

Distribution of Polygonaceae family in Türkiye

Mustafa Keskin^{1*}

Zeki Severoğlu²

¹Marmara University, Institute of Pure and Applied Sciences, Biology Program, 34722, Göztepe, Istanbul, Türkiye.

²Marmara University, Science and Education Faculty, Biology Department, 34722, Göztepe, Istanbul, Türkiye.

*Correspondence: trifolium@hotmail.com

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Abstract

After writing Flora of Turkey, this study summarizes studies on the Polygonaceae family according to the original findings. The new genera identification key of the natural or naturalized Polygonaceae species in Türkiye is prepared, and the distributions of the species are indicated by writing the province's name listed alphabetically under each species. The genera found in Turkey are as follows: *Emex*, *Fagopyrum*, *Fallopia*, *Koenigia*, *Oxyria*, *Persicaria*, *Polygonum*, *Pteropyrum*, *Reynoutria*, *Rheum* and *Rumex*. There are two genera with the largest number of species in Türkiye: *Polygonum* (net 39 species) and *Rumex* (net 39 species).

Key words

New key, Polygonaceae, distributions, Türkiye.

Introduction

Polygonaceae is a large flowering plant family of approximately 48 genera and 1200 species with a worldwide distribution (Freeman & Reveal 2005, Sanchez & Kron 2008). Currently, it is represented in the flora of Türkiye by 108 taxa under six genera: *Atraphaxis* L. (5 taxa), *Bistorta* (L.) Scop. (2 taxa), *Calligonum* L. (1 taxon), *Emex* Neck. (1 taxon), *Fagopyrum* Burch. (1 taxon), *Fallopia* Adanson (3 taxa), *Koenigia* L. (1 taxon), *Oxyria* Hill (1 taxon), *Persicaria* (L.) Mill. (14 taxa), *Polygonum* L. (34 taxa, two doubtful), *Pteropyrum* Jaub. & Spach (1 taxon), *Reynoutria* Houtt. (1 taxon), *Rheum* L. (2 taxa) and *Rumex* L. (41 taxa, which are two doubtful). 22 taxa are endemic to Türkiye (Keskin 2009, 2012; Koçyigit et al. 2015; Keskin & Severoğlu 2020, 2021, 2022a, 2022b; Keskin et al. 2021; Keskin et al. 2022).

The first information about Polygonaceae species in Türkiye was given by Boissier (1846). The Flora of Turkey and The East Aegean Islands vol.2, written later, is a continuation of Boissier, and the species were processed in detail according to the conditions of that day (Coode & Cullen 1966).

After the publication of the second volume of the Flora of Turkey, which deals with the Polygonaceae family, various species were described, and new records were added to two additional volumes. These are summarized in Table 1.

After this flora study, the first revision was made by Leblebici (1990), and *Polygonum* s.l. in Türkiye was examined.

After the writing of the 2nd, 10th, and 11th volumes of the flora of Turkey, some new species from Turkey were described: *Polygonum istanbulicum* M.Keskin (Keskin 2009), *P. leblebicii* Yıldırım (=*Persicaria leblebicii* (Yıld.) Raus) (Yıldırım 2011), *P. melihiae* Gemici & Tan (Gemici & Tan 2014), *P. urnigera* M.Keskin (Keskin & Severoğlu 2022a), and later *P. mersinicum* M.Keskin (Keskin et al. 2022).

At the genus level, a revision has been published on *Persicaria* (Keskin &

Severoğlu 2020). In this study, the differences in the *Polygonum* genus were specified, an identification key was created for all species, and the distributions of the species in Turkey were given. Following this, the Istanbul Polygonaceae family was studied, and their distribution within the province was given. In addition, identification keys were created for the Polygonaceae genera in Turkey (Keskin & Severoğlu 2021).

During various studies, new Polygonaceae species were reported for the flora of Turkey: *Polygonum nepalense* Meisn. (Tan & Baytop 1995), *Rumex cyprius* Murb. (Koç & al. 2014), *Persicaria lapathifolia* subsp. *bringtoneri* (Opiz) Soják (Keskin & Severoğlu 2020), *Persicaria lapathifolia* subsp. *nodosa* (Pers.) Á.Löve (Keskin & Severoğlu 2021), *Fagopyrum esculentum* Moench (Türe & Mısırdal 2002), *Reynoutria japonica* Houtt. (Karaer & al. 2020), *Rheum telianum* İlçim (İlçim & Karahan 2020) *Polygonum buxiforme* Small, *Polygonum neglectum* Besser, and *Polygonum rurivagum* Jord. ex Boreau (Keskin & Severoğlu 2022a). In addition, the presence of *P. longipes* Halácsy & Charrel in Turkey has been clarified (Keskin & Severoğlu 2022b).

