

Emilia Poli Marchese

## New records for the Sicilian dendroflora

### Abstract

Poli Marchese, E.: New records for the Sicilian dendroflora. — *Fl. Medit.* 6: 91-99. 1996 — ISSN 1120-4052.

The finding of *Acer platanoides* L. and *Ulmus glabra* Huds. on the Etna Mount is here reported. The former is new for the Sicilian dendroflora while the latter, only recently reported as occurring in Sicily, is new for Etna.

### Introduction

In the spring of 1994, while conducting geobotanic surveys in the Etna territory, I found specimens of two different spontaneous arboreal species: *Acer platanoides* L. and *Ulmus glabra* Huds. Moreover, this was the first recent record of the former species in Sicily; the latter had previously only been found in the Madonie mountains (Raimondo 1977).

The samples collected are kept in the Herbarium of the Institute of Plant Biology and Ecology of the University of Catania.

This material was identified using Fiori (1923-1929), Pignatti (1982), Tutin & al. (1964 & 1968) and Hegi (1957 & 1959).

A comparison of our specimens with the exiccata kept in the Herbaria of Florence (FI), Rome (RO), Palermo (PAL) and of the Geobotanic Station of the University of Warsaw at Bialowieza has led us to confirm the classification carried out on the basis of floristic works and literature.

Consultation of the Catania Herbarium (CAT) revealed no Sicilian specimens of *Acer platanoides* L., although *Ulmus glabra* Huds. was represented from other localities.

It was very useful to be able to compare our samples with others collected directly in the forests in northern-central Europe, within the environments and plant-communities favouring the two species.

### *Acer platanoides* L.

This species is reported in all of the main floristic works as existing in Italy, with its southern limit in Calabria (Bartolo & al. 1992). The species was not considered as occurring in Sicily.

However, first, Rafinesque (in Recupero 1815) and later Scuderi (1825) stated that the species existed on Etna. In his article “Chloris aetnensis o Le quattro florule dell’Etna” (1813), published in Recupero (1815) Chapter II, regarding the Florula nemoralis, Rafinesque mentions *Acer platanoides* L. among the trees “that together form the Etnean woodlands”. Scuderi (1825) includes this maple species in his “Trattato dei boschi dell’Etna” among the spontaneous species found in the Etna territory, specifying that “it is also indigenous to our woodland region” and adding that “wherever the soil and climatic conditions are favourable, it grows immensely. Some examples of this growth can be found in the woodlands on the northern coast of Sicily”, thereby reporting the presence of the species even in other territories of the island and particularly in the “Manganavite” (Mangalavite) woodlands on the Nebrodi mountains. It is interesting to note that both Rafinesque and Scuderi also quote the names of the species in the Sicilian dialects (Rafinesque: “arralli”; Scuderi: “aceru rizzu”), which suggests that the species was rather widespread in Sicily at that time. Presl (1826), in his “Flora sicula”, cites *Acer platanoides* L. as being present in the Palermo territory: “Habitat in dumosis, ad sepes Panormi etc.”

Strobl (1880), in his “Flora des Aetna”, mentions *Acer platanoides* L.: “*Acer platanoides* L., which according to Rafinesque II and Scuderi’s Trattato [Trattato dei Boschi dell’Etna] is indigenous to the woodland region on the Etna volcano, is not present in Sicily”. In subsequent floristic works on Etna (Tornabene 1889-1892), on Sicily (Tornabene 1887, Lojacono-Poiero 1888-1908) and on Italy in general (Bertoloni 1837, Parlatore 1858, Arcangeli 1894, Fiori & Paoletti 1896-1908, Fiori 1923-1929, 1933, Zangheri 1926, Pignatti 1982), as well as in the “Flora europaea” (Tutin & al. 1968), the species is not mentioned among those on Etna, nor in Sicily. The citations by Rafinesque, Scuderi and Presl were probably considered unreliable, as also seems to have been Strobl’s opinion.

This species is considered to be typical of cold, continental climates, requiring deep, cool soil. It tends to be sciaphilous and microthermic and seems in general to prefer the valleys and the lowlands in central-northern Europe (Fig. 1).

