Article

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Some new additions to the exotic vascular flora of continental Portugal

Abstract

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In this paper, based on recent and old bibliography and some own field observations, 69 more taxa (neophytes) are added to the catalogue of the exotic (or xenophytic) naturalised or subspontaneous vascular flora of continental Portugal, which includes now 841 taxa (species, subspecies, varieties and hybrids), a growth corresponding to more than 8.9% of the previous total number of 772 taxa, since our last reassessment, published in 2018, and our earlier surveys.

Key words: neophytes; subspontaneous flora; vascular plants; xenophytes.

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Introduction

After studying this subject for almost thirty years (since 1996), and given the importance of this kind of checklist, I thought it would be a good idea to update the list of the xenophytic flora of continental Portugal.

At the present time (2024), I conclude that the exotic naturalised or subspontaneous flora of continental Portugal includes now at least 841 neophytic taxa (species, subspecies, varieties and hybrids), 341 more than the number of 500 taxa attained at my original work on this theme (Domingues de Almeida 1999).

As we have written before (Domingues de Almeida & Freitas 2000, 2001, 2006, 2012), the expansion of exotic invasive plants is threatening the Portuguese native flora, representing a severe environmental problem, as it happens in many other parts of the World.

As we already know, continental Portugal is a territory very rich in weeds, shrubs and trees of exotic origin, at some cases even threatening the Portuguese native flora (Chodat 1913; Pereira Coutinho 1920; Fernandes 1955; Pinto da Silva 1971, 1975; Pinto da Silva & al. 1989; Domingues de Almeida & Freitas 2000, 2001; Greuter 2002).

Material and methods

The species are arranged in alphabetic order. Classification used in this paper follows the most recent concepts: APG III (2009) and APG IV (2016) for the delimitation of families, and *Flora iberica* (Castroviejo & al. 1986–2021) for the nomenclature of taxa. Ecological classification of the referred taxa follows Kornas (1990). Phytotypes or plant life-forms are given according to Raunkiaer classification (1934).

These 69 new taxa are mainly from recent (or ancient, in some cases) bibliographic references, but also from observations in the field and personal communications, and represent an increment of more than 8,9 % to the exotic flora of continental Portugal, since my last survey (772 taxa), published in 2018 (Domingues de Almeida 2018).

These 841 exotic taxa represent about 21 % (more than one fifth) of the total number of taxa of the continental Portuguese vascular flora, which includes circa 4000 taxa (species, subspecies, varieties and hybrids), according to our most recent estimations (Domingues de Almeida 2009; Domingues de Almeida & Freitas 2012; Domingues de Almeida 2018).

Results

1. ***Acacia podalyriifolia*** A. Cunn. ex G. Don [*Fabaceae*]
Phanerophyte, from NE Australia (Mabberley 2017), recently found naturalised in the northern Portuguese province of Minho: Viana do Castelo (Sousa Homem 2019), and Paredes de Coura (Matias 2017).

2. ***Acer opalus*** Miller [*Sapindaceae*]
Phanerophyte, from Eurasia, recently found naturalised in Beira Alta: Vouzela, maybe as an agriophyte, in oakwoods (Pereira & al. 2013).

3. ***Albizia julibrissin*** Durazz. [*Fabaceae*]
Phanerophyte, from Eurasia, introduced as an ornamental tree, now probably an epoecophyte, recently found naturalised somewhere in Portugal, although not really invasive (Marchante & al. 2014; Presidência do Conselho de Ministros 2019; https://invasoras.pt/pt/planta-invasora/albizia-julibrissin).

4. ***Aloe* × *nobilis*** Haw. [*Asphodelaceae*]
Chamaephyte, from South Africa; this species was recently (2013) found naturalised in Portugal, maybe as an agriophyte, in the Algarve: "in dune vegetation at Praia do Amado, near Portimão" (Smith & al. 2023).

5. ***Aloiampelos ciliaris*** (Haw.) Klopper & Gideon F. Sm. var. ***ciliaris*** (= *Aloe ciliaris* Haw.) [*Asphodelaceae*]
Chamaephyte, from South Africa (Mabberley 2017); this species "has escaped from cultivation, especially along the west-central coast of Portugal in the vicinity of Lisbon and indications are that it is on the brink of becoming naturalised" (Smith & al. 2023).

6. ***Alternanthera philoxeroides*** (Mart.) Griseb. (= *Bucholzia philoxeroides* Mart.) [*Amaranthaceae*]
Chamaephyte, from South America, recently found becoming invasive (probably as an epoecophyte) in continental Portugal (Ledo Mendes, 2023).

7. ***Amsinckia calycina*** (Moris) Chater (= *Lithospermum calycinum* Moris) [*Boraginaceae*]
Therophyte, from America, recently found as an epoecophyte in Trás-os-Montes: Bragança, in a field of *Lolium multiflorum* (Carlos Aguiar in Facebook, 26.IV.2021). It was already found naturalised in the neighbour countries Spain and France (Chater 1972; Juan 2012).

8. ***Anethum graveolens*** L. [*Apiaceae*]
Therophyte, native of the Old World, is "Widely cultivated as a herb and often more or less naturalised, particularly in the Mediterranean region", including Portugal (Tutin 1968), in several provinces: Algarve, Alto Alentejo, Beira Baixa, Beira Litoral and Estremadura (Grisley 1661; Brotero 1804a; Mariz 1895; Franco 1971; Pinto da Silva 1993).

9. ***Aptenia*** ×**'Red Apple'** [*Aizoaceae*]
Chamaephyte; this cultivar, of hybrid origin, from the crossing of *Aptenia cordifolia* (L. f.) Schwantes and *A. haeckeliana* (A. Berger) Bittrich ex Gerbaulet was found naturalised in continental Portugal: Estremadura, at least since 2014 (Silva & al 2015; Smith & al 2019).

10. ***Aristida adscensionis*** L. [*Poaceae*]
Hemicriptophyte, native of the Americas, was recently found naturalised as ruderal epoecophyte in the south of Portugal: Algarve (Portugal), at the margin of a road, at 31.VIII.2019 (Sánchez Gullón & Peña Ramos 2019).

11. ***Aucuba japonica*** f. ***variegata*** (Dombrain) Rehd. (= *Aucuba japonica* var. *variegata* Dombrain) [*Garryaceae*]
Phanerophyte, from East Asia, was recently found naturalised in Portugal, Estremadura: "29SMC6193, Sintra, Colares, *V. Silva & A. Flor*. 17-VI-2021" (Silva & al. 2023).

12. ***Billbergia zebrina*** (Herb.) Lindley (= *Bromelia zebrina* Herb.) [*Bromeliaceae*]
Hemicriptophyte, native of South America, was found some years ago naturalised in Portugal, Estremadura: "Ramada, Odivelas, Lisboa (E) 29SMC8395" (Silva & al. 2012).

13. ***Borago officinalis*** L. [*Boraginaceae*]
Therophyte, from the Mediterranean Region, probably an archaeophyte, introduced a long time ago as an edible, medicinal and ornamental plant, already referred by Grisley (1661), and by Brotero (1804a) as "spontanea , seu quasi indigena in ruderatis , solo raro , ad hortos , quibus colitur , et circa loca habitata"; it is also considered "planta culta" (Dias Baptista 1783) and "planta exotica" (Vandelli 1788); for more recent authors it seems to be a common spontaneous plant (Pereira Coutinho 1905; Pereira Coutinho 1913; Sampaio 1947; Franco 1984; Valdés 2012).

14. ***Bromus caroli-henrici*** Greuter [*Poaceae*]
Therophyte, from the Eastern Mediterranean Region (Greuter 1971), rarely naturalised in Portugal as an epoecophyte ot diaphyte, possibly introduced with italian wheats (Franco & Rocha Afonso 1998, sub *Bromus alopecuros* Poiret subsp. *alopecuros*), recently considered subspontaneous or adventitious in continental Portugal (Romero-Zarco 2023).

15. ***Chloris gayana*** Kunth [*Poaceae*]
Hemicriptophyte, from Africa, already known as subspontaneous in several Spanish provinces (Velayos 2021), was recently found in the Algarve, probably as an epoecophyte, by Valter Jacinto (2009, photo, Naturdata: https://naturdata.com/especie/Chloris-gayana/39407/0/) and Paulo Alves (2018, in Facebook), and also in Olhão (Algarve), by J. M. Neiva, "jul 23, 2021", "Growing on the slope of the road, origin unknown but likely a garden escapee" (Biodiversity4all 2024a).

