

OROBANCHACEAE IN THE "FLORA IBERICA" AREA: NEW TAXA, EXCLUDED TAXA, AND TYPIFICATION

by

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Resumen

FOLEY, M.J.Y. (2001). Orobanchaceae en el área de "Flora iberica": nuevos táxones, táxones excluidos y tipificación. *Anales Jard. Bot. Madrid* 58(2): 223-233 (en inglés).

Se describen una especie y una variedad nuevas de *Orobanche*: *O. austrohispanica* M.J.Y. Foley y *O. crinita* Viv. var. *occidentalis* M.J.Y. Foley. Del estudio del material de herbario disponible se concluye que las *Orobanchaceae* están representadas en el área de *Flora iberica* por una especie de *Cistanche* y 31 de *Orobanche*. Se discuten las citas de varias especies de ambos géneros que han de ser consideradas erróneas o dudosas. Además se tipifican *Lathraea phelypaea* L. [*Cistanche phelypaea* (L.) Cout.] y nueve especies de *Orobanche* (*O. caryophyllacea* Sm., *O. cernua* Loeft., *O. elatior* Sutton, *O. gracilis* Sm., *O. ramosa* L., *O. reticulata* Wallr., *O. rosmarina* Beck, *O. schultzei* Mutel y *O. variegata* Wallr.).

Palabras clave: *Orobanchaceae*, *Orobanche*, *Cistanche*, *Lathraea*, *Flora iberica*, taxonomía, distribución, tipificación.

Abstract

FOLEY, M.J.Y. (2001). Orobanchaceae in the "Flora iberica" area: new taxa, excluded taxa, and typification. *Anales Jard. Bot. Madrid* 58(2): 223-233.

Two new *Orobanche* taxa are described: *O. austrohispanica* M.J.Y. Foley, and *O. crinita* Viv. var. *occidentalis* M.J.Y. Foley. Thirty-one species or subspecies of *Orobanche* and one species of *Cistanche* have been confirmed as being present within the *Flora iberica* area but some others previously recorded appear to have been so erroneously. In addition, *Lathraea phelypaea* L. [*Cistanche phelypaea* (L.) Cout.] and nine species of *Orobanche* (*O. caryophyllacea* Sm., *O. cernua* Loeft., *O. elatior* Sutton, *O. gracilis* Sm., *O. ramosa* L., *O. reticulata* Wallr., *O. rosmarina* Beck, *O. schultzei* Mutel y *O. variegata* Wallr.) are typified.

Key words: *Orobanchaceae*, *Orobanche*, *Cistanche*, *Lathraea*, *Flora iberica*, taxonomy, distribution, typification.

INTRODUCTION

Resulting from work carried out in preparing the Orobanchaceae account for *Flora iberica*, some observations are given here. The work involved study in both the field and the herbarium as well as a detailed examination of the relevant literature. For some taxa which are difficult to delimit morphologically, their precise status remains

questionable. In such cases it has been thought appropriate to apply a relatively conservative treatment.

Resulting from the present work two new taxa are recognised and are described below. Some others previously recorded for the *Flora iberica* area appear to be absent. The following, recorded in *Flora Europaea* by CHATER & WEBB (1972), could not be confirmed: *O. lavandulacea* Rchb., *O. tricho-*

calyx Webb & Berthel., *O. lutea* Baumg., *O. variegata* Wallr. (doubtfully), *O. maritima* Pugsley and *O. elatior* Sutton and similarly for additional records for *O. caesia* Rchb., *O. lucorum* A. Braun and *O. salviae* F.W. Schultz ex W.D.J. Koch.

On the other hand, some which were omitted or considered doubtful in *Flora Europaea* are now known to be present: *O. ros-marina* Beck, *O. tunetana* Beck, *O. laserpitii-sileris* Reut. ex Jord., as well as others which have been subsequently described.

Several species within the *Orobanchaceae* are as yet untypified and the opportunity has been taken to do so in certain cases.

NEW TAXA

Orobanche austrohispanica M.J.Y. Foley, sp. nov.

Caulis simplex non validus. Spica plus minusve pauciflora, non densiflora. Calycis segmenta aequaliter divisa. Corolla 18-25 mm longa, campanulata sed dorsaliter parum carinata; tubus intus ochroleucus vel brunneolus; tubus extus intusque conspicue rubro-venatus; lobi eroso-denticulati. Stamina tubi basin versus (1,5-2,5 mm) inserta; filamenta plus minusve glabra. Stigma vix bilobum, lobis confluentibus vivide flavis. Parasitica in Ulex parviflorus et, interdum, in aliis plantis.

Plants typically (15-)20-30(-40) cm high. Stem simple, 5-10 mm wide below the inflorescence, reddish-yellow, glandular-pubescent. Leaves 15-20 mm long, c. 5-8 mm wide at their base, noticeably wide in proportion to length, very broadly lanceolate, pale yellow, glandular-pubescent. Inflorescence 5-25 cm long, moderately- to few-flowered and not particularly dense; bracts 12-22(-25) mm long, \pm lanceolate, yellow-brown, glandular-pubescent; bracteole absent. Calyx 9-15 mm long, lateral segments equally bifid, tapering, pink-yellow, glandular-pubescent. Corolla 18-25 mm long, erecto-patent, \pm campanulate, but \pm keeled along dorsal line, slightly galeate, distinctly curved proximally, less so distally, externally and internally

coloured cream-pale yellow to very pale brown and contrastingly, longitudinally-veined red on both inner and outer surfaces, glandular-pubescent; upper lip slightly bilobed, lobes of lower lip, separated, central lobe rounded, laterals more acute, margins ciliate, lobes of both upper and lower lips erosulate-denticulate. Filaments inserted 1.5-2.5 mm above the base of the corolla, \pm glabrous throughout their length and at the junction with the corolla base; anthers glabrous; stigma lobes \pm connivent, bright yellow, styles pale pink with a few, scattered glandular hairs.