Mainly isolated specimens or small communities of *Acer platanoides* L. can be found in deciduous broad-leaved woodlands; it is present from the lowlands to the mountain belt, but seldom at the subalpine level (Hegi 1959). According to Oberdorfer (1983), it is a “weakly characteristic of the Aceri-Tilietum, also in other Tilio-Acerion plant-communities or (rarely) in particularly cool Fagetalia plant-communities”. In Italy it is reported to be present “in the mountain vegetation belt, in mixed woods with a prevalence of Beech and white Fir trees, or even red Fir trees in the Alps. In areas with a cool climate and rich soil, it can also be found further down in the Turkey oak and Chestnut woods” (Bernetti & Padula 1984).

The European distribution goes from the Pyrenees to Scandinavia; its easternmost specimens can be found in the Urals; it is widespread in central Europe: in the south it is present in Italy, in the Balkans, in Greece and even in the Caucasus. After being widespread in central Europe, *Acer platanoides* seems to have crossed the Alps during the Glacial Period, thereafter remaining scarcely distributed in the Italian territory and on the Alps in the Fagetum and Piceetum areas, and even more scarcely present in the northern Apennines (Corti & Pavari 1956). Fenaroli (1974), who reported its presence down to Umbria, also stated that it can be found from the lowlands up to an altitude of 1000 (1650) m; Pignatti (1982) reported that it is rarely present in northern and central Italy, fact confirmed by Bernetti & Padula (1984).

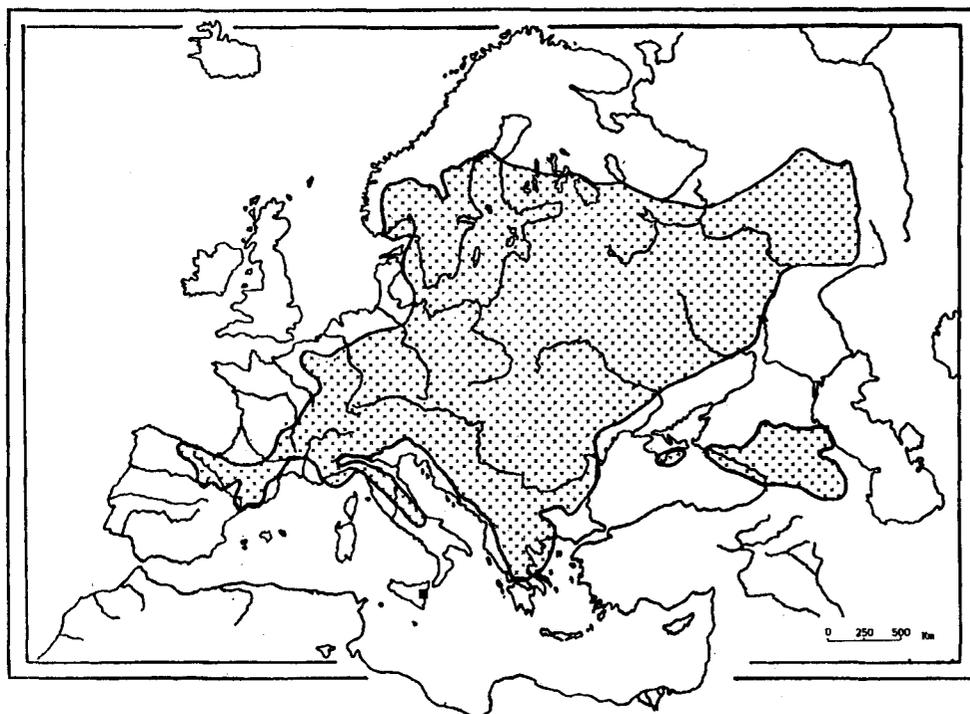


Fig. 1. European distribution area of *Acer platanoides* L. (from Bernetti & Padula 1984); ■ localities of our findings. (The old citations by Rafinesque (in Recupero 1815) and Scuderi (1825) for the Etna volcano and by Presl (1826) for Palermo are not shown).

Another *Acer*, *Acer lobelii* Ten., seems to be distributed from central Italy down to Campania, Basilicata and Calabria (Pignatti 1982). This was once classified as a subspecies or variety of *Acer platanoides* L. (cf. Hegi 1959, Fiori & Paoletti 1896-1908, Fiori 1923-1929, etc.), but is now considered a distinct species.

