

HANS WALTER LACK^{1*} & MARTIN W. CALLMANDER²

The discovery, naming and typification of *Michauxia campanuloides* (*Campanulaceae*) with notes on its introduction into cultivation

Version of record first published online on 21 June 2021 ahead of inclusion in August 2021 issue.

Abstract: *Michauxia campanuloides* (*Campanulaceae*) is a biennial to short-lived perennial characterized by white to purple-suffused, deeply lobed corollas with narrow and strongly reflexed corolla lobes. It occurs widely on the eastern fringe of the Mediterranean area in Turkey, Syria, Lebanon and Israel. First collected by Leonhard Rauwolf as early as 1575, it was made known by him through the publication of a description and an illustration. His herbarium specimen, among the first collected in the Near East, survives in Leiden. More than two centuries had to pass until André Michaux and, independently, Jean Jacques Houtou de Labillardière collected *M. campanuloides* again and made specimens and seeds available to the botanical community in Paris. On the basis of living material, but including references to herbarium specimens, Charles-Louis L'Héritier de Brutelle was the first to provide a binomial for this striking plant. This paper focuses on the widely unappreciated record of herbarium specimens and printed illustrations, and lists and comments on early specimens collected in the wild as well as those cultivated in botanical gardens up to 1800. In addition, the name *M. campanuloides* is properly lectotypified.

Key words: *Campanulaceae*, distribution, East Mediterranean area, Labillardière, L'Héritier, Michaux, *Michauxia*, Rauwolf, typification

Article history: Received 12 January 2021; peer-review completed 26 April 2021; received in revised form 28 April 2021; accepted for publication 28 April 2021.

Citation: Lack H. W. & Callmander M. W. 2021: The discovery, naming and typification of *Michauxia campanuloides* (*Campanulaceae*) with notes on its introduction into cultivation. – *Willdenowia* 51: 195–208. doi: <https://doi.org/10.3372/wi.51.51203>

Introduction

The rough-leaved Michauxia, *Michauxia campanuloides* L'Hér. (*Campanulaceae*), is a stately, up to 2 m tall biennial to short-lived perennial of the *Campanulaceae* family characterized by white to purple-suffused, deeply lobed corollas with narrow and strongly reflexed corolla lobes. This striking species occurs widely on the eastern fringe of the Mediterranean area in Turkey, Syria, Lebanon and Israel (Euro+Med PlantBase, <http://ww2.bgbm.org/EuroPlusMed/> accessed 30 Dec 2020). Only in Turkey it can be found further inland (Damboldt 1978). A recent record of *M. campanuloides* for Iran (Pluchet 2014: 178) is er-

roneous. The flower biology of this species displaying secondary pollen presentation has recently been studied in some detail (Al-Zein & Musselman 2004). The phylogenetic position of *M. campanuloides* is intriguing (e.g. Eddie & al. 2003; Jones & al. 2017), but is not the subject of this paper. Considering the different views on the place of valid publication of *M. campanuloides* and its typification (e.g. Rechinger & Schiman-Czeika 1965; Damboldt 1978; Lammers 2007) and the fact that the name has never been properly typified, it seems helpful to offer a more comprehensive account of the discovery of this species and provide a lectotypification. A note on the introduction of *M. campanuloides* into cultivation is also included.

1 Botanischer Garten und Botanisches Museum Berlin, Freie Universität Berlin, Königin-Luise-Str. 6–8, 14195 Berlin, Germany; *e-mail: h.w.lack@bgbm.org (author for correspondence).

2 Conservatoire et Jardin botaniques de la Ville de Genève, Chemin de l'Impératrice 1, C.P. 71, 1292 Chambésy-Genève, Switzerland.

Discussion

Initial discovery by Rauwolf

Michauxia campanuloides was discovered as early as 1575 by Leonhard Rauwolf [1535–1595/1596; year of birth according to Camerarius (1610); for orthographical variants see Häberlein (2003)]. A physician by training, Rauwolf was one of the pioneers of the botanical exploration of the Ottoman Empire, although perhaps best known as the first westerner to report on the habit of drinking coffee (Lack 2003; Friis 2015). He was also the first to bring back herbarium specimens and seed material from the Orient that was subsequently cultivated in his private botanical garden in Augsburg (Dannenfeldt 1968: 9, 218). In 1573 Rauwolf departed on a journey to the Ottoman Empire that took him east as far as Baghdad and south as far as Jerusalem. Back in Augsburg in 1576, Rauwolf published a detailed account of his oriental wanderings (Rauwolf 1582), which appeared in Laugingen [today Lauingen] near Augsburg). It is considered an iconic text of early travel literature in German and has created a considerable amount of secondary literature (e.g. Dannenfeldt 1968). Possibly because of the imperial diet meeting in Augsburg in that very year, a second edition with a new title page appeared later that year, followed by a third edition in 1583 that included a supplement with text and 42 plant illustrations (Dannenfeldt 1968).

Descending from the Qannubin monastery (today dayr qannūbīn, Lebanon) in the Wadi Qadisha to the town of Tripolis (today Trābulus, Lebanon) in May 1575, Rauwolf (1582: 284) reported finding “das rechte *Medium* Diosc: unnd *Mindium* Rhazis, welches zwischen dem geseüd inn seiner höhin unnd grossen ansehnlichen weiß purpurfarben blümen bald ward zūsehen” [the true *Medium* Diosc. or *Mindium* Rhazis, which could easily be seen between the stones due to its height and the large, attractive, white to purple flowers] (commentary: Dannenfeldt 1968: 146). Furthermore, Rauwolf (1582: 285) mentioned the similarity of the leaves of this plant to those of *Cichorium intybus* L. and added “blümen ... und mit ihren lang zart unnd schmalen bletlein (deren jede biß 8 hat) in ein runden zirckel herumb weit ausbraiten” [flowers ... with long, tender and thin leaves, i.e. corolla lobes, (each up to eight), extended in a circle]. This is not a convincing description, but the anonymous woodcut (Fig. 1) included in the third edition (Rauwolf 1583) offers some guidance. It is annotated “Ein unbekanntes hohes Kraut / welliches für das rechte *Medium* Diosco: und *Mindium* Rhasis zūhalten” [an unknown tall herb which has to be regarded as the true *Medium* Dioscorides or *Mindium* Rhazis] and shows a plant with some resemblance to *Michauxia campanuloides*. However, the long corolla lobes are not represented as reflexed, but straight, somewhat shorter and less narrow than in nature. Remarkably, Rauwolf did not only provide a locality, a description and a printed illustration of his finding, but he also collected a specimen that has survived in his her-