Holotype: Spain, Cádiz, roadside border between Ronda & Grazalema, near to kilometre post 62 on the C344 road, parasitic upon *Ulex parviflorus*, 5-IV-1994, *Foley* 278 (E).

Habitat: Scrub, road verges, woodland clearings. Often on calcareous, but also on ultramaphic, substrates. Parasitic upon *Ulex parviflorus* Pourr. and sometimes on other taxa; 0-1700 m.

Flowering time: (III-)IV-VI(-VII).

Distribution: It appears to be restricted to southern Spain (the provinces of A, Al, Ca, Co, Gr, Ma, Se) (Fig. 1). Its presence in Morocco is also quite likely since there is a poorly preserved specimen collected at Beni Hosmar (*Pau s.n.*, MA 115153) which may be this taxon.

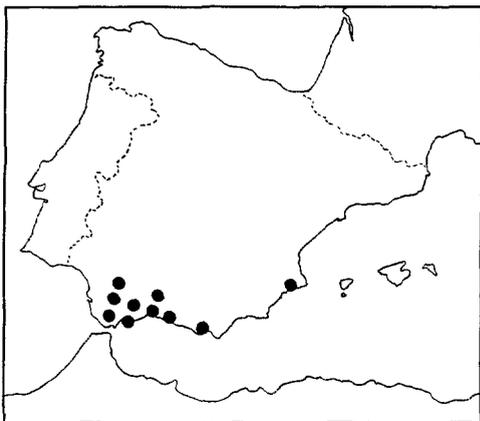


Fig. 1.—*Orobanche austrohispanica*: Provisional distribution, plotted in 50 × 50 km squares of the U.T.M. grid.

Specimens examined

ESP, ALICANTE: Sierra de las Águilas, 11-V-1958, *Rigual s.n.*, MA 373194. Sierra de El Cid, 11-V-1959, *Rigual s.n.*, MA 373174. ALMERÍA: Sierra de Gádor, 14-VI-1992, *Hervas s.n.*, GDAC 38287. CÁDIZ: San Roque-Almoraima, 30-III-1967, *Brinton-Lee s.n.*, SEV 82103. Algodonales, Sierra de Lijar, 29-III-1980, *Aparicio s.n.*, MA 313722, and also 26-IV-1980, SEV 114777, and 9-V-1980, SEV 114773. Villaluenga del Rosario, Sierra Peralto, 21-IV-1983, *Aparicio & Blázquez s.n.*, SEV 115455. Algodonales, Puerto de la Vieja, 30-IV-1984, *Aparicio & Rowe s.n.*, SEV 115451. Between Ronda and Grazalema, 5-IV-1994, *Foley 278* (E, holotype). CÓRDOBA: Rute, Cerro Teodoro, 8-V-1979, *Díaz & Muñoz s.n.*, SEV 120075. GRANADA: Almuñécar, III-1988, *Alabarce & Artiles s.n.*, GDAC 33274. MÁLAGA: Sierra Tejeda, 21-VI-1974, *Talavera & Valdés 311774*, SEV 102937. Sierra de Almijara, 19-IV-1982, *Cabezudo & al. s.n.*, MGC 41507. Sierra de Ojén, 1-VI-1983, *Cabezudo & al. s.n.*, MGC 11782. Cortes de la Frontera, Cortijo Las Alegrías, 14-IV-1983, *Aparicio & al. s.n.*, SEV 114774. Sierra de Montalate, Montejaque, 5-IV-1983, *Aparicio & Silvestre s.n.*, SEV 115454. Cortes de la Frontera, Arroyo Hondo, 11-V-1984, *Aparicio & Silvestre s.n.*, SEV 115452. Montes de Málaga, 23-IV-1988, *Martín s.n.*, MGC 332277. Montes de Málaga, 28-III-1990, *Sánchez & Vera s.n.*, MGC 30457. Cortes de la Frontera, 30-IV-1993, *Foley 250*, E. Between Alora and Carratraca, 7-IV-1994, *Foley 279*, E. Istán, 7-VI-1996, *Gil & al. s.n.*, MGC 42098. Elvira, Marbella, 11-IV-1997, *Foley 1108*, E. SEVILLA: Alrededores de Montellano, 3-III-1969, *Silvestre & Valdés s.n.*, SEV 31887. Entre Morón y Pruna, 18-III-1977, *Ruiz de Clavijo s.n.*, SEV 31885.