#### *Acer platanoides* on Etna today

We found specimens of *Acer platanoides* L. in different localities on the eastern slope of Etna:

- 1) in the "Contrada Razzara-Contrada Cassone", at an altitude of about 1160 m, in the large, Chestnut-dominated woodland, in which other arboreal species can be found, e.g.: *Quercus* cfr. *pubescens* Willd., *Ostrya carpinifolia* Scop., *Acer obtusatum* W. & K.;
- 2) along the right-hand side of the "Valle S. Giacomo", formed by steep wooded walls, mainly with a north-northeastern exposure. Here the plant was found in four different localities:
  - a, b - on the valley floor, at about 850 and 900 m, in its final and central part, at the foot of a high wall that descends very sharply into the valley;

- c - on the valley floor again, but in its innermost area, at about 980 m, at the foot of a wooded wall on the right-hand side, near the convergence of the main arms of the head of the valley;
- d - along the southern arm of the head of the valley at about 1130 m, in the very steep, impervious and partly wooded slope that connects the valley floor with the higher woodlands.

In all of these localities *Acer platanoides* L. was found as isolated specimens, in the arboreal community at a, b and c and in the shrub community at d, in woodlands that include other arboreal species, such as *Acer obtusatum* W. & K., *Ostrya carpinifolia* Scop., *Fraxinus ornus* L. and *Quercus* cfr. *pubescens* Willd.. A specimen of *Fagus sylvatica* L. in the shrub community was also found in locality d. This is deciduous broad-leaved mesophyll woodland vegetation that we (Poli & al. 1979a) previously described, with regard to the same "Valle S. Giacomo", considering it to be a fragmentary edge of that "mixed wood", which is believed to be of the Orno-Ostryon alliance and which Frei (1938) classifies as the "*Quercus, Tilia, Acer* belt", a belt which Frei also reports as being present in Sicily in relict areas.

Consultation of the aforementioned floristic works has allowed us to identify our specimens as *Acer platanoides* L. A comparison of our specimens with those collected in the forests of central Europe and with the exiccata kept in the Herbaria of Florence, Rome, Palermo and Bialowieza confirmed our views. A single specimen of *Acer platanoides* L. can be found in the Palermo Herbarium; this specimen was collected on Etna in Tornabene's time or even earlier. Its label contains the name of the species and beside it: "according to Tornabene: *Acer platanoides* L. Actna" followed by a note in pencil: "at a close look, this seems correct". Tornabene therefore seems to have confirmed the classification of this specimen as *Acer platanoides* L. Tornabene himself made no mention of it in his "Flora actnea" (1889-1892) or in his previous "Flora sicula" (1887) since they had probably been published previously. The citations published by Rafinesque, Presl and Scuderi, fully supported by the specimen in the Palermo Herbarium and by our findings, therefore, seem credible.

#### ***Ulmus glabra* Huds.**

This species, also known as *U. montana* With. and *U. scabra* Mill., is also described in the aforementioned floristic works. It is not mentioned in the Sicilian floristic works (Strobl 1887-1880, Tornabene 1889-1892, Lojacono-Poiero 1988-1908), since it was reported in this region only in 1977 (Raimondo 1977). Exiccata kept in the Catania Herbarium and classified as *Ulmus glabra* Huds. show that the plant can be found in three other Sicilian locations: 1) Motta-Camastra, Villa Savoia, 1 May 1985, *Spampinato*; 2) Ficuzza, 15 Jun 1985, *Brullo*; 3) Nebrodi mountains, Mount Pomiere, 10 Sep 1987, *Minissale*. According to Tornabene's Herbarium, the species also seems to have been found in a fourth locality, in Catania. His Herbarium includes three specimens that he collected in Catania "ad loca humida" and classified as *Ulmus campestris* L. Instead, these specimens seem to belong to *Ulmus glabra* Huds., one specimen having the very characteristic fruits of this species.

