

Gundelia mesopotamica (Asteraceae), a new lactiferous species from Mardin (Turkey)

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Abstract: *Gundelia mesopotamica*, a new species is described and illustrated from Mardin province, Turkey. From the morphological point of view, *G. mesopotamica* appears to be similar to *G. cilicica*, but from which it differs in several morphological features including plant height, colour of corolla, indumentum of all plant and cephaloid flowers number. A comprehensive description of this new species is provided, including detailed photographs, geographical distribution, habitat and ecology, vernacular name and IUCN conservation status.

Keywords: Mardin, Asteraceae, *Gundelia*, Lactiferous herb, Taxonomy.

Introduction

Gundelia L. belongs to the tribe Lactuceae according to the chloroplast *ndhF* gene (Karis et al., 2001). In the flora books (Nikitin, 1960; Sofieva, 1961; Vasilchenko, 1961; Kupicha, 1975; Feinbrun-Dothan, 1978; Rechinger, 1989 and Avetisian, 1995), *Gundelia tournefortii* L. is the only known species of the genus *Gundelia* and all other names were recorded as synonyms. Recently, several new species have been described from this genus i.e. *Gundelia aragatsi* Vitek, Fayvush, Tamanyan & Gemeinholzer, *G. armeniaca* Nersesyan from Armenia, and *G. dersim* Vitek, Yüce & Ergin, *G. munzuriensis* Vitek, Yüce & Ergin, *G. vitekii* Armağan, *G. komagenensis* Firat, *G. colemerikensis* Firat, *G. cilicica* Firat and *G. anatolica* Firat from Turkey, and *G. tehranica* Vitek & Noroozi from Iran.

Vitek et al. (2010, 2014) used some important morphologic characters for separating species in the genus *Gundelia* including plant size, number of flowers forming one cephaloid (=flower complex, heads of second order, pseudocephalia) in the synflorescence (see Classen-Bockhoff et al., 1989), size and shape of the fruit complex (disseminule), color of the flowers, indumentum in the synflorescence, indumentum of leaves, and habitats. Besides, Nersesyan (2014) used the shape of the involuclers of the central and lateral flowers as diagnostic characters. In addition, I have found some additional

morphologic characters to help for distinguishing species in the genus as closure of flowers at \pm noon and opening in \pm late afternoon, the different/same colors of basal and cauline leaves and squamulose disseminule (beside glabrous disseminule) (Firat, 2016, 2017).

During floristic surveys in Mardin (Fig. 1), May 2017, some interesting *Gundelia* specimens were collected, therefore I decided to analyze the morphological characters of the species using a wide range of literatures for identification (e.g. Nikitin, 1960; Rechinger, 1989; Sofieva, 1961; Al-Vasilchenko, 1961; Kupicha, 1975; Feinbrun-Dothan, 1978; Taey and Hossain, 1984; Avetisian, 1995; Nersesyan, 2014; Armağan, 2016; Vitek et al., 2007, 2014, 2016, 2017a, 2017b, 2017c; Firat, 2016, 2017). As a result of this effort with the light of new characters observed, the aim of the study is to found *G. mesopotamica* from Mardin.

Materials and Methods

Photos of the living material were taken with a Sony DSCR1 digital camera. Geographical positions were identified using a Magellan eXplorist 710 GPS, and insert in Figure 1. A total of 10 herbarium specimens of the new species were collected from three adjacent localities and deposited in the herbaria VANF (acronyms according to Thiers 2017), and in the personal herbarium of the author (private Herbarium of Mehmet Firat).

