



New plant records for A5 square , Cangal Forest (Ayancık, Sinop/Turkey)

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Abstract

This study was conducted in Middle Black Sea Region, A5 Square and Cangal Forest in Sinop Province between years 2004 and 2007. 769 species and sub-species taxons related 84 families and 368 types were found as a result of evaluation of 2031 plant samples handled in this context. The number of endemic species is 56 (7.28%) in field of study including all Euro-Siberian plant geography. 41 taxons were found as new species in A5 Square in Turkey flora.

Key words: A5, Ayancık, Cangal forest, Sinop, new square records

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A5 karesi için yeni bitki kayıtları, Çangal Ormanı (Ayancık, Sinop/Türkiye)

Özet

Bu çalışma Orta Karadeniz Bölgesi'nde, A5 karesinde ve Sinop ili sınırları içerisinde yer alan Çangal ormanında 2004 ve 2007 yılları arasında yürütülmüştür. 2031 bitki örneğinin değerlendirilmesi sonucunda 84 familya ve 368 cinse ait 769 tür ve tür altı takson tespit edilmiştir. Tamamen Avrupa-Sibirya bitki coğrafyası bölgesine giren çalışma alanındaki endemik tür sayısı 56 (%7.28) dir. A5 karesi için 41 takson yeni kayıt olarak bulunmuştur.

Anahtar kelimeler: A5, Ayancık, Çangal ormanı, Sinop, yeni kare kayıtları

1. Introduction

Our country is known as one of substantial flora regions and shows variety floristic structure. Flora work is useful to determine plant communities that are an important component of forest ecosystems. While flora is name used for describing all plants of a country or a specific region, plant elements dont necessarily have a common relationship. Plants are pieced together in form of systematic sequence during flora works (Yaltrık, 1996).

The resource of flora of any country, the number of plants and their interestingnesses can be measured with spreading of plants and and their having different vegetation types. Our country is one of the leading countries having substantial and different plant species in the world. This richness and interestingness take its resource from our contry' being under influence of different climatic types, its geographical location (altitudes showing variety up to 5000m, a lot of lakes and rivers), its geological structure, its having different topographical structures and soil groups and its being surrounded by three different phytogeographical regions (Davis, 1975).

Furthermore, our country shows variety with its different regions such as mountais, plains, alpin regions when geomorphology of Turkey is considered and this affects richness of floristic structure (Guyot, 1937).

Another feature of flora of Turkey is endemism. According to Flora of Turkey and the East Aegean Islands, Volume:11 (Supp) conducted in 2000, Turkey and East Aegean Islands Flora reached 8988 natural and 9222 plant species including 8796 species in Turkey and 192 species in the East Aegean Islands and total taxon number was found 12.000. 2991 of those plants (2941 in Turkey and 50 in the East Aegean Islands) are endemic. The ratio of endemic taxons to total plant taxons in Turkey (endemism) is 34.4% (Özhatay et al. 2003).

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Flora work dates back to 16th and 17th centuries in our country. Works that were basis of flora of Turkey was conducted by three famous botanists Edmond Boissier (1810-1885), Dr. Arthur Huber – Morath (1901-1990) and Prof. P.H. Davis (1918-1992) and current flora of Turkey was established (Baytop, 2004).

The region of this study have rich and dense plant cover due to its climatic, geographic and topographical features. No dense study except studies searching for flora of our country was conducted in the region in recent years and the region was a protected zone. Therefore flora work of this region and determining new plant species as a result of this study are an important finding to learn about spreading areas of plants in flora of Turkey.

2. Materials and methods

This study was conducted with data based on evaluation of 2031 plant species handled during land works in different vegetation periods between 2004 and 2007 aiming to find flora of Cangal Forest, Sinop Province, Ayancık District having 56 endemic species (7.28%) and 769 taxons. While research area have different altitudes ranging from 300 to 1651 m. In Euro-Siberian Floristic Region and different habitats, it is in A5 Square according to David's Grid system. Plant samples were turned into herbarium material being identified after being dried and deodorised in accordance with its rules and put under protection. Flora of Turkey was made use during naming of plants. Whether named plant samples had new square record or not was found by testing them according to different studies particularly J. Donner's study, new square records and floristic publications. Red data book of Turkish plants and the book prepared by IUCN were also scanned to determine danger category of endemic and rare taxons. Totally 41 plant species are new records for A5 Square in the light of this information.

The list of plants was given in accordance with evolutionary sequence in flora of Turkey. Altitude, date and picker number were given after province, district and position information in locatio information. Whether the plants were endemic or elements of any phytogeographical region was added.

