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A New Annual Veronica (Plantaginaceae) From Bingöl, Türkiye

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ABSTRACT

Veronica hispidula Boiss.& A.Huet subsp. *hispidula* var. *bingolense*, collected from the alpine parts of Bingöl province (Eastern Anatolia region-Türkiye), was defined as a new variety. New variety: it differs from the typical variety in terms of pedicel/bracte length ratio, leaf and bracte indumentum, leaf dimensions, and style length. *Veronica hispidula* subsp.*hispidula* var. *bingolense* grows in moist and wet habitats along stream banks in alpine high mountain meadows. This newly identified variety; description, ecological preferences, distribution map, and photographs were given.

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Bingöl (Türkiye)'den Yeni Tek Yıllık Bir *Veronica* (Plantaginaceae)

ÖZET

Bingöl ilinin (Doğu Anadolu bölgesi-Türkiye) alpinik kesimlerinden toplanan *Veronica hispidula* Boiss.& A.Huet subsp. *hispidula* var. *bingolense* yeni bir varyete olarak tanımlandı. Yeni varyete; tip varyeteden pedicel/bracte uzunluk oranı, yaprak ve bracte tüy durumu, yaprak boyutları ve style boyu bakımından farklılık gösterir. *Veronica hispidula* subsp. *hispidula* var. *bingolense* alpinik yüksek dağ çayırlarının dere kenarlarındaki nemli - sulak habitatlarda yetişmektedir. Yeni tanımlanan bu varyetenin; tanımı, ekolojik tercihleri, dağılım haritası ve fotoğrafları verildi.

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Anahtar Kelimeler
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INTRODUCTION

Bingöl province is located in the transition zone from Türkiye's harsh and long winter climate Eastern Anatolia Region to the relatively hot and drier Southeastern Anatolia Region and has interesting ecological characteristics (Behçet 2019). It has a rich plant diversity due to its location and ecology. Although this richness in biodiversity is largely determined; it is a fact that it has a richer potential than known, with many new plant taxa((Behçet et al., 2017; Behçet & İlçim, 2018; Behçet et al.,2019; Behçet & Yapar, 2020, 2021, 2023; Behçet & Çetin 2023; Behçet & Gülbasan,2023; Hamzaoğlu et al., 2020; Hamzaoğlu & Behçet 2022; Doğan et al., 2015; İlçim & Behçet, 2016; Sinan et al., 2021; Yapar& Behçet; 2020 and new records (Behçet & Altınsoy, 2023; Behçet & Cengiz 2023a and 2023b; Pınar et al., 2018, Yapar & Behçet, 2021) published through floristic studies in recent years.

Veronica L. (Plantaginaceae) is a genus with a cosmopolitan distribution and approximately 450 species in the world (Albach *et al.* 2004, Advay *et al.* 2024). There are 107 taxa (77 species, 24 subspecies, and 6 varieties) of this genus distributed in Türkiye (Güner 2012, Yaylaci et al. 2018).

Some interesting *Veronica* L. members were collected during botanical excursions in Bingöl in 2023 (Figure 1). These collected samples: with the help of the keys and definitions in the 6th volume of the book Flora of Turkey and the Eastern Aegean Islands (Fischer, 1978), it was determined that they belong to the species *Veronica hispidula* Boiss. & A. Huet (Figure 2,3)

Figure 1. Scanned habits of *Veronica hispidula* subsp. *hispidula* var. *bingolense.*
Şekil 1. Veronica hispidula subsp. hispidula var. bingolense'nin taranmış habitusları.

It was determined that some characteristics of the collected samples (such as bract/pedicel length ratio, leaf and bract indumentum feature, leaf dimensions, and style length) (Figure1, 4 and 5) differed from the description given about *Veronica hispidula* Boiss. & A. Huet in the mentioned studies (Fischer, 1978; 1981). Although the samples collected from Bingöl are more similar to the *hispidula* subspecies of the two subspecies of *Veronica hispidula* (Table 1; Figure 1–5); as mentioned above, they also differ from it in some features.