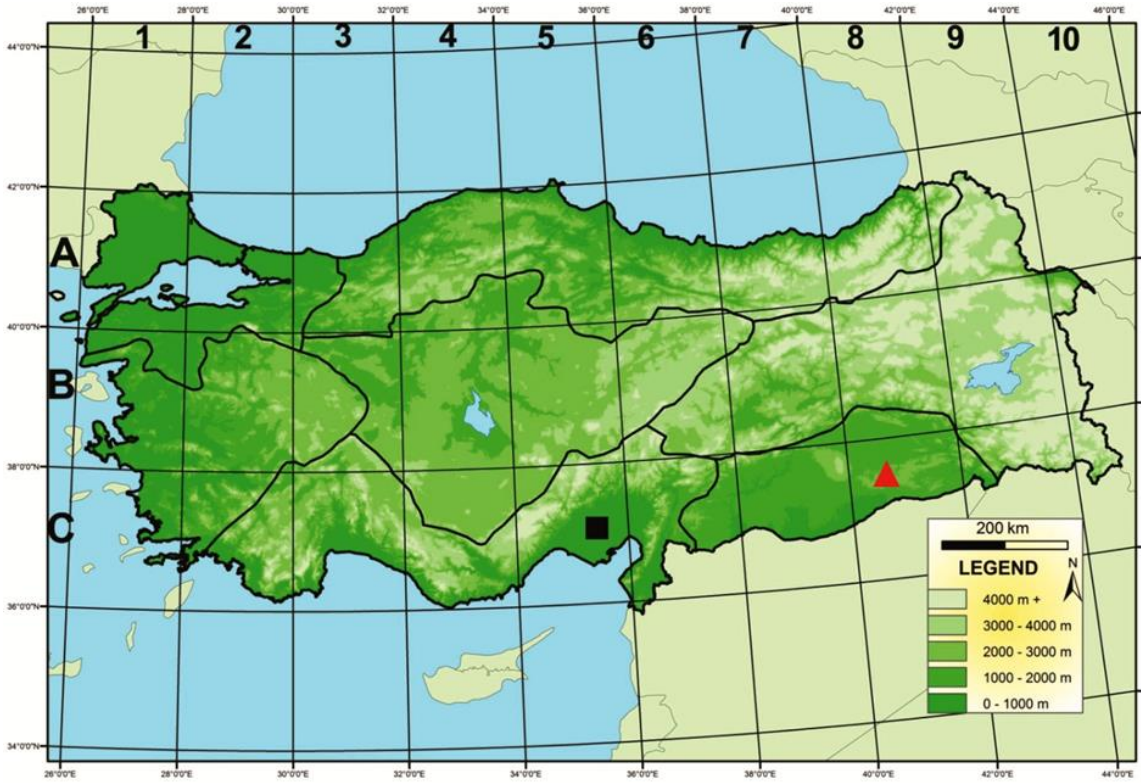


Figure 1. Distribution map of *Gundelia mesopotamica* (▲) and *Gundelia cilicica* (■) in Turkey.

Results

Gundelia mesopotamica Firat *sp. nov.* (Figs. 2-4)

Diagnosis: *Gundelia mesopotamica* is morphologically different from all other *Gundelia* species. Differs from *G. cilicica* with completely dense hairs versus few short or arachnoid hairs synflorescences (5-20 versus 5-10) and densely hairy and arachnoid hairs versus glabrous or with few short or arachnoid hairs; corolla colour internally (white to cream versus yellow)

Type: Turkey. C8 Mardin: 2-3 km from Mardin to Nusaybin (Nisêbîn), eroded slopes, aride steppe, 807 m, 37°17'36"N, 40°46'20"E, coll. 8 May 2017, M. Firat 33725 (holotype VANF, isotypes ANK, Herb. M. Firat).

Description: Perennial lactiferous herb with branched stem 50-80 cm. Completely dense hairs. Leaves coriaceous; alternate, pinnatipartite, pinnatilobe or pinnatisect, stiff spiny. Both side densely hairy and arachnoid hairs. Synflorescences normally 5-20, globose or ovoid, 50-65 mm long and 30-45 mm in diameter (excluding bractes), consisting of 25-55 cephaloids. Synflorescence completely arachnoid hairy (when young densely arachnoid hairs). Bracts spiny, more exceeding cephaloids (especially uppermost bracts very long), with a strong terminal spine and 2 lateral spines, uppermost

bracts up to 55 mm long, and to 11 mm broad at base. Cephaloid (in the middle of the synflorescence) compound of 6-7 flowers. Flowers campanulate to widely spreading, corolla externally purplish to reddish-brownish, internally white to cream, 9-11 mm long (usually lateral longer than central). Cephaloids glabrous. Fruit complex (disseminule) normally obconical to obovate, greyish brown, 10-13 mm long (without spines), in upper part 6-9 mm in diameter (when ripe); central and lateral flowers surrounded by spines originated from the involucels, spines of the central flowers 4-6 mm, of the lateral flowers 3-5 mm, obtained from 25 fruit of average weight 0.209 g (when ripe).

Phenology: Flowering from May to June and fruiting from July to August

Etymology: The specific epithet is derived from the ancient name of the Mesopotamia where type material was collected.

Distribution: *Gundelia mesopotamica* is endemic to Mardin Province of Turkey. According to the grid system (Davis, 1965), the new species, which is present in Mardin, falls specifically within the C8 square (Fig. 1). It is an element of the Irano-Turanian floristic region

Ethnobotanical usage: *Gundelia mesopotamica* is known



Figure 2. *Gundelia mesopotamica*. A-D. synflorescence in flowers stage; E-F. habit; G. basal leaves; D. habitat.

to be the tastiest and most consumed species. It is cooked as stew or egg-vegetable, obtained gum is chewed, used in "herby cheese" production.

Vernacular name: *Gundelia mesopotamica* is called as "Kireng" by the local people of the Mardin Province. The other *Gundelia* species are known by the local people under many names in Kurdish; e.g. "Kênger", "Qorav", "Kereng", "Kerenk", "Keven", "Kengel", and in Turkish; e.g. "Has kanger", "Acı kenger", "Eşek dikenî", "Kenger"

(Firat, 2013).

