

New taxa for the flora of European Turkey reported in the last forty years

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Abstract. A checklist is presented of new taxa from European Turkey, mainly deposited in the Trakya University Herbarium (EDTU) and published between 1982 and 2023. It comprises 161 taxa belonging to 52 families and 113 genera, organized alphabetically in five tables. Among these, four taxa are described as new to science from the territory of European Turkey, three are newly reported for the flora of Europe, six are new to the Balkan flora, and 23 are newly recorded for the flora of Turkey. Also, ten taxa have been confirmed for the flora of European Turkey. The highest number of new records were reported from Edirne (81), followed by Kırklareli (54), Çanakkale (17), Istanbul (16), and Tekirdağ (11). The families with the greatest number of new taxa are: *Fabaceae* (26), *Poaceae* (14), *Asteraceae* (12), *Caryophyllaceae* (11), *Scrophulariaceae* (9), etc. These taxa are absent from all formerly published volumes of the *Flora of Turkey* and earlier checklists. Their presence in virtual databases related to Turkey's flora has been investigated, revealing that none of them has been processed in these databases. Further scans of the virtual databases of European origin have shown that these records have not been included yet.

Key words: checklist, flora, further records, new taxa

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Introduction

Since publication of the *Flora of Turkey* (Davis 1965-1985; Davis & al. 1988), Turkey's flora has gained much attention from the botanical community, both domestically and internationally. Over the years, after an increasing number of botanical studies, numerous plants have been added to the Turkish flora inventory. Turkey's extraordinarily rich vegetation, conditioned by its diverse climate, soil and geographical features, makes new additions to its flora strongly possible.

Such enhanced interest has led to a deeper understanding of Turkey's botanical richness. New volumes of the *Flora of Turkey* have been published with descriptions of new taxa (Davis & al. 1988; Güner & al. 2000), enriching further knowledge and documentation of the region's unique plant diversity. A total of 8796 species are documented in the 11 volumes of the *Flora of Turkey*, 2941 of which are endemic to the country. After publication of the *Flora of Turkey*, knowledge about the region's flora has significantly expanded, prompting further research and identification of new taxa. These

new taxa have been systematically published in a series of articles entitled *Check-list of additional taxa to the supplement flora of Turkey*. Based on the original publications of these taxa since 1994, the checklists have been compiled in a series of updates (Özhatay & Kültür 2006; Özhatay & al. 1994, 2009, 2011, 2013, 2015, 2017, 2019, 2022). Güner & al. (2012) have published the book *List of the Plants of Turkey (Vascular Plants)* which includes 12 new species. By 2019, with the inclusion of that book and related checklists, a total of 638 new taxa have been added to the Turkish flora. This stands for a total of 508 taxa newly described for the world, and 130 taxa newly identified for Turkey. Research in this area is ongoing.

The territory of European Turkey accounts for 3% of Turkey's total area (23 764 km²), with Turkish Thrace as a meeting point for plant species from three major floristic regions. Based on the *Flora of Turkey* and ISTE records, approximately 2350 taxa have been identified within the flora of Thrace, and the number continues to grow. While most of these collected plants are stored in the ISTE Herbarium, an increasing portion is also housed in the Trakya University Herbarium (EDTU). Established in 1983 as part of the regional university, the EDTU Herbarium has been steadily expanding its collection to become a key resource for the regional flora. Recent studies have added many new plant records to the EDTU Herbarium, enhancing the knowledge of the flora of Thrace and contributing significantly to a broader understanding of Turkey's and Europe's botanical diversity.

This review summarizes the new taxa, first reported from European Turkey between 1982 and 2023, which have not been included yet in the multivolume *Flora of Turkey* or in some major electronic databases (Euro+Med PlantBase 2006+, GBIF 2024; POWO 2024).

Material and methods

In this study, new records from the specified period have been examined, with a particular focus on

publications registered in the EDTU Herbarium. Also, three unpublished taxa are for the first time presented and documented here. The checklists of Özhatay & al., cited above and originating from the EDTU Herbarium, are also reviewed. For each taxon, the specific region of publication is indicated (A1(E) Edirne, A1(E) Çanakkale, A2(E) Istanbul, A1(E) Kırklareli, A1(E) Tekirdağ) and their distribution is visualized on a map.

Families and genera of the latest records were identified and listed based on the Turkish flora sources (Davis 1965–1985; Davis & al. 1988), EDTU Herbarium data, e-flora, and web-based databases (Euro+Med PlantBase 2006+; GBIF 2024; POWO 2024). These databases were consulted to verify if each taxon has been registered earlier.

Results

New taxa published for the first time here

1. *Cicer arietinum* L.