Veronica hispidula subsp *hispidula* in Türkiye; it is an Irano-Turanian phytogeographical region element

distributed in the provinces of Erzurum, Kars, Diyarbakır, Adana, Hatay, Afyon, Uşak, Niğde, Bitlis and Muş (Fischer, 1978, Yıldırımlı 2012) (Figure 6). *Veronica* samples collected from Bingöl were compared with the descriptions of *Veronica hispidula* in the 6th volume of the Flora of Turkey and the 147th volume of the Flora of Iran (Fischer, 1978; 1981) and the type (Figure 2) and isotype images (Figure 3) in the PRC and HBG herbariums, and *Veronica hispidula* subsp. *hispidula* var. *bingolense* was described as a new variety.

Figure 2. The typus image of *Veronica hispidula* subsp. *hispidula* (var. *hispidula*) (syn.: *V. pusilla* Kotschy var. *pusilla*) in Herbarium Prague Charles University (PRC 453983) (from GBIF 2024)

Şekil 2. Prag Charles Üniversitesi Herbaryumundaki (PRC 453983) Veronica hispidula subsp. hispidula (var. *hispidula*) *(sinonim: V. pusilla Kotschy var. pusilla)' nın typus görüntüsü (GBIF 2024'den)*

MATERIALS and METHODS

Some interesting *Veronica* L. specimens were collected during botanical excursions in the mountainous parts of the west–southwest of Bingöl province in 2023. These specimens, collected from the alpine slopes of the mountainous part (south of Ortaköy village) on top of Lake Gerindal in the west-southwest of Bingöl province

(Türkiye), appeared close to *Veronica hispidula* subsp. *hispidula* at first glance. This taxon is also known to be distributed in the provinces of Erzurum, Muş (B8 square), and Diyarbakır (C8 square), which are close to Bingöl. However, with more careful examination, it was determined that the specimens collected from Bingöl were different from *V. hispidula* subsp. *hispidula* with some characteristics (Table 1). As a result of the comparisons made by considering the definitions in the relevant literature (Fischer, 1978; 1981) and the visual images of *V. hispidula* subsp hispidula in the Herbarium Prague Charles University (PRC453983E-visual images!) (Figure 2) and Hamburg University Herbarium (HBG512109E-visual images!) (Figure 3), the samples collected from Bingöl were evaluated as a new variety (var. *bingolense)*. Visual images of specimens belonging to the new taxon were taken with the help of a scanning device and enlarged photographs of important morphological structures were taken with the help of a stereo microscope. Type specimens are preserved in the Bingöl University Herbarium (BIN).

Figure 3. The virtual images isotype of *Veronica hispidula* subsp. *hispidula* (var. *hispidula*) (syn.: *Veronica glaberrima* var. *glanduligera* Bornm.)in Herbarium Hamburgense (HBG 519109) (B) (from GBIF 2024).

Şekil 3. Hamburgense Herbarium (HBG 519109)'undaki Veronica hispidula subsp. hispidula (var. hispidula) (sinonim: Veronica glaberrima var. glanduligera Bornm.) izotip görünümleri (GBIF 2024'den)

Figure 4. Leaf sizes (A, B) and the plant indumentum (C, D) views of *Veronica hispidula subsp. hispidula var. bingolense* (from Holotype)

Şekil 4. Veronica hispidula subsp. hispidula var. bingolense'nin yaprak boyutları(A, B) ve tüy örtüsü (C, D) görünümleri (Holotip'ten)

RESULTS and DISCUSSION

Veronica hispidula Boiss. & A. Huet subsp. *hispidula var. bingolensis* Behçet, *var. nov.* (Figs. 1,4,5,6 and Table 1)

Type: Türkiye. B8 Bingöl: 5 km south of Ortaköy village, 25 km west-southwest of Bingöl city center, high mountain meadows, streamside, 1900-2000m a.s.l. , 03.08.2023, *L.Behçet* 21131 (holo. BIN, iso. BIN)