Red list assessment: The distribution area of *G. mesopotamica* is less than 20,000 km². The species was collected from four localities, and where it occurred, ca. 5,000 individuals were counted. It grows in rocky steppe. Some anthropogenic or grazing effects were observed on the population. Based on the above data and observations, the IUCN (2014) red list category of *G. mesopotamica* is suggested as "Vulnerable", VU B1ab (i,ii,iii)+2ab (i,ii,iii).

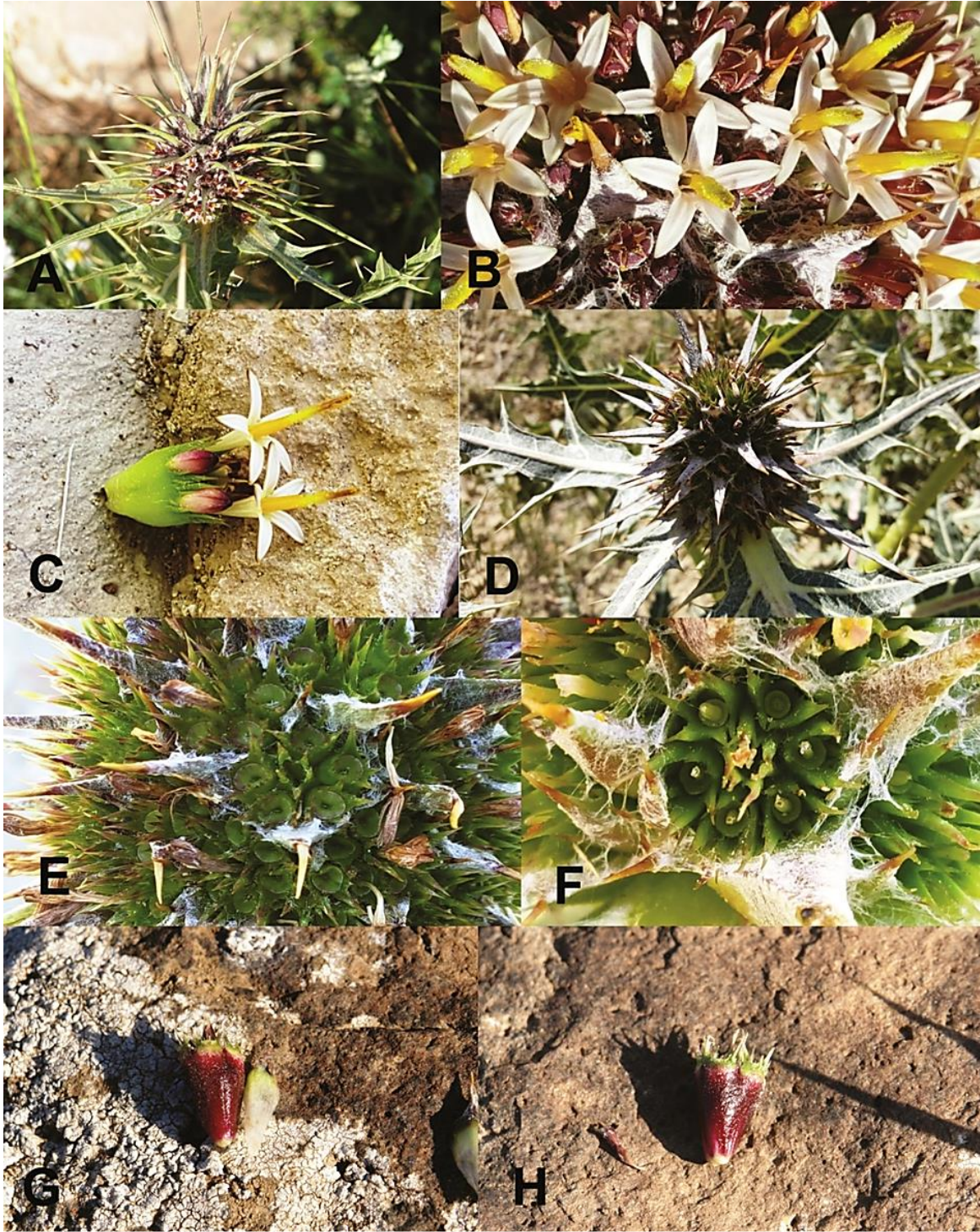


Figure 3. *Gundelia mesopotamica*. A-B. synflorescence in flowers stage; C. detail of cephaloid compound of six flowers; D-F. synflorescence in early fruiting stage (6-7); G-H. early fruiting stage.

