



New *Silene* L. records for the various squares of Turkey

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Abstract

In this study *Silene* taxa in the Southeastern Anatolia Region of Turkey's flora are not mentioned earlier identification of new distribution areas. *Silene* species collected in the 2012-2014 year with the determination of Dicle University Faculty of Science Herbarium in the localities of the species. Nine *Silene* new distribution areas previously not mentioned in the southeastern region of Turkey is determined flora taxa. After scanning the literature of nine *Silene* taxa related species was found to be new record for squares B7, B8, C7 and C8. Taxa of *Silene* in this article, with new distribution area are believed to contribute to Flora of Turkey.

Key words: new record, *Silene*, southeastern anatolia region

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Türkiye'den çeşitli kareler için yeni *Silene* L. kayıtları

Özet

Bu çalışmada Türkiye florasında bulunan *Silene* taksonlarının Güneydoğu Anadolu Bölgesi'nde daha önce belirtilmeyen yeni yayılış alanları belirlenmiştir. 2012-2014 yıllarında toplanan *Silene* türleri ile Dicle Üniversitesi Herbaryumu'nda bulunan türlerin lokaliteleri tespit edilmiştir. Dokuz *Silene* taksonu için Türkiye florasında Güneydoğu Anadolu Bölgesi için daha önce belirtilmeyen yeni yayılış alanları belirlenmiştir. Literatürlerin taranmasından sonra dokuz *Silene* taksonunun B7, B8, C7 ve C8 kareleri için yeni kayıt olduğu saptanmıştır. Bu makaledeki *Silene* taksonlarına ait yeni yayılış alanlarının Türkiye florasına katkı sağlayacağına inanılmaktadır.

Anahtar kelimeler: yeni kayıt, *Silene*, güneydoğu anadolu bölgesi

1. Introduction

Flora of Turkey (Davis, 1965-1988) a unique grid system for Turkey in order to determine easily the distribution area of the plant has been developed. According to Turkey from north to south, as tree squares A, B and C, from west to east at 30 squares divided by total square from 10 to 1 was formed.

Caryophyllaceae is a large and extremely variable family of dicotyledones with 80 genera and 2100 species, which are of wide geographic distribution mostly, includes the ornamental plants and weeds (Sahreen et al., 2008).

Silene L. which is among the most considerable of this species in Turkey in terms of species richness (Davis, 1967; Güner et al., 2000) and endemism by 45% (Yıldız and Çırpıcı, 2013) is considered as one of the most problematic in terms of taxonomic genus. *Silene* in flora of Turkey is divided into 31 sections in the 135 taxa, along with the new species recorded after 2000 this number increased to 165 (Yıldız and Çırpıcı, 2013). New species of this genus are still detected not only in Turkey but also in our closest neighbor Iran (Edalatiyan et al., 2011). Being used in the treatment of various diseases in traditional folk medicine in Turkey, this species 29 kinds of antimicrobial effect of which have been researched so far, many of these species have been found to have this effect (Akgöz, 2014).

In this study "Southeastern Anatolia Region Growing some *Silene* L. (Caryophyllaceae) species with morphological and anatomical studies" (Akgöz, 2015) is has been determined as a result of the evaluation *DUF* (Dicle University Faculty of Science the Herbarium) samples with samples collected in the PhD thesis. According to the grid

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system used in Turkey's flora, B7, B8, C7 and C8 squares for new *Silene* records were found. This new square records Turkey is an important finding in terms of the distribution area to learn about the flora of *Silene* species.

2. Materials and methods

The material of the research in 2012-2014 year from April-June with taxa belonging to the genus *Silene* collected from different localities and *DUF* constitute examples provided. Flora of Turkey to determine whether the registration of new taxa square (Davis and Tan, 1988) and other literature (Coode and Cullen 1967, Çırpıcı et al. 2008, Yıldız 1990, Yıldız 1994) was used.

Getting started with information about localities, cities, towns and districts altitude name is given after the plant is harvested, which is followed by the date and number of collectors gathered. The plant is not endemic or is any phytogeographical regions is given after locality information..

3. Results

CARYOPHYLLACEAE

3.1. *S. aegyptiaca* (L.) L. Fil. subsp. *ruderalis* Coode & Cullen. Notes Roy.Bot. Gard. Edinb. 28: 7 (1967). (Figure 1-A).