Tu(E), A1E Edirne, Merkez, between Karakasim-Tayakadın villages, in a rice field, 07.06.1989, *coll.*

F. Dane, N. Polat, *det.* M. Aybeke (3284).

New for European Turkey. Extensively cultivated in S Europe .

2. *Lotus corniculatus* L. var. *corniculatus*

Tu(E), A1E Edirne, Merkez, Edirne – Kırklareli, 20th km., 16.06.1987, *coll.* G. Olgun, A. Asan, H. Arda, *det.* M. Aybeke (EDTU 1323); Merkez, in campus environs, 11.07.1989, *coll.* F. Dane, N. Polat, *det.* M. Aybeke (EDTU 3766).

New for European Turkey, Europe, N Africa.

3. *Trifolium alpestre* L.

Tu(E), A1E Edirne, Lalapaşa, Donköy, 13.06.1993, *coll.* G. Dalgıç, *det.* M. Aybeke (EDTU 5707).

New for European Turkey. Euro-Sib. element.

All new taxa for European Turkey are presented and organized alphabetically in five tables, as follows:

Table 1. New taxa for science and for the European flora, reported from European Turkey (* - endemic taxa; IUCN categories, according to Ekim & al 2000): **CR** - Critically Endangered, **EN** - Endangered, **VU** - Vulnerable).

No	Taxa	Families	Regions	References
New species for science				
1.	<i>Bellevallia edirnensis</i> Özhatay & B. Mathew* (CR)	<i>Liliaceae</i>	A1(E) Edirne	Özhatay & al. (1991)
2.	<i>Onobrychis mehmetchiquii</i> Aybeke & Dane*	<i>Fabaceae</i>	A1(E) Edirne	Aybeke & Dane (2017)
3.	<i>Trachelium jacquinii</i> subsp. <i>dalgiciorum</i> Özhatay & Dane (VU)	<i>Campanulaceae</i>	A1(E) Edirne	Özhatay & al. (1993)
4.	<i>Verbascum × edirnense</i> F. Dane & G. Yilmaz	<i>Scrophulariaceae</i>	A1(E) Edirne	Dane & Yilmaz (2009)
New species for the flora of Europe				
1.	<i>Euphorbia macroclada</i> Boiss.	<i>Euphorbiaceae</i>	A1(E) Edirne	Dane & Aybeke (2008)
2.	<i>Pistacia terebinthus</i> subsp. <i>palaestina</i> (Boiss.) Engl.	<i>Anacardiaceae</i>	A1(E) Çanakkale	Dane & Dalgıç (2001)
3.	<i>Rorippa aurea</i> (Boiss. & Heldr.) Hub.-Mor.*	<i>Brassicaceae</i>	A1(E) Edirne	Aybeke (2013a)

Table 2. New taxa for the flora of the Balkans and European Turkey, reported from European Turkey.

No	Taxa	Families	Regions	References
1.	<i>Anthyllis vulneraria</i> subsp. <i>boissieri</i> (Sagorski) Bornm.	<i>Fabaceae</i>	A1(E) Edirne	Aybeke & al. (2008b)
2.	<i>Eremopyrum bonaepartis</i> (Spreng.) Nevski subsp. <i>bonaepartis</i>	<i>Poaceae</i>	A1(E) Edirne	Aybeke & al. (2008a)
3.	<i>Gypsophila linearifolia</i> (Fisch. & C.A. Mey.) Boiss.	<i>Caryophyllaceae</i>	A1(E) Edirne	Aybeke & al. (2015)
4.	<i>Ophrys oestrifera</i> subsp. <i>heldreichii</i> (Schltr.) Soó (VU)	<i>Orchidaceae</i>	A1(E) Edirne	Aybeke (2007)
5.	<i>Orchis punctulata</i> Lindl.	<i>Orchidaceae</i>	A1(E) Edirne, A1(E) Çanakkale	Aybeke (2007)
6.	<i>Setaria pallide-fusca</i> (Schumach.) Stapf & C.E. Hubb.	<i>Poaceae</i>	A1(E) Edirne	Başak & Güler (2008)

Table 3. New taxa for the flora of Turkey, reported from European Turkey.