This is a plant, quite widespread in southern Spain, with affinities to *O. gracilis* Sm. However, it differs from that in its \pm dorsally-keeled, distinctively and contrastingly reddish-veined, pale coloured corollas which lack the shiny red interior of *O. gracilis* and in its almost glabrous filaments and filament bases. Also, the lips of the corolla usually have more erosulate-margined lobes and the plant is frequently found to parasitise *Ulex parviflorus*. Herbarium specimens have a characteristically uniform, dull, orange-brown appearance. From *O. rapum-genistae* Thuill., also a known parasite of *Ulex* spp., it differs in its strongly veined corolla, its erosulate-lobed lips, its \pm glabrous filaments (glandular-pilose in the upper part in *O. rapum-genistae*), the lower point of filament insertion, the much less separated stigma lobes, and in being fewer- and laxer-flowered and less robust. *O. rapum-genistae* appears to

be absent from southern Spain and previous records for it there may refer to *O. austrohispanica*.

There are two other superficially similar taxa with \pm glabrous filaments. *O. gracilis* var. *wagneri* Beck in Feddes Repert. 18: 37 (1922) was based upon a Hungarian specimen but differs in having a dark red-purple corolla and an appreciably glandular-pilose style. The other, *O. tetuanensis* Ball in J. Linn. Soc. 16: 606 (1878) was described from material collected at Tetuan, Morocco. This also has a dark red-purple corolla (*sordide atropurpurea*), but further differs from *O. austrohispanica* in having a dense inflorescence and entire calyx segments. Although occupying a different geographical area, the latter may be the same plant as Beck's var. *wagneri* or possibly a variant of *O. variegata* Wallr. [*O. condensata* Moris, Stirp. Sard. Elench. 2: 8 (1828)]. The overall glabrescent *O. gracilis* var. *psilantha* Beck in Biblioth. Bot. 19: 197 (1890) has shiny, dark red-purple corollas.

Plants apparently similar to *O. austrohispanica* were seen by Haenseler and described by WILLKOMM (1846) under the illegitimate name *Orobanche Illicis* (sphalm. = *O. ulicis*). This name had been used earlier by DESMOULINS (1835) for what is now considered to be a synonym of *O. gracilis* and which is certainly not the plant under discussion. The formal description is vague: "caule squamoso simplicis, corolla ringente quadrifida crenulata, laciniis rotundatis" (stem scaly, simple, corolla gaping divided into four crenulate, rounded lobes) but he adds that the flowers are white and striped with red ("weisse rothgestreifte Blumen") and that the plant parasitises *Ulex australis* (= *U. parviflorus* s.l.). However, no type material or other specimens collected by Haenseler have been located (either in Willkomm's herbarium (COI) or elsewhere) and so it is not possible to fully establish how it compares to the new species. Apart from an observation by WILLKOMM (1870) suggesting that it should be investigated further, Haenseler's plant appears to have been otherwise ignored.

From material examined so far, all records for *O. austrohispanica* have been from

southern Spain. Within the same area, *O. gracilis* is mainly represented by var. *spruneri* (Schultz) Beck in Biblioth. Bot. 19: 198 (1890), a relatively robust plant having filaments which are appreciably villous in their lower part; this taxon is often parasitic upon shrubby legumes rather than on the smaller non-woody herbs preferred by *O. gracilis* throughout much of its European range. As *O. spruneri* Schultz, it was first described from Greece but the name has sometimes been misapplied (e.g., PUJADAS & LORA, 1996) to plants frequently parasitic upon *Ulex* spp. which are, in fact, conspecific with *O. austrohispanica*. The villous filaments and red corolla interior, both absent in *O. austrohispanica*, are referred to in the diagnosis by SCHULTZ (1843) and a specimen collected by Heldreich (MA 115145) in Greece closely matches Schultz's description.

***Orobanche crinita* var. *occidentalis* M.J.Y.**

Foley, var. nov.

A var. crinita inflorescentiis laxioribus, corollis minus tubulosis atque tantum parce curvatis, filamentis per totam longitudinem aliquantum pilosis recedit.

Differs from the type variety in its laxer inflorescence, less tubular, only slightly curved corolla, and filaments at least very slightly pilose throughout their length.

A small, moderately glandular-pilose plant, typically 10-13 cm tall, slender, with a short, fairly lax- and relatively few-flowered inflorescence. Leaves and bracts \pm lanceolate, brown-purple to maroon. Calyx 10-12 mm long, segments \pm equally divided, lobes narrow, tapering, light maroon. Corolla 14-16 mm long, patent to suberect, broadly subtubular, only slightly curved, deep red-maroon outside, slightly paler towards the base, red inside. Filaments inserted 1.5-2.0 mm above the corolla base, very slightly pilose below, very slightly glandular-pilose above. Stigma lobes usually deep maroon.

Holotype: Spain, Cádiz, Zahara de los Atunes, 26/27-IV-1993, *Foley 243* (E).

Habitat: Maritime sands or similar, where it prefers lightly vegetated areas rather than the loose, unfixed sand. Parasitic upon *Medicago* spp. and possibly other members of the *Fabaceae*; 0-100 m.

Flowering time: III-V.

Distribution: Apparently restricted to the Atlantic coasts of southern Spain (the provinces of Ca, H) and north-west Africa (Fig. 2); possibly also occurs in southern Portugal.