Sin: *S. assyriaca* Hausskn. & Bornm. ex Lazkov, Bot. Zhurn. (Moscow & Leningrad) 89 (7): 1181 (2004).

Type: Turkey [C8] Mardin, 4km E of Mardin, 1200 m, sunny limestone rocks, annual, flowers pink, 25 v 1957, Davis and Henge, 28573 (holo. E !).

Phytogeography: Unknown

B7 Diyarbakır: Çermik-Siverek road, rocky slopes, roadside, 38125703 N, 39447835 E, 25.05.2013, Y. Akgöz, *DUF* 53.

C8 Diyarbakır: Silvan 2 km to the north, stony slopes, 1060 m, 05.05.1990, T. Taşkın, *DUF* 6211, Mardin, Bilge village road 1. km, 990 m, 4148131 N, 37641952 E, 14.04.2013, Y. Akgöz, *DUF* 70.

3.2. *S. chaetodonta* Boiss. Diagn. Pl. Orient. ser. 1(1): 39 (1843). (Figure 1-B).

Sin: *S. modesta* Boiss. & Blanche, Diagn. Pl. Orient. ser. 2(6): (1859). *S. debilis* Stapf in Denk. Akad. Wiss. Wien, Nat. Kl. 51: 282 (1886).

Type: in Persia australi, *Aucher* 4223.

Phytogeography: Irano-Turanian elements

B7 Diyarbakır: Ergani-Maden, 6 km, Steppe, 1065 m, 12.06.1977, H. Demiriz, H. Mısırdalı, H.Malyer, G. Kaya, *DUF* 1236, Diyarbakır, Ergani, 3 km southwest, field edge, 830 m, 16.06.1981, C. Güzel ve E. Aslan, *DUF* 2774, Diyarbakır, Çüngüş, oak field, 05.06.2013, A.S.Ertekin, *DUF* 6965.

B8 Siirt: Kozluk, Malabadi Bridge, Diyarbakır-Siirt limit, slopes, 650 m, 19.06.1976, H. Demiriz., Ö. Saya, G. Kaya, *DUF* 570.

C8 Diyarbakır: Ergani, Ziyaret Mountain southern slopes, untilled fields, 980 m, 26.10.1990, T. Taşkın, *DUF* 6706.

3.3. *S. conoidea* L. Sp. Pl. 1:418 (1753). (Figure 2-A).

Sin: *Pleconax conoidea* (L.) Šourková, Oesterr. Bot. Z. 119: 579 (1972).

[Conosilene conoidea \(L.\) Fourn.](#), Ann. Soc. Linn. Lyon, N.S. 16: 344 (1972).

Type: describe from Spain (Hb.Linn.583/29!).

Phytogeography: Unknown

C7 Urfa: Bozova, Kanlıavşar, Sızan, 1,5 km, stony creek beds planted, 24.04.1981, S. Yücel, *DUF* 2388, Urfa, Siverek to Hilvan 4. km, 705 m, 4168205 N, 3752003 E, 14.04.2013, Y.Akgöz, *DUF* 63, Urfa-Hilvan roadside, 624 m, 4153570 N, 37490987 E, 14.04.2013, Y.Akgöz, *DUF* 68, Urfa, Suruç 18. km, 666 m, 4102755 N, 374052 E, 14.04.2013, Y.Akgöz, *DUF* 69, Urfa, Bozova way of entrance, field of lentils, 665 m, 01.05.2013, Y. Akgöz, *DUF* 71, Urfa, Bozova way out, peanut garden, 665 m, 01.05.2013, Y.Akgöz, *DUF* 75.

C7 Adıyaman: Nemrut way of entrance, oak field, stony slopes, 1664 m, 4202083 N, 37477283 E, 01.05.2013, Y. Akgöz, *DUF* 70.

