Article

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Pyrus pedrottiana (*Rosaceae*), a new species from the Nebrodi Mountains (N-E Sicily)

Abstract

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A new species of *Pyrus* for the dendroflora of Sicily is here described. It is *Pyrus pedrottiana*, actually considered endemic to the Nebrodi Mountains, a territory which includes the largest wooded area of the island with a high forest biodiversity.In the same area, *P. vallis-demonis* and *P. ciancioi* have also been described in recent times. The authors report diagnostic characters to distinguish the new taxon from the other two sympatric species.

Key words: vascular flora, *Pomoideae*, taxonomy, endemism, Italy, Mediterranean Region.

Introduction

In Italy, *Pyrus* L. is represented by 10 species (Bartolucci & al. 2018; Arrigoni 2018; Pignatti 2019). The number of species, if compared with the first edition of Flora d'Italia (Pignatti 1982), has significantly increased in recent decades, thanks to the descriptions of five new taxa, four of which from Sicily (Marino & al. 2013). In Sicily, recent scientific papers have led to the description of *Pyrus castribonensis* Raimondo, Schicchi & Mazzola, *P. sicanorum* Raimondo Schicchi & P. Marino, *P. vallis-demonis* Raimondo & Schicchi, and *P. ciancioi* P. Marino, G. Castellano, Raimondo & Spadaro, the last two described from the Nebrodi Mountains. The exploration of the Nebrodi territory– not well explored in the past and particularly rich in taxa that are difficult to classify,– allowed the identification of new species, both woody and herbaceous. Periodic observations carried out in a large population of Pyrus, allowed to separate and describe a new species, probably endemic to the Nebrodi. Compared to the other *Pyrus* species already described, it has an even more significant forest value, both for its dendrological characteristics and for its widespread presence in the *Quercus cerris* woods on the northern side of the vast mountain system of eastern Sicily. In this area, the new taxon – described with the name of *Pyrus pedrottiana* – comes into contact only marginally with *P. vallis-demonis*, from which, however, it differs considerably, while it remains sufficiently isolated with respect to *P. ciancioi*, a species which is also morphologically well characterized.

Materials and method

After noticing the presence in the wild of a population not corresponding to the taxa already known in Sicily, phenological observations in the field were carried out for a three-year period on 20 very similar plants. These plants were randomly selected within an area of ca. 10 hectares in which the population studied assumes greater quantitative impact as well as a constant unmistakable connotation. The observations, carried out for comparison, also concerned other plants of the same genus present in a discontinuous and fragmentary way in the same area, north-east of Lake Maulazzo, straddling the municipalities of Militello Rosmarino and Alcara Li Fusi, at ca.1400 m. The study was completed through comparisons with herbarium materials, with particular reference to the species recurrent in the whole Sicily [*P. pyrainus* Raf., *P. pyraster* (L.) Duroi*, P. spinosa* Forssk.] and in the Nebrodi Mountains (*P. vallis-demonis* and *P. ciancioi*) and in the nearby Madonie Mts (*P. castribonensis*). Our study was completed by chorological observations throughout the Nebrodi territory in order to circumscribe the area occupied by the critical taxon.

Results

Taxonomic analysis

The analysis of the diagnostic characters of the population studied, compared with the specific characters of the taxa mentioned above, therefore allows us to recognize the following new species:

Pyrus pedrottiana Raimondo, Venturella & Domina **sp. nov.** (Fig. 1)

Diagnosis – Arbor modicus, assurgens, spinosus, coma sub-pyramidali, folia glabra, lamina apiculata, plerumque ovata-extenuata, basi cuneata vel plana, viridis splendens, cum marginibus minute serratis. Inflorescentia cyma corymbosa, sepala exsertae triangularia-lesiniformia, margines ialini et vix denticulati, cum apice mucronato, reflexo, ferrugineo; petala candida, obovata-spathulata; stamina 20-25, basi connata; styli 3-5 breviori staminum et ciliati in basim. Pomus parvus plerumque globosus et cum calyx plerumque deciduus.

Type – Sicily: Monti Nebrodi, Locality Bosco Saracina, 37°56’60.0”N, 14°40’18.2 E, in the clearings of the woods with *Quercus cerris* on siliceous soil, 1425 m a.s.l., 3.09.2019, *F. M. Raimondo s. n.* (Holotypus PAL-Gr; Isotypi in PAL and FI).

