

## A new species record for the flora of Turkey: *Barbarea bracteosa* Guss.

Ünal Akkemik<sup>1\*</sup>, Hatice Yılmaz<sup>2</sup>

<sup>1\*</sup> Istanbul University, Faculty of Forestry, Department of Forest Botany, 34473, Istanbul, Turkey

<sup>2</sup> Istanbul University, Faculty of Forestry, Vocational School of Forestry, 34473, Istanbul, Turkey

\* Corresponding author e-mail (İletişim yazarı e-posta): [uakkemik@istanbul.edu.tr](mailto:uakkemik@istanbul.edu.tr)

Received (Geliş tarihi): 12.11.2015 - Revised (Düzeltilme tarihi): 23.11.2015 - Accepted (Kabul tarihi): 23.11.2015

**Abstract:** *Barbarea bracteosa* Guss. (Brassicaceae) recently collected from İstanbul, is reported as a new record for the Flora of Turkey. It was identified using the collected specimens and Flora Europaea. The description and illustrations of the species are given and a key is presented below to the fourteen species found in Turkey.

**Keywords:** *Barbarea, bracteosa*, Brassicaceae, new record, flora, Turkey

## Türkiye florası için yeni bir kayıt: *Barbarea bracteosa* Guss.

**Özet:** İstanbul'dan yeni toplanan *Barbarea bracteosa* Guss. (Brassicaceae) örnekleri, teşhis edildikten sonra Türkiye Florası için yeni kayıt olarak rapor edilmiştir. Türkiye Florasında olmayan bu tür, Avrupa Florasına dayanılarak teşhis edilmiştir. Makale kapsamında türün tanımı, görselleri ve Türkiye Florasında bu örneklerle birlikte 14 olan *Barbarea* türlerinin tam anahtarları verilmiştir.

**Anahtar Kelimeler:** *Barbarea, bracteosa*, Brassicaceae, yeni kayıt, flora, Türkiye

### 1. INTRODUCTION

Turkey, which has a wide geographical condition, hosted around 11707 plant taxa (Güner et al. 2012) in its nature. The floristic studies continuing reveal new species and new records from Turkey. The family Brassicaceae is known to be represented by 92 genera (Al-Shehbaz et al. 2007; Ünal and Özgökçe, 2007). The genus *Barbarea* is represented by thirteen species in Turkey (Bağcı, 2012), and only one species, *Barbarea vulgaris* W. T. Aiton grows in Istanbul. With the new record described here, the number of *Barbarea* species in Turkey is increased to fourteen. The purpose of the present paper is to submit a new record from Istanbul, Turkey.

### 2. MATERIAL AND METHODS

During a floristic field trip, the authors collected an interesting specimen of Brassicaceae on May 04, 2015, in the basin of Elmalı Dam, İstanbul (Figure / Şekil 1). In second trip to the same place on June 04, 2015 the specimen with fruit were also collected. The herbarium specimens gathered were deposited in the Herbarium (ISTO) of the Faculty of Forestry. When the herbarium specimens were examined, they were identified as *Barbarea* but some different features regarding the well-developed leafy bracts which subtend the flower were recognized (Figure / Şekil 2-3). This feature completely lack in other species of the genus native in Turkey. Therefore the specimens did not match any of the species included in the taxonomic accounts of the *Barbarea* for the flora of Turkey (Coode and Cullen, 1965; Davis et al., 1988; Yıldırım, 2000; Özhatay and Kültür, 2006; Özhatay et al., 2009; Özhatay et al., 2011; Özhatay et al., 2013; Savran et al., 2009). Based on this observation, the species is easily distinguished by its floral bracts, the specimens were identified as *Barbarea bracteosa* using the references (Ball, 1994; Pignatti, 1982).

**Cite (Atf) :** Akkemik, Ü., Yılmaz, H., 2016. A new species record for the flora of Turkey: *Barbarea bracteosa* Guss. *Journal of the Faculty of Forestry Istanbul University* 66(2): 636-640. DOI: [10.17099/jffiu.28935](http://dx.doi.org/10.17099/jffiu.28935)