16. ***Citrullus colocynthis*** (L.) Schrader (= *Cucumis colocynthis* L.) [*Cucurbitaceae*]
Hemicriptophyte, native of the Mediterranean Region, recently found naturalised in Portugal, Baixo Alentejo: Mértola, Corte do Pinto, by the margin of the river Guadiana (David Cardeira in Facebook, 5.XI.2023).

17. ***Coreopsis lanceolata*** L. [*Asteraceae*]
Hemicriptophyte, from E North America (Mabberley 2017), sometimes cultivated in continental Portugal and rarely naturalised, probably as a diaphyte, at several Portuguese provinces: Baixo Alentejo (Alcácer do Sal: Barrosinha), Beira Litoral (Águeda; Coimbra; Oliveira de Azeméis), Douro Litoral (Gondomar: Rio Tinto; Póvoa de Varzim), and Minho (Guimarães) (Biodiversity4all 2024b).

18. ***Coreopsis tinctoria*** Nutt. (= *Calliopsis tinctoria* (Nutt.) DC.) [*Asteraceae*]
Therophyte, from E North America (Mabberley 2017), sometimes cultivated in continental Portugal (Greuter 2006+), rarely naturalised in the South of Spain (Crespo & Buira 2019), was recently found subspontaneous in Douro Litoral: Vila Nova de Gaia, "Reserva Natural Local do Estuário do Douro" (José Luís Sousa in Facebook, 12.VII.2023), and also in Algarve (São Brás de Alportel), Alto Alentejo (Avis, Montemor-o-Novo), Beira Litoral (Tábua: Midões); Douro Litoral (Porto), Estremadura (Lisboa, Algés, Almada: Sobreda), Minho (Ponte de Lima: Feitosa, Vizela), and Trás-os-Montes e Alto Douro (São João da Pesqueira) (Biodiversity4all 2024c). I saw this plant as as casual escape in Beira Litoral (Figueira da Foz: Praia de Quiaios, Murtinheira, 28.VIII.1994, and Cantanhede: Olhos de Fervença, 13.X.2002).

19. ***Cotoneaster pannosus*** Franch. [*Rosaceae*]
Phanerophyte, from Eurasia (China), recently found naturalised (Senar Lluch & Cardero Aguilera 2022), probably as an epoecophyte, in several provinces of continental Portugal: Algarve (Lagoa), Baixo Alentejo (Almodôvar), Beira Litoral (Batalha, Coimbra, Leiria, Miranda do Corvo), Estremadura (Almada, Amadora, Arruda dos Vinhos, Bucelas, Caparica, Carcavelos, Lisboa, Mafra, Odivelas, Setúbal, Trafaria), Ribatejo (Alcanena, Tomar), and Trás-os-Montes e Alto Douro (Valpaços: Carrazedo de Montenegro), at least since 2019 (Biodiversity4all 2024d).

20. ***Crassula helmsii*** (Kirk) Cockayne (= *Tillaea helmsii* Kirk) [*Crassulaceae*]
Hemicriptophyte or helophyte, from Australia and New Zealand; agriophyte, semi-aquatic plant, probably introduced as an ornamental aquary and pond oxygenator plant, was recently (XI.2022) found naturalised in Beira Litoral, in swamps near Soure, not far from the Mondego river, by Jael Palhas (Biodiversity4all 2024g; iNaturalist, 2024; Jael Palhas in Facebook, VI.2023); it was also found naturalised in our neighbour region Galicia (Fagúndez & al. 2024) and in several other European countries (Robert & al. 2013; Global Invasive Species Database (GISD) 2024).

21. ***Crassula ovata*** (Mill.) Druce **'Baby Jade'** [*Crassulaceae*]
Phanerophyte, of hybrid origin, was recently found as a casual species (diaphyte), in Portugal: Estremadura, "29SMC5990, Cascais, Alcabideche, Biscaia, *V. Silva & S. Saraiva*. 29-IV-2017 (LISI s/n)" (Silva & al. 2023).

22. ***Crepis bursifolia*** L. [*Asteraceae*]
Hemicryptophyte, from the Mediterranean Region; ruderal epoecophyte, found naturalised in Portugal, Estremadura: Almada, since 2023 (Clamote, 2023a).

23. ***Cryptomeria japonica*** (Thunb. ex L. f.) D. Don (= *Cupressus japonicus* Thunb. ex L. f.) [*Cupressaceae*]
Phanerophyte, from Eurasia, introduced as an ornamental tree, found, at least, since 1950, subspontaneous in Parque da Pena, Sintra (Estremadura) (Alves & al., 2003), also naturalised in the archipelago of Azores) (Menezes de Sequeira & al. 2011).

24. ***Digitaria sanguinalis*** (L.) Scop. (= *Panicum sanguinale* L.) [*Poaceae*]
Therophyte, of subcosmopolitan, naturalised in Portugal as an archaeophyte (introduced before the year 1500), according to recent authors (Menezes de Sequeira & al. 2011; Alonso & Crespo 2021).

25. ***Echinochloa crus-galli*** var. ***hispidula*** (Retz.) Honda (= *Panicum hispidulum* Retz. = *Echinochloa hispidula* (Retz.) Nees ex Royle) [*Poaceae*]
Therophyte, from Tropical East Asia, naturalised in five Portuguese provinces: Baixo Alentejo, Beira Litoral, Douro Litoral, Estremadura, Trás-os-Montes e Alto Douro (Vasconcelos & al. 2020; Martínez Azorín & Crespo 2021).

26. ***Echinochloa oryzoides*** (Ard.) Fritsch (= *Panicum oryzoides* Ard. = *Echinochloa phyllopogon* (Stapf) Stapf) [*Poaceae*]
Therophyte, from Tropical East Asia, collected for the first time in Portugal before 1940, in the rice-fields of Quinta de Foja (Montemor-o-Velho, baixo Mondego) (Vasconcellos 1940); occurring in several Portuguese provinces: Beira Litoral, and probably also in Alto Alentejo, Baixo Alentejo, Douro Litoral, Estremadura, Minho and Ribatejo (Vasconcelos & al. 2020; Martínez Azorín & Crespo 2021).

27. ***Freesia leichtlinii*** subsp. ***alba*** (G.L. Mey.) J.C. Manning & Goldblatt (= *Freesia refracta* (Jacq.) Ecklon ex Klatt var. *alba* G.L. Mey.) [*Iridaceae*]

Geophyte, from South Africa, recently found naturalised in Portugal, possibly as an epoecophyte, in Estremadura: "29SMC6083, Cascais, Guia, *V. Silva & S. Saraiva*. 13-I-2018" (Silva & al. 2023).

28. ***Gazania rigens*** var. ***leucolaena*** (DC.) Roessler (=*Gazania leucolaena* DC.) [*Asteraceae*]
Chamaephyte, from South Africa, was recently found naturalised in Portugal, possibly as an epoecophyte, in the province of Estremadura: Oitavos (Cascais) and Colares (Sintra) (Silva & al. 2023; Talavera & Talavera 2017).

29. ***Gazania rigens*** var. ***uniflora*** (L. fil.) Roessler (= *Gorteria uniflora* L. fil.) [*Asteraceae*]
Chamaephyte, from South Africa, was recently found naturalised in Portugal, possibly as an epoecophyte, in E: Cabo Raso, in Cascais (Silva & al. 2015; Silva & al. 2023), and also in the province of Baixo Alentejo (Talavera & Talavera 2017).

30. ***Gladiolus cunonius*** (L.) Gaertn. (=*Antholyza cunonia* L.) [*Iridaceae*]
Geophyte, from South Africa, recently found naturalised in Portugal (Estremadura), possibly as an agriophyte, at the "arriba fóssil da Costa de Caparica", and "Mata dos Mêdos, Fonte da Telha, Almada, 26/03/2021" (Ana Cristina Antunes in Facebook, 27.III.2021).

31. ***Heteranthera limosa*** (Sw.) Willd. [*Pontederiaceae*]
Hydrophyte, from America, found naturalised in Portugal at least since 1997, epoecophyte in rice fields (Vasconcelos & al. 1999).

