



Original Scientific Report

## Nomenclatural questions on the hybrids between *Verbascum chaixii* s.l. and *V. lanatum*

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### ABSTRACT:

A study of the names used for the hybrids described between *Verbascum chaixii* (subsp. *chaixii*, subsp. *austriacum*) and *V. lanatum* is presented. On the basis of the historical background of these names and the examination of specimens, the neotypification of Borbás' *V. semilanatum* (*V. chaixii* subsp. *austriacum* × *V. lanatum*) is proposed on a specimen preserved at GB. A new nothospecies (*V. tommasinianum* Sutory) is proposed for the hybrid between *V. chaixii* subsp. *chaixii* and *V. lanatum* (holotype at BRNM, isotypes at WU and COI).

### Keywords:

Croatia, hybridization, *Verbascum conrathii*, *V. semilanatum*, *V. tommasinianum*, neotypification, nothospecies

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Hybridization in the genus *Verbascum* L. (Scrophulariaceae Juss.) is considered to be frequent (MURBECK 1933: 42) and dozens of hybrid names occur in every bigger flora. In the latest list of *Verbascum* species in Turkey (KARAVELIOĞULLARI 2012) 99 of them are named. The occurrence of hybrids between *V. chaixii* Vill. s.l. and other related species is known (see e.g. MURBECK 1933), causing both taxonomic and nomenclatural criticisms. Hybrids are sterile (no backcrossing) and the fact that *Verbascum* species are mostly biennial (early expire) limits the possibility to repeat the collection and provide further study.

Although *Verbascum chaixii* s.l. is a variable species which is classified into three subspecies in Europe (e.g. HAYEK 1929; MURBECK 1933; FERGUSON 1972; MARHOLD 2011), few authors (e.g. NEJC 2001) recognize them at species rank. *V. chaixii* subsp. *chaixii* occurs in Southern Europe, from Spain to the northwestern part of the Balkan Peninsula, *V. chaixii* subsp. *austriacum* (Schott ex Roem. & Schult.) Hayek is distributed over Eastern and Central Europe and part of the Balkan Peninsula, whereas *V. chaixii* subsp. *orientale* (M. Bieb.) Hayek inhabits the southern and central parts of the Russian Federation and Romania in Europe (see e.g. FERGUSON 1972). At species rank, the name *Verbascum orientale*

(L.) All. (≡ *Celsia orientalis* L.), which would have nomenclatural priority over *V. orientale* (L.) M. Bieb. (1875 vs. 1808, respectively; see also Art. 11.3 of ICN, TURLAND *et al.* 2018), is currently treated as *Verbascum marschallianum* Ivanina & Tzvelev (TZVELEV 1985: 272; MARHOLD 2011).

According to FERGUSON (1972), *V. chaixii* s.s. and *V. chaixii* subsp. *austriacum* differ in terms of the shape of the leaves which are usually slightly lobed towards the base, greyish tomentose beneath (basal leaves) and remotely dentate (upper cauline leaves) in subsp. *chaixii*, while in subsp. *austriacum* they are not lobed and green beneath (basal leaves), and are finely crenulate-serrate (upper cauline leaves).

*Verbascum lanatum* Schrad., sometimes treated as a synonym of *V. alpinum* Turra (see e.g. NEJC 2001; BARTOLUCCI *et al.* 2018), is distributed from northern Italy through southern Austria, Slovenia, Croatia, Bosnia and Herzegovina to the western part of Serbia (HAYEK 1929; FERGUSON 1972; NIKOLIĆ 1974; BARTOLUCCI *et al.* 2018). The name *V. hinkei* Friv. is also considered by various authors at various ranks for Ukraine, Romania, and Bulgaria, i.e. forma (NIKOLIĆ 1974), variety (GHIŞA 1960), or subspecies (MURBECK 1933). FERGUSON (1972) reported *V. hinkei* as a synonym of *V. lanatum*.

The present paper aims to clarify nomenclatural and taxonomic issues about *Verbascum chaixii* s.l., *V. lanatum*, and their hybrids.

The research is based on the examination of the specimens preserved at the herbaria BP, GB, and WU (the acronyms follow THIERS 2021). The online Herbarium of the University of Coimbra (<https://coicatalogue.uc.pt/>), where hundreds of specimens collected by Freyn are preserved, was also considered.

The articles cited throughout the text follow the *Shenzhen Code* (TURLAND *et al.* 2018; hereafter “ICN”).