3. Results

Divisio: SPERMATOPHYTA

Subdivisio: ANGIOSPERMOPHYTINA

Clasis: DICOTYLEDONOPSIDA

PAPAVERACEAE Juss.

**Corydalis caucasica* DC. subsp. *abantensis* Lidén & Zetterlund: A5: Sinop; Ayancık, Cangal Forest, Geçmiş Kayası location, Beech-Fir sub-forest and yard in forest 1095 m, 28.04.2007, Baysal 1778, Endemic (EN), Euro-Siberian

CRUCIFERAE (BRASSICACEAE) Juss.

**Aethionema eunomioides* (Boiss.) Bornm.: A5: Sinop; Ayancık, Cangal Forest, Kepez-Kaplancık location, Fir-Beech forest, rocky area, 1390 m, 21.06.2006, Baysal 1527, Endemic (LC)

**Draba bruniifolia* Stev. subsp. *olympica* (Sibth. ex Dc.) Coode et Cullen: A5: Sinop; Ayancık, Cangal Forest, Karlık location, Fir forest, rocky area, 1585 m, 09.06.2007, Baysal 1901

**D. muralis* L.: A5: Sinop; Ayancık, Cangal Forest, Akgöl location, Scots pine-Beech-Fir forest, yard in forest, 1162 m, 25.05.2007, Baysal 1836

**D. nemorosa* L.: A5: Sinop; Ayancık, Cangal Forest, Çakırçay location, Blackpine-Oak forest, humid area, 1040 m, 29.04.2007, Baysal 1802

**Barbarea vulgaris* R. Br.: A5: Sinop; Ayancık, Cangal Forest, Akgöl location, Boğuntu location, Scots pine-Beech-Fir forest, yard in forest, humid grass, 1270 m, 25.05.2007, Baysal 1812,

**Aubrieta canescens* (Boiss.) Bornm. subsp. *macrostyla* Cullen et Hub.-Mor.: A5: Sinop; Ayancık, Cangal Forest, Çakırçay location, Blackpine-Oak forest, rocky areas, 1046 m, 27.04.2007, Baysal 1770, Geçmiş Kayası location, Over unproductive Fir-Beech forest, rocky areas, 1010 m, 09.06.2007, Baysal 1864

CARYOPHYLLACEAE Juss.

**Silene noctiflora* L.: A5: Sinop; Ayancık, Cangal Forest, İnaltı Village, yard in forest, 1054 m, 04.07.2005, Baysal 864, İnaltı Cave, Over unproductive Beech forest, yard in forest, 1300 m, 04.07.2005, Baysal 866, Akgöl location, Fir-Beech forest, 1055 m, 22.07.2006, Baysal 1583

ILLECEBRACEAE R. Br.

**Scleranthus annuus* L. subsp. *annuus* L.: A5: Sinop; Ayancık, Cangal Forest, Akgöl location, Fir-Beech forest, yard in forest, 1055 m, 22.07.2006, Baysal 1599

GUTTIFERAE Juss.

**Hypericum pruinatum* Boiss. Et Bal. : A5: Sinop; Ayancık, Cangal Forest, Kepez-Kaplanlık location, Fir-Beech forest alti, rocky areas, 1390 m, 21.06.2006, Baysal 1528, Euro-Siberian

RUTACEAE Juss.

**Haplophyllum buxbaumii* (Poiret) G. Don subsp. *buxbaumii* (Poiret) G. Don: A5: Sinop; Ayancık, Cangal Forest, Uzunçay location, Blackpine- Oak forest, yard in forest, 850 m, 28.07.2007, Baysal 1966

CALLITRICHACEAE Link.

**Callitriche stagnalis* Scop.: A5: Sinop; Ayancık, Cangal Forest, Akgöl location, Fir-Beech forest, afloat, 1080 m, 10.06.2005, Baysal 449

CRASSULACEAE DC.

**Sedum telephium* L. subsp. *maximum* (L.) Krock: A5: Sinop; Ayancık, Cangal Forest, Kepez location, Over unproductive Beech forest, rocky area, 872 m, 25.08.2006, Baysal 1695, Euro-Siberian

**Sempervivum armenum* Boiss. et Huet. var. *armenum* Boiss. et Huet.: A5: Sinop; Ayancık, Cangal Forest, Sarçalıçal hill, Fir- Beech forest, rocky area, 1362 m, 16.08.2005, Baysal 1111, Akgöl way- near the Çileklik hill, Fir forest, rocky area, 1319 m, 17.08.2005, Baysal 1281, Endemic (LC), Euro-Siberian

APIACEAE (UMBELLIFERAE) Lindl.