No	Taxa	Families	Regions	References
1.	<i>Alkanna stribrnyi</i> Velen.	<i>Boraginaceae</i>	A1(E) Tekirdağ	Dimitrov (2001)
2.	<i>Allium saxatile</i> M. Bieb.	<i>Liliaceae</i>	A1(E) Kırklareli	Uruşak & al. (2013)
3.	<i>Anthemis rumelica</i> (Velen.) Stoj. & Acht.	<i>Asteraceae</i>	A2(E) Istanbul	Dimitrov (2020a)
4.	<i>Anthoxanthum aristatum</i> Boiss.	<i>Poaceae</i>	A1(E) Kırklareli	Uruşak & al. (2013)
5.	<i>Arundo mediterranea</i> Danin	<i>Poaceae</i>	A1(E) Tekirdağ	Danin (2007)
6.	<i>Cirsium candelabrum</i> Griseb.	<i>Asteraceae</i>	A1(E) Kırklareli	Yildiz & al. (2009)
7.	<i>Cymbalaria muralis</i> G. Gaertn. & al. subsp. <i>muralis</i>	<i>Scrophulariaceae</i>	A1(E) Edirne	Dane & Olgun (1989)
8.	<i>Delphinium balcanicum</i> Pawl.	<i>Ranunculaceae</i>	A1(E) Edirne, A1(E) Çanakkale, A1(E) Tekirdağ	Dane & Ekici (2009)

9.	<i>Dorycnium pentaphyllum</i> Scop. subsp. <i>pentaphyllum</i>	<i>Fabaceae</i>	A1(E) Edirne	Aybeke (2016)
10.	<i>Elatine triandra</i> Schkuhr	<i>Elatinaceae</i>	A1(E) Kırklareli	Uruşak & al. (2013)
11.	<i>Lindernia dubia</i> (L.) Pennell	<i>Scrophulariaceae</i>	A1(E) Edirne	Yıldırım (1998)
12.	<i>Mibora minima</i> (L.) Desv.	<i>Poaceae</i>	A1(E) Edirne	Byfield & Özhatay (1998)
13.	<i>Onobrychis alba</i> subsp. <i>calcareae</i> (Vandas) P.W. Ball	<i>Fabaceae</i>	A1(E) Edirne	Aybeke & Dane (2007)
14.	<i>Ornithogalum alatum</i> Turrill	<i>Liliaceae</i>	A2(E) Istanbul	Speta (1991)
15.	<i>Ornithogalum boucheanum</i> (Kunth) Asch.	<i>Liliaceae</i>	A1(E) Edirne	Dalgıç & al. (2009)
16.	<i>Ornithogalum euxinum</i> Speta	<i>Liliaceae</i>	A2(E) Istanbul	Speta (1990)
17.	<i>Paonia tenuifolia</i> L. (EN)	<i>Paoniaceae</i>	A1(E) Edirne	Dane & Olgun (1992)
18.	<i>Senecio sylvaticus</i> L.	<i>Asteraceae</i>	A2(E) Istanbul	Baytop (1995)
19.	<i>Sideritis scardica</i> Griseb. subsp. <i>scardica</i>	<i>Lamiaceae</i>	A1(E) Kırklareli	Başer & al. (1995)
20.	<i>Tilia rubra</i> L. subsp. <i>rubra</i>	<i>Tiliaceae</i>	A1(E) Tekirdağ	Yaltırık & Eliçin (1982)
21.	<i>Trifolium ornithopodioides</i> L.	<i>Fabaceae</i>	A1(E) Edirne	Byfield & Özhatay (1998)
22.	<i>Verbascum samniticum</i> Ten. (VU)	<i>Scrophulariaceae</i>	A1(E) Kırklareli	Yılmaz & Dane (2006)
23.	<i>Vicia sativa</i> var. <i>incisa</i> (M. Bieb.) Alef.	<i>Fabaceae</i>	A1(E) Edirne, A2(E) Istanbul	Meriç & Dane (1999)

Table 4. New taxa for the flora of European Turkey.

