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A REVISION OF *CYTISUS* SECTIONS *ALBURNOIDES*, *SPARTOPSIS* AND *VERZINUM* (GENISTEAE, FABACEAE)

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Cytisus sections *Alburnoides* DC., *Spartopsis* Dumort. and *Verzinum* (Raf.) Talavera (tribe Genisteae, Fabaceae) are revised. These comprise 10 species of the genus, of which two species are recognised in *Cytisus* section *Alburnoides*, four in *Cytisus* section *Spartopsis* (of which two species are divided into subspecies), and four in *Cytisus* section *Verzinum* (one with two subspecies). Three new combinations are made: *Cytisus ardoinoi* subsp. *sauzeanus*, *C. grandiflorus* subsp. *maurus* and *C. scoparius* subsp. *insularis*. Keys to the sections and to the species within each section are given. All taxa are described. Conservation assessments are made.

Keywords. Cytisus, Genisteae, taxonomic revision.

Introduction

The classification of *Cytisus* L. within the tribe Genisteae (Fabaceae) has been the subject of many taxonomic studies over the last 250 years. The first subdivision of the tribe Genisteae was made in 1753 by Linnaeus, who created three main genera: *Cytisus*, *Genista* L. and *Spartium* L. However, the taxonomic concepts adopted by Linnaeus, and later by Lamarck (1778) and De Jussieu (1789), began to be challenged in the late 18th century. Moench (1797), judging *Cytisus* too heterogeneous, was the first to distinguish an additional genus, *Laburnum* Fabr. Over the next 150 years a profusion of small genera were described within the Genisteae (see for example Grisebach, 1843; Spach, 1844; Holubova-Klaskova, 1964; Skalicka, 1968). The latest system within the tribe is closer to the Linnean classification, with two main complexes of genera: the *Cytisus*-group and the *Genista*-group (Lewis *et al.*, 2005).

The limits within the genus *Cytisus* have also undergone a few changes. De Candolle (1825) was the first to recognise sections within *Cytisus*. He distinguished six sections based on floral and seed characters. In the late 19th and 20th centuries the number of sections varied between two (Willkomm & Lange, 1880), four (Koch, 1873; Rouy, 1897; Frodin & Heywood, 1968), six (Rehder, 1949; Holubova-Klaskova, 1964) and seven (Briquet, 1894; Rothmaler, 1944; Maire, 1987). The most recent classification,

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based on a consensus of several morphological and molecular studies, increased the number of sections within *Cytisus* to 13 (Cristofolini & Troia, 2006). This last work eradicated minor genera such as *Lembotropis* Griseb. and *Calicotome* Link and returned them to a more heterogeneous *Cytisus*.

Cytisus sections *Alburnoides* DC., *Spartopsis* Dumort. and *Verzinum* (Raf.) Talavera have always been thought to be related. Sections *Spartopsis* and *Verzinum* have often been grouped as a unique section either called *Laburnum* (De Candolle, 1825) or *Sarothamnus* (Pellegrin, 1908; Rothmaler, 1944; Frodin & Heywood, 1968). *Cytisus scoparius* (L.) Link from *Cytisus* sect. *Spartopsis* and *Cytisus multiflorus* (Aiton) Sweet from *Cytisus* sect. *Alburnoides* are the prospective parents of an interspecific hybrid (*Cytisus* × *dallimorei* Rolfe; Rolfe, 1910), indicating a close relationship between those two sections as well. Recent phylogenetic studies of the genus *Cytisus* also recognised close relationships between these three sections. Based on the most comprehensive molecular work of the genus (Cubas *et al.*, 2002), they are part of a monophyletic group along with *Cytisus* sect. *Corothamnus* (W.D.J.Koch) Nyman. A more recent study focusing on *Cytisus purgans* Boiss. revealed *Cytisus* sect. *Spartopsis* to be the sister-group to *Cytisus* sect. *Alburnoides* (*Cytisus* sect. *Verzinum* was not included in the analyses; Cubas *et al.*, 2006). A cladistic study based on 68 morphological characters placed the three sections in a clade along with *Cytisus* sect. *Corothamnus* (Cristofolini & Conte, 2002). Cytological data indicate that taxa from the three sections have chromosome counts of $2n = 46$, 48 or 50 (Forissier, 1973; Horjales, 1974; Sanudo, 1979; Cubas *et al.*, 2001). This variation is probably only due to the presence of accessory chromosomes known as B chromosomes. It has been suggested that these are due to the fragmentation of A chromosomes as a result of the method used to prepare material for the study of meiosis (Cubas *et al.*, 2001). We here consider sections *Alburnoides*, *Spartopsis* and *Verzinum* as components of a larger monophyletic group.

