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ORIGINAL PDF URL: <https://dergipark.org.tr/tr/download/article-file/794696>



MINUARTIA SETACEA (CARYOPHYLLACEAE), A NEW RECORD FOR TURKEY

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(Received: February 21, 2017; Accepted: March 18, 2017)

ABSTRACT

Minuartia setacea was given as a new record for Turkey. The specimens were collected from Kocaeli province. This new record was compared with the similar species in Turkey. The description, distribution and the figure of this new species were given. Seed structures were examined by scanning electron microscopy.

KEYWORDS: *Minuartia*, new record, taxonomy, Turkey.

1. INTRODUCTION

Caryophyllaceae family consist 80 genera and 2100 species mainly distributed Irano–Turanian and Mediterranean phytogeographic regions in the word. It has three subfamilies namely *Alsinoideae* Burnett, *Caryophylloideae* Arn. and *Paronychioideae* A.St. *Minuartia* L. genus takes place in subfam. *Alsinoideae* (DC.) Fenzl in the family Caryophyllaceae. *Minuartia* comprises ca. 120 species distributed mainly in the northern hemisphere, one species native in Brazil and Chile [1]. *Minuartia* includes 7 section and 74 taxa in Flora of Turkey [2, 3, 4]. As a result of recent studies, 2 taxa (*M. dianthifolia* (Boiss.) Hand.–Mazz. subsp. *cataonica* McNeill and *M. dianthifolia* (Boiss.) Hand.–Mazz. subsp. *kurdica* McNeill) were determined as synonym in this genus. Also two species (*M. elmalia* (Aytaç) Aytaç, Parolly & Ö.Eren, *M.*

turcica M.Koç), one variety (*Minuartia dianthifolia* var. *longipetala* Parolly & Ö.Eren) and one hybrid (*Minuartia* × *antalyensis* Parolly & Ö.Eren) have been added to this genus [5, 6, 7, 8]. As a result; the total number of taxa in this genus has been increased to 76 in Turkey [2, 3, 9].

Authors collected some *Minuartia* specimens from Ballıkayalar valley (Kocaeli) during the project (A.F.F.F./2009–05 and 113Z260), supported by Bozok University and TÜBİTAK to revise Turkey sect. *Minuartia* taxa (Caryophyllaceae). These specimens were compared with related species or photographs in the herbaria of G–Boiss., ANK, GAZI, ISTE, HUB, ISTF, EGE, Bozok University Herb., and with records in the literature [2, 3, 10, 11, 12, 13, 14, 15, 16]. The studies showed that these specimens are representatives of a species new record for Turkey.

2. MATERIAL & METHOD

The specimens upon which this study is based were collected from Kocaeli province of Turkey. The collected specimens were first compared with the similar species from Flora of Turkey and then Flora of the U.S.S.R., Flora Europaea and Flora Iranica in order to identify them [10, 13, 14, 15, 16]. Pictures were taken with an OLYMPUS SZX–16 Stereomicroscop, DP 72 digital camera and seed surface images were taken by Quanta Feg 450 scanning electron microscope (SEM) at Bozok University Research and Application Center. The vegetative parts were measured with a ruler with 0.5 mm accuracy and the floral characteristics were studied using an ocular micrometer. The collected specimens are deposited in the herbarum Bozok Universities.

3. RESULT & DISCUSSION

Minuartia setacea (Thuill.) Hayek subsp. *setacea* var. *setacea*, [Fl. Steiermark 1: 271 (1911)] (Figure 1, 2 and 3).

≡ *Arenaria setacea* Thuill., Fl. Paris, ed. 2, 220 (1779); *Alsine setacea* (Thuill.) Mert. & W.D.J.Koch, Deutschl. Fl. 3, 286 (1831); *Sabulina setacea* (Thuill.) Rchb., Fl. Germ. Excurs.: 786 (1832).

Type: France, near Paris, a fontainebleau, rocher du Cuvier, *Thuiller s.n.* (G, G00226887, photo!; **isotypes:** G, G00226875, foto!; G, G00226888, foto!).

Loosely caespitose perennial herb. Stem erect or ascending, 10–20 cm, puberulent below glabrous above, loosely branched, base 0.5–0.8 mm diameter. Leaves linear–lanceolate, 5–12 × 0.6–1.1 mm, glabrous, 3-nerved at the base, greenish; apex acute to acuminate; margin membranous at the base and ciliate; leaf sheath membranous, 0.1–0.2 mm, glabrous or puberulent; leaf axillary fascicles open at flowering time. Bracts linear–lanceolate, 3–8 × 1–1.8 mm, glabrous, obscurely 3-nerved, middle nerved white; apex acute to acuminate; margin membranous, glabrous. Pedicels 2–7 mm, erect, glabrous. Inflorescence lax clusters, glabrous; flowers pedicellate, per cyme 3–8 flowered. Sepals ovate or ovate–lanceolate, 3–4.5 × 1–1.5 mm, obscurely 1 middle and occasionally 2 lateral nerved, glabrous; apex acute to acuminate; margin membranous and glabrous, membrane 0.1–0.2 mm wide. Petals ovate to elliptic, 3–5 × 1–1.3 mm, 1.3 times as long as sepals, white; apex acute; cuneate at the base. Stamens 10; filaments 1–4 mm; staminal glands at the base of outer filaments, definite, 5–numerous, bipartite, white to orange. Styles 1–2 mm. Capsule ovoid, 3–4.5 × 1–1.5 mm, 3–6 seeded, as long as sepals. *Fl.* 5–7, 930 m, rocky and stony places.

