

New records of interesting vascular plants (mainly xenophytes) in the Iberian Peninsula. VI.

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Summary: As a continuation of previous research on the naturalization of non-native vascular plants in the Iberian Peninsula new chorological data are presented for 13 species, mostly recorded in 2015 and 2016, in the provinces of Huelva, Sevilla (Andalusia, Spain) and Sintra (Estremadura, Portugal). For each taxon details about distribution, habitats occupied, previous records, degree of naturalization, etc. are provided.

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Key words: Spain, Portugal, Xenophytes.

Resumen: Como continuación de investigaciones previas sobre la naturalización de plantas vasculares alóctonas en la Península Ibérica se presentan como novedades corológicas 13 especies, sobre todo detectadas en 2015 y 2016, en las provincias de Huelva, Sevilla (Andalucía, España) y Sintra (Estremadura, Portugal). Para cada taxon se aportan detalles acerca de la distribución, los hábitats ocupados, las citas anteriores, el grado de naturalización, etc.

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Palabras claves: España, Portugal, Xenophytos.

Introduction

The introduction of invasive alien species, and the impact and disruption they cause in the natural environment, with a modification of the taxonomic and chorological spectrum of the local biota, or loss of environmental quality with banalization of ecosystems is an issue of major concern nowadays. It is obvious that, as a result of world globalization, there is an increasing, seemingly unstoppable input of xenophytes (introduced by the ornamental trade, traffic, etc.). In this new note we report about the presence and ecology of 13 newly introduced species in the Iberian Peninsula, mostly recorded between 2015 and 2016, as a continuation of previous research on non-native vascular plants in the Iberian Peninsula (Verloove & Sánchez Gullón, 2008, 2012; Sánchez Gullón & Verloove, 2009, 2013, 2015).

Material and methods

The floristic novelties here presented are mainly the result of fieldwork by the first author in various parts of the Iberian Peninsula (Spain as well as Portugal), mostly in 2015 and 2016 (Table 1). Voucher specimens of all taxa are preserved in the private herbarium of the first author. Duplicates were deposited in the herbarium of the Botanic Garden of Meise, Belgium (BR), the Universidad de Sevilla (SEV), and/or the Real Jardín Botánico de Madrid (MA).

For each taxon, alphabetically arranged here under, the following details are provided: currently accepted name and family (in accordance with Angiosperm Phylogeny Group III 2009), homo- or heterotypic synonyms (if useful), type of chorological novelty, additional comments on recognition, degree of naturalization, etc. For each taxon the xenotype is indicated following Kornás (1990). Finally, the data from the herbarium labels are also provided.

Chorological data in the Iberian Peninsula for the species presented were extracted from ANTHOS database (<http://www.anthos.es>) and Flora Iberica (<http://www.floraiberica.es/>). Further distributional information was obtained from Dana & al. (2005), Sanz Elorza & al. (2004), Almeida (1999) and Almeida & Freitas (2012).

UTM coordinates for all localities were assessed using Google Earth.

Results

Anredera cordifolia (Ten.) Steenis, *Fl. Males.*, 5: 303. 1957. (BASELLACEAE)

Basionymous: =*Boussingaultia cordifolia* Ten. *Index Seminum* (Naples) 1853: 4.; *Annales des Sciences Naturelle* ser. 3, 19 1854

Cirujano & Velayos (1990, sub *Boussingaultia cordifolia*) did not mention this South American xenophyte for Extremadura in Portugal. It is a succulent climber also known as “Parra de Madeira”. As an escape from cultivation this species is known from eastern and southern parts of the Iberian Peninsula and, in Portugal, from Beira Litoral (Silva & al., 2015; Fernandes, 1972; Rainha & Silva, 1972; Franco, 1971). In the ‘Paisaje Cultural de Sintra’ it was found in riparian woodland, apparently for the first time in Extremadura. According to Cirujano & Velayos (*op. cit.*) *Anredera cordifolia* rarely reproduces from seed in the Iberian Peninsula; however, as seen in Sintra, the species produces knobby tubers in the leaf axils along the stems, which enables non-sexual propagation. It is considered here an ergasiophyte and, like in many places, behaves like an invasive species.