In one of the studies examining some species of the genus *Polygonum*, four species (Koçyigit et al. 2015) and the other five species (Kılıç 2014) were examined. A detailed report on the local endemic species *Polygonum istanbulicum* and *Polygonum samsunicum* have been published (Keskin & al. 2021; Karaer & al. 2022).

In addition, Tuzlacı & Meriçli (1992) studied the properties and distribution of *Rheum ribes*, and later, Erşen Bak & Cesur (2021) studied the woody structure of the *Atraphaxis* genus. In another study, it was reported that *A. angustifolia* Jaub. & Spach, whose existence is doubtful in Turkey, grows in Erzincan (Kandemir et al. 2022). Sari & Kocuyigit (2021) reported the ethnobotanical uses of the genus *Rumex*. Also, detailed information about the *Rumex* genus and new taxa was given by Rechinger (1958).

Table 1. Polygonaceae species in supplement volumes in Flora of Turkey

Volume no	Scientific name	Current name
	<i>Polygonum minus</i> Huds.	<i>Persicaria minor</i> (Huds.) Opiz
	<i>Polygonum perfoliatum</i> L.	<i>Persicaria perfoliata</i> (L.) H.Gross
	<i>Polygonum thunbergii</i> Siebold & Zucc.	<i>Persicaria thunbergii</i> (Siebold & Zucc.) Nakai
	<i>Polygonum afyonicum</i> Leblebici & Gemici	
Volume 10 (Davis 1988)	<i>Polygonum rottboellioides</i> Jaub. & Spach	
	<i>Polygonum salsugineum</i> M.Bieb.	
	<i>Rumex palustris</i> Sm.	
	<i>Rumex bithynicus</i> Rech. fil.	
	<i>Rumex x prusianus</i> Rech. fil.	
	<i>Rumex x gemlikensis</i> Rech. fil.	
	<i>Polygonum sivasicum</i> Kit Tan & Yıldız	
	<i>Polygonum samsunicum</i> Yıldırımılı & Leblebici	
	<i>Polygonum ekimianum</i> Leblebici, H.Duman, Aytaç	
Volume 11 (Özhatay 2000)	<i>Polygonum karacae</i> Ziel. & Doratynski	
	<i>Rumex arifolius</i> All.	
	<i>Rumex maritimus</i> L.	

Material and Method

During the preparation of distributions, the data obtained from the samples and the field trips made since 2008 were used. *Polygonaceae* specimens from E. G, EGE, ISTE, ISTF, ISTO, MUFE, ANK, GAZI, HUB, NGBB, VANF, HARRAN, and KNYA herbaria were studied. Also, more related articles were

reviewed (Geven & al. 2008, Yıldırımılı 2009).

All identified plants have been verified with the help of various flora and articles (Karamanoğlu 1976, Yıldırımılı 2009, Keskin 2012).

In light of the data obtained, a new genus identification key was created for the *Polygonaceae* family.

Results**The Identification key of Polygonaceae in Turkey.**

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| 1. Fruit long and stout prickly
Fruit smooth | <i>Emex</i> |
| 2. Stamen 10-18; tepal 4, stillus 4, and fruit 4-angled
Stamen at most 9; tepal 4-6, stillus 2-3 and fruit 3-angled or lenticular | <i>Calligonum</i> |
| 3. Leaves almost circular, cordate at base, at least 20 cm diam.; stamen 9,
Leaves small and non-circular; stamen less than 9 | <i>Rheum</i> |
| 4. Leaves congested at base; blade reniform or orbicular-reniform
Leaves cauline; never reniform | <i>Oxyria</i> |
| 5. Leaves almost absent; tepal colored; filaments linear-filiform, hairy at base; anthers versatile,
Leaves visible; tepal usually greenish; filaments non filiform, glabrous; anthers non versatile | <i>Pteropyrum</i> |
| 6. Leaves mainly basal; petiole winged; stem simple
Leaves mainly cauline; petiole non winged; stem branched | <i>Bistorta</i> |
| 7. Leaves cordate-sagittate
Leaves simple, no cordate-sagittate | go 8
go 10 |
| 8. Stigma fimbriate
Stigma capitate | <i>Reynoutria</i> |
| 9. Leaf blade triangular; achenes longer than tepal
Leaf blade ovate; achenes included in tepal | <i>Fagopyrum</i>
<i>Fallopia</i> |
| 10. Tepal 6 becoming enlarged and hardened in fruit with tubercled
Tepal 4-5, nonenlarged and hardened | <i>Rumex</i> |
| 11. Inflorescence terminal and paniculate
Inflorescence non-paniculate | <i>Koenigia</i> |
| 12. Ocrea usually 2-veined; fruiting tepal inflated
Ocrea usually 10-nerved; tepal non inflated | <i>Atraphaxis</i> |
| 13. Usually flat-growing plants; filaments expanded at base; inflorescence in axils of leaves with 1-8 flowers but looks like raceme
Strict and long-stemmed plants; filaments non-expanded at base; inflorescence long pedunculate, loose or congested raceme-like a spike | <i>Polygonum</i>
<i>Persicaria</i> |

