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***Bromus alopecuroides* a new record for the Iberian Peninsula, with morphological, chorological and nomenclatural observations on the *B. lanceolatus* group**

Abstract

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Bromus alopecuroides, similar to *B. lanceolatus* is reported for the first time from Portugal. A comparative morphological study of the taxa of this group has been carried out. *Bromus alopecuroides* presents mainly Mediterranean distribution, and is accepted as consisting of two subspecies. In one of these, a new combination is proposed.

Introduction

In Europe the genus *Bromus* is represented by 37 species (Mabberley 1993) grouped in four sections. Two of them, *B.* sect. *Pinigma* and sect. *Ceratochloa*, include the perennial species, and the other two, *B.* sect. *Genea* and sect. *Bromus*, the annual species. The species that are included in *B.* sect. *Bromus* can be separated into two groups. The first includes the species presenting straight awn at maturity: *B. arvensis* L., *B. commutatus* Schrad., *B. racemosus* L., *B. secalinus* L., *B. lusitanicus* F. Sales & P. M. Smith, *B. pseudosecalinus* P. M. Smith, *B. bromoideus* (Lej.) Crépin, *B. grossus* Desf. ex DC., *B. hordeaceus* L., *B. lepidus* Holmb. and *B. interruptus* (Hack.) Druce, and the second one the species with eventually twisted awn: *B. intermedius* Guss. *B. japonicus* Thunb., *B. scoparius* L., *B. squarrosus* L., *B. lanceolatus* Roth and *B. alopecuroides* Poir. The last two species form a very closely related pair by their phenotypic characters.

Bromus alopecuroides was described by Poiret (1789), who states in the protologue: "Cette espèce croît dans les prairies aux environs de la Calle". Later, Poiret (1810) described it again under the name of *B. alopecuroides*, pointing out: "J'ai découvert cette espèce en Barbarie dans les prés aux environs de Lacalle". The materials that Poiret employed to describe *B. alopecuroides* have not been located in any of the herbaria where his materials are deposited (FI, H, P, and UPS). Probably, he did not preserve a specimen of the plant, as he says he saw it living ("V. v.", Poiret 1810). The similarity between the two epithets proposed by Poiret has resulted in many authors using them as if they were orthographic variants. When they used the second one, *alopecuroides*, they disregarded the principle of priority.

Desfontaines (1798) described the same taxon again under the name *Bromus contortus*. The corresponding specimen, deposited in the herbarium P-DESF, has a label with the provenance La Calle, so we think that probably Desfontaines refers to the same plant as had seen by Poiret. Some years later, Parlatore (1845) transferred this epithet to the genus *Serrafalcus* as *S. contortus*, and pointed out "... dal regno napoletano, dalla Sicilia e dalla Grecia". Parlatore (1848) renamed the plant *S. alopecuroides* and stated its distribution in Italy as comprising Puglia, Basilicata, Terra di Otranto, Calabria, Sicilia.... Fiori (1923) subordinated Poiret's brome grass to *B. scoparius*, as a variety, extending its distributional area to western Asia. More recently, Smith (1978, 1980) gives the European range of this species as Mediterranean, specifically Crete, Greece, and Italy, Sicily being its western limit.

Morphology

For this study we have used herbarium material from the whole Mediterranean basin, with special attention to the southern part of the Iberian Peninsula, deposited in: herb. Arizaleta, BCF, BR, FI, GDA, GDAC, LD LEB, LISI, LISU, MA, MAF, P, SALAF, SEV, UNEX, VAB, and VALA.

Bromus alopecuroides is very similar morphologically to *B. lanceolatus* and can be misidentified if it is not studied carefully. The differential characters that we have employed in order to define this taxon concern the inflorescence and spikelets (Table 1). Some of them were mentioned by Poiret in his protologue.

