Verbascum haraldi-adnani (Scrophulariaceae), a new chasmophytic species from SW Anatolia, Turkey

Abstract

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Verbascum haraldi-adnani is described as a species new to science and illustrated. The habitat conditions of this local endemic species growing in Yılanlı Dağ (Muğla province) in SW Anatolia, Turkey, and its conservation status are considered. V. haraldi-adnani appears to be most closely allied to V. luciliae. Its affinities with this and other related or similar species are discussed.

Additional key words: local endemic, rock plants, taxonomy, Muğla province, Yılanlı Dağ.

Introduction

Verbascum L. is one of the largest genera in Turkey, with c. 238 species and a high species endemism level (c. 80 %). Anatolia represents the centre of diversity and evolution in Verbascum (Murbeck 1925; Huber-Morath 1978; Vural & Aydoğan 1993; Davis & al. 1988; Ekim 2000; Karavelioğullar & al. 2004, 2006; Kaynak & al. 2006; Parolly & Tan 2007). All representatives of this genus in Turkey belong to V. sect. Bothrosperma Murb. (Huber-Morath 1978). In his “Flora of Turkey” account, Huber-Morath (1978) placed all Verbascum species with 4 stamens and a bifid placentation into the informal “group A”, where he recognised 29 taxa. This view was largely confirmed by Karavelioğullar & Aytaç (2008), who in their recent revision of this group provide partly amended descriptions of the species. They suggest slight taxonomic adjustments, accepting 25 species, three subspecies and four varieties, to which V. yurtkuranianum Kaynak & al. (2006) should be added. The total number of Turkish endemic Verbascum species belonging to “group A” is 18.

In July 2007, during bryosociological studies in SW Anatolia, an uncommon Verbascum was observed on Yılanlı Dağ in the province of Muğla. In “Flora of Turkey” (Huber-Morath 1978), it keyed out as Verbascum luciliae (Boiss.) Kuntze but clearly differed in a number of important
Fig. 1. *Verbascum haraldi-adnani* – habit. – Type material (Turkey, C2 Muğla: Yalanlı Dağı, 1250 m, Kürschner & al. 07-269).
features. Comparing the material with related taxa and checking the Verbascum accounts in the Floras of the neighbouring countries (Bouloumoy 1930; Rechinger 1943; Thiebaut 1953; Ferguson 1972; Feinbrun-Dothan 1978; Huber-Morath 1980, 1981; Meikle 1985; Raus 1991) and the relevant monographs (Murbeck 1925; Huber-Morath 1971) suggested the novelty of the species from Yılanlı Dağı. One year later, as a response to a critical review of a previous version of the present paper, additional field work yielded further material and observations, which confirmed our earlier conclusions. We thus describe here this plant as a new species, bringing the total number of Verbascum species known from Turkey to 239.

Verbascum haraldi-adnani Parolly & Eren, sp. nov. – Fig. 1-2
Holotype: Turkey, C2 Muğla, Yılanlı Dağı E of Muğla along the way to Akyer-Göktepe, 37°19'34.2''N, 28°30'30.9''E, 1250 m, siliceous rock in Pinus nigra forest, 19.7.2007, Kürschner 07-269, Erdağ & Eren (AYDN; isotypes: B, herb. Kürschner, herb. Parolly).

Habitu Verbascoc laucilae similis et huic speciei proxima, sed imprimis differt indumentum virgente dominante glanduloso-tomentoso (non canescente eglanduloso et glanduloso), floribus minoribus (10-11[-12] non 13-20 mm longis) et filamentis brevioribus (2.5-3 non 6-7 mm longis).