Distribution of Polygonaceae species in Türkiye**I- Atraphaxis L.**

1. *Atraphaxis angustifolia* Jaub. & Spach
Erzincan

Note: This species, known only from the type specimen, has recently been revealed in the Flora of Türkiye (Kandemir et al. 2022).

2. *Atraphaxis billardieri* Jaub. & Spach. var. *billardieri*
Adana, Adıyaman, Aksaray, Ankara, Antalya, Bitlis, Çorum, Elazığ, Erzincan, Erzurum, Eskişehir, Gaziantep, Hatay, Isparta, Kahramanmaraş, Karaman, Kars, Kayseri, Kırkkale, Kilis, Konya, Kütahya, Malatya, Mersin, Muğla, Nevşehir, Niğde, Osmaniye, Sivas, Tunceli, Van.

3. *Atraphaxis billardieri* Jaub. & Spach. var. *tournefortii* (Jaub. & Spach) Cullen.

Artvin, Bitlis, Erzurum, Tunceli, Van.

4. *Atraphaxis grandiflora* Willd. (endemic).
Erzincan, Erzurum, Kahramanmaraş, Kayseri, Sivas.

5. *Atraphaxis spinosa* L.

Afyonkarahisar, Ankara, Bingöl, Elazığ, Erzincan, Erzurum, Iğdır, Kars, Malatya, Mardin, Sivas, Tunceli, Van.

II- Bistorta (L.) Scop.

6. *Bistorta officinalis* L.

Artvin, Bolu, Bursa, Çorum, Erzincan, Hakkari, Iğdır, Isparta, İzmir, Kahramanmaraş, Kars, Kastamonu, Kayseri, Kütahya, Niğde, Sinop, Sivas, Tokat, Trabzon, Yozgat.

7. *Bistorta carnea* (K.Koch) Kom.

Ardahan, Artvin, Bursa, Erzurum, Giresun, Gümüşhane, Hakkari, Kars, Kastamonu, Niğde, Rize, Trabzon, Van.

III- Calligonum L.

8. *Calligonum polygonoides* L.

Ağrı, Iğdır, Kars.

IV- Emex Neck.

9. *Emex spinosa* (L.) Campd. Adana, Antalya, Mersin, Muğla.

V- Fagopyrum Burch.

10. *Fagopyrum esculentum* Moench.

Bilecik, Kastamonu.

VI- Fallopia Adanson

11. *Fallopia aubertii* (L.Henry) Holub.

Ankara, İstanbul, Karaman, Konya.

12. *Fallopia convolvulus* (L.) Á.Löve.

Afyonkarahisar, Amasya, Ankara, Artvin, Balıkesir, Bolu, Denizli, Edirne, Erzurum, Eskişehir, Gümüşhane, Hatay, İstanbul, Kars, Kayseri, Kırkkale, Kocaeli, Konya, Kütahya, Muş, Nevşehir, Rize, Sakarya, Samsun, Sivas, Tekirdağ, Tokat, Trabzon, Van, Yozgat.

13. *Fallopia dumetorum* (L.) Holub.

Erzurum, Hatay, Kahramanmaraş, Trabzon, Zonguldak.

VII- Koenigia L.

14. *Koenigia alpina* (All.) T.M.Schust. & Reveal.

Ağrı, Ankara, Antalya, Balıkesir, Bayburt, Bitlis, Bolu, Bursa, Çankırı, Elazığ, Erzincan, Erzurum, Giresun, Gümüşhane, Iğdır, İzmir, Kars, Kayseri, Kocaeli, Muş, Niğde, Rize, Sivas, Trabzon.

VIII- *Oxyria* Hill

15. *Oxyria digyna* (L.) Hill.

