

MORPHOLOGICAL COMPARISON BETWEEN SOME PLANT SPECIES IN THE FLORA OF TURKEY AND THEIR COLLECTED SAMPLES FROM THE EAST ANATOLIAN REGION OF TURKEY

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Abstract: In this study, the morphological characteristics of the plants collected from the East Anatolian Region of Turkey were compared with the recorded morphological peculiarities in the Flora of Turkey.

Keywords: Flora of Turkey, East Anatolia, Plant species, Morphological peculiarities

TÜRKİYE' NİN DOĞU ANADOLU BÖLGESİNDEN TOPLANAN VE MORFOLOJİK OLARAK TÜRKİYE FLORASI' NDAN FARKLILIK GÖSTEREN BAZI BİTKİLER TÜRLERİ

Özet: Bu çalışmada, Türkiye' nin Doğu Anadolu Bölgesi' nden toplanan ve Türkiye Florası' nda kayıtlı özelliklerinden farklı özellikler gösteren bitkiler ele alınmıştır.

Anahtar Kelimeler: Türkiye Florası, Doğu Anadolu, Bitki türleri, Morfolojik özellikler

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1. INTRODUCTION

Flora of Turkey (1,2) is a good work revealing our country's flora in the best way. However, there were problems related on identification of some taxa. The cause of problems are due to either identification of certain species after the volumes of Flora of Turkey or descriptions of species and genus by using insufficient samples and populations.

In this study, the plants were collected from the East Anatolian Region where few studies were done although it is rich in flora.

2. MATERIALS AND METHODS

In this study, 31 taxa collected from the East Anatolian Region were used as materials. The plants were collected during botanical excursions that were made in various times. They were made to herbarium materials (3, 4, 5, 6). Flora of Turkey (1) has been used for the identification of plant samples. The identified plants have been deposited FIRAT Herbarium, Department of Biology, Faculty of Arts and Science, Fırat University, Elazığ, Türkiye and EGE Herbarium, Department of Biology, Faculty Science, Ege University, İzmir, Türkiye. The list of plants were arranged by using the orders of Flora of Turkey. The observed morphological differences are recorded according to descriptions given in Flora of Turkey.

3. LIST OF PLANTS

3.1. Ranunculaceae

3.1.1. *Delphinium peregrinum* L. (I:117)

Elazığ: Hazar Dağı, Karanlık Dere vicinity, calcareous slopes, 1350 m, 07.08.1979, Altan.507.

Follicles was determined often pilose in the Flora of Turkey, however it was observed glabrous in our sample.

3.2. Papaveraceae

3.2.1 *Corydalis rutifolia* (Sibth. & Sm.) DC. subsp. *erdellii* (Zucc.) Cullen & Davis (I:241)

Malatya: Pötürge, Kubbe Dağı, steppe, 1900 m, 07.05.1982, Altan.2149.

Although inflorescence was determined as 1-7 flowers in the description of this species, 14-17 flowers were observed on our specimens.

3.3. Brassicaceae

3.3.1. *Brassica tournefortii* Gouan (I:265)

Van: Gürpınar, Çavuştepe, edges of fields, 1700 m, 15.06.1993, Altan.4720.

In the description of this species, fruit pedicels were determined as 10-35 mm, petals as 7x2-3 mm and fruit's measurement was determined as 32-70 x 2,5 mm, however the dimensions of the pedicels as 3-4 mm, petals as 8x0,5-1 mm and the fruit's dimensions, about 92 x 3-4 mm in our specimens.

3.3.2. *Alyssum macropodum* Boiss. & Bal. var. *macropodum* (I:380)

Malatya: Pötürge, Kubbe Dağı, Genista albida community, 2000 m, 25.06.1981, Altan.2529, Endemic, Ir.-Tur. Element.

A fruit length and width were given as 2,5-3,5 x 1,6-2,3 mm in Flora of Turkey. The measurements of the same fruits from on our specimens were recorded as 4,5 x 4,5 mm.

3.3.3. *Erysimum alpestre* Kotschy ex Boiss. (I:471)

Malatya: Pötürge, Kubbe Dağı, Karayolları Bakımevi, steppe, 2500 m, 25.06.1981, Altan.1642, Endemic, Ir.-Tur. Element.

Although a fruit length was determined as 15 - 25 mm, it was recorded as 32 mm in our specimens.

