SOCIETÀ TOSCANA
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SOCIETÀ TOSCANA
DI
SCIENZE NATURALI

MEMORIE • SERIE B • VOLUME CXXVI • ANNO 2019

Edizioni ETS

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Atti Soc. Tosc. Sci. Nat., Mem., Serie B, 126 (2019)
pagg. 5-12, figg. 2; *doi: 10.2424/ASTSN.M.2018.16*

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FROM COMMON AND USED TO RARE AND FORGOTTEN: PAST AND PRESENT DISTRIBUTION OF THE ARCHAEOPHYTE *EUPHORBIA LATHYRIS* L. (EUPHORBIACEAE) IN SOUTHERN ITALY AND SICILY

Abstract - S. Pasta, A. Troìa, *From common and used to rare and forgotten: Past and present distribution of the archaeophyte* Euphorbia lathyris *L. (Euphorbiaceae) in southern Italy and Sicily.*

Our study aimed at clarifying the current and previous occurrence, distribution and status (native vs. introduced) of *Euphorbia lathyris* L., the caper spurge, in S Italy and Sicily: most of the recent Italian floras and checklists, in fact, do not report this species for this area. To do this, a multi-disciplinary research was carried out taking into account not only botanical but also ethnobotanical and dialectological sources and a survey of the main herbaria of central and southern Italy. Our results point out that *E. lathyris* was much more frequent, well-known and commonly used in the whole southern Italy and in Sicily until 2-3 centuries ago, and that it probably experienced isolated cases of short naturalization at that time. Nowadays the caper spurge still occurs with few, small and scattered populations only in Molise and Calabria.

Key words - Apulia, Basilicata, Calabria, Molise (Italy), casual alien, ethnobotany, herbaria

Riassunto - S. Pasta, A. Troìa, *Da comune e utilizzata a rara e dimenticata: distribuzione passata e presente dell'archeofita* Euphorbia lathyris *L. (Euphorbiaceae) in Italia meridionale e Sicilia.*

Il nostro studio mira a chiarire la presenza attuale e passata, la distribuzione e lo status (nativa/introdotta) di *Euphorbia lathyris* L., nota col nome volgare di Catapuzia, in Italia meridionale e Sicilia: gran parte delle recenti flore italiane, infatti, non segnala la specie per questa area. A tale scopo, è stata condotta una ricerca multidisciplinare che ha tenuto conto non solo delle fonti botaniche ma anche di quelle etnobotaniche e dialettologiche, nonché di un sondaggio dei principali erbari del centro e sud Italia. I nostri risultati evidenziano che *E. lathyris* è stata molto più frequente, ben nota e comunemente usata in tutta l'Italia meridionale e in Sicilia fino a 2-3 secoli fa, e che probabilmente essa ha dato vita a casi isolati di breve naturalizzazione in quel periodo. Attualmente la Catapuzia si presenta ancora con poche, piccole e sparse popolazioni solo in Molise ed in Calabria.

Parole chiave - aliena casuale, Basilicata, Calabria, Molise (Italia), erbari, etnobotanica, Puglia

Introduction

Euphorbia lathyris L. (Euphorbiaceae), also known as caper spurge or mole plant, has been cultivated and used since ancient times, especially in southern and central Europe, for various purposes. For instance, the species was already cultivated, and perhaps naturalized, in southern Italy during the classical age, when it occurred at Pompeii (Borgongino, 2006). The wide spectrum of uses of the plant (for humans and domestic animals) is connected with the toxicity of its latex: as far as we know, it has been mostly exploited as purgative, laxative and emetic, or applied against skin diseases (Ernst *et al.*, 2015; Guarrera *et al.*, 2007; Viegi *et al.*, 2003), while its repellent effect on small noxious herbivorous mammals has never been confirmed.

As a result of its ancient cultivation, Geltman (2015) points out that assessing the native area of *E. lathyris* is almost an impossible task. According to most of the recent overviews on the genus *Euphorbia*, the caper spurge is considered to be native to Asia, its primary range spreading from China/Vietnam over Pakistan and Kyrgyzstan (Govaerts *et al.*, 2010; WCSP, 2015) and westwards up to Caucasian countries (Georgia, Armenia and Azerbaijan) (EURO+MED, 2006 onwards), from where it may have been introduced long time ago in the Mediterranean countries, because of its various uses as medicinal plant. Nowadays it also grows in Europe, Atlantic islands, N Africa, N and S America (Radcliffe-Smith, 1986), and Australia (Jeanes, 1999).