barium, which today is kept in the Naturalis Biodiversity Center, Leiden, Netherlands. The specimen L.2111470 (Fig. 2) is part of a book herbarium (Dannenfeldt 1968; Ghorbani & al. 2018), mounted on a recto page annotated “180” on the right-hand upper corner. The annotation in calligraphy is placed on the preceding verso page reading “*Medium* verum Dioscoridis, planta nondum cognita. *Mindium* Rhasis”. This specimen undoubtedly belongs to *Michauxia campanuloides*, although the preparation of the flowers is most unconventional. The long, reflexed corolla lobes have been spread out in a star-like manner and consequently transmit a totally inappropriate impression of the three-dimensionality of the flower. Why Rauwolf chose this strange approach when preparing his specimen for the drying process remains unknown. However, there is a factual clue: at least occasionally, Felix Platter (1536–1614), professor of medicine at Basel University, also followed this approach, e.g. when preparing a specimen of *Lilium martagon* L. forming part of his book herbarium kept in the Burgerbibliothek in Bern. He chose to flatten the reflexed tepals of one of the three flowers for the drying process [shelf mark ES 70.2 (223)]. Rauwolf and Platter both studied medicine under Rondelet in Montpellier (Dulieu 1994) and their teacher may have induced them to have plants bearing flowers with recurved corollas flattened for pressing.

Interest in Rauwolf’s woodcuts developed quickly. Only three years after their publication, the presence of mirrored copies and brief plant descriptions with names in Latin appeared in print in Lyon (Dalechamps 1586). They formed a separate chapter placed at the end of the appendix of the *Historia generalis plantarum* by Jacques Daléchamps (1513–1588; D’Aléchamps), physician in Lyon and also a former student of Rondelet in Montpellier (Dulieu 1994). However, the title of the chapter “Plantarum Aegyptiarum et Syriacarum eiconicae figurae & historia summa diligentia & cura descriptae a Leonardo Ravvolf” [Illustrations of the Egyptian and Syrian plants and their history described with great care by Leonhard Rauwolf] is partly wrong – Rauwolf had never visited Egypt.

Rauwolf sold his herbarium in 1593, including the fourth volume with the plants collected during his travels in 1573–1575, to Rudolf II (1552–1612), Emperor of the Holy Roman Empire, who had it deposited in the famous Kunstkammer in his residence in Prague Castle (Stefanaki 2019: S 7 Appendix). When Prague was looted on the order of Christina, Queen of Sweden (1626–1689) in 1648, Rauwolf’s herbarium was removed to Stockholm (Stefanaki 2019: S7 Appendix). However, the collection did not remain in Sweden for long. It was acquired by Isaac Vossius, the librarian of the royal court in Stockholm (Blok 2000), transferred to the Netherlands and subsequently to England, and finally sold by his heirs to Leiden University (Dannenfeldt 1968: 230).

From 1735 until 1739 Linnaeus stayed in the Republic of the United Netherlands and visited Leiden several times, where he was in contact with Jan Fredrick



Fig. 1. *Michauxia campanuloides* – anonymous woodcut based on an anonymous drawing. – L. Rauwolf, Aigentliche Beschreibung der Reiß inn die Morgenländer: t. [35]. 1583, Laugingen: L. Reinmichel. – München, Bayerische Staatsbibliothek.

Gronovius (1696–1762), a classical philologist, and Johannes Burman (1707–1779) (Rutger 2008). However, there is no indication that he ever studied the Rauwolf

herbarium (Jarvis 2007). When Linnaeus, in his numerous later works, referred to Rauwolf, he meant Rauwolf's woodcuts, not his specimens, which he apparently had



Fig. 2. *Michauxia campanuloides* – specimen collected by L. Rauwolf in 1575. – Herbarium Rauwolf, vol. 4, f. 180 (L.2111470). – Leiden, Naturalis Biodiversity Center.

been unable to consult. It was only some 180 years after Rauwolf's publication and 20 years after Linnaeus's visit that the fourth volume of Rauwolf's herbarium was studied in detail. This was done by Gronovius and resulted in his *Flora orientalis* (Gronovius 1755). Why its author refrained from making use of binomial nomenclature in this work remains a mystery – in particular when considering that he had been in correspondence with Linnaeus for many years. Gronovius chose the polynomial *Campanula foliis radicalibus, dentato-pinnatis, caulinis cordatis sessilibus* for L.2111470 (Gronovius 1755: 48). Unlike in other cases, e.g. in *Rheum ribes* L. (Ghorbani & al. 2017), Linnaeus refrained from citing this polynomial in his later works and consequently there is no Linnaean binomial for *Michauxia campanuloides*. When Linnaeus published his *Flora palaestina* (Linnaeus 1756), which was effectively a thesis submitted to Uppsala University by Bengt Johan Strand (1738–1790), the name Rauwolf is mentioned in the introduction. A few binomials listed have the letter R affixed, which refers to Rauwolf, but again there is no evidence that Linnaeus had studied the herbarium material kept in Leiden, although this has previously been stated (Dannenfeldt 1968: 149). More importantly in our context, Rauwolf's plant from the vicinity of the Quannubin monastery was not included in this work.

In 1763 the generic name *Mindium* Adans. was validated (Adanson 1763), the protologue containing descriptive matter and a reference to "*Medium* Diosc. *Campanula* Rauw.", with the latter element best interpreted as an indirect reference to Rauwolf's name and his fragmentary description given in 1582. In short, not a single specimen of *Michauxia campanuloides* seems to have been collected after 1575; all knowledge until that moment originated from Rauwolf's plant and the illustration based on it.

Rediscovery by Michaux and Labillardière

Michauxia campanuloides was rediscovered by André Michaux (1746–1802), a farmer who had qualified in the Trianon botanic gardens in Versailles and in the Jardin du Roi in Paris (Pluchet 2014). Supported by Louis-Guillaume Lemonnier (1717–1799), professor of botany at the Jardin du Roi and first physician-in-ordinary to Louis XVI in Versailles since 1770 (Laissus 1986), he was sent out to collect living plants in Persia and bring seeds back to Trianon (Hamy 1909; Pluchet 2014). The following journey brought Michaux as far as Persepolis (today Tacht-e Dschamschid, Iran) in the east, Bushehr (today Busher, Iran) on the Persian Gulf in the south, and Rasht (Iran) on the Caspian Sea in the north (Puchet 2014).

Michaux stayed twice in the distribution area of *Michauxia campanuloides* – from April until October 1782 in what is now Turkey and Syria, and from January to March 1785 on his way back from Persia in what is now Syria (Puchet 2014). In both years his base was Aleppo (today Halab, Syria). Considering the seasonality of flowering, Michaux could have only spotted this

plant in 1782 and could only have collected a flowering plant and/or seeds during that year. No herbarium specimen of *M. campanuloides* annotated by Michaux could be traced, but the Lamarck herbarium (P-LA) contains a pertinent specimen with the note "ex oriente, D. andré" in Lamarck's handwriting (P00356146). The specimen is very carefully prepared and reminiscent of L.2111470 (see above). Additionally, the Candolle herbarium (G-DC) has a single flower of *M. campanuloides*, albeit severely attacked by insects, with a label reading "*Michauxia andré*" (G00203241) in Lemonnier's handwriting. "andré" on the labels has to be attributed to André Michaux as previously stated (Aymonin 1981). Several examples confirm this hypothesis when comparing the texts of Augustin-Pyramus de Candolle's (1771–1841) protologues in his *Prodromus systematis naturalis regni vegetabilis* with the annotations of original material in G-DC. Two examples may help to illustrate this point: the name *Ruta dichotoma* DC. is based on G00219011 and the name *Centaurea pulchella* var. *glabra* DC. is based on G00474318; both specimens carry the annotation "andré", while Candolle in the two protologues cited Michaux as collector. The unpublished name *Centaurea hyalina* L'Hér. on the lower right-hand label in G00474318 in Candolle's handwriting refers to "hyalina" in L'Héritier's hand on the upper right-hand label. This is further confirmed by the note in the protologue "in Persia inter Hamadan et Cassaban olim legit cl. Michaux et semina ad L'Hér misit. Ad var. ex cultura orta? *C. hyalina* L'Her. ! herb. et mss. (v.s.)" (Candolle 1837: 566). The other information on the upper right-hand corner of this specimen "*Centaurea* 1405 1406 depuis Hamadan jusqu'à Cassaban. André" is in the handwriting of Lemonnier, Michaux's mentor. The latter stayed only briefly in Paris (see above) and left for the United States on 1 September 1785 (Deleuze 1804). Therefore it is quite unlikely that he labelled and annotated his collections, a job apparently taken over by Lemonnier. After the death of Lemonnier, his herbarium was acquired in 1800 by the wealthy industrialist and ardent botanist Benjamin Delessert (1773–1847), who gave 1200 duplicates to Candolle in the same year including "un grand nombre de double ... de cet herbier [i.e. l'herbier de Lemonnier]" [a large number of duplicates ... of this [i.e. Lemonnier's] herbarium] (Candolle 1830).

Like Linnaeus in Uppsala, Lemonnier in Versailles had dispatched promising young men to collect plant specimens abroad in order to enrich the Jardin du Roi and the herbaria kept by the professors employed in this institution (Duyker 2003). Two years after Michaux's return from Persia, Jacques-Julien Houtou de Labillardière (1755–1834), a physician like Rauwolf, left France for the Ottoman Empire (Duyker 2003). Again Lemonnier had made the necessary arrangements and found an important supporter in Charles Gravier Comte de Vergennes (1717–1787), the long-serving minister for foreign affairs at the court in Versailles (Duyker 2003). Judging from Labillardière's letters and the localities given in his *Icones*

plantarum Syriae rariorum (Labillardière 1791–1812; see below) he travelled in what is now Cyprus, Israel, Lebanon and Syria. Labillardière may even have visited the southern tip of what is now Turkey, since he mentioned having been to Mount Cassius (Jebel Aqra) on the modern Turkish-Syrian border (Duyker 2003). Considering the season of the year, Labillardière had ample opportunities to collect *Michauxia campanuloides*. Like Rauwolf before him, he also visited the Wadi Qadisha near Tripolis (Duyker 2003). Labillardière is reported to have brought back c. 1000 specimens from the Ottoman Empire (Lasègue 1845). Of these, only a tiny fraction was ever published in his *Icones*, and *M. campanuloides* was not among them. Labillardière's material from the Orient was subsequently split up, with parts integrated in his own herbarium and other parts in Lemonnier's herbarium, which upon the latter's death was acquired by Delessert (Duyker 2003). The Delessert herbarium is now in the Conservatoire et Jardin botaniques in Geneva (G). Labillardière's private herbarium was acquired after his death by Philipp Barker Webb (1793–1854) in 1834, who left his botanical collections to Leopold II (1797–1870), Grand Duke of Tuscany, in 1854 (Steinberg 1977) and hence they ended up in Florence and are now part of the Museo di storia naturale of Florence University (FI-W) (Steinberg 1977; Nepi 2009).

Therefore, it was logical to assume that specimens of *Michauxia campanuloides* collected by Labillardière could be found in Florence (FI-W), in Geneva (G, G-DC) and/or in the Muséum national d'Histoire naturelle (MNHN) in Paris (P). Indeed two specimens could be located in G, i.e. G00203243 in G-DC and G00341946 in G, plus three more specimens, in Kew (K000463932), Paris (P00235465) and Stockholm (S 09-14102), all with fragmentary annotations. The specimen S 09-14102 carries a label with the inscription "*Michauxia campanuloides*", probably in Labillardière's handwriting (cf. Burdet 1979); the other labels are in the handwriting of scribes or are unidentifiable. As for localities, P00235465 has "Syrie", G00203243 and K000463932 have "Orient" and G00341946 has "Mt. Liban". The Stockholm specimen could have been collected in any place along Labillardière's travel route, except for the places visited during his excursions from Larnaca in Cyprus. Four more specimens of *M. campanuloides* could be located in FI-W, i.e. FI018922, FI018923, FI018924 and FI018925, all annotated by Labillardière. Of these, the first two were collected at "Zaalé dajbel [not deciphered]", a mountain near Zahlé (Zahlá, Lebanon), and the last-mentioned specimen at "Mt. Liban". FI018924 has no locality data.

In this context, a curious specimen should be mentioned. Kept in Montpellier, it has a single historical label with three separate annotations: "*Michauxia campanuloides* DC." in one handwriting, "Herb. Mich." in another and "L'her." in a third (MPU016141). These annotations were written neither by Candolle, L'Héritier (1746–1800; see below) nor Lemonnier (Burdet 1979). The origin of this specimen remains uncertain, but it cannot be excluded

that the material had been cultivated. The most likely place for seed material gathered by Michaux to be sown and cultivated was, of course, the Trianon gardens in Versailles or, alternatively, the Jardin du Roi in Paris. For later evidence of the fate of Michaux's seed material, see below.

Validation of the name *Michauxia campanuloides* by L'Héritier and its typification

The plant collected by Rauwolf, Michaux and Labillardière received its binomial from Charles-Louis L'Héritier, the author of the *Stirpes novae* (L'Héritier 1785–1791). Back from London in late 1787 and apparently before continuing with this project, L'Héritier published three leaflets, of which the last was dedicated to *Michauxia campanuloides* and appeared in March–April 1788 (L'Héritier 1788; Stafleu 1963a, 1963b; Stafleu & Cowan 1981). From a bibliographical point of view, this publication consisted of a single sheet of paper folded once and not paginated plus two copper engravings (see below). The "title page", i.e. 1r, simply reads "Michauxia" without giving the name of the author, the place and year of the publication, and the name of the printers. The text is placed on the following pages, i.e. 1v, 2r and 2v, the legends explaining the two copper engravings are placed on 1v and 2v. The format and typography chosen by L'Héritier for "Michauxia" is identical to that used in the *Stirpes novae* and there is no doubt that the text appeared in Paris. The leaflet is exceedingly rare, with e.g. no copy in the Bibliothèque nationale de France. It appears that "Michauxia" was privately published and distributed by L'Héritier to correspondents, with copies kept today in e.g. the Library and Archives of the Natural History Museum, London, in the Bibliothèque centrale of the MNHN, in the Bibliothèque de l'Institut de France, both in Paris, and in the Universitätsbibliothek of Vienna University (Lack & al. 2021). The hypothesis is put forward that L'Héritier may have intended to re-use this leaflet or parts of it in a subsequent instalment of his *Stirpes novae*. Because of his unexpected and sudden death – L'Héritier was murdered on 16 August 1800 in Paris – this was not substantiated. However, at least the two copper engravings of *M. campanuloides* (see below; renumbered t. 116 and t. 117), even though there is no accompanying text, were included in what are conventionally called the fascicles 7–8 of *Stirpes novae* (Lack & al. 2021). Known in a tiny number of copies (Buchheim 1965), all without text, the precise date of publication/distribution of fascicles 7–8 remains unknown.

L'Héritier had included two copper engravings of exquisite quality in his "Michauxia", both were based on images prepared by Pierre-Joseph Redouté (1759–1841), his preferred botanical illustrator, which are currently untraceable. Of these, t. 1 (Fig. 3) shows the habit of the plant and t. 2 offers flower and fruit details. The two engravings are among the very first that were based on drawings by Redouté, which he must have prepared in 1787 at the latest. Traditionally such plant illustrations



Fig. 3. *Michauxia campanuloides* – copper engraving based on drawing by Pierre-Joseph Redouté. – C.-L. L'Héritier de Brutelle, *Michauxia*: t. 1. 1788, [Paris]. – Wien, Universität Wien, Universitätsbibliothek.



Fig. 4A. *Michauxia campanuloides* – first sheet of lectotype. – Specimen collected by Labillardière in 1787, G00341946. – Geneva, Conservatoire et Jardin botaniques, Herbarium. © CJBG.



Fig. 4B. *Michauxia campanuloides* – second sheet of lectotype. Specimen collected by Labillardière in 1787, G00341946. – Geneva, Conservatoire et Jardin botaniques, Herbarium. © CJBG.

were (and sometimes still are) treated like specimens, annotated and integrated into herbaria. This was the case also for the two engravings of *M. campanuloides*, which have been filed in the Lamarck herbarium (P00356144, P00356145, P00356157). Interestingly, two of the three prints are in the *avant la lettre* stage, i.e. prior to the addition of the name of the plant, illustrator and engraver and the plate number.

Rather astonishingly, L'Héritier published a second edition of his "Michauxia" a few months after the first (Stafleu 1963; Stafleu & Cowan 1981); it differs only by the addition of two lines added to the synonymy (K. Böhme, pers. comm. 2020). However, this change, i.e. the addition of "*Mindium*. Adans. fam. 2. 134", is significant. If L'Héritier had already added Adanson's name to the synonymy in the first edition, his new generic name *Michauxia* L'Hér. would have been nomenclaturally superfluous and illegitimate from the beginning. When a proposal was submitted to the Committee for *Spermatophyta* to conserve the name *Michauxia* (Meikle 1972), its author was apparently unaware of the first edition and based his arguments in part on the inclusion of the name *Mindium* in the synonymy of what he considered to be the protologue of the name *Michauxia*, i.e. the second edition. Nevertheless this proposal was helpful because it saved the name *Michauxia* from becoming a synonym of the ambiguous *Mindium*, although the arguments put forward were partly incorrect. Copies of the second edition are kept in the library of the Linnean Society of London and the Mertz Library in New York.

Only one year later, Antoine-Laurent de Jussieu (1748–1836), then sous-démonstrateur de l'extérieur des plantes at the Jardin du Roi (Laissus 1986), took up Adanson's *Mindium* and provided a description. By rushing his leaflet "Michauxia" into publication in early 1788, L'Héritier had won the race for the generic name.

Compared to other plant descriptions published in the second half of the eighteenth century, those provided by L'Héritier offer a wealth of details (L'Héritier 1788). The new genus *Michauxia* is characterized in a text of twenty-two words and the description of *M. campanuloides* comprises more than 250 words. In addition, L'Héritier offered a list of references including Rauwolf, Dalechamps, Bauhin, Gronovius and he even cited the corrupted image based on Rauwolf, which appeared in Robert Morison's posthumously published *Plantarum historia naturalis oxoniensis* (Morison 1715). More relevant in our context is the dedication of the generic name to Michaux "qui hoc genus invenit et communicavit" [who found this genus and communicated it] and the note "Nuperrime ex Alepo semina mittebat praedictus Andreas Michaux" [Very recently the aforementioned André Michaux sent seeds from Aleppo]. These notes are evidence that L'Héritier based his description on a living plant cultivated in a garden in Paris or its surroundings. Significantly he had regularly noted "H.P." standing for "hortus parisiensis", i.e.

the Jardin du Roi, in his *Stirpes novae*, but this is not the case in his "Michauxia". Therefore, we do not know where exactly *M. campanuloides* was cultivated, with the Trianon gardens, the Jardin du Roi or another garden in Paris all being possible candidates. A search for a herbarium specimen documenting a plant cultivated in a garden in Paris or its surroundings in 1787 or before brought no result. Such a specimen was found neither in G, where L'Héritier's herbarium is conserved (Lasègue 1845; Baldi 2020), nor in P, where only a specimen annotated "in hort. Paris. 1793" (P-JU n° 7648) could be traced.

Significantly, L'Héritier included in "Michauxia" the note "Habitat in Syriâ. Michaux. Libano. La Billardiere", which may be interpreted as the citation of syntypes in the protologue (Turland & al. 2018: Art. 9.6). Consequently the original material of *M. campanuloides* in the sense of the Code (Art. 9.4) consists of (1) one or more specimens collected by Michaux in Syria, (2) one or more specimens collected by Labillardière on Mt Lebanon and (3) the copper engraving (Fig. 3) published as part of the protologue. Among these elements, the specimens collected by Michaux and Labillardière are to be regarded as syntypes. Until now no lectotypification of the name *M. campanuloides* seems to have ever been made (e.g. Rechinger & Schiman-Czeika 1965; Damboldt 1978; Mouterde 1980). Of the two extant specimens that could be found (see above), the specimen collected by Labillardière is selected as lectotype (G00341946).

Nomenclatural summary

Michauxia L'Hér., *Michauxia* [unpaginated]. 1788, nom. cons. – Type: *Michauxia campanuloides* L'Hér., typ. cons. ≡ *Mindium* Adans., Fam. Pl. 2: 134, 578. 1763. – Type (designated by Rechinger & Schiman-Czeika 1965: 47): *Mindium campanuloides* (L'Hér.) Rech. f. & Schiman-Czeika.

Note — The generic name *Michauxia* was proposed for conservation (Meikle 1972), the proposal was supported (McVaugh 1974) and the name with *M. campanuloides* as the conserved type was added to the list of nomina conservanda by the XII IBC (Stafleu & al. 1978).

Michauxia campanuloides L'Hér., *Michauxia* [unpaginated]. 1788 ≡ *Mindium campanuloides* (L'Hér.) Rech. f. & Schiman-Czeika in Rechinger, Fl. Iran. 13: 47. 1965. – **Lectotype (designated here):** "Mt. Liban", s.d., *La-billardière s.n.* (G barcode G00341946! [two-part specimen; Fig. 4A, 4B]; isolectotype: FI-W barcode FI018925 [image!]). – Other syntypes: "ex oriente", s.d., *Michaux s.n.* (P-LA barcode P00356146 [image!], G-DC barcode G00203242! [fragment]).

Notes — The name *Michauxia campanuloides* was validated in the leaflet "Michauxia" in 1788, not in William



Fig. 5. *Michauxia campanuloides* – Israel, Upper Galilee, Mount Peki'in, elevation c. 660 m, 1 Jun 2019, photograph © Yael Orgad (<https://www.inaturalist.org/photos/41165690>).

Aiton's *Hortus kewensis* in 1789 as currently given in IPNI (<https://www.ipni.org/>).

The specimen collected by Labillardière designated here as lectotype in G (G00341946) with a duplicate in FI-W are the only known specimens that strictly adhere to the topographical note given by the validating author, i.e. “Libano” (L'Héritier 1788). The specimen in G was part of Lemonnier's herbarium (subsequently part of Delessert's herbarium, see above) and is well-preserved and complete, which is not the case for the single flower – severely attacked by insects – of *Michauxia campanuloides* collected by Michaux and annotated by Lemonnier in G-DC. The P-LA specimen annotated “ex oriente, D. andré” in Lamarck's hand would also be a candidate for lectotypification. The note “D. andré” stands for “dedit André Michaux” (see above) and echoes *ancien régime* terminology – for Jean-Baptiste de Monet Chevalier de Lamarck (1744–1829), who was then a correspondent of the Jardin du Roi (Laissus 1986), farmer Michaux was simply “andré”.

***Michauxia campanuloides* in cultivation**

Michauxia campanuloides was first cultivated in a garden in Versailles or in Paris before 1788 (see above). When L'Héritier moved to London in late 1786 for a stay of

about fifteen months, he seems to have taken with him seeds for Sir Joseph Banks (1742–1820), the President of the Royal Society and his host at his house, 32 Soho Square. As the informal superintendent of the Royal Garden at Kew, Banks almost certainly had the seeds raised there. Admittedly, this hypothesis is not supported by any herbarium specimen, but *Hortus kewensis*, a kind of inventory of the Royal Garden at Kew and other gardens in the London area, lists *M. campanuloides* adding “Introduct. 1787, by Mons. L'Heritier” (Aiton 1789). It should be noted, however, that this catalogue in three volumes is largely the work of Daniel Solander (1748–1810) and Jonas Dryander (1733–1782), who in succession were librarians to Banks (Mabberley 2019). Four years after the publication of *Hortus kewensis*, the first coloured engraving of *M. campanuloides* appeared in the Botanical Magazine based on a specimen in cultivation in the nursery of Grimwood & Co. in Kensington, London in 1792 (Curtis 1793). In early 1797 this species is explicitly reported as being in cultivation in the Jardin des Plantes, formerly Jardin du Roi, in Paris (Desrousseaux & al. 1797: 134–135), but the accompanying engraving had already been published in July 1792 (Lamarck 1792: t. 295). This implies that the plant had been in cultivation even before this date in the Jardin des Plantes. Also at an early date, *M. campanuloides* was cultivated in the garden of Jacques-Martin

Cels (1740–1806) in Montrouge, now a commune in the southern suburbs of Paris (Callmander & al. 2017), a fact testified by a specimen in G-DC (G00203245) collected on “20 fr. An II” corresponding to 6 September 1794. Seeds of this exceptional plant originating from gardens like those in Paris and in London passed quickly to other botanical gardens, e.g. those in Berlin and Vienna, but the details are outside the scope of this paper.

Epilogue

Michauxia campanuloides (Fig. 5) has recently been listed among the most attractive plants native in Turkey (Erdoğan 2007) and indeed is a species of some horticultural importance (Huxley 1992). At the same time it illustrates the historical complexities of the botanical exploration of the Ottoman Empire, in particular the considerable lapse of time between discovery and rediscovery of several plant species. Somewhat similar cases for such a long interval are *Papaver pseudo-orientale* (Fedde) Medw. (Lack 2019), *Syringa vulgaris* L. and *Aesculus hippocastanum* L. (Lack 2000). However, here the introduction into cultivation took place soon after discovery and the rediscoverers were many decades later surprised to find these plants growing in the wild in the then Ottoman Empire. In the case of *M. campanuloides* it was, by contrast, the rediscoverer who introduced this very distinctive species into gardens.

Notes

1. A few aspects of this story have already been elucidated previously (Smith 1809), although without reference to the herbarium record.
2. No attempt has been made to interpret the link established by Rauwolf between the names coined by the physicians Dioscorides (first century CE) and Rhazes, i.e. ar-Rāzi (854–925), on the one hand and *Michauxia campanuloides* on the other.
3. The names of Rauwolf’s and Michaux’s travel companions have deliberately not been mentioned in this paper because their contribution to botany in general and to plant collecting in particular is negligible.

Acknowledgements

Thanks are due to K. Böhme (Berlin), J. Compton (Tisbury), E. Lack (Berlin) and E. Vitek (Vienna), who read a preliminary version of this text. K. Böhme (Berlin) pointed out the tiny difference between the first and second editions of L’Héritier’s “*Michauxia*”; A. Donatelli (Florence) located the specimens of *M. campanuloides* in FI cited above; F. Buholzer (Geneva) scanned the lectotype (Fig. 4); Cécile Aupic (Paris) helped at

P; A. Stefanaki (Leiden) recommended comparing the specimens kept in the Felix Platter herbarium with those in the Rauwolf herbarium; Y. Orgad kindly provided the field photograph (Fig 5). Finally we thank W. M. M. Eddie (Edinburgh), T. Henning (Berlin) and D. Lakušić (Belgrade) for their reviews, which helped to improve an earlier version of this manuscript, as well as J. McNeill (Edinburgh), J. H. Wiersema (Washington, DC) and N. J. Turland (Berlin) for nomenclatural advice.

Unpublished sources

Genève, Collection privée de Candolle
Candolle A. P. de (1830). Catalogue de l’herbier d’après les époques et les origines des échantillons qui le composent.

References

- Adanson M. 1763: Familles des plantes **2**. – Paris: Vincent.
- Aiton W. 1789: Hortus kewensis **2**. – London: G. Nicol.
- Al-Zein M. S. & Musselman L. J. 2004: *Michauxia* (*Campanulaceae*): a western Asian genus honoring a North American pioneer botanist. – *Castanea* **69**(Occ. Pap. **2**): 200–205.
- Aymonin G. G. 1981: L’herbier de Lamarck. – *Rev. Hist. Sci. (Paris)* **34**: 25–58.
- Baldi R. 2020: L’achat de l’herbier de L’Héritier de Bruttelle: un malentendu historiographique. – *Arch. Sci.* **71**: 23–36.
- Blok F. F. 2000: Isaac Vossius and his circle. His life until his farewell to Queen Christina of Sweden, 1618–1655. – Leiden: Brill.
- Buchheim G. 1965: A bibliographical account of L’Héritier’s “*Stirpes novae*”. – *Huntia* **2**: 29–58.
- Burdet H. M. 1979: *Auxilium ad botanicorum graphicem*. – Publications hors-série **2**. – Genève: Conservatoire et Jardin botaniques.
- Callmander M. W., Durbin O. D., Lack H.-W., Bungener P., Martin P. & Gautier L. 2017: Etienne-Pierre Ventenat (1757–1808) and the gardens of Cels and Empress Joséphine. – *Candollea* **72**: 87–132.
- Camerarius J. R. 1610 *Horarum natalium centuria I. et II.* – Francofurti: E. Emmelius.
- Candolle A.-P. 1837: *Prodromus systematis naturalis regni vegetabilis* **6**. – Parisiis: Treuttel et Würtz.
- Curtis W. 1793: *The botanical magazine* **7**. – London: S. Couchman.
- Dalechamps J. 1586: *Historia generalis plantarum pars altera*. – Lugduni: G. Rovillius.
- Damboldt J. 1978: *Michauxia* L’Hérit., nom. cons. – Pp. 81–83 in: Davis P. H. (ed.), *Flora of Turkey and the East Aegean Islands* **6**. – Edinburgh: Edinburgh University Press.

- Dannenfeldt K. H. 1968: Leonhard Rauwolf. Sixteenth-century physician, botanist, and traveler. – Cambridge: Harvard University Press.
- Deleuze J.-P.-F. 1804: Notice historique sur André Michaux. – Ann. Mus. Natl. Hist. Nat. **3**: 191–232.
- Desrousseaux L. A. J., Poiret J. L. M. & Savigny M. J. C. L. de 1797: Encyclopédie méthodique **4(1)**. – Paris: H. Agasse (often cited as Lamarck, J. B. A. P. Monnet de (ed.)), Encyclopédie méthodique **4(1)**.
- Dulieu L. 1994: Les précurseurs Rondelet et ses disciples. – Pp. 13–15 in: Rioux J.-A. (ed.), Le jardin des plantes de Montpellier. Quatre siècles d'histoire. – Graulhet: Ed. Odysée.
- Duyker E. 2003: Citizen Labillardière. A naturalist's life in revolution and exploration (1755–1834). – Melbourne: Miegunyah Press.
- Eddie W. M. M., Shulkina T., Gaskin J., Haberle R. C. & Jansen R. K. 2003: Phylogeny of *Campanulaceae* s. str. inferred from ITS sequences of nuclear ribosomal DNA. – Ann. Missouri Bot. Gard. **90**: 554–575.
- Erdoğan T. 2007: Türkiye'nin en güzel yaban çiçekleri **1**. / The most beautiful flowers of Turkey **1**. – Istanbul: Türkiye iş bankası kültür yayınlar.
- Friis I. 2015: Coffee and qat on the royal Danish expedition to Arabia. – Arch. Nat. Hist. **42**: 101–112.
- Ghorbani A., Boer H. J., Maas P. J. M. & van Andel T. 2017: The typification of two Linnaean names based on illustrations published by Leonhard Rauwolf in 1583. – Taxon **66**: 1204–1207.
- Ghorbani A., Wieringa J. J., de Boer H. J., Porck H., Kardinaal A. & van Andel T. 2018: Botanical and floristic composition of the historical herbarium of Leonhard Rauwolf collected in the Near East (1573–1575). – Taxon **67**: 565–580.
- Gronovius J. F. 1755: Flora orientalis. – Lugduni Batavorum: W. de Groot.
- Häberlein M. 2003: Rauwolf (Rau(c)wolf(f), Dasylycos), Leonhard. – Pp. 217–218 in: Neue deutsche Biographie **21**. – Berlin: Duncker & Humblot.
- Hamy E. T. 1908: Voyage d'André Michaux en Syrie et en Perse (1783–1785) d'après son journal et sa correspondance. – Pp. 351–388 in: Claparède A. de (ed.), Neuvième congrès international de géographie: Genève 27 juillet – 6 août 1908. Compte rendu des travaux du congrès **3**. – Genève: Société Générale d'Imprimerie.
- Huxley E. (ed.) 1992: The new Royal Horticultural Society dictionary of gardening **3**. – London: Macmillan Press.
- Jarvis C. 2007: Order out of chaos. Linnaean plant names and their types. – London: Linnean Society of London; Natural History Museum.
- Jones K. E., Korotkova N., Petersen J., Henning T., Borsch T. & Kilian N. 2017: Dynamic diversification history with rate upshifts in Holarctic bell-flowers (*Campanula* and allies). – Cladistics **33**: 637–666.
- Jussieu A.-L. 1789: Genera plantarum. – Parisii: Herissant.
- Labillardière J. J. Houton de 1791–1812: Icones plantarum Syriae rariorum. – Lutetiae Parisiorum.
- Lack H. W. 2000: Lilac and horse-chestnut: discovery and rediscovery. – Curtis's Bot. Mag., ser. 6, **17**: 109–141.
- Lack H. W. 2001: Ein Garten Eden. Meisterwerke der botanischen Illustration/ Garden Eden. Masterpieces of botanical illustration/Un Jardin d'Eden. Chefs-d'œuvre de l'illustration botanique. – Köln: Taschen.
- Lack H. W. 2003: Magdalen College and the coffee tree. – Magdalen Coll. Rec. **2003**: 112–116.
- Lack H. W. 2019: The discovery and naming of *Papaver orientale* L. s.l. (*Papaveraceae*) with notes on its nomenclature and early cultivation. – Candollea **74**: 47–64.
- Lack H. W., Böhme K. & Callmänder M. W. 2021: Augustin-Pyramus de Candolle's L'Héritier Reliquiae: a volume of miscellaneous prints kept in Geneva. – Candollea **76**: 145–165.
- Laissus Y. 1986: Le Jardin du Roi. – Pp. 287–341 in: Taton R. (ed.), Enseignement et diffusion des sciences au XVIIIe siècle. – Paris: Hermann.
- Lamarck J. B. P. A. Monet de 1792: Tableau encyclopédique et méthodique **1(2)**. – Paris: Pancoucke.
- Lammers T. G. 2007: World checklist and bibliography of *Campanulaceae*. – Kew: Royal Botanic Gardens (= World checklists and bibliographies 7).
- Lasègue A. 1845: Musée botanique de M. Benjamin Delessert. – Paris: Masson et Cie.
- L'Héritier de Brutelle C.-L. 1788: Michauxia. – [Paris].
- Linnaeus C. 1756: Flora palaestina. – Upsaliae: Höjer.
- Mabberley D. J. 2019: Botanical revelation. European encounters with Australian plants before Darwin. – Sydney: NewSouth Publishing.
- McVaugh R. 1974: Report of the Committee for *Spermatophyta*. – Taxon **23**: 819–824.
- Meikle R. D. 1972: Proposal to conserve the generic name *Michauxia* L'Hérit. (1788) (*Campanulaceae*) against *Mindium* Adanson (1763). – Taxon **21**: 541–542.
- Morison R. 1715: Plantarum historiae naturalis oxoniensis **2**. – Oxoniae: Theatrum Sheldonianum.
- Mouterde P. 1980: Nouvelle flore du Liban et de la Syrie **3**. – Beyrouth: Daar el-Machrieq Éditeur.
- Nepi C. 2009: L'Erbario Webb / The Webb herbarium. – Pp. 102–115 in: Raffaelli M. (ed.), Il Museo di Storia Naturale dell'Università di Firenze **2**. Le collezioni botaniche / The Museum of Natural History of the University of Florence. The Botanical collections. – Firenze: Firenze University Press (= Cataloghi e collezioni **6**).
- Pluchet R. 2014: L'extraordinaire voyage d'un botaniste en Perse. – Toulouse: Privat.
- Rauwolf L. 1582: Aigentliche Beschreibung der Reiß inn die Morgenländer. – s. loc.
- Rauwolf L. 1583: Aigentliche Beschreibung der Reiß inn die Morgenländer. – Laugingen: L. Reinmichel.
- Rechinger K. H. & Schiman-Czeika H. 1965: *Campanulaceae*. – In: Rechinger K. H. (ed.), Flora iranica **13**. – Graz: Akademische Druck- und Verlagsanstalt.

- Rutger J. 2008: Linnaeus in the Netherlands. – Tijdschr. Skandinavistiek **29**: 103–116.
- Smith J. E. 1809: *Michauxia*. – 3N: 1–2 (unpaginated) in: Rees A. (ed.), *The cyclopaedia* **23**. – London: Longman & Comp.
- Stafleu F. A. 1963a: Dates of botanical publications. – *Taxon* **12**: 43–87.
- Stafleu F. A. 1963b: L'Héritier de Brutelle: the man and the work. – Pp. xiii–xliv in: L'Héritier de Brutelle C.-L., *Sertum anglicum* (1788). Faksimile with critical studies and translation. – Pittsburgh: The Hunt Botanical Library (= The Hunt Facsimile Series **1**).
- Stafleu F. A. & Cowan R. S. 1981: Taxonomic literature, ed. 2, **3**. – Utrecht: Bohn, Scheltema & Holkema (= *Regnum Veg.* **105**).
- Stafleu F. A., Demoulin V., Greuter W., Hiepko P., Linczevski I. A., McVaugh R., Meikle R. D., Collins R. C., Ross R., Schopf J. M., Voss E. G. (ed.) 1978: *International Code of Botanical Nomenclature adopted by the Twelfth International Botanical Congress, Leningrad, July 1975*. – Utrecht: Bohn, Scheltema & Holkema (= *Regnum Veg.* **97**).
- Stefanaki A., Porck H., Grimaldi I. M., Thurn N., Pugliano V., Kardinaal A., Salemink J., Thijsse G., Chavannes-Mazel C., Kwakkel E. & van Andel T. (2019). Breaking the silence of the 500-year-old smiling garden of everlasting flowers: the En Tibi book herbarium. – *PLOS ONE* **14**(6): e0217779.
- Steinberg C. H. 1977: The collectors and collections in the Herbarium Webb / I raccoglitori e le raccolte contenute nell'erbario Webb. – *Webbia* **32**: 1–49.
- Turland N. J., Wiersema J. H., Barrie F. R., Greuter W., Hawksworth D. L., Herendeen P. S., Knapp S., Kusber W.-H., Li D.-Z., Marhold K., May T. W., McNeill J., Monro A. M., Prado J., Price M. J. & Smith G. F. (ed.) 2018: *International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code) adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017*. – Glashütten: Koeltz Botanical Books (= *Regnum Veg.* **159**).

Willdenowia

Open-access online edition bioone.org/journals/willdenowia



Online ISSN 1868-6397 · Print ISSN 0511-9618 · 2019 Journal Impact Factor 0.887

Published by the Botanic Garden and Botanical Museum Berlin, Freie Universität Berlin

© 2021 The Authors · This open-access article is distributed under the CC BY 4.0 licence