Maire (1987) was the first to give sections *Alburnoides*, *Sarothamnus* (Wimm.) Benth. (now a synonym of *Spartopsis*) and *Verzinum* their current delimitation. He based his classification on the shape of the keel, the position of the ovary inside the corolla, and the shape of the style and its hairiness. This classification was followed by Talavera & Salgueiro (1999) in their treatment of the genus for Flora Iberica but they recognised *Sarothamnus* as a synonym of *Spartopsis*. However, both of these taxonomic studies were done for Floras and were restricted to either the African species (Maire, 1987; Tahiri & Ouyahya, 2007) or to the species from the Iberian Peninsula (Talavera *et al.*, 1999). The recent reassessment by Cristofolini & Troia (2006) did involve all known taxa from the three sections but it was more of a literature study that lacked morphological comparisons of specimens. We present here a taxonomic revision of *Cytisus* sections *Alburnoides*, *Spartopsis* and *Verzinum*.

Materials and Methods

The present revision is based on a study of more than 2000 dried herbarium specimens from ANG, B, BBF, BC, BM, BP, BR, C, E, FI, G, K, L, LINN, LISU,

LY, MA, MAF, MANCH, MPU, P, SALA, SEV, TLF and VAL (herbarium abbreviations according to Holmgren *et al.*, 1990). The measurements in the descriptions are taken from dried herbarium sheets. All specimens have been seen unless otherwise indicated. Type specimens seen are marked with an exclamation mark (!).

The specimens examined for each taxon are listed in alphabetical order of country, region and then localities. In the case of unknown localities, first the date of collection and then the name of the collector are taken into account.

Cytisus commutatus (Willk.) Briq. was placed in *Cytisus* sect. *Sarothamnus*, together with *C. arboreus* (Desf.) DC., *C. baeticus* (Webb) Steud., *C. cantabricus* (Willk.) Reichb.f. & Beck, *C. grandiflorus* (Brot.) DC., *C. malacitanus* Boiss., *C. scoparius* and *C. striatus* (Hill.) Rothm., by Pellegrin (1908) and Frodin & Heywood (1968). More recently Maire (1987) and Talavera *et al.* (1999) placed *Cytisus arboreus*, *C. baeticus* and *C. malacitanus* in *Cytisus* sect. *Verzinum* and *C. cantabricus*, *C. grandiflorus*, *C. scoparius* and *C. striatus* in *Cytisus* sect. *Spartopsis*. In recent molecular studies *Cytisus commutatus* is in a clade with *C. scoparius* (*trn*L-F sequences, Cubas *et al.*, 2002; *trn*L-F, ITS and ETS sequences, Cubas *et al.*, 2006), which is the type species of *Cytisus* sect. *Spartopsis* (Dumortier, 1827; Talavera & Salgueiro, 1999). However, *Cytisus commutatus* can be distinguished from all other taxa of *Cytisus* sections *Alburnoides*, *Spartopsis* and *Verzinum* by its longer leaves, obovate leaflets with an acuminate apex, and a calyx entirely pilose and more deeply divided into two lips. The shape of the calyx is a highly diagnostic character within the whole tribe Genisteae (Zielinski, 1975; Bisby, 1981) and particularly within *Cytisus* (Cristofolini & Troia, 2006). Based on these morphological criteria we exclude *Cytisus commutatus* from the three sections studied here.

Diagnostic Characters

Habit. Taxa from *Cytisus* sections *Alburnoides*, *Spartopsis* and *Verzinum* are mostly erect shrubs about 1 to 3 m high. Although still considered an erect shrub, *Cytisus striatus* has more supple twigs. *Cytisus malacitanus* has an ascending habit with upright but curved twigs. Some species such as *Cytisus oromediterraneus* Rivas Mart. et al. and *C. balansae* (Boiss.) Ball are smaller in stature with short internodes. *Cytisus ardoinoi* E.Fourn. and *C. scoparius* subsp. *maritimus* (C.Bailey) Tutin are prostrate shrubs.

