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A NEW RECORD AND DISTRIBUTION OF THE ENDEMIC *Thymus cilicicus* Boiss. & Bal. FOR THE SQUARES B3 AND C3 IN TURKEY

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Abstract

This study was carried out in Isparta and Konya province between 2008 and 2009. The endemic plant *Thymus cilicicus* Boiss. & Bal. has been found for the first time for the Square B3 in Isparta besides new distribution of mentioned species has been recorded in C3 square. *T. cilicicus* was found one location for the square B3 in Şarkikaraağaç and six different locations for the square C3 in Atabey, Atabey pond, Gönen, Yenişarbademli, Eğirdir (Isparta province) and Selki (Konya province). The relation between population density of *T. cilicicus* and some anthropogenic affects in habitats where *T. cilicicus* exists are also discussed.

Keywords: New record, *Thymus cilicicus*, Thyme, Turkey.

INTRODUCTION

Turkey is one of the richest areas in the Middle Latitudes in terms of plant diversity because of geo-morphological and soil diversities and the situation of the area at the junction of three flora region (Avcı, 2005). Furthermore Turkey is one of two countries in the world having tree different Hotspots; Irano-Anotolian, Mediterranean Basin and Caucasus.

Flora of Turkey contains just over 11000 infrageneric taxa, of which 34,5% are endemic (Başer, 2002). The family of Labiatae is represented by 45 genera, 546 species and 730 taxa in Turkey and the rate of endemism is 44.2% (Akgül & Özcan, 1999). *Thymus* is the one of the largest genus in Labiatae family which has 220 genus. *Thymus* (Labiatae) is a polymorphic genus with 60 taxa belonging to 39 species in Turkey and the ratio of endemism is 45% (Başer, 2002). According to some authors, the word *of* "*Thymus*" means perfume (Thyo) and for some others call Thymos; infers bravery, courage and strength (Yıldız et al., 2004).

The quadrature system of Davis (1965) shows that Isparta province is included in B3 and C3 squares which belong to Mediterranean region however Aksu, Sütçüler, Yenişarbademli, Şarkikaraağaç and Yalvaç towns are in the border of Irano-Anotolian (Özçelik & Serdaroğlu, 2000). More than 600 endemic taxa grow in Isparta province (Ozcelik & Serdaroglu, 2000). *Thymus cilicicus*, which grows in Adana (C5), Antalya (C3-C4), Hatay (C6), Karaman (C4), Konya (C4), Mugla (C2), Mersin (C5) and Isparta (B3-C3; species was recorded first time with this study) is one of the endemic species, and in Least Concern (LC) category in the Red Data List of Turkish Plants (Davis, 1982; Ekim, et al., 2000). Although Turkey has the richest flora diversity and endemic species among all European countries, there is not enough study about determination of the plant diversity. Invariably results of the existent studies show a new species, new records and/or new distribution of the plants in the country.

The purpose of this study was determination of the flora of *T. cilicicus* in Isparta and Konya provinces (B3 and C3 square) where the species had not been found before and some anthropogenic affects such as cattle grazing and afforestation areas where *T. cilicicus* was distributed was also discussed.

MATERIALS AND METHODS

This study is carried out in Isparta and Konya provinces included in B3 and C3, the quadrature system of Davis (1965), between 2008 and 2009. *T. cilicicus* has been identified using the account in "Flora of Turkey and the East Aegean Islands" (Davis, 1982). The specimens were collected when *T. cilicicus* was in blooming time between April and August for both study years. The coordination is taken by Lat/Lon (Latitude/Longitude) coordinate system which is the system of geographical coordination in Turkey. Some anthropogenic affects like cattle grazing and afforestation areas where *T. cilicicus* was distributed was also determined. Distribution of the said species was determined by the quadrature system of Davis (1965).

RESULTS AND DISCUSSION

The study area was chosen 38th latitude which goes into division B3 and C3. The North of 38th latitude is called B3 and the south called C3 for Davis' quadrature system (Figure 1). The distribution and new localities of endemic plant species, *T. cilicicus*, are given Table 1.