Antalya, Artvin, Bitlis, Bursa, Erzurum, Hakkari, Isparta, Kahramanmaraş, Kayseri, Mersin, Muş, Niğde, Rize, Siirt, Tunceli, Van.

IX- *Persicaria* (L.) Mill.

16. *Persicaria amphibia* (L.) Delarbre.

Afyonkarahisar, Amasya, Ankara, Antalya, Ardahan, Artvin, Bitlis, Bolu, Burdur, Bursa, Edirne, Erzurum, Eskişehir, Hakkari, Hatay, Iğdır, Isparta, İstanbul, Kars, Kayseri, Kocaeli, Konya, Muğla, Muş, Niğde, Rize, Sinop, Sivas, Trabzon, Van.

17. *Persicaria decipiens* (R.Br.) K.L.Wilson.

Antalya, Bitlis, Bolu, Gaziantep, Isparta, İstanbul, Kahramanmaraş, Kocaeli, Nevşehir, Rize, Sinop, Şanlıurfa, Trabzon, Van.

18. *Persicaria hydropiper* (L.) Delarbre.

Ankara, Artvin, Bartın, İstanbul, Ordu, Rize, Samsun, Tokat, Trabzon.

19. *Persicaria hydropiperoides* Small.

İstanbul.

20. *Persicaria lapathifolia* (L.) Delarbre. subsp. *lapathifolia*

Adıyaman, Afyonkarahisar, Ankara, Antalya, Artvin, Balıkesir, Bartın, Bingöl, Bitlis, Bolu, Çanakkale, Edirne, Hatay, İstanbul, İzmir, Kahramanmaraş, Kars, Kastamonu, Kırkkale, Kırklareli, Konya, Mersin, Muş, Nevşehir, Rize, Sakarya, Samsun, Siirt, Sinop, Şanlıurfa, Tekirdağ, Trabzon, Yalova, Yozgat, Zonguldak.

21. *Persicaria lapathifolia* (L.) Delarbre. subsp. *brittingeri* (Opiz) Soják. Bursa, İstanbul, Konya.

22. *Persicaria lapathifolia* (L.) Delarbre. subsp. *nodosa* (Pers.) Á.Löve. İstanbul.

23. *Persicaria leblebicii* (Yıld.) Raus. (endemic).

Artvin.

24. *Persicaria maculosa* Gray.

Amasya, Ankara, Antalya, Artvin, Bartın, Bingöl, Bolu, Bursa, Erzurum, Gümüşhane, Hatay, Isparta, İstanbul, Kahramanmaraş, Kars, Kırklareli, Konya, Nevşehir, Rize, Sakarya, Samsun, Siirt, Sinop, Tokat, Trabzon, Zonguldak.

25. *Persicaria minor* (Hudson) Opiz. Rize.

26. *Persicaria nepalensis* (Meisn.) H. Gross.

Artvin, Rize, Van.

27. *Persicaria orientalis* (L.) Spach.

Ankara, Artvin, Bursa, Düzce, İstanbul, Rize, Sakarya, Şanlıurfa, Trabzon.

28. *Persicaria perfoliata* (L.) H.Gross.

Artvin, Rize, Trabzon.

29. *Persicaria thunbergii* (Siebold & Zucc.) H.Gross. Artvin, Rize.

X- *Polygonum* L.

30. *Polygonum afyonicum* Leblebici & Gemici. (endemic).

Afyonkarahisar.

31. *Polygonum arenarium* Waldst. & Kit.

Amasya, Balıkesir, Bingöl, Bursa, Çanakkale, Erzincan, İstanbul, İzmir, Tokat, Van.

32. *Polygonum arenastrum* Boreau.

Afyonkarahisar, Ağrı, Amasya, Ankara, Antalya, Bartın, Bilecik, Bingöl, Bitlis, Bolu, Bursa, Çanakkale, Edirne, Erzincan, Erzurum, Giresun, Hatay, Iğdır, Isparta, İstanbul, İzmir, Kahramanmaraş, Kars, Kastamonu, Kayseri, Kırkkale, Kocaeli, Konya, Malatya, Muş, Nevşehir, Niğde, Rize, Sakarya, Samsun, Sivas, Şırnak, Tokat, Trabzon, Tunceli, Van, Yozgat.

33. *Polygonum argyrocoleon* Steud. & Kunze.

Note: Suspicious recording. Its existence needs confirmation. Its record from Mersin was given by Karamanoğlu (1976).

34. *Polygonum aviculare* L.