Description – Tree up to 10–12 m tall, with an almost pyramidal crown, gray-brownish bark, cracked in longitudinal plates; lateral branches from horizontal to patent, the young with many linear lenticels, the herbaceous puberules; ovoid to conical, elongated buds with 5–7 leathery, hairless scales. Leaves glabrous, blade apiculate, from strictly ovate to orbicated or elliptical, with base from cuneate to straight; petiole (12) 18–30 (37) mm, stipules 3.5–4.5 mm. Flowers (2) 5–9 (11) in corymbiform buds; peduncles (11) 16–20 (22) mm; 4 mm high receptacle; triangular-lesiniform sepals 5 mm long, exert, with a slightly toothed hyaline margin and mucronate, ferruginous apex, curved downwards; petals obovate-spatulate, concave, 14–15 × 7.5–8 mm; narrow nail of

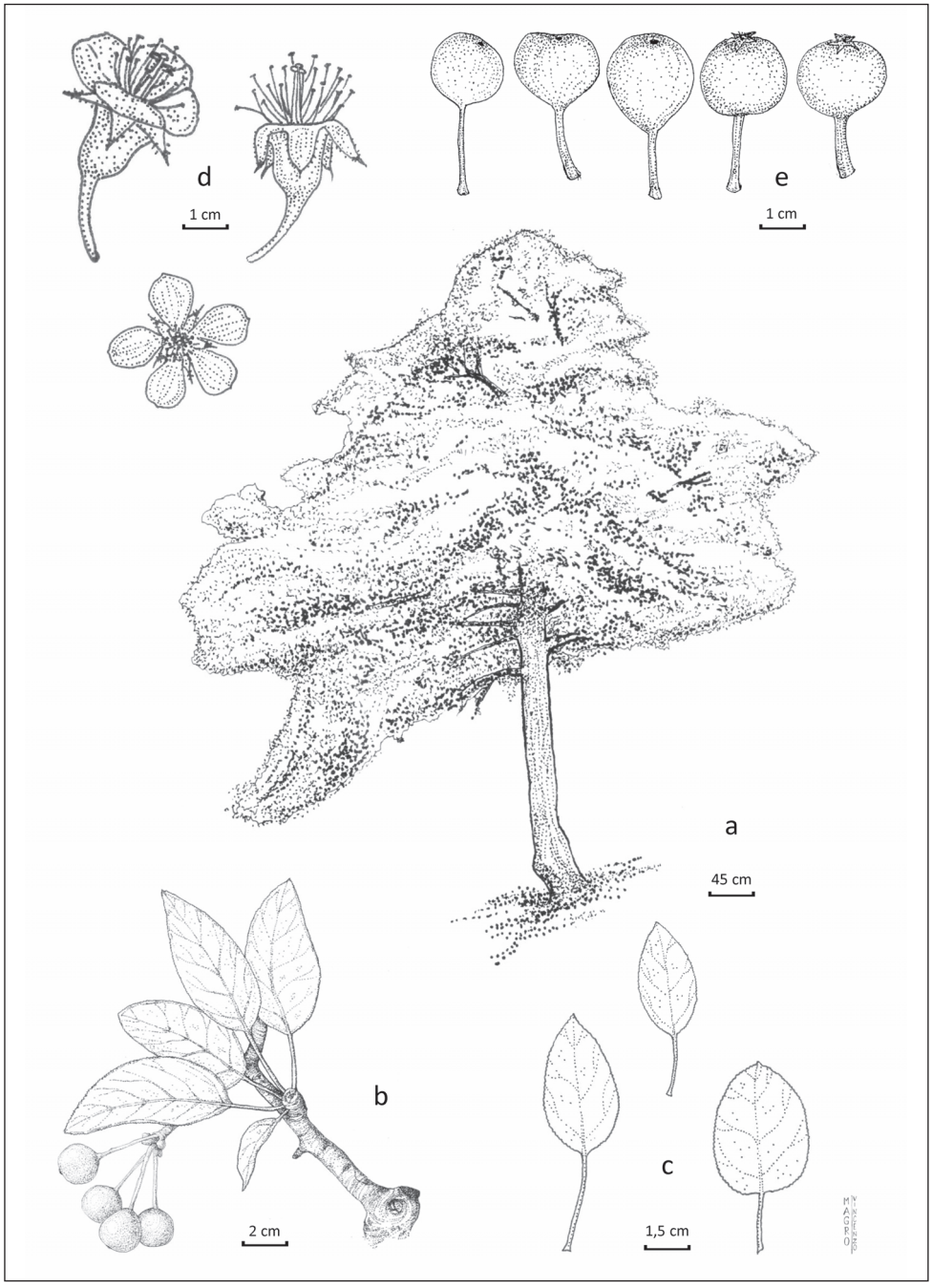

Fig. 1. Iconographic plate of *Pyrus pedrottiana*: a) tree habit; brachiblast with ripe leaves and fruits; c) more recurrent leaf forms; d) floral structures; e) various shapes of pommel recurring in this species: the least frequent in the center and on the right. (Drawings by Vincenzo Magro).