Twigs. Most taxa have unarmed twigs. The apex of the twigs can sometimes end in a soft spike in the case of *Cytisus malacitanus* or in a sharp spike in the case of *C. balansae*. The hairiness of the twigs changes with age. Young twigs usually bear short erect or adpressed hairs, giving a slightly hairy to villous appearance, while older twigs tend to be glabrescent or glabrous. The number of ribs on the twigs and the shape of the ribs are important diagnostic characters. Most taxa have T-shaped ribs except for *Cytisus scoparius* and *C. ardoinoi* subsp. *sauzeanus* (Burn & Briq.) Auvray that have V-shaped ribs. These taxa are also the only representatives of the

three sections where the number of ribs is as low as five. For all other taxa the number of ribs is mostly 8 or 10 and sometimes up to 13, as in *Cytisus balansae*. Ribs are smoother for the taxa from section *Alburnoides*, with ribs larger than striae.

Leaves. Leaves are deciduous and tend to fall off at the onset of fruiting. Taxa from section *Alburnoides* only have a few leaves, which are often reduced. Leaves are either unifoliolate or trifoliolate. The number of leaflets is highly dependent on the age of the twigs for some species. Leaves are usually trifoliolate in section *Verzinum* and usually unifoliolate in section *Alburnoides* with the exception of *Cytisus ardoinoi* which has trifoliolate leaves. The number of leaflets is more variable within section *Spartopsis*. The number of ribs on the stipule is two for most taxa but up to three in the case of *Cytisus balansae* and *C. malacitanus*. Both species of section *Verzinum* share characteristic obovate leaflets whose apices are truncate. Species from section *Alburnoides* usually have linear to elliptic leaflets with the exception of the obovate leaves of *Cytisus ardoinoi* subsp. *sauzeanus*. Leaflets have more variable shapes in section *Spartopsis*, ranging from elliptic to lanceolate, obovate or linear.

Flowers. Taxa from the three sections are mainly yellow-flowered. However, two taxa are white-flowered, i.e. *Cytisus multiflorus* and *C. scoparius* f. *albus* (G.Don) Schneider, and forms *andreanus* (Puiss.) Zabel and *bicolor* (Massé) Auvray of *C. scoparius* bear variegated flowers that are either white and yellow or red and yellow. Flowers are solitary or paired in axillary clusters. The clusters tend to be located near the twig apices in section *Alburnoides*. Flowers from section *Alburnoides* are the smallest of the sections and are about 10 mm long, while those of species of sections *Spartopsis* and *Verzinum* often reach 20 mm. The calyx is either ciliate on the margins or glabrous as for species *Cytisus scoparius* and *C. grandiflorus*. The shape of the standard petal can vary within a taxon although they are often orbicular. However, its apex has a characteristic recurved shape within section *Spartopsis* apart from *Cytisus striatus*. *Cytisus striatus* shares an emarginate apex of the standard with *C. balansae* and *C. oromediterraneus* from section *Alburnoides*, as well as taxa from section *Verzinum*. The keel petals are either falcate to sub-falcate (sections *Alburnoides* and *Spartopsis*) or obovate (section *Verzinum*).

Style. The shape of the style distinguishes section *Spartopsis* (where the style forms a loop on itself when mature) from sections *Alburnoides* and *Verzinum*, where the style is curved at the top of the keel. The vestiture of the style is highly diagnostic for section *Spartopsis*.

Fruit. While the shape of the fruit is only slightly variable within the three sections, its vestiture is a highly diagnostic character at species and subspecies level, especially within *Cytisus* sect. *Spartopsis*. Most subspecies of *Cytisus scoparius* have legumes with ciliate margins. The legumes of *Cytisus grandiflorus* subsp. *grandiflorus* are sericeous on both the surface and margins while *C. grandiflorus* subsp. *maurus* (Humbert & Maire) Auvray has completely glabrous legumes. The legumes of *Cytisus striatus* have a highly

recognisable white surface due to hundreds of long and adpressed hairs covering the whole fruit.

