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A new record for the Flora of Turkey, *Hedysarum singarense* Boiss. & Hausskn. (Fabaceae)

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Abstract

In this study, *Hedysarum singarense* Boiss. & Hausskn. species whose presence is unknown in Turkey before have been studied with their systematic and morphological characteristics. The species collected from the Southeastern Anatolia Region has been identified as a new record for the Flora of Turkey. In the study, the description, designation key, distribution map and pictures are given.

Key words: *Crinifera*, Diyarbakır, Fabaceae, *Hedysarum*, Mardin, *Multicaulia*, New record, Turkey.

1. Introduction

Hedysarum L. is a large genus which belongs to the Fabaceae family, with about 200 species and generally spreading in the northern hemisphere (Vassiljeva, 1987). North America, Europe, the Mediterranean region and Central Asia constitute the main gene centers (Polhill, 1981, Yakovlev et al., 1996). The plants belonging to this genus can grow in all kinds of habitats from mountainous regions to poles, from beach to clover. They are mostly perennial herbaceous plants and sometimes have semi-bushy forms (Choi and Ohashi, 2003).

H. singarense is an endemic species that grows in northern Iraq (Townsend and Guest, 1974). Although Rechinger (1984) mentioned its presence in Turkey and Syria, in other studies carried out in the following years, it has been mentioned to spread to Western Iran and not to spread in Turkey (Hedge, 1970; Davis et al., 1988; Yıldız and Aktoklu, 1997; Ranjbar et al., 2006; Aktoklu, 2012).

However, *Hedysarum* L. samples collected from Diyarbakır and Mardin in the floristic trips made in the Southeastern Anatolia Region in 2015-2016 has been diagnosed as *Hedysarum singarense* Boiss. & Hausskn. with the help of Iraq and Iran Floras (Rechinger, 1984, Townsend and Guest, 1974). Thus, with the new record, the number of genus *Hedysarum* in Turkey has reached up to 22 species.

2. Material

Our study material, *H. singarense* species, was collected from Diyarbakir and Mardin in 2014-2015 from natural environment. Collected samples were made into herbarium specimens to be used for diagnosis and subsequent studies. Dried specimens are preserved in the Herbarium of Dicle University (DUF).

2.1. Collection area

B8 Diyarbakır, Silvan, Silvan to Sason, 3-4 km, around of Hassuni Mağaraları, stony and calcareous slopes, 970-980 m, 17.05.2014, A. Selçuk Ertekin, DUF 10128. ibid. 08.06.2014, A. Selçuk Ertekin, DUF 10165. 37 683071 E 4222262 N.

C8 Mardin, Mazıdağı, Mazıdağı to Derik, 4-5 km, calcareous slopes, 1030 m, 06.06.2015, A. Selçuk Ertekin, DUF 10281. 37628234 E 4147442 N (Fig. 1).

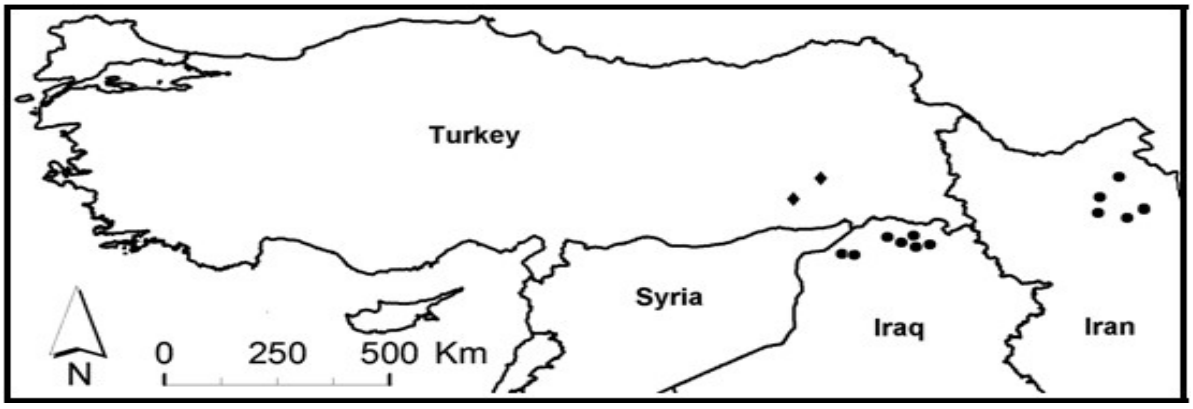

Figure 1. Distribution map of *Hedysarum singarense.*

3. Findings

Hedysarum singarense Boiss. & Hausskn. Fl. Orient. 2: 522, 1872.