Material studied:

PORTUGAL (Lu): Estremadura (E): Sintra, en sotobosque ripario. WG84 29S 466380; 4294223. 26-09-2015. E. Sánchez Gullón (BR, Herbario particular E. Sánchez Gullón: ESG 464).

***Atriplex tatarica* L. Sp. Pl., 2: 1053. 1753 (AMARANTHACEAE)**

Synonymous: =*Atriplex tornabenei* Tineo, *Fl. Sicul. Syn.* 2: 589. 1843.

A neophyte from Central and eastern Europe, *Atriplex tatarica* is sometimes considered an invasive species (Jarzyna & al., 2010; see also Uotila, 2011 and Aymerich, 2016). In 2007 it was found in a marshy saline area in Marismas del Odiel in Huelva along with, among others, *Atriplex halimus* L., *Atriplex prostrata* DC., *Suaeda splendens* (Pourret) Gren. & Godron, *Arthrocnemum macrostachyum* (Moric.) Moris in Moris & Delponte, *Salicornia spec.*, etc.). The species grew by a roadside in the port area and may have been introduced unintentionally, either as grain alien or as an impurity in seasonal fruit or vegetables introduced from eastern Europe (e.g. strawberries). In Andalucía it has been recorded before in the coastal area near Gulf of Cádiz (Pastor, 1987, sub *Atriplex tornabenei*), where it was considered a rare and threatened species, now extinct according to Sánchez García (2000). In Huelva this species was found on the verge of tidal marshes that are nitrified by tidal garbage in the estuary of rivers Guadiana and Odiel. In this locality it was not confirmed subsequently; hence it is classified as a mere casual alien (ergasiophyphyte).

Material studied:

SPAIN (Hs): Huelva (H): Paraje Natural Marismas del Odiel, en borde marisma del Paseo Marítimo. WG84 29S 681305; 4127107. 20-09.-2007. *E. Sánchez Gullón* (BR, Herbario particular E. Sánchez Gullón: ESG 23).

***Centipeda minima* (L.) A. Braum & Asch., *Ind. Sem. Hort. Berol.* app. 6. 1867. subsp. *minima* (COMPOSITAE)**

Basionymous: =*Artemisia minima* L., *Sp. Pl.* 2: 849. 1753.

The genus *Centipeda* counts about ten species with its center of diversity in Australia, radiating to New Zealand, New Guinea, Asia and South America (Walsh, 2001; <http://www.theplantlist.org/tpl1.1/search?q=centipeda>). The evolution of *Centipeda* correlates with the temporal increase of aridity in the arid zone since the Pliocene (Nylinder & al., 2013). *Centipeda minima* was found as a weed in an ornamental plant garden center in Moguer. These regularly irrigated habitats are closely similar to the species natural habitat, e.g. river banks (occasionally, it also is a weed of agricultural fields). In Spain a second species from the same genus is known, *Centipeda cunninghamii* (DC.) A. Braun & Ascherson (Sánchez Rodríguez & Elías Rivas, 1998). Both are separated as follows:

- 1.- Annual (or rarely perennial in shaded places); cypselae truncate, less than 3 times as long as wide; corollas of female florets less than 0,3 mm long; capitula soon disintegrating when cypselae are mature; plant procumbent or ascending, glabrescent to cottony ***C. minima***
- 1.- Perennial; cypselae rounded or truncate at apex, at least 3 times as long as wide; corollas of female florets 0,3 mm long or more; capitula persisting long after flowering; plant erect, usually glabrescent ***C. cunninghamii***

Its occurrence in Huelva seems to be the first record in Spain. At least at present, it is considered an ephemerohyte associated with the horticultural trade.

Material studied:

SPAIN (Hs): Huelva (H): Moguer, arvense vivero plantas ornamentales. WG84 20S 692402; 4128140. 15-06-2013. *E. Sánchez Gullón* (BR, Herbario particular E. Sánchez Gullón: ESG 421).