Systematic Treatment

Cytisus Desf., Fl. Atl. 2: 139 (1798), nom. cons. – Type: *Cytisus villosus* Pourret (designated by Polhill *et al.*, 1978).
Cytisus L., Sp. Pl. 739 (1753), nom. rejic. – Type: *Cytisus sessilifolius* L.

Mostly low shrubs, rarely small trees or herbs woody at the base, unarmed. *Twigs* alternate, with no or 5–14 ribs, pubescent, sericeous or villous; ribs V-shaped or T-shaped. *Leaves* alternate, stipulate or estipulate, petiolate or sessile, unifoliolate or trifoliolate, deciduous or persistent; stipule with 2 or 3 ribs. *Inflorescence* in axillary or terminal capitules with few flowers or solitary flowers; flowers pedunculate, usually without nectar, ebracteate, with (0)1–3 bracteoles. *Calyx* campanulate or cylindrical, with two lips divided up to a third or a half of its length, glabrous or pilose; upper lip bidentate; lower lip tridentate; lobules triangular, symmetric. *Corolla* deciduous, mostly yellow, rarely white; petals fused to the floral receptacle or to the base of the staminal tube; standard about the same length as the wings and keel petals, rhombic, spathulate, orbicular or elliptic, emarginate or apiculate, glabrous or glabrescent; wings oblong, glabrous or glabrescent; keel petals sub-elliptic, glabrous or glabrescent. *Androecium* monadelphous; anthers basifixed and dorsifixed; tube oblique or rarely inversely oblique, truncate, membranous, glabrous; staminal filaments cylindrical; anthers ovoid or sub-cylindrical, glabrous. *Ovary* sessile or stipitate, with 5–18 seminal rudiments, pilose or glabrous, style cylindrical or plane, curved or arcuate; stigmata capitate or elliptic, introrse or extrorse. *Fruit* sessile or stipitate, elliptic, dehiscent, 1- to 13-seeded, glabrous or pilose. *Seeds* ovoid or ellipsoid, yellow, greenish, brown or black, with strophioles (Talavera *et al.*, 1999; Cristofolini & Troia, 2006).

Distribution. About 60 species in Southern, Western and Central Europe, the Canary Islands, North Africa and West Asia. The highest species diversity is seen around the Mediterranean area.

Key to the sections

1a. Unarmed shrubs; twigs ribbed; ribs 5–10(13), T-shaped or V-shaped; flowers 1–2 in axillary clusters; calyx campanulate, divided into 2 lips to 1/3–1/2 of its length; legume oblong (*Cytisus* sects. *Alburnoides*, *Spartopsis* and *Verzinum*) _____ 2
1b. Without the combination of characters above ____ All other sections of *Cytisus*

2a. Leaves usually trifoliolate; leaflets obovate and truncate; keel petals obovate _____ **iii. Cytisus** sect. **Verzinum**

2b. Leaves unifoliolate or trifoliolate; leaflets linear, elliptic or obovate and acuminate; keel falcate or sub-elliptic _____ 3

3a. Twigs generally with 8–13 ribs, T-shaped; leaves often absent to few or reduced; flowers in axillary clusters near the apices of the twigs; calyx ciliate; petals about 10 mm long; standard sometimes emarginate but never recurvate; wings and keel petals always as long as the standard; style curved inside the keel _____ _____ **i. Cytisus** sect. **Alburnoides**

3b. Twigs with 5 V-shaped ribs or 8 T-shaped ribs; leaves well-developed; flowers in axillary clusters along the twigs; calyx generally glabrous; petals about 20 mm long; standard recurvate; wings and keel petals sometimes longer than the standard; style revolute inside the keel when mature _____ **ii. Cytisus** sect. **Spartopsis**

i. Cytisus sect. **Alburnoides** DC., Prodr. 2: 153 (1825). – Type: *Cytisus multiflorus* (L'Hér.) Sweet, designated by Talavera & Salgueiro (1999).

Spartocytisus sect. *Spartothamnus* Webb & Berthel., Phyt. Canar. 2, 3: 52 (1836). – *Spartothamnus* (Webb & Berthel.) C.Presl, Bot. Bemerk. 138 (1844). – *Cytisus* (sect. *Alburnoides*) subsect. *Spartothamnus* (Webb & Berthel.) Briq., Etud. Cytis. Alp. Marit. 153 (1894). – *Genista* sect. *Spartothamnus* (Webb & Berthel.) Rouy, Fl. France 4: 205 (1897). – *Cytisus* sect. *Spartocytisus* Benth., Gen. Pl. 1: 484 (1867), pro parte. – Type: *Spartocytisus albus* Webb & Berthel., designated by Cristofolini & Troia (2006).