The occurrence of *E. lathyris* throughout Mediterranean area is discontinuous: Greuter *et al.* (1986) report it as native in Greece, Italy, Sardinia, Corsica, doubtfully native in Jugoslavia and France, naturalized in Anatolia, Turkey-in-Europe, Bulgaria, Balearic Islands, Spain, Portugal, Morocco; Smith & Tutin (1993) follow Greuter *et al.* (1986) for Mediterranean countries, reporting it as naturalized also in Azores and in most part of central Europe, whilst EURO+MED (2006 onwards) reports its occurrence as naturalized only in Spain, Portugal and Morocco, and as native in Transcaucasia, with a wide gap in the Mediterranean between Spain and Caucasus.

In Italy *E. lathyris* mostly occurs on nutrient-rich soils up to 1000 m a.s.l., preferring the places which are subject to anthropogenic disturbance (i.e. suburban areas,

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roadsides, disturbed streamsides, abandoned orchards and groves, construction and dump sites). According to the oldest Italian floras (Arcangeli, 1882; Bertoloni, 1844; Cesati *et al.*, 1884; Parlatore, 1869) up to the most recent plant checklists (Conti *et al.*, 2005, 2007), this biennial hemicryptophyte does not occur in most of the regions of southern Italy (Apulia, Basilicata and Sicily); its occurrence in Calabria has been recently confirmed (Crisafulli *et al.*, 2006), while ancient records from Molise needed to be checked (Lucchese, 1995).

In this note we revise the distribution of the species in southern Italy, with special reference to Sicily, where (according to national and international Floras and checklists) it is not present, to verify the extent of the distribution 'gap' in the centre of the Mediterranean basin (reported also in some regional reviews, e.g. Frajman & Nogan, 2007). We try to interpret its native or alien status in the above mentioned regions, too.

Materials and methods

In order to reconstruct the past and present distribution of *E. lathyris* in southern Italy and Sicily we consulted not only the botanical but also the ethnobotanical literature. Moreover, we looked for herbarium specimens kept in the main central and southern Italian herbaria: FI, PAL, CAT, LEC, BI, HLUC, NAP, and RO (acronyms according to Thiers, 2017).

Results and Discussion

Euphorbia lathyris was reported as growing wild in Sicily by Lojacono-Pojero (1904-1907) on the base of two *exsiccata* stored in PAL, one coming from Alicudi (the westernmost island of Aeolian Archipelago), and one from 'Monte Lungo di Carini' (currently called Montagna Longa), a calcareous mountain about 15 km west of Palermo. Both these records have just been reported with no further remarks by Giardina *et al.* (2007) and Raimondo *et al.* (2010) but they were neglected by the authors of all the Italian floras published hereinafter (Fiori, 1923; Pignatti, 1982; Pignatti *et al.*, 2017; Zangheri, 1976), who report this species for central and northern Italy, Sardinia and Corsica but not for southern Italy, with the only exception of Campania, where it was already recorded during the XIX century (Tenore, 1823, 1831).

No single specimen of *E. lathyris* from S Italy is stored in the herbaria of FI, CAT, HLUC, LEC and RO; moreover, the single *exsiccatum* conserved at NAP is useless as it only reports 'nelle province del Regno / coltivata' (R. Vallariello, *pers. comm.*), whilst the one conserved at BI has no label, hence it is not possible to assess whether it was collected in our study area or not.

We also verified the specimens stored in PAL (see below for the list of the 'specimina visa'): only the one from Alicudi is present (PAL 52125, http://147.163.105.223/zoomify/view_img.asp?ic=52125), even if in bad conditions, while that from mainland Sicily has not been found. The date of the specimen from Alicudi (16 June 1854) and the name 'Domenico' suggest that the collector could be Domenico Reina, and not Enrico Pirajno di Mandralisca as erroneously stated by Lojacono-Pojero (1904-1907). This hypothesis needs to be confirmed: in fact, in PAL there are several specimens collected by G. (Giovanni) Reina, an employee of the Botanic Garden of Palermo at that time; his director, Vincenzo Tineo, sent him and his colleague Vincenzo Messina to collect plants in many Sicilian localities, including circum-Sicilian islets (Mazzola *et al.*, 1997), while Domenico Reina collected animals (mostly invertebrates, but also plants) on behalf of the Zoological Museum of the University of Palermo and other Italian institutions around 1860s and with no doubt visited Alicudi (Lo Cascio, 2014).

