



New species and new hybrid of genus *Verbascum* L. (*Verbascum mecit-vuralii* Karavel. *Verbascum x ersin-yücelii* Karavel.) from Turkey

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Abstract

Verbascum mecit-vuralii Karavel. **sp. nov.** is described firstly for science world from Turkey. The diagnostic morphological characters of the these new species and the closely related other species *Verbascum oreophilum* and *V. pyramidatum* are discussed. Moreover, distribution maps of two new species and the related species of it are given. New hybrids of *Verbascum* (Scrophulariaceae) are described. *Verbascum x ersin-yücelii* Karavel. **nothosp. nova** (= *V. heterobarbatum* Hub.-Mor. x *V. caudatum* Freyn & Bornm.) from ANK Herbarium.

Key words: *Verbascum*, Trabzon, Ankara, hybrid, Turkey

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Türkiye'den *Verbascum* L. cinsinden yeni tür ve hibrit. (*Verbascum mecit-vuralii* Karavel. *Verbascum x ersin-yücelii* Karavel.)

Özet

Türkiye'den bilim dünyası için *Verbascum mecit-vuralii* Karavel. **sp. nov.** tanımlanmıştır. Ayırıcı morfolojik karakterler yakın türlerle *Verbascum oreophilum* ve *V. pyramidatum* tartışılmıştır. Ayrıca yayılış haritaları yakın türlerle birlikte verilmiştir. *Verbascum x ersin-yücelii* Karavel. **nothosp. nova** (= *V. heterobarbatum* Hub.-Mor. x *V. caudatum* Freyn & Bornm.) yeni hibrit olarak ANK herbaryumundan tanımlanmıştır.

Anahtar kelimeler: *Verbascum*, Trabzon, Ankara, Hibrit, Turkey

1. Introduction

Verbascum Linnaeus (1753: 177) (Scrophulariaceae) includes about 360 species in the world (Mabberley, 2008). In Turkey, with the additional 130 hybrids, the genus is represented by 246 species, 6 imperfectly known or doubtful records (Huber-Morath, 1978, Davis *et al.* , 1988, Karavelioğulları, 2012, 2014a, 2014b). The endemism ratio of the genus is very high with 196 endemic species (80%) (Karavelioğulları, 2012, 2014a, 2014b).

Verbascum is divided into two sections (Murbeck 1933): *Aulacospermae* Murbeck (1933: 593) and *Bothrospermae* (Murbeck, 1933: 82). The most important difference between these is the seed morphology. In sect. *Aulacospermae*, the seeds are longitudinal corrugated, while in sect. *Bothrospermae* the seeds are transversal corrugated alveolate. All Turkish species of *Verbascum*, belong to sect. *Bothrosperma* (Murberck, 1933; Huber-Morath, 1971).

The first revision of Turkish *Verbascum* for Flora of Turkey was carried out by Huber-Morath (1978). Fourteen species and six hybrids were later described and three new records have been identified (Karavelioğulları, 2009, 2012, 2014a, 2014b).

2. Materials and methods

Then, during the field research studies to Trabzon province in 2009 (within the TÜBİTAK 106T510 project) an unusual population of *Verbascum* was established. At the first glance, it seemed to be close to *Verbascum*

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oreophilum ve *V. pyramidatum* were observed . They are formally described here. All specimens were cross-checked with the keys provided by Huber-Morath (1978) and the *Verbascum* accounts given in various relevant literatures such as Fedchenko (1955), as well as all specimens of this new species have been cross checked with the material kept at various herbaria BRNU!, GB!, B!, LE!, KW!, E (Photo!), GAZI!, EGE!, ISTF!, ISTE!, HUB!, ANK!, VANF!, KNYA! (Holmgren *et al*, 1990) (Table 1). The abbreviations of the authors of plant names were checked from Brummitt and Powell (1992) and <http://www.ipni.org/index.html>. Also, the threat category assessment of the new species was made according to IUCN criteria (IUCN, 2013). During works in ANK Herbarium new hybrid were observed. This is formally described here. *Verbascum x ersin-yücelii* Karavel. (= *V. heterobarbatum* Hub.-Mor. x *V. caudatum* Freyn & Bornm.). New hybrids are mentioned both Murbeck's monography (1933) and Huber-Morath's works (1971, 1978).