3.3.4. *Erysimum purpureum* Aucher (I:476)

Malatya: Pötürge, Büyüköz Köyü, East side of Nemrut Dağı, steppe, 2000 m, 21.06.1982, Altan.2619, Ir.-Tur. Element.

Type sample of this perennial taxon was collected from Turkey and it's fruit length was determined as 25-30 mm in Flora of Turkey. However it was recorded as 30-35 mm in our specimens.

3.3.5. *Erysimum repandum* L. (I:477)

Malatya: Pötürge, Yatılı Bölge Okulu, waste ground, 1250 m, 27.05.1982, Altan.2327.

Although a fruit length was determined as 40-60 mm, it was recorded as 65-80 mm in our specimens.

3.4. Caryophyllaceae

3.4.1. Cerastium anomalum Waldst. & Kit. (II:75)

Malatya: Pötürge, Kubbe Dağı, Karayolları Bakımevi, meadows, 1900 m, 07.05.1982, Altan.2151.

In the description of this species in Flora of Turkey, a sepal length was given as 4-5 mm, however it was recorded about 9 mm on our specimen.

3.4.2. Agrostemma githago L. (II:244)

Elazığ: Hazar Dağı, Kazgediği vicinity, fields, 1450 m, 18.06.1979, Altan.315; Malatya: Pötürge, Yazıca Köyü, under *Quercus*, 900 m, 25.06.1982, Altan.1750.

Calyx teeth were determined as 35 mm in the flora, however calyx teeth of our sample were about 50 mm.

3.5. Geraniaceae

3.5.1. Geranium dissectum L. (II:461)

Malatya: Pötürge, Ferikhan Köyü, sandy, 660 m, 04.05.1981, Altan.1136; Yazıca Köyü, humid areas, 650 m, 05.05.1981, Altan.1242; Gündüz Köyü, under *Quercus*, 900 m, 29.05.1982, Altan.2418; Alihan Köyü, meadows, 900 m, 31.05.1982, Altan.2452.

The specimen was collected from different habitats such as sandy areas, humid areas, bottom of the *Quercus* and meadows places and the colour of flowers in collected sample was recorded as white. However, it was determined as carmine or purple in the Flora description.

3.5.2. Erodium oxyrrhynchum Bieb. (II:476)

Erzurum: Olur, Orman Koruma Sahası, limey soil by roadsides, 1200 m, 09.08.1996, Altan.6662.

In this annual or perennial species grown in the eastern Anatolia, their sepal is three veined, their awn is 0.3 mm and their petal is double size of sepal in Flora of Turkey. But sepal is four veined, awn is 0.5 mm and petal is very small size in our collected samples.

3.6. Fabaceae

3.6.1. Astragalus hamosus L. (III:67)

Malatya: Pötürge, Aktarla Köyü, road sides, 900 m, 28.05.1982, Altan.2359.

Although maximum stem length of the plant in Flora of Turkey was given 50 cm, the stem length of our sample was recorded as 90 cm. In our sample, the number of flowers in inflorescence were counted as 3-18, but it is reported as 5-10 in the flora.

3.6.2. Astragalus densifolius Lam. (III:72)

Malatya: Pötürge, Develi Köyü, steppe, 1950 m, 18.05.1982, Altan.2210; Malatya: Pötürge, Büyükköz Köyü, S. side of Nemrut Dağı, 2000 m, 21.06.1982, Altan.2614, Endemic, Ir.-Tur. Element.

In the description of the species, bracts were measured as 8 mm and peduncles were measured as 4-15 cm, However in our specimens, bracts were recorded as 11 mm and it was observed that peduncles were being reached to 8 - 27 cm.

3.6.3. Astragalus decurrens Boiss. (III:188)

Elazığ: Hazar Dağı, Kızıltepe, 1450 m, 05.07.1979, Altan.421. Endemic, Ir.-Tur. Element.

Calyx teeth were given as 15-19 mm in the flora however calyx teeth of our samples were not longer than 9 - 10 mm.

3.6.4. Astragalus odoratus Lam. (III:194)

Malatya: Pötürge, Tepehan Nahiyesi, meadows, 1200 m, 16.06.1982, Altan.2501.

In the description of the species bracts were 1 mm and there was no bracteoles whereas in our samples bracts were 3 mm and there were bracteoles.