***Duchesnea indica* (Andrews) Techem., *Hort. Reg. & Gard. Mag.*, 1(12): 460. 1835 (ROSACEAE)**

Synonymous: =*Potentilla indica* (Andrews) T.H. Wolf in Ascherson & Graebner *Syn. Mitteleur. Fl.* 6(1): 660-661 1905. 1904

A xenophyte from South and East Asia, *Duchesnea indica* is rarely found naturalized in northern Spain. In Portugal it has been known from Douro Litoral and Miño (Navarro & Muñoz Garmendía, 1998). It is here reported for the first time from Sintra in Estremadura (Portugal), where it is locally naturalized in the damp understory of woodlands. It can be classified as holoagriophyte.

Material studied:

PORTUGAL (Lu): Estremadura (E): Sintra, en sotobosque. WG84 29S 466029; 4294046. 26-09-2015, *E. Sánchez Gullón*. (BR, Herbario particular E. Sánchez Gullón: ESG 463).

***Eragrostis virescens* C. Presl., *Reliq. Haenk.*, 1: 276. 1830 (POACEAE)**

Synonymous: =*Eragrostis mexicana* subsp. *virescens* (J. Presl) S.D. Koch & Sánchez Vega, *Phytologia* 58(6): 380 (1985)

A neotropical xenophyte originating in South America (Portal, 2002), this species was recorded in Portugal in Alentejo (Verloove & Sánchez Gullón, 2012, sub *Eragrostis mexicana* subsp. *virescens*). It is here reported for the first time from Extremadura (Portugal) (Almeida, 1999; Almeida & Freitas, 2012). In Sintra it is considered an epocophyte, naturalized as a weed of agricultural fields and gardens.

Material studied:

PORTUGAL (Lu): Estremadura (E): Sintra, arvense en jardín botánico Quinta da Regaleira. WG84 29S 465558; 4294184. 26-09-2015, E. Sánchez Gullón. (BR, SEV 286628, Herbario particular E. Sánchez Gullón: ESG 456).

***Euphorbia marginata* Pursh, *Fl. Amer. Sept.* 2: 607 (1814) (EUPHORBIACEAE) (Lám. 1(b))**

This North American neophyte (Smith & Tutin, 1968) has been repeatedly recorded in the Iberian Peninsula (e.g. Pujadas Salvá & Hernández Bermejo, 1986; Casasayas i Fornell, 1989; Benedí & al., 1997). It is frequently grown as a garden ornamental (Sagredo, 1987; Sánchez de Lorenzo, 2007) and easily escapes. Up to present, however, it is classified as an ephemerophyte (Fig. 1).

Material studied:

SPAIN (Hs): Huelva (H): Cartaya, orilla carretera. WG84 29S 665904; 4129089. 30-09-2015, E. Sánchez Gullón. (BR, SEV 286629, Herbario particular E. Sánchez Gullón: ESG 441).

***Euphorbia serpens* Kunth, *Nov. Gen. Sp.*, 2: 52. 1817. subsp. *serpens* (EUPHORBIACEAE)**

Basionymous: =*Chamaesyce serpens* (Kunth) Small, *Fl. S.E. U.S.* [Small]. 709. 1903.

Euphorbia serpens, originally native in the neotropics, is widely naturalized in the Iberian Peninsula (e.g. Molesworth, 1976; Benedí & Orell, 1992; Benedí, 1997, sub *Chamaesyce serpens*). However, so far it had not been recorded from Huelva province, where it is fast spreading lately in highly disturbed habitats (gardens, fields, pavements, etc.). It is fully naturalized, mostly in urban habitats, and can be considered an epocophyte.

Material studied:

SPAIN (Hs): Huelva (H): El Portil (Punta Umbria), aceras casco urbano. WG84 29S 673144; 4120158. 17-08-2015, E. Sánchez Gullón. (BR, SEV, Herbario particular E. Sánchez Gullón: ESG 450). Huelva, casco urbano. WG84 29S 682570; 4125313, not date, E. Sánchez Gullón. (BR, SEV, Herbario particular E. Sánchez Gullón: ESG 451).

***Gomphocarpus physocarpus* E. Mey., *Comm. Pl. Afr. Austr.*: 202. 1838. (APOCYNACEAE)(Lám. 1(c))**

Basionymous: = *Asclepias physocarpa* (E. Mey.) Schltr., *Bot. Jahrb. Syst.* 21(5, Beibl. 54): 8. 1896.