3. Results and discussion

Verbascum mecit-vuralii Karavel. **sp. nov.**—Figures 1 and 2.—Vural sığırkuyruğu

Type: Turkey, A8 Trabzon: Hamsiköy, 650–700 m, 15 June 2009, FAK 3875. (Holotype: ANK, Isotype: GAZI).

Description: Biennial, 60–100 cm, with densely stellate, short stalked glands throughout. Basal leaves 10–50 x 5–30 cm, lanceolate-oblong, semicordate, crenate, acute; with petiole 5–15 cm. Stem branched at base. Cauline leaves 5–10 x 3–6 cm, lanceolate semicordate, crenate acute. Inflorescence panicle. Bracts 30–45 x 4–10 mm, ovate to linear-lanceolate, cordate, entire, acuminate. Pedicels 10–20 mm, ebracteolate. Calyx 3–6 mm, almost divided to the base, lobes oblong-lanceolate, acute. Corolla 15–30 mm diam, yellow, lobes 5–10 mm, with pellucid glands, stellate and glandular hairy outside. Stamens 4, 7–9 mm. Filaments 6–7 mm, with mixed whitish-yellow and purplish-violet woolly, two anterior filaments glabrous near apex. Anthers 1–2 mm, reniform. Ovary 1–2 x 0.5–1 mm, ovate. Style 6–7 mm, filiform. Stigma 2 mm, capitate. Capsule 4–6 x 2–5 mm, ovate.

3.1. Phenology

Flowering from June to early July. Capsules ripening from the beginning of August.

3.2. Examined specimens

Verbascum oreophilum K. Koch var. *oreophilum*

A4 Kastamonu: Küre mountain, Pınarbaşı, 650 m, 23 August 2002, N 41° 36' 15", E 33° 07' 11", FAK 3397 (GAZI); Azdavay, Kayabaşı village, Nalbantoğlu, Çatak canyon, 600–700 m, 25 August 2002, FAK 3403 (GAZI, G, EGE); Tosya-Gökçeviz village 5. km, 1000–1300 m, 25 Jun 2003, FAK 3426 (GAZI); A9 Kars: Akçay to Cumaçay E. of Kağızman, 2200 m, 17 June 1966, Davis. 46735 (E photo); 10 km S. of Akçay, 1760 m, 29 June 1984, M. Nydegger 18490 (GAZI); Artvin: Ardanuç, Kutul, 14 June 1947, M. Heilbronn & M. Başaran (ISTF); Ardanuç, Kurdevan mountain, 1900–2900 m, 29 June 1982, N. Demirkuş 1646 (HUB); B6 Yozgat: Akdağmadeni, Ortaköy, c. 1300 m, 07 June 1979, T. Ekim & A. Düzenli 4261 (ANK); B8 Erzurum: 29. km from Erzurum to Pasinler, 1800 m, 12 June 1966, Davis 46421 (E photo); Palandöken mountain, Terman, 2050 m, 11 June 2002, N 39° 41' 32", E 41° 23' 42", FAK 3350 (GAZI, ANK, ISTE); Karaköse 54. km. c. 2300 m, 20 June 1956, H. Birand 574 (ANK); Bingöl: Karhova-Çat, 2250 m, 27 June 1970, T. Baytop 18281 (ISTE); B9 Van: d. Çatak, Kavuşşahap mountain, 2700 m, Davis 23067 (E photo); Bahçesaray-Uçum 4. km, 1560 m, 07 Jun 2001, N 38° 05' 64", E 42° 48' 12", FAK 3044 (GAZI); Bitlis: Bitlis-Tatvan, 1730 m, 30 Jun 1954, Davis 22340 (E photo); *ibid.*, 1730 m, 30 June 1954, Davis & O. Polunin 22340 (ANK); *ibid.*, Tepe, 1600–1700 m, 14 September 1995, Y. Gemicici 16713 (EGE); Kotum, Karz Dag above Kamer, 2300 m, 24 August 1954, Davis & O. Polunin 24597 (ANK); Tuğ, 1780 m, 26 June 1956, H. Demiriz 3520 (ISTF); Gevaş-Tatvan, 2023 m, 13 June 2002, N 33° 22' 51", E 42° 46' 27", FAK 3373 (GAZI); Ağrı: Karaköse-Tutak, Murat river, Batmış-Aşağıarabalı, 1500 m, 24 June 1956, H. Demiriz 3471 (ISTF); Karaköse-Tutak, Hamur, 1650 m, 24 June 1956, H. Demiriz 3457 (ISTF); B10 Van: Özalp, Yukarı Balçıklı village, Beştepe, 2311 m, 18 October 1997, F 5561 (VANF); C10 Hakkari: Van-Hakkari 113. km, c. 2400 m, 19 June 1956, H. Birand & K. Karamanoğlu 471 (ANK).