Other specimens examined: *Gundelia cilicica*. Turkey. C5 Mersin: Erdemli province, Tozlu village, open forrest, 1460 m, 36°48'12"N, 34°07'09"E, coll. 5 May 2016, M. Firat 32705 (holotype VANF, isotypes ANK, E, Herb. Yıldırımli, Herb. M. Firat).

Conclusion

With the new described species of *Gundelia*, total number of species increased to fourteen: *G. tournefortii*, *G. glabra*, *G. tenuisecta*, *G. rosea*, *G. aragatsi*, *G. armeniaca*, *G. munzuriensis*, *G. dersim*, *G. vitekii*, *G. colomerikensis*,

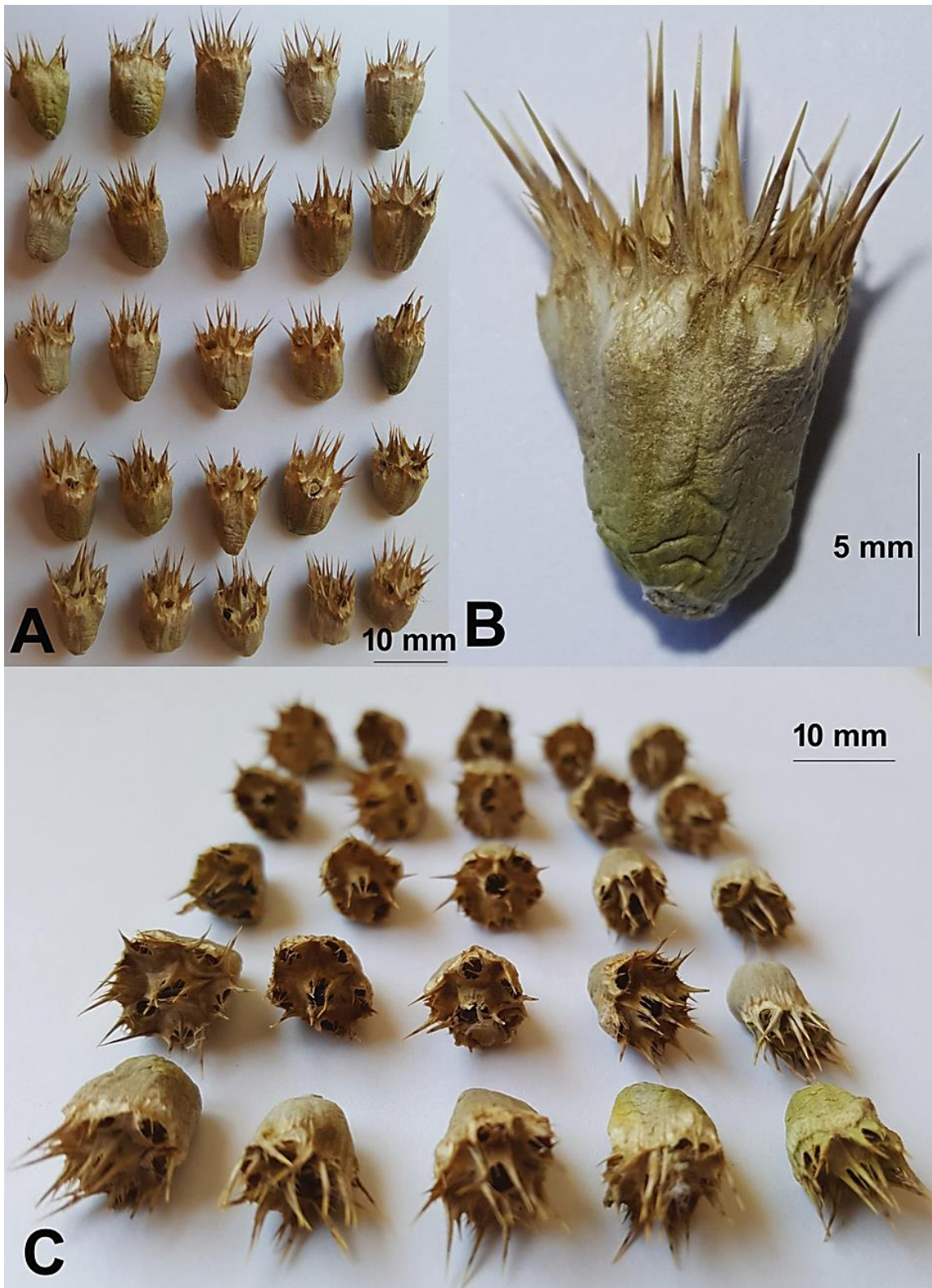


Figure 4. *Gundelia mesopotamica*. A. variability of ripe disseminules B. ripe disseminules, C. detail of cephaloid compound of six and seven disseminules.

G. cilicica, *G. anatolica*, *G. komagenensis* and *G. tehranica*. Based on the former studies and a new

described species, it is possible to claim that the genus deserves much attention on its taxonomy.

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