Although *E. lathyris* has not been observed in Sicily since XIX century, we found out many Sicilian vernacular names clearly referred to the species, like 'Latiri' (Penzig, 1924), 'Catapòzzulu' and 'Catapùzzulu' (Piccitto, 1977). This fact suggests that the caper spurge may have been much more frequent on the island in the past centuries. This hypothesis was supported by consulting more ancient botanical and pharmaceutical books: in fact, Cupani (1696) records its occurrence in Sicily with different polynomials used by other pre-Linnaean scholars such as 'Tithymalus latifolius, Cataputia dictus … Lathyris maior … Lathyris, sivè Cataputia minor'. Half a century later, Lagusi (1743) mentions *E. lathyris* with the vernacular names 'Erba Catapazzuli', 'Catapotia', 'Latire', and 'Titimmalu cu li fogghi larghi' (= broadleaved spurge) as a native (or at least as a fully naturalized) plant rather common in the orchards of Sicilian countryside, specifying that the raw seeds were used for their immediate emetic and purgative effects, while a decoction of the leaves was used to treat and cleanse skin ulcers and sores. Quite surprisingly, Ucria (1789) reports *E. lathyris* as native and common everywhere ('ubique!'), and mentions its use against warts and the vernacular name 'catapozzuli', whilst La Pira (1803), mentions '*Cataputia minor, Lathyris major*' as either a cultivated or a naturalized plant in Sicily. In his Catalogus Plantarum, Tineo (1827) mentions the species repeating Ucria's vernacular name; as for the provenance, by reporting 'Sicilia' he considered it as native. An old specimen without date, reporting exactly the same information of the Catalogus and issuing from plants cultivated in Palermo Botanical Garden is still preserved in PAL (see *specimina visa*). In the same year Coppoler (1827) includes *E. lathyris* in a list of

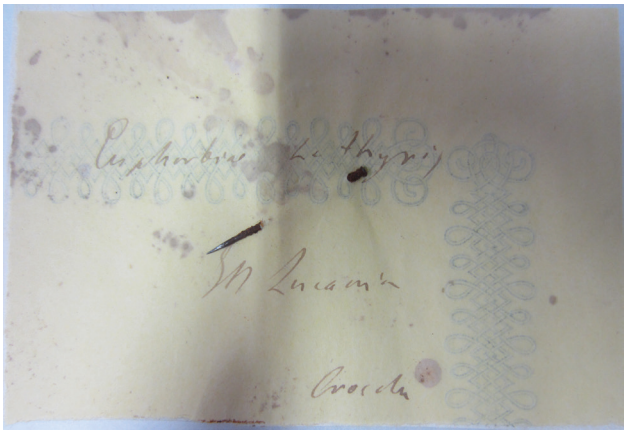

Figure 1. Label of the herbarium specimen (PAL 53111) documenting the past presence of *E. lathyris* in Basilicata.

species which can be potentially noxious for Sicilian bee-keepers: this confirms the occurrence of the species throughout the island at least until the beginning of XIX century. As a matter of fact, the species must have disappeared shortly after: in fact, Gussone (1842-1843) simply repeats Ucria's datum without adding any personal comment; later on, neither Calcara (1851) nor Pitrè (1870) will mention it, while its use possibly lasted longer in the small and isolated human community of the tiny islet of Alicudi.

As for Calabria, the presence of three different vernacular names clearly referring to the caper spurge, i.e. 'scataponzolo' (Tenore & Pasquale, 1847), 'gatapuzia' (Penzig, 1924) and 'làutru' (Penzig, 1924: Cosenza province, from 'lathyris'), suggest that the species was almost common (at least as a cultivated plant) in the region, where it became rarer and rarer during last century. The local occurrence of *E. lathyris* was documented in the past for Aspromonte (Capo Spartivento according to Macchiati, 1884; Giffoni and Valli according to Pasquale, 1897), and confirmed in recent times (Crisafulli *et al.*, 2006) near Serra San Bruno, and at Canolo Nuovo above Cinquefrondi (A. Crisafulli, *pers. comm.*), always in ruderal and man-made habitats. No other botanist has seen it recently elsewhere in the region (C. Gangale, C. Musarella, *pers. comm.*).

In PAL we found a specimen collected by Felice Crocchi, a chemist and botanist who wrote down a catalogue of the plants growing at the botanical garden of Potenza (Crocchi, 1846). This *exsiccatum* (PAL 53111; http://147.163.105.223/herbarium_vdetails_en2.asp?idmode=simple&id=62425, Fig. 1) represents the first and only record of *E. lathyris* for Basilicata. As the label does not indicate a precise locality but a generic 'In Lucania', we are not able to assess whether the plant was naturalized or not at that time: in fact, the specimen could issue from a plant cultivated in the botanical garden of Potenza. As a matter of fact, *E. lathyris* has not been mentioned neither in the works

Figure 2. Herbarium specimen (PAL 52125) documenting the occurrence of *E. lathyris* on Alicudi Island

published immediately after Crocchi (i.e. Barbazita, 1847) nor in the only available regional inventory (Gavioli, 1947). Whenever naturalized, caper spurge only experienced a very short time of occurrence as a casual alien and has disappeared hereinafter without leaving any trace, not even in local folklore (Salerno *et al.*, 2005). Additionally, nobody observed it growing wild in this region during last 30 years (S. Fascetti, G. Navazio and G. Salerno, *pers. comm.*).