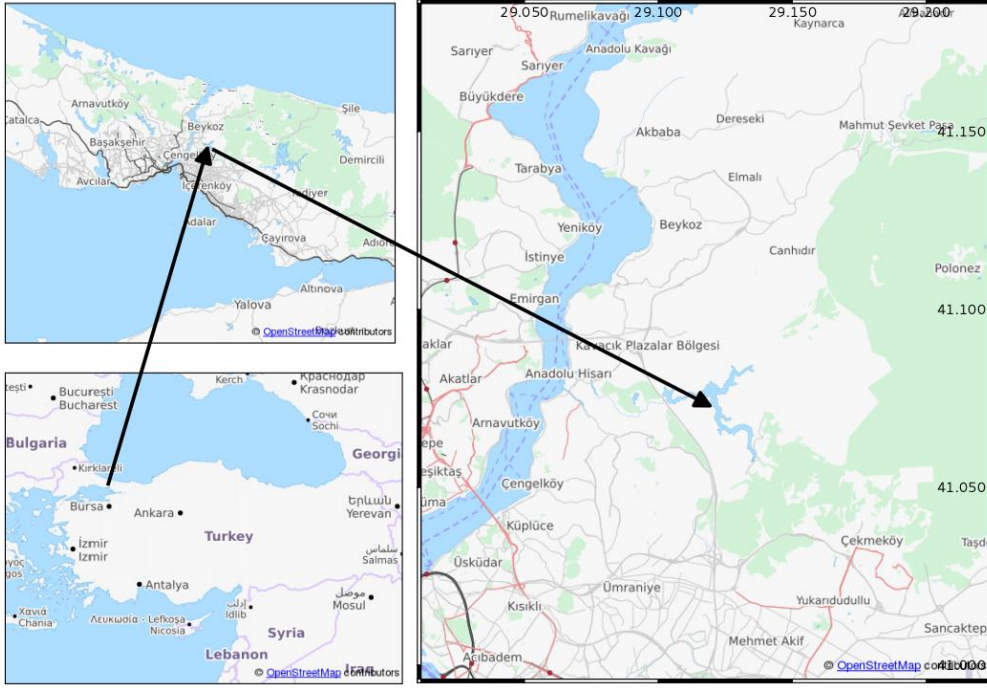


Figure 1. The area where the specimens were collected  
Şekil 1. Örneklerin toplandığı alan



Figure 2. Flowering stems of the species with bracts (A) and a flower having a bract (B)  
Şekil 2. Brahte taşıyan çiçekli gövde (A) ve brahteli çiçekler (B)

### 3.RESULTS AND DISCUSSION

New record in Turkey: A2 İstanbul, Elmalı Dam Basin, 110 m asl., within open area and road sides in the forest, ISTO numbers are 36729 and 36730.

The description of the species according to Flora Eropaea (Ball, 1994) and the specimens is as follows: *Barbarea bracteosa* Guss. Fl. Sic. Prodr. 2: 257. 1828.

Biannual or perennial, up to 50 (65) cm, glabrous. Lower leaves with 2-4 pairs of lateral lobes; upper leaves pinnatifid. Inflorescence is a bracteate raceme or at least in the lower half; petals 55 mm; pedicels are 2-4 (-6) mm in fruit. Siliquae 15-30 x 1-2 mm; valves with distinct median vein; style 1-2 mm. Flowering time is April to May in İstanbul (Figure / Şekil 2-3).



Figure 3. Stem branches with fruits  
Şekil 3. Meyveli gövdeler

General distribution: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, France, Greece, Italy (Sicily), Macedonia, Montenegro, Serbia, Turkey and Malta.

The red list category of the species is Data Deficient (DD) (Kell, 2013). It is known in many countries around Europe but currently, it is only known in one locality in Turkey. This species, which was found in the Asian side of Istanbul, may be collected especially in European part of Turkey.

Including this new record and based on the references (Coode and Cullen, 1965; Savran et al., 2009) the identification key for the native species of *Barbarea* in Turkey was revised as follows:

1. All or lower half of the flowers with bracteate..... 14.**B. bracteosa**
1. Flowers without bracteate
  2. Stem or inflorescence distinctly zig-zag at least at base; young leaves distinctly fleshy or succulent
    3. Plant very short up to 8 cm, erect, always simple and glabrous; style smaller (0.5-1 (-1.2) mm); fruit also smaller (0.4-15 mm x 1-2.3 mm)..... 12. **B.anfractuosa**
    3. Plant taller, 10-26 cm, generally branched or rarely unbranched, very changeable in shape from erect, ascending to decumbent or prostrate, glabrous or pilose; style longer ((1.3-) 1.5-2 mm); fruit also longer ((08-) 10-26 mm x 1-1.5 mm).....13. **B. duralii**
  2. Stem or inflorescence smooth (not zig-zag), young leaves not succulent or fleshy when young
    4. Petioles of basal leaves distinctly with broad and flat winged .....8.**B. plantaginae**
    4. Petioles of basal leaves without winged
      5. Siliquae flattened and compressed
        6. Plant glabrous, usually ascending, erect, procumbent or decumbent, all leaves entire or at most undulate-crenate, siliquae spreading ..... 10. **B. integrifolia**
        6. Plant usually pilose below, glabrous or sparingly pilose above, sometimes glabrous, usually erect or ascending, decumbent, leaves various shape, siliquae strict or erect-spreading
          7. Siliquae strict, 2 mm or more broad.....9. **B. platycarpa**
          7. Siliquae erect-spreading
            8. Stems glabrous or subglabrous, if hairy at base of stem sparingly pilose, terminal lobes of basal leaves ovate, lateral leaflets lobes filiform, linear, narrowly lanceolate or lanceolate-ovate; siliquae usually short, average 10-16 mm; inflorescence usually simple.....11. **B. brachycarpa**
            8. Stems retrorsely- pilose, especially at base of stem; terminal lobes of basal leaves ovate-orbicular, usually leaves all deeply pinnatisect, with linear-lanceolate or ovate-lanceolate lobe; siliquae long, average 22-27 mm long; inflorescence usually branched..... **5. B. trichopoda**
    5. Siliquae terete and not compressed
      9. Basal leaves at fertile stems with 0-2 (-3) pairs of lateral leaflets, siliquae strict
        10. Siliquae torulose, terminal lobes of basal leaves orbicular-ovate, auricles of the lower leaves larger than lateral leaflets, upper stem leaves repant-dentate .....6. **B. auriculata**
        10. Siliquae smooth, terminal lobes of basal leaves oblong-elliptic, auricles of the lower leaves smaller than lateral leaflets, upper stem leaves deeply dentate, sometimes pinnatifid.....7.**B. lutea**
      9. Basal leaves on fertile stems with (2-) 3-10 pairs of lateral leaflets, siliquae strict or erect-spreading
        11. Upper stem leaves lobed or dentate, never pinnatisect .....1. **B.vulgaris**
        11. Upper stem leaves pinnatifid or pinnatisect
          12. Siliquae strict, 15-30 mm long; plant glabrous ..... 3.**B. intermedia**
          12. Siliquae spreading, 10-70 mm long; plant glabrous or sparingly pilose;
            13. Pedicel stout in fruit; siliquae (21-) 30-70 mm, glabrous, style 1-1.5 mm, terminal lobe of basal leaves usually suborbicular.....2. **B. verna**
            13. Pedicel not thick in fruit, siliquae 10-20 (-25) mm, slightly pilose; style (1.5-) 2-3 mm, terminal lobe of basal leaves ovate-orbicular.....4.**B. sicula**