Table 1: Differential features of *Bromus alopecuroides* and *B. lanceolatus*

CHARACTERS	<i>B. alopecuroides</i>	<i>B. lanceolatus</i>
Inflorescence	spiciform	panicle
Inflorescence branches	inconspicuous	more 1 cm.
Spikelets	sessile	pedicellate
N° florets/spikelet	up to 20	20 - 40
Spikelet length (mm)	20 - 50	20 - 50
Spikelet width (mm)	4 - 5 (7)	(6) 7 - 10
Lower glume length (mm)	6 - 8	6 - 9
Lower glume width (mm)	1.5 - 2	3 - 4
Upper glume length (mm)	9.5 - 10	(8) 9 - 11
Upper glume width (mm)	3	4 - 5
Lemma length (mm)	10 - 20	11 - 20
Lemma width (mm)	3 - 4	5 - 6
Palea length (mm)	8 - 12	8 - 12
Palea width (mm)	1 - 1.5	1.5 - 2

The inflorescence features may help in the differentiation of *Bromus alopecuroides* and *B. lanceolatus*. *Bromus alopecuroides* presents a more or less spiciform, narrow and contracted inflorescence with very short or missing branches, the spikelets being sessile. Conversely, *B. lanceolatus* usually presents a composite inflorescence in which at least the lower branches are more than 1 cm long and the spikelets are clearly pedicellate.

The spikelets are lanceolate in both *Bromus alopecuroides* and *B. lanceolatus*. The number of flowers that they present is very variable but in *B. alopecuroides* it does not usually exceed 20, whilst in *B. lanceolatus* it ranges between 20 and 40.

Table 2: Differential characters of *Bromus lanceolatus* subsp. *lanceolatus* and subsp. *biaristulatus* (from Maire, 1942, 1955).

CHARACTERS	subsp. <i>lanceolatus</i>	subsp. <i>biaristulatus</i>
Inflorescence	wide, dense panicle	spiciform, narrow, simple
Length branches	3 - 4 cm	
N° of spikelets per branch	2 - 3	1
Spikelets	pedicellate	sessile
Apex lemma	2 - toothed	2 - aristate (mucro = ± 2 mm)

Of all spikelet measurements, only the width can differentiate between the two species. In *Bromus alopecuroides* it is 4-5(-7) mm, in *B. lanceolatus* (6-) 7-10 mm. The spikelet width depends to some degree on the glume and lemma width, in which some differences can be noted too. (Table 1).

The vegetative characters such as length and width of the culm, leaf, sheaths and lamina do not contribute any significant difference. Indumentum characters, both of vegetative parts and of the spikelets, give no differences either, because in both species are found glabrous and hairy varieties.

Chorology

Bromus alopecuroides is a Mediterranean species. Only a very imprecise record from the Iberian Peninsula is known, that we could not verify. Vahl (1794) wrote that *B. alopecuroides* with hairy spikelets lives "in Hispania". According to more recent literature, this Mediterranean species is only known from the eastern Mediterranean basin. The three new localities noted here widen considerably, in a westerly direction the known area. The corresponding specimens are deposited in the herbarium LISI. They come from the Iberian Peninsula, Portugal: Alcoutim (Algarve), Alvaizere (Beira Litoral), and Cadaval-Junceira (Estremadura).

Variations in *Bromus alopecuroides*

Maire (1942) described a new taxon in this group from Lybia (Cyrenaica: Barce and Ouadi Kouf). *Bromus lanceolatus* subsp. *biaristulatus*. The differences between *B. lanceolatus* subsp. *lanceolatus* and subsp. *biaristulatus* are clearly explained in his description, and we have digested them in Table 2. They concern inflorescence type as well as panicle organisation, and coincide with those commonly used to differentiate between *B. lanceolatus* and *B. alopecuroides*.

Later, Greuter (1971) described a new species of this group *Bromus caroli-henrici*. The diagnostic features that he gives such as narrow and spiciform inflorescence, solitary spikelets at each node with pedicels of 0.5-1 mm and lemmas with biaristulate apex, agree with those pointed out by Maire (1942) for *B. lanceolatus* subsp. *biaristulatus*. The distribution area of this taxon overlaps with the eastern part of the area of *B. alopecuroides*.