32. ***Ipomoea cairica*** (L.) Sweet (= *Convolvulus cairicus* L.) [*Convolvulaceae*]
Hemicryptophyte, from Africa and the Mediterranean Region; ruderal epecophyte, found naturalised in Estremadura: Almada, since 2023 (Clamote, 2023b).

33. ***Kniphofia uvaria*** (L.) Oken (= *Aloe uvaria* L.) [*Asphodelaceae*]
Chamaephyte, from South Africa, introduced as an ornamental plant and recently (2017) found as a casually naturalised species in Estremadura: "Cascais, Alcabideche, Abuxarda" (Silva & al. 2023).

34. ***Larix decidua*** Mill. (= *Pinus larix* L.) [*Pinaceae*]
Phanerophyte, from Europe (Raab-Straube 2014+), introduced as a cultivated tree in the mountains of Cabreira and Gerês (Minho), Marão, Montezinho and Nogueira (Trás-os-Montes e Alto Douro), and Estrela (Beira Alta, Beira Baixa) (Franco 1943; Franco 1993b; Ribeiro & al. 2008), and also in Douro Litoral (Arouca), and in Estremadura (Cadaval: Cercal, and Loures: Lousa) (Biodiversity4all 2024e).

35. ***Leptochloa fusca*** subsp. ***fascicularis*** (Lam.) N. Snow (= *Festuca fascicularis* Lam.) [*Poaceae*]
Therophyte, semiaquatic, from North America, recently found naturalised in the centre of Portugal, as an epoecophyte infestant weed in rice fields in Ribatejo (Aedo 2021; Carvalho Santos 2022).

36. ***Linaria maroccana*** Hooker fil. [*Plantaginaceae*]
Therophyte, from the Western Mediterranean Region, endemic to Morocco, rarely naturalised in other countries (Marhold 2011+), frequently cultivated as an ornamental plant and rarely escaped from cultivation, as a diaphyte, observed in Coimbra (Beira Litoral, in the centre of Portugal), at both margins of rhe river Mondego, at least since 2014 (own observation and photos).

37. ***Ludwigia grandiflora*** (Michx.) Greuter & Burdet (= *Jussiaea grandiflora* Michx.) [*Onagraceae*], including *Ludwigia grandiflora* (Michx.) Greuter & Burdet subsp. *hexapetala* (Hook. & Arn.) G. L. Nesom & Kartesz (= *Jussiaea hexapetala* Hook. & Arn.)
Hydrophyte, from tropical America, now considered invasive and banned in other regions (Mabberley 2017; Raab-Straube 2018+); agriophyte, probably introduced as an ornamental aquatic plant, already naturalised in several Spanish provinces (Nieto Feliner 1997), and presently considered a serious invasive species in continental Portugal (Presidência do Conselho de Ministros 2019; Município da Figueira da Foz 2020; Flora-On: Flora de Portugal Interactiva 2024; Plantas invasoras em Portugal 2024a), found present in the provinces of Beira Litoral (Arganil: Coja, and Figueira da Foz) and Alto Alentejo (Castelo de Vide: Serra de S. Mamede Natural Park) (Município da Figueira da Foz 2020; Palhas & al. in Flora-On: Flora de Portugal Interactiva 2024; Plantas invasoras em Portugal 2024a; Biodiversity4all 2024f).

38. ***Mahonia japonica*** (Thunb.) DC. (= *Ilex japonica* Thunb. = *Berberis japonica* (Thunb.) Spreng.) [*Berberidaceae*]
Phanerophyte, from Tropical Asia, frequently cultivated as an ornamental plant and rarely escaped from cultivation, as a diaphyte, very recently (2023) found naturalised in the province of Estremadura: "Cascais, Alcabideche, Malveira da Serra" (Silva & al. 2023).

39. ***Marsilea schelpeana*** Launert [*Marsileaceae*]
Helophyte; exotic fern, from the Cape Region of South Africa, "which grows on seasonal pools, along watercourses or reservoirs in seasonally dry areas", recently found naturalised as an agriophyte in Alentejo "at the Guadiana basin", "on the field campaign of 2017" (Aguiar & al. 2019).

40. ***Myrtus communis*** subsp. ***tarentina*** (L.) Nyman (= *Myrtus communis* var. *tarentina* L.) [*Myrtaceae*]
Phanerophyte, probably of horticole origin (Brotero 1804b; Pereira Coutinho 1916), rarely naturalised in Portugal (Paiva 1997), "*mainly near the coast*" (Campbell 1968), "però forse solo come relitto di antiche colture" (Pignatti 1982), which was traditionally "worn by judges & victors at orig. Olympic Games" (Mabberley 2017).

41. ***Najas gracillima*** (A. Braun ex Engelm.) Magnus (= *Najas indica* (Willd.) Cham. var. *gracillima* A. Braun ex Engelm.) [*Hydrocharitaceae*]
Cryptophyte (hydrophyte), from Eurasia and North America; agriophyte, maybe casually introduced, already found introduced/naturalised in rice-fields in Spain and Italy (Dandy 1980b; Uotila 2009+; Talavera & Gallego 2010); aquatic plant found naturalised in Beira

Litoral (Figueira da Foz, two places, by Jael Palhas), and in Algarve (Tavira, by João Neiva), 2021 (J. Neiva & J. Palhas in Facebook, 23.VIII.2021: https://www.facebook.com/groups/246571202123569).

42. ***Narcissus* × *intermedius*** Loisel. (= *N. jonquilla* L. × *N. tazetta* L.) [*Amaryllidaceae*]
Cryptophyte (geophyte), of hybrid origin; diaphyte, introduced as an ornamental plant, sometimes subspontaneous or escaped from cultivation in continental Portugal, found as a casual species in Minho: Póvoa de Lanhoso, at least since 1887 (Henriques 1887; Pereira Coutinho 1913; Fernandes 1936).

43. ***Narcissus* × *odorus*** L. (= *N. jonquilla* L. × *N. pseudonarcissus* L. subsp. *pseudonarcissus*, *N.* × *calathinus* L.) [*Amaryllidaceae*]
Cryptophyte (geophyte), of hybrid origin; diaphyte, introduced as an ornamental plant, sometimes subspontaneous or escaped from cultivation in continental Portugal, found as a casual species in the Algarve (Faro), and also in Minho (Melgaço, Póvoa de Lanhoso), having been found at least since 1883 (Tait 1886; Henriques 1887; Thellung 1912; Pereira Coutinho 1913; Menezes de Sequeira & al. 2011).

44. ***Nepeta cataria*** L. [*Lamiaceae*]
Hemicryptophyte, probably an archaeophyte from Eurasia, very rare in Portugal, likely introduced a long time ago as a medicinal and ornamental plant, «*Hab.* in ruderatis, ad vias et sepes Lusitaniae montanae, ut videtur haud frequens» (Pereira Coutinho 1907), already found by Tournefort (Henriques 1890), and also mentioned by Grisley (1661), Vandelli (1788, 1789) and Brotero (1804a), and as "*formerly cultivated as a medicinal herb and widely naturalized in N. & W.C. Europe*" (Turner 1972), and "often naturalised" (Hedge & Lamond 1982).

45. ***Nothoscordum* × *borbonicum*** Kunth [*Amaryllidaceae*]
Geophyte, of hybrid origin, from South America, was recently (2018) found as an epoecophyte, naturalised in the city of Lisbon (Estremadura) (Silva & al. 2023).

46. ***Nymphaea* × *marliacea*** Lat.-Marl. [*Nymphaeaceae*]
This aquatic species (hydrophyte), of hybrid origin, was recently found in one river in the South of Portugal, in the province of Algarve: "Ag: Odeleite. 15-1-2018. MA926165" (Sánchez Gullón & al. 2020).

47. ***Nymphaea mexicana*** Zucc. [*Nymphaeaceae*]
Hydrophye, from North America, legally considered as an invasive species in continental Portugal (Presidência do Conselho de Ministros 2019; Invasoras.pt. 2024; Plantas invasoras em Portugal 2024b), was recently found in rivers in the South of Portugal (Jael Palhas in Facebook, 10.V.2024).

48. ***Oenothera speciosa*** Nutt. [*Onagraceae*]
Chamaephyte, from North America, recently (2017) found in the Algarve: Tavira, on a riverbank, as an ergasiophygophyte (Sánchez Gullón & al. 2020).

