

## FLORA OF ARMUTLU PENINSULA III

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**Resumen.** Este es el tercer y último artículo sobre la flora de la Península de Armutlu (Turquía). Incluye 312 taxones pertenecientes a 153 géneros y 37 familias. Se completa así la catalogación florística de la Península de Armutlu, con un total de 906 taxones pertenecientes a 429 géneros y 95 familias.

**Summary.** This article is the third and last on the Flora on Armutlu Peninsula. In this part 312 taxa and 153 genera belonging to 37 families are given. Thus the Flora of Armutlu Peninsula is composed of 906 taxa, 429 genera and 95 families in total.

### INTRODUCTION

The climatic, geographic and vegetational features of the research area and the aim of this study have been indicated in KAYNAK (1966a). The study area is the Armutlu Peninsula and lies within the A 2 (A) square according to the grid system adopted by Davis. This area is phytogeographically located in the Mediterranean floristic region. The northern part of the area is located within the boundaries of the Yalova province and the southern part of the area is located within the boundaries Bursa province (Fig. 1).

In a study previously published (KAYNAK, 1966a, b), a part of the Flora of Armutlu Peninsula containing 594 taxa and 276 genera belonging to 58 families are described. This article reports the rest of the flora studied, namely 37 families beginning with Boraginaceae, in the sequence of families, genera and taxa following *Flora of Turkey* (DAVIS, 1978). The abbreviations used in the list are as follows: Herbarium of University of Bursa (BULU), Mediterranean Element (Medit. El.), East Mediterranean Element (E. Medit. El.), Euro-Siberian Element (Eu.-Sib. El.), Euxine Element (Eux. El.), Irano-Turanian Element (Ir.-Tur. El.). The new records for A 2 square have been indicated by a star (\*). Herbarium specimens of our collections have been deposited in the Biology Department, Science Faculty, Uludag University, Bursa.

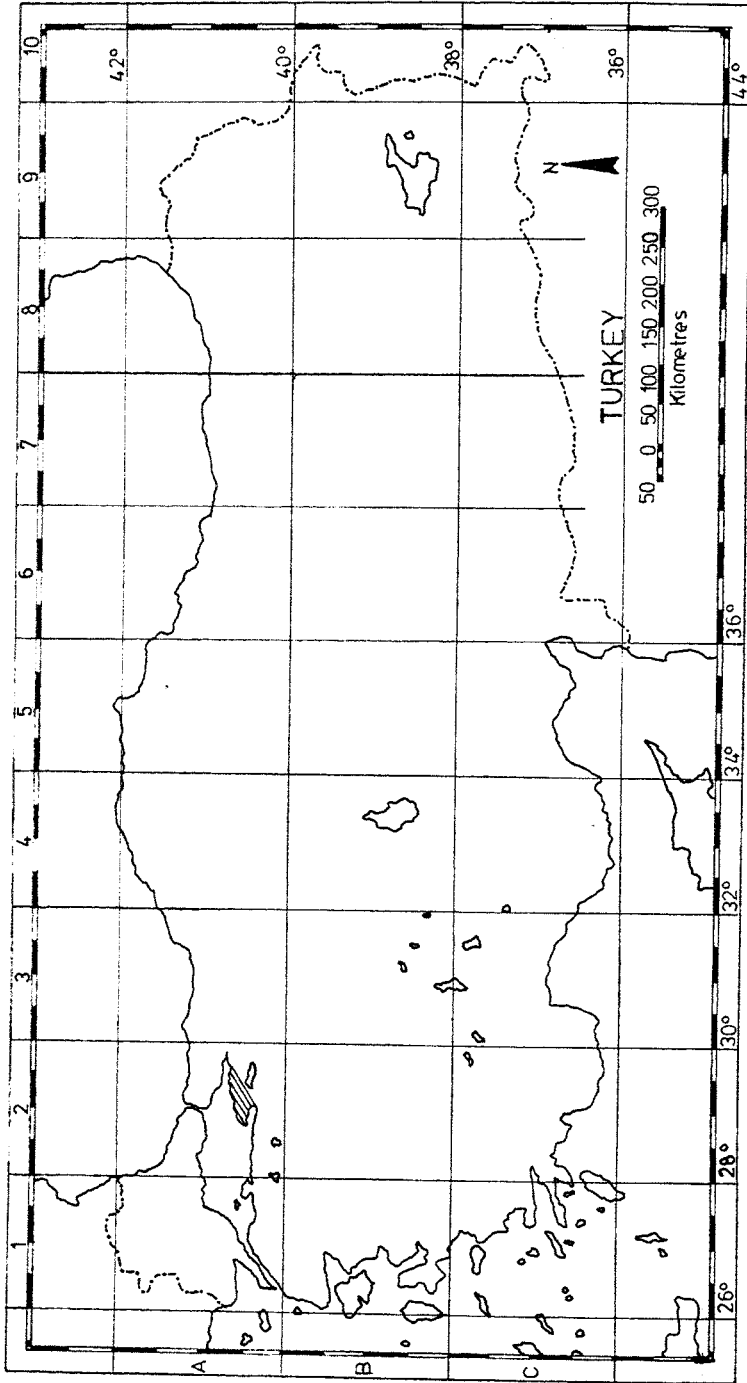


Fig. 1. Places of research area (indicated crossing out) and grid system of Turkey.

## RESULTS

## BORAGINACEAE

**Heliotropium europaeum** L., *Sp. Pl.* 130. (1753).

Yalova: Esenköy, roadside, 19.8.1985, BULU 1037. *Medit. El.*

**H. hirsutissimum** Grauer, *Decad Pl. Min. Cogn.* 1 (1784).

Bursa: Gemlik; Camgöz Çayiri, *Quercus* and *Fagus* forests, 730 m, 9.7.1994, BULU 4309. *E. Medit. El.*

**Myosotis incrassata** Guss., *Fl. Sic. Syn.* 1: 214 (1842).

Yalova: Yalova 13 km to Orhangazi, slopes, 30.3.1986, BULU 1090. *E. Medit. El.*

**M. litoralis** Steven ex Bieb., *Fl. Taur.-Cauc.* 3: 118 (1819).

Yalova: Tefvikiye village, *Quercus* woods, 470 m, 3.5.1990, BULU 4274. *E. Medit. El.*

**M. ramosissima** Rochel ex Shultes, *Österr. Fl.* ed. 2, 1: 366 (1814).

Yalova: Çınarcık 2 km to Küçükova, maquis and meadows, 20.4.1985, BULU 134.

**M. stricta** Link ex Roemer et. Schultes, *Syst. Veg.* 4: 104 (1819).

Bursa: Gemlik; Haydariye, in the vicinities of Palamutluk, Oak thickets, 560-630 m, 13.4.1989, BULU 2793. *Eu.-Sib. El.*

**M. arvensis** (L.) Hill, *Veg. Syst.* 7: 55 (1764) subsp. **arvensis**

Bursa: Gemlik; Mecidiye, stony slopes Dibek hill, 550 m, 10.7.1990, BULU 4472. *Eu.-Sib. El.*

**Cynglossum officinale** L., *Sp. Pl.* 134 (1753).

Bursa: Gemlik; Karacaali, valley and rocky places, 300 m, 3.6.1986, BULU 1702. *Eu.-Sib. El.*

**C. creticum** Miller, *Gard. Dict.* ed. 8, no. 3 (1768).

Bursa: Armutlu; 5 km from Hayriye village to Selimiye village, sparse maquis and damp places, 385 m, 5.4.1989, BULU 4105.

**C. montanum** L., *Amoen. Acad.* 3: 402 (1756).

Yalova: around Gökçedere dam, maquis, 110 m, 19.5.1985, BULU 443. *Eu.-Sib. El.*

**Lithospermum officinale** L., *Sp. Pl.* 132 (1753).

Yalova: Çınarcık; 2 km to Küçükova, maquis and meadows, 20.4.1985, BULU 135. *Eu.-Sib. El.*

**L. purpuracaeruleum** L., *Sp. Pl.* 132 (1753).

Yalova: 1,5 km from Çallica village to Yalova, rocky and stony places, 90 m, 20.4.1985, BULU 160. Eu.-Sib. El.

**Buglossoides arvensis** (L.) Johnston, *J. Arn. Arb.* 35: 42 (1954).

Yalova: Kocadere 2 km to Çınarcık, fields, 19.5.1985, BULU 497.

**Neatostema apulum** (L.) Johnston, *J. Arn. Arb.* 34: 6 (1953).

Bursa: Gemlik; Haydariye village, in the vicinities of Palamutluk location, Oak thickets, 560-630 m, 13.4.1988, BULU 2803. Medit. El.

**Echium italicum** L., *Sp. Pl.* 139 (1753).

Yalova: around Güney village, streamsides and rocky slopes, 400 m, 16.7.1987, BULU 2696. Medit. El.

**E. plantagineum** L., *Mant. Alt.* 202 (1771).

Yalova: Kocadere, coastal sandy, 19.5.1985, BULU 537. Medit. El.

**E. angustifolium** Miller, *Gard. Dict.* ed. 8, no. 6 (1768).

Yalova: around Gökçedere dam, valley, 110 m, 18.5.1985, BULU 417. E. Medit. El.

**Onosma thracicum** Velen., *Sitz.-Ber. Böhm. Ges. Wiss.* 1895 (37): 8 (1896).

Bursa: Gemlik; between Narlı and Selimiye, *Quercus* bushes, 375-470 m, 9.6.1989, BULU 4164. Eu.-Sib. El.

**O. tauricum** Pallas ex Willd., *Neue Schrift. Ges. Nat. Freunde Berlin Mag.* 2:122 (1799) var. **tauricum**

Yalova: Tefvikkiye, Sineklibayır hill, *Quercus* and *Fagus* forests, 650 m, 3.5.1990, BULU 4275.

**Cerintho minor** L. subsp. **auriculata** (Ten.) Domac, *Bot. J. Linn. Soc.* 65: 260 (1972).

Yalova: around Esadiye village, waterside and mixed forests, 500 m, 2.6.1994, BULU 8616.

**Trachystemon orientalis** (L.) G. Don., *Gen. Syst.* 4: 309 (1837).

Yalova: fienköy, in *Carpinus* forests, 19.5.1985, BULU 524. Eux. El.

**\*Anchusa leptophylla** Roemer & Sch., *Syst. Veg.* 4: 90 (1819) subsp. **leptophylla**

Bursa: Gemlik; eastern slopes of Karacaali, maquis, 250 m, 18.4.1986, BULU 1276.

**A. undulata** L. subsp. **hybrida** (Ten.) Coutinho, *Fl. Port.* 495 (1913).

Bursa: Gemlik; Haydariye village, Palamutluk location, Oak thickets, 560-630 m, BULU 2801. Medit. El.

**A. azurea** Miller, *Gard. Dict.* ed. 8: no. 9 (1768) var. **azurea**

Yalova: Kocadere 2 km to Çınarcık, fields, 19.5.1985, BULU 494.