Seed micromorphology: Seeds reniform; 0.8–1 × 0.6–0.9 mm; brownish; lateral and dorsal surfaces tuberculate, tubercles papillate; cells oblong–elliptic, irregular; anticlinal cell walls uncertain V–undulat; periclinal cell walls convex, wrinkled.

Specimens examined: Turkey – A2 Kocaeli: Gebze, Ballıkayalar valley, 40°50'N–029°30'E, 930 m, rocky and stony places, 24.7.2014, *Koç* 2354 & *Hamzaoglu* (Bozok Univ. Herb.).



Figure 1. *Minuartia setacea* subsp. *setacea* var. *setacea* (Koç 2354). A– habit, B– cyme, C– bract, D– sepal, E– petal, F– (*) staminal gland, G– capsule.

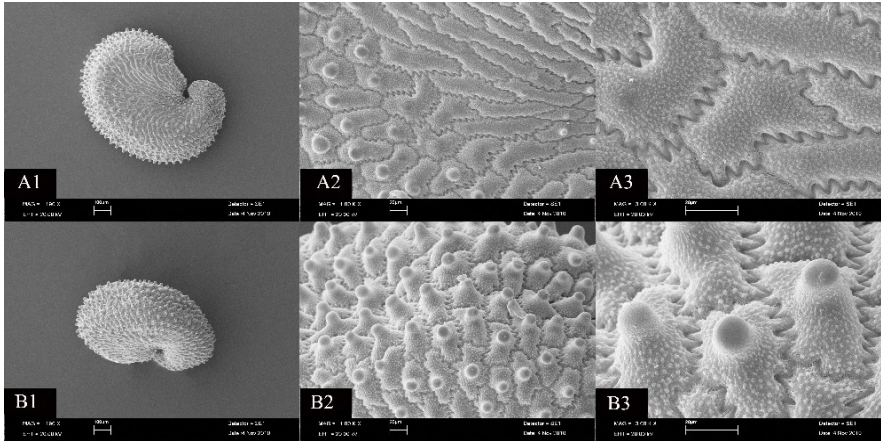


Figure 2. SEM photographs of the seed coat. *Minuartia setacea* (A– Ventral, B– Dorsal surface). (Scale bars: A1 and B1– 500 µm; A2 and B2– 100 µm; A3 and B3– 40 µm).

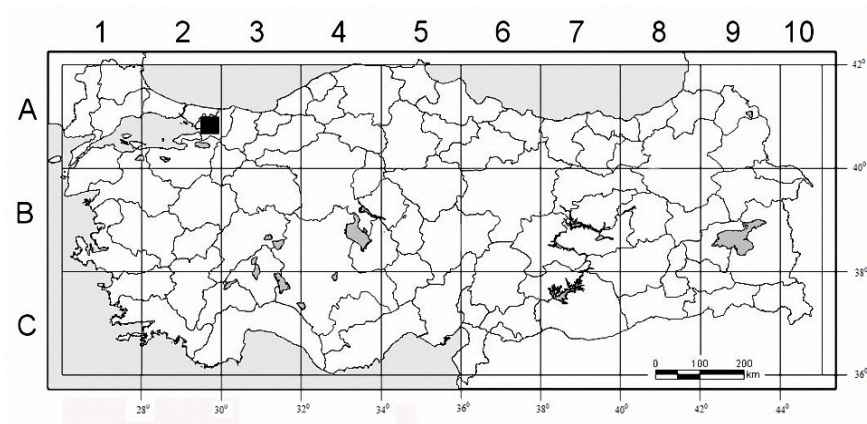


Figure 3. Distribution of *Minuartia setacea* (■) in Turkey.

The *Minuartia* specimens collected from Ballıkayalar valley (Gebze, Van) were first compared with the related species in Flora of Turkey. According to this comparison, the specimens has some similarities with *Minuartia anatolica* (Boiss.) Woron. var. *anatolica* but differ from it with apparent glabrous leaves and inflorescence (Davis et al., 1988). So the specimens collected were compared with the flora of the neighboring countries which showed that the morphological characteristics of the species were identical with those of *Minuartia setacea* species. This reveals the fact that the species *Minuartia setacea* which is known to be distributed in Europe and Russia regions is also present in Turkish flora [13, 15].

Acknowledgements: We wish to thank TÜBİTAK (Project number: KBAG–113Z260) and Bozok University (Project No: AFFF–2009–5) for financial support.

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