Diagnosis: *Veronica hispidula* Boiss. & A.Huet subsp. *hispidula var. bingolensis* differs from *V. hispidula* &subsp. *hispidula* (var. *hispidula*) mainly leaf to16 × 5.1 mm, margins sparsely 4-6 celled glandular ciliate (not 4−12 × 1.5−3.5 mm and glabrous); style length 0.2−0.3 mm (not 0.3−0.6 mm); the fruit pedicel hooked vertically upwards below fruit at the tip and pedicel length 2−3 x bracts(not (0.3−)0.5-1(−1.3) × bracts; pedicel length 2-3 mm (not 2−4(−6) mm) (Figure 1,4,5). The new variety is similar to *Veronica* ***hispidula*** **subsp.** *ixodes* (Boiss. & Balansa) M.A. Fisch. in terms of being annual, pedicel, and capsule features, but differs in some characters (Table 1).

Figure 5. Fruiting pedicels (patent and strongly hooked below capsule) (E), flower color (F), calyx, and style in mature capsule (G) seed structure and color (H) views of *Veronica hispidula* subsp. *hispidula* var. *bingolense*(from Holotype).

Şekil 5. Veronica hispidula subsp. hispidula var. bingolense'nin meyve pediseli (kapsülün aşağısı belirgin olarak kıvrılmış) (E) çiçek rengi (F), olgun kapsülde kaliks ve stylus (G) ile tohum yapı ve renk (H) görünümleri (Holotip'ten)

Description: **Annual,** erect, 8-13(-15) cm, usually branched above, **Stems** puberulent with upward-curved 0.05–0.2 mm hairs (sometimes lower parts glabrous), eglandular. **Leaves** 1(–2) pair, petiole 0–2 mm, lamina obovate – oblanceolate, or lanceolate–linear lanceolate, rarely elliptic, to 16 × 5.1 mm, entire, margins sparsely 5–6–celled glandular ciliated. **Raceme** 5–25–flowered, axis straight; eglandular–puberulent and glandular–pubescent with scattered 4-6-celled 0.3–0.5 mm glandular hairs. **Bract** lanceolate, glandular ciliate, herbacous. **Fruiting pedicels** 2–3 mm, 2–3 × bracts, horizontally patent and hooked vertically upwards below the fruit, pubescent with ± adpressed very short eglandular and 4–6–celled 0.3–0.5 mm glandular hairs. **Calyx** 2.5–4 × to 4 mm, the lobes united at the base about 1 mm, ovate-lanceolate or lanceolate, outer surface with 4–5 celled glandular hairs, as long as (rarely slightly shorter) or slightly longer than the capsule. **Corolla** blue, 2–3 mm diam. **Style** 0.2–0.3 mm long. **Capsule** hygrophytic, 3–3.5 × 3.5–4 mm, slightly shorter or equaling calyx, brownish, glandular-ciliate, otherwise usually glabrous; sinüs 1/2 ×capsule; base broadly truncate to subcordate; style 1/3 × sinus or shorter.

Seeds 20-35, elliptic to oblong, 1–1.2 x 0.4–0 ·6 mm, ± convex, smooth, ventrally with no chalazal podium but with an eccentric minute dot-like circular *depression;* sticky when wet. *Fl.&Fr. 6*–8. High mountain meadows, stream banks, 1900-2000 m.