A native of southeastern Africa this species has been recorded before in the southern and eastern parts of the Iberian Peninsula (Arista & Ortíz, 2012) but not yet from Huelva in Andalucía Occidental (García Martín, 1987). It is much reminiscent of *Gomphocarpus fruticosus* (L.) W.T. Aiton, a species previously recorded in Huelva that is distinguished by its ovoid follicles that are tapering into a beak (vs. inflated and spheroid in *G. physocarpus*). Both these species are cultivated as ornamentals and readily escape since seeds bear a pappus, which facilitates wind dispersal. As such suitable habitats in the surroundings of gardens are easily colonized. This species is often considered invasive; in Huelva, however, it may either be an ephemerophyte or ergasiophyte (Fig. 2).

Material studied:

SPAIN (Hs): Huelva (H): Cartaya, cuneta carretera. WG84 29S 664747; 4124822. 16-09-2015, E. Sánchez Gullón. (BR, Herbario particular E. Sánchez Gullón: ESG 473).



Lamina 1.- Selection of species of the study: **a)** *Jarava ichu* Ruiz & Pav.; **b)** *Euphorbia marginata* Pursh; and **c)** *Gomphocarpus physocarpus* E. Mey.

Jarava ichu Ruiz & Pav., Fl. Peruv., 1: 5, pl. 6, f. b. 1798. (POACEAE) (Lám. 1(a))
Basionymous: =*Stipa ichu* (Ruiz & Pav.) Kunth. *Révis. Gramin.* 1: 20. 1829.

This species, originally native in the Andes, Mexico and Guatemala (Tovar, 1993), was found in disturbed coastal dunes in Punta Umbría in 2015. A single individual, possibly as an ephemerophyte, was found in an *Ammophiletea* Br.Bl. & Tüxen ex Westhoff, Dijk & Passchier 1946 association. To our knowledge, this species has not been recorded before in Europe (Verloove 2005). Four other species of this genus, a segregate of *Stipa* L., have been recorded before in southwestern Europe (*J. plumosa* (Spreng.) S.W.L. Jacobs & J. Everett, *J. ambigua* (Speg.) Peñail., *J. brachychaeta* (Godr.) Peñail. and *J. caudata* (Trin.) Peñail.), three of them also in Spain (Verloove l.c.).

Like other stipoid grasses (e.g. the very similar *Nassella tenuissima* (Trin.) Barkworth) *Jarava ichu* is increasingly planted as an ornamental which may explain its occurrence in Punta Umbría (Fig. 3).

Material studied:

SPAIN (Hs): Huelva (H): Punta Umbría, en sistema dunar costero. WG84 29S 681740; 4115954. 30-09-2015, E. Sánchez Gullón. (BR, Herbario particular E. Sánchez Gullón: ESG 467).

Lemna minuta Kunth, *Nov. Gen. Sp.*, 1: 372. 1817 (ARACEAE)(Lám. 2(a))

A macrophyte from temperate to tropical America, this species is widely naturalized in Europe, Asia and Africa, although there are very few records for the Iberian Peninsula (e.g. Galán, 2007; Galán & Castroviejo, 2005; Aymerich, 2012; Sánchez Gullón & Galán de Mera, 2014). It is here reported for the first time from Estremadura in Portugal where it is a hemiagriophyte in irrigation channels (Fig. 4).

Material studied:

PORTUGAL (Lu): Estremadura (E): Sintra, en canal de riego. WG84 29S 466300; 4294249. 26-09-2015, E. Sánchez Gullón. (BR, MA, SEV 286639, Herbario particular E. Sánchez Gullón: ESG 470).

***Oenothera biennis* L. Sp. Pl., 1: 346. 1753. (ONAGRACEAE)**

This neophyte of uncertain origin is widely naturalized in Spain and many other parts of the world (Dietrich, 1997; Romero, 2010); however, it has not been previously recorded in Andalucía Occidental (Silvestre, 1987). It is considered an invasive species in anthropogenic habitats, for instance as a weed in agricultural fields and gardens (Sanz Elorza & al., 2004). The genus *Oenothera* is particularly well represented in Huelva and now counts nine taxa. In addition to *O. biennis*: *O. affinis* Cambess., *O. indecora* Cambess. subsp. *indecora*, *O. drummondii* Hook., *O. glazioviana* Micheli, *O. laciniata* Hill, *O. longiflora* L. subsp. *longiflora*, *O. rosea* L'Hér. ex Aiton and *O. speciosa* Nutt. (see Sánchez Gullón & Rubio Garcia 1999; Sánchez Gullón & al. 2006; Dietrich 2000; Verloove & Sánchez Gullón 2008; García de Lomas & al., 2015). In Huelva it is found by roadsides and on rough ground, probably as an ephemerophyte.