No	Taxa	Families	Regions	References
1.	<i>Acer negundo</i> L.	<i>Aceraceae</i>	A1(E) Edirne	Dane & al. (2012)
2.	<i>Adonis aestivalis</i> L. subsp. <i>aestivalis</i>	<i>Ranunculaceae</i>	A1(E) Edirne, A1(E) Kırklareli	Aybeke & Dane (2013c)
3.	<i>Agrimonia repens</i> L.	<i>Rosaceae</i>	A1(E) Kırklareli	Aybeke (2018b)
4.	<i>Aira elegantissima</i> Schur subsp. <i>elegantissima</i>	<i>Poaceae</i>	A1(E) Kırklareli	Yarci (1999)
5.	<i>Aira praecox</i> L.	<i>Poaceae</i>	A1(E) Kırklareli	Yarci (1999)
6.	<i>Allium dentiferum</i> Webb & Berthel.	<i>Liliaceae</i>	A1(E) Kırklareli	Uruşak & al. (2013)
7.	<i>Alyssum hirsutum</i> M. Bieb.	<i>Brassicaceae</i>	A1(E) Edirne	Dane & Dalgıç (2001)
8.	<i>Amaranthus retroflexus</i> L.	<i>Amaranthaceae</i>	A1(E) Edirne	Dane & Koşanay (2011)
9.	<i>Ammannia auriculata</i> Willd. var. <i>arenaria</i> (Kunth) Koehne	<i>Lythraceae</i>	A1(E) Edirne	Aybeke (2017)
10.	<i>Amygdalus communis</i> L.	<i>Rosaceae</i>	A1(E) Çanakkale	İlarslan & al. (1988)
11.	<i>Anogramma leptophylla</i> (L.) Link	<i>Pteridaceae</i>	A2(E) Istanbul	Kaynak & al. (2005)
12.	<i>Aquilegia olympica</i> Boiss.	<i>Ranunculaceae</i>	A1(E) Kırklareli	Aybeke (2018a)
13.	<i>Arabis sagittata</i> (Bertol.) DC.	<i>Brassicaceae</i>	A1(E) Edirne	Aybeke (2013a)
14.	<i>Arabis turrita</i> L.	<i>Brassicaceae</i>	A1(E) Kırklareli	Uruşak & al. (2013)
15.	<i>Arenaria serpyllifolia</i> L.	<i>Caryophyllaceae</i>	A1(E) Edirne	Aybeke & al. (2014b)
16.	<i>Asplenium septentrionale</i> (L.) Hoffm. subsp. <i>septentrionale</i>	<i>Aspleniaceae</i>	A1(E) Edirne	Başak & al. (2008)
17.	<i>Aster squamatus</i> (Spreng.) Hieron.	<i>Asteraceae</i>	A2(E) Istanbul	Baytop (1995, as <i>Conyzanthus squamatus</i>)
18.	<i>Astragalus angustifolius</i> Lam. var. <i>angustifolius</i>	<i>Fabaceae</i>	A1(E) Çanakkale	Aybeke & Dane (2013b)
19.	<i>Astragalus trojanus</i> Fisch.	<i>Fabaceae</i>	A1(E) Edirne	Aybeke & al. (2014a)
20.	<i>Atraphaxis billardieri</i> Jaub. & Spach subsp. <i>billardieri</i>	<i>Polygonaceae</i>	A1(E) Edirne	Özhatay & al. (1996)