## REFERENCES (KAYNAKLAR)

- Al-Shehbaz İ.A., Mutlu, B., Dönmez, A., 2007. The Brassicaceae (Cruciferae) of Turkey, Updated. *Turkish Journal of Botany* 31: 327-336.
- Bağcı Y., 2012. *Barbarea*. In Guner A., Aslan, S., Ekim, T., Vural M., Babaç T. (eds) Türkiye Bitkileri Listesi. NGBB and Flora Araştırmaları Derneği Yayını, İstanbul.
- Ball, P. W., 1994. *Barbarea* R Br. In: Flora Europea (eds. Tutin T.G., V.H. Heywood, N.A. Burges, D.H. Valentine, S.M. Walters, D.A. Webb), Cambridge University Press, 281-282.
- Coode, M.J.E., Cullen, J., 1965. *Barbarea* R.Br. in Davis et al (Ed). Flora of Turkey and East Aegean Island, Edinburgh at the University Press. Vol.1, pp: 433-438
- Davis P.H., Mill, R.R., Tan, K., (eds), 1988. Cruciferae. Flora of Turkey and the East Aegean Island (supplement I) 10: 29-58, Edinburgh: Edinburgh University Press
- Guner A., Aslan, S., Ekim, T., Vural, M., Babaç, T., (eds) 2012. Türkiye Bitkileri Listesi. NGBB and Flora Araştırmaları Derneği Yayını, İstanbul.
- Kell S.P., 2013. *Barbarea bracteosa*. The IUCN Red List of Threatened Species. Version 2015.1. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 15 June 2015
- Özhatay N., Kültür, Ş., 2006. Check-list of additional taxa to the Supplement Flora of Turkey III. *Turkish Journal of Botany* 30: 281-316.
- Özhatay N., Kültür, Ş., Gürdal, B., 2011. Check-list of additional taxa to the Supplement Flora of Turkey V. *Turkish Journal of Botany* 35: 589-624.
- Özhatay N., Kültür, Ş., Aslan, S., 2009. Check-list of additional taxa to the Supplement Flora of Turkey IV. *Turkish Journal of Botany* 33: 191-226.
- Özhatay, N., Kültür, Ş., Gürdal, B., 2013. Check-list of additional taxa to the Supplement Flora of Turkey VI. *Journal of Faculty Pharmacy of Istanbul University* 43: 33-82.
- Pignatti S., 1982. Flora d'Italia. Volume primo, Bologna, Edagricole, p. 396-397
- Savran A., Bağcı Y., Martin E. 2009. Türkiye Barbarea (Brassicaceae) Cinsinin Revizyonu (Taxonomic revision of *Barbarea* in Turkey). Project no: TBAG 106T179. Published in [http://uvt.ulakbim.gov.tr/uvt/index.php?cwid=9&vtadi=TPRJ&ano=132314\\_07bb068276a2e79dff4918f9d24b397f](http://uvt.ulakbim.gov.tr/uvt/index.php?cwid=9&vtadi=TPRJ&ano=132314_07bb068276a2e79dff4918f9d24b397f) Accessed on 17 June 2015
- Ünal, M., Özgökçe, F., 2007. A new generic record for Turkey. *Turkish Journal of Botany* 31: 307-309.
- Yıldırım Ş., 2000. *Barbarea* R.Br. In: Flora of Turkey and East Aegean Island (ed. Güner et al.), Edinburgh, Edinburgh University Press. Vol.11, pp: 38