C8 Diyarbakır: Çınar-Aşağı konak, 6 km, Göksu creek, roadside and field, 28.04.1977, H.Mısırdalı, G.Kaya, *DUF* 1104, Diyarbakır, Çınar, 1. km west, 610 km, 16.05.1982, Ö.Saya, O.Namlı, M.Sağel, *DUF* 3118, Diyarbakır, Silvan, 7-9 km, roadside, 650-670 m, 29.04.1984, A.S.Ertekin, *DUF* 3892, Diyarbakır, Dicle Univ. Campus, Medical Hospital, (Dicle River) slopes and meadow, 610-650 m, 19.4.1986, R. İşeri, *DUF* 4874, Diyarbakır, D.Ü. Campus., meadow, 610 m, 07.05.1986, H.Soydinç, *DUF* 4964, Diyarbakır, Dicle, Çavlı village, fields, 960 m, 10.5.1986, İ.Altaş, *DUF* 5000, Diyarbakır, Ergani, Ziyaret Mountain Kurbantaşı southern hill slopes, vineyards, 990 m, 11.05.1990, T.Taşkın, H.Ç.Özen, *DUF* 6258, Diyarbakır, Dicle Univ. Campus, Dicle riverside

and meadow, 610-625 m, 26.04.2014, Y.Akgöz, *DUF 94.*, Diyarbakır, City entrance, Bağcılar, roadside, 37551759 N, 40085961 E, 610 m, 17.05.2015, Y.Akgöz, *DUF 115.*

3.4. *S. crassipes* Fenzl. Pug. Pl. Nov. Syr. 8 (1842). (Figure 2-B).

Sin: *S. gonocalyx* Boiss., Diagn. Pl. Orient. ser. 1(1): 38 (1843).

Type: [Turkey C5 Hatay] in Syria prope Svedia ad ostia Orontis et circa Aleppo [Syria], *Kotschy 113.*

Phytogeography: Unknown

B7 Diyarbakır: Çermik to Siverek, oak hillside, roadside, 38125703 N, 39447835 E, 25.05.2013, Y. Akgöz, *DUF 54.*

3.5. *S. dichotoma* Ehrh. subsp. *dichotoma* Beitr. Naturk. 7: 144 (1792). (Figure 3-A).

Sin: *S. iberica* M.Bieb., Fl. Taur.-Cauc. 1: 335 (1808). *S. thirkeana* Koch in Linnaea 19: 56 (1847). *S. racemosa* Otth in DC., Prodr. 1: 384 (1867). *S. praedichotoma* Cand. Bull. Soc. Bot. Fr. 44: 155 (1897).

Phytogeography: Unknown

B7 Diyarbakır: Çermik to Siverek, slope, roadside, 38125703 N, 39447835 E, 25.05.2013, Y. Akgöz, *DUF 51.*, Diyarbakır, Çermik, Sinek creek surroundings, rocky slopes, roadside, 38125715 N, 39447821 E, 25.05.2013, Y. Akgöz, *DUF 58.*

B8 Diyarbakır: Lice entrance, oak slopes, roadside, 38439997 N, 40663071 E, 02.06.2013, Y. Akgöz, *DUF 79.*, Diyarbakır, Lice between Kulp, Özbekin hamlet, rocky slopes, 38225687 N, 40771769 E, 02.06.2013, Y. Akgöz, *DUF 81.*

3.6. *S. longipetala* Vent. Descr. Pl. Nouv. 83, t. 83 (1802). (Figure 3-B).

Ic: Sibth. & Sm., Fl. Gr. 5: t. 429 (1825).

Type: [Syria] aux environs d'Alep, Bruguère & Olivier.

Phytogeography: Irano-Turanian elements

B7 Diyarbakır: Ergani, Ziyaret Mountain, roadside, steppe, 1240 m, 38294134 N, 39760686 E, 25.05.2013, Y. Akgöz, *DUF 41.*, Diyarbakır, Çermik between Siverek, oak slope, roadside, 38125703 N, 39447835 E, 25.05.2013, Y. Akgöz, *DUF 52.*

C7 Adıyaman: Nemrut Mountain entrance 4.km, 4202083 N, 37477283 E, 1664 m, stony slopes, 17.06.2012. Y. Akgöz, *DUF 8.*, Şanlıurfa, Siverek between Hilvan 4.km, 705 m, 4168205 N, 3752003 E, 14.04.2013, Y. Akgöz, *DUF 62.*

3.7. *S. marschallii* C. A. Meyer, Verz. Pfl. Casp. Meer. 214 (1831). (Figure 4-A).

Sin: *S. puberula* Sensu Boiss., Fl. Or. 1: 636 (1867) non Bertol. *S. propinqua* Schischk. In Izv. Mus. Gruzii 1: 14 (1920-22). Ic: Grossh., Fl. Kavk. 3: t. 24 f. 7 (1945).