*Ulmus glabra* is considered to be a mesophyll species that is widespread, according to Hegi (1957), "in deep wooded valleys and slopes of the hill and mountain belt, where it prefers a humid climate and mature, cool, permeable and well-aired soil". According to Fenaroli (1974), it can be found from 400 to 1300 (1600) m; according to most authors, it

is occasionally present in the deciduous broad-leaved woodland belt and particularly in mixed woods (with Oak, Turkey Oak, Chestnut, Hornbeam, Maple trees, etc.) and in Beech-woods or mixed Beech and White Fir woods.

Hegi considers it to be “a characteristic species of the Maple and Ash woods with plentiful shrubs of the Fagion alliance; it seems to be found more rarely in the riparian woodlands”. According to Oberdorfer (1983), it is a characteristic species of the plant-communities of the Tilio-Acerion alliance and it is also present in the close plant-communities of the Fagion alliance or Alno-Ulmion alliance.

According to Falinski (1986), the species seems to be widespread in the plant-communities of the Alno-Ulmion alliance and in the plant-communities preferring humid soil of the Carpinion betuli alliance, such as the Tilio-Carpinetum stachyetosum sylvaticae.

The plant seems to be part of the woodlands belonging to the deciduous broad-leaved vegetation belt (of the Quercu-Fagetea class) even in its Sicilian locations found by Raimondo.

Oberdorfer (1983) considered it a Euro-Asiatic-suboceanic (sub-Mediterranean) element with a vast European distribution area, from Spain to the British Isles, over half of the Scandinavian peninsula, with its eastern boundary in western Asia.

In the east it reaches as far south as the Black Sea (in Crimea); it goes down to the Balkan peninsula and includes most of Greece and northern and central Italy. It can be found in Italy all along the Alpine area, in the northern and central Appenines, down to Campania, in the Gargano, in Calabria and on the Madonie mountains in Sicily. Raimondo (1977) considered its locations on the Madonie mountains as being “detached” from the others: “probably because of the interruption in the calcareous Appenine chain which reappears in central-northern Sicily”.

Our finding of *Ulmus glabra* shows that the species is more widespread in Sicily where it can also be found on substrata of volcanic origin.

These substrata are the southern boundary of its European distribution area (Fig. 2).

#### *Locations of Ulmus glabra*

The specimens we collected were found on the eastern slope of Etna, in the “Valle S. Giacomo”.

The locality is near the end of the valley, at about 850 m, at the foot of a steep wooded slope on the right-hand side.

The few specimens found are in the shrub-tree community. This vegetation belongs to the already mentioned “mixed woodland”.

The classification of our specimens as *Ulmus glabra* Huds. was carried out by consulting the previously mentioned floristic works and was facilitated by a comparison with fresh samples collected in central Europe and with exsiccata kept in the Herbaria cited above.

I found other specimens belonging to the genus *Ulmus*, in another locality at 700 m on alluvial ground, on the north-western slope of the Etna territory, in the area near the Castello di Maniace.

This is a very variable *Ulmus* population. Some specimens are possible hybrids of *Ulmus glabra* Huds. and *Ulmus minor* Miller.

More accurate identifications and details will be given later when the ongoing surveys are completed.