No	Taxa	Families	Regions	References
21.	<i>Atriplex halimus</i> L.	<i>Chenopodiaceae</i>	A1(E) Kırklareli	Aybeke (2019c)
22.	<i>Atriplex rosea</i> L.	<i>Chenopodiaceae</i>	A1(E) Edirne	Aybeke (2018a)
23.	<i>Avena fatua</i> var. <i>glabrata</i> Peterm.	<i>Poaceae</i>	A1(E) Kırklareli	Aybeke (2021)
24.	<i>Avena sterilis</i> L. subsp. <i>sterilis</i>	<i>Poaceae</i>	A1(E) Çanakkale	Sorger & Mann (1987)
25.	<i>Betula pendula</i> Roth	<i>Betulaceae</i>	A1(E) Kırklareli	Aybeke (2019b)
26.	<i>Biserrula pelecinus</i> L.	<i>Fabaceae</i>	A1(E) Edirne	Aybeke (2023b)
27.	<i>Brachypodium retusum</i> (Pers.) P. Beauv.	<i>Poaceae</i>	A1(E) Çanakkale	İlarslan & al. (1988)
28.	<i>Caesalpinia gilliesii</i> (Hook.) D. Dietr.	<i>Fabaceae</i>	A1(E) Edirne	Tütüncü Konyar (2012)
29.	<i>Cerastium gracile</i> Duf.	<i>Caryophyllaceae</i>	A1(E) Edirne	İlarslan & al. (1988)
30.	<i>Chamaecytisus eriocarpus</i> (Boiss.) Rothm.	<i>Fabaceae</i>	A1(E) Kırklareli	Aybeke & Dane (2013a)
31.	<i>Chamaecytisus jankae</i> (Velen.) Rothm.	<i>Fabaceae</i>	A2(E) Istanbul	Dimitrov & Trifonov (2006)
32.	<i>Cheilanthes marantae</i> (L.) Domin	<i>Sinopteridaceae</i>	A1(E) Edirne, A1(E) Tekirdağ	Başak (1993)
33.	<i>Chenopodium botrys</i> L.	<i>Chenopodiaceae</i>	A1(E) Edirne	Aybeke (2023a)
34.	<i>Cicer arietinum</i> L.	<i>Fabaceae</i>	A1(E) Edirne	Aybeke (here)
35.	<i>Cirsium canum</i> (L.) All.	<i>Asteraceae</i>	A1(E) Kırklareli	Yarcı (1999)
36.	<i>Cornus sanguinea</i> L. subsp. <i>sanguinea</i>	<i>Cornaceae</i>	A1(E) Kırklareli	Yaltırık & Eliçin (1982)
37.	<i>Coronilla emerus</i> subsp. <i>emeroides</i> (Boiss. & Spruner) Holmboe	<i>Fabaceae</i>	A1(E) Tekirdağ	Aybeke & Dalgıç (2015)
38.	<i>Corydalis solida</i> (L.) Clairv. subsp. <i>solida</i>	<i>Papaveraceae</i>	A1(E) Edirne, A1(E) Kırklareli	Aybeke (2015)
39.	<i>Crataegus aronia</i> (L.) DC. var. <i>aronia</i>	<i>Rosaceae</i>	A1(E) Kırklareli	Aybeke (2018b)
40.	<i>Crataegus curvisepala</i> Lindm.	<i>Rosaceae</i>	A1(E) Kırklareli	Aybeke (2019a)
41.	<i>Crataegus orientalis</i> Pall. var. <i>orientalis</i>	<i>Rosaceae</i>	A1(E) Tekirdağ	Yaltırık & Eliçin (1982)
42.	<i>Crocus flavus</i> subsp. <i>dissectus</i> T. Baytop & B. Mathew	<i>Iridaceae</i>	A1(E) Çanakkale	İlarslan & al. (1988)
43.	<i>Crucianella imbricata</i> Boiss.	<i>Rubiaceae</i>	A1(E) Çanakkale	İlarslan & al. (1988)
44.	<i>Cymbalaria longipes</i> (Boiss. & Heldr.) Cheval.	<i>Scrophulariaceae</i>	A1(E) Tekirdağ	Aybeke (2022)
45.	<i>Cystopteris fragilis</i> (L.) Bernh.	<i>Athyriaceae</i>	A1(E) Edirne, A1(E) Kırklareli	Başak & al. (2009)
46.	<i>Datura innoxia</i> Mill.	<i>Solanaceae</i>	A1(E) Edirne	Dane & Tütüncü Konyar (2013)
47.	<i>Dianthus carthusianorum</i> L.	<i>Caryophyllaceae</i>	A1(E) Kırklareli	Uruşak & al. (2013)
48.	<i>Dianthus pinifolius</i> Sm. (VU)	<i>Caryophyllaceae</i>	A1(E) Edirne	Dane & al. (2010)
49.	<i>Dictamnus albus</i> L.	<i>Rutaceae</i>	A1(E) Edirne	Dane & al. (1992)
50.	<i>Dryopteris dilatata</i> (Hoffm.) A. Gray	<i>Aspidiaceae</i>	A1(E) Kırklareli	Kaynak & al. (2005)
51.	<i>Dryopteris pallida</i> (Bory) Maire & Petitm. subsp. <i>pallida</i>	<i>Aspidiaceae</i>	A1(E) Kırklareli	Kaynak & al. (2005)
52.	<i>Ephedra major</i> Host	<i>Ephedraceae</i>	A1(E) Edirne	Aybeke (2013b)
53.	<i>Epipactis microphylla</i> (Ehrh.) Sw.	<i>Orchidaceae</i>	A1(E) Edirne	Güler (2008b)
54.	<i>Epipactis pontica</i> Taub.	<i>Orchidaceae</i>	A1(E) Kırklareli	Uruşak & al. (2013)