Prostrate, low or erect shrubs. *Twigs* alternate, with 8–13 ribs T-shaped in transverse section, rarely with 5 ribs V-shaped in transverse section, sericeous to densely sericeous when young, glabrous to pubescent when older; ribs larger than striae. *Leaves* absent to few, often reduced, stipulate, petiolate or sessile, unifoliolate or trifoliolate; stipule with 2 or 3 ribs; leaflets linear, elliptic, obovate or oblanceolate, generally sericeous. *Flowers* 1–2 in axillary clusters, located near apices. *Calyx* campanulate, divided into two lips, ciliate. *Corolla* yellow or white; petals about 10 mm long; standard orbicular, sometimes emarginate, glabrous; wings as long as the standard, glabrous; keel petals as long as the standard, falcate or sub-elliptic, generally glabrous, rarely pubescent on the lower margin. *Stamens* 10. *Style* curved inside the keel, pilose or sericeous. *Fruit* plane, oblong, usually villous. *Seeds* ovoid, with large strophiole.

Key to the species

1a. Erect shrub up to 2 m high; striae on twigs superficial; flowers numerous; corolla white or pink _____ **3. Cytisus multiflorus**

1b. Ascending, low or prostrate shrub; striae on twigs well-developed; flowers few; corolla yellow _____ 2

2a. Prostrate shrub; longer internodes; leaves trifoliolate _____ **1. Cytisus ardoinoi**

2b. Ascending or low shrub; short internodes; leaves unifoliolate _____ 3

3a. Ascending shrub; twigs unarmed; stipule with 2 ribs __ **4. Cytisus oromediterraneus**
3b. Low shrub; apex of the twigs transformed into sharp spikes; stipule with 3 ribs _____ **2. Cytisus balansae**

1. Cytisus ardoinoi E.Fourn., Bull. Soc. Bot. France 13: 89 (1866) ['*ardoini*']. – *Genista ardoinoi* (E.Fourn.) Rouy, Fl. France 4: 209 (1897) ['*ardoini*']. – Type: [France] ix 1869, *Ardoino* s.n. (Fournier's collection) (holo FI!). **Figs 1, 2.**

Proposed IUCN conservation assessment. Near Threatened (NT), as for *Cytisus ardoinoi* subsp. *sauzeanus*, the most widespread subspecies.

Key to the subspecies of Cytisus ardoinoi

1a. Twigs with 8 T-shaped ribs; fruits densely villous _____ _____ **1a. Cytisus ardoinoi** subsp. **ardoinoi**
1b. Twigs with 5 V-shaped ribs; fruits with surface glabrous but ciliate on margins _____ **1b. Cytisus ardoinoi** subsp. **sauzeanus**

1a. Cytisus ardoinoi E.Fourn. subsp. **ardoinoi**

Prostrate creeping shrub, 0.2–0.7 m high. *Twigs* with long internodes, unarmed, with 8 ribs T-shaped in transverse section, pubescent with erect hairs up to 1 mm long; striae well-developed. *Leaves* petiolate, trifoliolate; stipule with 2 ribs; petiole 3–6 mm long; leaflets 4–7 × 1–2 mm, linear to elliptic, sericeous. *Flowers* few; pedicel 3–10 mm long. Upper lip of the *calyx* 2–3 mm long; lower lip 2–4 mm long; teeth 0.5–1 mm deep. *Corolla* yellow; standard 9–13 mm long, 9–10.5 mm wide, orbicular, glabrous; wings 9.5–13 mm long, as long as the standard and the keel petals, 3–4 mm wide, shape variable, with apex curved, glabrous; keel 9.5–12 mm long, as long as the standard, 3–4 mm wide, falcate or sub-falcate, glabrous or pubescent on the lower margin. *Style* pilose. *Fruit* 10–20 mm long, plane, oblong or elliptic, densely villous.

Distribution. France (Alpes-Maritimes).