**Historical background.** The first hybrid described between *Verbascum chaixii* and *V. lanatum* was proposed by BORBÁS (1878: 212) and named *Verbascum xsemilanatum* (as “*semi-lanatum*”). Borbás’s study (only one page long) was published in a strange way, as the supplement to a larger paper (66 pages) on Brassicaceae Burnett. BORBÁS (1878) provided the provenance (Plitvicki tavaknal, currently the Croatian Plitvice Lakes). According to DEGEN (1905: 172), Borbás collected plants in 1875. The diagnosis (in Hungarian) is: “*V. semilanatum* m[ihi]. (*V. chaixii* × *lanatum*) at Plitvice Lakes. The lower leaves are similar to those of *V. lanatum*, but are fairly glabrescent, green, and only sparsely lanate along the veins and on the petiole. The upper leaves are more similar to those of *V. chaixii*, crenate-serrate, raceme simple, but the peduncles are fairly pilose”.

BORBÁS (1878), and subsequently, JÁVORKA (1925) and BOROS (1947), cited *Verbascum chaixii* as a parental species, but no specification about the subspecies was reported. According to the latest published distribution data of *V. chaixii* s.l. in Croatia (NIKOLIĆ 2015, 2020), only the subsp. *austriacum* occurs in the region including the Plitvice Lakes, whereas the subsp. *chaixii* is limited to the western coastal region (Fig. 1). Note that the occurrence of the *V. chaixii* subsp. *chaixii* in Croatia is even omitted for the country by some authors (e.g. BECK 1901; DOMAC 1976) while, in other cases, the subsp. *austriacum* is included in the variability of *V. chaixii* s.l. (see e.g. HORVAT *et al.* 1974). A distribution map of both these subspecies, although not so detailed, was published by MURBECK (1939: 10).

On the basis of my examination of the literature, I realized that parental taxa names were often wrongly reported and this could be a consequence of Borbás’s uncertainty (see the discussion above). As early as two years before the publication of *Verbascum xsemilanatum* in an article dated December 15, 1875 (published by BORBÁS 1876), he described some new hybrids from Croatia (*V. xjuranyi*, *V. xcrenatum*, and *V. xfreynianum*) using the two names *V. super-chaixii* and *V. sub-chaixii* and one belonging to the parents. On the basis of the localities of these hybrids given in the protologues (Monte Maggiore, Bunic, Senj, and Vratnik) is not possible to reliably iden-

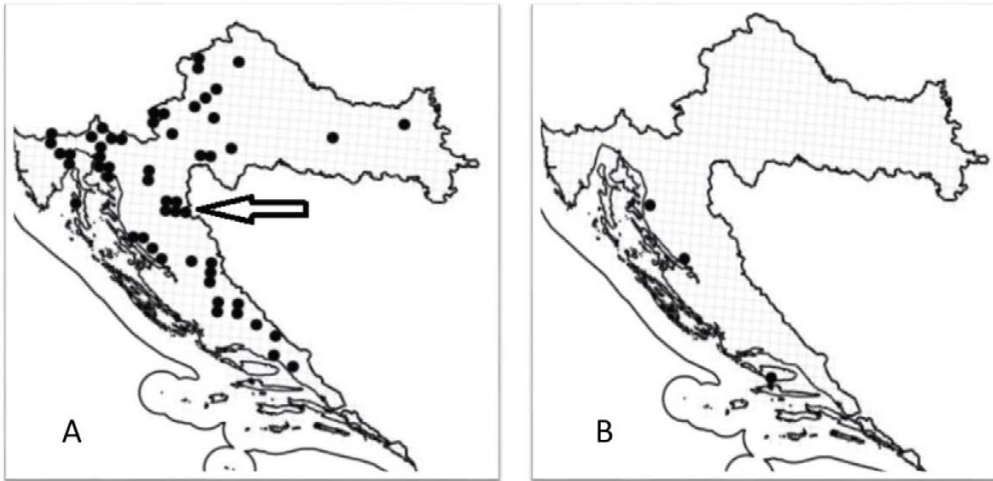
tify the names “*sub-chaixii*” w and “*supra-chaixii*”. Note that 1875 is the same year the specimen was collected in the Plitvice Lakes region (see above). Not long afterwards, the final version of the manuscript dated 28 April 1877 was published, in which BORBÁS (1878) used the name *V. chaixii* when describing the hybrid *V. xsemilanatum*. In the later publications, BORBÁS (1881, 1900) regularly used the name *V. austriacum* instead of *V. chaixii*.