Material studied:

SPAIN (Hs): Huelva (H): Huelva, cuneta carretera. WG84 29S 684080; 4125474. 15-08-2015, E. Sánchez Gullón. (BR, SEV 286632, Herbario particular E. Sánchez Gullón: ESG 434).

***Sisymbrium erysimoides* Desf. L. Fl. Atlant., 2: 84 (1798) (BRASSICACEAE)**

Synonymous: =*Sisymbrium rigidulum* Lag. Gen. Sp. Pl. [Lagasca] 20. 1816

In Iberian Flora this crucifer with a paleotropical and Mediterranean-Saharo-Arabian distribution was omitted for Andalucía Occidental (Pujadas Salvá, 1987; Morales Torres, 2009). In the Iberian Peninsula *Sisymbrium erysimoides* is known from the Eastern and southeastern parts, Levante and Andalucía Oriental. It is here reported from rough ground and similar highly disturbed habitats in Sevilla and is considered an epocophyte.

Material studied:

SPAIN (Hs): Sevilla (Se) Sevilla: Avda. Reina Mercedes, en acerado urbano. WG84 30S 235334; 4139288. 20-07-2015, E. Sánchez Gullón. (BR, SEV, Herbario particular E. Sánchez Gullón: ESG 434).

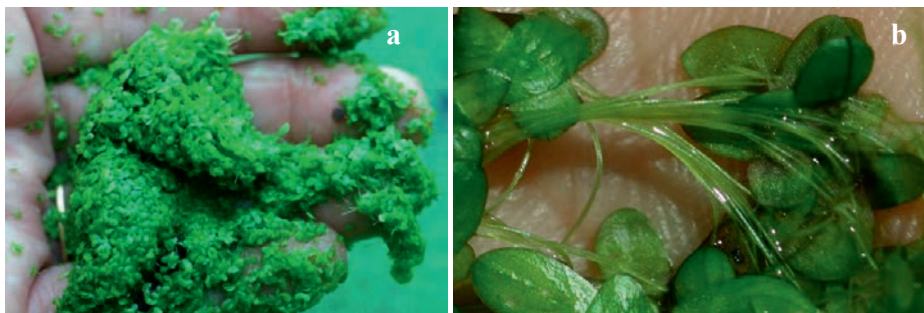
***Spirodela punctata* (G. Mey.) C.H. Thomps., Rep. (Annual) Missouri Bot. Gard., 9: 28. 1898. (ARACEAE)(Lam. 2(b))**

Synonymous: =*Landoltia punctata* (G. Mey.) Les & D. J. Crawford, Novon 9(4): 532. 1999.

This subcosmopolitan macrophyte from eutrophic standing water only locally occurs in the Iberian Peninsula. It's known from Huelva (Andalucía) and Douro Litoral (Portugal) (Galán, 2007; Galán & al., 2005; Sánchez Gullón & Galán de Mera, 2010). It is here reported for the first time from Estremadura (Portugal) where it is a hemiagriophyte in artificial water bodies in urban areas (Fig. 5).

Material studied:

PORTUGAL (Lu): Estremadura (E): Sintra, en estanque. WG84 29S 463452; 4293966. 26-09-2015, E. Sánchez Gullón. (BR, MA, SEV 286640, Herbario particular E. Sánchez Gullón: ESG 471).



Lamina 2.- Species selection studied: **a)** *Lemna minuta* Kunth.; **b)** *Spirodela punctata* (G. Mey.) C.H. Thomps.