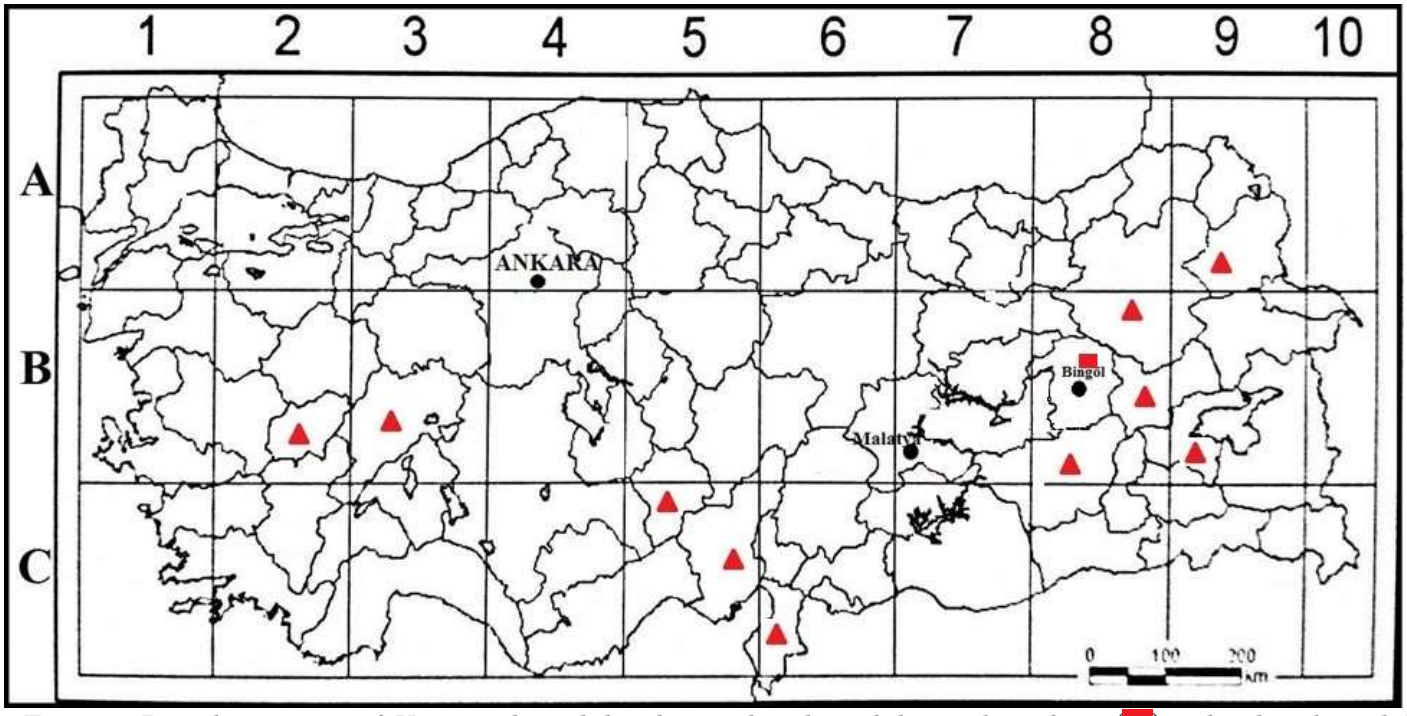

Figure 6. Distribution map of *Veronica hispidula* subsp. *subsp. hispidula var. bingolense* (■) and *subsp. hispidula var. hispidula* (▲) in Türkiye

Şekil 6. Veronica hispidula subsp. *subsp. hispidula var. bingolense* (■) ve *subsp. hispidula var. hispidula* (▲) 'nın *Türkiye'deki dağılış haritası*