An exhaustive description and discussion of the hybrid origin of *Verbascum xsemilanatum* was given in FREYN (1879: 279), based on Freyn’s own collections from Istria (Croatia). FREYN (l.c.) supposed that both his collections and those of Borbás belonged to the same nothotaxon, thus sharing the same parental combination. Although FREYN (l.c.) mentioned *V. chaixii* as one of the parental species, he failed to provide the subspecies. However, in this case is easier to specify it. In fact, only the *V. chaixii* subsp. *chaixii* occurs in Freyn’s cited Istrian locality. Moreover, I traced a specimen of the subsp. *chaixii* collected by Freyn together with his hybrid specimen at BRNM (no. 20163/36). This evidence allows us to consider the *V. chaixii* subsp. *chaixii* as one of the parents of Freyn’s hybrid.

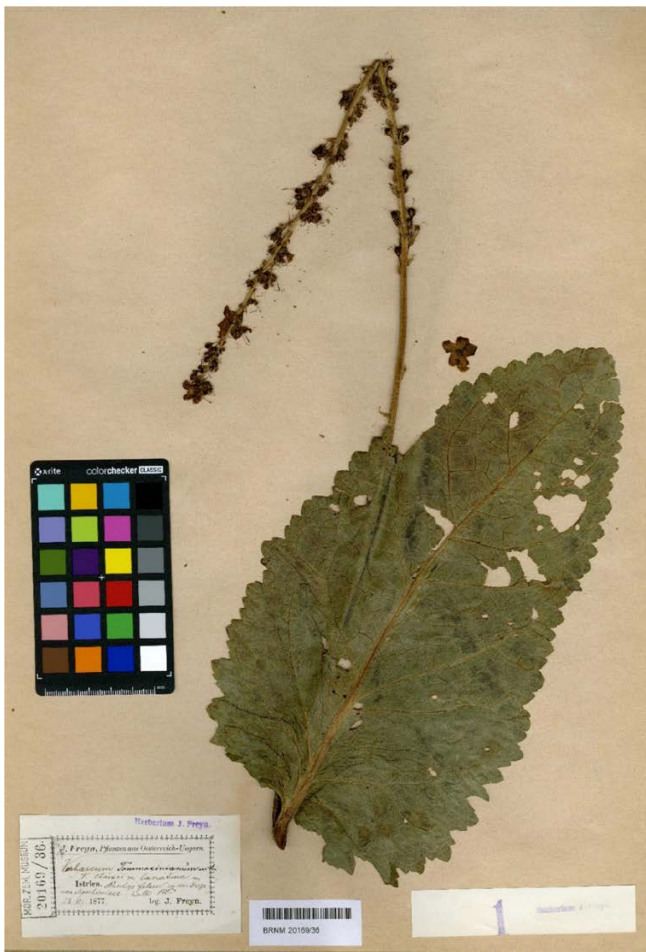
All things considered, the plants used by BORBÁS (1878: 212) and FREYN (1879: 279) are indentifiable as different subspecies (the subsp. *austriacum* and the subsp. *chaixii*, respectively). As a consequence, Freyn’s hybrid cannot be named *Verbascum xsemilanatum* (Borbás’s name) and a new nothospecies —*Verbascum tommasinianum*— is formally described here.

The first existence of the hybrid (*Verbascum chaixii* subsp. *austriacum* × *V. lanatum*) in Croatia was mentioned by HAYEK (1929: 129), who did not propose any binominal. This parental combination appears in MURBECK (1933) under another name, as *Verbascum xconrathii*. MURBECK (l.c.) commented on a hybrid specimen of *V. chaixii* subsp. *austriacum* (seen in Hayek’s Herbarium at GE) with Hayek’s name *V. conrathii*. The locality cited by MURBECK (l.c.) is Styria (Austria). Unfortunately, no description was provided by MURBECK (l.c.) (see also WIDDER 1959), and thus the name “*Verbascum xconrathii*” is invalid from the nomenclatural point of view (Arts. 32.4 and 38.1 of ICN). It should be noted that Murbeck’s name is also used by other authors, e.g. HARTL (1965), MELZER (1966, 1972), or BOROS (1947), and is repeatedly mentioned in various internet databases (see e.g. IPNI 2021; POWO 2021). Nevertheless, even if it were to be published validly, it would be a heterotypic synonym of *V. semilanatum* Borbás.