3.6.5. Astragalus bicolor Lam. (III:216)

Elazığ: Hazar Dağı, Karanlıkdere vicinity, edges of fields, 1400 m, 17.05.1979, Altan.154, Endemic, Ir.-Tur. Element.

It was recorded in the flora that there were short, black, adpressed, bifurcate hairs on plant's fruits, however there was no black hair on our sample's fruit.

3.6.6. Astragalus tigridis Boiss. (III:235)

Elazığ: Hazar Dağı, Kürdemlik Dağı, under *Quercus*, 1400 m, 26.05.1979, Altan.201; Malatya: Pötürge, Tosunlu Köyü, steppe, 1200 m, 19.05.1982, Altan.2270, Ir.-Tur. Element.

Peduncles were observed as 45 cm on our sample, however peduncles were given 13-15 cm in the flora.

3.6.7. Astragalus elongatus Willd. subsp. elongatus (III:235)

Malatya: Pötürge, Büyüköz Köyü, under oak scrub, 1400 m, 21.06.1982, Altan.2569; Pötürge, Argoçe Ormanı, under Quercus, 1450 m, 02.06.1981, Altan.1501, Endemic, Ir.-Tur. Element.

Although fruit length and width were given 12x4 mm. in Flora of Turkey. They were recorded as 20 x 10 mm on our samples.

3.6.8. Astragalus nitens Boiss. & Heldr. (III:243)

Malatya: Pötürge, Gözlüce Köyü, Yirmitepe vicinity, under *Quercus*, 2000 m, 26.06.1981. Altan.1827; Malatya: Pötürge, Büyüköz Köyü, S. side of Nemrut Dağı, 2000 m, 21.06.1982, Altan.2612, Endemic, Ir.-Tur. Element.

According to description of the flora about this plant, the dimensions of the leaflets were reported as 10-18 mm, bracts as 2 mm and calyx teeth 1 mm. In contrast leaflets size were recorded as 27 mm, bracts as 3 mm and calyx teeth 3 mm on our samples.

3.6.9. Glycyrrhiza glabra L. var. glandulifera (Waldst. & Kit.) Boiss. (III:260)

Malatya: Pötürge, Aktarla Köyü, cultivated ground, 900 m, 28.05.1982, Altan.2360.

In Flora of Turkey the leaflets size was reported as 15-45x10-20 mm according to biggest one. The leaflets size was reported as 45 x 20 mm in the description. Leaflets size reached to 55 x 25 mm according to our samples.

3.6.10. Lens montbretti (Fisch. & Mey.) Davis & Plitm. (III:325)

Elazığ: Hoşmat Karayolları Bakımevi, fields, 900 m, 18.06.1982, Altan.2757; Karakoçan, fallow fields, 1100 m, 10.05.1986. Altan.4214, Ir.-Tur. Element.

Although stem length of the plant in Flora of Turkey was determined as 14-20 cm, leaflets 6-12x2,5-3,5 mm and calyx length 5-6 mm. Stem length, leaflets and calyx length were recorded as 40-42 cm, 4-15x1-6 mm and 7-8 mm respectively in our samples.

3.6.11. Lathyrus nissolia L. (III:366)

Malatya: Pötürge, Yatılı Bölge Okulu, Quercus scrub, 1250 m, 27.05.1982, Altan.2304.

Legume length was determined as 32-40 mm in the Flora of Turkey. It was measured as 50 mm in our sample.

3.6.12. Trifolium resutum L. (III:397)

Malatya: Pötürge, Argoçe Ormanı, Quercus clearings, 2000 m, 02.06.1981, Altan.1494.

In our sample, number of flowers in inflorescence were counted as 42. In the flora, they were reported as 15-20.

3.6.13. Trigonella lunata Boiss. (III:459)

Elazığ: Hazar Gölü, Üniversite kampı, stony slopes, 1250 m, 28.05.1980, Altan.731; Malatya: Pötürge, Argoçe Ormanı, Quercus clearings, 1000 m, 04.05.1981, Altan.1156; Pötürge, Yatılı Bölge Okulu, Quercus scrub, 1250 m, 27.05.1982, Altan.2299, Ir.-Tur. Element.

Number of flowers in the inflorescence were reported as 1-3 in the flora. They were observed as 4 in our sample.