Shortly glandular-tomentose perennial herb, 20-40 cm tall. Rootstock branched, woody, stout, up to 1 cm in diameter, with a blackish brown bark easily peeling off, supporting 1-2 flowering stems per branch and year. Stems arcuate-ascending, slender, 1.5-2 mm in diameter at base, equally leafy throughout, at base with a dense indumentum of many short, glandular and much fewer longer, white eglandular hairs, otherwise glandular-pubescent. Leaves bright green, becoming increasingly simpler and smaller upwards; with the exception of a few longer eglandular hairs along the leaf margins and on the petioles, uniformly with short, glandular hairs on both surfaces, but weaker so on the upper surface; basal leaves often weathered at anthesis, petiolar remains present; lower stem leaves narrowly ovate to lanceolate, 40-50 × 14-24 mm (including the 8-12 mm long petiole), acute, pinnatisectly divided into a large, dentate, coarsely serrate to irregularly incised terminal lobe and 1-2(-3) pairs of distant lateral lobes with dentate margins, each tooth mucronulate to sharply pointed; middle stem leaves with shorter petioles, upper subsessile, smaller and less divided; uppermost stem leaves merging into bracts, lanceolate, sessile, almost entire. Inflorescence 10-30-flowered, 10-15 cm long and densely short-glandular hairy raceme, bracteate throughout. Pedicels patent, delicate, (10-)12-15 mm long. Flowers hermaphrodite, 10-11(-12) mm across, slightly zygomorphic. Bracts (from base to top) ranging from lanceolate to almost subulate, lowermost up to 8 × 2 mm. Bracteoles absent. Calyx divided almost to base, equally 5-lobed; lobes narrowly ovate, c. 3 × 1.2-1.5 mm, acute, green and glandular-pubescent on both surfaces. Corolla rotate, 5-lobed; tube short, yellow; lobes rounded, slightly unequal, c. 4 × 3.5 mm, bright yellow, sparsely glandular-pubescent outside. Stamens 4, all fertile, isandric; filaments free, 2.5-3 mm long, purplish, with dense, yellowish white wool right up to anthers; anthers introrse, reniform, c. 1 mm, yellow. Ovary 2-locular; style terminal, filiform, 5-7(-8) mm long. long exerted, papillose at margin; stigma clavate. Capsule globose, 3-4 × 3-4 mm, glandular-pilose, glabrescent, pale brown. Seeds c. 0.7-1 mm long, blackish.

Eponymy. – We are glad to name the new Verbascum after our friends and colleagues Prof. Dr Harald Kürschner, Systematische Botanik & Pflanzengeographie, Freie Universität Berlin, and Assoc. Prof. Dr Adnan Erdoğan, Botany section, Adnan Menderes University Aydın, who were attracted by this saxatile beauty while searching for bryophytes.

Distribution, site ecology and IUCN threat category. – The eye-catching Verbascum haraldi-adnani seems to be a very local endemic, which is only known from a single locality. It grows, in various exposures, on a few large boulders in a rock-strewn black pine forest (Pinus nigra var. caramanica (Loudon) Rehder) at an altitude of c. 1250-1300 m. As a true chasmophyte, V. haraldi-adnani grows in the crevices of siliceous rocks (orthogneiss), both in the deep shade of
boulders and at sunny places (Fig. 2A). Besides two habitat-vague vascular plants (Poa bulbosa L. and a sterile Festuca species), associated species include mostly silicolous mosses such as Grimmia lisae De Not., G. trichophylla Grev., Hedwigia stellata Hedenäs, Homalothecium sericeum (Hedw.) H. Rob., Hypnum cupressiforme Hedw. and Pterogonium gracile (Hedw.) Sm.

We do not have much information about the population size of Verbascum haraldi-adnani, but during the 2008 field survey c. 35 flowering and fruiting individuals were observed on a limited number of rocks scattered in the forests. Further populations could not be traced. Hence, we strongly recommend placing V. haraldi-adnani in the IUCN category “Critically Endangered (CR),” because the estimated whole range is less than 10 km² (Criterion B2) and the population size of the species is estimated to be lower than 50 mature individuals (Criterion D; IUCN 2001).

On 5 July 2008, the population was in late flower, so that it was possible to collect both flowering and fruiting material. In July 2007, the few plants recorded were still mostly in bud.

Additional material seen (paratypes). – TURKEY: C2 Muğla: Yilanlı Dağı, along the way to Akyer-Göktepe, Ikizhasan Mevkii, 37°19’32.3”N, 28°30’33.1”E, 1290 m, siliceous rock in Pinus nigra forest, 5.7.2008, Eren 164/08 & Ağcağil (AYDN, B, herb. Parolly).