Scholz (1974), considering Maire's Libyan specimen to differ significantly from Greuter's Aegean ones, proposed the combination *Bromus caroli-henrici* subsp. *biaristulatus* (Maire) H. Scholz. This new combination is not necessary in our opinion because *B. caroli-henrici* and *B. lanceolatus* subsp. *biaristulatus* cannot be distinguished.



Fig. 1.- *Bromus alopecurus* subsp. *alopecurus* from Alcoutim, Portugal. A, habit; B, spikelet; C, lemma; D, palea; E, glumes; F, apex of lemma.

Smith (1978) considered this interesting taxon, *Bromus caroli-henrici*, to result from populational isolation of *B. alopecuroides* and considered the rank of subspecies as appropriate for it making the combination *B. alopecuroides* subsp. *caroli-henrici* (Greuter) P. M. Smith.

We concord that the appropriate rank for *Bromus caroli-henrici* is that of a subspecies within *B. alopecuroides*, the correct name of which subspecies must be use the epithet *biaristulatus*, for reasons of priority, as follows:

Bromus alopecuroides subsp. *biaristulatus* (Maire) Acedo & Llamas, comb. nov.
 = *B. lanceolatus* subsp. *biaristulatus* Maire in *Bull. Soc. Sci. Nat. Maroc* 33: 98 (1942)
 = *B. caroli-henrici* Greuter. subsp. *biaristulatus* (Maire) H. Scholz in *Willdenowia* 7: 420 (1974)
 = *B. caroli-henrici* Greuter in *Ann. Naturhist. Mus. Wien.* 75: 83 (1971)
 = *B. alopecuroides* subsp. *caroli-henrici* (Greuter) P. M. Smith in *Bot. J. Linn. Soc. Bot.* 76: 360 (1978)

Key of identification of taxa in the B. alopecuroides-B. lanceolatus complex

- 1.- Inflorescence usually a more or less compound panicle. At least the lower branches 1 cm long. Spikelets pedicellate *B. lanceolatus*
 1.- Inflorescence spiciform. Branches inconspicuous. Spikelets sessile 2
 2.- Lemma apex 2-toothed *B. alopecuroides* subsp. *alopecuroides*
 2.- Lemma apex biaristulate *B. alopecuroides* subsp. *biaristulatus*

Specimens seen

Bromus alopecuroides* subsp. *alopecuroides

Algeria: La Calle, *M. Desfontaines*, (P-DESF).

Greece: Nom. Magnisias, Ep. Skopelou, Kira Panagia, E end Ormos Hagio, 17 Apr 1982, *A. Carlström* 5243, (LD). Northern Sporades, 0.5 km of the town, 1-50 m. 17 Apr 1972, *S. Snogerup* & *M. Gustafsson* 42811, (LD). Northern Sporades, Skopelos, at Elios, 0-2 m, 21 Apr 1972, *S. Snogerup* & *M. Gustafsson* 43129, (LD). Rhodos, 1 km S Kattavia, 17 Apr 1982, *A. Carlström* 4031, (LD). Samos, N of the town of Samos, 37°45'N 26°58'E, 50-100 m, 3 May 1992, *S. & B. Snogerup* 8832, (LD).

Portugal: Algarve: Alcoutim, Alamo, Rio Guadiana, 29SPB34, 23 Apr 1983, *M. Lousa* & *P. Oliveira*, (LISI). Beira Litoral: Alvaiazere, W da localidade de Bofinho, 29SNE51, 160 m, 22 May 1970, *M. Lousa*, (LISI 1411). Estremadura: Cadaval-Junceira, a 1 km de la vila Montejunto, 29SMD83, 9 Oct 1971, *M. Pineiro de Mello*, (LISI).