Species	Family	Origin	Invasive behavior (Kornás, 1990)
<i>Anredera cordifolia</i>	Basellaceae	South America	Ergasiophytophyte
<i>Atriplex tatarica</i>	Amaranthaceae	C and E Europe	Ergasiophytophyte
<i>Centipeda minima</i>	Asteraceae	Australia	Ephemerophyte
<i>Duchesnea indica</i>	Rosaceae	S and E Asia	Holoagriophyte
<i>Eragrostis virescens</i>	Poaceae	South America	Epocophyte
<i>Euphorbia marginata</i>	Euphorbiaceae	N America	Epocophyte
<i>Euphorbia serpens</i>	Euphorbiaceae	N America	Epocophyte
<i>Gomphocarpus physocarpus</i>	Apocynaceae	SE Asia	Ergasiophytophyte/ Ephemerophyte?
<i>Jarava ichu</i>	Poaceae	South America	Ephemerophyte
<i>Lemna minuta</i>	Araceae	Tropical America	Hemiagriophyte
<i>Oenothera biennis</i>	Onagraceae	North America	Ephemerophyte
<i>Sisymbrium erysimoides</i>	Brassicaceae	Mediterranean	Epocophyte
<i>Spirodela punctata</i>	Araceae	Subcosmopolita	Hemiagriophyte

Table 1. Origin and xenophyte type by Kornás (1990) of new interesting records from Iberian Peninsula