Adana, Amasya, Ankara, Bolu, Bursa, Edirne, Erzurum, Giresun, Hakkari, Iğdır, Isparta, İstanbul, Kars, Kastamonu, Kayseri, Kırklareli, Kocaeli, Konya, Muğla, Samsun, Sivas, Trabzon.

35. *Polygonum bellardii* All.

Adana, Ağrı, Amasya, Ankara, Antalya, Balıkesir, Burdur, Çanakkale, Çankırı, Denizli, Diyarbakır, Edirne, Erzincan, Erzurum, Eskişehir, Gaziantep, Hakkari, Iğdır, Isparta, Kars, Kastamonu, Konya, Kütahya, Mardin, Muş, Nevşehir, Niğde, Tunceli, Uşak, Van, Yozgat.

36. *Polygonum buxiforme* Small.

İstanbul, Malatya.

37. *Polygonum cappadocicum* Boiss. & Balansa. (endemic). Kayseri.

38. *Polygonum cognatum* Meisn.

Adana, Adıyaman, Afyonkarahisar, Ağrı, Ankara, Antalya, Balıkesir, Burdur, Bursa, Denizli, Erzincan, Erzurum, Gaziantep, Gümüşhane, Iğdır, İzmir, Isparta, Kars, Kayseri, Kırşehir, Konya, Kütahya, Malatya, Muğla, Rize, Siirt, Sivas, Şanlıurfa, Şırnak, Uşak, Van.

39. *Polygonum ekimianum* Leblebici, H.Duman & Ayaç. (endemic). Kahramanmaraş

40. *Polygonum equisetiforme* Sibth. & Sm.

Adana, Amasya, Antalya, Bilecik, Bitlis, Bursa, Çanakkale, Edirne, Eskişehir, Gaziantep, Hatay, İstanbul, İzmir, Konya, Mersin, Muğla, Sivas, Şanlıurfa.

41. *Polygonum istanbulicum* M.Keskin. (endemic). İstanbul.

42. *Polygonum karacae* Ziel. & Borat. (endemic). Muğla.

43. *Polygonum longipes* Halácsy & Charrel.

İstanbul.

44. *Polygonum luzuloides* Jaub. & Spach.

Bitlis, Hakkari, Kars, Konya, Malatya, Muş, Siirt, Van.

45. *Polygonum maritimum* L.

Antalya, Aydın, Balıkesir, Bartın, Bursa, Çanakkale, Edirne, Giresun, İstanbul, İzmir, Kocaeli, Mersin, Muğla, Rize, Sakarya, Samsun, Şanlıurfa, Tekirdağ, Trabzon, Yalova.

46. *Polygonum melihae* Gemici & Kit Tan. (endemic). Afyonkarahisar.

47. *Polygonum mersinicum* M.Keskin (endemic). Mersin

48. *Polygonum mesembrium* Chrtek.

Bartın, Bitlis, Bolu, Edirne, İstanbul, Kırklareli, Sakarya, Trabzon.

49. *Polygonum neglectum* Besser.

Balıkesir, İstanbul, Kars, Kırklareli, Muğla, Yalova.

50. *Polygonum paronychioides* C.A. Mey.

Ağrı, Kars, Van.

51. *Polygonum patulum* Bieb.

Bingöl, Erzincan, Kars, Konya, Mersin, Muş, Siirt.

52. *Polygonum pulchellum* Loisel.

Afyonkarahisar, Ankara, Balıkesir, Bartın, Bilecik, Bingöl, Bursa, Çanakkale, Edirne, Elazığ, Erzincan, Erzurum, Eskişehir, Hatay, Iğdır, Isparta, İstanbul, İzmir, Kahramanmaraş, Kırklareli, Kocaeli, Konya, Malatya, Mersin, Muş, Sivas, Şanlıurfa, Tekirdağ, Tokat, Tunceli, Van.

53. *Polygonum polycnemoides* Jaub. & Spach.

Adıyaman, Bitlis, Elazığ, Erzurum, Kahramanmaraş, Kars, Kayseri, Konya, Mersin, Niğde, Sivas, Şanlıurfa.

54. *Polygonum praelongum* Coode & Cullen.

Antalya, Konya, Muğla.

55. *Polygonum romanum* Jacq.

Note: Suspicious recording. Its existence needs confirmation. Its record from İstanbul was given by Karamanoğlu (1976). It has not been recovered and probably misidentifies the *P. longipes* species.

56. *Polygonum rotboelliioides* Jaub. & Spach. Hakkari, Kars.

57. *Polygonum rurivagum* Jord. ex Boreau.