49. ***Opuntia bonaerensis*** Speg. [*Cactaceae*]
Phanerophyte, from South America; this taxon, formerly included in *Opuntia elata* Salm-Dyck, *sensu lato*, was recenty recognized as being naturalised in several Portuguese provinces as an epoecophyte: Beira Alta, Beira Litoral, Estremadura and Trás-os-Montes e Alto Douro (Aymerich & Font 2023). I've already found this plant in 2004, at the top of the hill Senhora do Monte, near the river Douro (Trás-os-Montes e Alto Douro), not far from Vila Nova de Foz Coa (Domingues de Almeida 2009, sub *Opuntia maxima* Mill.).

50. ***Oryza sativa*** subsp. ***silvatica*** Chiappelli [*Poaceae*]
Therophyte, from South Asia, occurring as an epoecophyte in rice-fields, along with other infestant species, mainly in the Centre and South of Portugal, at the rivers Mondego, Tejo and Sado basins (Dias & al. 2020; Vasconcelos & al. 2020).

51. ***Parablechnum chilense*** (Kaulf.) Gasper & Salino (= *Lomaria chilensis* Kaulf. = *Blechnum chilense* (Kaulf.) Mett.) [*Blechnaceae*]
Hemicryptophyte, from Souh America; agriophyte, introduced as an ornamental plant. The presence of this fern was recently confirmed in Estremadura: Sintra (Molino de Miguel 2022).

52. ***Paulownia tomentosa*** (Thunb.) Steud. (= *Bignonia tomentosa* Thunb.) [*Paulowniaceae*]
Phanerophyte, from China, introduced as an ornamental and useful tree, this species, naturalised in several European countries (Marhold 2017+), was recently considered invasive in Central Portugal: Serra da Estrela (Raposo & al. 2021; Presidência do Conselho de Ministros 2019).

53. ***Picea abies*** (L.) Karsten (= *Pinus abies* L.) [*Pinaceae*]
Phanerophyte, from Europe (Raab-Straube 2014+), cultivated and sometimes naturalised in the mountains: Buçaco, Cabeceiras de Basto, Manteigas, Montalegre and Vieira do Minho, (Franco 1943; Franco 1951; Franco 1993a; Ribeiro & al. 2008).

54. ***Picea orientalis*** (L.) Link (= *Pinus orientalis* L.) [*Pinaceae*]
Phanerophyte, from Eurasia (Raab-Straube 2014+) found, at least, since 1950, naturalised in Parque da Pena, Sintra (Estremadura) (Alves & al. 2003).

55. ***Pinus nigra*** subsp. ***laricio*** Maire [*Pinaceae*]
Phanerophyte, from the Mediterranean Region (Raab-Straube 2014+); it was once introduced for wood in the mountains: Barroso, Cabreira, Estrela, Gerês, Lousã, Marão, Montezinho, Nogueira and Padrela (Ribeiro & al. 2008).

56. ***Pteris tremula*** R. Br. [*Pteridaceae*]
Hemicriptophyte, from Australia, New Zealand, found as a casual escaped plant (2021): "Já ocorre assilvestrado também no Continente, como casual em ambientes ruderais, mais ou menos sombrios e com alguma humidade no solo, nomeadamente em áreas urbanas" (Flora-On 2024: https://flora-on.pt/#/1Pteris+tremula).

57. ***Pyracantha angustifolia*** (Franch.) C. K. Schneid. (= *Cotoneaster angustifolius* Franch.) [*Rosaceae*]
Phanerophyte, from Eurasia, commonly used as an ornamental plant, and sometimes escaped, as an epoecophyte, at the provinces of Beira Alta, Beira Litoral and Baixo Alentejo (Ribeiro 2006; Domingues de Almeida 2009; Sánchez Gullón & al. 2020).

58. ***Reseda odorata*** L. [*Resedaceae*]
Hemicriptophyte, from the Eastern Mediterranean Region (Valdés Bermejo 1993), in continental Portugal considered "In large-scale cultivation" in continental Portugal (Martín-Bravo 2011), "*Commonly cultivated for its fragrant flowers and locally naturalized in S. & C. Europe*" (Yeo 1964; Yeo 1993).

59. ***Rhododendron macrophyllum*** D. Don ex G. Don [*Ericaceae*]
Phanerophyte, from North America; agriophye, introduced as an ornamental, found naturalised since 1999, in Parque da Pena, Sintra (Estremadura) (Alves & al. 2003).

60. ***Roldana petasites*** (Sims) H. Rob. & Brettel (= *Cineraria petasitis* Sims = *Senecio petasitis* (Sims) DC.) [*Asteraceae*]
Chamaephyte, from tropical North America, found naturalised in Estremadura, near Lisbon: near Lisbon: Arruda dos Vinhos: Arruda dos Vinhos, 29SMD91, 15.III.1974, by T. Vasconcelos, and in Cascais, Alcabideche, Malveira da Serra, 29SMC6190, 14.II.2014, by V. Silva & S. Saraiva (Silva 2015).

61. ***Rosa* × *wichuraiana*** Crép. **'Excelsa'** (= *Rosa luciae* Franch. & Rochebr. × *Rosa* 'Crimson Rambler') [*Rosaceae*]
Phanerophyte, of hybrid origin, becoming an invasive (epoecophyte) rose common mainly in the North of continental Portugal: Minho and Douro Litoral (Silva. & al. 2019; Paulo Alves in Facebook, 16.IX.2023).

62. ***Rumohra adiantiformis*** (G. Forst.) Ching (= *Polystichum adiantiforme* G. Forst.) [*Dryopteridaceae*]
Hemicriptophyte, mainly from Southern Hemisphere, was recently found naturalised in the North of Portugal: Douro Litoral): Maia, Gemunde, 29TNF36, at the trunk of a dead palm-tree, by Carlos Silva (in Facebook, 1.I.2024), and was identified by Paulo Alves (in Facebook, 3.I.2024).

63. ***Salvia hispanica*** L. [*Lamiaceae*]
Hemicryptophyte, from North America; seems to be an agriophyte, possibly escaped from cultivation: "*Salvia hispanica,* muito viçosa e nalguns pontos dominava uma margem ribeirinha sombreando o solo", em Caldas da Rainha (Paulo Lemos in Facebook, 28.X.2021).

64. ***Scilla hyacinthoides*** L. [*Asparagaceae*]
Geophyte, from Eurasia, probably escaped from gardens, as an epoecophyte, where it was cultivated as an ornamental plant (Almeida da Silva & Crespi 2013).

65. ***Senecio brasiliensis*** (Spreng.) Less. (= *Cineraria brasiliensis* Spreng.) [*Asteraceae*]
Hemicriptophyte, from South America, was "reported for the first time as a naturalized alien species from Europe (near Porto; Portugal)" (Dana & al. 2021), as an epoecophyte "found in highly disturbed habitats with many alien species near Porto" (Dana & al. 2021).

66. ***Tecomaria capensis*** (Thunb.) Spach (= *Tecoma capensis* (Thunb.) Lindley = *Bignonia capensis* Thunb.) [*Bignoniaceae*]
Phanerophyte, from South Africa, was recently found naturalised, probably as an epoecophyte, in Estremadura: "Cascais, ribeira dos Mochos, 29SMC6284, 14-II-2014, V. Silva & S. Saraiva, LISI 87/2014" (Silva 2015).

67. ***Trifolium miegeanum*** Maire [*Fabaceae*]
Therophyte, from the Western Mediterranean Region, endemic to Morocco (Dobignard & Chatelain 2012), introduced in the Botanic Garden of Coimbra and casually escaped and found in the arboretum of Vale de Canas, near Coimbra, 20-VI-1948 (Fernandes 1949; Fernandes 1955; Pinto da Silva 1971).

68. ***Ulmus minor*** var. ***vulgaris*** (Aiton) Richens (= *U. campestris* var. *vulgaris* Aiton; *U. procera* Salisb.) [*Ulmaceae*]
Phanerophyte; archaeophyte, probably introduced by the Romans to support the vines, cultivated and subspontaneous in most of continental Portugal (Brotero 1804a; Pereira Coutinho 1913, 1936; Sampaio 1947; Domingues de Almeida 2009); according to Gil & al. (2004), the "English elm is a 2,000-year-old Roman clone", which "is very effective in vegetative propagation", "spread over Spain and Britain", and "it corresponds to the Atinian elm, which was used for vinetraining by the Romans" (Gil & al. 2004; cf. Portela-Pereira 2016, in Flora-On: Flora de Portugal Interactiva 2024); it was already cited as "*Hab.* prope *Cintra*, in vallibus, et ad pagos in Extremadura, Beira, et Lusitania boreali quasi spontanea" by Brotero (1804a), being mainly "confined to the north-west of the country" (Richens & Jeffers 1986; Franco 1971).