Specimens examined

ESP, CÁDIZ: Above Willis's [near Algeciras], 14-IV-1912, *Wolley-Dod 628*, BM. Near "Bruce's Farm" [near Algeciras], 10-V-1913, *Wolley-Dod 1958*, BM. Zahara de los Atunes, 12-IV-1970, *Fraser-Jenkins 277*, LTR. Zahara de los Atunes (as above), 26/27-IV-1993, *Foley 243* (E, holotype). HUELVA: Ayamonte, 9-V-1943, on *Scorpiurus*, *Vicioso s.n.*, MA 115177 [stigma purpureus].

MOR: Entre Tangier & Turiak[?], V-1921, *Pau s.n.*, MA 115184. Larache, 1914, *Pérez Camarero s.n.*, MA 115167. Tánger, IV-1921, *Pau s.n.*, MA 115183. El Araix, on *Ornithopus*, 19-IV-30, *Font Quer s.n.*, MAF 36257. Safi, 18-IV-1924, *Jahandiez 119*, BM.

It has been argued (FOLEY, 1999) that *O. crinita* Viv. rather than *O. sanguinea* Presl is the correct name for this *Orobanche*. In its typical form, *O. crinita* reaches as far west as the Balearic Islands but further west still it is replaced by var. *occidentalis*. Up to the present, all records have been from a rather limited area of the Atlantic coastal sands west of Gibraltar and on the adjacent north African

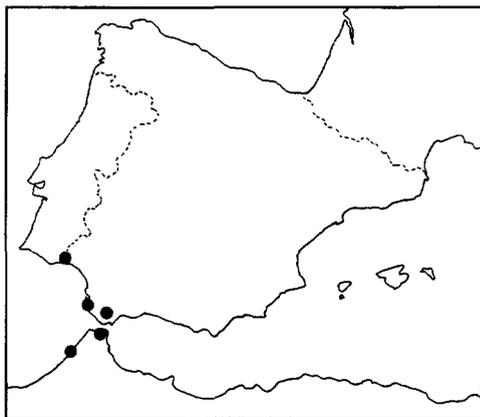


Fig. 2.—*Orobanche crinita* var. *occidentalis*: Provisional distribution, plotted in 50 × 50 km squares of the U.T.M. grid.

coast. It is possible that this variety may have arisen through introgression of *O. crinita* var. *crinita* by *O. foetida* Poir. Although occupying a similar habitat to the type, var. *occidentalis* is usually parasitic upon members of *Medicago* rather than on those of the *Lotus creticus* group. Occasional red-flowered forms of *O. densiflora* also occur within the area and, whilst sometimes causing difficulties in identification, can be separated from *O. crinita* var. *occidentalis* by their yellow stigma lobes.

It is possible that in the past, populations of var. *occidentalis* have been partly included within plants described under *O. foetida* subsp. *broteri* J.A. Guim. or *O. foetida* var. *lusitanica* Cout. (*O. foetida lusitanica* Brot.). However, the characters of the former do not comply with either of those descriptions, and var. *occidentalis* is clearly distinct and closely allied to *O. crinita* rather than to *O. foetida*. *O. sanguinea* var. *cyrenaica* described from Libya is a separate taxon (BECK, 1930).

CONFIRMED AND UNCONFIRMED TAXA

The following 32 species or subspecies within the *Orobanchaceae* have been confirmed for the *Flora iberica* area:

Cistanche phelypaea (L.) Cout., *Orobancha alba* Stephan ex Willd., *O. amethystea* Thuill. [subsp. *amethystea*; subsp. *castellana* (Reut.) Rouy], *O. arenaria* Borkh., *O. artemisiae-campestris* Vaucher, *O. austrohispanica* M.J.Y. Foley, *O. ballotae* A. Pujadas, *O. calendulae* Pomel, *O. caryophyllacea* Sm., *O. cernua* Loeffl., *O. clausonis* Pomel subsp. *hesperia* (J.A. Guim.) M.J.Y. Foley, *O. crenata* Forssk., *O. crinita* Viv., *O. densiflora* Salzm., *O. foetida* Poir., *O. gracilis* Sm., *O. hederiae* Duby, *O. haenseleri* Reut. ex DC., *O. laserpitii-sileris* Reut. ex Jord., *O. latisquama* (F.W. Schultz) Batt., *O. minor* Sm., *O. purpurea* Jacq., *O. ramosa* [subsp. *ramosa*; subsp. *mutelii* (F.W. Schultz) Cout.; subsp. *nana* (Noë ex Reut.) Cout.], *O. rapum-genistae* Thuill., *O. reticulata* Wallr. subsp. *reticulata*, *O. ros-marina* Beck, *O. schultzii* Mutel, *O. teucritii* Holandre, and *O. tunetana* Beck.

The following have previously been reported from the *Flora iberica* area but, despite the examination of a large number of preserved specimens, it has not been possible to confirm their presence. However, since a proportion of the available herbarium specimens are inadequate for accurate determination due to their quality or to the lack of field colour notes, it is still possible that some may be of these taxa. Although several of the latter are quite likely to occur in the area and should be searched for, until unequivocal confirmation can be obtained, it seems better to omit them from the Iberian flora for the present.

Cistanche violacea (Desf.) Hoffmanns.
& Link and variants of *C. phelypaea* (L.) Cout.

The reported presence in Almería of the mainly north African *Cistanche violacea* (FERNÁNDEZ CASAS & REJÓN, 1974; FERNÁNDEZ CASAS & al., 1994) may result from confusion with colour variants of *C. phelypaea* which are known to occur there. A specimen (López s.n., MA 435428) collected in 1982 shows, in stature and corolla shape, some similarities to *C. violacea* and might be the same, but similar plants need to be more fully investigated especially in the field.