Amasya, Balıkesir, Denizli, Hatay, İstanbul, Kahramanmaraş, Konya, Sakarya, Samsun, Şanlıurfa.

58. *Polygonum salebrosum* Coode & Cullen. (endemic). Antalya, Hatay, Mersin, Muğla.

59. *Polygonum salsugineum* M.Bieb.

Kırklareli.

60. *Polygonum samsunicum* Yıld. & Leblebici. (endemic). Samsun.

61. *Polygonum setosum* Jacq.

Bingöl, Bitlis, Elazığ, Erzincan, Erzurum, Giresun, Gümüşhane, Hatay, Iğdır, İzmir, Kahramanmaraş, Karaman, Kars, Konya, Muğla, Muş, Siirt, Sivas, Van.

62. *Polygonum sivasicum* Kit Tan & Yıldız. (endemic). Sivas.

63. *Polygonum unigera* M.Keskin. (endemic).

İstanbul.

XI- *Pteropyrum* Jaub. & Spach

64. *Pteropyrum olivierii* Jaub. & Spach. Van.

XII- *Reynoutria* Houtt.

65. *Reynoutria japonica* Houtt. Samsun.

XIII- *Rheum* L.

66. *Rheum ribes* L.

Adıyaman, Ağrı, Ardahan, Batman, Bayburt, Bingöl, Bitlis, Diyarbakır, Elazığ, Erzincan, Erzurum, Eskişehir, Hakkari, Hatay, Iğdır, Kahramanmaraş, Kars, Kilis, Malatya, Mardin, Muş, Siirt, Sivas, Şanlıurfa, Şırnak, Tunceli, Van.

67. *Rheum telianum* İlçim. (endemic). Adıyaman.

XIV- *Rumex* L.

68. *Rumex acetosa* L.

İstanbul, Muş.

Note: Suspicious type. It is probably a misidentification of the *R. tuberosus* species. Its records were reported by Karamanoğlu (1976).

69. *Rumex arifolius* L.f. Sivas, Bitlis.

70. *Rumex acetosella* L.

Adana, Afyonkarahisar, Ağrı, Aksaray, Amasya, Ankara, Antalya, Ardahan, Artvin, Balıkesir, Bilecik, Bingöl, Bitlis, Bolu, Bursa, Çanakkale, Çankırı, Çorum, Denizli, Edirne, Elazığ, Erzincan, Erzurum, Eskişehir, Giresun, Iğdır, Isparta, İstanbul, İzmir, Kahramanmaraş, Karaman, Kars, Kastamonu, Kayseri, Kırkkale, Kırklareli, Kocaeli, Konya, Kütahya, Malatya, Muğla, Muş, Niğde, Ordu, Rize, Sakarya, Samsun, Sinop, Sivas, Tekirdağ, Trabzon, Tunceli, Van, Yozgat.

71. *Rumex alpestris* Jacq.

Afyonkarahisar, Artvin, Bolu, Bursa, Erzincan, Gümüşhane, Kastamonu, Kocaeli, Muş, Rize, Trabzon.

72. *Rumex amarus* Rech.f. (endemic).

Hatay, Osmaniye.

73. *Rumex alpinus* L., Sp. Pl. 1: 334 (1753).

Afyonkarahisar, Artvin, Bingöl, Bursa, Elazığ, Erzincan, Gümüşhane, Kars, Muş, Rize, Trabzon.

74. *Rumex angustifolius* Campd. subsp. *angustifolius*

Adana, Ağrı, Antalya, Erzincan, Erzurum, Gümüşhane, Hakkari, Isparta, Kayseri, Konya, Kütahya, Muğla, Sivas, Tunceli, Uşak.

75. *Rumex angustifolius* Campd. subsp. *macranthus* (Boiss.) Rech. f.

Adana, Antalya, Bitlis, Erzincan, Kahramanmaraş, Konya, Mersin, Niğde, Sivas.

76. *Rumex bithynicus* Rech. f. (endemic). Bursa.

77. *Rumex bucephalophorus* L.

Antalya, Aydın, Balıkesir, İstanbul, İzmir, Mersin, Muğla.

78. *Rumex caucasicus* Rech. f.

Erzurum, Kars, Kayseri, Ordu, Rize.

79. *Rumex chalepensis* Mill. Gaziantep, Van.

80. *Rumex conglomeratus* Murray.