The vernacular name 'acinello' (= small grain, berry), mentioned by Penzig (1924) for Lecce, led us to investigate whether the caper spurge also occurred in Apulia. Indeed, Baselice (1811, 1813) mentions it as cultivated in Gargano area, where it was used to discourage garden robberies, as a medicinal plant and to repel moles. Later on, Marinosci (1870) states to have cultivated an individual obtained from a plant observed growing at Lecce. Additionally, he provides some information on its local uses (purgative, caustic against warts, poison to catch fishes) and reports four vernacular names: besides the already mentioned 'acinello', he also quotes

'catapuzia minore', 'cacapuzza' and 'purgativo de' monaci' (= monk purgative), the latter suggesting that it was introduced and commonly used by monks. As no *exsiccatum* was found in LEC, we cannot assess if the plant observed by Marinosci was cultivated or escaped; as a matter of fact, *E. lathyris* has never been observed neither in Gargano (Fenaroli, 1970; Biscotti, 2002) nor in Salento or elsewhere in Apulia since 100 years or even more (P. Medagli, R. Wagensommer and V.E. Perrino, *pers. comm.*). The single *exsiccatum* of *E. lathyris* conserved at BI has no indication of collecting site; according to the handwriting on the label, it was probably collected in Campania by Vincenzo Cesati (L. Forte, *pers. comm.*).

E. lathyris was recorded for Molise during the first decades of XIX century by Scarano (1812), who found it in the municipality of Trivento (Campobasso province), where it had already disappeared one century after (Villani, 1912), and by Tommaso Levante, who generically reported its occurrence in the region (Pizzolongo, 1964). Although Conti *et al.* (1997) considered the species as 'extinct in the wild' for Molise, it figures among the veterinary medicines still used by local people in Isernia province (Guarrera, 2002; Guarrera *et al.*, 2009) and its sporadic occurrence in the region was confirmed by Franco Rossi (*pers. comm.*), who documented an individual growing at Larino (Campobasso province, June 2007) and another one growing at Montenero di Bisaccia (Campobasso province, May 2008); moreover, a conspicuous population of *E. lathyris* has been recently observed in the archaeological site of Sepino-Altilia (B. Paura and G. Salerno, 5.5.2014, *pers. comm.*).

Conclusions

Considering that the vernacular name 'lathyris', once used in Sicily and Calabria, is identical to the name used for caper spurge in classic Greek treatises, *E. lathyris* probably has a very long history of use (and introduction) in southern Italy, a history which could date back to the Greek colonization of S Italy, i.e. around VIII century BC. As a matter of fact, this species is no more used or known as a medicinal plant all over southern Italy and, obviously, the less it is cultivated, the less are its chances to escape from cultivation. The same seems to have happened in Sardinia, where its current occurrence is sporadic: although many vernacular names clearly referred to this species are known for central and southern Sardinia (Paulis, 1992), its properties completely fell into oblivion (Campanini, 2009).

The present study emphasizes the importance of taking into account the ethnobotanical and dialectological studies, which often represent a totally neglected source of precious information concerning the previous occurrence, distribution and frequency of currently rare or almost extinct plants. In fact, also in the present study case, the popular knowledge and the vernacular names seem to have been underestimated by botanists. The same has been proved, for example, for the Aeolian islands of Filicudi and Alicudi, where local toponyms unambiguously indicated the occurrence of *Chamaerops humilis* L. (Lo Cascio & Pasta, 2000) and *Cytisus aeolicus* Guss. (Pasta & Lo Cascio, 2002), respectively, long before being recorded by scientists.