**A. thessala** Boiss. & Spruner in Boiss., *Diagn.* ser. 1 (11): 99 (1849).

Bursa: Gemlik; slopes of Ayıkaya hill, *Quercus* bushes and meadows, 690 m, 9.7.1994, BULU 9286. Eu.-Sib. El.

**Nonea ventricosa** (Sm.) Griseb., *Spic.* 2: 93 (1844).

Yalova: Esenköy, maquis, 13.5.1993, BULU 6956. Medit. El.

**Alkanna tinctoria** (L.) Tausch subsp. **glandulosa** Hub-Mor., *Notes R. B. G. Edinb.* 35:298 (1977).

Bursa: Gemlik; eastern slopes of Karacaali, maquis, 200 m, 18.4.1986, BULU 1275. Endemic. E. Medit. El.

#### SOLANACEAE

**Solanum nigrum** L., *Sp. Pl.* 186 (1753) subsp. **nigrum**

Yalova: Yalova, roadside, 22.8.1985, BULU 1039. Cosmopolitan.

**S. nigrum** L. subsp. **schultesii** (Opiz) Wessely, *Feddes Rep.* 63: 311 (1960).

Yalova: Esenköy, roadside, 19.8.1985, BULU 1029.

**S. alatum** Moench, *Meth.* 474 (1794).

Bursa: Gemlik; Kapakli, valley and streamside, 21.10.1993, BULU 7686.

**S. dulcamara** L., *Sp. Pl.* 185 (1753).

Bursa: Gemlik; Kapakli, valley and rocky slopes, 100 m, 6.7.1988, BULU 3215.

**Datura stramonium** L., *Sp. Pl.* 179 (1753).

Bursa: Gemlik; Fistikli, gardens, 15.5.1991, BULU 4574 B. Cosmopolitan.

#### SCROPHULARIACEAE

**Verbascum orientale** (L.) All., *Fl. Pedem.* 1: 106 (1785).

Bursa: Gemlik; between Hayriye and Sultaniye, stony ground, 610 m, 9.6.1989, BULU 4188. E. Medit. El.

**V. bugulifolium** Lam., *Encyl.* 4: 226 (1797).

Bursa: Gemlik; between Armutlu and Armutlu thermal spring, maquis, 215 m, 13.5.1993, BULU 6914. Eu.-Sib. El

**V. blattaria** L., *Sp. Pl.* 178. (1753).

Yalova: Çınarcık, around Hasanbaba hill, forests and maquis, 450 m, 8.6.1985, BULU 678.

- V. bombyciferum** Boiss., *Diagn. ser. 1* (4): 52 (1844).  
Yalova: Termal, forests, 18.5.1985, BULU 450. Endemic. Eu.-Sib. El.
- V. lagurus** Fisch. & Mey., *Ind. Sem. Horti Petrop.* 5: 44 (1839).  
Bursa: Gemlik; Kapakli, streambed, 50-70 m, 21.10.1993, BULU 7684. Eu.-Sib. El.
- V. sinuatum** L., *Sp. Pl.* 178 (1753) var. **sinuatum**  
Yalova: Samanlı village, banks of stream, 29.8.1985, BULU 1060. Medit. El.
- V. lydium** Boiss. var. **heterandrum** Murb., *Monogr. Verbascum* 378 (1933).  
Bursa: Gemlik; Kapakli, valley and streamside, 100 m, 6.7.1988, BULU 3194. Endemic. E. Medit. El.
- V. bithynicum** Boiss., *Diagn. ser. 1* (4): 63 (1844).  
Bursa: Gemlik; Mecidiye, Tazdag, *Fagus* and *Carpinus* forests, 700 m, 10.7.1990, BULU 4494. Endemic. Eu.-Sib. El.
- V. tossiense** Freyn & Sint., *Öst. Bot. Zeitschr.* 44: 263 (1894).  
Bursa: Gemlik; screes between Fistikli and Narli, maquis, 90 m, 15.5.1991, BULU 4563 B. Endemic. Ir.-Tur. El.
- V. lasianthum** Boiss. ex Benth in DC., *Prodr.* 10: 234 (1846).  
Bursa: Orhangazi; between Orhangazi and Hamzali, maquis, 550 m, 16.7.1987, BULU 2632.
- V. banaticum** Schrader, *Mongr. Verbasci* 2: 28 (1823).  
Yalova: Kurtköy, forests, 450 m, 19.7.1985, BULU 1003. E. Medit. El.
- Scrophularia cryptophila** Boiss. & Heldr. in Boiss., *Diagn. ser. 1* (2): 31 (1853).  
Bursa: Gemlik; Mecidiye, Dibek hill, stony slopes, 550 m, 10.7.1990, BULU 4476. Endemic. E. Medit. El.
- S. peregrina** L., *Sp. Pl.* 621 (1753).  
Bursa: Gemlik; Karacaali, around big waterfall, 370 m, 24.6.1992, BULU 5775. Medit. El.
- Antirrhinum majus** L., *Sp. Pl.* 617 (1753) subsp. **majus**  
Bursa: Gemlik; between Gemlik and Kumla, roadside, 26.6.1992, BULU 5777.
- Misopates orontium** (L.) Rafin., *Autikon Bot.* 158 (1840).  
Bursa: Gemlik; screes between Narli and Kapakli, maquis, 10 m, 5.4.1989, BULU 4028.

**Linaria genistifolia** (L.) Miller, *Gard. Dict.* ed. 8, no. 14 (1768) subsp. **genistifolia**

Bursa: Gemlik; Kapakli, rocky places and valley, 100 m, 6.7.1988, BULU 3216. Eu.-Sib. El.

**L. pelisseriana** (L.) Miller, *Gard. Dict.* ed. 8, no. 10 (1768).

Bursa: Gemlik; Ayvali location, sparse maquis, 420 m, 11.5.1992, BULU 5615. Medit. El.

**Kickxia elatine** (L.) Dumort. subsp. **crinita** (Mabille) Greuter, *Boissiera* 13: 108 (1967).

Yalova: Yalova, roadside, 22.8.1985, BULU 1040. Medit. El.

**K. spuria** (L.) Dumort. subsp. **integrifolia** (Brot.) R. Fernandes, *Bot. J. Linn. Soc.* 64: 74 (1971).

Yalova: between Orhangazi and Yalova, roadside, 10.8.1992, BULU 5781.

**Gratiola officinalis** L., *Sp. Pl.* 17 (1753).

Bursa: Gemlik; Hayriye village, around Kiran hill, rocky and waterside, 430 m, 9.6.1989, BULU 4177. Eu.-Sib. El.

**Digitalis ferruginea** L., *Sp. Pl.* 622 (1753) subsp. **ferruginea**

Bursa: Gemlik; between Gemlik and Kumla, roadside, 120 m, 7.6.1990, BULU 4312. Eu.-Sib. El.

**Veronica serpyllifolia** L., *Sp. Pl.* 12 (1753).

Yalova: near Esadiye village, mixed forests, 500 m, 27.4.1989, BULU 4117 A.

**V. arvensis** L., *Sp. Pl.* 13 (1753).

Bursa: Gemlik; between Gemlik and Orhangazi, maquis, 29.4.1994, BULU 8150.

**V. persica** Poiret in Lam., *Encycl.* 8: 542 (1808).

Yalova: between Akköy and Koruköy, maquis and open places, 4.2.1989, BULU 3250.

**V. cymbalaria** Bodard, *Mem. Ver. Cymb.* 3 (1798).

Bursa: Gemlik; Mecidiye, around Dibek hill, rocky slopes, 550 m, 10.7.1990, BULU 4475. Medit. El.

**V. hederifolia** L., *Sp. Pl.* 13 (1753).

Yalova: around Çallica village, rocky slopes, 3.4.1988, BULU 2786. Cosmopolitan.

**V. anagallis-aquatica** L., *Sp. Pl.* 12 (1753).

Yalova: Esenköy, roadside, 2.6.1994, BULU 8551. Cosmopolitan.

**V. chamae** L., *Sp. Pl.* 13 (1753).

Bursa: Gemlik; between Cumali and Hayriye village, sparse maquis, 380 m, 5.4.1989, BULU 4092. Eu.-Sib. El.

**V. pectinata** L., *Mant.* 24 (1767) var. **pectinata**

Yalova: Çınarcık, 1.5 km from Çallica village to Çınarcık, stony places, 90 m, 20.4.1985, BULU 163.

\***V. pectinata** L. var. **glandulosa** Riek ex M.A. Fischer, *Pl. Syst. Evol.* 128: 296 (1977).

Bursa: Gemlik; Kapaklı, maquis and rocky slopes, 110 m, BULU 5655.

**Parentucellia latifolia** (L.) Caruel in Parl., *Fl. Ital.* 6: 482 (1885) subsp. **latifolia**

Yalova: around Gökçedere dam, maquis, 100 m, 18.5.1985, BULU 421. Medit. El.

**Bellardia trixago** (L.) All., *Fl. Pedem.* 1: 61 (1785).

Yalova: Gökçedere, west-facing slopes of Kızılagaç hill, meadows, 360-400 m, 12.6.1987, BULU 2197.

#### OROBANCHACEAE

**Orobanche ramosa** L., *Sp. Pl.* 633 (1753).

Yalova: Kocadere 2 km to Çınarcık, fields, 19.5.1985, BULU 501.

**O. nana** Noe ex G. Beck, *Monogr. Orob.* 92, t. 1 f. 11 (1890).

Yalova: in vicinities of Kurtköy, forests, 450 m, 19.7.1985, BULU 1008.

**O. cernua** Loefl., *Iter Hisp.* 152 (1758).

Bursa: Gemlik; Mecidiye, Dibek hill, rocky slopes, 10.7.1990, BULU 4477.

**O. alba** Stephan in Willd., *Sp. Pl.* 3: 350 (1800).

Bursa: Gemlik; screes between Karacaali and Narlı, maquis, 120 m, 3.6.1986, BULU 1668 B.

**O. minor** Sm., *Engl. Bot.* 6: 422 (1797).

Bursa: Gemlik; Kapaklı, valley and rocky places by stream, 50-70 m, 21.10.1993, BULU 7693.

#### ACANTHACEAE

**Acanthus mollis** L., *Sp. Pl.* 639 (1753).

Yalova: around Güneyköy, damp meadows, 420 m, 18.5.1986, BULU 1219. Medit. El.



## GLOBULARIACEAE

**Globularia trichosantha** Fisch. & Mey., *Ind. Sem. Horti Petrop.* 5: 36 (1839).

Yalova: between Ataköy and Koruköy, maquis and stony slopes, 3.4.1988, BULU 2780.

## VERBENACEAE

**Phyla nodiflora** (L.) Greene, *Pittonia* 4: 46 (1899).

Yalova: Kurtköy, forests, 450 m, 19.7.1985, BULU 1001.

**Verbena officinalis** L., *Sp. Pl.* 20 (1753).

Yalova: Samanlı village, waterside, 29.8.1985, BULU 1061.

**Vitex agnus-castus** L., *Sp. Pl.* 638 (1753).

Bursa: Gemlik; in vicinities of Armutlu thermal spring, maquis, 50-70 m, 6.7.1988, BULU 3225. Medit. El.