var. *joannis* (Bordz.) Hub.-Mor.

A9 Kars: Kağızman, Paslı-Çilehane, 1600 m, 13 June 1981, O. Güneş 2009 (HUB); 10 km S. of Sarıkamış, 21 June 2001, N 40° 15' 46", E 42° 38' 14", FAK 3140 (GAZI); B7 Erzincan: Keşiş mountain above Cimin, 2500–2600 m, 26 June 1957, Davis & Hedge 31664 (ANK, E photo); Spikordağı, Kırklar-Sipikor, 2225 m, 10 June 2001, N 39° 50' 51", E 39° 32' 17", FAK 3326 (GAZI, HUB, ANK, EGE); B8 Bingöl: Bingöl-Karhova, 12 km S. of Karhova, 1700 m, 19 June 1982, M. Nydegger 17251 (GAZI); Solhan-Muş, 23 August 1969, T. Gözler 15837 (ISTE); Muş: Cingilli, 15 June 1956, H. Birant 343/328 (ANK); Solhan-Muş 12. km, Buğlan, Gediklitepe, 13 June 2001. 1640 m, FAK 3119

(GAZI, G); Erzurum: Palandöken Dağı, Terman road, 2050 m, 11 June 2002, N 39° 41' 32", E 41° 23' 42", FAK 3351 (GAZI); B9 Erzurum: 5 km W. of Karayazı, Jelink 2401 (E photo); Van: Muradiye waterfall, 1900 m, 17 June 2001, FAK 3129 (GAZI, ISTE); Muradiye, Adaklı village-Süphan, 2500 m, 14 June 1997, MÜ 1538 (VANF); Muradiye, Köseveli mountain, 2300 m, 17 June 1997, MÜ 695 (VANF); Ağrı: Taşlıçay, Balıklı Gölü, 2350–2400 m, 18 June 2001, FAK 3131 (GAZI); C9 Van: Çatak, Dalbastı villag-Belbuka mountain pasture, 1800 m, 28 June 2003, B. Bani 2435; B10 Iğdır: Suveren-Çili village, 1750 m, 19 June 2001, FAK 3135 (GAZI); C4 Konya: Seydişehir-Şahinkaya, 1700, 21 Jun 1980, H. Ocakverdi 1107 (KNYA); C6 Adana: Karsanti-Hızır (Pos forest), c. 1180, 28 Jun 1973, E. Yurdakulol 22 (ANK); C10 Hakkari: Sat mountain above Veregöz, 1800–2000 m, Davis 45561 (E photo); Yüksekova-Esendere, 28. km, Altınbaşak village, 1180 m, 06 June 2001, N 37° 42' 41", E 44° 31' 60", FAK 3036 (GAZI); ibid., 18. km, 2140 m, 23 June 1983, M. Nydegger 18421 (GAZI, E photo).

Verbascum pyramidatum Bieb.