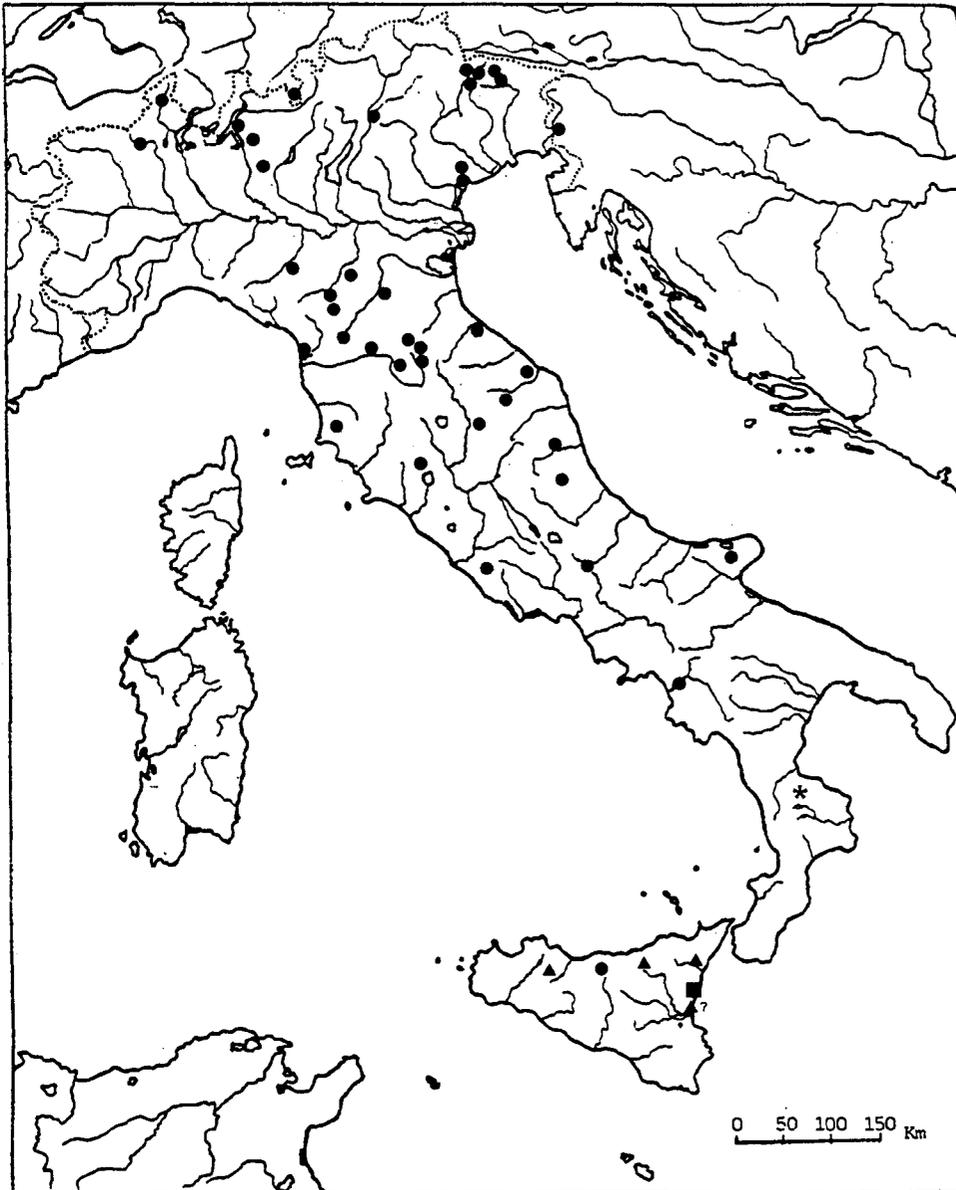


Fig. 2. Distribution of *Ulmus glabra* Huds. in Italy (●) according to Raimondo (1977). Other localities: \* recently reported (Bartolo & al. 1992); ■ of our findings; ▲ from Herbarium specimens (CAT), perhaps still extant.

**Ecological characteristics of *Acer platanoides* and *Ulmus glabra* localities**

The soil, originating from very old volcanic substrata, is mainly deep and rather mature. All of the localities are situated on the most humid slope of the volcano, the eastern slope, exposed to very humid sea winds. In fact, the climatic station in Zafferana (590 m) registers the highest average annual rainfall in the Etna area (1224.4 mm) with an average annual temperature of 14.6°C. In particular, the microclimate in the “Valle S. Giacomo” is highly influenced by the location of the valley and by its particular geomorphologic conformation. This very narrow valley (a typical V-shaped valley), enclosed by steep, high walls and open towards the sea, is easily filled with fog, which persists due to the dominant winds. This results in a particularly humid microclimate even in very dry periods. These findings are the result of surveys carried out previously by Poli & al. (1979a), Fig. 3.