approx. 1.5 mm; stamens in number of 20-25, connected to the base; filaments more or less equal 4–7 mm; anthers 0.5–0.7 mm, purple; 3–5 styles, 8-10 mm long, bottom chiliolate. Subglobose pommel, exceptionally pyriform, 18–20 × 19–23 mm, with rough exocarp, sometimes tobacco-colored and generally with a caducous calyx when ripe. Peduncle of the pommel 12–30 mm long. Seeds 4–6 mm more or less ovate, compressed, dark brown, shiny.

Etymology – The epithet of the name of the new species recalls the surname of the illustrious active naturalist and plant ecologist Franco Pedrotti, professor emeritus of Botany at the University of Camerino (Italy), in the occasion of his 88th birthday.

Phenology – The species flowers in May along with leaf emission (Fig. 2) fruits ripen in October. The ripening of the fruits and the fall of the leaves occurs 2-3 weeks earlier than the other species of *Pyrus* occurring in the same area.

Biological form – Scapose phanerophyte (P scap) (Fig. 3).

Distribution and ecology – Mesophilous species, well represented in the area of the Nebrodi Mountains where it occupies the humid, north slopes. The distribution area covers the submontane belt characterized by extensive forests of *Quercus cerris* L. and occupies the potential space of the associations of the order *Quercetalia-pubescenti-petraea*, between 1300 and 1500 m; in particular it occurs in the area around the *locus classicus* (Fig. 4). In this context, it widely colonizes clearings, exploiting the radical polloniferous capacities. It is no coincidence that some groups of individuals of this species are managed, from the silvicultural point of view, following the same treatment reserved for Turkey oak (Fig. 3f). The presence of *Quercus cerris* to which they are associated include also: *Crataegus monogyna* L., *C. laciniata* Ucria, *Pyrus spinosa* Forssk., *Malus sylvestris* L., *Daphne laureola* L., *Rosa canina* L., *Rosa sicula* Tratt., *Rubus hirtus* Waldst. & Kit., *Ruscus aculeatus* L., and, among herbaceos species: *Polygala* aff. *preslii* Spreng., *Symphytum tuberosum* subsp. *angustifolium* (A. Kern.) Nyman, *Lotus corniculatus* L. subsp. *corniculatus*, *Asphodelus ramosus* L. subsp. *ramosus*, *Clinopodium alpinum* subsp. *nebrodense* (A. Kern. & Strobl) Bartolucci & F. Conti, *Viola reichembachiana* Boreau, *Cynosurus cristatus* L., *Odontites vernus* subsp. *serotinus* Corb., *Cirsium vallis-demonii* Lojac. subsp. *vallis-demonii*, *Centaurea jacea* L. subsp. *jacea*, *Medicago cupaniana* Guss., *Plantago cupani* Guss., *Trifolium pratense* L. subsp. *pratense*, *T. repens* L., *Ajuga iva* (L.) Schreb. subsp. *iva*, *Bellis perennis* L., *Brachypodium pinnatum* (L.) P. Beauv., *Muscari commutatum* Guss., *Dacthylorhiza romana* (Sebast.) Soó subsp. *markusii* (Tineo) Holub, *Sinapis pubescens* L., *Capsella rubella* Reut., *Reichardia picroides* (L.) Roth, *Hypochoeris radicata* L., *Crepis vesicaria* L., ecc.

Characters of the population – The population of the species occurs in an area of about 1000 hectares inside the Regional Park of Nebrodi. Within this area, however, the species occurs in dense and extensive groups of plants of various ages and development (Fig. 3). Overall, it is estimated the number of mature individuals exceeds 5 thousand units.

Fig. 2. *Pyrus pedrottiana*: **a)** portion of the crown in full bloom and foliation; **b-d)** corymbs and details of the flowers in various stages; **e)** final phase of fruiting with pomes partly provided with the remains of the calyx; **f)** fruits after a few days of harvesting, without calyx remains.

