## Short Communication

# Typification of the name *Herniaria empedocleana* (Caryophyllaceae)

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**Abstract -** *Herniaria fontanesii* subsp. *empedocleana* is a Sicilian endemic vascular plant which has probably gone extinct during the last decades. In this contribution we propose a lectotype for the basionym, *Hernaria empedocleana* described by Lojacono-Pojero, whose selected specimen is kept in PAL. Some details are also provided on the figure and scientific activity of Lojacono-Pojero, one of the most influential Sicilian botanists of the second half of the 19th century. Additionally, some considerations are shared on the need to translate the work of typification and identification of *loci classici* into an effective tool for safeguarding the naturalistic values of the territory.

**Keywords:** herbaria, history of botany, nature conservation, Sicily, typification.

**Riassunto** - Tipificazione del nome *Herniaria empedocleana* (Caryophyllaceae).

*Herniaria fontanesii* subsp. *empedocleana* è una pianta vascolare endemica siciliana, probabilmente estintasi negli ultimi decenni. In questo contributo proponiamo un lectotipo per il basionimo, *Hernaria empedocleana* descritto da Lojacono-Pojero, il cui esemplare selezionato è conservato in PAL. Vengono inoltre forniti alcuni dettagli sulla figura e sull'attività scientifica di Lojacono-Pojero, uno dei botanici siciliani più influenti della seconda metà del XIX secolo. Inoltre, vengono condivise alcune considerazioni sulla necessità di tradurre il lavoro di tipificazione e identificazione dei *loci classici* in uno strumento efficace per la salvaguardia dei valori naturalistici del territorio.

**Parole chiave:** conservazione della natura, erbari, Sicilia, storia della botanica, tipificazione.

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## INTRODUCTION

Within the Mediterranean Basin biodiversity hotspot (Myers *et al.*, 2000), the Italian peninsula is one of the most important centers of diversity and floristic richness (D'Antraccoli *et al.*, 2024). Furthermore, the presence of several key areas of plant diversity, which serve as both refuges and crossroads for plant dispersal, promotes active plant speciation (Médail & Quézel, 1997), making it still possible to describe taxa that are new to science (e.g. Bartolucci *et al.*, 2021, 2023; Brullo *et al.*, 2023; Cambria *et al*., 2024, 2025; Bartolucci & Conti, 2025).

According to the most recent assessment, around 1,700 species and subspecies are endemic to Italy (Bartolucci *et al.,* 2024), 13 of which have been reported to be extinct in nature (Orsenigo *et al.*, 2018; Bartolucci *et al.*, 2024). One of them is *Herniaria fontanesi* Gay subsp. *empedocleana* (Lojac.) Brullo, last observed in 1980s but not found in the last years despite repeated searches in the field (S. Brullo and S. Cambria, *pers. comm*.). According to POWO (2017+), this subspecies belongs to the *H. fontanesii* aggregate that includes three taxa: *H. fontanesii* subsp. *fontanesii*, occurring in NW Africa and Canary Islands, *H. fontanesii* subsp. *almeriana* Brummitt & Heywood, growing in SE Spain and N Morocco, and *H. fontanesii* subsp. *empedocleana*, endemic to Sicily (southern Italy).

A description of the main morphological traits of *H. fontanesii* subsp. *empedocleana* is available in Brullo & Brullo (2020).

*Herniaria fontanesii* subsp. *empedocleana* used to grow on marly and clayey soils from 0 to 20 m a.s.l. as a component of a nitro-xerophilous shrubland community dominated by woody chenopods corresponding to the association *Salsolo oppositifoliae-Limonietum opulenti* Brullo, Grillo & Scalia 1980 (Brullo *et al.*, 1980). This plant was first described as *Herniaria empedocleana* Lojac. by Lojacono-Pojero (1884: 284). Twenty years later, Lojacono-Pojero himself (1907: 264) reported this plant to grow only on the arid marls of one single locality, known as "Salatore", located close to the harbour of Porto Empedocle near Agrigento (southern Sicily).