No	Taxa	Families	Regions	References
55.	<i>Erigeron acris</i> L. subsp. <i>acris</i>	<i>Asteraceae</i>	A1(E) Kırklareli	Aybeke (2018c)
56.	<i>Festuca jeanpertii</i> (St.-Yves) Markgr. subsp. <i>jeanpertii</i>	<i>Poaceae</i>	A1(E) Kırklareli	Yarci (1999)
57.	<i>Galinsoga parviflora</i> Cav.	<i>Asteraceae</i>	A1(E) Kırklareli	Baytop (1995)
58.	<i>Geranium bohemicum</i> L.	<i>Geraniaceae</i>	A1(E) Kırklareli	Uruşak & al. (2013)
59.	<i>Glinus lotoides</i> L.	<i>Molluginaceae</i>	A1(E) Çanakkale	Sorger & Mann (1987)
60.	<i>Helianthemum aegyptiacum</i> (L.) Mill.	<i>Cistaceae</i>	A1(E) Kırklareli	Sorger & Mann (1987)
61.	<i>Hypericum perforatum</i> L.	<i>Hypericaceae</i>	A1(E) Kırklareli	Aybeke (2020a)
62.	<i>Inula heterolepis</i> Boiss.	<i>Asteraceae</i>	A1(E) Kırklareli	Yarci (1999)
63.	<i>Isoetes histrix</i> Bory	<i>Isoetaceae</i>	A1(E) Edirne	Özhatay & al. (1996)
64.	<i>Isoetes duriei</i> Bory	<i>Isoetaceae</i>	A2(E) İstanbul	Özhatay & al. (1996)
65.	<i>Baldellia ranunculoides</i> (L.) Parl.	<i>Alismataceae</i>	A2(E) İstanbul	Özhatay et al. (1996).
66.	<i>Kochia scoparia</i> (L.) Schrad.	<i>Chenopodiaceae</i>	A1(E) Edirne	Aybeke (2018a)
67.	<i>Lathyrus setifolius</i> L.	<i>Fabaceae</i>	A1(E) Edirne	Aybeke (2011)
68.	<i>Lamium album</i> L.	<i>Lamiaceae</i>	A1(E) Çanakkale	Dane & Dalgıç (2001)
69.	<i>Lepidium campestre</i> (L.) W.T. Aiton	<i>Brassicaceae</i>	A1(E) Edirne	Aybeke & al. (2013a)
70.	<i>Limonium graecum</i> (Poir.) Kuntze var. <i>graecum</i>	<i>Plumbaginaceae</i>	A2(E) İstanbul	Alpınar (1988)
71.	<i>Lotus corniculatus</i> L. var. <i>corniculatus</i>	<i>Fabaceae</i>	A1(E) Edirne	Aybeke (here)
72.	<i>Lupinus albus</i> subsp. <i>graecus</i> (Boiss. & Spruner) Franco & P. Silva	<i>Fabaceae</i>	A1(E) Edirne, A2(E) İstanbul	Aybeke & Dane (2013a)
73.	<i>Lupinus gredensis</i> Gand.	<i>Fabaceae</i>	A1(E) Edirne	Aybeke & al. (2010, sub <i>L. hispanicus</i> Boiss. & Reut.), Stoyanov & Apostolva-Stoyanova (2022, revised as <i>L. gredensis</i>)
74.	<i>Lysimachia vulgaris</i> L.	<i>Primulaceae</i>	A1(E) Kırklareli	Aybeke (2020b)
75.	<i>Minuartia anatolica</i> (Boiss.) Woron. var. <i>polymorpha</i> McNeill	<i>Caryophyllaceae</i>	A1(E) Kırklareli	Yarci & Aybeke (2012)
76.	<i>Nepeta cataria</i> L.	<i>Lamiaceae</i>	A1(E) Kırklareli	Uruşak & al. (2013)
77.	<i>Orchis italica</i> Poir.	<i>Orchidaceae</i>	A1(E) Çanakkale	Guler (2008a)
78.	<i>Ornithogalum oligophyllum</i> E.D. Clarke	<i>Liliaceae</i>	A1(E) Edirne	Sorger & Mann (1987)
79.	<i>Paronychia cephalotes</i> (M. Bieb.) Besser	<i>Caryophyllaceae</i>	A1(E) Kırklareli	Uruşak & al. (2013)
80.	<i>Paronychia polygonifolia</i> (Vill.) DC.	<i>Illecebraceae</i>	A1(E) Kırklareli	Yarci (1999)
81.	<i>Piptatherum coerulescens</i> (Desf.) P. Beauv.	<i>Poaceae</i>	A1(E) Kırklareli	Yarci (1999)
82.	<i>Plantago argentea</i> Chaix	<i>Plantaginaceae</i>	A1(E) Edirne	Dimitrov (2020b)
83.	<i>Populus nigra</i> L. subsp. <i>nigra</i>	<i>Salicaceae</i>	A1(E) Kırklareli	Aybeke (2019b)
84.	<i>Punica granatum</i> L.	<i>Punicaceae</i>	A1(E) Edirne	Tütüncü Konyar & al. (2012)
85.	<i>Pyrus elaeagrifolia</i> Pall. subsp. <i>elaeagrifolia</i>	<i>Rosaceae</i>	A1(E) Kırklareli	Aybeke (2019a)
86.	<i>Ranunculus brutius</i> Ten.	<i>Ranunculaceae</i>	A1(E) Kırklareli, A2(E) İstanbul	Dane & Yılmaz (2012)