Fig. 3. The population of *P. pedrottiana* in its locus classicus in the Nebrodi Mountains: a) the typical plant at the edge of the forest path leading to the village of Militello Rosmarino; b) young plants cleaned of the low branches, at the edge of the wood with *Quercus cerris*; c) a large tree of *P. pedrottiana* and in the background plants of the same species of different ages, also these cleaned for grazing; d) basal part of the trunk of a mature tree of the same population; e) group of contemporary suckers at the edge of the wood, the tendentially pyramidal shape of the species is evident; f) dense nucleus of *P. pedrottiana* in the area close to the locus classicus. in which forestry treatments were carried out.

Taxonomic relationships – On the basis of the taxonomic arrangement of the genus *Pyrus* by Terpò & Amaral Franco (1968) and according to the actual systematic and taxonomic conceptions of the genus in relation to the European flora (Terpò 1984; Browicz 1993; Aldasoro & al. 1996; Aedo & Aldasoro 1997), *Pyrus pedrottiana* is to be included within the group characterized by pomes with caduche calyx that includes also *P. vallis-demonis* and *P. castribonensis* in Sicily, and *P. cordata* in Italy.

Pyrus pedrottiana has some morphological affinities with *Pyrus pyraster*, however, compared to this very variable taxon, it is well distinguished by the persistent calyx as

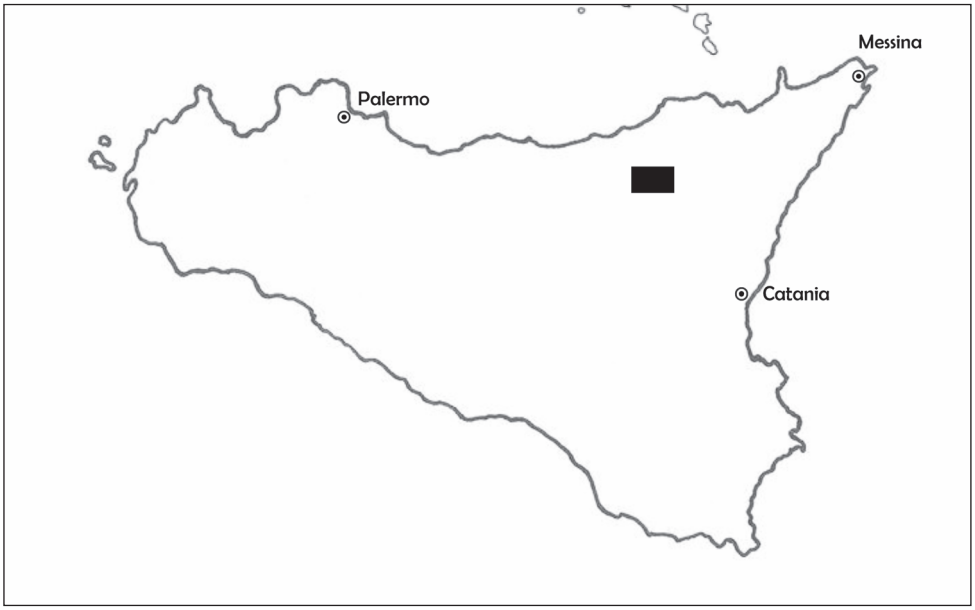

Fig. 4. The area of idstribution of *Pyrus pedrottiana*.

well as in *P. communis* and *P. spinosa*. The same with respect to the two other endemic taxa described in the same area of the Nebrodi Mts, such as *P. vallis-demonis* and *P. ciancioi* (Fig.5). From the former, *P. pedrottiana* is distinguished by the exceptionally pear-shaped fruits (with shorter peduncles (Fig. 1e), as well as by the different morphology, color and leaf consistency, not dark and rigid as in *P. vallis-demonis* . The character of the crown is also different: rising, with a tendency to pyramidal shape (Fig. 3a, b, e). Compared to *P. ciancioi,* the new taxon not only stands out for its leaf morphology and absence of tomentosity, but also for the shape and size of the fruit and peduncles, which are much shorter and stockier than in *P. ciancioi*, Furthermore, differences with the two taxa of the Nebrodi are observed in the flowers: in particular, in the sepals of the *P. pedrottiana* there is a thin marginal indentation and the mucronate, ferruginous apex, curved on the outside (Fig. 1e): this character is absent in all the other species of Sicily. *P.ciancioi*, then, is well distinguished from *P. pedrottiana* for the pommel regularly and not exceptionally with a persistent calyx.