69. ***Vallisneria americana*** Michx. [*Hydrocharitaceae*]
Hydrophyte; agriophyte, found subspontaneous in water ponds in the provinces of Beira Litoral: Mira (Jael Palhas in Facebook, 22.VIII.2019), Estremadura: "Grande Lisboa", in public parks, about 20 years ago (ca. 2004) (Udo Schwarzer in Facebook, 22.VIII.2019), and Algarve: Aljezur: Odeceixe (Udo Schwarzer in Facebook, 22.VIII.2019), probably introduced as an aquary plant. *Valisneria spiralis* L. is the only species of the genus *Vallisneria* L. spontaneous in Europe (Dandy 1980a; Uotila 2009+).

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References

Aedo, C. 2021: *Leptochloa* P. Beauv. – Pp. 1365-1369 In: Castroviejo, S. (coord.), Romero Zarco, C., Rico, E., Crespo, M. B., Devesa, J. A., Buira, A. & Aedo, C. (eds), Flora iberica, **19(2).** – Madrid.

Aguiar, F. C., Fernandes, M. R., Martins, M. J. & Ferreira, M. T. 2019: Effects of a Large Irrigation Reservoir on Aquatic and Riparian Plants: A History of Survival and Loss. – Water **2019(11)** 2379. https://doi.org/10.3390/w11112379

Almeida da Silva, R. M. & Crespí, A. L. 2013: *Scilla* L. – Pp. 145-156 In: Castroviejo, S. (coord.); E. Rico, M.B. Crespo, A. Quintanar, A. Herrero & C. Aedo (eds), Flora iberica, **20.** – Madrid.

Alonso, M.Á. & M.B. Crespo. 2021. *Digitaria* Haller. – Pp 1136-1147. In: Castroviejo, S. (coord.); Romero Zarco, C., Rico, E., Crespo, M. B., Devesa, J. A., Buira, A. & Aedo, C. (eds), Flora iberica, **19(2).** – Madrid.

Alves, J., Duarte, M. C., Monjardino J. & Moreira, I. 2003: Infestantes ambientais no Parque da Pena (Sintra). – An. Inst. Sup. Agron. **49:** 271-284.

APG III. 2009: An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG III. The Angiosperm Phylogeny Group. – Bot. J. Linn- Soc. **161:** 105-121. doi: 10.1111/j.1095-8339.2009.00996.x.

APG IV. 2016: An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG IV. The Angiosperm Phylogeny Group. – Bot. J. Linn. Soc. **181(1):** 1-20. https://doi.org/10.1111/boj.12385

Aymerich, P. & Font, F. 2023: On the identity of *Opuntia elata* s.l. (*Cactaceae*) introduced in the Mediterranean region. A taxonomic and nomenclatural update. – Medit. Bot. 44: e80196. https://doi.org/10.5209/mbot.80196.

Biodiversity4all. 2024a: Biodiversity4all. Associação Biodiversidade Para Todos. *Chloris gayana*. – https://www.biodiversity4all.org/observations/88315054 [accessed 9/9/2024]

— 2024b: Biodiversity4all. Associação Biodiversidade Para Todos. *Coreopsis lanceolata*. – https://www.biodiversity4all.org/observations?photos=true&taxon_id=76444&place_id=7122&preferred_place_id=7122. [accessed 9/9/2024]

— 2024c: Biodiversity4all. Associação Biodiversidade Para Todos. *Coreopsis tinctoria* Nutt. – https://www.biodiversity4all.org/observations?photos=true&taxon_id=76445&place_id=7122&preferred_place_id=7122. [accessed 9/9/2024]

— 2024d: Biodiversity4all. Associação Biodiversidade Para Todos. *Cotoneaster pannosus*. https://www.biodiversity4all.org/listed_taxa/35009729; https://www.biodiversity4all.org/taxa/53375-Cotoneaster-pannosus. [accessed 9/9/2024]

— 2024e: Biodiversity4all. Associação Biodiversidade Para Todos. *Larix decidua*. https://www.biodiversity4all.org/observations?place_id=7122&taxon_id=59747. [accessed 9/9/2024]

— 2024f: Biodiversity4all. Associação Biodiversidade Para Todos. *Ludwigia grandiflora*. https://www.biodiversity4all.org/observations?photos=true&place_id=7122&preferred_place_id=7122&taxon_id=70020; https://www.biodiversity4all.org/observations?place_id=7122&taxon_id=77840. [accessed 9/9/2024]

— 2024g: Biodiversity4all. Associação Biodiversidade Para Todos. *Crassula helmsii*. https://www.biodiversity4all.org/observations/141998798. [accessed 17/9/2024]

Brotero, F. A. 1804a: Flora Lusitanica, seu Plantarum quae in Lusitania vel sponte crescunt, vel frequentius coluntur, ex Florum praesertim Sexubus systematice distributarum, Synopsis, **1.** – Olisipone.

— 1804b: Flora Lusitanica, seu Plantarum quae in Lusitania vel sponte crescunt, vel frequentius coluntur, ex Florum praesertim Sexubus systematice distributarum, Synopsis, **2.** – Olisipone.

Campbell, M. S. 1968: *Myrtus* L. – Pp. 303-304. In: Tutin, T. G., Heywood, V. H., Burges, N. A., Moore, D. M., Valentine, D. H., Walters, S. M. & Webb, D. A. (eds) Flora Europaea, **2.** – Cambridge.

Carvalho Santos, J. P. 2022: Infestantes dos arrozais: contributo para o estudo da germinação de *Leptochloa fusca* subsp. *fascicularis* e da sensibilidade a herbicidas em *Cyperus difformis*. – Dissertação para a obtenção do Grau de Mestre em Engenharia Agronómica - especialização em Proteção de Plantas. Instituto Superior de Agronomia da Universidade de Lisboa. – Lisboa.

Castroviejo, S. & al. (eds). 1986-2021: Flora Iberica, **1-21.** – Madrid.

Chater, A. O. 1972: *Amsinckia* Lehm. – P. 110. In: Tutin, T. G., Heywood, V. H., Burges, N. A., Moore, D. M., Valentine, D. H., Walters, S. M. & Webb, D. A. (eds), Flora Europaea, **3.** – Cambridge.

Chodat, R. 1913: Voyage d'études géobotaniques au Portugal. – Le Globe, Mém. **52:** 59-146.

Clamote, F. 2023a: Plantas: Beleza e Diversidade. quinta-feira, 1 de junho de 2023. *Crepis bursifolia*. – https://obotanicoaprendiznaterradosespantos.blogspot.com/2023/06/crepisbursifolia.html?fbclid=IwAR1cjRmaIR8Zty5jnxWVn2OxUclWO5GgSRiu2XOTxCQDmDcAor5y8f8mgeM. [accessed 2/6/2023]

— 2023b: Plantas: Beleza e Diversidade. Terça-feira, 10 de outubro de 2023. Plantas ornamentais: *Ipomoea cairica*. – http://obotanicoaprendiznaterradosespantos.blogspot.com/2023/10/plantas-ornamentais-ipomoea-cairica.html. [accessed 13/10/2023]

Crespo, M. B. & Buira, A. (eds) 2019: *Coreopsideae* Lindl. – Pp. 2112-2114. In: Castroviejo, S. (coord.); Benedí, C., Buira, A., Rico, E. Crespo, M. B., Quintanar, A. & Aedo, C. (eds), Flora iberica, **18(3).** – Madrid.

Dana, E. D., Verloove, F., Alves, P. & Heiden, G. 2021: *Senecio brasiliensis* (Spreng.) Less. (*Asteraceae*), another potentially invasive alien species in Europe. – BioInvasions Records **10(3):** 521-536.

Dandy, J. E. 1980a: *Vallisneria* L. – P. 5. In: Tutin, T. G., Heywood, V. H., Burges, N. A., Moore, D. M., Valentine, D. H., Walters, S. M. & Webb, D. A. (eds), Flora Europaea, **5.** – Cambridge.