A4 Kastamonu: İnebolu to Küre, 450 m, D. 21673 (ANK); Çankırı: Top of Ilgaz Da, 2300 m, Nydegger 11348 (GAZI); A5 Çorum: Kırkdilim, Boğazi, 22km from Çorum to Osmaniç, 1120–1250 m, 24 Jun 1955, Simon (ANK); A6 Samsun: S. of Samsun, 300 m, Krause 3881 (G photo); Tokat: 16 km S. of Tokat, 1120 m, Hub.-Mor. 12931 (G photo); Ordu: 25 km from Ordu to Gököy, 680 m, Hub.-Mor. 14741 (G photo); Sivas: 16 km from Zara to Şerefiye Y, 1500 m, Hub.-Mor. 11805 (G photo); A7 Giresun: below Tamdere, 1600 m, D. 20636; Trabzon: hills above Trabzon, 14 Jun 1890, Sammier & Levier (Type of *Verbascum anatolicum*) (KW); A8 Rize: 25 km W. of Rize, s.l, M. & D. Zohary 1295; Erzurum: 8 km from İspir to Rize, 1500 m, Stn. & Hend. 6247 (LE)

Table 1. Diagnostic characters of *Verbascum mecit-vuralii* with the related *V. oreophilum* and *V. pyramidatum*

Characters	<i>V. mecit-vuralii</i>	<i>V. oreophilum</i> *	<i>V. pyramidatum</i> *
Basal leaves	10–50 x 5–30 cm	10–45 x 3–25 cm	7–40 x 3–15 cm
Pedicels	10–20 mm	4–8 mm	3–8 mm
Bracts	30–45 x 4–10 mm	3–7 x 2–4 mm	8–15 x 5–10 mm
Calyx	lobes oblong-lanceolate	lobes oblong	lobes oblong
Corolla	glandular and stellate tomentose hairy outside	stellate tomentose outside	stellate tomentose outside
Stamens	4	4–5 (–7)	5(–4)
Capsule	ovate, glandular hairy .	ovate-elipsoid stellate-tomentose	elliptic to ovate, stellate-tomentose,

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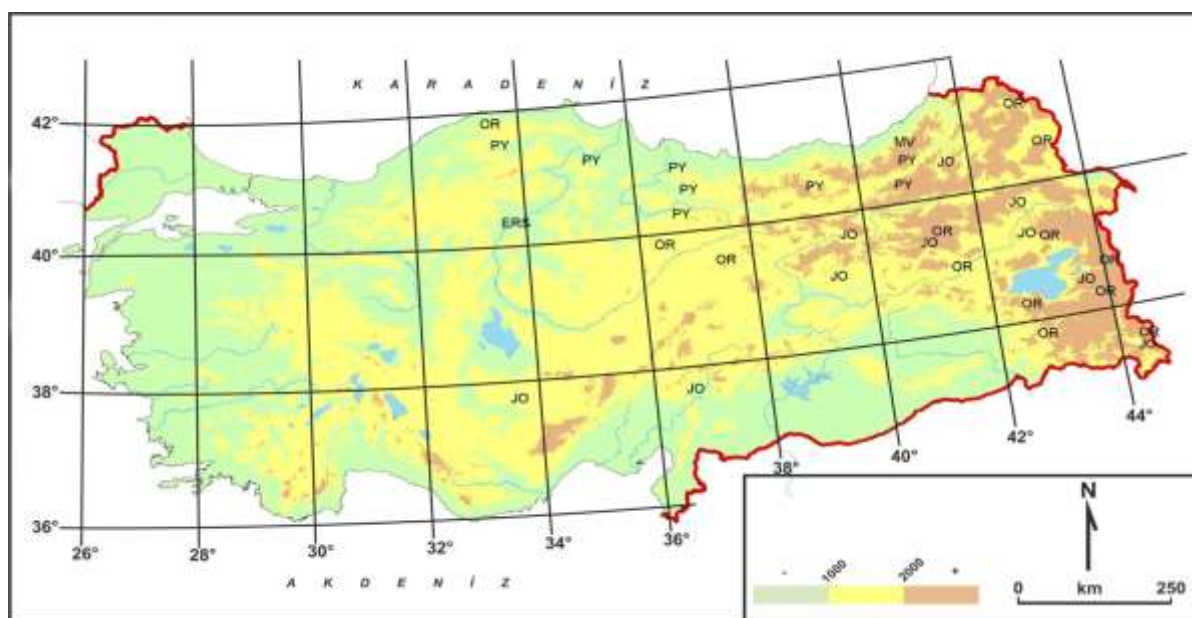