Other specimens

Sicily: Monti Nebrodi, Locality ,Faitedda , 1350 m, on clayey soil, 18 August 2019, *F.M. Raimondo s.n.* (PAL-Gr); Monti Nebrodi, Locality Agrifoglio, 1400 m a.s.l., on siliceous soil, in the clearings of the mixed oak and holly wood, 28 May 2020, *F.M. Raimondo & E. Bajona s.n.* (PAL-Gr, FI); Monti Nebrodi, Localty Bosco Saracina, on siliceous soil, in the clearings of Turkey oak wood, 1420 m a.s.l. 7 May 2021, *F. M. Raimondo & E. Bajona s. n.* (PAL-Gr, PAL, FI).

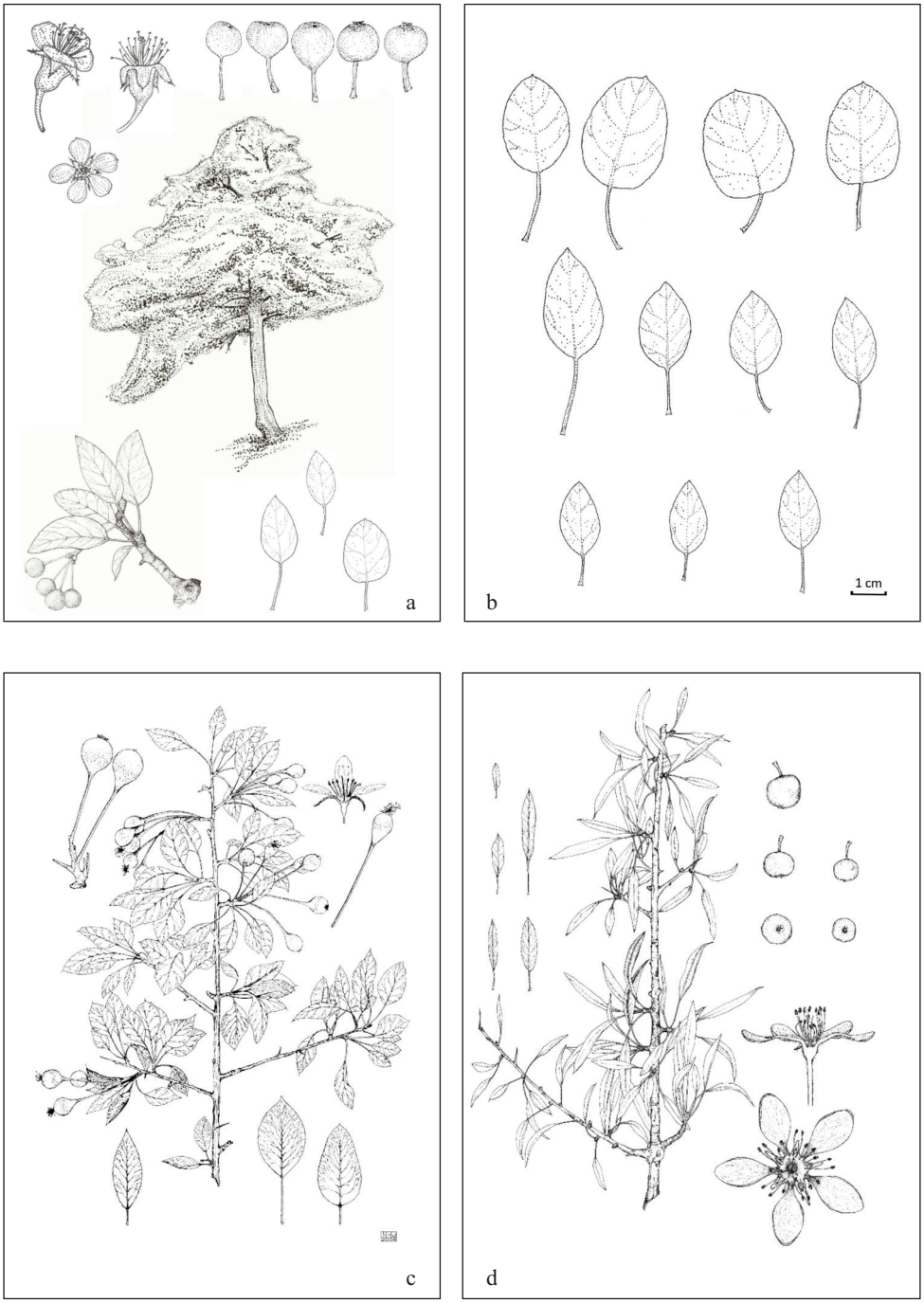

Fig. 5. Differences between the three species of pear of the Nebrodi: **a)** *P. pedrottiana*; **b)** variability of the leaf in *P. pedrottiana*; **c)** *P. vallis-demonis*; **d)** *P. ciancioi*.

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