Flowering time. April–June.

Proposed IUCN conservation assessment. Vulnerable (VU D2). This assessment is based on criterion D2 from the IUCN red list categories (IUCN, 2001) as the area of occupancy of *Cytisus ardoinoi* subsp. *ardoinoi* is less than 20 km^2 (G. Giggot & J. Olivier, Fédération Française des Conservatoires Botaniques Nationaux, pers. comm.). Individuals of *Cytisus ardoinoi* subsp. *ardoinoi* are eaten by sheep and goats and are self-incompatible, which adds to their vulnerability. The subspecies is protected in France (Anonymous, 1982).

Additional specimens examined. FRANCE. **Alpes Maritimes**: *Anonymous* (E); 23 iv 1896, *Anonymous* (E); Au-dessus de Menton, 20 v 1895, *C. Bicknell* (L); Bézaudun, iv 1870, *Consolat* (MPU); Bézaudun, v/vi 1870, *J. Moggridge* (E); Bézaudun, iv/vi 1873, *Consolat* 35

FIG. 1. *Cytisus ardoinoi* E.Fourn. subsp. *ardoinoi*. 1, stem; 2, leaves; 3, inflorescence; 4, flowers; 5, fruits. Drawn by Dominique Mansion and reproduced with permission (see Acknowledgements). Scale bar = 1 cm.

FIG. 2. Distribution of *Cytisus ardoinoi* E.Fourn. subsp. *ardoinoi* (area in black) and *Cytisus ardoinoi* E.Fourn. subsp. *sauzeanus* (Burnat & Briq.) Auvray (area in grey).

(E, G, K, L, MPU); Bézaudun, 26 v 1875, *Barlet* (LY); Bézaudun, Mont Chier, v/vi 1876, *Huet* (E, K, MPU); Caussols, 30 iv 1872, *E. Burnat* (G, MP); Caussols, 6 v 1905, *I. Verguin* (E, MPU); Caussols, 16 v 1917, *P. Le Brun* (MPU); Caussols, 20 iv 1966, *G. Gavelle* (MA); Caussols, 29 v 1971, *C. Simon* (K); Cime d'Ours, 25 iv 1869, *J. Moggridge* (G, K); Cime d'Ours, iv 1871, *J. Moggridge* (G); Cime d'Ours, 9 v 1889, *W. Bernoulli* (G, MA); Cime d'Ours, 8 iv 1893, *J. Moggridge* (G); Cime d'Ours, Menton, 20 iv 1872, *J. Moggridge* (K); Cipières, 27 v 1990, *F. Hepper* 8963 (K); Cipières, 3 v 1991, *F. Hepper* 9377 (K); Entre Caussols et Gourdon, 6 v 1963, *G. Gavelle* 4346 (L, MA); Entre Caussols et Gourdon, 26 v 1975, *A. Charpin* 11480 (G); L'Audibergue, 12 v 1908, *J. Rodié* (G); Le Chier près Bézaudun, 10 v 1872, *E. Burnat* (L); Mayres, 1893, *abbé Sauze* (G); Mont Aiguille, 7 iv 1877, *W. Barbey* (G); Mont Baudon, 15 v 1904, *G. Vialon* 2203 (G, MPU); Mont Baudon, près Menton, 23 v 1904, *J. Arbost* (MPU); Mont Cheiron, 7 v 1870, *J. Moggridge* (E); Mont Cheiron, 28 v 1875, *E. Burnat* (G); Mont Chier, iv/vi 1870/1872, *Burnat* & *Consolat* (MPU); Mont Chier, iv 1870, *Hasskarl* (L); Mont Chier, 10 v 1872, *E. Burnat* 149 (G); Mont Méras, 16 iv 1869, *J. Moggridge* (K); Mont Siricocca, v 1895, *C. Bicknell* 3820 (E, G); Thiey, près St Vallier, 23 v 1896, *E. Burnat et al.* (G).