As for Corsica and Sardinia, several scholars (Arrigoni, 2010; Corrias & Diana, 1986; Deschâtres, 1986; Gamisans, 1985; Jeanmonod & Gamisans, 2013) consider the local populations of *E. lathyris* living at mid-altitude along streamsides and forest openings as native. Contrariwise, Arrigoni & Camarda (2015) and most of the authors of the recent papers on the alien species of Mediterranean countries (Ferrer-Gallego *et al.*, 2016; Uludağ *et al.*, 2017), including Italy (Bacchetta *et al.*, 2009; Del Guacchio & La Valva 2018; Viegi *et al.*, 2003), consider the caper spurge as an archaeophyte and a casual alien according to the definition of Pyšek *et al.* (2004). Following this opinion, it has been included in the recently published check-list of the alien vascular plants of Italy (Galasso *et al.*, 2018). As a consequence, *Euphorbia lathyris* should be left out from the national (Conti *et al.*, 1997) and regional (Raimondo *et al.*, 2011) red-lists, following the same destiny of other species such as *Citrullus colocynthis* (L.) Schrad., another naturalized archaeophyte native to S Asia still present on Vulcano island (Aeolian Archipelago) and once occurring also on Pantelleria island (Di Martino *et al.*, 1995). In the end, *E. lathyris* behaved as a casual alien in Apulia and Sicily – and perhaps in Basilicata – up to mid XIX century, while it is naturalised in Molise and Calabria. An intriguing question which still needs to be answered is why the caper spurge has almost suddenly disappeared throughout the entire S Italy while it is still cultivated – and frequently escaped or fully naturalised – in central and northern Italy (Galasso *et al.*, 2018).

Specimina visa

1. Alicuri [= Alicudi], naturale [= growing wild] / *Domenico [Reina]* / 16.VI.[18]54 (PAL 52125) (http://147.163.105.223/zoomify/view_img.asp?ic=52125). Fig. 2

2. Sic[ilia] / Ucr[ia]: / med[icinalis]: ven[enosa]: / ♂ [= biennial], N[ome]: S[iciliano]: [= Sicilian name] *Catapozzulu*, Duodec[andria]: trigyn[ia]: *s.d.* (PAL, no code)

3. In Lucania / *Crocchi* / *s.d.* (PAL 53111) (http://147.163.105.223/herbarium_vdetails_en2.asp?idmode=simple&id=62425).

ACKNOWLEDGEMENTS

We are grateful to many friends and regional experts, who helped us to find and consult the most relevant literature and kindly shared with us information and opinions on the past and present distribution and on the status of *E. lathyris* not only in southern Italy, like Alessandro Crisafulli (Dipartimento ChiBioFarAm, University of Messina), Carmen Gangale (Botanical Garden of the University of Calabria, Arcavacata di Rende) and Carmelo Musarella (Dipartimento di Agronomia, University 'Mediterranea' of Reggio Calabria) for Calabria, Fernando Lucchese, Giovanni Salerno (Diartimento di Biologia Ambientale, University of Rome 3) and Bruno Paura (Dipartimento S.A.V.A., University of Molise, Campobasso) for Molise, Pietro Medagli (Dipartimento di Scienze e Tecnologie Ambientali e Biologiche, University of Salento, Lecce), Robert Wagensommer (Dipartimento di Chimica, Biologia e Biotecnologie, University of Perugia), Valeria Tomaselli (Istituto di Bioscienze e Biorisorse, National Council of Research, unit of Bari) and Enrico Vito Perrino (Istituto Agronomico Mediterraneo *of Bari*) for Apulia, Giuseppe Navazio (Pignola, PZ) for Basilicata, but also for other regions where *E. lathyris* occurs, such as Annalisa Santangelo (Dipartimento di Biologia, University Federico II, Naples) for Campania, Guilhan Paradis (Ajaccio) for Corsica and Giuseppe Fenu (Dipartimento di Scienze dell'Ambiente e della Vita, University of Cagliari) for Sardinia. We are also indebted with Pietro Lo Cascio (Associazione Nesos, Lipari) and Gianniantonio Domina (Dipartimento di Scienze Forestali, Alimentari e Agrarie, University of Palermo), for helping us with the identification of the collector of the plant specimen of Alicudi, and with the staff of several Italian herbaria, namely Chiara Nepi (FI), Antonella Albano (LEC), Luigi Forte (BI), Simonetta Fascetti (HLUC), Roberta Vallariello (NAP) and Agnese Tilia (RO) for facilitating our research of the specimens of *E. lathyris* collected in S Italy. Many thanks also to Renzo Nelli (Science Library of the University of Florence) for helping us to consult the papers of Pizzolongo and Scarano and to the reviewers, whose punctual remarks and suggestions improved the final version of the manuscript.

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(ms. pres. il 4 novembre 2018; ult. bozze il 31 ottobre 2019)

Edizioni ETS
Palazzo Roncioni - Lungarno Mediceo, 16, I-56127 Pisa
info@edizioniets.com - www.edizioniets.com
Finito di stampare nel mese di dicembre 2019