As part of an ongoing process of typification of the names referring to Sicilian plants published by Lojacono-Pojero (e.g., Domina & Mazzola, 2007; Aghababyan *et al*., 2008; Domina *et al.*, 2014a, 2014b, 2016, 2017; Di Gristina *et al.*, 2017; Scafidi *et al*., 2020; Iamonico & Domina, 2023; Romero Zarco, 2023; Pasta & Troia, 2024,

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and references therein), the selection of the lectotype of the name *H. empedocleana*, currently not designated (Peruzzi *et al*., 2015), is here done and discussed.

## MATERIAL AND METHODS

This work is based on the analysis of Lojacono Pojero's protologue and the examination of relevant literature. In order to trace the original material of *Herniaria empedocleana*, we performed a survey in PAL (codes follow Thiers, 1997+), where Lojacono-Pojero worked and where several specimens collected by him are kept (Stafleu & Cowan, 1981). Furthermore, we also checked the presence of specimens at B, BM, DS, E, FI, G, GE, K, L, MANCH, P, PI, NAP, W, and WU, where several Sicilian duplicates are kept, in order to trace further original material. The typification procedure follows the Madrid Code (Turland *et al.*, 2025), hereinafter ICN (International Code of Nomenclature).

## RESULTS

In his protologue, Lojacono-Pojero (1884) provided detailed diagnosis, followed by the locus classicus '*In aridis marnaceis mari finitimis cum Reaumuria vermiculata ac Statice Smithii, prope Porto Empedocle. Junio 1883'*. Furthermore, the author explains in detail the main morphological differences between *H. empedocleana* and *H. fontanesii* Gay.

The herbarium search allowed us to trace one well preserved sheet stored at PAL (barcode PAL47570). No further original material has been found in the other investigated herbaria. The sheet from PAL contains various specimens mounted together, showing every organ of the plant except for the roots. The label hosts two different handwritings: the first is by G. Bonafede, gardener at the Botanical Garden of Palermo under the direction of Agostino Todaro: "*Herniaria. Porto Empedocle/Bonafede. Aprile 1882*". Further information was added afterwards by d Lojacono-Pojero, whose handwriting is unmistakable: after the name of the genus *Herniaria* he added "*empedocleana Lojac. Nat*[.] *Sicil*[.]", providing further details on the exact location of the plant, found and collected by Bonafede "[in] mezzo al Salatore Lojac.!" [= in the middle of the Salatore, personally seen by Lojacono-Pojero himself].

## DISCUSSION

The explicit mention - made on the label by Lojacono-Pojero himself - of 'Nat Sic.' clearly refers to the paper, published in the journal 'Il Naturalista siciliano' where he first described *H. empedocleana*. Hence, the material fixed on this sheet is eligible for typification purposes. Moreover, PAL47570 perfectly matches the protologue and corresponds to the current application of the name (see e.g., Brullo *et al*., 1980; Pignatti *et al*., 2017; Brullo & Brullo, 2020) and therefore is here selected as the lectotype according to Art. 9.3 of the ICN.

*Herniaria empedocleana* Lojac., *Naturalista sicil.* 3(10): 284. 1884.

≡ ***Herniaria fontanesii*** subsp. ***empedocleana*** (Lojac.) Brullo, *Giorn. Bot. Ital.* n.s. 114(1–2): 46. 1980.

**Lectotype** (designated here): [Italy, Sicily] "*Herniaria* [manu Bonafede] *empedocleana* Lojac, Nat[.] Sicil[.] [manu Lojacono-Pojero] Porto Empedocle, *Bonafede.* Aprile 1882. Mezzo i Salatore Lojac. [manu Lojacono-Pojero] (PAL No. PAL47570!, larger upper right fragment) (Fig. 1) (image available at https://herbarium.unipa.it/herbarium_vdetails_en2.asp?idmode=adv&id=58631).