Bibliography

- Almeida, J. D. de 1999. *Flora exótica subespontánea de Portugal continental* (plantas vasculares), 2nd ed. Coimbra.
- Almeida, J.D. & Freitas, H. 2012. Exotic flora of continental Portugal – a new assessment. *Bocconea*: 231-237.
- Angiosperm Phylogeny Group III. 2009. An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG III. *Bot. J. Linn. Soc.* 161: 105-121.
- ANTHOS, 2016. Sistema de información sobre las plantas de España. Available from: <http://www.anthos.es/> (consulted V-2016)
- Arista, M. & Ortíz, M.L. 2012. *Gomphocarpus* R. Br., In: S. Castroviejo (coord.) *Flora Iberica*, 11: 114-117. CSIC. Madrid.
- Aymerich, P. 2012. *Lemna minuta* Kunth, espècie nova per a la flora de Catalunya. *Butll. Inst. Cat. Hist. Nat.*, 77: 137-138.
- Aymerich, P. 2016. Contribució al coneixement de la flora alloctona del nord i el centre de Catalunya. *Orsis*, 30: 11-40. https://www.researchgate.net/publication/305634828_Contribucio_al_coneixement_de_la_flora_alloctona_del_nord_i_centre_de_Catalunya.
- Benedi, C. 1997. *Chamaesyce* Gray, In S. Castroviejo (coord.) *Flora Iberica* 8: 286-297. CSIC. Madrid.
- Benedi, C., Molero, J., Simon, J. & Vicens, J. 1997. *Euphorbia* L., In: S. Castroviejo (coord.) *Flora Iberica*, 8: 210-285. CSIC. Madrid.
- Benedi, C. & Orell, J.J. 1992. Taxonomy of the genus *Chamaesyce* S.F. Gray (Euphorbiaceae) in the Iberian Peninsula and Balearic Islands. *Collect. Bot. (Barcelona)*, 21: 9-55. CSIC. Madrid.
- Casasayas i Fornell, T., M. 1989. *La flora alloctona de Catalunya. Catàleg raonat de les plantes vasculares exòtiques que creixen sense cultiu al NE de la Península Ibèrica*. Thesis Doctoral. Universitat de Barcelona.
- Cirujano, S. & Velayos, M. 1990. *Boussingaultia* Kunth, In: S. Castroviejo (coord.) *Flora Iberica*, 2: 474-475. CSIC. Madrid.
- Dana, E. D.; Sanz, M.; Vivas, S. & Sobrino, E. 2005. *Especies vegetales invasoras en Andalucía*. Sevilla.
- Dietrich, W. 1997. *Oenothera* L., In: S. Castroviejo (coord.) *Flora Iberica*, 8: 90-100. CSIC. Madrid.
- Fernandes, R.B. 1972. Basellaceae. *Anu. Soc. Brot.*, 38: 139-140.
- Franco, J.A. 1971. *Nova Flora de Portugal*. 1 (Lycopodiaceae-Umbelliferae). Lisboa.
- Galán, A. 2007. *Lemnaceae*. In: S. Castroviejo (coord.) *Flora Iberica* 18: 311-319. CSIC. Madrid.
- Galán, A. & Castroviejo, S. (2005) *Acerea del tratamiento de Lemnaceae en Flora Iberica. Acta Bot. Malac.*, 30: 248-249.
- Galán, A.; Sánchez Gullón, E. & Castroviejo, S. 2005. *Spirodela punctata* (G. Meyer) C.H. Thompson (Lemnaceae), una novedad para la flora ibérica. *Acta Bot. Malac.*, 30: 246-247.
- García de Lomas, J.; Fernández Carrillo, L.; Concepción Saavedra, M.; Mangas, L.; Rodríguez Hiraldo, C.; Sánchez Gullón, E. & Martínez Montes, E. 2015. Invasión de *Oenothera drummondii* Hook. (Onagraceae) en el Paraje Natural Marismas del Odiel (Huelva, S de España): Bases para la gestión de una invasión avanzada. *Rev. Soc. Gad. Hist. Nat.*, 9: 41-50.
- García Martín, F. 1987. *Asclepiadaceae*, In: Valdés B., Talavera S. & Galiano E. (eds.) *Flora Vascular Andalucía Occidental*, 2: 348-350. Ed. Ketres. Barcelona.
- Jarzyna I.; Malecka K.; Panufnik-Mędrzycka D. & Mędrzycki P. 2010. Dynamics and currence patterns of the tatarian orache *Atriplex tatarica* L. (Chenopodiaceae) at the roadsides in Warsaw, Poland. *Acta Soc. Bot. Polon.*, 79(3): 249-254.
- Kornás, J. 1990. Plant invasions in Central Europe: historical and ecological aspects. In: di Castri F., A.J. Hansen & M. Debussche (eds.), *Biological invasions in Europe and the Mediterranean Basin*. Kluwer Academic Publishers, Dordrecht: 19-36.
- Molesworth Allen, B. 1976. Notas sobre algunas plantas de la provincia de Cádiz. *Lagascalia*, 6(2): 239-242.
- Morales Torres, C. 2009. *Sisymbrium* L., In: Blanca, G. & al (eds) *Flora Vascular Andalucía Oriental*, 3: 73-75. Consejería Medio Ambiente. Junta de Andalucía. Sevilla.
- Navarro, C. & Muñoz Garmendía, F. 1998. *Duchesnea* Sm., In S. Castroviejo (coord.) *Flora Iberica*, 6: 94-96. CSIC. Madrid.
- Nylinder, S., Lemey, P., Bruyn, M. de, Suchard, M.A., Pfeil, B.E., Walsh, N. & Anderberg, A.A. 2013. On the biogeography of *Centipeda*: A species-tree diffusion approach. *Systematic Biology*, 63(2): 178-191.
- Pastor, J. 1987. *Atriplex* L., In: Valdés B., Talavera S. & Galiano E. (eds.) *Flora Vascular Andalucía Occidental*, 1: 177-181. Ed. Ketres. Barcelona.
- Portal, R. 2002. *Eragrostis de France et de l'Europe occidentale*. Vals-près-Le Puy: 431 Pp.
- Pujadas Salvá, A. 1993. *Sisymbrium* L., In: S. Castroviejo (coord.) *Flora Iberica*, 4: 22-24. CSIC. Madrid.
- Pujadas Salvá, A. & Hernández Bermejo, J.E. 1986. Contribución al conocimiento de la flora arvense y ruderal de Córdoba. *Lagascalia*, 14(2): 203-225.
- Rainha, B.V. & Silva, M. 1972. *Boussingaultia cordifolia* Ten. *Agron. Lusit.*, 34(3): 186.
- Romero, A.T. 2010. *Oenothera* L., In: Blanca, G. & al. (eds.) *Flora Vascular Andalucía Oriental*, 3: 241-243. Consejería de Medio Ambiente. Junta de Andalucía. Sevilla.
- Sagredo, R. 1987. *Flora de Almería*. Diputación Provincial Almería. Instituto Estudios Almerienses. Almería.