**Myrrhoides nodosa* (L.) Cannon: A5: Sinop; Ayancık, Cangal Forest, Fidanlık hill, Fir-Beech forest, umbras, 1377 m, 29.07.2007, Baysal 1981

**Chaerophyllum macrospermum* (Sprengel) Fisch. et Mey.: A5: Sinop; Ayancık, Cangal Forest, Akgöl location, Fir-Beech forest, rocky area, 1080 m, 10.06.2005, Baysal 466, Aktepe fire tower, Beech-Fir-Scots pine forest, rocky area, 1513 m, 04.07.2005, Baysal 715, İrano-Turanian

**Scaligeria lazica* Boiss.: A5: Sinop; Ayancık, Cangal Forest, İnaltı Cave, Unproductive Blackpine-Oak sub-forest, 1150 m, 25.05.2007, Baysal 1844, Geçmiş Kayası location, Over unproductive Fir-Beech sub-forest and rocky slope, 1010 m, 09.06.2007, Baysal 1857, Endemic (NT), Euro-Siberian

**Smyrniolum perfoliatum* L.: A5: Sinop; Ayancık, Cangal Forest, between Sansar location-Manastr hill, Beech-Fir forest, yard in forest, 1042 m, 10.06.2005, Baysal 548, Avca district, Beech-Scots pine forest, yard in forest, 1338 m, 10.06.2005, Baysal 635, Çakırçay location, clearings in Blackpine-Oak forest, 1050 m, 21.06.2006, Baysal 1442

**Peucedanum longifolium* Waldst. et Kit.: A5: Sinop; Ayancık, Cangal Forest, Kepez location, Beech- Oak sub-forest, 835 m, 25.08.2007, Baysal 1998, Euro-Siberian

**Heracleum sphondylium* L. subsp. *ternatum* (Velen.) Brummitt: A5: Sinop; Ayancık, Cangal Forest, Akgöl location, Fir-Beech forest, edge of creek, 1080 m, 10.06.2005, Baysal 434, Avca district, Scots pine forest, edge of creek, 1290 m, 05.07.2005, Baysal 1079, Euro-Siberian

CAPRIFOLIACEAE Juss.

**Viburnum opulus* L.: A5: Sinop; Ayancık, Cangal Forest, Akgöl location, edge of Fir-Beech forest, 1055 m, 22.07.2006, Baysal 1598, Euro-Siberian

COMPOSITAE (ASTERACEAE) Giseke.

**Galinsoga parviflora* Cav.: A5: Sinop; Ayancık, Cangal Forest, near the Cangal mountain, Fir-Beech forest, yard in forest and edge of field, 1492 m, 18.08.2005, Baysal 1426

**Telekia speciosa* (Schreber) Baumg.: A5: Sinop; Ayancık, Cangal Forest, Ütük location, Fir- Beech sub-forest, 1146 m, 16.08.2005, Baysal 1106, Euro-Siberian

**Aster amellus* L. subsp. *ibericus* (Stev.) Avetisian: A5: Sinop; Ayancık, Cangal Forest, Karlık location, Sarıdökük location, Fir- Beech forest, above timber line, 1638 m, 26.08.2006, Baysal 1725, Euro-Siberian

**Senecio viscosus* L.: A5: Sinop; Ayancık, Cangal Forest, Avca district, Scots pine forest, yard in forest ve rocky slope, 1290 m, 05.07.2005, Baysal 1072,

**Arctium tomentosum* Miller var. *glabrum* (Körnicker) Arenes: A5: Sinop; Ayancık, Cangal Forest, Yemişli location, Fir-Beech forest, umbra, 1270 m, 23.07.2006, Baysal 1656

**Centaurea simplicicaulis* Boiss. et Huet: A5: Sinop; Ayancık, Cangal Forest, Kavak location, Blackpine-Oak forest, rocky area, 903 m, 21.06.2006, Baysal 1541, Euro-Siberian

CAMPANULACEAE Juss.

**Campanula argaea* Boiss. et Bal.: A5: Sinop; Ayancık, Cangal Forest, Yumacık location, Scots pine-Beech-Fir forest, rocky area, 1120 m, 16.08.2005, Baysal 1094, Akgöl location, Fir-Beech forest, rocky area, 1055 m, 22.07.2006, Baysal 1573, Endemic (LC), İrano-Turanian

ERICACEAE Juss.

