itself in these habitats.

The province Tunceli and the area around the Munzur Mountains prove once more to be a centre of diversity. Several species have been described from here or are endemic in these mountains (YILDIRIMLI 1995, ARMAĞAN 2015). Up to now *Gundelia vitekii* is endemic in the northern part of province Tunceli.

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