- Sánchez de Lorenzo, J.M. 2007. *Euphorbia* L., In: Sánchez de Lorenzo (coord.) *Flora ornamental española. Las plantas cultivadas en la España península e insular. Santalaceae-Polygalaceae* 5: 104-153. Consejería de Medio Ambiente. Junta de Andalucía. Sevilla.
- Sánchez García, I. 2000. *Flora amenazada del litoral gaditano*. Consejería de Medio Ambiente Junta de Andalucía-Diputación Provincial de Cádiz. Jerez.
- Sánchez Gullón, E. & Galán de Mera, A. 2010. Contribución al estudio de las lemnáceas de Huelva (Andalucía Occidental, España). *Lagasalia*, 30: 29-37.
- Sánchez Gullón, E. & Galán de Mera, A. 2014. *Lemna minuta* (Araceae, Lemnaceae), nuevo xenófito para la flora de Andalucía. *Acta Botanica Malacitana*, 39: 246-248.
- Sánchez Gullón, E. & Rubio García, J.C. 1999. Novedades florísticas para el litoral de Huelva y provincia. I. *Lagasalia*, 21: 7-16.
- Sánchez Gullón, E. & Verloove, F. 2009. New records of interesting xenophytes in Spain. II. *Lagasalia*, 29: 281-291.
- Sánchez Gullón, E. & Verloove, F. 2013. New records of interesting vascular plants (mainly xenophytes) in the Iberian Peninsula. IV. *Fol. Bot. Extremadurensis*, 7: 29-34.
- Sánchez Gullón, E. & Verloove, F. 2015. New records of interesting xenophytes in the Iberian Peninsula. V. *Lazaroa*, 36: 43-50.
- Sánchez Rodríguez, J.A. & Elías Rivas, M. 1998. *Centipeda cunninghamii* (DC.) A. Braun & Ascherson (Asteraceae), una planta adventicia nueva para Europa. *Anales Jard. Bot. Madrid*, 56(1): 167.
- Sanz Elorza M.; Dana Sánchez, E.D. & Sobrino Vesperinas, (eds.) 2004. *Atlas de las Plantas Alóctonas Invasoras en España*. Dirección General para la Biodiversidad. Madrid, 384 pp.
- Silvestre, S. 1987. *Oenothera* L., In Valdés B., Talavera S. & Galiano E. (eds.). *Flora Vascular Andalucía Occidental*, 2: 206-207. Ed. Ketres. Barcelona.
- Smith, A.R. & Tutin, T.G. 1968. *Euphorbia* L., In: Tutin T.G. & al. (eds.). *Flora Europaea*, 2: 213-226. Cambridge University Press. The Plant List 2016. <http://www.theplantlist.org> (consulted V-2016)
- Tovar, O. 1993. Las gramíneas (Poaceae) del Perú. *Ruizia*, 13: 1-480. Monografía del Real Jardín Botánico. CSIC. Madrid.
- Uotila, P. 2011. *Chenopodiaceae (pro parte majore)*, In: *Euro+Med Plantbase- the information resource for Euro-Mediterranean plant diversity*: <http://www2.bgbm.org/EuroPlusMed/PTaxonDetail.asp?NameId=7720944&PTRefFk=7300000> (consulted V-2016)
- Silva, V., Figueiredo, S. & Smith, G.F. 2015. Alien succulents naturalised and cultivated on the central west coast of Portugal. *Bradleya*, 33: 58-81.
- Verloove, F. 2005. A synopsis of *Jarava* Ruiz & Pav. and *Nassella* E. Desv. (*Stipa* L. s.l.) (Poaceae: Stipeae) in southwestern Europe. *Candollea*, 60(1): 97-117.
- Verloove, F. & Sánchez Gullón, E. 2008. New records of interesting vascular plants (mainly xenophytes) in the Iberian Peninsula. *Acta Bot. Malacitana*, 33: 147-167.
- Verloove, F. & Sánchez Gullón, E. 2012. New records of interesting vascular plants (mainly xenophytes) in the Iberian Peninsula. II. *Fl. Medit.*, 22: 5-24.
- Walsh, N.G. 2001. A revision of *Centipeda* (Asteraceae). *Muelleriana*, 15: 33-64.