Type: [Caucasus] in altioribus montibus Talysch, 1200-2000 m, *Meyer.*

Phytogeography: Irano-Turanian elements

C7 Adıyaman: Nemrut Mountain entrance, oak field, rocky slopes, 4202083 N, 37477283 E, 01.05.2013, Y. Akgöz, *DUF 25.*

3.8. *S. spergulifolia* (Desf.) Bieb., Fl. Taur.-Cauc. 3: 305 (1819). (Figure 4-B).

Sin: *Cucubalus spergulifolius* Desf., Choix Pl. 73 (1808). *S. armeniaca* Rohrb. in App. Alt. Ind. Hort. Berol. 5 (1867). *S. brotherana* Somm. & Lev. in Acta Horti Petrop. 13: 36 (1893). *S. infedelium* Post in Bull. Herb. Boiss. 3: 154 (1895). Ic: Grossh., Fl. Kavk. 3: t. 25 f. 3 (1945).

Phytogeography: Irano-Turanian elements

B7 Diyarbakır: Ergani, Ziyaret Mountain, roadside, 1240 m, 38294134 N, 39760686 E, 25.05.2013, Y. Akgöz, *DUF 42.*

B8 Diyarbakır: Kulp between Hazro 10.km, oak wood, 38225687 N, 40771769 E, 02.06.2013, Y. Akgöz, *DUF 83.*

C7 Adıyaman: Nemrut Mountain entrance 4 km, 37477283 E, 4202083 N, 1664 m, rocky slopes, 17.06.2012, Y. Akgöz, *DUF 31.*

3.9. *S. swertiifolia* Boiss. Diagn. Pl. Orient. Ser. 1(1): 32 (1843). (Figure 5).

Syntypes: [Turkey] Cappadocia orientalis, Aucher 451; [Iran] in monte Demawend Persiae Aucher 4215.

Phytogeography: Irano-Turanian elements

B7 Diyarbakır: Ergani, Ziyaret Mountain, roadside, 1240 m, 38294134 N, 39760686 E, 25.05.2013, Y. Akgöz, *DUF 43.*

B8 Diyarbakır: Kulp between Hazro 10.km, oak wood, 38225687 N, 40771769 E, 02.06.2013, Y. Akgöz, *DUF 87.*

C7 Adıyaman: Nemrut Mountain 4.km, 4202083 N, 37477283 E, 1664 m, rocky slopes, 17.06.2012, Y. Akgöz, *DUF 17.*



Figure 1. **A:** *S. aegyptiaca* subsp. *ruderalis* (Y.A, DUF 70) **B:** *S. chaetodonta* (A.S.E, DUF 6965)



Figure 2. **A:** *S. conoidea* (Y.A, DUF 63) **B:** *S. crassipes* (Y.A, DUF 54).



Figure 3. **A:** *S. dichotoma* subsp. *dichotoma* (Y.A, DUF 58) **B:** *S. longipetala* (Y.A, DUF 52)



Figure 4. **A:** *S. marschallii* (Y.A, DUF 25) **B:** *S. spergulifolia* (Y.A, DUF 31)



Figure 5. *S. swertiifolia* (Y.A, DUF 43).

In this study, nine of *Silene* taxa were identified new expansion areas for Turkey. According to this *S. aegyptiaca* subsp. *ruderalis* taxa are new records for B7 and C8 (Diyarbakır) squares. (Figure 6). *S. chaetodonta* taxa previously, were stated on B7 Elazığ and Tunceli, B8 Diyarbakır and C8 Mardin in flora. In this study, *S. chaetodonta*'s spread area has been determined in B7 Diyarbakır, B8 Siirt and C8 Diyarbakır (Figure 7). In addition *S. conoidea* taxa seen in C7 Adıyaman, Sanliurfa and C8 Diyarbakır (Figure 8). *S. crassipes* taxa was found in the B7 (Diyarbakır) square (Figure 9). *S. dichotoma* subsp. *dichotoma* taxa grow in Diyarbakır square B7 and B8 (Figure 10). *S. longipetala* taxa were found B7 Diyarbakır and C7 Adıyaman (Figure 11). *S. marschallii* taxa have been identified for the first time in C7 Adıyaman (Figure 12). In flora it is found *S. spergulifolia* taxa grows in of flora B8 Diyarbakır and C8 Mardin squares. On the other hand in the findings of this study it has been identified that *S. spergulifolia* taxa is seen in B7-B8 (Diyarbakır) and C7 (Adıyaman) squares (Figure 13). In flora *S. swertiifolia* taxa was previously identified in the C8 Mardin square. In this study this taxa is identified in B7-B8 Diyarbakır and C7 Adıyaman for the first time and it's determined that taxa wasn't recorded in this areas before (Figure 14). As a result of this research in B7 square seven taxa and C7 square five taxa were recorded for the first time in grid system in "*Flora of Turkey*".

