**Gypsophila hispida, A New record for flora of Iran**

Atiye Nejad Falatoury¹ & Mostafa Assadi²

Received: 05.07.2018 / Revised: 15.07.2018 / Accepted: 26.08.2018 / Published: 21.12.2018

1Iranian Research Institute of Plant Protection, Agricultural Research, Education and Extension Organization (AREEO), Tehran, Iran
2Research Institute of Forests and Rangelands, Agricultural Research, Education and Extension Organization (AREEO), Tehran, Iran

*Correspondent author: a.falatoury@areeo.com

**Abstract.** *Gypsophila hispida*, sect. *Hispidae*, is reported for the first time from NW Iran. Illustrations, morphological and palynological descriptions and distribution are provided in detail, along with a key for the six taxa of subgen. *Hagenia* from Iran.

**Keywords.** baby’s-breath, Caryophylloideae, Caryophyllales, Middle East, Turkey

**INTRODUCTION**

Genus *Gypsophila* L. (Linnaeus, 1753: 406) (baby’s-breath in English), a member of the Pink family (Caryophyllaceae; “Mikhakian” in Persian), with approximately 150 species (Mabberley, 2008: 383), is the fourth largest genus of the subfamily Caryophylloideae Rabeler & Bittrich. and the second largest genus of the tribe Caryophyllaceae (Rabeler & Bittrich, 1993: 862). Iran is the second main diversity center of *Gypsophila* with 38 species (Nejad Falatoury et al., 2015a, b; 2016a, b, c and Armağan et al., 2017). In recent decades, some new taxa of *Gypsophila* have been reported from Turkey and Iran (Mozaffarian, 1991; Ataşlar and Ocak, 2005; Mozaffarian, 2008; Budak, 2012; Yildirim, 2012; Hamzaoglu, 2012; Koç, 2013; Nejad Falatoury et al., 2015a, b; Armağan, 2016; Nejad Falatoury et al., 2016a, b, c and Armağan et al., 2017). In this paper a new record of the genus *Gypsophila* subgenus *Hagenia* (Moenche) Fenzl sect. *Hispidae* Boiss. is described from West Azerbaijan Province, North West of Iran. This species was previously recorded from East of Turkey and South of Transcaucasia (Schischkin, 1936; Barkoudah, 1962; Huber-Morath, 1967; Davis et al., 1988 and Ataşlar, 2000). In addition to the morphology of *G. hispida*, its palynological characteristics were also discussed. The pollen grains of *Gypsophila* taxa are monade, apolar, pantoporate with 12 pores, rounded polyhedral, tectate with granulate microechinate-microperforate ornamentation.

Type: Turkey; Cappadocia, along the Euphrates, Aucher 549, holotype G-Boiss photo!

Description: Perennial. Stems several, branched in the upper part, erect, 30-40 cm long, yellowish green, glabrous below, with long glandular hairs above. Internodes 1-5 cm often 3-4 cm long. Lower leaves 20-50 × 2-7 mm, narrow lanceolate, narrowed at the base, glabrous; upper leaves 15-90 × 2-17 mm, lanceolate to narrow lanceolate, acute or apiculate; only one to three leaves near the inflorescence glandular-hairy. Inflorescence lax, compound dichasial, glandular-hispid, large, many-flowered. Bracts 1.3 mm long, lanceolate, acuminate, green with scarios margines. Pedicels 5-20 often 10 mm long. Calyx, 5-ribbed, campanulate-tubular, 4-6 mm long, densely glandular-hispid, incised nearly to the middle; teeth ovate, obtuse; green bands twice as broad as the scarios intervals, with crowded crystals. Petals 8-12 mm long, cuneate, emarginate to sinuate, pale yellow (cream) Stamens 10, shorter than calyx. Ovary globose, with two long styles with terminal stigmatic surface. Ovules 12-16. Capsule ovate, 3.5-4.5 mm long, splitting into 4 valves, with 4-5 seeds. Seeds reniform, with marginal hilum, warty, with black and glossy surface. In terms of exomorphology, the surface of the seed is constructed of regularly arranged polygonal or elongate cells with zip shaped margins and convex periclinal walls with acute papillae, 1.3-1.4 × 1.4-1.5 mm. (Fig. 3)

Distribution and Habitat — This species has been collected from West Azerbaijan Province, North West of Iran (Fig. 4). The species could be found on limestone slopes and rocks at an altitude of 1100-2150 m.

Phenology — The flowering and fruiting materials were collected from June to July.

Specimens examined (Paratypes):—IRAN. West Azerbaijan Province: Khoy, Razi (border of Turkey), 2050m, 9 July 1991, Mozaffarian 69966 (TARI!); —Turkey. Kars province, 7 June 1913, Woronow 12307 (LE!).

Pollen morphology

Monade, apolar, rounded polyhedral-spheroidal, 28.4-28.6 μm. Grains pantoporate. Pores 2.9-3.4 μm in diameter, annulate. Distance between pores (without annulus) 3.6-4.4 μm. Annulus with granules, operculate. Ornamentation is nanoechinate-nanoperforate (Fig. 3 E, F).
Fig. 1. *Gypsophila hispida* (V. Mozaffarian 69966, TARI!).
Fig. 2. Syntype of Gypsophila xanthina (Woronow 12307, LE!).
Fig. 3. *Gypsophila hispida*. A: Complete flower in side view, B: Fruit (capsule), C: petal, D: Scanning electron micrographs (SEM) of mature seed, E: Scanning electron micrographs (SEM) of pollen grain, F: Detail of pollen ornamentation (photos from V. Mozaffarian 69966 by A. Nejad Falatoury).

CONCLUSION

Subgenus *Hagenia* includes 6 taxa in Iran, which have some common morphological characteristics such as relatively elongated petals, foliaceous bracts and hairy calyces except in *G. pilosa* var. *glabra*. In the following, an identification key for the six Iranian taxa of this subgenus is provided.
A simplified key for the taxa of *Gypsophila* L. subgenus *Hagenia* (Moenche) Fenzl in Iran

1. Plant annual ........................................ 2
   — Plant perennial .................................... 3
   — Plant completely glabrous ......................... *G. pilosa* var. *glabra* Falat., F. Ghahrem. & Assadi
3. Stem erect, middle leaves lanceolate to ovate ......................................................... 4
   — Stem ascending to erect, middle leaves narrow lanceolate, petals spatulate, divided to distinctive lamina and claw, undulate ........................................... *G. farsensis* Falat., Assadi & F. Ghahrem.
4. Leaves oblanceolate to ovate, calyx 6-10 mm, petals 11-17 mm, narrow cuneate, truncate ........................................... *G. platyphylla* Boiss.
   — Leaves lanceolate to spatulate, calyx 3-6 mm, petals 8-13 mm, narrow cuneate, emarginate to sinuate ........................................... 5
5. Lower leaves lanceolate, calyx 4-6 mm, petals pale yellow (cream), emarginate to sinuate ........................................... *G. hispida* Boiss.
   — Lower leaves spatulate, calyx 3-4 mm, petals white with purple veins at base, emarginate ........................................... *G. lurorum* Rech.f.

**ACKNOWLEDGEMENT**

The authors are grateful to the curators of the herbaria TARI (Research Institute of Forests and Rangelands) and LE (Komarov Botanical Institute) for making the herbarium facilities available for the study. The First author would like to express the deepest appreciation to Prof. F. Ghahremaninejad for his valuable guide and support. Special thanks should be offered to A.H. Rezaee (Tehran) and M. Shojaei (Tehran) for their technical assistance.

**REFERENCES**


How to cite this article: