



## Typification of the name of the Scotch elm *Ulmus glabra* (*Ulmaceae*)

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The typification of the name of the Hudson's elm *Ulmus glabra* is discussed. The name is lectotypified using an original illustration from Gerarde's *The herball; or Generall historie of plantes* published in 1633. Unfortunately, this illustration does not show several diagnostic characters (e.g., the asymmetric base with a lobe covering part of the short petiole) to distinguish *Ulmus glabra* to other related species. Therefore, for a precise circumscription of the name an epitype is selected from a modern and well-prepared specimen with available molecular data.

### Introduction

The genus *Ulmus* Linnaeus (1753: 225) (*Ulmaceae* Brisseau-Mirbel 1815: 905) comprises approximately 46 woody species, widely distributed throughout the north-temperate regions (excluding western North America), and extending to the subtropics in Central America and southeast Asia (Richens 1983, Schneider 1916, Fu 1980, Wiegrefe *et al.* 1994, Buchel 2000).

The northern and montane taxon *Ulmus glabra* Hudson (1762: 95) (Scotch or Wych elm) is a large deciduous tree widespread distributed in Europe, from the United Kingdom to Siberia, including Asia Minor (see *Ulmus glabra* distribution map: <http://linnaeus.nrm.se/flora/di/ulma/ulmus/ulmuglav.jpg>; POWO 2021). This species is a plant up to c. 40 m, with leaves suborbicular or broadly obovate to elliptic, 6–17 × 3–12 cm, with an asymmetric base, the lobe often covering part of the short (< 5 mm) petiole; the upper surface is rough (leaves on juvenile or shade-grown shoots sometimes have three or more lobes near the apex); lateral veins 12–18 pairs; fruit 15–20 mm; seed central (Tutin 1964, Zeitlinger 1992, Armstrong & Sell 1996, Ruiz de la Torre 2006).

This species has been widely cultivated, and several cultivars and hybrids have been raised (see Green 1964, Coleman 2009, Xiaoxu *et al.* 2020). *Ulmus glabra* hybridises naturally with *U. minor* Miller (1768: without page) (Stace 1975, Richens & Jeffers 1986, Collada *et al.* 2004, Cox *et al.* 2014; Martín del Puerto *et al.* 2017, Thomas *et al.* 2018), producing a complex group of the elms named *U. ×hollandica* Miller (1768: without page), from which have arisen a number of cultivars. Another hybrid, between *U. glabra* and the Siberian elm *U. pumila* Linnaeus (1753: 226) is *U. ×arbuscula* Wolf (1910: 286, 290), this hybridization process occurs frequently in urban areas (Cogolludo-Agustín *et al.* 2000), but it has not been observed in natura (see Santamour 1972, Mitterpergher & La Porta 1991, Martín-Benito *et al.* 2005).

The purpose of this paper is to contribute to the stability of the nomenclature by lectotypification of the name *Ulmus glabra*. This nomenclatural act is highly recommended because this name includes many accepted synonyms (see POWO 2021). The designation of the type is based on the consultation of Hudson's original elements and the literature cited in the protologue. Acronyms of the herbaria consulted according to Thiers (2021 [continuously updated]).

### Typification of the name *Ulmus glabra*

Hudson's protologue (1762: 95) of *Ulmus glabra* consists of the nomen specificum legitimum “ULMUS foliis oblongo-ovatis duplicato-serratis basi inaequalibus, cortice glabro” followed by three synonyms: 1) “Ulmus folio latissimo scabro” cited from Gerarde (1633: 1481) and Ray (1724: 469), 2) “Ulmus latiore folio” cited from Parkinson (1640: 1404), and 3) “Ulmus folio glabro” cited from Gerarde (1633: 1481) and Parkinson (1640: 1404) as a variety with the symbol “β”. The common name and the ecology of this plant were cited as: “Anglis, broad-leaved Elm, or Wych-hasel” and “Habitat in sepibus”.

The references to Gerarde (1633: 1481) and Parkinson (1640: 1404) provide illustrations that can be considered original material used by Hudson to describe *U. glabra*. The Gerarde's drawing "Ulmus folio latissimo scabro" is a stem with leaves ("duplicato-serratis") and fruits (Fig. 1). The Gerarde's and Parkinson's drawing "Ulmus folio glabro" are the same, and represent a stem with serrate leaves. On the other hand, the Parkinson's drawing "Ulmus latiore folio" (1640: 1404) is the same illustration to the drawing published by Gerarde as "Ulmus folio latissimo scabro" (Gerarde 1633: 1481). The references to Gerard and Parkinson provide illustrations which serve as original materials used by Hudson. However, in these all illustrations, the base of longer side of leaf not overlapping or concealing the petiole (see below), a character that is present in this species.



**FIGURE 1.** Lectotype of *Ulmus glabra* Huds., illustration of Gerarde (1633: 1481) "Ulmus folio latissimo scabro".

There is little information about the collectors quoted by Hudson and the materials he consulted (see Fabado & Ferrer 2021). Hudson's original herbarium was totally destroyed by fire at his house in Panton Street (London) in 1783, caused "by the villany of a confidential servant" (Dixon 1959). Hudson retired to Jermyn Street (London), actually very near Panton Street. Consequently, there are only scattered specimens in existence, mainly those he had given away to other botanists. The LINN herbarium has the relevant collection because Hudson sometimes gave specimens of his new species to Linnaeus. Also the BM herbarium contains relevant material because the collections of Sir Hans Sloane were consulted by Hudson in preparing his *Flora anglica*, at least while he was assistant librarian of the British Museum (Anonymous 1805), as Hudson himself indicates in the introduction of his work, mentioning the herbarium of Buddle, Petiver and Plukenet, which are in the Sloane Herbarium (Dandy 1958).

Unfortunately, we have been unable to locate any original specimens in any herbaria that contain Hudson's material (e.g., BM, CGE, K, OXF, UPS [Thunberg herbarium]) (see Stafleu & Cowan 1979, Jarvis 2007). On the other hand, there is a letter sent by Hudson to Linnaeus on 1760 (available at the Linnean Society of London, at <http://linnean-online.org/777771652/>). The letter lists a total of 76 herbarium sheets, with the names of the plants and a bibliographical reference to Ray (1724). Through this information, we have been able to correlate these sheets with the names that Hudson published in his *Flora anglica*. However, in the Hudson's letter we have not found any annotation about this species.

In conclusion, the only original elements of the name *U. glabra* are the Gerarde's (1633: 1481) and Parkinson's (1640: 1404) illustrations. We designate as the lectotype the Gerarde's illustration "Ulmus folio latissimo scabro" (Gerarde 1633: 1481) cited in the protologue by Hudson (1762). It is the most complete and representative illustration among these two drawings.

However, this (quasi-obligate) lectotype does not show the most relevant diagnostic characters to distinguish *U. glabra* to other related species (e.g., *U. minor*) (e.g., with an asymmetric base, the long-side of leaf-blade often covering part of the short (< 5 mm) petiole). In this sense, *U. glabra* is genetically most close to *U. minor* (Wiegrefe *et al.* 1994), so hybridization and introgression between these two species have been described in natural populations (Richens & Jeffers 1986, Cogolludo-Agustín *et al.* 2000, Cox *et al.* 2014, Preston & Pearman 2015, Martín del Puerto *et al.* 2017). Consequently, for a precise identification of this name an epitype selected according to ICN Art. 9.9 of the *Shenzhen Code* (Turland *et al.* 2018). The epitype selected is a complete (with leaves and fruits), modern and well-prepared specimen preserved at B herbarium (Fig. 2) with available molecular data (see [http://www.ggbn.org/ggbn\\_portal/search/result?unitID=B%2010%200096356&ColIcodeS=Herbarium%20Berolinense&InstCodeS=B](http://www.ggbn.org/ggbn_portal/search/result?unitID=B%2010%200096356&ColIcodeS=Herbarium%20Berolinense&InstCodeS=B)), which show relevant diagnostic characters (e.g., with nutlet central in the samara and with a very short petiole). This specimen clearly represents the traditional concept and current use and application of the name (e.g., Tutin 1964, Richens 1983, Zeitlinger 1992, Armstrong & Sell 1996, López González 2001, Ruiz de la Torre 2006).



FIGURE 2. Epitype of *Ulmus glabra* Huds. (B, barcode B 10 0096356). Photography by courtesy of Herbarium B; reproduced with permission.



*Ulmus glabra* Hudson (1762: 95)

**Type (lectotype** designated here):—[illustration] “*Ulmus folio latissimo scabro*” in Gerarde (1633: 1481) (Fig. 1); **epitype** (designated here):—Germany, Hessen, Limburger Becken, Runkel-Steeden, Kerkerbachtal, Heumst, 21 May 1983, *H. Kalheber 83-1889* (B, barcode B 10 0096356) (Fig. 2).

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