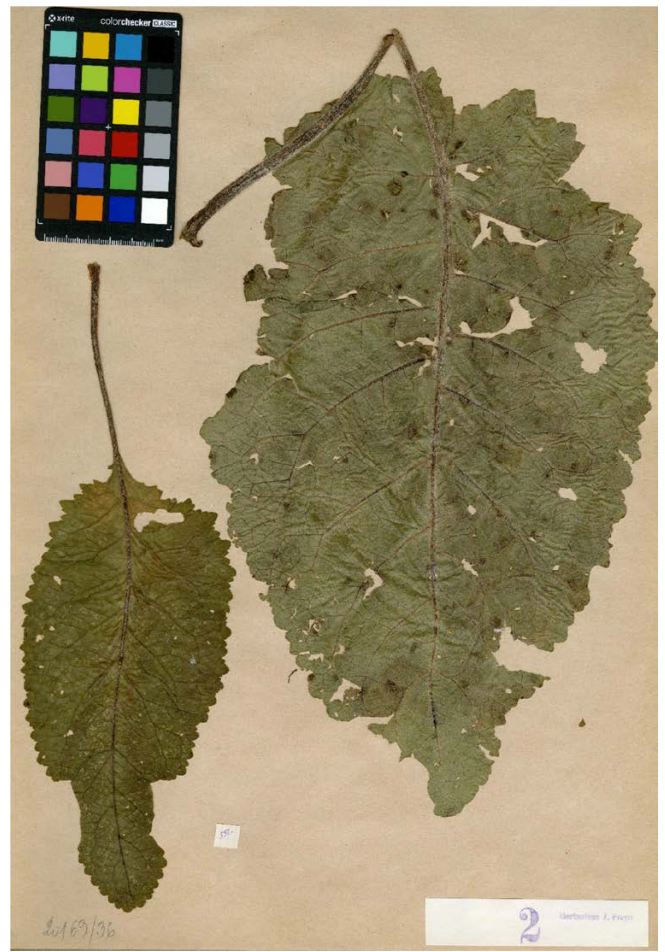
**Morphological data.** The differences between *Verbascum chaixii* subsp. *chaixii* and *Verbascum chaixii* subsp. *austriacum* are not conspicuous as already reported by FISCHER *et al.* (2008). The main useful characters refer to the shape of the lower and upper leaves and their hairiness. A diagnostic key follows.



**Fig. 1.** Distribution maps of *Verbascum chaixii* subsp. *austriacum* (A) and *V. chaixii* subsp. *chaixii* (B) in Croatia (according to NIKOLIĆ 2015). The arrow shows the region including the Plitvice Lakes.



**Fig. 2.** Holotype of *Verbascum xtommasinianum* Freyn ex Sutorý (BRNM20169/36a!, first sheet with the label).



**Fig. 3.** Holotype of *Verbascum xtommasinianum* Freyn ex Sutorý (BRNM20169/36b!, second sheet with basal and lower leaves).

– Basal leaves with irregularly serrate margins, becoming lobed towards the base, sparsely hairy on both sides; upper cauline leaves sessile and acute ..... *V. tommasinianum*  
 – Basal leaves crenate, crenato-dentate, anguloso-sublobate towards the base (similar to *V. lanatum*, fairly gla-

brescent, green, only sparsely lanate along the veins and on the petiole ..... *V. semilanatum*

I observed a further morphological difference in the inflorescence structure, which would be pyramidally branched

in *Verbascum tommasinianum* and simple in *V. semilanatum*. However, because of the low number of specimens traced it is difficult to confirm the taxonomic value of this character which could be related to the size of the plants (large in Freyn's specimen, small in Conrath's or perhaps the unknown specimen by Borbas).

The expected distribution of both the studied hybrids is restricted due to the small distribution area of *Verbascum lanatum* (*V. hinkei* is not taken into account). *V. tommasinianum* shares part of the distribution of both parents in northern Italy, Croatia, and probably Slovenia, whereas *V. semilanatum* occurs in northern Italy, Austria, Slovenia, Croatia, Bosnia and Herzegovina, and Serbia.

## TAXONOMIC TREATMENT

***Verbascum* × *tommasinianum*** Freyn ex Sutorý, *nothospecies nova* (*Verbascum chaixii* Vill. subsp. *chaixii* × *Verbascum lanatum* Schrad.).