Italy: Campania: Napoles, Geniolo Porrentina, Jun 1913, *without collector*, (MA 14040). Malta: In Collibus Panormitanis alla Moarta, Sep 1842, *D. Parlato*, (FI). Sicilia: Monte Pellegrino, Sep 1842, *D. Parlato*, (FI).

Bromus alopecuroides* subsp. *biaristulatus

Greece: Chios, 1.5 km SSE of Anavatos, 38°20'N 26°2'E, 350 m, 20 Apr 1990, *S. & B. Snogerup* 6796, (LD). Dodekanes, Karpathos, 1 km west Agios Minas, 35°41'10" N 27°11'E, 100 m, 27 May 1984, *H. Risse* 10024, (LD). Rhodos, 1 km NE Salakos, 12 May 1982, *A. Carlström* 5633, (LD). Rhodos, 2 km S Archipol, 23 Apr 1982, *A. Carlström* 4934, (LD). Samos, N of the town of Samos, 37°45'N 26°58'E, 50-100m, 3 May 1992, *S. & B. Snogerup*

8833, (LD). Eparchie Rethimni, Tal und Schlucht N von Methoia, 33°20'N 24°24'30"E, 180 m, 2 Jun 1982, *W. Greuter & H. Risse 19456*, (LD).

Israel: Palestina: Jerusalem, fields, 800 m, 5 Apr 1912, *Fred. S. Meyers & J. E. Dinsmore, N° B 2905*, (LD).