Ecological prefenceres: *Veronica hispidula* Boiss. & A. Huet subsp. *hispidula* var. *bingolensis* is an endemic taxon distributed in a narrow area in the alpine parts of the mountainous area in the west-southwest of Bingöl province (Figure 6). This new variety is distributed along stream banks in higher elevations (1900-2000 m). While the flowering period is June-July; the fruiting period is between the end of July and August. Other important plants that develop in the area where the new taxon spreads are as follows; *Achillea biebersteinii* Afan., *A. millefolium* L. subsp. *millefolium, Agrostis olympica* (Boiss.) Bor, *Alopecurus arundinaceus* Poir., *Centaurea pterocaula* Trautv., *C. spectabilis* (Fisch. & C.A.Mey.) Sch.Bip. subsp. *microlapha* (Boiss.) Wagenitz, *Cirsium pubigerum* DC. var. *coniforme* Petr., *C. pubigerum* DC. var. *glomeratum* (Freyn & Sint.) P.H.Davis & Parris, *Crepis commutata* (Spreng.) Greuter, *Dactylis glomerata* L. subsp. *hispanica* (Roth) Nyman, *Deschampsia caespitosa* (L.) P.Beauv., *Elymus elongatus* (Host) Runemark subsp. *elongatus, Festuca gigantea* (L.) Vill., *F. pratensis* Huds., *Hypericum perforatum* L., *Lapsana communis* L. subsp. *intermedia* (M.Bieb.) Hayek var. *intermedia, Lythrum salicaria* L., *Lysimachia verticillaris* Spreng., *L. vulgaris* L., *Scrophularia umbrosa* Dumort., *Clinopodium vulgare* subsp. *vulgare*, *Myosotis alpestris* F.W. Schmidt subsp. *alpestris, M. sylvatica* subsp. *rivularis* Vestergr., Phleum *pratense* L., *Pilosella* x *macrotricha* (Boiss.) F.W.Schultz & Sch.Bip, *P. verruculata* (Link) Soják, *Poa longifolia* Trin., *P. pratensis* L., *P. trivialis* L., *Prangos ferulacea (L.) Lindl. P. platychlaena* Boiss. subsp. *platychleana, Pulicaria dysenterica* (L.) Bernh. subsp. *dysenterica, Scrophularia umbrosa* Dumort., *Senecio othonnae* M.Bieb., *Tanacetum parthenium* (L.) Sch.Bip., *Urtica dioica* L. subsp. *dioica Verbascum oreophilum* var. *joannis* (Bordz.) Hub.-Mor., *Veronica anagallis-aquatica* L., *V. biloba* L., *V. oxycarpa* Boiss.

Veronica hispidula subsp. *hispidula* var. *bingolensis* is similar to *V. hispidula* subsp. *hispidula* var.*hispidula* in that it is an annual, its general appearance, its fruit characteristics, and its fruit pedicel is hooked vertically upwards below the fruit at the tip. However, the new taxon; differs from *V. hispidula* subsp. *hispidula* (var. *hispidula*) and other close subspecies in terms of leaf characteristics, bract indumentum, pedicel/bract length ratio, and style length (Table 1 and Figure 1,4,5).

Specimens Seen: ***Veronica hispidula*** subsp. ***hispidula*** var. ***bingolensis*** Türkiye. B8 Bingöl: 5 km south of Ortaköy village, 25 km west-southwest of Bingöl, high mountain meadows, streamside, 1900-2000m a.s.l. , 03.08.2023,

L.Behçet 21131 (holo. BIN, iso. BIN). ***Veronica hispidula*** subsp. ***hispidula*** (var. ***hispidula***) Libani, in excelsis jugi Sanin, 2200-2300 m, 16/6/1897, Bornmüller J. 1219 (BR0000035779261 Virtual image!), The isotype of ***Veronica hispidula*** Boiss.& A.Huet subsp. ***hispidula*** (var. *hispidula*) (syn.: *Veronica glaberrima* Boiss.&Balansa var. *glanduligera* Bornm.)in Herbarium Hamburgense (HBG 519109 Virtual image!)

The number of members of the *Veronica* genus in Türkiye reached 108 taxa with the addition of the new variety, and 36(33.33%) of these taxa are endemic to Türkiye (Güner,2012, Yaylaci *et al.* 2018).

Table 1. Comparison of the diagnostic features of *Veronica hispidula* subsp. *hispidula* var. *bingolensis* with the distinguishing characters between *Veronica* taxa close to this taxon.

Çizelge 1. Veronica hispidula subsp. hispidula var. bingolensis'in diagnostik özellikleri ile bu taksona yakın Veronica taksonları arasındaki ayırt edici karakterlerin karşılaştırılması