– *Verbascum* × *semilanatum* BORBÁS ex FREYN (1879: 279) non BORBÁS (1878: 212)

**Holotype.** [Croatia] “M[onte]. Maggiore [Učka gora]. Felsen, Gebüsche in der Strasse von Moschienizze, [Mošćenička Draga (Draga di Moschiena), N 45°14'00”, E 14°15'00”], 150 m, J. Freyn, 23.6.1877”, BRNM 20169/36, six sheets compose the type. The attached small labels bear the number 532 (Figs. 2, 3). – **Isotypes:** “M. Maggiore. Felsen, Gebüsche in der Strasse von Moschienizze, 150 m, J. Freyn, 23.6.1877, ein Zweig eines Riesenexemplares”, WU0129195! (Kerner's collection), image available at: <http://jacq.org/detail.php?ID=1685200>, COI00042213! (Willkomm's collection), image available at: [https://coi-catalogue.uc.pt/index.php?t=results\\_specimen&CatalogNumber=COI00042213&orderby=CatalogNumber&orderdirection=ASC&size=10&page=0](https://coi-catalogue.uc.pt/index.php?t=results_specimen&CatalogNumber=COI00042213&orderby=CatalogNumber&orderdirection=ASC&size=10&page=0).

**Eponymy:** The name is dedicated to Mutius Tommasini (1794–1879), the Austro-Hungarian/Italian (born in Trieste) botanist, famous for his work in Istria and neighbouring lands. Freyn originally used the name “*V. tommasinianum*” on the labels on his herbarium sheets collected prior to the publication of Borbás's name (BORBÁS 1878).

**Description:** Stem 1–1.8 m tall, pyramidally branched in the upper part, basal leaves oval to oval-lanceolate, obtuse, margins irregularly serrate, becoming lobed towards the base, sparsely hairy on both sides, almost glabrous, the base of the lamina almost cordial. Petiole 13–25 cm long, the stem leaves becoming gradually smaller, the upper leaves sessile and acute. Flowers 6–10 or more in the fascicles. Pedicels 2–4 times longer than the calyx. The calyx divided into five narrow sepals down to the base. Yellow corolla, approx. 2.5 cm in diameter, glabrous on both sides or sparsely hairy in the lower part, all stamens with violet hairs, the lower two anthers longer than the three upper ones, glabrous in the upper third, the upper three stamens hairy up to the top, reniform anthers. Capsules elliptical, up to twice as long as the calyx.

***Verbascum* × *semilanatum*** Borbás Math. Terméz. Tudom. 15: 212. 1878 (*Verbascum chaixii* subsp. *austriacum* × *Verbascum lanatum*).

**Neotype** [Austria] S. Lambrecht: untere Region des Kalkberg's, c. 1130 m; Kalkphyllit, VII. 1908, Paul Conrath. Herbarium Paul Conrath. GB-0105872, image available at: <http://herbarium.bioenv.gu.se/web/images/GB-0105872.jpg>

**Typification:** one of Conrath's specimens was selected as a neotype for Borbás's name *Verbascum* × *semilanatum* because no specimen which formed part of the original material was found (Art. 9.8 of ICN). The designated neotype clearly shows the important diagnostic characters (see MURBECK 1833) and it is easily accessible.

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## REZIME



Botanica  
SERBICA

## Nomenklatura pitanja u vezi hibrida između *Verbascum chaixii* s.l. i *V. lanatum*

Karel SUTORÝ

Predstavljena je studija o imenima korišćenim za hibride između *Verbascum chaixii* (subsp. *chaixii*, subsp. *austriacum*) i *V. lanatum*. Na osnovu istorijske osnove ovih imena i proučavanja primeraka, predlaže se neotipifikacija Borbasovih *V. semilanatum* (*V. chaixii* subsp. *austriacum* × *V. lanatum*) na primerku sačuvanom u herbarijumu GB. Nova notovrsta (*V. tommasinianum* Sutorý) se predlaže za hybrid između *V. chaixii* subsp. *chaixii* i *V. lanatum* (holotip u BRNM, izotipovi u WU i COI).

**Ključne reči:** Hrvatska, hibridizacija, *Verbascum conrathii*, *V. semilanatum*, *V. tommasinianum*, neotipifikacija, notovrsta