The endemic plant species, *T. cilicicus*, was found between 964 and 1723 metres in B3 and C3 square. The lowest altitude in Eğirdir with 964 metres and the highest altitude in Yenişarbademli with 1723 metres were measured (Table 1).

Table 1. Distribution of endemic plant species *T. cilicicus* in B3 and C3 squares.

Family: Labiatae

Species: *Thymus cilicicus* Boiss. & Bal.

Square	Province	Town	Habitat Description	Coordinate	Altitude	Date
B3	Isparta	Şarkikaraağaç	by the roadside next to *Pinus nigra* afforestation area, gravelly ground	N38°01'56.28" E31°27'37.91"	1255m	29.05.2009
C3	Isparta	Atabey	scrubland without Quercus coccifera, gravelly ground.	N37°56'46.39" E30°37'19.30"	1031m	20.08.2008
C3	Isparta	Atabey Pond	around pond, scrubland with Quercus coccifera, gravelly ground.	N37°56'59.18" E30°36'54.66"	1051m	12.07.2009
C3	Isparta	Gönen	Quercus coccifera scrubland.	N37°56'43.11" E30°35'00.69"	1072m	12.07.2008
C3	Konya	Selki	by the roadside next to Pinus nigra afforestation area, gravelly ground.	N37°53'30.02" E31°42'23.65"	1230m	29.05.2009
C3	Isparta	Eğirdir	scrubland with Quercus coccifera, open rocky and gravelly ground.	N37°57'04.57" E30°56'38.12"	964 m	29.05.2009
C3	Isparta	Yenişarbademli	scrubland without Quercus coccifera, gravelly ground.	N37°42'05.82" E31°17'42.89"	1723m	03.07.2009

Distribution of *T. cilicicus* was determined in both Hotspots; Irano-Anotolian and Mediterranean Basin in Turkey.

Although there are many studies about determination of flora in B3 and C3 squares (Davis, 1965-1988; Mutlu & Erik,1996; Özçelik & Serdaroglu, 2000; Serin et al., 2001; Selvi, 2007), the endemic plant species, *T. cilicicus* could not be found in Isparta before. Notwithstanding the endemic species was found in C3 square, new distribution areas have been determined for the first time in Isparta province for C3 and mentioned endemic plant species has been found for the first time in B3 square with this study (Table 1).

According to the meteorological data taken from the region of the present study, the rainfall has been decreased while the average temperature has been increased during the last 30 years. *T. cilicicus* might be carried to the higher altitudes because of these climate changes. Although Ekim et al. (2000) declared that *T. cilicicus* is "Least Concern" under the "Lower Risk" category in Red Data Book of Turkish Plants; the species should be protected in the habitats affected by human activities such as cattle and sheep grazing, agriculture, tourism and afforestation. *T. cilicicus* could not be found in the areas affected by human activities especially with cattle grazing and afforestation, although mentioned areas were very close and had got same properties with the habitats where *T. cilicicus* was sampled. The population dynamic of *T. cilicicus* was observed contrary relation between habitats with human activities and natural ones during this study. Not only distribution of *T. cilicicus* but also