## LAMIACEAE

**Ajuga reptans** L., *Sp. Pl.* 561 (1753).

Bursa: Gemlik; Haydariye village, Palamutluk location, Oak thickets, 560-630 m, 13.4.1988, BULU 2800. Eu.-Sib. El.

**A. chamaepitys** (L.) Schreber subsp. **chia** (Schreber) Arcangeli, *Comp. Fl. Ital.* 560 (1882) var. **chia**

Yalova: 1.5 km from Çallica village to Yalova, stony and rocky ground, 90 m, 20.4.1985, BULU 162.

**Teucrium chamaedrys** L., *Sp. Pl.* 565 (1753) subsp. **chamaedrys**

Bursa: Orhangazi; between Orhangazi and Hamzali, maquis, 550 m, 16.7.1987, BULU 2649. Eu.-Sib. El.

**T. chamaedrys** L. subsp. **lydium** O. Schwarz, *Feddes Rep.* 36: 132 (1934).

Yalova: around Esadiye village, waterside and forests, 500 m, 2.6.1994, BULU 8617. E. Medit. El.

**T. divaricatum** Sieber subsp. **villosum** (Celak.) Rech. fil., *Bot. Archiv* 42: 391 (1941).

Bursa: Gemlik; Narli, maquis, 6.7.1988, BULU 3178. E. Medit. El.

**T. polium** L., *Sp. Pl.* 566 (1753).

Yalova: Güllük village, mill road, *Quercus* and *Fagus* forests, 365 m, 12.6.1987, BULU 2197.

**Lavandula stoechas** L., *Sp. Pl.* 573 (1753) subsp. **stoechas**

Bursa: Gemlik; eastern slopes of Karacaali, maquis, 200 m, 18.4.1986, BULU 1279. E. Medit. El.

**L. stoechas** L. subsp. **cariensis** (Boiss.) Rozeira, *Broteria (Ser. Ci. Nat.)* 45: 70 (1949).

Bursa: Gemlik; between Narli and Armutlu, maquis, 20 m, 28.4.1988, BULU 2881. Endemic. E. Medit. El.

**Scutellaria velenovskyi** Rech. fil., *Bot. Archiv* 43: 9, t. 1 f. 7 (1941).

Yalova: in vicinities of Güneyköy village, streamside and rocky slopes, 450 m, 16.7.1987, BULU 2697. E. Medit. El.

**Phlomis russeliana** (Sims) Bentham, *Lab. Gen. Sp.* 629 (1834).

Yalova: around Güneyköy, streamside and rocky slopes, 400 m, 16.7.1987, BULU 2690 B. Endemic. Eux. El.

**Lamium amplexicaule** L., *Sp. Pl.* 579 (1753).

Bursa: Gemlik; Ayvalı location, among the bushes and meadows, 400 m, 23.3.1989, BULU 4007. Eu.-Sib. El.

**L. purpureum** L., *Sp. Pl.* 579 (1753) var. **purpureum**

Bursa: Armutlu; 3 km to Cumali village, sparse maquis and open places, 410 m, 5.4.1989, BULU 4074. Eu.-Sib. El.

**L. maculatum** L., *Sp. Pl.* ed. 2: 809 (1763) var. **maculatum**

Yalova: Teflvikiye village, around Sineklıbayır hill, *Fagus* and *Quercus* forests, 650 m, 30.5.1990, BULU 4275 B. Eu.-Sib. El.

**Wiedemannia orientalis** Fisch. & Mey., *Ind. Sem. Horti Petrop.* 4: 52 (1837).

Bursa: Gemlik; between Kapaklı and Fistikli, maquis, 160 m, 11.5.1992, BULU 5634. Endemic. Ir-Tur. El.

**Ballota nigra** L. subsp. **anatolica** P. H. Davis, *Notes B. R. G. Edinb.* 21: 61 (1952).

Bursa: Gemlik; Kapaklı, streamside, 50-70 m, 21.10.1993, BULU 7697. Endemic. Ir-Tur. El.

**Sideritis lanata** L., *Fl. Palaest.* 22 (1756).

Bursa: Gemlik; screes between Armutlu and Fistikli, maquis, 130 m, 11.5.1992, BULU 5649. E. Medit. El.

**S. montana** L., *Sp. Pl.* 575 (1753) subsp. **montana**

Bursa: Gemlik; stony southern slopes of Sahintepe hill, 635-650 m, 9.6.1989, BULU 4153. E. Medit. El.

**Stachys byzantina** C. Koch, *Linnaea* 21: 686 (1848).

Yalova: Güllük village, mill road, *Quercus* bushes, 365 m, 12.6.1987, BULU 2194. Eu.-Sib. El.

**S. thirkei** C. Koch, *Linnaea* 21: 685 (1848).

Bursa: Orhangazi; between Orhangazi and Hamzali, maquis, 550 m, 16.7.1987, BULU 2637.

**S. annua** (L.) L., *Sp. Pl.* ed. 2, 813 (1763) subsp. **annua** var. **annua**

Bursa: Gemlik; Ayvali location, *Quercus* fire woods, 420 m, 11.5.1992, BULU 5582 A.

**S. spinulosa** Sm. in Sibth. & Sm., *Prodr. Fl. Graec.* 1: 410 (1806).

Bursa: Gemlik; between Armutlu and Armutlu thermal spring, maquis, 100 m, 15.5.1991, BULU 4559. E. Medit. El.

**Nepeta nuda** L., *Sp. Pl.* 570 (1753) subsp. **nuda**

Yalova: Samanlı village, waterside, 29.8.1985, BULU 1059.

**Prunella vulgaris** L., *Sp. Pl.* 600 (1753).

Bursa: Gemlik; Karacaali, around big waterfall, 370 m, 24.6.1992, BULU 5734. Eu.-Sib. El.

**P. lacinata** (L.) L., *Sp. Pl.* ed. 2: 837 (1762).

Yalova: Kurtköy, around Tavukluyayla, forests, 670-700 m, 12.6.1987, BULU 2177. Eu.-Sib. El.

**Origanum vulgare** L. subsp. **hirtum** (Link) Ietswaart, *Tax. Rev. Origanum* 112 (1980).

Bursa: Orhangazi; between Orhangazi and Hamzali, maquis and stony ground, 550 m, 16.7.1987, BULU 2653. E. Medit. El.

**Calamintha nepeta** (L.) Savi subsp. **glandulosa** (Req.) P. W. Ball, *Bot. J. Linn. Soc.* 64 (4): 347 (1972).

Yalova: in vicinities of Esenköy, roadside, 19.8.1985, BULU 1027.

**\*Clinopodium vulgare** L., *Sp. Pl.* 587 (1753) subsp. **vulgare**

Yalova: around Güneyköy, rocky slopes by stream, 400 m, 16.7.1987, BULU 2699.

**Acinos rotundifolius** Pers., *Syn. Pl.* 2: 131 (1806).

Yalova: in vicinities of Çallica village, rocky and stony slopes, 3.4.1988, BULU 2787.

**Micromeria myrtifolia** Boiss. & Hohen. in Boiss., *Diagn.* 1 (5): 19 (1844).

Yalova: Gökçedere, Kizilagaç hill, forests and meadow places, 360-400 m, 12.6.1987, BULU 2214. E. Medit. El.

**M. juliana** (L.) Bentham ex Reichb., *Fl. Germ. Exc.* 311 (1811).

Bursa: Gemlik; Karacaali, around big waterfall, mixed forests, 370 m, 24.6.1992, BULU 5768. *Medit. El.*

**Thymus thracicus** Velen. var. **longidens** (Velen.) Jalas, *Ann. Bot. Fennici* 17: 323 (1980).

Bursa: Gemlik; 1 km to Karacaali, maquis, 30.5.1987, BULU 2036.

**T. longicaulis** C. Presl subsp. **longicaulis** var. **subisophyllus** (Borbas) Jalas, *Ann. Bot. Fennici* 11: 263 (1974).

Bursa: Gemlik; Büyükkumla, stony SW slopes of fiahintepe hill, 635-650 m, 9.6.1989, BULU 4134.

**Thymbra spicata** L., *Sp. Pl.* 569 (1753) var. **spicata**

Yalova: 1.5 km from Çallica village to Yalova, rocky and stony grounds, 100 m, 8.6.1985, BULU 696 A. *E. Medit. El.*

**Mentha aquatica** L., *Sp. Pl.* 576 (1753).

Yalova: between Safranköy and Paflaköy, *Quercus* bushes and waterside, 275 m, 10.7.1994, BULU 9312.

**M. longifolia** (L.) Hudson subsp. **typhoides** (Briq.) Harley, *Notes R. B. G. Edinb.* 38: 38(1980) var. **typhoides**

Bursa: Orhangazi; between Orhangazi and Hamzali, maquis, 550 m, 16.7.1987, BULU 2661.

**M. spicata** L., *Sp. Pl.* 576 (1753) subsp. **spicata**

Yalova: Samanlı village, waterside, 29.8.1985, BULU 1057.

**Lycopus europaeus** L., *Sp. Pl.* 21 (1753).

Yalova: Samanlı village, waterside, 29.8.1985, BULU 1058. *Eu.-Sib. El.*

**Salvia viridis** L., *Sp. Pl.* 24 (1753).

Bursa: Gemlik; Ayvali location, fire woods, 420 m, 11.5.1992, BULU 5601. *Medit. El.*

**S. sclarea** L., *Sp. Pl.* 27 (1753).

Yalova: in vicinities of Güneyköy, sparse maquis and meadows, 400 m, 26.6.1985, BULU 770.

**S. forskahlei** L., *Mant.* 26 (1767).

Yalova: Kurtköy, forests, 450 m, 19.7.1985, BULU 1000. *Eux. El.*

**S. virgata** Jacq., *Hort. Vindop.* 1: 14, t. 37 (1770).

Bursa: Gemlik; between Büyükkumla and Ayvali location, fields, 240 m, 7.6.1990, BULU 4328.

**S. verbenaca** L., *Sp. Pl.* 25 (1753).

Yalova: 2 km from Kocadere to Çınarcık, fields, 19.5.1985, BULU 498. Medit. El.

**S. napifolia** Jacq., *Hort. Vindob.* 2: 71, t. 152 (1772).

Yalova: Çınarcık, around Üçreisler, sparse maquis, 370 m, 20.6.1985, BULU 193. E. Medit. El.

## PLUMBAGINACEAE

**Plumbago europaea** L., *Sp. Pl.* 151 (1753).

Bursa: Gemlik; in vicinities of Kapakli, screes by stream, 21.10.1993, BULU 7660. Eu.-Sib. El.

## PLANTAGINACEAE

**Plantago major** L. subsp. **intermedia** (Gilib.) Lange *Handb. Danske Fl.* ed. 2: 107 (1856-59).

Yalova: Yalova, roadside, 22.8.1985, BULU 1030.

**P. coronopus** L., *Sp. Pl.* 115 (1753) subsp. **coronopus**

Yalova: Esenköy, coastal sands, 2.6.1994, BULU 8548. Eu.-Sib. El.