In south-east Spain, in localities of high saline content, often some distance from the coast and over gypsum substrates, *C. phelypaea* can show appreciable deviation from the type, especially in respect to stature, corolla shape and colour. Plants from the provinces of Murcia and Almería, have also been separated as subsp. *lutea* by FERNÁNDEZ CASAS & LAÍNIZ (1973) based on their slightly different stem leaf and corolla morphology but such differences, especially the latter, are not readily apparent in herbarium specimens. Recent field work suggests that plants transitional between these and the type may occur and because of this recognition at subspecific level is not appropriate.

Orobanche sect. Trionychon Wallr.

Several taxa related to *O. ramosa* L. exhibit considerable morphological variation making their precise delimitation very difficult. Close to *O. ramosa* are *O. mutelii* F.W. Schultz and *O. nana* (Noë ex Reut.) Beck, which have been variously placed at different taxonomic levels. However, material from the Iberian peninsula, as from several other parts of the Mediterranean (e.g., MEIKLE, 1985), contains such a wide a range of morphological intermediates, that it is unjustified to place these any higher than subspecific rank. Within this same group there are also plants which are mostly unbranched, possessing a dense, but often short, rounded inflorescence, with flowers 16-22 mm in length, usually of a pale coloration. Although they show appreciable variation within and between collections, herbarium specimens of these are separable as an entity and appear to be conspecific with the taxon described as *O. mutelii* var. *spissa* (Rouy) Beck.

Other taxa, some of them poorly understood and which are also morphologically close to members of the *O. ramosa* aggregate, have been recorded for the area. *Orobanche lavandulacea* Rchb. is a relatively distinctive plant with narrow, tapering, often branched, inflorescences of mauve-grey flowers, the lower of which are usually long pedicellate. It is frequent in much of the southern, central Mediterranean, where its normal host is *Bituminaria bituminosa*. Although distinctive and recorded for the area by WILLKOMM (1870), WILLKOMM (1893), GREUTER & al. (1989), BOLÒS & al. (1990) and others, no specimens have been seen during this work.

Orobanche trichocalyx (Webb & Berthel.) Beck [*Phelipaea trichocalyx* Webb & Berthel., *Phytogr. Canar.* 3: 154 (1844-1850)] was recorded for Spain and Portugal by WILLKOMM (1893), COUTINHO (1939), CHATER & WEBB (1972), FRANCO (1984) and GREUTER & al. (1989) where it apparently parasitised the unlikely host, *Pteridium aquilinum* (L.) Kuhn. Again, no material has been located, but from the illustration included with the original authors' diagnosis, it bears

some resemblance to both *O. lavandulacea* and *O. schultzii* and should perhaps be included within one or other of these or within *O. ramosa*.

Orobanche caesia Rchb., an eastern European/Asiatic plant is a quite distinctive arachnoid-villous member of this Section. There are many Iberian records, especially from central, east, and south-east Spain, but all these appear to refer to the morphologically similar north African *O. tunetana* Beck which is present in Alicante province (PUJADAS & al., 1997).

Orobanche sect. Orobanche

Orobanche lucorum A. Br. was recorded for Portugal by GUIMARÃES (1904) and for Galicia by MERINO (1906) but this is a plant of central Europe, largely restricted to a *Berberis* host. No material has been seen and its occurrence in the Iberian peninsula is unlikely.

Two species recorded, but which are also mainly restricted to central Europe, are *O. lutea* Baumg. (syn. *O. rubens* Wallr.) and *O. salviae* F.W. Schultz. The former has certainly been recorded as far west as southern France and its presence in Spain is quite possible but, other than a single, poorly preserved specimen which may be of this taxon collected between Tella and Salinas de Sin, Huesca (Fernández 3373, JACA 267694), no material has been seen. On herbarium specimens the names *O. lucorum* and especially *O. lutea* are also sometimes erroneously applied to what are merely yellow-flowered or pigment-lacking forms of other taxa. For Catalonia, WILLKOMM (1893) lists a single record for *O. salviae* but again no voucher has been found.

In *Flora Europaea*, CHATER & WEBB (1972) recorded *O. variegata* Wallr. as doubtful for Spain. This is a plant of the central Mediterranean where it is parasitic upon a range of leguminous shrubs, especially *Spartium junceum* L. and *Calicotome villosa* (Poir.) Link. Many of the Iberian records would appear to result from confusion with *O. foetida* Poir. or with robust plants of *O. gracilis* Sm., and specimens of these are sometimes erroneously labelled as such on

herbarium sheets. Both taxa may sometimes exhibit a rather similar morphology to *O. variegata* as well as having a similar host preference (leguminous shrubs), but *O. variegata*, otherwise quite distinct, could nevertheless occur in the area.