Characters / Karakterler	***Veronica hispidula* subsp. *hispidula* var. *bingolensis***	***V. hispidula* subsp. *hispidula* (var. *hispidula*)**	***V. hispidula* subsp. *ixodes***
Plant height(cm) / Bitki boyu	5–11	2–8 (–15)	2–8 (–15)
Leaf lamina/ Yaprak laminası	to **16 × 5.1 mm**, sparsely **5–6-celled glandular ciliated**	4–12 × **1.5–3.5 mm**, **glabrous**	4–12 × **1.5–3.5 mm**, **glabrous**
Position of the fruit pedicel at the tip and the ratio of pedicel length to bract length / Mevve pediselinin uçta pozisyonu ve pedisel brakte oranı	hooked vertically upwards below the fruit, **2–3 × bracts**	hooked vertically upwards below the fruit, **(0.3–) 0.5–1(–1.3) × bracts**	hooked vertically upwards below the fruit, **1–1.5 × bracts**
Fruit pedicel length(mm) / Meyve pedisel uzunluğu	2–3	2–4(–6)	4–6
Corolla color/Korolla rengi	blue	blue	white
Style length(mm)/ stylus uzunluğu	**0.2–0.3**	**0.3–0.6**	**0.8–1.1**
Seed /Tohum	bright yellow, smooth	bright yellow, smooth	brownish

Author's Contributions

Single author

Statement of Conflict of Interest

The study has a single author.

REFERENCES

Advay, M., Albach D.C. & Doostmohammadi M. (2024) A new species of *Veronica* (Plantaginaceae) from Western Iran.*PhytoKeys 237*, 219-230

Albach DC, Martinez-Ortega MM, Chase MW (2004) *Veronica*: Parallel morphological evolution and phylogeography in the Mediterranean. *Plant Systematics and Evolution 246*,177–194. https://doi.org/10.1007/s00606-004-0148-9

Behçet, L., (2019). Bingöl ekolojisi ve bitki çeşitliliği (Ecology and plant diversity of Bingöl)(Sözlü tam metin yayımlanmış bildiri). *Uluslararası Arıcılık Araştırmaları Ve Sürdürülebilir Kırsal Kalkınma Stratejileri Kongresi, Bingöl, Türkiye*,11-13 Ekim 2019, ss. 1-16.

Behçet, L. & Altınsoy, İ. (2023). *Clinopodium debile* (Bunge) Kuntze (Lamiaceae), A New Record for the Flora of Türkiye. *KSU J. Agric Nat. 26* (3), 504–510.

Behçet, L. & Cengiz, H. (2023a). *Pimpinella major* (Apiaceae); a New Record for the Flora of Türkiye and Contributions to Its Taxonomy. *KSÜ Tarım ve Doğa Dergisi 26* (5), 1048-1055.

Behçet, L. & Cengiz, H. (2023b). On the Presence and Distribution of *Lycopus exaltatus* (Lamiaceae) in Türkiye. *KSU J. Agric Nat. 26* (6), 1253-1258.

Behçet, L. & Çetin, A. (2024) A New Taxon of *Stachys* (Lamiaceae) from Bingöl -Türkiye. *KSU J. Agric Nat. 27* (1), 101-107

Behçet, L. & Gülbasan, İ.H. (2024) A New Gigantic *Vicia* (perennial Wild vetch) (Fabaceae) Taxon From East Anatolia, Türkiye. *KSU J. Agric Nat. 27* (2),325-332

Behçet, L. & İlçïm, A. (2015). *Paracaryum bingoelianum* (Boraginaceae), a New Species from Turkey. *Turkish Journal of Botany 39* (2), 334–340.

Behçet, L., İlçim, A. & Yapar, Y. (2017). *Centaurea bingoelensis* (Asteraceae), a New Species from Turkey. *Turkish Journal of Botany 41,* 180–188.

Behçet, L. & Yapar, Y. (2019). Rediscovery of the lost endemic *Micromeria cymuligera* (Lamiaceae) in Eastern Anatolia-Turkey. *Nordic Journal of Botany 37* (10), 1–6.

Behçet, L.,Yapar, Y. & Olgun, Ş. 2019. *Prangos aricakensis* (Apiaceae), a new species from eastern Turkey. *Phytotaxa 401* (1), 055–063 . doi.org/10.11646/phytotaxa.401.1.5

Behçet, L. & Yapar, Y. (2020). *Lactuca anatolica* (Asteraceae: Lactucinae), a New Species from Eastern Anatolia (Turkey). *Phytotaxa 455* (4), 287–294.