**P. coronopus** L. subsp. **commutata** (Guss.) Pilger, *Feddes Rep.* 28: 287 (1930).

Bursa: Gemlik; Büyükkumla, stony SW slopes of Sahintepe, 635-650 m, 9.6.1989, BULU 4137. E. Medit. El.

**P. lanceolata** L., *Sp. Pl.* 113 (1753).

Bursa: Gemlik; screes between Fistikli and Narli, maquis, 90 m, 15.5.1991, BULU 4579.

**P. lagopus** L., *Sp. Pl.* 114 (1753).

Yalova: 9 km from Orhangazi to Yalova, roadside 10.8.1992, BULU 5681. Medit. El.

**P. bellardii** All., *Fl. Pedem.* 1: 82, t. 85 f. 3 (1785).

Bursa: Gemlik; screes between Fistikli and Narli, maquis, 90 m, 15.5.1991, BULU 4567 B. E. Medit. El.

## TYMELIACEAE

**Daphne pontica** L., *Sp. Pl.* 357 (1753).

Yalova: Çınarcık, N screes of Hasanbaba hill, mixed forests, 450 m, 8.6.1985, BULU 672. Eux. El.

**D. sericea** Vahl., *Symb.* 1: 28 (1790).

Bursa: Gemlik; Ayvali location, firewoods, 420 m, 11.5.1992, BULU 5583.

E. Medit. El.

#### ELAEAGNACEAE

**Elaeagnus angustifolia** L., *Sp. Pl.* 121 (1753).

Bursa: Orhangazi; between Orhangazi and Hamzali, 550 m, 16.7.1987, BULU 2662.

#### LAURACEAE

**Laurus nobilis** L., *Sp. Pl.* 369 (1753).

Yalova: 5 km from Yalova to Orhangazi, maquis, 21.4.1985, BULU 200.  
Medit. El.

#### SANTALACEAE

**Osyris alba** L., *Sp. Pl.* 1022 (1753).

Bursa: Gemlik; Kapakli, maquis, 110 m, 11.5.1992, BULU 5658. Medit. El.

#### RAFFLESIACEAE

**Cytinus hypocistis** L. subsp. **kermesinus** (Guss.) Wettst., *Ber. Deutsch. Bot. Ges.* 35: 91 (1917).

Yalova: Çınarcık, Hasanbaba hill, N screes, 570 m, 10.5.1990, BULU 4246.  
Medit. El.

#### ARISTOLOCHIACEAE

**Aristolochia pallida** Willd., *Sp. Pl.* 4: 162 (1805).

Bursa: Gemlik; Ayvali location, among the bushes and meadows, 400 m, 23.3.1989, BULU 3984.

**A. pontica** Lam., *Encycl.* 1: 259 (1783).

Yalova: Çınarcık, Hasanbaba hill, N screes, 570 m, 10.5.1990, BULU 4242.

#### EUPHORBIACEAE

**Mercurialis annua** L., *Sp. Pl.* 1035 (1753).

Bursa: Gemlik; Kapakli, valley and streamside, 50-70 m, 21.10.1993, BULU 7691.

**E. platyphyllos** L., *Sp. Pl.* 460 (1753).

Yalova: between Armutlu and Esenköy, maquis, 60 m, 2.6.1994, BULU 8626.

**E. stricta** L., *Syst. Nat.* ed. 10, 2: 1049 (1759).

Yalova: Kocadere, coastal sandy habitats, 19.5.1985, BULU 535. Eu.-Sib. El.

**E. valerianifolia** Lam., *Encycl.* 2: 435 (1788).

Yalova: Güllük village, mill road, *Quercus* bushes, 12.6.1987, BULU 365-450 m, BULU 2184. E. Medit. El.

**E. helioscopia** L., *Sp. Pl.* 459 (1753).

Bursa: Gemlik; Haydariye, Palamutluk location, Oak thickets, 560-630 m, 9.6.1989, BULU 4163.

**E. aleppica** L., *Sp. Pl.* 458 (1753).

Bursa: Gemlik; Karacaali, around big waterfall, 370 m, 24.6.1992, BULU 5743.

**E. peplus** L. subsp. **minima** DC. in Lam. & DC., *Fl. Fr.* 3: 331 (1805).

Bursa: Gemlik; eastern slopes of Karacaali, maquis, 300 m, 3.6.1986, BULU 1696.

**E. taurinensis** All., *Fl. Pedem.* 1: 287 et 3: t. 83 f. 2 (1785).

Bursa: Gemlik; eastern slopes of Karacaali, maquis, 300 m, 3.6.1986, BULU 1649.

**E. falcata** L., *Sp. Pl.* 456 (1753) subsp. **falcata** var. **falcata**

Bursa: Gemlik; Kapakli, stony streambed, 50-70 m, 21.10.1991, BULU 7687.

**E. myrsinites** L., *Sp. Pl.* 461 (1753).

Bursa: Gemlik; between Narli and Selimiye, sparse maquis, 375-470 m, 9.6.1989, BULU 4163.

**E. amygdaloides** L., *Sp. Pl.* 463 (1753) subsp. **amygdaloides**

Bursa: Gemlik; Mecidiye, stony slopes Dibek hill, 550 m, 10.7.1990, BULU 4465. Eu.-Sib. El.

## URTICACEAE

**Urtica dioica** L., *Sp. Pl.* 984 (1753).

Yalova: Esenköy, roadsides, 2.6.1994, BULU 8565. Eu.-Sib. El.

**Parietaria judaica** L., *Diss. Fl. Pal.* 32 (1756).

Yalova: around Gökçedere dam, maquis, 110 m, 18.5.1985, BULU 420.

**P. lusitanica** L., *Sp. Pl.* 1052 (1753).

Bursa: Gemlik; Kapakli, rocky places and maquis, 110 m, 11.5.1992, BULU 5662. *Medit. El.*

#### MORACEAE

**Morus alba** L., *Sp. Pl.* 986 (1753).

Bursa: Gemlik; Karacaali, around big waterfall, 370 m, 24.6.1992, BULU 5752.

**Ficus carica** L., *Sp. Pl.* 1059 (1753) subsp. **carica**

Yalova: Kocadere, 19.5.1985, BULU 501.

#### ULMACEAE

**Ulmus minor** Miller, *Gard. Dict.* ed. 8 no. 6 (1768) subsp. **minor**

Yalova: in vicinities of Esadiye village, forests, 500 m, 29.4.1994, BUL 8157.

#### JUGLANDACEA

**Juglans regia** L., *Sp. Pl.* 997 (1753).

Yalova: in vicinities of Esadiye village, forests, 500 m, 27.4.1989, BULU 4120.

#### PLATANACEAE

**Platanus orientalis** L., *Sp. Pl.* 990 (1753).

Yalova: Gökçedere, screes of Kızılgaç hill, forests, 360-400 m, 12.6.1987, BULU 2205.

#### FAGACEAE

**Fagus orientalis** Lipsky, *Acta Horti Petrop.* 14: 300 (1898).

Yalova: around Kurtköy village, forests, 450 m, 19.7.1985, BULU 988. *Eu.-Sib. El.*

**Castanea sativa** Miller, *Gard. Dict.* ed. 8, no 1 (1768).

Yalova: Çınarcık; Hasanbaba hill, N screes, forests, 570 m, 10.5.1990, BULU 4241. *Eu.-Sib. El.*

**Quercus robur** L., *Sp. PL.* 996 (1753) subsp. **robur**

Bursa: Gemlik; between Hayriye and Sultaniye, *Quercus* bushes and stony places, 9.6.1989, BULU 4188 B. *Eu.-Sib. El.*



**Q. frainetto** Ten., *Prodr. Fl. Nap. Suppl.* 2: 1xxii (1813).

Yalova: between Yalova and Orhangazi, before the province border of Bursa, 27.4.1989, BULU 4124. Eu.-Sib. El.

**Q. petraea** (Mattuschka) Liebl. subsp. **iberica** (Stevenne ex Bieb.) Krassiln., *Novit. Syst. Pl. Vasc. (Leningrad)* 5: 86 (1968).

Yalova: 10 km from Yalova to Orhangazi, maquis, 12.5.1991, BULU 4657.

**Q. infectoria** Olivier, *Voy. Emp. Othoman* 1: 252, Atlas t. 14, 15 (1801) subsp. **infectoria**

Bursa: Gemlik; Ayvali location, bushes, 420 m, 11.5.1992, BULU 5592. Eu.-Sib. El.

**Q. infectoria** Olivier subsp. **boissieri** (Reuter) O. Schwarz, *Feddes Rep.* 33: 336 (1934).

Bursa: Gemlik; Hayriye village, around Kiran hill, 430 m, 9.6.1989, BULU 4169 B.

**Q. cerris** L., *Sp. Pl.* 997 (1753) var. **cerris**

Yalova; in vicinities of Kurtköy, forests, 350-370 m, 18.5.1985, BULU 396. Medit. El.

**Q. coccifera** L., *Sp. Pl.* 995 (1753).

Yalova: 3.5 km from Kocadere to Çınarcık, maquis, 19.5.1985, BULU 510. Medit. El.

#### CORYLACEAE

**Carpinus betulus** L., *Sp. Pl.* 998 (1753).

Bursa: Gemlik; Mecidiye, NW slopes of Tazdag, *Fagus* and *Carpinus* forests, 700 m, 10.7.1990, BULU 4495. Eu.-Sib. El.

**Corylus avellana** L., *Sp. Pl.* 998 (1753) var. **avellana**

Yalova: around Esadiye village, forests, 500 m, 2.6.1994, BULU 8633. Eu.-Sib. El.

#### BETULACEAE

**Alnus glutinosa** (L.) Gaertner, *Fruct. & Sem.* 2: 54, t. 90 (1970)

subsp. **glutinosa**

Yalova: in vicinities of Kurtköy, forests, 450 m, 19.7.1985, BULU 987. Eu.-Sib. El.

## SALICACEAE

**Salix alba** L., *Sp. Pl.* 1021 (1753), incl. subsp. **micans** (Andersson) Rech. fil.,  
*Öst. Zeitschr.* 110: 338 (1963).

Bursa: Gemlik; Karacaali, around big waterfall, 370 m, 24.6.1992, BULU 5762. Eu.-Sib. El.

**S. caprea** L., *Sp. Pl.* 1020 (1753).

Yalova: between Yalova and Orhangazi roadside, 26.3.1995, BULU 9327. Eu.-Sib. El.

**Populus tremula** L., *Sp. Pl.* 1034 (1753).

Bursa: Orhangazi; between Orhangazi and Hamzali, roadside, 550 m, 16.7.1987, BULU 2652. Eu.-Sib. El.

## RUBIACEAE

**Sherardia arvensis** L., *Sp. Pl.* 102 (1753).

Bursa: Gemlik; Haydariye, Palamutluk location, Oak thickets, 560-630 m, 13.4.1988, BULU 2804. Medit. El.

**Crucianella imbricata** Boiss., *Diagn. ser. 1* (10): 59 (1849).

Bursa: Gemlik; screes between Karacaali and Narli, maquis, 120 m, 3.6.1986, BULU 1684 A. E. Medit. El.