1b. Cytisus ardoinoi subsp. **sauzeanus** (Burnat & Briq.) Auvray, **comb. et stat. nov.** – *Cytisus sauzeanus* Burnat & Briq., Etud. Cytis. Alp. Marit. 27, 157 (1894). – *Genista ardoinoi* subsp. *sauzeana* (Burnat & Briq.) Rouy, Fl. France 4: 209 (1897). – *Genista sauzeana* (Burnat & Briq.) Hill, Index Kewensis Suppl. 6: 90 (1926). – *Cytisus ardoinoi* var. *sauzeanus* (Burnat & Briq.) Chatenier, Bull. Soc. Bot. France 57: 122

(1910) [*ardoinianus* var. *sauzianus*]. – Type: [France] Isère, Mayres, près la Mure, 20 iv 1882/29 v 1882, Société dauphinoise d'échanges, *Abbé Sauze* 68 bis (holo G!; iso G!, MPU!). **Figs 2, 3.**

Shrub 0.2–0.6 m high. *Twigs* with 5 ribs, V-shaped. *Petiole* 5–10 mm long; leaflets 7–12 × 3–6 mm, elliptic to obovate. *Style* glabrous. *Fruit* 20–40 mm long, glabrescent with occasional, short hairs on margins.

Distribution. France (Drôme, Hautes-Alpes, Isère).

Flowering time. May–June.

Proposed IUCN conservation assessment. Near Threatened (NT). *Cytisus ardoinoi* subsp. *sauzeanus* has an area of occupancy of less than 2000 km^2 and has been found in a few (but more than 10) scattered locations. The subspecies is also undergoing a continuing decline in both the area of occupancy and the number of mature individuals due to the absence of fructification caused by self-incompatibility (G. Giggot & J. Olivier, Fédération Française des Conservatoires Botaniques Nationaux, pers. comm.).

Taxonomic notes. *Cytisus ardoinoi* subsp. *sauzeanus* is distinguishable by the number of ribs on the twigs as well as their shape. Both subspecies have a low prostrate habit as well as well-developed trifoliolate leaves which are unique features within *Cytisus* sect. *Alburnoides*. Both taxa have a well-delimited and allopatric distribution.

Additional specimens examined. FRANCE. **Drôme**: Gorges de Rioufroid, 29 v/19 viii 1896, *C. Chatenier* 3899 (LY). **Hautes Alpes**: Mont Aurore, 2 viii 1898, *Rouy* (LY); Montmaur, 3 viii 1898, *H. Coste* (MPU); St Julien en Beauchêne, 3 vii 1902, *A. Faure* (L, MPU); St Julien en Beauchêne, 7 vii 1902, *L. Girod* 106 (E); St Julien en Beauchêne, 10 vi 1931, *R. de Litardière* 6329 (MPU); St Julien en Beauchêne, 18 v 1948, *J. Rodié* (MPU). **Isère**: Marcieu, iv 1894, *Bernard* (LY); Marcieu, 1900/1904, *Berruard* (MPU); Mayres, 1893, *abbé Sauze* (G); Mont Séneppe, près de Marcieu, 25 vi 1889, *abbé Sauze* 6a (G).

2. Cytisus balansae (Boiss.) Ball, J. Bot. 11: 303 (1873). – *Sarothamnus balansae* Boiss., Diagn. Pl. Orient. ser. 2, 2: 7 (1856). – *Cytisus purgans* var. *balansae* (Boiss.) Briq., Etud. Cytis. Alp. Marit. 155 (1894). – *Genista purgans* subsp. *balansae* (Boiss.) Rouy, Fl. France 4: 206 (1897). – *Genista purgans* var. *hermini* Welw. in Rouy, Fl. France 4: 206 (1897), nom. nud. – *Cytisus purgans* subsp. *balansae* (Boiss.) Maire, Mém. Soc. Sci. Nat. Maroc. 7: 172 (1924). – *Corothamnus balansae* (Boiss.) Ponert, Feddes Repert. 83: 619 (1973). – Type: [Algeria] Fr. bois de Lambèse, 10 vii 1853, *Balansa* 918 (lecto G!, designated here; isolecto K! (left-hand specimen), P!). **Fig. 4.**

Cytisus balansae var. *atlanticus* Ball, J. Bot. 11: 303 (1873). – *Cytisus balansae* subsp. *atlanticus* Ball ex Canto & Rivas Mart., Lazaroa 23: 6 (2003 ['2002']), comb. inval. – Type: [Morocco] Ex regione superiori Atlantis Majoris in cacumine Djebel Tezah, 22 v 1871, *Ball* s.n. (lecto G!, designated by Talavera & Gibbs, 1997; isolecto K!).