— 1980b: *Najas* L. – Pp. 13-14. In: Tutin, T. G., Heywood, V. H., Burges, N. A., Moore, D. M., Valentine, D. H., Walters, S. M. & Webb, D. A. (eds), Flora Europaea, **5.** – Cambridge.

Dias, M., Pacheco, P., Vasconcelos, T., Lima, A., Forte, P., Canha, G., Setas, F., Calha, I., Monteiro, A. 2020: Gestão das infestantes do arroz. – AGROTEC - Grandes culturas **34:** 67-70.

Dias Baptista, M. 1789: Florae Conimbricensis Specimen. – Mem. Econ. Acad. R. Sci. Adiantamento Agric. Artes Industria Portugal **1:** 254-298. – Lisboa.

Dobignard, A. & Chatelain, C. 2012: Index Synonymique de la Flore d'Afrique du Nord, **4.** – Genève.

Domingues de Almeida, J. 1999: Flora exótica subespontânea de Portugal continental (plantas vasculares). 2nd edition. Catálogo das plantas vasculares exóticas que ocorrem subespontâneas em Portugal continental e compilação de informações sobre estas plantas. – Dissertação de Mestrado. Faculdade de Ciências da Universidade de Coimbra. – Coimbra.

— 2009: Flora e Vegetação das Serras Beira-Durienses. (Serras e planaltos de Arada/Freita/São Macário/Arestal, Caramulo, Chavães, Montemuro/Leomil/Nave/Lapa, Penedono/Trancoso, Senhora do Monte, Senhora do Viso e outras serras menores, de altitude superior a 700 m, situadas entre os rios Douro e Mondego). – Dissertação de doutoramento. Universidade de Coimbra.

— 2018: New additions to the exotic vascular flora of continental Portugal. – Fl. Medit. **28:** 259-278.

— & Freitas, H. 2000: A flora exótica e invasora de Portugal. – Portugaliae Acta Biol. **19:** 159-176.

— & — 2001: The exotic and invasive flora of Portugal. – Bot. Complutensis **25:** 317-327.

— & — 2006: Exotic flora of continental Portugal – a reassessment. – Bot. Complutensis **30:** 117-130.

— & — 2012: Exotic flora of continental Portugal – a new assessment. – Bocconea **24:** 231-237.

Fagúndez, J., Fernández, M. A. Balado, A., Martínez-Veiga, E. & Servia, M. J. 2024: First record of the semi-aquatic invasive plant *Crassula helmsii* in the Iberian Peninsula and its link to potential dispersal drivers. – Biol. Invas. **(2024) 26:** 1997-2004. https://doi.org/10.1007/s10530-024-03300-x

Fernandes, A. 1936: Narcisos de Portugal. – Anu. Soc. Brot. **2:** 9-26.
— 1955: Progrès récents dans l'étude de la flore vasculaire du Portugal. – Anu. Soc. Brot. **21:** 5-24.
Fernandes, R. B. 1949: Notas sobre a Flora de Portugal. I. – Bol. Soc. Brot., Sér. 2, **23:** 119-157.
Flora-On: Flora de Portugal Interactiva. 2024: Flora-On: Flora de Portugal Interactiva. Sociedade Portuguesa de Botânica. – https://www.flora-on.pt [Last accessed 22.09.2024]
Franco, J. A. 1943: Dendrologia Florestal. – Lisboa.
— 1951: Notas sobre a flora lenhosa do Buçaco. – Bol. Soc. Brot., Sér. 2, **25:** 197-248.
— 1971: Nova Flora de Portugal (Continente e Açores), **1.** – Lisboa.
— 1984: Nova Flora de Portugal (Continente e Açores), **2.** – Lisboa.
— 1993a: *Picea* A. Dietr. – Pp. 39-40. In: Tutin, T. G., Burges, N. A., Chater, A. O., Edmondson, J. R., Heywood, V. H., Moore, D. M., Valentine, D. H., Walters, S. M. & Webb, D. A. (eds), Flora Europaea, ed. 2, **1.** – Cambridge.
— 1993b: *Larix* Miller. L. – P. 40. In: Tutin, T. G., Burges, N. A., Chater, A. O., Edmondson, J. R., Heywood, V. H., Moore, D. M., Valentine, D. H., Walters, S. M. & Webb, D. A. (eds), Flora Europaea, ed. 2, **1.** – Cambridge.
— & Rocha Afonso, M. L. 1998: Nova Flora de Portugal (Continente e Açores), **3(2).** – Lisboa.
Gil, L., Fuentes-Utrilla, P., Soto, Á., Cervera, M. T. & Collada, C. 2004: English elm is a 2,000-year-old Roman clone. – Nature **431:** 1053.
Global Invasive Species Database (GISD). 2024: Species profile *Crassula helmsii*. – https://www.iucngisd.org/gisd/species.php?sc=1517 [accessed 20/9/2024]
Greuter, W. 1971: *Bromus Caroli-Henrici,* eine verkannte ostmediterrane Graminee. – Ann. Naturhist. Mus. Wien **75:** 83-89.
— 2002: Notices of publications. – Pp. (1)-(48) in: Iriondo, J. M. & De Hond, L. J., OPTIMA Newsletter **36.** – Palermo.
— 2006+: *Compositae* (pro parte majore). – In: Greuter, W. & Raab-Straube, E. von (eds): Compositae. Euro+Med Plantbase - the information resource for Euro-Mediterranean plant diversity. – http://ww2.bgbm.org/EuroPlusMed/PTaxonDetail.asp?NameId=14103&PTRefFk=7000000. [accessed 20/9/2024]
Grisley, G. 1661: Viridarium lusitanum, in quo arborum fruticum et herbarum differentiae onomasti insertae, quas ager Ulyssiponensis ultra citaque Tagum ad trigesimum usque lapidem profert collectae per Gabrielem Grisley, chymiatrum et botanicum. – Ulissipone.
Hedge, I. C. & Lamond, J. 1982: *Nepeta* L. – Pp. 264-288. In: Davis, P. H., Edmondson, J. R., Mill, R.R. & Tan, K. (eds), Flora of Turkey and the East Aegean Islands, **7.** – Edinburgh.
Henriques, J. A. 1887: Amaryllideas de Portugal. Contribuição para o estudo da flora portugueza. – Bol. Soc. Brot. **5:** 159-174.
— 1890: Exploração em Portugal por Tournefort. – Bol. Soc. Brot. **8:** 191-262.
iNaturalist 2024: *Crassula helmsii*. –https://www.inaturalist.org/taxa/199392-Crassula-helmsii. [accessed 17/9/2024]
Invasoras.pt. 2024: Invasoras.pt: Plataforma de informação e ciência-cidadã sobre plantas invasoras em Portugal. – https://invasoras.pt/pt. [accessed 9/9/2024]
Juan, R. 2012: *Amsinckia* Lehm. – Pp. 486-489. In: Castroviejo, S. (coord.); Talavera, S., Andrés, C., Arista, M., Fernández Piedra, M. P., Gallego, M. J., Ortiz, P. L., Romero Zarco, C., Salgueiro, F. J., Silvestre, S. & Quintanar, A. (eds), Flora iberica, **11.** – Madrid.
Kornas, J. 1990: Plant invasions in Central Europe – Pp. 105-133. In: Di Castri, F. Hansen, A. J. & Debussche, M. (eds), Biological Invasions in Europe and the Mediterranean Basin. – Dordrecht.
Ledo Mendes, M. 2023: A Flora Brasileira no Jardim Botânico da Universidade do Porto: perspectivas históricas e potencialidades paisagísticas. Master Thesis. Departamento de Geociências, Ambiente e Ordenamento do Território. Faculdade de Ciências da Universidade do Porto. – Porto.

Mabberley, D. J. 2017: Mabberley's Plant-Book. A portable dictionary of plants, their classification and uses. 4th edition. – Cambridge.

Marchante, H., Morais, M., Freitas, H. & Marchante, E. 2014: Guia Prático para a Identificação de Plantas Invasoras de Portugal. – Coimbra.