Michele Lojacono Pojero (Palermo 1853 - Messina 1919) has been one of the most influential Sicilian botanists of the second half of the 19th century. As a pupil of Agostino Todaro, director of the Royal Botanical Garden of Palermo between 1856 and 1892, he started investigating the Sicilian flora (not only vascular plants but also mosses and liverworts) around 1877. In 1883 he obtained a lectureship in botany (Dia, 1987), without ever receiving a salary. For most of his life he lived in Palermo, where he drew most of the economic resources necessary to finance his prolific research (Domina *et al*., 2014b) from the trade of dry specimens of Sicilian plants sold to herbaria throughout Europe and even overseas. The disagreements and misunderstandings with his old mentor became even more bitter in 1892 with Todaro's successor, Antonino Borzì (Domina *et al*., 2014a). This situation prompted him to move to Messina in 1913, where he obtained a position as teacher of Natural Sciences at the Regio Istituto Tecnico (= Royal Technical Institute) and spent the last years of his life.

Apart from a few collections made in his youth, such as the one made in April 1877 on the Aeolian Islands, most of Lojacono-Pojero's dry specimens are now preserved in European and even extra-European herbaria to which he sold his collections. He was probably forced to do so as a means of self-financement, having failed to obtain a paid position at the Botanical Garden due to Todaro's obstructionism first and to Borzì's subsequent hostility. It is therefore not surprising that PAL harbors very few types of the hundreds of taxa (species, varieties, forms) described by Lojacono-Pojero. The presence of original material referred to *Herniaria empedocleana* in PAL at first glimpse may look like an exception, but in fact it confirms this rule, as the specimen designated as lectotype comes from other people's collections.

## CONCLUSIONS

Sicily is not only one of the botanically richest regions in Italy, but also one with the highest number of extinct species or species that have not been observed for a long time (Domina *et al*., 2025). In this regard, it should be noted that the probable extinction of *Herniaria fontanesii* subsp. *empedocleana* is not due to natural processes but is the result of the physical destruction of the territory where the only known population occurred. Between the late 19th century and the 1960s, in fact, the natural environment of the Porto Empedocle area was literally wiped out to make way for industrial buildings devoted to sulphur refining (Syed *et al*., 2024). The rapid but short-lived industrial development of the area in turn led to chaotic urban sprawl and infrastructure development, giving the coup de grace to the local landscape and triggering the disappearance or irreversible degradation of most of the local ecosystems.

Fig. 1 - Sheet bearing the lectotype (larger upper right fragment) of the name *Herniaria empedocleana* (PAL47570, published with permission). / Foglio recante il lectotipo (frammento superiore destro più grande) del nome *Herniaria empedocleana* (PAL47570, pubblicato con autorizzazione).

Over the last ten years, the Italian botanical community has made a considerable effort to highlight the importance of typification work and the identification of the *loci classici* of vascular plants endemic to Italy (Peruzzi *et al*., 2015) or described from Italy (Peruzzi *et al.*, 2019). The richness of species - and of endemic ones in particular - in our flora should not just be something to boast about triumphantly at specialist conferences. Instead, it should remind not only botanists, but also politicians, local administrators, stakeholders and citizens of their duty to protect these places. The importance of *loci classici* becomes crucial in the case of endemic species that count only one or a few populations, whose protection is our full and sole responsibility (Brundu *et al*., 2017).

In recent decades, several species new to science have been described whose past presence is now documented only by herbarium material, while these plants are no longer present in nature, having become extinct globally as a result of the destruction or profound alteration of the territories where they used to live: this is the case, for example, of *Limonium catanense* (Tineo ex Lojac.) Brullo, which probably disappeared at the beginning of the 20th century from the coastal area of the port of Catania, or *Suaeda kocheri* Guss. ex C.Brullo, Brullo & Giusso, once present near the ports of Lampedusa and Porto Empedocle, where it seems to have disappeared definitively over the last few decades (Brullo *et al*., 2011). Identifying the locations where extremely rare plants have been collected and from where they have been described should be the first step in adopting effective strategies to safeguard or increase their integrity, allowing these rare plants to grow in habitats that guarantee their growth, reproduction and free dispersal. Otherwise, scientific research applied to the nomenclature and classification of plants risks remaining a sterile academic exercise with no practical impact, and type labels may sound like sad epitaphs.

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