Bromus lanceolatus

Spain: Alicante: Cabo de la Nao-Javés, 31SBC59, 15 May 1969, *A. Segura Zubizarreta*, (MA 363179). Denia, base del Montgó, 31SBC59, 16 May 1984, *J. L. Carretero*, (VALA 5137.). Jávea, 31SBC59, 5 m, 25 May 1991, *Q. Masia*, (VAB 933957). Playa de Altea, 30SYH57, 16 May 1958, *without collector*, (MA 377155). Almería: Cabo de Gata, prope cas Bonarela, 16 Apr 1879, *Porta Rigo*, (BR 192). Cabo de Gata, 30SWF76, *without date*, *Rojas Clemente*, (MA 156164). Sierra de Alhamilla, Cerro de la Hoya del Pozo, 30SWF59, 7 Jun 1967, *P. W. Ball, A. O. Chater, I. K. Ferguson & B. Valdés*, (SEV 107742). Sierra de Gador, Enix, 30SWF18, 1100 m, 4 Jun 1982, *C. Evrard*, (BR 9499). Badajoz: Badajoz, 29SPD70, 1 May 1979, *R. de Arcos*, (UNEX 13959). Badajoz, 29SPD70, 3 May 1979, *M. C. Viera*, (UNEX 13960). Badajoz, Finca Casablanca, 29SPD70, 21 Apr 1989, *M. C. Viera & T. Ruiz*, (UNEX 13955). Badajoz, Valdepasillas, Cantuesar, 29SPD70, 15 Mar 1987, *J. A. Devesa*, (UNEX 13957). Barcarrota, 29SPC86, 1 May 1969, *M. Ladero, J. Borja & Rivas Goday*, (MAF 94516). Brovales, 29SQC04, 3 May 1987, *F. Vázquez*, (UNEX 13964). Don Benito, 30STJ51, 9 Apr 1988, *A. Ortega & M. C. Viera*, (UNEX 8459). Don Benito, Carretera a la Haba, 30STJ51, 300 m, 28 Apr 1988, *R. Tormo & A. Muñoz*, (UNEX 13954). Feria, 29SPD70, 21 Apr 1987, *F. Vázquez*, (UNEX 12934). Fuente del Maestre, 29SQC26, 21 Apr 1987, *F. Vázquez*, (UNEX 12664). Guareña, 29SQD50, 6 May 1975, (MAF 92899). Guareña, 29SQD50, 5 May 1988, *T. Ruiz & M. C. Viera*, (UNEX 8460). La Haba 30STJ51, 2 May 1987, *T. Ruiz* (UNEX 12935). Mengahil-Guareña, río Guadamez, 6 May 1975, *Bote, Ladero & Pérez Chiscano*, (MA 201670, MAF 92641). Navalvillar de Pelas, 30STJ83, 4 May 1969, *Rivas Goday, Borja & Ladero*, (MAF 74184). Navalvillar de Pelas, 30STJ83, 4 May 1969, *J. Borja* (MAF 73905). Santa Amalia, 29TNE45, 300 m, 28 Apr 1988, *A. Muñoz & R. Tormo*, (UNEX 13958). Santa Marta de los Barrios, 29SQC07, 17 Apr 1987, *F. Vázquez*, (UNEX 13961). Segura de León, 21 May 1987, *Ladero & Amor*, (SALAF 15535). Sierra Alconera, 29SQC15, 2 May 1987, *F. Vázquez*, (UNEX 12936). Tamarujo, 29 Apr 1988, *A. Muñoz & R. Tormo*, (UNEX 13956). Valdecaballeros, central nuclear, 30SUJ14, 17 May 1977, *Malato-Beliz et al.*, (MA 284845). Villafranca de los Barros, 29TNE45, 2 May 1987, *F. Vázquez*, (UNEX 13965). Barcelona, Barcelona, 31TDF28, champs, Jun 1910, *Fre. Sennen*, (MA 14017). Martorell de Llobregat, 31TDF19, in viveis, 31 Jun 1916, *Font Quer*, (MA 14015). Cáceres: Aldeamoret, cerro de la Mina, 16 May 1983, *Ladero & Santos*, (SALAF 5949). Aliá, 30SUJ17, 6 Sep 1969, *J. Borja*, (MAF 74012). Cañaveral, Cerro de Cabezarribia, 29SQE20, 11 May 1983, *Ladero & Santos*, (SALAF 6171). Carrascalejo, 30SUJ19, 6 Aug 1967, *M. Ladero*, (MAF 78069). Ceclavin, 29SPE91, 8 May 1975, *Bote, Ladero & Pérez Chiscano*, (MAF 92898). Garrovillas, Cuesta de Aralla, 29SQD19, 9 May 1986, *Ladero & Santos*, (SALAF 14140). Plasencia, dehesa de los Caballos, 29TQE43, 11 May 1983, *Ladero & Santos*, (SALAF 18916). Plasencia, dehesa de los Caballos, 29TQE43, 11 May 1983, *Ladero & Santos*, (SALAF 6140). Romangordo, La Cañada, 30STK60, 30 May 1981, *D. Belmonte*, (MAF 117226). Romangordo, La Cañada, 30STK60, 4 May 1980, *D. Belmonte*, (MA 393603). Saucedilla, 30STK71, 16 Jun 1983, *Ladero, Ruíz & González*, (SALAF 7764). Cádiz: Alcalá de los Gazules, Finca el Pradillo, 30STF53, 800 m, 18 May 1980, *R. Murillo*, (SEV 57519). Algeciras, La Línea de la Concepción, 30STF70, 7 May 1970, *E. F. Galiano & al.*, (SEV 107737). Arcos de la Frontera-Paterna, 30STE45, 150 m, 8 May 1980, *B. Mollesworth Allen*, (SEV 107843). Benaocaz, A° del Pajarito, Rancho las Colmenillas, 30STF86, 30 May 1984, *A. Aparicio & S. Silvestre*, (MA 460837). Bornos, 30STF57, 13 May 1967, *E. F. Galiano*, (SEV 99105). Chiclana de la Frontera, 29SQA53, 21 Apr 1980, *F. Amor & A. Barroso*, (SEV 107707). Chiclana de la Frontera, 29SQA53, Jun 1964, *J. Borja*, (MAF 67679). Chiclana de la Frontera, 29SQA53, May 1965, *J. Borja*, (MA 186139). Grazalema, Sierra del Pinar, 30STF87, calizas, 1400 m, 3 Jun 1980, *B. Cabezudo & C. Romero*, (SEV 73032). Guadarranque, San Roque, 30STF80, 17 May 1974, *B. Mollesworth Allen*, (SEV