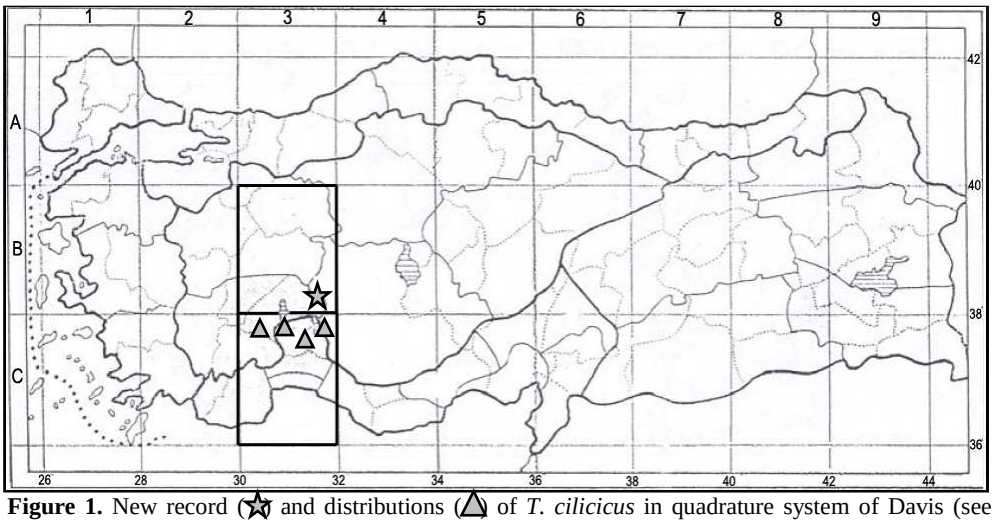

Figure 1. New record (☆) and distributions (△) of *T. cilicicus* in quadrature system of Davis (see coordinates in Table) (Dark rectangle shows study squares, B3 and C3).

the other endemic and rare plant species should be determined for new locations and previous locations should be also checked whether the species are still exist or not because of human activities which are increasing day by day. This process could protect flora of Turkey before the endemic, rare and valuable species are extinct.

LITERATURE CITED

Akgül A, Özcan M (1999). Essential Oils of Four Turkish Wild-Growing Labiatae Herbs: *Salvia cryptantha* Montbr. Et Auch., *Satureja cuneifolia* Ten., *Thymbra spicata* L. and *Thymus cilicicus* Boiss. et Bal.. *Journal of Essential Oil Research* 11: 209-214.

Avcı M (2005). Çeşitlilik ve Endemizm Açısından Türkiye'nin Bitki Örtüsü *Diversity and Endemism in Turkey's Vegetation.* İstanbul Üniversitesi Edebiyat Fakültesi Coğrafya Bölümü Coğrafya dergisi, Sayı:13, Sayfa 27-55.

Başer KHC (2002). Aromatic Biodiversity Among the Flowering Plant Taxa of Turkey. *Pure Appl Chem* 74 (4): 527-545.

Davis PH (1982). *Flora of Turkey and the East Aegean Islands*. Vol.: VII. Edinburgh University Press. Edinburg. 947.

Davis PH (1965-1988). *Flora of Turkey and the East Aegean Islands*. Vol.: I-X. Edinburgh University Press. Edinburg.

Ekim T, M Koyuncu, M Vural, H Duman, Z Aytaç, N Adıgüzel (2000). *Red Data Book of Turkish Plants (Pteridophyta and Spermatophyta).* TTKD-Van Yüzüncü Yıl University, Barışcan Ofset, Ankara 246 p.

Mutlu B, Erik S (1996). B3-C3 Kareleri İçin Yeni Floristik Kayıtlar, Hacettepe Fen ve *Mühendislik Bilimleri Dergisi* 17: 57-79.

Özçelik H, Serdaroğlu H (2000). Isparta Florasına Ön Hazırlık. SDÜ. *Fen Bilimleri Dergisi* 4(1): 135-154.

Selvi B (2007). A6, B3 ve B6 Kareleri için Yeni Bitki Kayıtları, Fırat Üniv *Fen ve Müh Bil Dergisi* 19 (1): 01-06.

Serin M, Şanda MA, Batı F (2001). New Floristic Records for the Square C3 (Seydisehir-Konya, Turkey). *Türk J Bot* 25: 161-162.

Yıldız B, Tümen G, Demirkuş N, Adıgüzel N, Akyalçın H, Bahçecioğlu Z (2004). Türkiye'de Yetişen *Thymus* L. (Lamiaceae) Türlerinin Revizyonu ve Türler Üzerinde Palinolojik ve Kimyasal Araştırmalar. TÜBİTAK-TBAG-1715 (198 T 003) No'lu Proje Sonuç Raporu. 201 p.