In this study, besides known areas of these taxa new spreading areas have been identified. None of these new recorded taxa are endemic. Also these five taxa are elements of Irano-Turanian Phytogeographical region which contain this research area. Phytogeographical region of these four taxa are unknown. Some taxa which were identified in the result part of the study were collected from urban areas. This records which were taken from urban areas are important as it can also show us new records can be taken from urban areas. In this article it's thought that *Silene* taxa new spreading areas contribute to flora of Turkey.

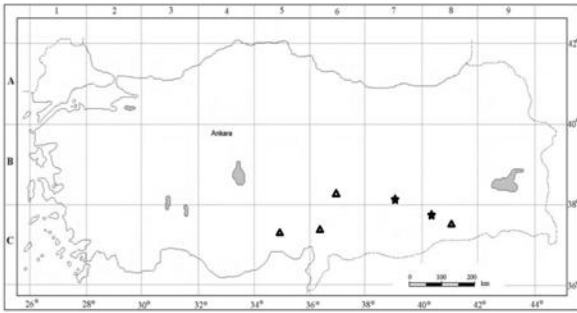


Figure 6. *S. aegyptiaca* subsp. *ruderalis* distribution map (Δ: Coode and Cullen 1967, ★: New record)

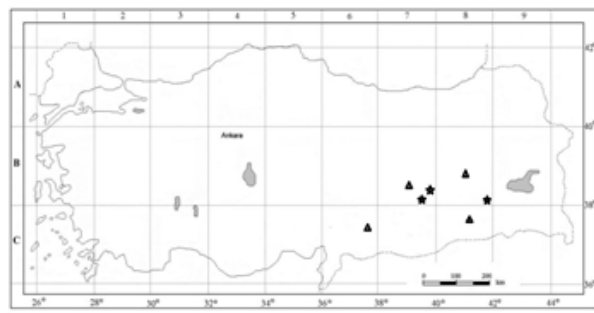


Figure 7. *S. chaetodonta* distribution map (Δ: Coode and Cullen (1967), ★: New record)

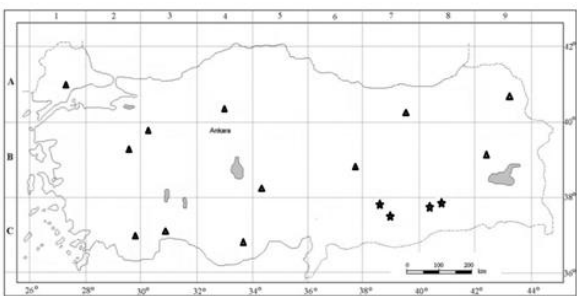


Figure 8. *S. conoidea* distribution map (Δ: Coode and Cullen 1967, ★: New record)

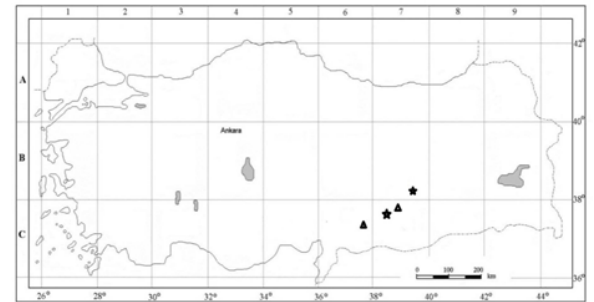


Figure 9. *S. crassipes* distribution map (Δ: Coode and Cullen 1967, ★: New record)