**Asperula lilaciflora** Boiss. subsp. **phrygia** (Bornm.) Schönb-Tem., *Notes R. B.G. Edinb.* 37: 245 (1979).

Bursa: Orhangazi; around Findikli, *Quercus* bushes and dry stony slopes, 470 m, 16.7.1987, BULU 2706. Endemic.

**A. tenella** Heuffel ex Degen in Kerner, *Sched. Fl. Exs. Austro-Hung.* 8: 43 no 2947 (1899).

Yalova: Gökçedere, NE screes of Kizilagaç hill, forests and meadows, 360-400 m, 12.6.1987, BULU 2202.

**A. arvensis** L., *Sp. Pl.* 103 (1753).

Bursa: Gemlik; Mecidiye, stony slopes of Dibek hill, 550 m, 10.7.1990, BULU 4470. Medit. El.

**Galium rivale** (Sm.) Griseb, *Spic.* 2: 156 (1844).

Yalova: Samanlı village, waterside, 29.8.1985, BULU 1053. Eu.-Sib. El.

**G. verum** L., *Sp. Pl.* 107 (1753) subsp. **verum**

Bursa: Gemlik; between Hayriye and Sultaniye, stony ground, 610 m, 9.6.1989, BULU 4180. Eu.-Sib. El.

**G. album** Miller subsp. **pycnotrichum** (H. Braun) Krendl, *Öst. Bot. Zeitschr.* 114: 539 (1967).

Yalova: between Yalova and Orhangazi, before the province border of Bursa, bushes, 27.4.1989, BULU 4126 B. Eu.-Sib. El.

**G. fissurense** Ehrend. & Schönb.- Tem., *Notes R. B. G. Edinb.* 37: 249 (1979).

Bursa: Gemlik; Mecidiye, stony slopes of Dibek hill, 550 m, 10.7.1990, BULU 4469. Endemic. Eux. El.

**G. paschale** Forsskal, *Fl. Aeg.-Arab.* 203 (1775).

Yalova: in vicinities of Kurtköy village, forests, 450 m, 19.7.1985, BULU 999. E. Medit. El.

**G. spurium** L., *Sp. Pl.* 106 (1753) subsp. **spurium**

Yalova; around Esadiye village, among the bushes, 500 m, 29.4.1994, BULU 8176. Eu.-Sib. El.

**G. aparine** L., *Sp. Pl.* 157 (1753).

Bursa: Gemlik; Ayvali location, bushes and damp meadows, 420 m, 11.5.1992, BULU 5600.

**G. divaricatum** Pourr. ex Lam., *Encycl.* 2: 580 (1788).

Yalova: in vicinities of Güneyköy, rocky slopes and banks of stream, 400 m, 16.7.1987, BULU 2694. Medit. El.

**G. tenuissimum** Bieb., *Fl. Taur.-Cauc.* 1: 104 (1808) subsp. **tenuissimum**

Yalova: Esenköy, roadside, 2.6.1994, BULU 8569.

**Cruciata laevipes** Opiz, *Seznam.* 34 (1852).

Yalova: Kocadere, coastal sandy habitats, 19.5.1985, BULU 556. Eu.-Sib. El.

**C. pedemontana** (Bellardi) Ehrend., *Notes R. B. G. Edinb.* 22: 369 (1958).

Yalova: around Gökçedere dam, meadows, 110 m, 18.5.1985, BULU 448.

**Rubia peregrina** L., *Sp. Pl.* 109 (1753).

Bursa: Gemlik; Karacaali, around big waterfall, 24.6.1992, BULU 5721. Medit. El.

**R. tinctorum** L., *Sp. Pl.* 109 (1753).

Yalova: Esadiye village, forests and waterside, 2.6.1994, BULU 8618. Ir-Tur. El.

## ANGIOSPERMAE

## MONOCOTYLEDONES

## ARACEAE

**Arum italicum** Miller, *Gard. Dict.* ed. 8, no 2 (1768).

Yalova: Senköy, in *Carpinus* forests, 19.5.1985, BULU 519.

**A. nickellii** Schott, *Prodr. Aroid.* 85 (1860).

Bursa: Gemlik; between Armutlu and Esenköy, maquis, 60 m, 2.6.1994, BULU 8537. E. Medit. El.

**Dracunculus vulgaris** Schott in Schott & Endl., *Melet. Bot.* 17 (1832).

Bursa: Gemlik; Kapakli, rocky slopes of valley, 100 m, 6.7.1988, BULU 3198. E. Medit. El.

## LILIACEAE

**Smilax excelsa** L., *Sp. Pl.* 1029 (1753).

Yalova: 3.5 km from Kocadere to Çınarcık, maquis, 19.5.1985, BULU 515. Eux. El.

**Ruscus aculeatus** L., *Sp. Pl.* 1041 (1753) var. **aculeatus**

Yalova: Senköy, in *Carpinus* forests, 19.5.1985, BULU 527.

**R. hypoglossum** L., *Sp. Pl.* 1041 (1753).

Yalova: in vicinities of Kurtköy, forests, 450 m, 19.7.1985, BULU 1013. Eu.-Sib. El.

**Asparagus acutifolius** L., *Sp. Pl.* 314 (1753).

Bursa: Gemlik; Mecidiye, NW slopes of Tazdag, *Fagus* and *Carpinus* forests, 700 m, 10.7.1990, BULU 4491. Medit. El.

**A. tenuifolius** Lam., *Encycl.* 1: 294 (1783).

Yalova: in vicinities of Esadiye village, forests and waterside, 500 m, 2.6.1994, BULU 8586 B.

**Asphodelus aestivus** Brot., *Fl. Lusit.* 1: 525 (1804).

Bursa: Gemlik; screes between Narli and Armutlu, maquis, 20 m, 28.4.1988, BULU 2898. Medit. El.

**Asphodeline lutea** (L.) Reichb., *Fl. Germ. Exc.* 116 (1830).

Bursa: Gemlik; Ayvali location, sparse maquis, 420 m, 11.5.1992. Medit. El.

**Allium neapolitanum** Cyr., *Pl. Rar. Neap.* 1: 13, t. 4 (1788).

Bursa: Gemlik; Armutlu, west-facing slopes, 35 m, 5.4.1989, BULU 4059. Medit. El.

**A. paniculatum** L., *Syst. Nat.* ed. 10, 2: 978 (1759) subsp. **paniculatum**

Bursa: Gemlik; Karacaali, around big waterfall, wet rocky slopes, 300 m, 18.4.1986, BULU 1337. Medit. El.

**A. myrianthum** Boiss., *Diagn. ser. 1* (5): 59 (1844).

Bursa: Gemlik; Kapakli, *Quercus* and *Acer* forests, 100 m, 6.7.1988, BULU 3197. Ir-Tur. El.

**A. ampeloprasum** L., *Sp. Pl.* 294 (1753).

Yalova: around Çallica village, rocky and stony ground and shrubs, 100 m, 8.6.1985, BULU 702. Medit. El.

**A. atrovioleaceum** Boiss., *Diagn. ser. 1* (7): 112 (1846).

Yalova: Güllük village, mill road, *Quercus* and *Fagus* forests, 365-450 m, 12.6.1987, BULU 2190.

**A. scorodoprasum** L. subsp. **rotundum** (L.) Stearn, *Ann. Mus. Goulandris* 4: 178 (1978).

Yalova: in vicinities of Güneyköy, sparse maquis and meadows, 410 m, 18.5.1986, BULU 1223. Medit. El.

**A. amethystinum** Tausch, *Sylloge Ratisb.* 2: 256 (1828).

Bursa: Gemlik; between Orhangazi and Gemlik, maquis, 80 m, 29.4.1994, BULU 8129. Medit. El.

**A. nigrum** L., *Sp. Pl.* ed. 2: 430 (1762).

Yalova: around Güneyköy, sparse maquis and meadows, 410 m, 18.5.1986, BULU 1228. Medit. El.

**A. atropurpureum** Waldst et Kit., *Pl. Hung.* 1: 16, t. 17 (1800).

Yalova: Yenimahalle, fields border, 18.5.1985, BULU 460. Eu.-Sib. El.

**Scilla bifolia** L. *Sp. Pl.* 309 (1753).

Yalova: around Esadiye village, bushes and meadows, 470 m, 20.2.1990, BULU 4224. Medit. El.

**Ornithogalum sphaerocarpum** Kerner, *Öst. Bot. Zeitschr.* 28: 15 (1878).

Yalova: between Kurtköy and Tavukluyayla, open places in forests, 670-700 m, 12.6.1987, BULU 2174.

**O. narbonense** L., *Cent. Pl.* 2: 15 (1756).

Yalova: 2 km from Kocadere to Çinarcik, fields, 19.5.1985. Medit. El.

- O. montanum** Cyr., Ten., *Fl. Nap.* 1: 176 (1811).  
Bursa: screes between Fistikli and Narli, maquis, 90 m, 15.5.1991, BULU 4585. E. Medit. El.
- O. fimbriatum** Willd., *Ges. Nat. Freunde Berlin Mag. Neue Schr.* 3: 420 (1801).  
Yalova: Üvezpinari, Uzunsirt location, meadows, 670 m, 2.6.1990, BULU 4282. E. Medit. El.
- O. wiedemannii** Boiss., *Fl. Or.* 5: 221 (1882).  
Yalova: Senköy, in *Carpinus* forests, 19.5.1985, BULU 526.
- O. sigmoideum** Freyn & Sint., *Bull. Herb. Boiss.* 4: 189 (1896).  
Bursa: Armutlu; 5 km from Hayriye village to Selimiye village, damp places and sparse maquis, 385 m, 5.4.1989, BULU 4109. Eu.-Sib. El.
- Muscari comosum** (L.) Miller, *Gard. Dict.* ed. 8 no. 2 p.p. (1768).  
Yalova: 2 km from Kocadere to Çinarcik, fields, 19.5.1985, BULU 507. Medit. El.
- M. armeniacum** Leichtlin ex Baker, *Gard. Chron.* n. s. 9: 798 (1878).  
Bursa: Armutlu; 5 km from Hayriye village to Selimiye village, sparse maquis and meadows, 385 m, 5.4.1989, BULU 4108.
- M. neglectum** Guss. in Ten., *Syll. Fl. Neap. App.* 5: 13 (1842).  
Bursa: Gemlik; Haydariye, Palamutluk location, Oak thickets, 560-630 m, 13.4.1988, BULU 2808.
- Bellevalia trifoliata** (Ten.) Kunth, *Enum. Pl.* 4: 308 (1843).  
Yalova: in vicinities of Esadiye village, bushes, 500 m, 27.4.1989, BULU 4123 B. Medit. El.
- B. sarmatica** (Pallas ex Georgi) Woronow, *Bull. Jard. Bot. URSS* 26: 611 (1927).  
Yalova: Kurtköy; around Kasnak hill, forests, 460 m, 5.6.1990, BULU 4294.
- Tulipa orphanidea** Boiss. ex Heldr., *Gartenflora* 11: 309, t. 373 (1862).  
Bursa: Armutlu; NW rocky slopes of Tazdag, 680-710 m, 5.4.1989, BULU 4089 B. E. Medit. El.
- Gagea chrysantha** (Jan) Schultes & Schultes fil., *Syst. Veg.* 7: 545 (1829).  
Yalova: Teffvikiye, northern slopes of Sinekliibayir hill, forests, 30.5.1990, Bulu 4283. Medit. El.