Figure 1. Distribution map *V. mecit-vuralii* (MV), *V. oreophilum* var. *oreophilum* (OR), *V. oreophilum* var. *joannis* (JO), *V. pyramidatum* (PY), *Verbascum x ersin-yucelii* (ERS)



Figure 2. *Verbasicum mecit-vuralii* Karavel. (FAK 3875)

Verbasicum x ersin-yucelii Karavel. **nothosp. nova** (= *V. heterobarbatum* Hub.-Mor. x *V. caudatum* Freyn & Bornm.)—Figures 1.—Yücel sığirkuyruğu.

Type: Turkey, A4 Ankara: Kalecik, nr. Çukur Köy, Kılınç 1975 (Holotype ANK).

Description: Biennial herb, c. 90 cm tall, similar in habit to *V. heterobarbatum*, indumentum greynish floccose-tomentose. Stem terete, branched. Basal leaves oblong-lanceolate (as in *V. caudatum*) greynish, sparsely hairy above, floccose-tomentose beneath of *V. heterobarbatum*. Upper cauline leaves cordate-ovate to ovate, resembling the form and size of leaves of *V. heterobarbatum*. Inflorescence with flowers not so 2–4 (as in *V. caudatum*). Bracteols 2. Pedicels 1–2 mm. Calyx floccose-tomentose, interspersed with microglands. Corolla 25–35 mm, without pellucide glands, pubescent outside. Stamens 5, 3 posterior filaments with whitish-yellow wool, two anterior anthers decurrent, thereof with a line of purple-violet hairy (as in *V. heterobarbatum*). Ripe capsules not developed, ovate, tomentose.

3. 3. Examined specimens

Verbasicum heterobarbatum

Type: [Turkey B4] Ankara: d. Çankaya. Wegrund 9 km südlich Gölbaşı, 870 m, 1 June 1956, Huber-Morath 14075 (holo. Hb. Hub.-Mor.); A4 Ankara: Kalecik, nr Çukur Köy, Kılınç 1975: 141; B4 Ankara: Beynam, D. 13005 (ANK).

Verbasicum caudatum

Type: [Turkey B5 Kayseri/Yozgat] Cappadocia, ad vias inter et Caesaream (Kayseri) et Yaszad (Yozgat), inter pagos Köprüzköi et Keller, 1300 m, 23 June 1890, Bornmüller 2181 (holotype BRNU, isotype B); A4 Ankara: Ankara airport, A. & T. Baytop (ISTE 15211); B4 Ankara: Ankara to Bala, Beynam forest, Akman 1969: 446 (ANK); B5 Yozgat: 17 km S. W. of Yozgat, 1070 m, Hub.-Mor. 12946; Kayseri: Himmetdede between Kayseri and Kirşehir, 1170 m, Hub.-Mor. 14771; B6 Kayseri: Sultanhane, 65 km S. of Şarkışla, 1210 m, Hub.-Mor. 11818; Malatya: Darende, 13 June

1906, G. & B. Post (ANK); B7 Malatya: 3 km E. of Malatya, 920 m, Hub.-Mor. 8838; Elaziğ: Charput (Harput), nr Apaud, Sint. 1889: 801; C5 Niğde: Niğde, 1300 m, Krause 2656 (ANK).

The hybrid plants grow together with their parent and their occurrence is limited by the distribution of the endemic *V. heterobarbatum* to the Central Anatolia part of the A4 square.

3.4. Red list assessment

Known only from type locality. The extent of occurrence was nearly as 10 km². There new species are distributed in a single location. *V. mecit-vuralii* grows on rocky place. Its' habitat continues to decline due to agricultural activities and other local uses (criteria B1ab (iii) under CR). The threat category of *V. mecit-vuralii* is suggested as CR [B1ab (iii)].

3.5. Etymology

This is one of the new species is named in honour of the Turkish Legend Botanist Prof. D. Mecit Vural. Hybrid is named in honour of the Turkish Ecologist Prof. Ersin Yücel.

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