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E-ISSN: 2458-7893, <http://www.actabiologicturcica.info>***Gundelia rosea* (Asteraceae), a new record for the Flora of Turkey with contributions to its systematics****Mehmet FIRAT**

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**Abstract:** *Gundelia rosea* Al-Taey & Hossain (Asteraceae) is reported as a new vascular plant record for the flora of Turkey. *Gundelia rosea* is previously known from Iraqi Kurdistan (northern Iraq) and Iran. It is for the first time collected from Hakkari Province in eastern Anatolia, Turkey. The expanded morphological description, photographs in habitat, and distribution map of the new record are presented.

**Keywords:** Asteraceae, *Gundelia rosea*, Hakkari, New record, Turkey.

**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, 1981; 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 *Gundelia*, i.e. *G. 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* as 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), colour of the flowers, indumentum in the synflorescence, indumentum of leaves, and habitats. Besides, Nersesyan (2013) used the shape of the involucels 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 colours of basal and cauline leaves and squamulose disseminule (beside glabrose disseminule) (Firat, 2016).

During floristic surveys in Hakkari, May 2011, some interesting *Gundelia* specimens were collected, therefore I decided to analyse the morphological characters of the species using a wide range of literatures for identification (e.g. Nikitin, 1960; Rechinger, 1981; Sofieva, 1961; Al-Vasilchenko, 1961; Kupicha, 1975; Feinbrun-Dothan, 1978; Taey, 1984; Avetisian, 1995; Nersesyan, 2014; Armağan, 2016; Vitek et al., 2014; 2016, 2017a, 2017b; Firat, 2016). As a result of this effort with the light of new characters observed, the aim of the study is to report *G. rosea* from Turkey for the first time.

**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 2016), and in the personal herbarium of the author (private Herbarium of Mehmet Firat).

**Results**

***Gundelia rosea* Al-Taey & Hossain (Figs. 2-3)**



Figure 1. Distribution map of *Gundelia rosea* (▲) in Turkey, Iraqi Kurdistan (northern Iraq) and Iran.

**Description:** Perennial herb with branched stem up to 30-90 (-100) cm. Leaves coriaceous, prostrate, alternate, pinnatilobate or pinnatisect, spiny. Both side short or arachnoid hairs, especially on or besides the veins. Synflorescences normally 8-50, globose or ovoid, 40-60 mm long and 30-50 mm in diameter (excluding bracts), consisting of 50-70 cephaloids. Synflorescence densely covered with arachnoid hairs when young. Bracts spiny, more or less exceeding cephaloids, with a strong terminal spine and 2-4 lateral spines, with additional smaller spines in between, in aberrant forms bracts up to 50 mm long, and to 10 mm broad. Bracts densely covered by tomentose and arachnoid hairs and are normally tinged with purple. Cephaloid (in the middle of the synflorescence) compound of (6-) 7-8 flowers. Flowers campanulate to widely spreading, corolla externally purplish to dark red, internally pinkish, 14-18 mm long (usually central longer than lateral), tube very narrowly. Synflorescence glabrous. Fruit complex (disseminule) normally conical to obovoid, greyish to light brown, 13-20 mm long (without spines), in upper part 8-14 mm in diameter (when ripe), central and lateral flowers surrounded by spines originated from the involucels, spines of the central flowers 2-7 mm, of the lateral flowers 1.5-6 mm.