Related and similar species. – The unique combination of characters (a glandular pubescent indumentum with the occurrence of scattered eglandular hairs confined to the lower portion of stem and the margins of lower leaves; narrow bracts; very small flowers with short filaments and comparatively long styles, see Fig. 2B) makes Verbascum haraldi-adnani a distinct and easy-to-identify species. In technical respects, it approaches a group of Celsia type Verbascum species with lyrate to pinnatisect leaves and capsules without keels, which key out in lead 9 of the informal Verbascum “group A” in “Flora of Turkey” (Huber-Morath 1978). Omitting those species...
| Table 1. Comparison of *Verbascum haraldi-adnani* with allied and similar species based on Huber-Morath (1978), Karavelioğulları & Aytaç (2008), Murbeck (1925) and the specimens cited below. |
| --- | --- | --- | --- | --- |
| Habit | V. haraldi-adnani | V. luciliae | V. rupicola | V. agrimoniifolium | V. levanicium |
| Indumentum | perennial | biennial | annual, biennial or perennial | perennial | perennial |
| | numerous glandular and very few longer eglandular hairs below, glandular-pubescent above | numerous eglandular and less numerous shorter glandular hairs throughout | numerous eglandular and less numerous shorter glandular hairs throughout | glandular pubescent below, glabrous above | numerous eglandular and less numerous shorter glandular hairs throughout |
| Pairs of lateral leaf lobes of basal leaves | 1-2(-3) | (2-3-5) | 1-2 | 4-10 | 2-4 |
| Cauline leaves | alternate | alternate | alternate | alternate | opposite |
| Lower bracts | lanceolate, long-acuminate to caudate, almost entire | broadly lanceolate, acuminate, entire, rarely dentate | broadly ovate, acuminate, serrate-dentate | cordate to ovate, acuminate or caudate, dentate or entire | leaf-like, broadly triangular-ovate, acute or shortly acuminate, dentate |
| Indumentum of bracts | densely glandular-pubescent | with eglandular and glandular hairs | with glandular hairs | glabrous | eglandular- and glandular-pubescent |
| Indumentum of calyx | densely glandular-pubescent | densely glandular-pubescent | densely glandular-pubescent | densely glandular-pubescent | densely glandular-pubescent |
| Corolla diam. [mm] and indumentum | 10-11(-12), sparsely glandular pubescent outside | 13-18(-20), glabrous or sparsely glandular outside | 12-16, glabrous or sparsely glandular outside | 10-12, glabrous outside | (10-25-30(-35), glabrous or sparsely glandular outside |
| Filaments [mm] | 2.5-3 | 6-7 | 3-4 | 4.5(-6) | 3-6 |
| Filament wool | whitish yellow | whitish yellow | purple-violet | whitish yellow | whitish yellow and purple-violet |
| Anterior anthers | transversely medifixed | transversely medifixed | transversely medifixed | transversely medifixed | decurrent on to filament |
| Style [mm] | (5-6-7(-8)) | 4-5 | 6-7 | 6-7 | 8-9 |
| Capsule | glandular | glandular | glandular | glabrous | glabrous, rarely sparsely glandular |
| Habitat | rocks | rocks & rocky slopes | rocks | wet places | diverse |
| Range | local endemic | W & SW Anatolia | SW & C Anatolia | Turkey, Transcaucasia, Iraq, Afghanistan, Syria | Cyprus, Lebanon, Palestine, Turkey |
with an exclusively eglandular indumentum on the basal leaves, brings four species into the focus: *V. agrimoniifolium* (K. Koch) Hub.-Mor. (including subsp. *agrimoniifolium* and subsp. *syrtaucom* (Murb.) Hub.-Mor.), *V. levanticum* I. K. Ferguson, *V. luciliae* (Boiss.) Kuntze and *V. rupicola* (Hayek & Siehe) Hub.-Mor. The diagnostic characters of these four species are compared in Table 1.

*Verbascum agrimoniifolium*, although similarly small-flowered, is readily distinguished from *V. haraldi-adnani* by its often annual or biennial, non-chasmophytic habit, much more strongly divided leaves, the glabrous portions of the inflorescence and, in ecological respects, its preference for damp, eutrophic habitats. Depending on the sites, the E Mediterranean, facultative rock plant *V. levanticum* can develop a habit matching that of *V. haraldi-adnani*. However, the opposite stem leaves, the much larger flowers (the largest in this group), the deviating anther insertion type and the purple-violet filament wool of the anterior stamens indicate superficial affinities rather than a closer relationship.

Such a relationship may be given with the remaining two taxa, both endemics of the western half of Anatolia, which are also predominantly small- to medium-sized chasmophytes with branched, woody root-stocks and basal leaves with 1-5 lateral leaf lobes. Besides the initially mentioned diagnostic indumentum characters and quantitative characters of the flowers, *V. rupicola* differs clearly by its purple-violet filament wool and the much wider bracts.