The morphological separation of taxa within the *O. minor* group can also be difficult, especially for those restricted to specific hosts. *O. santolinae* Loscos & Pardo may be little more than a discrete race of another taxon within this group whose morphology is host-determined. For the present, it is probably best placed at varietal level within *O. artemisiae-campestris* Vauch. *O. maritima* Pugsley (now considered to be a variety of *O. minor* (RUMSEY & JURY, 1989) is usually a plant of coastal cliff grassland from where it was described in southern Britain; it could also occur in similar habitats on the Atlantic coasts of Europe including Spain and Portugal. It is recorded for the latter by FRANCO (1984) but no specimens have been seen and a record given for Gibraltar by PUGSLEY (1940) needs confirmation. The recently-described *O. almeriensis* (PUJADAS & LORA, 1995) is based on plants occurring in a ruderal habitat in a very limited area of Almería province. Unfortunately, no material has been available for examination but from the morphological description and the fact that it is known from only a single locality, it possibly represents an ecotypic variant, maybe of *O. calendulae*.

Usually under the synonym *O. major* L., there are Spanish records for the widespread Eurasian *O. elatior* Sutton (WILLKOMM, 1893; CADEVALL, 1932; CHATER & WEBB, 1972; GREUTER & al., 1989; BOLÒS & al., 1990) but again no specimens have been located and its presence in the Flora area is doubtful.

TYPIFICATION

***Lathraea phelypaea* L., Sp. Pl.: 606 (1753)**
[*Cistanche phelypaea* (L.) Cout., Fl. Portugal: 571 (1913)]

Neotype designated here: "Orobanche elegantissima verna flores luteo virid. Lusit. Grisley" (P-Tournefort n.º 6443, photo!).

This was described by LINNAEUS (1753) as *Lathraea phelypaea* "Habitat in Lusitaniae umbrosis" but there is no relevant material in his herbaria. He cites "Phelypaea lusitanica, flore luteo. Tournef. cor. 47" (TOURNEFORT 1703) as well as "Orobanche elegantissima verna, flore luteo. Grisl. lusit. Moris. hist. 3. p. 502" (MORISON, 1699). In the Tournefort publication, a description and a drawing of an individual (pedicellate?) flower is given for "Phelypaea". His description apparently includes the western European plant "Phelypaea lusitanica, flore luteo" and presumably a more eastern one "Phelypaea Orientalis, flore coccineo". The latter perhaps refers to *Phelypaea coccinea* (M. Bieb.) Poir. or to *Phelipaea tournefortii* Desf. However, these are plants with single-flowered spikes, and although GILLI (1982) quotes Tournefort "Phelipaea orientalis flore coccineo" in lieu of the type, he states that no specimens of this species could be found in the Tournefort herbarium. LINNAEUS (1753) also cites the earlier publication of MORISON (1699) which describes "Orobanche elegantissima flore luteo verna, Gab. Grisley. Viridar. Lusit." and refers to this plant and to Tournefort's visit to Portugal [in 1688-89] "Plantam hanc teneram, succosam, sesquipedalem, D. Tournefort Parisiensis in Lusitanicis suis perambulationibus feliciter detexit". In Tournefort's herbarium there is a specimen (n.º 6443) which bears the above label "Orobanche elegantissima verna flore luteo virid. Lusit. Grisley" and whose identity corresponds to what is currently known as *Cistanche phelypaea*. This is now designated the neotype.

Cistanche phelypaea is usually a plant of open, saline areas, often close to the coast and Linnaeus' reference to a shady habitat (*Habitat in Lusitaniae umbrosis*) is most curious. The name "Phelypaea" commemorates the French family Phélypeaux. Louis Phélypeaux was the influential Count Phélypeaux de Pontchartrain (1643-1727) variously General Controller of Finances to the government, Secretary of State to the navy and Chancellor to the King's (Louis XIV) household (BOISNARD, 1986). Hieronymous Phélypeaux was a naval Commander

to the King. Count Phélypeaux de Pontchartrain was a patron of Tournefort when he set out in 1700, together with the artist Aubriet and the German botanist Gundelsheimer, on his famous travels to the Levant. Possibly, because TOURNEFORT (1703) dedicated the name to the Phélypeaux family, they may have supported Tournefort's travels to Spain and Portugal in 1688-89.

Although it is not known where Tournefort made his original collection of the plant, it is known that he collected in the vicinity of Lisbon and Arrabida in March 1689 at a time when it would be in flower. In *Flora Lusitanica* (BROTERO, 1804) –the first Portuguese Flora– the author gives localities for the species “inter Cacilhas et Arribida, praesertim ex Alfeite ad Seixal” [all in the general area of Lisbon]. It is quite possible that Tournefort's earlier gathering came from somewhere in the Lisbon estuary where this species still occurs today.

Orobanche caryophyllacea Sm. in Trans. Linn. Soc. London 4: 169 (1798)

Lectotype designated here: Herb. Smith 1087.23 (LINN!).

Smith described *O. caryophyllacea* from Italy and as well as citing synonyms of Pollich and Bauhin, stated “Gathered on shrubby hills near Valcimara at the foot of the Appenines, in April 1787. Tour on the Continent, vol.ii. 308...”. This was presumably one of the collections he made during his Grand Tour of western Europe during 1786-87. In Smith's herbarium (LINN) there are several collections attributed to this plant, one of which (1087.23) is from the area mentioned in the protologue and is labelled “Hill behind the inn at Valcimara April 29 1787”. This latter is designated as the lectotype.

Orobanche cernua Loefl., Iter. Hispan.: 152 (1758)

Lectotype designated here: *Loefling s.n.* (LINN 798.6, microfiche!)