Adana, Afyonkarahisar, Ankara, Antalya, Bitlis, Bolu, Bursa, Çanakkale, Denizli, Düzce, Edirne, Eskişehir, Giresun, Hatay, Isparta, İstanbul, İzmir, Kahramanmaraş, Karaman, Kastamonu, Kırıkkale, Kırklareli, Kırşehir, Kocaeli, Konya, Mersin, Muğla, Niğde, Sakarya, Samsun, Şırnak, Tekirdağ, Tokat, Trabzon, Yozgat, Zonguldak.

81. *Rumex crispus* L.

Adana, Afyonkarahisar, Aksaray, Amasya, Ankara, Antalya, Artvin, Balıkesir, Bilecik, Bitlis, Bolu, Çanakkale, Diyarbakır, Düzce, Elazığ, Erzincan, Erzurum, Eskişehir, Gaziantep, Hakkari, Iğdır, Isparta, İstanbul, İzmir, Kahramanmaraş, Karaman, Kars, Kastamonu, Kayseri, Kırıkkale, Kırklareli, Kocaeli, Konya, Malatya, Nevşehir, Rize, Sakarya, Samsun, Şanlıurfa, Şırnak, Tekirdağ, Tokat, Tunceli, Van, Yozgat.

82. *Rumex cristatus* DC.

Adana, Afyonkarahisar, Amasya, Balıkesir Çanakkale, Denizli, Düzce, Edirne, Erzincan, Isparta, İstanbul, İzmir, Kocaeli, Nevşehir, Yalova.

83. *Rumex cyprius* Murb. Mersin.

84. *Rumex dentatus* L. subsp. *halacsiyi* (Rech.) Rech. f. Afyonkarahisar, Ankara, Bursa, Edirne, Eskişehir, Hatay, İzmir, Kahramanmaraş, Kastamonu, Kayseri, Kırklareli, Konya, Şanlıurfa.

85. *Rumex gracilescens* Rech.f. (endemic).

Ağrı, Ankara, Artvin, Bitlis, Kars, Kastamonu, Van.

86. *Rumex hydrolapathum* Huds.

Adana, Ankara, Bolu, İzmir, Mersin, Tokat.

87. *Rumex maritimus* L.

Samsun.

88. *Rumex nepalensis* Spreng.

Amasya, Balıkesir, Bilecik, Bolu, Bursa, Giresun, Gümüşhane, Hatay, Isparta, İzmir, Kahramanmaraş, Kastamonu, Kocaeli, Konya, Tunceli, Zonguldak.

89. *Rumex obtusifolius* L. subsp. *subalpinus* (Schur) Celak.

Adana, Afyonkarahisar, Amasya, Artvin, Balıkesir, Bilecik, Bolu, Bursa, Çankırı, Edirne, Gaziantep, Gümüşhane, Iğdır, İstanbul, Kars, Kastamonu, Kocaeli, Ordu, Rize, Sinop, Sivas, Tokat, Trabzon.

90. *Rumex olympicus* Boiss. (endemic).Bursa.

91. *Rumex palustris* Sm.İzmir.

92. *Rumex patientia* L.

Adana, Ağrı, Ankara, Antalya, Bayburt, Bolu, Bursa, Diyarbakır, Erzurum, Eskişehir, İstanbul, İzmir, Kahramanmaraş, Kars, Kırklareli, Kocaeli, Mardin, Muğla, Rize, Siirt, Sivas, Şanlıurfa.

93. *Rumex ponticus* E.H.L. Krause. (endemic).

Adıyaman, Ağrı, Bitlis, Erzincan, Erzurum, Gümüşhane, Hakkari, Malatya, Muş, Siirt, Van.

94. *Rumex pulcher* L.

Adana, Afyonkarahisar, Aksaray, Ankara, Antalya, Aydın, Balıkesir, Bilecik, Bitlis, Bolu, Bursa, Çanakkale, Denizli, Diyarbakır, Edirne, Erzincan, Eskişehir, Gaziantep, Hatay, İstanbul, İzmir, Kahramanmaraş, Kırklareli, Kocaeli, Konya, Kütahya, Mersin, Muğla, Nevşehir, Osmaniye, Siirt, Sinop, Tokat, Trabzon.

95. *Rumex sanguineus* L. Bartın, Gaziantep, İstanbul, Yalova.

96. *Rumex scutatus* L.

Adana, Amasya, Ankara, Antalya, Ardahan, Balıkesir, Bayburt, Bingöl, Bolu, Bursa, Çankırı, Çorum, Denizli, Erzincan, Erzurum, Gümüşhane, Hakkari, Iğdır, Isparta, Kahramanmaraş, Karaman, Kastamonu, Kayseri, Kırşehir, Kocaeli, Konya, Malatya, Mersin, Muğla, Muş, Nevşehir, Niğde, Rize, Sivas, Şanlıurfa, Van, Yozgat.