**G. bithynica** Pascher, *Sitz.- Ber. Deutsch. Naturw.- Med. Ver. Böhm. 'Lotos'* n. s. 24: 122 (1904).

Yalova: 3.5 km from Kocadere to Çınarcık, maquis and meadows, 19.5.1985, BULU 510. E. Medit. El.

**G. bohémica** (Zauschn.) Schultes & Schultes fil., *Syst. Veg.* 7: 549 (1829).

Bursa: Gemlik; Ayvalı location, *Quercus* bushes and damp meadows, 400 m, 23.3.1989, BULU 4016 A.

\***Colchicum burttii** Meikle, *Bot. Mag.* 181: n.s.t. 735 (1977).

Bursa: Armutlu; around Cumalı village, sparse maquis and open places, 410 m, 5.4.1989, BULU 4080. Endemic.

**C. turcicum** Janka, *Öst. Bot. Zeitschr.* 23: 242 (1873).

Bursa: Gemlik; Ayvalı location, bushes and damp meadows, 400 m, 23.3.1989, BULU 4021. E. Medit. El.

#### AMARYLLIDACEAE

**Leucojum aestivum** L., *Syst. Nat.* ed. 10, 2: 975 (1759).

Yalova; 4 km from Yalova to Esenköy, wet places in maquis, 4.4.1992, BULU 5537. Eu.-Sib. El.

**Galanthus plicatus** Bieb. subsp. **byzantinus** (Baker) D. A. Webb, *Bot. J. Linn. Soc.* 76: 310 (1978).

Bursa: Gemlik; Armutlu; around gravegard, 1.2.1989, BULU 3244. Endemic. Eux. El.

**G. elwesii** Hooker fil., *Bot. Mag.* 101: t. 6166 (1875).

Yalova; E screes of Esadiye village, open places in forests, 470 m, 20.2.1990, BULU 4222. E. Medit. El.

#### IRIDACEAE

**Iris pseudacorus** L., *Sp. Pl.* 38 (1753).

Bursa: Gemlik; eastern slopes of Karacaalı, maquis, 410 m, 18.5.1986, BULU 1295.

**I. orientalis** Miller, *Gard. Dict.* ed. 8, no. 9 (1768).

Bursa: Armutlu; 5 km from Hayriye village to Selimiye village, damp places in bushes, 385 m, 5.4.1989, BULU 4110. E. Medit. El.

**I. suaveolens** Boiss. & Reuter in Boiss., *Diagn. ser.* 1 (13): 15 (1853).

Bursa: Gemlik; screes between Kapaklı and Fistikli, maquis, 60 m, 5.4.1989, BULU 4039. E. Medit. El.

**Crocus chrysanthus** (Herbert) Herbert, *Bot. Reg.* 29: Misc. 27 (1843).

Bursa: Orhangazi; between Orhangazi and Yalova, before the province border of Bursa, among the *Quercus* bushes, 25.2.1989, BULU 3251.

**C. pestalozzae** Boiss., *Diagn. ser. 1* (13): 17 (1853).

Bursa: Gemlik; Ayvali location, Oak thickets and meadows, 400 m, 23.3.1989, BULU 4019. Endemic. E. Medit. El. It was collected above 200 m.

**C. biflorus** Miller, *Gard. Dict.* ed. 8, no. 4 (1768) subsp. **biflorus**

Bursa: Gemlik; Sahintepe, maquis, 300 m, 20.2.1990, BULU 4234. E. Medit. El.

**C. flavus** Weston, *Univ. Bot.* 2: 237 (1771) subsp. **flavus**

Yalova: Teflvikiye; northern slopes of Sineklibayir hill, forests, 3.5.1990, BULU 4280. Eu.-Sib. El.

\***C. flavus** Weston subsp. **dissectus** T. Baytop & Mathew, *Kew Bull.* 30: 241 (1975).

Bursa: Armutlu; between Mecidiye and Hayriye village, Oak thickets, 380 m, 1.2.1989, BULU 3249. Endemic.

\***C. pallasii** Goldb., *Mem. Soc. Nat. Mosc.* 5: 157 (1817) subsp. **pallasii**

Bursa: Gemlik; Ayvali location, among the bushes and wet meadows, 400 m, 23.3.1989, BULU 4017 B.

**Romulea linaresii** Parl. subsp. **graeca** Beg., *Bot. Jahrb.* 38: 325 (1907).

Bursa: Gemlik; Ayvali location, among the bushes and wet meadows, 400 m, 23.3.1989, BULU 4020. E. Medit. El.

**R. columnae** Seb. & Mauri, *Fl. Rom. Prodr.* 18 (1818) subsp. **columnae**

Bursa: Armutlu; Cumali village, sparse maquis, 380 m, 5.4.1989, BULU 4089 B.

**Gladiolus italicus** Miller, *Gard. Dict.* ed. 8, no. 2 (1768).

Yalova; around Güneyköy, maquis, 410 m, 18.5.1986, BULU 1229.

#### ORCHIDACEAE

**Epipactis helleborine** (L.) Crantz, *Strip. Austr.* ed. 2, 2: 467 (1769).

Bursa: Gemlik; Armutlu, maquis, 215 m, 13.5.1993, BULU 6945.

**Limodorum abortivum** (L.) Swartz, *Nova Acta Reg. Soc. Sci. Upsal.* 6: 80 (1799).

Yalova; Hasanbaba hill, N screes, mixed forests, 570 m, 10.5.1990, BULU 4239.



**Ophrys vernixia** Brot., *Fl. Lusit.* 1: 24 (1804) subsp. **vernixia**

Bursa: Gemlik; between Narli and Kapakli, maquis, 300 m, 15.5.1991, BULU 4513. *Medit. El.*

**O. oestifera** Bieb., *Heim. Orch. Baden-Württ.* 14: 204-240 (1982) subsp. **oestifera**

Yalova: 1.5 km from Çallica village to Yalova, stony and rocky grounds, 90 m, 20.4.1985, BULU 166.

**O. apifera** Hudson, *Fl. Angl. ed.* 1: 340 (1762).

Yalova; around Gökçedere dam, maquis, 110 m, 18.5.1985, BULU 429.

**Serapias vomeracea** (Burm. fil.) Briq. subsp. **laxiflora** (Soo) Gözl & Reinhard, *Orchidee* 28: 114 (1977).

Bursa: Gemlik; Ayvali location, Oak thickets, 420 m, 11.5.1992, BULU 5625. *E. Medit. El.*

**\*Aceras anthropophorum** (L.) Aiton fil. in Aiton, *Epit. Hort. Kew.* 281 (1814).

Bursa: Gemlik; screes between Narli and Kapakli, maquis, 20 m, 28.4.1988, BULU 2887.

**Anacamptis pyramidalis** (L.) L. C. M. Richard, *Orchid. Eur. Annot.* 33 (1817).

Yalova: around Esadiye village, field borders and open places in forests, 500 m, 2.6.1994, BULU 8636.

**Orchis purpurea** Hudson, *Fl. Angl. ed.* 1: 334 (1762).

Yalova: around Gökçedere dam, maquis, 110 m, 8.5.1985, BULU 436. *Eu.-Sib. El.*

**O. papilionacea** L., *Syst. Nat. ed.* 10: 1242 (1759) var. **papilionacea**

Bursa: Gemlik; between Narli and Armutlu, slopes and maquis, 28.4.1988, BULU 2888.

**O. pallens** L., *Mant. Alt.* 292 (1771).

Yalova; Teflvikiye, northern slopes of Sineklıbayır hill, open places in *Fagus* forests, 650 m, 3.5.1990, BULU 4260 B. *Eu.-Sib. El.* It was collected below 1000 m.

**O. laxiflora** Lam., *Fl. Fr. ed.* 1, 3: 504 (1779).

Bursa: Armutlu; 5 km from Hayriye village to Selimiye, sparse maquis and damp meadows, 385 m, 5.4.1989, BULU 4108 A. *Medit. El.*

**Dactylorhiza romana** (Seb.) Soo, *Nom. Nov. Gen. Dactylorhiza, Budapest* 3 (1962) subsp. **romana**

Yalova; in vicinities of Güneyköy, meadows, 10.5.1990, BULU 4238. *Medit. El.*

## DIOSCOREACEAE

**\**Tamus communis* L., *Sp. Pl.* 1028 (1753) subsp. *communis***

Bursa: Gemlik; eastern slopes of Karacaali, maquis, 120 m, 3.6.1986, BULU 1700.

***T. communis* L. subsp. *cretica* (L.) Kit Tan, *Notes R. B. G. Edinb.* 41: 47 (1983).**

Yalova; around Esadiye village, waterside and forests, 500 m, 2.6.1994, BULU 8634. It was collected above 300 m.

## TYPHACEAE

***Typha latifolia* L., *Sp. Pl.* 971 (1753).**

Bursa: Gemlik; S slopes of Ayikaya, forests, 690 m, 9.7.1994, BULU 9292.

## JUNCACEAE

***Juncus acutus* L., *Sp. Pl.* 325 (1753).**

Yalova: Yalova, waste grounds, 22.8.1985, BULU 1032.

***J. effusus* L., *Sp. Pl.* 326 (1753).**

Bursa: Gemlik; Ayvali location, wet meadows, 11.5.1992, BULU 5595. Cosmopolitan.

***J. conglomeratus* L., *Sp. Pl.* 326 (1753).**

Yalova; in vicinities of Güney köyçevresi, meadows, 410 m, 18.5.1986, BULU 1238. Eu.-Sib. El.

***J. articulatus* L., *Sp. Pl.* 327 (1753).**

Bursa: Gemlik; Mecidiye, NW slopes of Tazdag, 700 m, 10.7.1990, BULU 4495. Eu.-Sib. El.

***Luzula forsteri* (Sm.) DC. in Lam. & DC., *Syn. Pl. Fl. Gall.* 150 (1806).**

Bursa: Armutlu; around Cumali village, sparse *Quercus* bushes and open places, 410 m, 5.4.1989, BULU 4082. Eu.-Sib. El.

## CYPERACEAE

***Cyperus longus* L., *Sp. Pl.* 45 (1753).**

Yalova; Esenköy, waste ground, 19.8.1985, BULU 1035.

***C. rotundus* L., *Sp. Pl.* 45 (1753).**

Yalova; Samanlı village, waterside, 29.8.1989, BULU 1068.

**Pycreus flavescens** (L.) Reichb., *Fl. Germ. Exc.* 1: 72 (1830).

Yalova; Çınarcık; around Hasanbaba hill, waterside, 450 m, 8.6.1985, BULU 683.

**Eleocharis palustris** (L.) Roemer & Schultes, *Syst. Veg.* 2: 151 (1817).

Yalova; Kocadere, sandy coastal habitats, 19.5.1985, BULU 541.