Loefling described *O. cernua* from Aranjuez [Spain, south of Madrid] where it

was parasitic upon *Artemisia campestris*. He cited synonyms from TOURNEFORT (1703) [with a “?”] “*Orobanche lusitanica, flore atro-purpureo, Tournef. inst. 176?*” and from CLUSIUS (1601) “*Orobanche subcaeruleo flore sive 11, Clus. Tournef. loc. cit.?*”. From the “?” it appears that he doubted whether or not the synonyms corresponded to his plant and these, therefore, cannot be considered as the basis for the name and any associated plants are not suitable for designation as the type. In CLUSIUS (1601) there is only literal reference to “Orobanche 11”, although there are plates representing “Orobanche 1” and “Orobanche 111”. Therefore, there is no original material which can be derived from Loefling's protologue. However, in LINN there is a Loefling specimen (798.6) whose identity matches current usage and upon which the only annotation is that of the specific epithet made in Linnaeus' hand. This specimen is designated as the lectotype of *O. cernua*. A similar designation given in GILLI (1982) is invalid since he simply states “Described from Spain (Hb. Linn. 798.6)” and is inadequate to represent effective typification.

Orobanche elatior Sutton in Trans. Linn. Soc. London 4: 178, tab.17 fig. 4 (1798)

Lectotype designated here: Herb. Smith 1087.14 n.° 1 (LINN!).

Although apparently noted in the mid-seventeenth century by RAY (1660), *O. elatior* was first described by Sutton from gravelly field margins [in Norfolk, England] at Gunton, Kelling, Sheringham, Catton and Costesey. His description is accompanied by a drawing and this would seem to represent an ideal type element except for the fact that there is little in it which distinguishes *O. elatior* from other closely similar taxa. Consequently, an alternative to this is preferable. GILLI (1982) designated a Loefling specimen collected in Spain but determined by Linnaeus as *O. major* - but this name embraces more than one taxon and is considered to be a *nomen ambiguum* (TURLAND & RUMSEY, 1997), and since *O. elatior*

is unconfirmed for Spain, it must have been of another. There are, however, two specimens in the Smith herbarium with which Sutton was no doubt familiar as both he and Smith were natives of Norwich (and back to where Smith moved in 1796). Both of these specimens can be considered original material but that numbered 1087.14 n.° 1 is chosen as lectotype since it was collected in Norfolk, a locality cited in the protologue and in which county both Smith and Sutton resided.

Orobanche gracilis Sm. in Trans. Linn. Soc. London 4: 172 (1798)

Lectotype designated here: Herb. Smith 1087.11 n.° 1 (LINN!).

Orobanche gracilis was also described by Smith from Italy: "Gathered in hilly pastures at St. Orseese near Genoa, in July 1787", again collected on his Grand Tour. In Herb. Smith (LINN), there is a specimen similarly labelled: "St. Orseese near Genoa" which bears the number 1087.11 n.° 1 and which is clearly of this collection; this is a suitable lectotype. Although this was apparently the specimen also considered by GILLI (1982), his citation: "holo. LINN" is incorrect, since at the time it was first described no designation was made and so it cannot be considered to be the holotype. Additionally the herbarium citation (holo LINN) is also technically incorrect and so misleading.

Orobanche ramosa L., Sp. Pl.: 633 (1753)

Lectotype designated here: Herb. Clifford: 321, *Orobanche* 2 (BM!).

The type specimen indicated by GILLI (1982): "Sparman (Hb. LINN 798/9)" is not eligible for typification since the sheet does not bear Linnaeus' number, an indication that the specimen was not in his possession when he described the species and so must have been a post 1753 addition to his herbarium. The specimen numbered 798.8 is eligible, however, but a specimen which is also eligible and conforms better to current usage is the one cited above and held in Herb.

Clifford (BM); this is selected as the lectotype of *O. ramosa*.

Orobanche reticulata Wallr., *Orobanches* Gen. Diask.: 42 (1825)

Lectotype designated here: Toulouse, 1807, *Flugge s.n.* (LE!).

This was described from Toulouse, southern France "in agro Tolotono" where it was collected by Flüggé. In the herbarium (LE) there is the upper part of an *Orobanche* inflorescence bearing two labels in Wallroth's hand (BURDET, 1979) "Herb. Martens. *Orobanche reticulata mihi*" and "Herb. Martens. *Orobanche elatior*. Toulouse. 1807. D. Flugge". It appears that Wallroth (or the collector) was originally of the impression that this was *O. elatior*. Although the habitat appears dissimilar and the material is somewhat fragmentary, the specimen conforms to the montane European plant and to Wallroth's diagnosis and not to *O. elatior* Sutton and so is selected as the lectotype.

Orobanche rosmarina Beck in Oesterr. Bot. Z. 70: 243 (1921)

Lectotype designated here: *Welwitsch* 779 (BM!).

Little material is available of this quite distinctive plant. BECK (1890) placed it as a variety (*Orobanche Muteli* α *stenosiphon*) but later raised it to specific level as *O. rosmarina*. His name was based on that (*Trionychon Rosmarinum*) given to it by Welwitsch (*in sched.*; Fl. Lus. exsicc.) when he first collected it over 70 years earlier in the Sierra de Arrabida, Portugal. Reference is made to this collection in the list of synonyms of *O. rosmarina* quoted by Beck in his second monograph on the genus (BECK, 1930). A relevant herbarium sheet exists in BM which contains two specimens; one of these appears to be *O. gracilis* Sm. but the other (the left-hand of the pair) is from Welwitsch's original collection and bears the label "Flora Lusitanica, Sect. II (da). No. 779. *Trionychon Rosmarinum* nov. sp. S. de Arrabida. Annis

1848-50 leg. Dr Welwitsch". This is a suitable lectotype for *O. rosmarina*.