Behçet, L. & Yapar, Y. (2021). *Bromus orientalis* (Poaceae: B. sect. Bromopsis), a New Species from Turkey. *Nordic Journal of Botany 39* (4), 1–7.

Behçet, L. & Yapar, Y. (2023). A new species *Eremogone* (Caryophyllaceae) from Türkiye. *Phytotaxa 633* (1), 1-8.

Davis, P.H. & Plitmann,U. (1970). *Vicia* L. in: Davis PH (ed.) *Flora of Turkey and the east aegean islands*, vol: 3, Edinburgh Univ. Press, Edinburgh, pp. 274–325.

Duran, A., Behçet, L. & Öztürk, M. (2015). *Diplotaenia bingolensis* (Apiaceae), New Species from East Anatolia, Turkey. *Plant Syst Evol 301*, 467–478.

Doğan, M., Behçet, L., Sinan,A.(2015). *Pseudophleum anatolicum*, a New Endemic Species of *Pseudophleum* (Poaceae) from East Anatolia, Turkey. *Systematic Botany 40* (2), 454–460.

Fischer M.A. (1978). *Veronica* L. in: Davis PH (ed.) *Flora of Turkey and the east aegean islands*, Vol: 6, pp. 689-753, Edinburgh Univ. Press, Edinburgh

Fischer M.A. (1981). *Veronica* L. in: Rechinger KH(ed.) *Flora Iranica* Vol.:147, pp. 52-165 (Akademische Druck-u. Verlagsanstalt : Graz, Austria)

GBIF.org (2024), GBIF Home Page. Available from: https://www.gbif.org [26.08.2024].

Güner, E.D.(2012) *Veronica* L. In:Güner A., Aslan, S., Ekim, T., Vural, M. ve Babaç, M. T(eds.) *Türkiye Bitkileri Listesi (Damarlı Bitkiler).* İstanbul: Nezahat Gökyiğit Botanik Bahçesi ve Flora Araştırmaları Derneği Yayını, pp.677-684

Hamzaoğlu, E., Behçet, L. & Yapar, Y. (2020). A New Suffruticose Taxon of *Dianthus* (Caryophyllaceae) from Bingöl, Turkey. *KSÜ Tarım ve Doğa Dergisi 23* (6), 1529–1534.

İlçim, A., & Behçet, L. (2016). *Astragalus topalanense* (Fabaceae), a New Species from Turkey. Turkish Journal of Botany *40*, 74–80.

Meise Botanic Garden (2024). Meise Botanic Garden Herbarium (BR). Version 1.32. Meise Botanic Garden. Occurrence dataset https://doi.org/10.15468/wrthhx accessed via GBIF.org on 2024-08-26. https://www.gbif.org/occurrence/4072772974

Pınar, S. M., Fidan, M., Behçet, L. & Eroğlu, H. (2018). A New Record for The Flora of Turkey: *Onopordum cinereum* Grossh. (Asteraceae). *Erzincan University Journal of Science and Technology 11* (1), 85-91.

Sinan, A., Behçet, L. & Yapar, Y. (2021). *Ranunculus solhanensis* (Ranunculaceae), a new species from eastern Turkey. *Phytotaxa 497* (2), 157–164.

Yapar Y.& Behçet L., 2022. *Pentanema divaricatum* Cass. (Inuleae, Asteraceae), A New Record for the Flora of Turkey . *KSÜ Tarım ve Doğa Dergisi 25* (6), 1401-1405

Yapar Y.& Behçet L., 2020. A new subspecies of *Ornithogalum malatyanum* (Asparagaceae: Scilloideae) from eastern Anatolia, Turkey. *Nordic Journal of Botany 38* (11),1-5

Yaylaci,Ö.K., Sezer,O., Özgişi, K., Öztürk,D., Potoğlu Erkara, İ., Koyuncu, O. &Ocak, A. (2018). A new *Veronica* (Plantaginaceae) species from Central Anatolia, Turkey.*Phytotaxa 362* (1), 55-67.

Yıldırımlı, Ş. (2005). The Chorology of the Turkish species of Scrophulariaceae family. *Ot Sistematik Botanik Dergisi 19* (1), 151-211.