No	Taxa	Families	Regions	References
87.	<i>Ranunculus ficaria</i> subsp. <i>calthifolius</i> (Rchb.) Arcang.	<i>Ranunculaceae</i>	A2(E) Istanbul, A1(E) Kırklareli	Aybeke & Yarcı (2014)
88.	<i>Ranunculus illyricus</i> L. subsp. <i>illyricus</i>	<i>Ranunculaceae</i>	A1(E) Edirne, A1(E) Kırklareli	Dane & Aybeke (2014)
89.	<i>Ranunculus oxyspermus</i> Willd.	<i>Ranunculaceae</i>	A1(E) Edirne	Dimitrov (2022)
90.	<i>Romulea columnae</i> Sebast. & Mauri subsp. <i>columnae</i>	<i>Iridaceae</i>	A1(E) Çanakkale	Sorger & Mann (1987)
91.	<i>Romulea ramiflora</i> Ten. subsp. <i>ramiflora</i>	<i>Iridaceae</i>	A1(E) Çanakkale	Sorger & Mann (1987)
92.	<i>Rosmarinus officinalis</i> L.	<i>Lamiaceae</i>	A1(E) Çanakkale	Aybeke (2022)
93.	<i>Senecio doria</i> subsp. <i>umbrosus</i> (Waldst. & Kit.) Soó	<i>Asteraceae</i>	A1(E) Kırklareli	Yarcı (1999)
94.	<i>Seseli tortuosum</i> L.	<i>Apiaceae</i>	A1(E) Kırklareli	Dimitrov (2021)
95.	<i>Sideritis lanata</i> L.	<i>Lamiaceae</i>	A1(E) Kırklareli	Yarcı (1999)
96.	<i>Silene otites</i> (L.) Wibel	<i>Caryophyllaceae</i>	A1(E) Edirne, A1(E) Tekirdağ	Dane & al. (2007)
97.	<i>Sisymbrium altissimum</i> L.	<i>Brassicaceae</i>	A1(E) Edirne	Aybeke & al. (2013b)
98.	<i>Sonchus tenerrimus</i> L.	<i>Asteraceae</i>	A1(E) Edirne, A1(E) Tekirdağ	Leventer & Dane (2012)
99.	<i>Sorbus aucuparia</i> L.	<i>Rosaceae</i>	A1(E) Kırklareli	Yarcı (1999)
100.	<i>Stellaria media</i> subsp. <i>pallida</i> (Dumort.) Asch. & Graebn.	<i>Caryophyllaceae</i>	A1(E) Kırklareli	Aybeke & Yarcı (2012)
101.	<i>Tamus communis</i> L.	<i>Dioscoreaceae</i>	A1(E) Edirne, A1(E) Çanakkale	Sorger & Mann (1987)
102.	<i>Taeniatherum caput-medusae</i> (L.) Nevski subsp. <i>asperum</i> (Simonkai) Melderis	<i>Poaceae</i>	A1(E) Edirne	Sorger & Mann (1987)
103.	<i>Teucrium divaricatum</i> Heldr. subsp. <i>divaricatum</i>	<i>Lamiaceae</i>	A1(E) Çanakkale	İlarslan & al. (1988)
104.	<i>Trifolium alpestre</i> L.	<i>Fabaceae</i>	A1(E) Edirne	Aybeke (here)
105.	<i>Trifolium clusii</i> Godr.	<i>Fabaceae</i>	A1(E) Edirne	Savaş & al. (2008)
106.	<i>Trifolium diffusum</i> Ehrh.	<i>Fabaceae</i>	A1(E) Edirne	Savaş & al. (2009)
107.	<i>Trifolium glanduliferum</i> Boiss. var. <i>nerulosum</i> (Boiss. & Heldr.) Zohary	<i>Fabaceae</i>	A1(E) Edirne	Aybeke & al. (2017)
108.	<i>Trifolium incarnatum</i> L. var. <i>molinerii</i> (Hornem.) DC.	<i>Fabaceae</i>	A1(E) Edirne	Savaş & al. (2009)
109.	<i>Trifolium latinum</i> Sebast.	<i>Fabaceae</i>	A1(E) Edirne	Savaş & al. (2011)
110.	<i>Umbilicus erectus</i> DC.	<i>Crassulaceae</i>	A1(E) Kırklareli	Aybeke (2023b)
111.	<i>Verbascum lasianthum</i> Benth.	<i>Scrophulariaceae</i>	A1(E) Çanakkale	Dane & al. (1992)
112.	<i>Verbascum ovalifolium</i> subsp. <i>thrasicum</i> (Velen.) Murb. (EN)	<i>Scrophulariaceae</i>	A1(E) Edirne	Dane & Yılmaz (2005)
113.	<i>Verbascum roripifolium</i> (Halácsy) I.K. Ferguson (VU)	<i>Scrophulariaceae</i>	A1(E) Edirne	Dane & Yılmaz (2003)
114.	<i>Vicia articulata</i> Hornem.	<i>Fabaceae</i>	A1(E) Edirne	Meriç & Dane (2001)
115.	<i>Vicia lutea</i> L. var. <i>lutea</i>	<i>Fabaceae</i>	A1(E) Edirne	Meriç & al. (2008)

Table 5. Taxa confirmed for the flora of European Turkey.