O. rosmarina is a plant of apparently very local distribution and is most easily distinguished by its sub-erect, dark grey-blue corollas which appear especially narrow in comparison to its thick, robust stem and relatively short stature. As well as those from Serra de Arrabida, similar specimens exist (LISU) collected by Welwitsch from the Serra de Montejunto, central Portugal. Other than these, no other Iberian material has so far been traced although the plant was seen and photographed in Mallorca by Rumsey [pers. comm. F.J. Rumsey (photo!)]]; also see BECKETT (1993). At varietal level, as var. *stenosiphon*, GUIMARÃES (1904) gives an additional central Portuguese locality (Casal da Pimenta) whilst, (as *O. rosmarina*), FRANCO (1984) recorded it "rarissimo em matos perenifolios" for western Portugal. However, recent searches for the plant near to the type locality have been unsuccessful. Other than the above Iberian records, no other collections have been located which can be confidently assigned to this taxon. It is felt that those given for France, Italy and Jugoslavia by BECK (1930) may be errors. This is further supported by a Greek collection, held in the Haynald herbarium (BP) (photocopy!), of what appears to be a separate taxon, but is labelled and signed "*O. muteli* Schultz v. *stenosiphon* mihi" by Beck. This would seem to represent an otherwise minor variant of *O. ramosa* subsp. *mutelii*.

***Orobanche schultzei* Mutel, Fl. Franç. 2: 352-353, 429 (1835)**

Lectotype designated here: "au bord de la mer á Bone" leg. Mutel (GRM - photo!).

As a footnote under *O. arenaria* Borkh., Mutel described *O. schultzei* from the Algerian coast where it was fairly abundant "sur les coteaux et les rochers au bord de la mer á Bone" growing amongst leguminous plants "probablement sur le Scorpiure...". In Mutel's herbarium (GRM) there is a sheet of four specimens, the left-hand one of which is similarly labelled to the above: "orobanche

Schultzei mut./bone/parmi les légumineuses probablement le Scorpiure rude [illegible] éscarpe au bord de la mer". Whilst all the specimens on the sheet appear to correspond to Mutel's description and to current usage, they are selected as the lectotype. Although originally described by Mutel under *O. arenaria*, later in the same publication (under "Additions, p. 429") Mutel stresses that the plant has little similarity to the former as illustrated by Reichenbach. He named the plant after F.W. Schultz, a German botanist (1804-1876), for his work "sur ce genre difficile".

This plant appears to be relatively unknown and perhaps often misunderstood. Like several taxa within sect. *Trionychon*, it is probably subject to appreciable morphological variation. As originally described and as apparent from the type specimen, it would appear to lie closest to *O. lavandulacea* Rchb., which is a parasite mainly of *Bituminaria bituminosa*.

***Orobanche variegata* Wallr., Orobanches Gen. Diask.: 40 (1825)**

Lectotype designated here: In Spartio. E. Sicilia, 1820[?], Presl s.n. (LE!).

The original description of *Orobanche variegata* given by Wallroth is based upon material collected "ad Spartii scoparii radices in Sicilia. Majo". An additional note in the protologue states: "O. foetida? DC. gall. V. 392. excl. syn.! Presl. sicul. Bivon. Bernard. stirp. rar. man. 1. n. 5.". What appears to be a relevant original specimen is held in LE. This, the left-hand of three on the sheet, bears several labels, two of which are in Wallroth's hand (BURDET, 1979). They separately state "herb. Martens. Orobanche foetida Desf. In Spartio. Maj. E. Sicilia. Presl 1820[?]" and "Herb Martens. Orobanche variegata mihi. Cum [illegible] Cererole datum, huic [illegible]". This may be the specimen referred to by Beck (1930) since the sheet bears Beck's inscription in blue pencil: "Wallroth! B." Although it is possible that the taxon currently known as *Orobanche variegata* Wallr. may have been described earlier under another

name (FOLEY, 1999), it is morphologically quite close to, and apparently a vicariant of, *O. foetida* Poir. This perhaps explains Wallroth's initial confusion in labelling. The above specimen, however, closely conforms to living plants parasitic on *Spartium* spp. and seen in Sicily in May 1996 and also to Wallroth's diagnosis of *O. variegata*. It is therefore selected as the lectotype.

ACKNOWLEDGMENTS

I am grateful to F.J. Rumsey, S. Cafferty and N.K.B. Robson (all London) and I.C. Hedge (Edinburgh) for useful discussion and also to the latter for assistance with the Latin translations. I thank the curators of the following herbaria for loan of specimens: BC, BM, BP, COA, COI, E, GDAC, GRM, JACA, K, LE, LINN, LISE, LISU, LIV, LTR, MA, MAF, MGC, MUB, P, RNG, SALA, W, and WU; also J. Edmondson and C. Sedgwick (both Liverpool) for information relating to the Smith herbarium.

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