108756). Jerez, 29SQA56, 7 May 1876, *Pérez Lara*, (MA 14003). Jerez, 29SQA56, 22 May 1880, *Pérez Lara*, (MA 14009). Jerez, 29SQA56, 10 Apr 1878, *Pérez Lara*, (MAF 26599). Jerez, Ermita del Mimbral, 29SQA56, 15 May 1878, *Pérez Lara*, (MAF 26655). Jerez, Camino de Sebrija, 29SQA56, 29 May 1880, *Pérez Lara*, (MAF 26598). La Granja, Los Barrios, 3 Jul 1974, *B. Mollesworth Allen*, (SEV 107729). San Fernando, 29SQA54, 4 Apr 1956, *F. Bellot & B. Casaseca*, (SANT 9484). San Fernando, polígono de tiro, 29SQA54, 29 Mar 1951, *C. López & S. Grau*, (MA 153743). Sierra de Lijar, Algodonales, 30STF88, 700 m, 31 May 1980, *A. Aparicio*, (SEV 61290). Sierra de Lijar, Algodonales, 30STF88, 500 m, 10 May 1980, *A. Aparicio*, (SEV 61123). Sierra de Lijar, Algodonales, 30STF88, 800 m, 18 Jun 1980, *A. Aparicio & C. Romero*, (SEV 61291). Prope "jarinar" in ditioni oppidi, Tarifa, 30STE69, 3 Jun 1881, *Pérez Lara*, (MAF 26597). Trebujena, 29SQA58, 7 May 1982, *S. Talavera & B. Valdés*, (SEV 107738). Ubrique, 30STF85, 700 m, 28 May 1981, *J. Díez, J. Pastor & B. Valdés*, (SEV 73785). Villaluenga, S^a de Peralto, Casa La Huertecilla, 30STF9065, 900 m, 7 Jul 1983, *A. Aparicio*, (MA 460437). Villamartín-Algodonales, Base de la S^a de Nava, 30STF88, 1 May 1969, *E. F. Galiano, P. Gibbs & S. Silvestre*, (SEV 96790). Castellón: Cabanes, 2 Jun 1981, *J. L. Carretero*, (VALA 3575). Penyalgosa, 30SYK25, without date, *without collector*, (MAF 13862). Ciudad Real: Almagro, 30SVJ30, 16 Jun 1976, *Fuertes, Ladero & Rivas Goday*, (MAF 94840). La Encomienda de Santa Cruz de Mudelas, 30SVH47, Jun 1960, *J. Borja*, (MA 83135). Córdoba: Azuel-Río, Yeguas, 30SVH84, pizarras, 28 May 1982, *J. A. Devesa & F. García*, (SEV 107730). Belalcazar, 23 Apr 1982, *E. Laguna*, (VAB 903167). Belmez, Lomas del Pedregosilla, 30SUH13, 1 May 1980, *J. Varela*, (SEV 104157). Conquista-La Garganta, Río Guadalmez, 30SUH65, 27 May 1982, *J. A. Devesa & F. García*, (SEV 107735). Fuente Ovejuna-La Granjuela, 30STH94, 30 May 1984, *J. Arroyo, J. Mejías & S. Talavera*, (SEV 104157). Los Blázquez-Fuente Ovejuna, Arroyo de Montuenga, 6 Jun 1979, *J. Muñoz & E. Ruíz de Clavijo*, (SEV 108755). Los Blázquez, Comarca del Zujar, 23 Apr 1982, *J. A. Devesa, T. Luque & B. Valdés*, (SEV 108770). Los Pedroches, Dos Torres 30SUH35, 2 May 1976, *J. A. Devesa*, (SEV 34934). Montoro, 30SUH91, 4 May 1982, *M. J. Díez & I. Fernández*, (SEV 107703). Priego de Córdoba, c. de La Rabita, 30SUG94, 593 m, 30 May 1979 *M. L. Díez & J. Muñoz*, (SEV 108215). Priego de Córdoba, Cerro Gallardo, 30SUG94, 18 May 1978, *J. M. Muñoz*, (SEV 107705). Rute, Bco. c. Cortijo de los Chozones 30SUG83, 15 May 1980, *M. J. Gallego, C. Romero & S. Silvestre*, (SEV 107706). Sierra de Rute, Bco. de las Cárceles, El Chorrillo, 30SUG83, 15 May 1980, *M. J. Gallego, C. Romero & S. Silvestre*, (SEV 107739), *id.