**Habitat:** Mountain meadows and stony slopes, 1600-2500 m.

**Phenology:** Flowering from April to May and fruiting from July to August.

**Distribution in Turkey:** Hakkari Provinces.

**General distribution:** Iraqi Kurdistan (northern Iraq), Iran and New to Turkey.

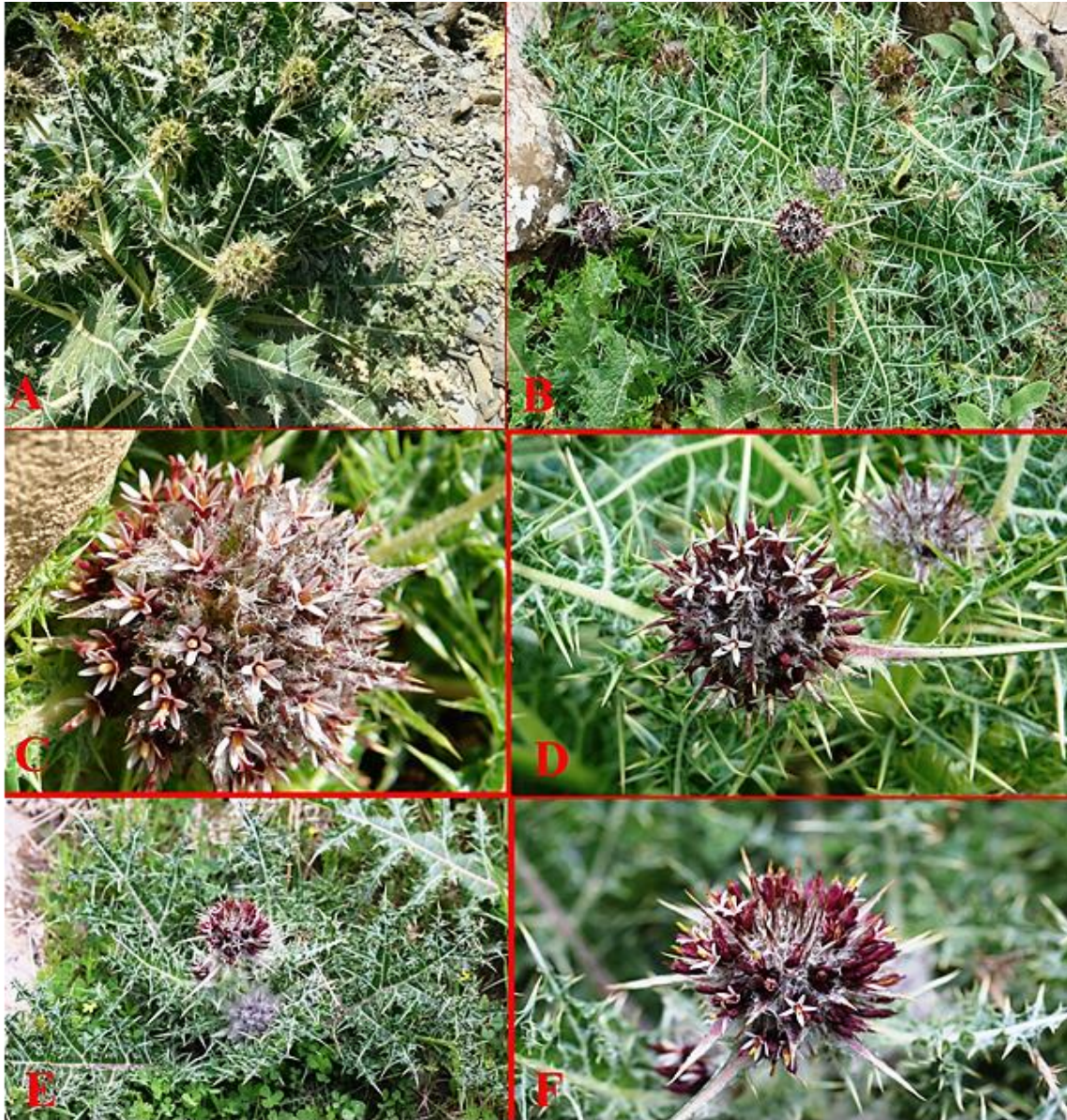
**Ethnobotanical usage:** *Gundelia rosea* is known to be the tastiest and most consumed species. It is cooked as stew or egg-vegetable, obtained gum is chewed, used in "herby cheese" production.

**Vernacular name:** *Gundelia rosea* is called as "Kengereş" by the local people of the Hakkari 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).

**Other specimens examined:** *Gundelia rosea*. Turkey. C10 Hakkari: Şemdinli Province, Sad Mountain, Derîyê Kera region, meadows and stony slopes, 1662 m, 37°16'17" N, 44°20'09" E, coll. 25 May 2011, M. Firat 27393 (Herb. M. Firat); C10 Hakkari: Şemdinli Province, Sad Mountain, Derîyê Kera region, meadows and stony slopes, 1662 m, 37°16'17" N, 44°20'09", coll. 27 July 2011, M. Firat 27620 (Herb. M. Firat) (in fruit).

### Conclusion

With the recently reported species *G. rosea*, total number of species in the genus increased to fourteen in Turkey: *G. tournefortii*, *G. glabra*, *G. tenuisecta*, *G. rosea*, *G. aragatsi*, *G. armeniaca*, *G. munzuriensis*, *G. dersim*, *G. vitekii*, *G. komagenensis*, *G. colemerikensis*, *G. cilicica* *G. anatolica* and *G. tehranica*. Based on the



**Figure 2.** *Gundelia rosea*. (A-B) habit, (C-D). synflorescence in flowers stage (A, B, C, and D=from Turkey material, Firat 27393), (E) habit, and (F) synflorescence in flowers stage (E-F=from type locality Iraqi Kurdistan (northern Iraq) material of Dr. S. Youssef).