No	Taxa	Families	Regions	References
1.	<i>Bupleurum apiculatum</i> Friv.	Apiaceae	A1(E) Kırklareli	Stoyanov (2007)
2.	<i>Frankenia hirsuta</i> L.	Frankeniaceae	A1(E) Edirne	Özhatay & al. (1996)
3.	<i>Paeonia peregrina</i> Mill.	Paeoniaceae	A1(E) Edirne, A1(E) Kırklareli	Dane & Yılmaz (2007)
4.	<i>Ornithogalum euxinum</i> Speta	Liliaceae	A2(E) Istanbul	Speta (1990)
5.	<i>Pimpinella tragium</i> subsp. <i>lithophila</i> (Schischk.) Tutin	Apiaceae	A1(E) Kırklareli	Uruşak & al. (2013)
6.	<i>Pinus nigra</i> subsp. <i>pallasiana</i> (Lamb.) Holmboe	Pinaceae	A1(E) Kırklareli	Aybeke (2019c)
7.	<i>Senecio sylvaticus</i> L.	Asteraceae	A2(E) Istanbul	Baytop (1995)
8.	<i>Silene frivaldszkyana</i> Hampe (VU)	Caryophyllaceae	A1(E) Edirne	Dane & al. (2007)
9.	<i>Silene skorpilii</i> Velen.	Caryophyllaceae	A1(E) Edirne	Özhatay & al. (1996)
10.	<i>Trifolium glanduliferum</i> Boiss. var. <i>glanduliferum</i>	Fabaceae	A1(E) Edirne	Aybeke & al. (2016)

Conclusion

The present review features 161 taxa from the flora of European Turkey, recorded for the first time over the past 40 years (1982-2023). These taxa belong to 52 families and are summarized in five tables. Among them, one species (*Bellevalia edirnensis*) is classified as Critically Endangered (CR), two taxa (*Paeonia tenuifolia* and *Verbascum ovalifolium* subsp. *thrasicum*) as Endangered (EN), and six taxa as Vulnerable (VU): *Dianthus pinifolius*, *Ophrys oestrifera* subsp. *heldreichii*, *Silene frivaldszkyana*, *Trachelium jacquinii* subsp. *dalgiciorum*, *Verbascum roripifolium*, and *Verbascum samniticum*. Furthermore, three taxa are endemic to the region: *Bellevalia edirnensis*, *Onobrychis mehmetchiquii*, and *Rorippa aurea*.

Table 1 includes four taxa newly described for science (*Bellevalia edirnensis*, *Onobrychis mehmetchiquii*, *Trachelium jacquinii* subsp. *dalgiciorum*, and *Verbascum* × *edirnense*), along with three newly recorded taxa for the flora of Europe (*Euphorbia macroclada*, *Pistacia terebinthus* subsp. *palaestina*, and *Rorippa aurea*).

Table 2 presents six taxa published during the stated period as new additions to the flora of the Balkans and European Turkey (*Anthyllis vulneraria* subsp. *boissieri*,

Eremopyrum bonaepartis subsp. *bonaepartis*, *Gypsophila linearifolia*, *Ophrys oestrifera* subsp. *heldreichii*, *Orchis punctulata*, and *Setaria pallide-fusca*).

A total of 23 taxa new to the flora of Turkey were reported from European Turkey and listed in Table 3. Of these, ten were reported from Edirne, six from Kırklareli, five from Istanbul, four from Tekirdağ, and one from Çanakkale. Notably, two taxa (*Delphinium balcanicum* and *Vicia sativa* var. *incisa*) were recorded from three and two regions, respectively.

Table 4 lists 115 taxa newly reported for the flora of European Turkey. Also, ten taxa have been confirmed as part of that flora and are presented in Table 5. Most newly recorded taxa belong to the family Fabaceae (26), followed by Poaceae (14), Asteraceae (12), Caryophyllaceae (11), and Scrophulariaceae (9), etc.

The highest number of new records (Fig. 1) were documented in Edirne (81), followed by Kırklareli (54), Çanakkale (17), Istanbul (16), and Tekirdağ (11). Several species have been reported from more than one region.

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Fig. 1. The map of reported new taxa by regions from European Turkey.

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