Marhold, K. 2011+: *Linaria*. – In: Euro+Med Plantbase – the information resource for EuroMediterranean plant diversity. – http://ww2.bgbm.org/EuroPlusMed/PTaxonDetail.asp?NameId=33093&PTRefFk=7200000. [accessed 24/5/2024]

— 2017+: *Paulowniaceae*. – In: Euro+Med Plantbase - the information resource for Euro-Mediterranean plant diversity. – http://ww2.bgbm.org/EuroPlusMed/PTaxonDetail.asp?NameCache=Paulowniaceae&PTRefFk=7200000. [Last accessed 24.06.2024]

Mariz, J. 1895: Subsidios para o estudo da Flora Portugueza. As Umbelliferas. – Bol. Soc. Brot. **12:** 171-256.

Martín-Bravo, S. 2011. *Resedaceae*. – In: *Euro+Med Plantbase – the information resource for Euro-Mediterranean plant diversity*. – http://ww2.bgbm.org/EuroPlusMed/PTaxonDetail.asp?NameId=27981&PTRefFk=7200000. [accessed 24/5/2024]

Martínez Azorín, M. & Crespo, M. B. 2021: *Echinochloa* P. Beauv. – Pp. 1147-1160. In: Castroviejo, S. (coord.); Romero Zarco, C., Rico, E., Crespo, M. B., Devesa, J. A., Buira, A. & Aedo, C. (eds), Flora iberica, **19(2).** – Madrid.

Matias, I. M. (Coord.). 2017: Plano de Paisagem das Terras de Coura. Relatório de Caracterização das Subunidades. 3ª Fase – Diagnóstico da Paisagem. – Paredes de Coura.

Menezes de Sequeira, M., Espírito-Santo, D., Aguiar, C., Capelo, J. & Honrado, J. (Coord.); Crespí, A. M. L., Pereira Coutinho, A. X., Aguiar, C., Neto, C., Pinto-Gomes, C., Espírito-Santo, D., Dias, E., Almeida, J., Honrado, J., Capelo, J., Costa, J. C., Pinto, M. J., Lousã, M., Pinto da Silva Menezes de Sequeira, M., Porto, M., Alves, P., Jardim, R. & Silva, R. M. 2011: Checklist da Flora de Portugal. – Lisboa.

Molino de Miguel, S. 2022: Sinopsis global y aproximación a la filogenia molecular del género *Parablechnum* C. Presl (*Blechnaceae*, *Polypodiopsida*). A global synopsis and molecular phylogenetic approach of the genus *Parablechnum* C. Presl (*Blechnaceae*, *Polypodiopsida*). Memoria para optar al grado de doctor presentada por Sonia Molino de Miguel. Universidad Complutense de Madrid. Facultad de Ciencias Biológicas. – Madrid.

Município da Figueira da Foz. 2020: Municíp[i]o promove erradicação de *Ludwigia grandiflora*. 18 Novembro 2020. – https://www.cm-figfoz.pt/pages/1010?news_id=919. [accessed 6/9/2024]

Naturdata. 2022: Naturdata – Biodiversidade Online. Portugal. – https://naturdata.com/especie/Chloris-gayana/39407/0/. [Last accessed 06.06.2024]

Navarro, C. & Castroviejo, S. 1993: *Ulmus* L. – Pp. 244-248. In: Castroviejo, S., Aedo, C., Cirujano, S., Laínz, M., Montserrat, P., Morales, R., Muñoz Garmendia, F., Navarro, C., Paiva, J. & Soriano, C. (eds), Flora iberica, **3.** – Madrid.

Nieto Feliner, G. 1997: *Ludwigia* L. – Pp. 87-90. In: Castroviejo, S., Aedo, C., Benedí, C., Laínz, M., Muñoz Garmendia, F., Nieto Feliner, G. & Paiva J. (eds), Flora iberica, **8.** – Madrid.

Paiva, J. 1997: *Myrtus* L. – Pp. 74-76. In: Castroviejo, S., Aedo, C., Benedí, C., Laínz, M., Muñoz Garmendia, F., Nieto Feliner, G. & Paiva J. (eds), Flora iberica, **8.** – Madrid.

Palhas, J., Araújo, P. V. & Carapeto, A. 2024: *Ludwigia grandiflora* (Hook. & Arn.) G. L. Nesom & Kartesz subsp. *hexapetala* – Mapa de distribuição. Flora-On: Flora de Portugal Interactiva, Sociedade Portuguesa de Botânica. – http://www.flora-on.pt/#wLudwigia+grandiflora+subsp.+hexapetala. [accessed 8/9/2024]

Pereira, P. (coord.); Peixoto, M., Cosme, J., Martins, R. & Lopes, Â. 2013: Património Natural – árvores e florestas do concelho de Vouzela. – Vouzela.

Pereira Coutinho, A. X. 1905: As Boraginaceas de Portugal. Contribuições para o estudo da flora portugueza. – Bol. Soc. Brot. **21:** 106-165.

— 1907: As Labiadas de Portugal. Contribuições para o estudo da flora portugueza. – Bol. Soc. Brot. **23:** 51-175.

— 1913: Flora de Portugal (plantas vasculares) disposta em chaves dichotomicas. – Lisboa.

— 1916: Plantas portuguesas dos Herbarios de Brotero e de Valorado existentes na Universidade de Lisboa. – Arquivos Univ. Lisboa **3:** 333-379.

— 1920: Breves considerações estatísticas acêrca da flora portuguesa. – Bol. Soc. Brot. **28:** 95-121.

— 1936: Esboço de uma Flora Lenhosa Portuguesa. 2nd edition, updated. – Direcção Geral dos Serviços Florestais e Aqüícolas. – Publicações **3(1):** 1-371.

Pignatti, S. 1982: Flora d'Italia, **2.** – Bologna.

Pinto da Silva, A. R. 1971: Les plantes synanthropiques au Portugal continental et aux Açores. – Boissiera **19:** 297-303.

— 1975: L'état actuel des connaissances floristiques et taxonomiques du Portugal, de Madère et des Açores, en ce qui concerne les plantes vasculaires. – Coll. Internationaux C.N.R.S. **235:** 19-28.

— 1993: A flora económica de Lisboa seiscentista no Viridarium Lusitanum. – Mem. Acad. Ciências Lisboa **32:** 17-100.

—, Bacelar, J. J. A. H., Catarino, F. M., Correia, A. I. D., Escudeiro, A. S. C., Leitão Serra, M. G. & Rodrigues, C. M. A. 1989: A flora da Serra de Sintra. Catálogo. – Portug. Acta Biol. (B) 15: 5-258.

Plantas invasoras em Portugal. 2024a: *Ludwigia grandiflora*. – https://invasoras.pt/pt/planta-invasora/ludwigia-grandiflora [accessed 8/9/2024]

— 2024b: *Nymphaea mexicana*. – https://www.invasoras.pt/pt/planta-invasora/nymphaea-mexicana [accessed 9/9/2024]

Presidência do Conselho de Ministros. 2019: Decreto-Lei n.º 92/2019 de 10 de julho. – Diário da República, 1.ª série, **130:** 3428-3442.

Raab-Straube, E. von. 2014+: *Gymnospermae*. – In: Euro+Med Plantbase - the information resource for Euro-Mediterranean plant diversity. http://ww2.bgbm.org/EuroPlusMed/PTaxonDetail.asp?NameId=106394&PTRefFk=7500000. [Last accessed 04.09.2024]

— 2018+: *Onagraceae*. – In: Euro+Med Plantbase - the information resource for Euro-Mediterranean plant diversity. https://europlusmed.org/cdm_dataportal/taxon/7509625b-16dc-4c12-8840-147281bc867a. [accessed 9/9/2024]

Raposo, M. A., Nunes, L. J. R., Quinto-Canas, R., del Río, S., Vázquez Pardo, F. M., Galveias, A & Pinto-Gomes, C. J. 2021: *Prunus lusitanica* L.: An Endangered Plant Species Relict in the Central Region of Mainland Portugal. – Diversity 13: 359. https://doi.org/10.3390/d13080359.

Raunkiaer, C. 1934: The Life forms of plants and plant geography. – Oxford.

Ribeiro, D. (Coord.); Marques, H., Pinto, G., Pinto, P. & Teixeira, C. 2008: Regiões de proveniência. Portugal. Projecto – DEFOR "The contribution of research for the development and competitiveness of Southwest European forest sector". INTERREG III B SUDOE DEFOR SO2 /1.3/F64. – Lisboa.