* (SEV 107710). Zujar, Los Blázquez, 30SUH08, 23 Apr 1982, *J. A. Devesa T. Luque & B. Valdés*, (SEV 108760). Gerona: Tarrasa, 31TDG10, Jun 1894, *Cadevall*, (MA 14918). Granada: Atarfe, base de Sierra Elvira, 30SVG32, 14 May 1980, *Ladero & J. Hurtado*, (MAF 109009). Garanda, Atarfe, base de Sierra Elvira, 30SVG32, 14 May 1980, *Ladero & J. Hurtado*, (LEB 18203). Illora-Puerto López, 30SVG2327, 650 m, 19 Jun 1985, *Aroza, P. & O. Socorro*, (GDA 17342). Moraleta de Zafayona, 30SVF11, 19 Apr 1980, *Ladero et López Guadalupe*, (MA 246440). Sierra de Huétor, Chorrillo, 30SVG52, 12 Jun 1978, *F. Valle*, (GDAC 11559). Sierra de Loja, 30SUG91, 22 May 1980, *C. Morales*, (GDAC 34353). Sierra de Parapanda, 30SVG13, 14 Jun 1980, *C. Morales*, (GDAC 34352). Huelva: Ayamonte, 29SPB42, 6 Apr 1979, *J. Díez, S. Talavera & B. Valdés*, (SEV 107726). Ayamonte, 29SPB42, 7 May 1943, *C. Vicioso*, (MA 14007). Doñana, Marisma de Hinojos, El Lobo, 29SQA29, 27 Apr 1978, *S. Castroviejo & E. Valdés Bermejo*, (MA 246437). Hinojos, Palacio del Rey, 29SQB33, 17 May 1979, *S. Silvestre, S. Talavera & al.*, (SEV 107709). Hinojos, Reserva Guadiamar, 29SQA29, 25 Apr 1978, *E. Valdés & S. Castroviejo*, (SEV 61124). Huelva, 29SPB82, 6 May 1942, *C. Vicioso*, (MA 14008). Marigenta-El Berrocal, 29SQB16, 27 Apr 1981, *F. García, J. García & S. Silvestre*, (SEV 107734). San Juan del Puerto, 6 May 1930 *E. Gros*, (MA 14001). Islas Baleares: Sóller, 31SDE70, 21 May 1912, *F. Bionor*, (MA 14019). Jaén: Bailén, 30SVH31, 6 Jun 1963, *E. F. Galiano*, (SEV 6171). Benascar, 18 Jun 1883, *Pérez Lara*, (MAF 26596). Despeñaperros, Monticum Marianorum, 30SVH55, 13 Jun 1874, *Torre Pando*, (MAF 26604). Jaen, 30SVG47, 29 May 1880, *Pérez Lara*, (MAF 26600). Jaén, subida a Jabalcuz, 30SVG2478, 1100 m, 8 May 1987, *C. Fernández & A. Olmo*, (VAB 921890). La Iruela, Cerro de las Albardas, 30SWH0603, 1340 m, 5 Jun 1975, *González Rebollar, Muñoz Garmendía & Soriano*, (MA 482269). La Iruela, Valle del Guadalquivir, 30SWH0804, carretera del Tranco, 740 m, 17 Aug 1976, *González Rebollar, Muñoz Garmendía & Soriano* (MA 482268). Mojón Blanco, 30SVG57, 1400 m, 13

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