**Bolboschoenus maritimus** (L.) Palla in W. D. J. Koch, *Syn. Deutschl. Fl.* ed. 3, 3: 2532 (1905) var. **maritimus**

Bursa: Gemlik; Camgöz meadows, swamps, 730 m, 9.7.1994, BULU 9903. Cosmopolitan.

**Scirpoides holoschoenus** (L.) Sojak, *Cas. Nar. Muz. (Prague)* 140 (3-4): 127 (1972).

Bursa: Gemlik; Kapakii, bed of river, 100 m, 6.7.1988, BULU 3211.

**Carex hirta** L., *Sp. Pl.* 975 (1753).

Bursa: Gemlik; Karacaali, waste places, 18.4.1986, BULU 1323 A. Eu.-Sib. El.

**C. riparia** Curtis, *Fl. Lond.* 2 (4): t. 60 (190, 28) (1753).

Yalova; around Çallica village, damp meadows, 4.3.1988, BULU 2789. Eu.-Sib. El.

**C. pendula** Hudson, *Fl. Angl.* ed. 1: 352 (1762).

Yalova; in vicinities of Esadiye village, waterside, 450 m, 29.4.1994, BULU 8164. Eu.-Sib. El.

**C. flacca** Schreber subsp. **serrulata** (Biv.) Greuter, *Boissiera* 13: 167 (1967).

Yalova; around Çallica village, stony and rocky places, 90 m, 3.4.1988, BULU 2789. Medit. El.

#### GRAMINEAE

**Aegilops geniculata** Roth, *Bot. Abh. Beob.* 45 (1787)

Yalova; Güllük village, *Quercus* and *Fagus* forests, 365-450 m, 12.6.1987, BULU 2186. Medit. El.

**Hordeum geniculatum** All., *Fl. Pedem.* 2: 259, t. 91 (1785).

Bursa: Orhangazi; between Orhangazi and Hamzali, maquis, 550 m, 16.7.1987, BULU 2666. Eu.-Sib. El.

**H. bulbosum** L., *Amoen. Acad.* 4: 304 (1759).

Bursa: Gemlik; Armutlu, roadside, 55 m, 2.6.1994, BULU 8521.

**Taeniatherum caput-medusae** (L.) Nevski subsp. **crinitum** (Schreber) Melderis, *Notes R. B. G. Edinb.* 42: 81 (1984).

Yalova; between Kurtköy and Tavukluyayla, open places in forests and meadows, 670-700 m, 12.6.1987, BULU 2179. Ir. -Tur. El.

**Bromus japonicus** Thunb., *Fl. Jab.* 52, t. 11 (1784) subsp. **japonicus**

Yalova; around Esadiye village, *Quercus* bushes, 450 m, 29.4.1994, BULU 8158.

\***B. squarrosus** L., *Sp. Pl.* 76 (1753).

Bursa: Gemlik; fiahintepe, sparse maquis, 400 m, 20.2.1990, BULU 4225 A.

**B. tectorum** L., *Sp. Pl.* 77 (1753).

Yalova; Güneyköy, meadows and maquis, 410 m, 18.5.1986, BULU 1236.

**B. sterilis** L., *Sp. Pl.* 77 (1753).

Yalova; between Kurtköy and Tavukluyayla, open places in forests and meadows, 670-700 m, 12.6.1987, BULU 2182.

**B. madritensis** L., *Cent. Pl.* 1: 5 (1755).

Yalova; Güllük köyü, *Quercus* and *Fagus* forests, 365-450 m, 12.6.1987, BULU 2187 B.

**B. diandrus** Roth, *Bot. Abh.* 44 (1787).

Bursa: Gemlik; eastern slopes of Karacaali, maquis and *P. pinea* forests, 200 m, 18.4.1986, BULU 1298 B.

**Avena barbata** Pott ex Link in Schrader, *J. Bot.* 1799 (2): 315 (1800) subsp. **barbata**

Yalova; in vicinities of Esadiye village, bushes, 500 m, 2.6.1994, BULU 8603. Medit. El.

**A. sterilis** L., *Sp. Pl.* ed. 2: 118 (1762) subsp. **sterilis**

Bursa: Gemlik; Mecidiye, stony slopes of Dibek hill, 550 m, 10.7.1990, BULU 4487.

**Helictotrichon compressum** (Heuffel) Henrard, *Blumea* 3: 429 (1940).

Yalova; between Kurtköy and Tavukluyayla, open places in forests and meadows, 670-700 m, 12.6.1987, BULU 2187 A. Eux. El.

**Aira elegantissima** Schur, *Verh. Siebenb. Ver. Naturw.* 4 (Sert. Fl. Transs.) 85 (1853).

Yalova; Çınarcık; N screes of Hasanbaba hill, mixed forests, 570 m, 10.5.1990, BULU 4249. Medit. El.

**Holcus lanatus** L., *Sp. Pl.* 1048 (1753).

Bursa: Gemlik; Kapakli, valley, alongside the streams, 100 m, 6.7.1988, BULU 3210. Eu.-Sib. El.

**Agrostis stolonifera** L., *Sp. Pl.* 62 (1753).

Bursa: Gemlik; Ayvali location, wet meadows, 23.3.1989, BULU 4022. Eu.-Sib. El.

**Gastridium ventricosum** (Gouan) Schinz & Thell., *Vierteljahr. Naturf. Ges. Zürich* 58: 39 (1913).

Bursa: Armutlu; around thermal spring, maquis, 100 m, 6.7.1988, BULU 3231. Medit. El.

**Phalaris arundinacea** L., *Sp. Pl.* 55 (1753).

Bursa: Orhangazi; between Orhangazi and Hamzali, wet meadows, 500 m, 16.7.1987, BULU 2659.

**P. paradoxa** L., *Sp. Pl.* ed. 2: 1665 (1753).

Yalova; Karsak mountain pass, stony screes, 300 m, 30.4.1987, BULU 1873. Medit. El.

**Alopecurus myosuroides** Hudson, *Fl. Angl.* 1: 23 (Jan.-Jun. 1762) subsp. **myosuroides**

Bursa: Gemlik; Karacaali, olive fields, 18.4.1986, BULU 1324. Eu.-Sib. El.

**A. myosuroides** Hudson var. **tonsus** (Blanche ex Boiss.) R. Mill, **comb. nov.** *A. agrestis* L. var. *tonsus* Blanche ex Boiss., *Fl. Or.* 5: 485 (1884).

Yalova; Yalovaköy, gardens, 30.3.1985, BULU 1120. Eu.-Sib. El.

**Phleum subulatum** (Savi) Aschers. & Graebn., *Syn. Mitteleur. Fl.* 2(1): 54 (1899) subsp. **subulatum**

Bursa: Orhangazi; around Findikli çevresi, bushes and dry stony slopes, 470 m, 16.7.1987, BULU 2705.

**Lolium perenne** L., *Sp. Pl.* 83 (1753).

Bursa: Gemlik; eastern slopes of Karacaali, maquis, 200 m, 18.4.1986, BULU 1180. Eu.-Sib. El.

**L. temulentum** L., *Sp. Pl.* 83 (1753) var. **temulentum**

Bursa: Gemlik; between Karacaali and Narli, maquis, 120 m, 3.6.1986, BULU 1679.

**Catapodium rigidum** (L.) C. E. Hubbard ex Dony, *Fl. Bedfordshire* 437 (1753) var. **rigidum**

Yalova; Esenköy, roadside, 2.6.1994, BULU 8545.

**Poa pratensis** L., *Sp. Pl.* 67 (1753).

Yalova; Kocadere, around wharf, 19.5.1985, BULU 540.

**P. alpina** L. subsp. **fallax** F. Hermann, *Hercynia* 1: 458 & 454 (1939).

Yalova; in vicinities of Güneyköy, meadows, 420 m, 18.5.1986, BULU 1235. It was collected below 1750 m.

**P. bulbosa** L., *Sp. Pl.* 70 (1753).

Bursa: Gemlik; stony southern slopes of Sahintepe hill, 635-650 m, 9.6.1989, BULU 4152.

**Catabrosa aquatica** (L.) P. Beauv., *Ess. Agrost.* 97 (1812).

Bursa: Gemlik; Armutlu, roadside, 55 m, 2.6.1994, BULU 8521 B.

**Dactylis glomerata** L., *Sp. Pl.* 71 (1753) subsp. **glomerata**

Yalova; Kurtköy; between Kurtköy and Tavukluyayla, fields border, 670-700 m, 12.6.1987, BULU 2166. Eu.-Sib. El.

**Cynosurus cristatus** L., *Sp. Pl.* 72 (1753).

Yalova; Çınarcık, around Hasanbabahill, waterside, 450 m, 8.6.1985, BULU 682. Eu.-Sib. El.

**C. echinatus** L., *Sp. Pl.* 72 (1753).

Bursa: Gemlik; Büyükkumla crossroad to Ayvalı location in *P. pinea* forests and maquis, 190 m, 7.6.1990, BULU 4323. Medit. El.

**Briza media** L., *Sp. Pl.* 70 (1753).

Yalova; Gökçedere, NE screes of Kızılağaç hill, forests and meadows, 360-400 m, 12.6.1987, BULU 2200.

**B. maxima** L., *Sp. Pl.* 70 (1753).

Bursa: Gemlik; SW screes between Narlı and Kapaklı, maquis, 10 m, 5.4.1989, BULU 4032.

**Melica ciliata** L., *Sp. Pl.* 66 (1753) subsp. **ciliata**

Bursa: Gemlik; screes of Narlı, maquis, 30 m, 2.6.1994, BULU 8499.

**Stipa pulcherrima** C. Koch subsp. **epilosa** (Martinovsky) Tzvelev, *Novit. Syst. Pl. Vasc.* (Leningrad) II: 18 (1974).

Bursa: Gemlik; between Narlı and Armutlu, roadside, 6.7.1988, BULU 3181. It was collected below 400 m.

**Piptatherum miliaceum** (L.) Cosson subsp. **thomasii** (Duby) Freitag, *Notes R. B. G. Edinb.* 33: 363 (1975).

Bursa: Gemlik; Kapaklı, rocky slopes by stream, 100 m, 6.7.1988, BULU 3208.

**P. coeruleus** (Desf.) P. Beauv., *Ess. Agrost.* 18 & 173 (1812).

Bursa: Armutlu; around Cumali village, sparse bushes and open places, 410 m, 5.4.1989, BULU 4081 A.

**Arundo donax** L., *Sp. Pl.* 81 (1753).

Yalova; Samanlı village, waterside, 29.8.1985, BULU 1056.

**Phragmites australis** (Cav.) Trin. ex Steudel, *Nom. ed.* 2, 2: 324 (1841).

Bursa: Armutlu; 5 km from Hayriye village to Selimiye village, sparse maquis and damp places, 385 m, 5.4.1989, BULU 4111. Eu.-Sib. El.

**Setaria verticillata** (L.) P. Beauv., *Ess. Agrost.* 51 (1812) var. **verticillata**

Bursa: Armutlu; around Cumali village, sparse bushes and open places, 410 m, 5.4.1989, BULU 4081 B.

**Sorghum halepense** (L.) Pers., *Syn.* 1: 101 (1805) var. **halepense**

Bursa: Gemlik; S screes of Narlı, maquis, 30 m, 2.6.1994, BULU 8499 B.