**Rhododendron ponticum* L. subsp. *ponticum* L.: A5: Sinop; Ayancık, Cangal Forest, Cangal, Yanıklık hill, Fir- Beech sub-forest, 1400 m, 22.07.2006, Baysal 1585, Euro-Siberian

SCROPHULARIACEAE Juss.

**Linaria grandiflora* Desf.: A5: Sinop; Ayancık, Cangal Forest, Kepez location, Beech-Oak forest, yard in forest, 817 m, 22.07.2006, Baysal 1649, İrano-Turanian

LABIATAE (LAMIACEAE) Juss.

**Scutellaria altissima* L.: A5: Sinop; Ayancık, Cangal Forest, Akgöl location, Fir-Beech sub-forest, rocky area, 1055 m, 22.07.2006, Baysal 1590, Euro-Siberian

**Galeopsis bifida* Boenn.: A5: Sinop; Ayancık, Cangal Forest, Akgöl location, Fir-Beech forest, umbras, 1055 m, 22.07.2006, Baysal 1570, Euro-Siberian

**Leonurus quinquelobatus* Gilib.: A5: Sinop; Ayancık, Cangal Forest, Gürsöku Village, Fir-Beech forest, yard in forest, 928 m, 23.07.2006, Baysal 1653, Euro-Siberian

**Marrubium vulgare* L.: A5: Sinop; Ayancık, Cangal Forest, Yukarıçakırçay location, Blackpine-Oak forest, roadside, 1150 m, 16.08.2005, Baysal 1184, Çakırçay location, Blackpine-Oak forest, yard in forest, 1050 m, 21.06.2006, Baysal 1449

SALICACEAE Mirbel.

**Salix caprea* L.: A5: Sinop; Ayancık, Cangal Forest, Cangal Boğaz location, Fir-Beech forest, 1160 m, 09. 06. 2005, Baysal 346, Yumacık location, Scots pine-Beech-Fir forest, 1120 m, 16.08.2005, Baysal 1102, Cangal Forest District, Fir-Beech forest, 1050 m, 21.06.2006, Baysal 1549, Akgöl location, Fir-Scots pine forest, 1030 m, 29.07.2007, Baysal 1984, Euro-Siberian

Classis: MONOCOTYLEDONOPSIDA

LILIACEAE Dum.

**Polygonatum multiflorum* (L) All.: A5: Sinop; Ayancık, Cangal Forest, Kepez-Kaplanlık location, Fir-Beech sub-forest, 1390 m, 21.06.2006, Baysal 1525, Namazlık hill, Over unproductive Beech sub-forest, 1352 m, 09.06.2007, Baysal 1873,

**Ornithogalum arcuatum* Steven: A5: Sinop; Ayancık, Cangal Forest, Yumacık location, Scots pine-Fir-Beech forest, yard in forest, 1200 m, 21.06.2006, Baysal 1532, İrano-Turanian

**Gagea chrysantha* (Jan) Schultes et Schultes Fil.: A5: Sinop; Ayancık, Cangal Forest, Çakırçay location, Blackpine-Oak forest, yard in forest ve stony areas, 1067 m, 08.07.2007, Baysal 1953, Mediterranean

AMARYLLIDACEAE Jaume St.-Hil

**Galanthus nivalis* L. subsp. *nivalis* L.: A5: Sinop; Ayancık, Cangal Forest, Akgöl location, Scots pine-Beech-Fir sub-forest, 1093 m, 29.04.2007, Baysal 1795, Euro-Siberian

ORCHIDACEAE Juss.

**Listera ovata* (L.) R. Br.: A5: Sinop; Ayancık, Cangal Forest, Hamzaçay location, yard in forest, humid areas, 941 m, 10.06.2007, Baysal 1913, Euro-Siberian

CYPERACEAE Juss.

**Carex remota* L.: A5: Sinop; Ayancık, Cangal Forest, the bulging of Cangal Forest District and around, Fir-Beech forest, humid areas, 1137 m, 10.06.2005, Baysal 357, Euro-Siberian.

4. Conclusions

41 new plant species were found for A5 Square including area of research according to square system in flora of Turkey in consequence of this study and new spreading areas except areas of species known so far were determined. Five of species that are new record for A5 Square are endemic. Furthermore 19 of those species are elements of Euro-Siberian phytogeographical region within the boundaries of area of research. While number of element of İrano-Turanian phytogeographical region is 3, number of element of Mediterranean phytogeographical region is 1. 18 taxons have wide spreading areas or in unclear phytogeographical regions.

There are 3 taxons in LC category, 1 taxon in NT category and and 1 taxon in EN category among new square records that have certain hazard classes and are endemic.

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(Received for publication 22 October 2014; The date of publication 15 December 2015)