3.6.14. Medicago rigudula (L.) All. var. subtimis (Boiss.) Heyn (III:503)

Malatya: Pötürge, Tosunlu Köyü, waste ground, 1200 m, 19.05.1982, Altan.1282.

In the description of this plant; the height of plant was reported as maximum 25 cm. However it was about 50 cm in our samples.

3.7. Datisceae

3.7.1. Datisca cannabina L. (IV: 208)

Malatya: Pötürge, Behramlı Köyü, river banks, 1200 m, 13.08.1983, Altan.3557.

Height of the species having wide spread long streams in our collected sample was determined as max 2 m, and it's fruits were determined as 4 mm in flora of Turkey. But in our sample's height was recorded as max. 3 m and its fruits height was reported about 7 mm.

3.8. Apiaceae

3.8.1. Tordylium cappadocicum Boiss. (IV:507)

Malatya: Pötürge, Yazıca Köyü, fields, 900 m, 25.06.1981, Altan.1741; Pötürge, Alihan Köyü,

fields, 900 m, 31.05.1981, Altan.2436, Endemic, Ir.-Tur. Element.

In the Flora description of the species, the basal leaves were unknown. On the other hand, the lowest leaves were in simple palmat structure in our samples.

3.9. Valerianaceae

3.9.1. Valerianella dactylophylla Boiss. et Hohen (IV:564)

Elazığ: Karakoçan, Gündoğdu Köyü, rocky slopes, 1600 m, 28.05.1980, Altan.993.

This species has wide distribution in the eastern Anatolia. Their calyx was with 6 lanceolate and were consisted of acuminate lobes in the description of Flora of Turkey. However calyx were consisted of 10 lobes in our samples.

3.9.2. Valerianella coronata (L.) DC. (IV:576)

Elazığ: Hazar Dağı, Kazgediği, rocky slopes, 1300 m, 03.06.1980, Altan.765; Malatya: Gözlüce Köyü, under *Quercus*, 2000 m, 26.06.1981, Altan.1801.

The plant's stem height was determined as 25 cm in flora of Turkey. However, it was about 45 cm in our sample.

3.10. Asteraceae

3.10.1. Bidens tripartita L. (V:46)

Elazığ: Sivrice, Tekevler Köyü, river banks, 1300 m, 02.10.1980, Altan.901; Malatya: Pötürge, Yazıca Köyü, moist places, 1400 m, 22.09.1982, Altan.2673.

The plant with 2 aristae in achenes was described in Flora. However in our sample, plants with 3 aristae in achenes were recorded.

3.11. Campanulaceae

3.11.1. Campanula involucrata Aucher ex A.DC. (VI:20)

Elazığ: Sivrice, Arpalık vicinity, limestone rocks, 1400 m, 29.05.1979, Altan.251; Malatya: Pötürge, Kubbe Dağı, Karayoları Bakımevi, steppe, 2000 m, 25.06.1981, Altan.1626, Ir.-Tur. Element.

Stigmas were determined as 2 in the flora, however stigmas were observed as both 3 and 2 in our samples.

3.12. Apocynaceae

3.12.1. Trachomitum venetum (L.) Woodson subsp. sarmatiense (Woodson) Avetisian (VI:160)

Malatya: Pötürge, Tosunlu Köyü, river banks, 1200 m, 17.08.1981, Altan.2036, E.Medit Element.

According to description of the species in the Flora of Turkey, the number of the corolla lobes were determined as 5 and the number of the stamens were determined as 5. however, the number of corolla lobes and stamens were observed as 6 in our samples.

3.13. Asclepiadaceae

3.13.1. Cionura erecta (L.) Griseb. (VI:174)

Elazığ: Hazar Dağı, Karanlıkdere vicinity, gongloneiste scree, 1260 m, 28.06.1979, Altan.538. Malatya: Pötürge, Behramlı Köyü, coglomerate scree, 1400 m, 14.08.1983, Altan.3611, E.Medit Element.

In the flora, fruits length (follicle) of the plant was determined as 8 cm. However it was recorded about 9,2 cm in our samples.

4. RESULTS AND DISCUSSION

In this study, the plants collected from the East Anatolian Region have been morphologically compared with the data recorded in flora of Turkey. The morphological differences given in the Flora of Turkey were used as an evaluation criteria. We think that presented differences will provide useful information both in determining the species variation degrees in the Flora of Turkey, and would be beneficial to botanists who will make biosystematical and revision studies in the future.

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