**S. halepense** (L.) Pers. var. **muticum** (Hackel) Grossh., *Fl. Kavk.* 1: 56 (1928).

Bursa: Gemlik; Narlı, maquis, 6.7.1988, BULU 3183.

**Chrysopogon gryllus** (L.) Trin., *Fund. Agrost.* 188 (1820).

Yalova: Gökçedere; NE screes of Kizilagaç hill, forests and meadows, 360-400 m, 12.6.1987, BULU 2201.

**Botriochloa ischaemum** (L.) Keng, *Contr. Biol. Lab. Sci. Soc. China, Bot. ser.* 10: 201 (1936).

Yalova: in vicinities of Esadiye village, forests and waterside, 500 m, 2.6.1994, BULU 8582 B.

## DISCUSSION

This research is based on the 2220 plant specimens collected between 1985 and 1994. As a result (see also KAYNAK, 1996a, 1996b) of the studies 906 taxa belonging to 95 families and 429 genera were found. 18 taxa belong to Spermatophyta. Gymnospermae have 6 taxa and Angiospermae have 882 taxa. 754 taxa of Angiospermae are Dicotyledons and 128 taxa are Monocotyledons.

The taxa which are found only in the northern part and only in the southern part and in both areas are approximately equal in number. Out of the taxa collected from the Armutlu Peninsula, 313 belongs only to the southern part, 86 of which (9,5 %) are Mediterranean, 26 (2,9 %) are Euro-Siberian, 8 (0,9 %) are Irano-Turanian and 4 (0,4 %) are Euxine elements. Multi-regional taxa are 189 (20 %) (Table 1).

Out of 287 taxa found only in the northern part, 46 (5,1 %) are Mediterranean, 58 (6,4 %) are Euro-Siberian and 9 (10 %) are Euxine elements. Multi-regional taxa are 174 (19,2 %).

This reveals that the northern part of the area (Yalova) has a humid mediterranean climate while the southern part of the area (Gemlik) a semi-humid type.

If both areas are considered collectively the number of common taxa seen is 307, 74 of which (8,2 %) are Mediterranean, 38 (4,2 %) are Euro-Siberian, 5 (0,5 %) Euxine and 3 (0,4 %) Irano-Turanian. The multi-regional taxa are 177 (20 %).

The numbers and the percentage of taxa according to certain phytogeographical regions are as follows. Mediterranean element 206 (23,1 %), Euro-Siberian element 122 (13,1 %), Euxine element 18 (2,0 %) and Irano-Turanian element 11 (1,3 %). The number of the multi-regional taxa is 531 (58 %). Additionally, two Hyrcano-Euxine elements are seen in the area, one of which is West-Mediterranean element and the other is East-Mediterranean-Euro-Siberian element.

Table 1 provides a comparison of the phytogeographical elements. 206 taxa (23,1 %) of the total of 906 are Mediterranean. This result is natural due to the fact that the research area is located in the Mediterranean phytogeographical region.

Area Name		Southern area	Northern area	Southern and Northern area	Total Area
Number of taxa		313	287	306	906
Medit.	number	86	46	74	206
Elements	%	9,5	5,1	8,2	22,8
Eu.-Sib.	number	26	58	38	122
Elements	%	2,9	6,4	4,2	13,5
Euxine	number	4	9	5	18
Elements	%	0,4	1,0	0,5	1,9
Ir.-Tur.	number	8	–	3	11
Elements	%	0,9	–	0,4	1,3
Multi-Reg.	number	189	174	186	549
Elements	%	20,9	19,2	20,5	60,6

Table 1. Number and percent ratios of taxa by phytogeographical region in the research area.



As seen in Table 1, there are 120 (13,3 %) Mediterranean taxa in the northern part. However, there are only 64 (7,1 %) Euro-Siberian taxa in the southern part of research area, i.e. the Euro-Siberian element penetrating to the southern part of the study area is not as important as the Mediterranean element moving to the northern area. The Euxine element is poorly represented in the area (2,0 %), has wide distribution in the northern part of peninsula. The Irano-Turanian element having a low frequency (1,3 %) extends to the southern part of peninsula.

If the findings of this study are compared with those of other studies (SÜMBUL & ERIK, 1990; EYLE & OCAKVERDI, 1978), it is seen that the number of the multi-regional taxa is very high (60,6 %). This can be explained with the fact that the research area is highly populated and widely cultivated.

Table 2 shows a comparison of the percentage ratios of the taxa included in certain phytogeographical regions collected from Armutlu Peninsula which differ with those from other floristic studies: TARIMCILAR & KAYNAK (1994), ÇIRPICI (1989), YAYITAS (1982), ERDEM (1982).

Out of a total of 906 taxa 32 are endemic (Table 3), i.e. endemism has a low ratio (3,6 %). It is possible to explain this with the abundance of the cosmopolitan species due to the highly populous nature of the area and to the resulting heavy cultivation.

Research Areas	Medit.	Eu.-Sib.	Ir.-Tur.	Eux.
Murat Mountain (Kütahya-Uşak)	13,4	13,1	10,7	–
Simav Mountain (Kütahya)	6,9	7,7	4,5	–
Balya-Gökçeyaz-Ovacık (Balıkesir)	22,1	4,6	6,7	–
Campus Area of Uludağ University (Bursa)	22,0	10,0	1,0	0,8
Armutlu Peninsula (Bursa-Yalova)	23,5	13,9	1,3	2,0

Table 2. Percentage of floristic elements in areas of Armutlu Peninsula.

Area Name	Southern area	Northern area	Southern and Northern area	Total Area
Number of species	313	287	306	906
Endemic number	20	5	7	32
Species %	2,2	0,6	0,8	3,6

Table 3. Number and percent ratios of endemic taxa in the research area.

The taxa which are endemic of the research area and the nearby regions (Istanbul, Kocaeli, Tekirdag, Kütahya) are listed below: *Hypericum aviculariifolium* Jaub subsp. *byzantinum* (Azn.) Robson; *Carduus nutans* L. subsp. *trojanus* P.H. Davis; *Centaurea olympica* C. Koch; *C. hermannii* F. Hermann; *Taraxacum pseudobrachyglossum* van Soest; *Verbascum bombyciferum* Boiss.; *Galanthus plicatus* Bieb. subsp. *byzantinus* (Baker) D.A. Webb.; *Crocus pestalozzae* Boiss.

In Table 4 the top ten families with the highest number of taxa are given. This is in accordance with the biggest families ranked in the volumes of Flora of Turkey.

Families	Species number	Total species numbers (906) (%)
<i>Asteraceae</i>	123	13,6
<i>Fabaceae</i>	91	10
<i>Brassicaceae</i>	49	5,4
<i>Poaceae</i>	45	5,0
<i>Lamiaceae</i>	44	4,9
<i>Apiaceae</i>	38	4,2
<i>Rosaceae</i>	37	4,1
<i>Liliaceae</i>	34	3,8
<i>Boraginaceae</i>	32	3,5
<i>Scrophulariaceae</i>	32	3,5
Other families (84)	381	42,1

Table 4. Species numbers of the most important families of the Armutlu Peninsula flora.

Genera	Species Numbers
<i>Trifolium</i>	22
<i>Vicia</i>	14
<i>Ranunculus</i>	13
<i>Verbascum</i>	11
<i>Geranium</i>	10
<i>Euphorbia</i>	10
<i>Anthemis</i>	9
<i>Veronica</i>	9
<i>Galium</i>	9
<i>Allium</i>	9

Table 5. Species numbers of the most important genera of the Armutlu Peninsula flora.

Similar figures are reported in other floristic studies (TARIMCILAR & KAYNAK (1994), ÇIRPICI (1989), YAYINTAS (1982), ERDEM (1982), ILARSIAN & al. (1990), TUZLACI (1981)) carried out in neighbouring areas (see Table 6).

<i>Research Area</i>	<i>First five family</i>
History National Garden (Gelibolu)	<i>Fabaceae, Asteraceae, Poaceae Lamiaceae, Caryophyllaceae</i>
Murat Mountain (Kütahya-Uflak)	<i>Asteraceae, Fabaceae, Brassicaceae Caryophyllaceae, Lamiaceae</i>
Simav Mountain (Kütahya)	<i>Fabaceae, Asteraceae, Lamiaceae Brassicaceae, Poaceae</i>
Marmara Island	<i>Asteraceae, Fabaceae, Lamiaceae Poaceae, Brassicaceae</i>
Balya-Gökçeyazi-Ovacik (Balıkesir)	<i>Fabaceae, Asteraceae, Lamiaceae Rosaceae, Liliaceae</i>
Campus Area of Uludag University (Bursa)	<i>Asteraceae, Fabaceae, Lamiaceae Liliaceae, Boraginaceae</i>
Armutlu Peninsula (Bursa-Yalova)	<i>Asteraceae, Fabaceae, Brassicaceae Poaceae, Lamiaceae</i>

Table 6. Main families in several areas close to Armutlu Peninsula.

The genera with the highest number of taxa are *Trifolium*, *Vicia*, *Ranunculus*, *Verbascum* and *Geranium* (Table 5). The reason why these genera occupy the top of the list is the fact that they require for their existence mostly habitats which are widely spread in the area.

The taxa numbers of the major genera are in agreement with the numbers seen in the nearby regions as indicated in Table 7.

In conclusion, this study reports 17 new taxa for the A 2 square. Another contribution of the study is that the authors have collected *Centaurea hermannii* in the Armutlu region, which was previously known to exist only in Istanbul area collected by Baytop and Demiriz (DAVIS (1978), SÜMBÜL & ERİK (1990, EYCE & OCAKVERDİ (1978), TARIMCILAR & KAYNAK (1994), ÇIRPICI (1989), YAYINTAS (1982), ERDEM (1982), ILARSLAN & al. (1990), TUZLACI (1981), BAYTOP (1962)). This taxa is stated to have yellow colour in "*Flora of Turkey*" where the plants collected by the authors is of orange colour, as stated in *Flora Europaea* (TUTIN & al., 1972).

<i>Research area</i>	<i>First five Genera</i>
History National Garden (Gelibolu)	<i>Medicago, Trifolium, Ranunculus Anthemis, Silene</i>
Murat Mountain (Kütahya-Uflak)	<i>Centaurea, Silene, Ranunculus Veronica, Alyssum</i>
Simav Mountain (Kütahya)	<i>Trifolium, Vicia, Ranunculus Veronica, Alyssum</i>
Marmara Island	<i>Trifolium, Euphorbia, Quercus Teucrium, Verbascum</i>
Balya-Gökçeyazi-Ovacik (Balıkesir)	<i>Vicia, Polygonum, Verbascum Trifolium, Linum</i>
Campus Area of Uludag University (Bursa)	<i>Trifolium, Vicia, Ranunculus Ornithogalum, Geranium</i>
Armutlu Peninsula (Bursa-Yalova)	<i>Trifolium, Vicia, Ranunculus Verbascum, Geranium</i>

Table 7. Biggest genera in several areas close to Armutlu Peninsula.

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