Ribeiro, P. M. C. 2006: Caracterização da Flora Vascular e do Padrão da Dinâmica da Paisagem na Serra do Caramulo. Análise do Estado de Conservação de Taxa Prioritários. – Dissertação para cumprimento dos requisitos necessários à obtenção do grau de Doutor em Biologia, especialidade de Ecologia. Universidade de Coimbra. – Coimbra.

Richens, R. H. & Jeffers, J. N. R. 1986: Numerical taxonomy andethnobotany of the elms of northern Spain. – Anales Jard. Bot. Madrid **42(2):** 325-341.

Robert, H., Lafontaine, R.-M., Beudels-Jamar, R. C. & Delsinne, T. 2013: Risk analysis of the Australian swamp stonecrop *Crassula helmsii* (Kirk) Cockayne. – Risk analysis report of non-native organisms in Belgium from the Royal Belgian Institute of Natural Sciences for the Federal Public Service Health, Food chain safety and Environment. – Brussels.

Romero Zarco, C. 2023: 2023.El género *Bromus* L. (Poaceae) en la flora ibérica y balear. – Acta Botanica Malacitana 48. https://doi.org/10.24310/abm.v48i.16220.

Sampaio, G. 1947: Flora Portuguesa. 2nd edition, directed by A. Pires de Lima. – Porto.

Sánchez Gullón, E., Muñoz Rodríguez, A. F. & Verloove, F. 2020: Flora ornamental naturalizada en el SW de la península ibérica. – Bouteloua **29:** 3-11.

— & Peña Ramos, J. F. 2019. *Aristida adscensionis* L. (*Poaceae*) novedad para el Algarve (Portugal). – Folia Bot. Extremadurensis **13(2):** 143.

Senar Lluch, R. & Cardero Aguilera, S. 2022: Nuevos datos para a xenoflora catalana y valenciana. – Fl. Montiberica **84:** 73-91.

Silva, D., Alves, P., Santos, M. M. & Diz de Sá, J. 2019: Atlas da Flora. Da Serra d'Arga à Foz do Âncora. – Lima.

Silva, V. 2015: Novas localidades na Estremadura para flora exótica estabelecida e outras novidades para Portugal. Notas do Herbário Florestal do INIAV (LISFA): Fasc. XL. – Silva Lusit. **23(1/2):** 110-123.

—, Figueiredo, E. & Smith, G. F. 2015: Alien succulents naturalised and cultivated on the central west coast of Portugal. – Bradleya **33(2015):** 58-81.

—, Laguna Lumbreras, E. & Guillot Ortiz, D. 2023: Novos dados sobre neófitos em Portugal. – Bouteloua **33:** 312-328.

—, Portela-Pereira, E., Costa, J. C., Arsénio, P., Monteiro-Henriques, T., Neto C. & Pinto-Cruz, C. 2012: Sobre as orlas e bosques higrofílicos do Divisório Português. – Acta Bot. Malacitana **37:** 202-207.

Smith, G., Figueiredo, E. & Silva, V. 2019: Representatives of *Aptenia* N.E.Br. (Aizoaceae / Mesembryanthemaceae), an endemic southern African genus, naturalised in Portugal. Bradleya **37(2019):** 184-190.

—, —, Verloove, F., Klopper, R. R. & Silva, V. 2023: An annotated catalogue of *Aloe* and *Aloiampelos* (Asphodelaceae subfam. Alooideae) naturalised and escaped in continental Portugal. – Phytotaxa **629(1):** 035-052. https://doi.org/10.11646/phytotaxa.629.1.3.

Sousa Homem, A. 2019: De como a floração das mimosas é uma felicidade. Crónica. – Correio da Manhã, Suplemento, **14489:** 49.

Tait, A. W. 1886: Notes on the *Narcissi* of Portugal. – Porto.

Talavera, S. & Gallego, M. J. 2010: *Najas* L. – Pp. 55-62. In: Castroviejo, S. (Coord.); Talavera, S., Gallego, M. J., Romero Zarco, C. & Herrero, A. (eds), Flora iberica, **17.** – Madrid.

— & Talavera, M. 2017: *Gazania* Gaertn. [nom. cons.] – Pp. 1342-1346. In: Castroviejo, S. (Coord.); Talavera, S., Buira, A., Quintanar, A., García, M. Á., Talavera, M., Fernández Piedra, P. & Aedo, C. (eds), Flora iberica, **16(2).** – Madrid.

Thellung, A. 1912: La flore adventice de Montpellier. – Habilitation Schrift der Philosophischen Fakultät (Mathematisch-Naturwissenschaftliche Sektion) der Universität Zürich zur Erlangung der Venia Legendi vorgelegt im Januar 1909 von Dr Albert Thellung von Winterthur. Mitteilungen aus dem botanischen Museum der Universität Zürich (LVIII). (Extrait des Mémoires de la Société nationale des Sciences naturelles et mathématiques de Cherbourg, Tome XXXVIII, 1911-1912). – Cherbourg.

Turner, C. 1972: *Nepeta* L. – Pp. 158-160. In: Tutin, T. G., Heywood, V. H., Burges, N. A., Moore, D. M., Valentine, D. H., Walters, S. M. & Webb, D. A. (Eds), Flora Europaea, **3.** – Cambridge.

Tutin, T. G. 1968: *Anethum* L. – Pp. 341-342. In: Tutin, T. G., Heywood, V. H., Burges, N. A., Moore, D. M., Valentine, D. H., Walters, S. M. & Webb, D. A. (Eds), Flora Europaea, **2.** – Cambridge.

Uotila, P. 2009+: *Hydrocharitaceae*. In: Euro+Med Plantbase – the information resource for Euro-Mediterranean plant diversity. – http://ww2.bgbm.org/EuroPlusMed/PTaxonDetail.asp?NameCache=Hydrocharitaceae&PTRefFk=7300000. [Last accessed 20.11.2024]

Valdés, B. 2012: *Borago* L. – Pp. 329-332. In: Castroviejo, S. (Coord.); Talavera, S., Andrés, C., Arista, M., Fernández Piedra, M. P., Gallego, M. J., Ortiz, P. L., Romero Zarco, C., Salgueiro, F. J., Silvestre, S. & Quintanar, A. (eds), Flora Iberica, **11.** – Madrid.

Valdés Bermejo, E. 1993: *Reseda* L. – Pp. 440-475. In: Castroviejo, S., Aedo, C., Gómez Campo, C., Laínz, M., Montserrat, P., Morales, R., Muñoz Garmendia, F., Nieto Feliner, G., Rico, E., Talavera, S. & Villar, L. (eds), Flora iberica, **4.** – Madrid.

Vandelli, D. 1788: Florae lusitanicae et brasiliensis specimen et epistolae ab eruditis viris Carolo a Linné Antonio de Haen ad Dominicum Vandelli scriptae. – Conimbricæ.

— 1789: Viridarium Grisley Lusitanicum, Linnaeanis nominibus illustratum Jussu Academiae in Lucem editum. – Olisipone.

Vasconcellos, J. C. 1940: Anotações do Herbário do Instituto Superior de Agronomia. – An. Inst. Sup. Agron. **11:** 7-17.

Vasconcelos, T., Monteiro, A., Lima, A. & Forte, P. 2020: Infestantes dos arrozais de Portugal. 1st edition. – Lisboa.

—, Tavares, M. & Gaspar, N. 1999: Aquatic plants in the rice fields of the Tagus Valley, Portugal. – Hydrobiologia **415:** 59-65, 1999.

Velayos, M. 2021: *Chloris* Sw. – Pp. 1358-1361. In: Castroviejo, S. (coord.); Romero Zarco, C., Rico, E., Crespo, M. B., Devesa, J. A., Buira, A. & Aedo, C. (eds), Flora iberica, **19(2).** – Madrid.

Yeo, P. F. 1964. *Reseda* L. – Pp. 346-349. In: Tutin, T. G., Heywood, V. H., Burges, N. A. Valentine, D. H., Walters, S. M. & Webb, D. A. (eds), Flora Europaea, **1.** – Cambridge.

— 1993. *Reseda* L. – Pp. 91-97. In: Tutin, T. G., Burges, N. A., Chater, A. O., Edmondson, J. R., Heywood, V. H., Moore, D. M., Valentine, D. H., Walters, S. M. & Webb, D. A. (eds), Flora Europaea, ed. 2, **1.** – Cambridge.

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