*Verbascum luciliae* appears to be the closest ally of our species, however, having leaves with on average 3-5 lateral leaflets (the vast majority of all *V. haraldi-adnani* individuals studied in the field have only 1-2 pairs), significantly larger flowers in combination with relatively short styles, and filaments twice as long as in *V. haraldi-adnani* (this holds also for the smallest individual *V. luciliae* flowers from the top of the inflorescence, which are occasionally only 13-15 mm in diameter). The flowers of *V. haraldi-adnani* appear to be constantly small within the population and to have long styles (Fig. 2B, see also the colour photographs of the electronic supplement at www.bgbm.org/willdenowia/willd38/parolly+eren.htm): the largest flower measured (fresh material) had a corolla diameter of 12 mm, but 10-11 mm is the normal range. The characters “corolla diameter”, “filament length” and “style length” seem at least in this group of *Verbascum* (Table 1) to be disconnected and justify together with the leaf and indumentum characters the species rank of *V. haraldi-adnani*. The distribution of the glandular and eglandular hairs on specimens of the two species is remarkably, and to our knowledge, also constantly different. *V. haraldi-adnani* shows an almost completely glandular-pubescent indumentum, with only a few scattered eglandular hairs confined to its basal parts. By contrast, in *V. luciliae* such long eglandular hairs clearly dominate the lower portions (stems, basal and lower cauline leaves), and they are also prominent in the upper parts. This dense indumentum gives *V. luciliae* a greyish overall appearance, while *V. haraldi-adnani* is clearly green (see the electronic supplement). The distribution ranges of both taxa are c. 100 km apart.

**Specimens of related and similar species seen**

*Verbascum agrimoniifolium* subsp. *agrimoniifolium*. – **TURKEY**: A8 Erzurum: Zwischen Bayburt und Ispir, 20 km westlich Ispir, 1520 m, Schuttstelle, mit *Verbascum oreodoxum*, 15.6.1984, Nydegger 19235 (B). – **AFGHANISTAN**: Prov. Kabul, Istalif 34°51'N, 69°06'E, 22.6.1965, Rechinger 31195 (B); Prov. Ghorat, in alveo glaucoa rivi c. 5 km E Parjuman (Partcheman), 1850 m, 2.8.1962, Rechinger 19121 (B). – **IRAQ**: Ditionis Erbil, in montis Kuh-Sefin reg. infer. ad pagum Schaklava, 900 m, 27.5.1893, Bornmüller 1639 (B); distr. Mosul, ad confines Turciae prov. Hakkari, in ditione oppidi Zakho, in faucibus 5 km a Zakho meridiem versus, 4.7.1957, Rechinger 10706 (B). – **IRAN**: Prov. Kermanshah, inter Kermanshah et Senandaj, 73 km NNW Taqi-i Butsan, ad fontem, 29.8.1957, Rechinger 14646 (B); Montes Elburs centr., in montibus Kuh-e-Dasht prope Keredj, in valle Darreh Wardi, c. 1600 m, 7.6.1937, Rechinger 746 (B); prope Sultanabad, 7.1897, Strauss s.n. (B); Kohrud, 20.7.1904, Strauss s.n. (B); Kuh-i-Parrau, Nudschuheran-Schlucht, 15.6.1906, Strauss s.n. (B); Kermanschah, in valle Dscham-Tueh ditionis fluvii Saimerre, 14.5.1904, Strauss s.n. (B).
Verbascum agrimoniifolium subsp. syriacum. – SYRIA: Libani ad rivolos subalpinos jugi Sannin, 1600-1700 m, 21.7.1897, Bornmüller 1192 (holotype B); Antilibani in humidis ad Rascheya, 1200 m, 27.6.1897, Bornmüller 1193 (B).


Verbascum luciliae. – TURKEY: B2 İstanbul: Eme, Karapınar güney sirtları, küçük çömlek tepesi, 950-1130 m, volkanik kaya üzerinde, 27.5.2000, Duman 7208 (EGE). B2 Kütahya: Simav, Akdağ, 1900 m, kaya çatlığı, 3.8.1993, Gemici 8179 (EGE); von Kiçir nach Hisarköy, 3 km südlich Kiçir, 1090 m, 22.6.1993, Nydegger 47522 (B). B3 Uşak: Eme, Kişlak D., Gümüş kol batısı, 920-1000 m, kaya üzerinde, 1.6.2002, Duman 8717 (GAZI).

Verbascum rupicola. – TURKEY: B1 İzmir: Gümülüdür, Tahtalı baraj bendi yakını, 180-200 m, silisli kayalar, 20.5.2003, Şenol 3025 (AYDN, EGE).

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