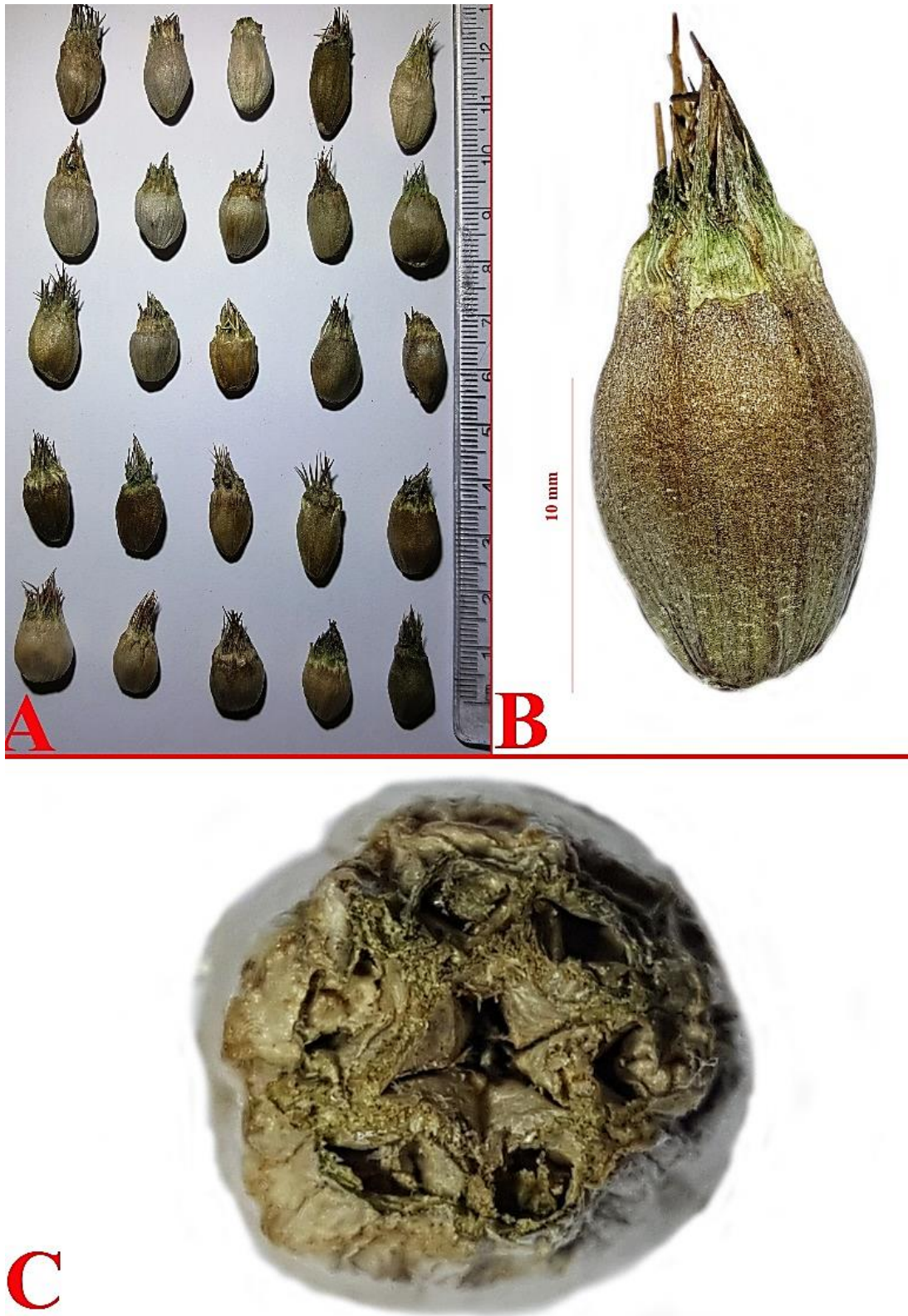
former studies and this new record proved that the genus deserves more attention particularly on its taxonomy.

#### Acknowledgements

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**Figure 2.** *Gundelia rosea*. (A) Variability of ripe disseminules, (B) ripe disseminules, and (C) detail of cephaloid compound of seven disseminules.

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