97. *Rumex thyrsoiflorus* Fingerh. Malatya, Siirt, Van.

Note: Suspicious recording. Its existence needs confirmation. Its record from 3-province was given by Karamanoğlu (1976). It has not been recovered and probably misidentifies the *R. tuberosus* or *R. scutatus*.

98. *Rumex tmoleus* Boiss. (endemic).

Adana, Antalya, İzmir.

99. *Rumex tuberosus* L.

Adana, Ankara, Antalya, Ardahan, Artvin, Balıkesir, Bilecik, Bingöl, Bitlis, Bolu, Bursa, Çanakkale, Denizli, Edirne, Erzincan, Erzurum, Eskişehir, Gaziantep, Gümüşhane, Hakkari, Hatay, Iğdır, Isparta, İstanbul, İzmir, Kahramanmaraş, Kars, Kastamonu, Kayseri, Kırklareli, Konya, Kütahya,

Malatya, Mersin, Muğla, Muş, Nevşehir, Niğde, Rize, Samsun, Sinop, Tekirdağ, Trabzon, Tunceli, Van, Yalova, Yozgat, Zonguldak.

Hybrids

100. *Rumex x autranianus* Freyn & Sint. ex Dinsm. Gümüşhane.

101. *Rumex x gemlikensis* Rech. f. (endemic).

Bursa.

102. *Rumex x muellneri* Rech.f. Tunceli.

103. *Rumex x prusianus* Rech. f. (endemic). Bursa.

104. *Rumex x pseudopatentia* Rech.f. Ağrı.

105. *Rumex x remotiflorus* Samuelsson Isparta.

106. *Rumex x subtrianianus* Freyn & Sint. Gümüşhane.

107. *Rumex x subtrilobus* Boiss. İzmir, Çanakkale.

108. *Rumex x uludaghensis* Rech.f. Bursa.

Discussions

As a result of this study, the distribution of the Polygonaceae family in Turkey has been revealed.

In Flora of Turkey and The East Aegean Islands vol. 2, the Polygonaceae family has been reported as eight genera and 64 taxa. This study states that 14 genera and 108 taxa live in the Flora of Türkiye. Later, a new genus identification key was given in the article by Karaer et al. (2020), in which the genus *Reynoutria* was reported from Turkey. This study created a diagnostic key for the genera *Atraphaxis*, *Calligonum*, *Emex*, *Fagopyrum*, *Fallopia*, *Oxyria*, *Polygonum*, *Reynoutria*, *Rheum*, and *Rumex*. Finally, by processing current data by Keskin and Severoğlu (2021), a new genus identification key was created by emphasizing the richness of *Polygonum*. Here, 14 genera are reported, as highlighted in this study.

However, the existence of only *Polygonum arygycoleum*, *P. romanum*, *Rumex acetosa*, and *R. thyrsoiflorus* species in Turkey is doubtful. The distributions of these species are indicated based on provinces and under the species names.

Conclusions

This article has determined the net number of Polygonaceae genera and species living in Türkiye. A new discrimination key has been developed for the genera of Polygonaceae. For all species, new distributions are given in light of the samples collected by the first author years ago and the data obtained from many herbaria.

As a result of studies with the Polygonaceae family, three new *Polygonum* species (*Polygonum istanbulicum* M.Keskin, *P. urnigera* M.Keskin, and *P. mersanicum* M.Keskin), three new *Persicaria* records (*P. lapathifolia* subsp. *britingeri* (Opiz) Soják, *P. lapathifolia* subsp. *nodosa* (Pers.) A.Löve and *P. hydropteroides* (Michaux) Small), three new *Polygonum* records (*P. buxiforme* Small, *P. neglectum* Besser, and *P. rurivagum* Jord. ex Boreau, and *Polygonum longipes* Halácsy & Charrel, which had been missing for 124 years, were re-collected and reported by previous studies (Keskin 2009, Keskin & Severoğlu 2020, 2021, 2022a, 2022b, Keskin et al. 2022). In addition, the micromorphological features of *Polygonum istanbulicum*, a rare endemic species, were revealed (Keskin et al. 2021).

In conclusion, it is thought that this article is a good source for the Illustrated Flora of Türkiye, which is still being written.

Statement of Conflict of Interest

The author(s) declare no conflict of interest for this study.

Author's Contributions

The first author made field and herbarium trips to the article. He also played a significant role in the initial writing of the article. The second author took part in the development and control of the article.

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