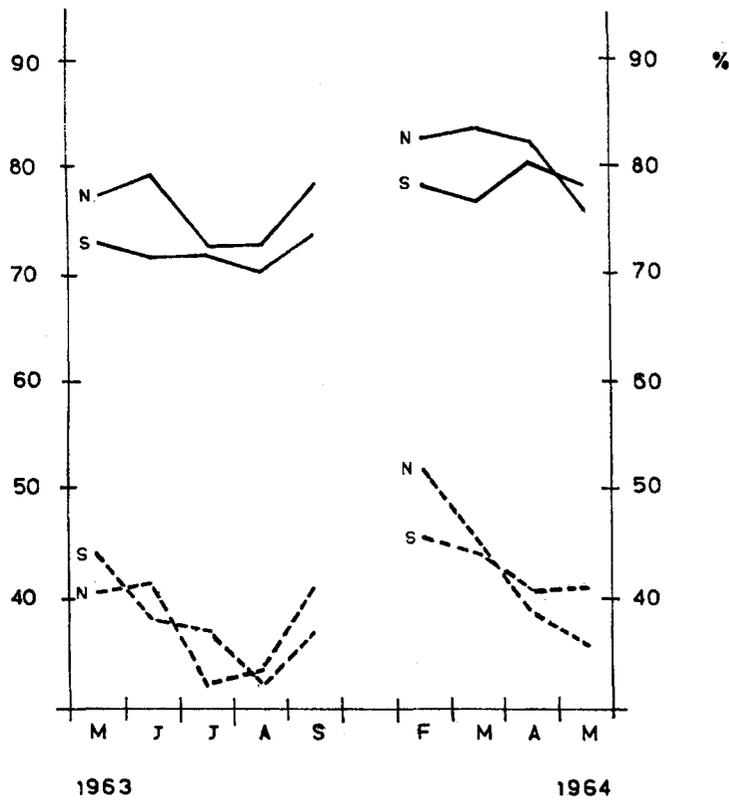


Fig. 3. Average maximum (-----) and minimum (---) monthly humidity levels in the “Valle S. Giacomo” (Etna). N.: on the right; S.: on the left.

The graph shows that in that year the average air humidity levels were high throughout the year: about 60% RH in summer and never lower than 51%. On the valley right, with north-northeastern exposure, these levels are always slightly higher.

These findings show the peculiarity of the locations where the specimens of both species were found and why they have survived in a seemingly inhospitable region. Their survival unto the present has also been favoured by their relative inaccessibility and hence lack of human interference.

We are of the opinion that if these significant relict areas are not properly protected, they will disappear. In fact, we believe that their distribution areas in Sicily have slowly been reduced also due to human intervention, with profound changes on the less steep slopes. If there are further climatic and microclimatic changes towards greater drought, these relict areas will certainly be lost.

Strict environment protection should therefore be adopted in these areas, even if they are already included in protected areas such as the natural parks.

## References

- Andrearczyk, J. 1971: Variability of elm (*Ulmus campestris* L.) leaves. — *Rocz. Sekc. Dendr.* **25**: 17-135.
- 1976: Remarks on the nomenclature of some european species of *Ulmus* L. — *Rocz. Sekc. Dendr.* **29**: 121-128.
- 1979: Variability of the *Ulmus* L. species occurring in Poland. — *Monographiae Botanicae* **57**: 5-68.
- Arcangeli, G. 1984: Compendio della Flora Italiana. — Torino.
- Bartolo, G., Minissale, P., Pulvirenti, S., Scelsi, F., Spampinato, G. 1992: Segnalazioni Floristiche Italiane. — *Inform. Bot. Ital.* **24(1-2)**: 50.
- Bernetti, G. 1984: Gli olmi. — Pp. 10-16 in: *Le latifoglie nobili nei nostri boschi.* — *Quaderni di Monti e Boschi* **1**.
- & Padula 1984: Gli aceri. — Pp. 22-32 in: *Le latifoglie nobili nei nostri boschi.* — *Quaderni di Monti e Boschi* **1**: 31-32.
- Bertoloni, A. 1837: *Flora italica* **3**. — Bononiae.
- Cesati, G., Passerini, G. & Gibelli, G. 1884: *Flora italiana.* — Milano.
- Corti, R. & Pavari, A. 1956: Gli aceri. — *Monti e boschi* **11/12**: 564-584.
- Cupani, F. 1696: *Hortus Catholicus.* — Neapoli.
- Falinski, J. 1986: Vegetation dynamics in temperate lowland primeval forest. — *Geobotany* **8**. Series Editor Werger. Dordrecht.
- Fenaroli, L. 1974: *Gli alberi d'Italia.* — Firenze.
- Fiori, A. 1923-1929: *Nuova flora analitica d'Italia.* — Firenze.
- 1933: *Iconographiae Florae Italicae.* — Firenze.
- & Paoletti, G. 1896-1908: *Flora analitica d'Italia.* — Padova.
- Frei, M. 1938: *Die Gliederung der sizilianischen Flora und Vegetation und ihre Stellung in Mittelmeergebiet.* — Zürich.
- Fournier, P. 1961: *Les quatre Flores de la France.* — Paris.
- Gambi, G. 1956: Gli olmi. — *Monti e boschi* **11/12**: 549-559.
- Gussone, J. 1827: *Florae siculae Prodromus.* — Napoli.
- 1832: *Supplementum ad Florae siculae prodromus.* — Napoli.
- 1842-1844: *Florae siculae synopsis.* — Napoli.
- Hegi, G. 1957: *Illustrierte Flora von Mittel-Europa* **III**<sub>1</sub>. — München.
- 1959: *Illustrierte Flora von Mittel-Europa* **V**. — München.
- Lojacono Poiero, M. 1888-1908: *Flora sicula.* — Palermo.
- Meusel, H., Jäger, E. & Weinert, E. 1964: *Vergleichende Chorologie der Zentraleuropaischen Flora.* — VEB Gustav Fischer Verlag Jena.
- Nicotra, L. 1884-94: *Elementi Statistici della flora siciliana.* — *Nuovo Giorn. Bot. Ital.*, **6**, **21**, **22**, **24**; ser. 2, **1**, 3.