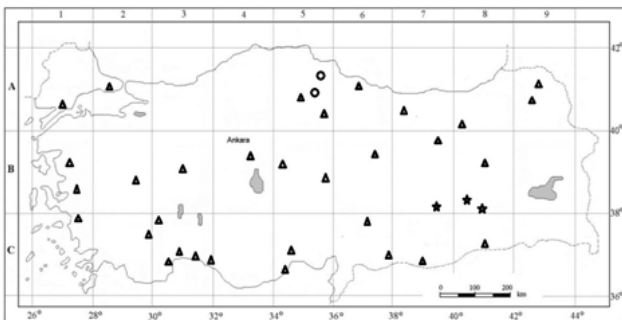


Figure 10. *S. dichotoma* subsp. *dichotoma* distribution map (Δ: Coode and Cullen 1967, O: Yıldız 1990, ★: New record)

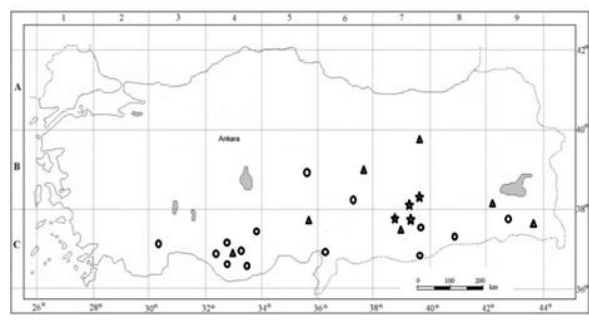


Figure 11. *S. longipetala* distribution map (Δ: Coode and Cullen 1967, O: Çırpıcı et al. 2008, ★: New record)

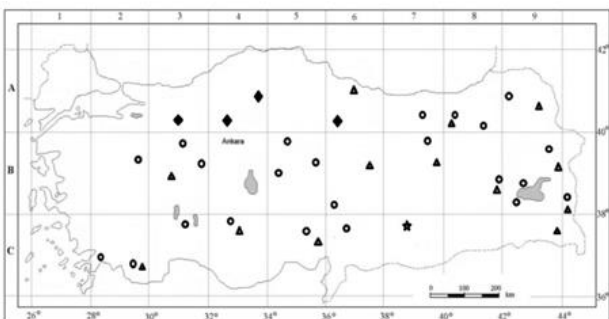


Figure 12. *S. marschallii* distribution map (Δ: Coode and Cullen 1967, O: Çırpıcı et al. 2008, ◆: Yıldız 1994, ★: New)

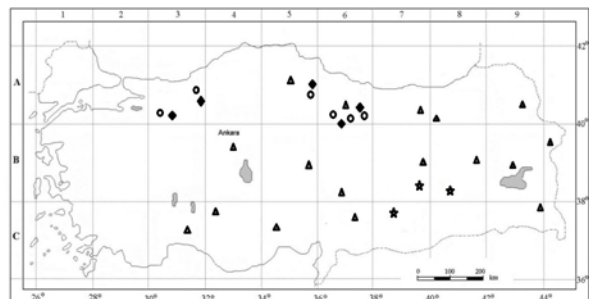


Figure 13. *S. spergulifolia* distribution map (Δ: Coode and Cullen 1967, O: Yıldız 1990, ◆: Yıldız 1994, ★: New)

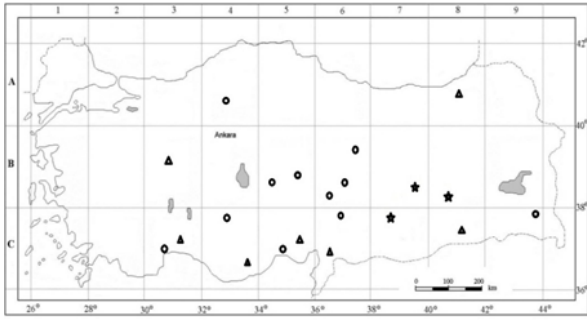


Figure 14. *S. swertiifolia* distribution map (▲: Coode and Cullen 1967, O: Çırpıcı et al. 2008, ★: New record)

After 2000 in flora of Turkey 22 *Silene* taxa, 21 of which were defined for the first time were recorded (Akgöz 2013, Aydın et al., 2014). Based on these data with more comprehensive work to be done in the future on the species *Silene*, it is considered that of new species *Silene* will be discovered in Turkey.

Acknowledgements

The author thank Prof.Dr.A.S.Ertekin (Dicle Univ.) for the valuable support his provided to the present study, for providing author valuable information.

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(Received for publication 31 July 2015; The date of publication 15 August 2016)