3.1. Morphology

Perennial, caulescent, stem numerous, erect, unbranched or rarely branched below, 15-45 cm, striate, all vegetative parts densely silky hairy to tomentose, woody at the base. Stipules ovat-deltoid, acuminate, 5-7 mm, connate below c. 2-3 mm, brownish, membraneus, upper stipules small 2-3 mm ovat to lanceolate. Leaves imparipinnat, 7-15 cm, the upper leaves shorter, to 2-5 cm; lower petioles 2-4 cm; leaflets 4-6 (-8) pairs, obovat to ovate, apex mucronate, 10-24 x 6-14 mm, adpressed densely silvery tomentose or tomentose below, somewhat less hairy and greener upper surface; petiolate 1-1.5 mm, terminal leaflets larger than lateral, 2-4 mm; upper leaflets smaller to 5-9x 3-6 mm. Inflorescence narrow, cylindiric, densely flowered, peduncle 5-22 cm, elongating in fruit, densely silvery tomentose. Pedicel 2-3 mm in fruit. Bracts subulate, 2-4 mm, adpressed hairy, caducous; bracteoles similar, very small, 1-2 mm. Flowers 12-13 mm. Calyx 4-5 mm, campanulate, slightly oblique, tube 1.5-2 mm, teeth subequal, about equalling or slightly longer than tube, inner part white pannose hairy, ovat or lanceolate, the lower teeth linear-lanceolat, 2-3 mm, upper teeth, ovate, acuminat, 2mm. Corolla pink, yellow spotted half below of standart; standart obovat, 7-10 x 5-6 mm, 3-4 mm shorter than keel, apex slightly emarginate, shortly clawed, 1-1.5 mm; wings oblong-ovat, 5-6 x 2 mm, apex obtuse, shortly clawed, c. 1 mm; keel deltoid, 11-13 x 4-5.5 mm, apex truncate claw2.5-3.5 mm. Andrekeum oblique, 14-16 mm, staminal tube 10-12 mm, free filament 2-3 mm, vexillar stamen 9-10 mm. Style 11-12 mm. Legumen with 1 (-2) lomentum, lomentum asimetrically rhomboid-broadly ovat, 12-15 x 9-11 mm densely tomentose and with numerous red or violet setae, 10-11 mm long (Fig. 2, 3).

Figure 2. Fruit of *H. singarense*.

Figure 3. General view of plant.

Fl. 5-6. Stony and calcareous slopes, 970-1030 m.

Typus: Jabal Sinjar, Haussknecht, 05. 1867 (G-BOIS 326930/1, photo!).

3.2. Key of Turkish species of sect. Crinifera Boiss.

1.Leaflets 6-12 pairs, ovate, c.5 mm long ***aucheri***

1.Leaflets 2-9 pairs, linear-oblong to ovat or ovat-orbicular, longer than 8 mm

2.Standart shorter than the keel c.3-4 mm,

3.Corolla mauve-pink; leaflets obovat to ovate, 10-24 mm ***singarense***

3.Corolla yellow; leaflets linear-oblong or oblong elliptic, 8-10 mm

4.Leaflets linear-oblong; keel 10 mm; lomentum 12 mm long ***pycnostachyum***

4.Leaflets oblong elliptic; keel 14 mm; lomentum 8 mm long ***pogonocarpum***

2.Standart longer than or equalling keel

5.Corolla yellow, cream or white;

6.Corolla cream or white; leaflets glabrous above, to 12 mm ***kotschyi***

6.Corolla yellow; leaflets densely tomentose on both surfaces, to 22 mm ***pannosum***

5.Corolla purplish-pink or rose-lilac; ***rotundifolium***

4. Discussion

Compared to the Iraq and Iranian floras, it is seen that the Turkish examples show some differences. Especially the leaves are 4-6 (-8) pairs and Iraq specimens are 3-5 pairs.

Although the color of flowers is indicated as blue-purple in the examples of Iraq and Iran, the samples studied are corolla pink color.

Although calyx teeth were defined as subulate in the Iraq and Iranian flora, in the examined samples, calyx teeth were identified as ovate or lanceolate. The inside of the calyx was determined to be white pannose hairy. *H. singarense* specimens collected from Turkey also differ significantly from other species by their frequent silver-fuzed body and leaves, shorter standard than the keel (Fig. 4, 5, 6).

Figure 4. Shorter standart than the keel.

Figure 5. Multypartite leaves.

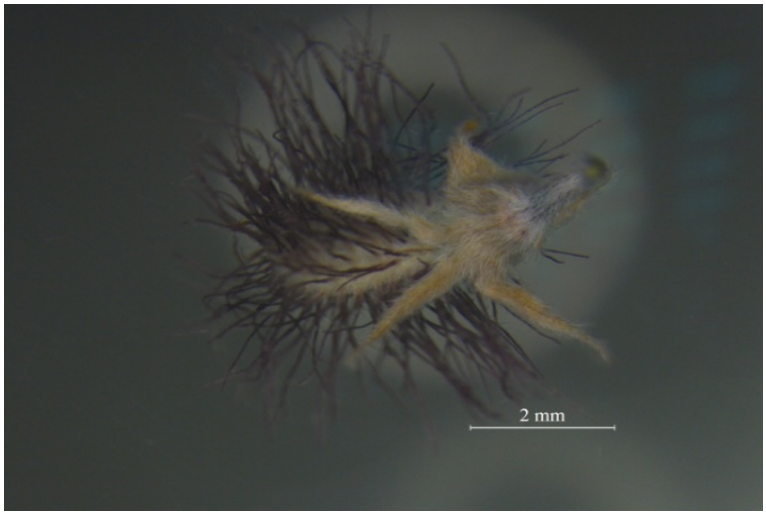

Figure 6. Subulate and white pannose hairy calyx.

5. Result

As a result; it has been reached to the conclusion that the specimen accepted as a member of *Multicaulia* Boiss. division by Rechinger, should be transferred to *Crinifera* Boiss. division (Hedge, 1970) due to its vegetative qualities (simple body and leaf hairiness) and long red seta lomentums. As a result of this study, the number of members of the *Crinifera* Boiss. section has reached to 7.

Besides, while *Hedysarum* genus is represented by 21 species, 12 of which is endemic is recorded in Turkey (Aktoklu, 2012), *H. singarense* species whose presence in Turkey has been detected by us and which is a new record for Flora of Turkey has been recorded as 22 species in Turkey.

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