- 1894: Note sopra alcune piante di Sicilia. — Malpighia (Addenda ad Floram Italicam) **VIII**: 88-94.
- Oberdorfer, E. 1983: Pflanzensoziologische Exkursionsflora. — Stuttgart.
- Parlatore, F. 1867: Flora italiana **4**. — Firenze.
- Pignatti, S. 1982: Flora d'Italia, **1-2**. — Bologna.
- Poli, E., Lo Giudice, R. & Ferlito, N. 1979a: La vegetazione della valle S. Giacomo. — Atti Acc. Gioenia, ser. 7, **10**: 253-319.
- , Di Benedetto, L., Ferlito, N. & Lo Giudice, R. 1979b: Stazioni etnee di faggio a bassa quota. — Atti Acc. Gioenia di Catania, ser. 7, **10**: 135-148.
- Presl, C. B. 1826: Flora sicula. — Pragae.
- Rafinesque-Schmaltz, 1813: Le 4 florule dell'Etna. — Palermo. — In: Recupero, G. 1815: Storia naturale e generale dell'Etna. — Catania.
- Raimondo, F. M. 1977: Primo rinvenimento di *Ulmus glabra* Huds. sulle Madonie, Sicilia settentrionale. — Webbia **31(2)**: 261-277.
- Scuderi, S. 1825: Trattato dei boschi dell'Etna. — Atti Acc. Gioenia Sc. Nat. — Catania.
- Strobl, G. 1878: Flora der Nebroden. — Regensburg.
- 1880: Flora des Aetna. — Oesterr Bot. Zeitschr, **11** u. ff.: 1-323.
- Tornabene, F. 1887: Flora sicula. — Catania.
- 1889-1892: Flora Aetnea, **I, III**. — Catania.
- Truchanowicz, J. 1970: Wiaz góski (*Ulmus scabra* Mill.). — In: Variability of the leaves and fruits of trees and shrubs in forest associations of the Bialowieza National Park. — Monographiae Botanicae **32**.
- Tutin, T. G., Heywood, V. H., Burges, N. A., Valentine, D. H., Walters, S. M. & Webb, D. A. 1964: Flora europaea **1**. — Cambridge.
- , —, —, Moore, D. M., Valentine, D. H., Walters, S. M. & Webb, D. A. 1968: Flora europaea **2**. — Cambridge.
- Zangheri, P. 1976: Flora italica. — Padova.

Address of the author:

Prof. Emilia Poli Marchese, Istituto di Biologia ed Ecologia vegetale, Università di Catania, Via Etna 440, I-95125 Catania, Italy.