FIG. 3. *Cytisus ardoinoi* E.Fourn. subsp. *sauzeanus* (Burnat & Briq.) Auvray. 1, stem; 2, leaves; 3, fruits; 4, flowers. Drawn by Dominique Mansion and reproduced with permission. Lower scale bar = 1 cm. Upper scale bar = 1 mm.

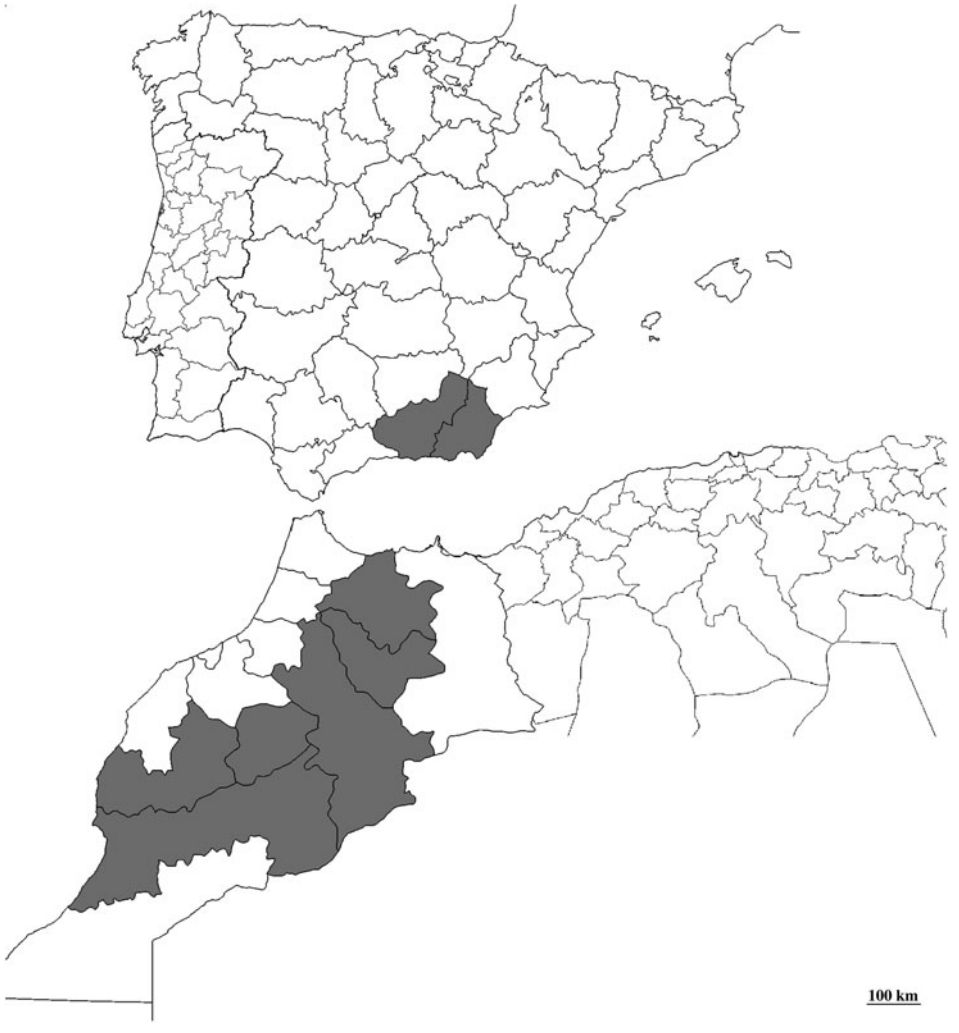

FIG. 4. Distribution of *Cytisus balansae* (Boiss.) Ball (area in grey). *Cytisus balansae* is present in Algeria but no locality is mentioned on specimen sheets (see list of specimens).

Cytisus galianoi Talavera & P.E.Gibbs, Bot. J. Linn. Soc. 125: 338 (1997). – *Cytisus balansae* var. *galianoi* (Talavera & P.E.Gibbs) G.Lopez, Anales Jard. Bot. Madrid 57: 450 (2000). – *Cytisus balansae* subsp. *nevadensis* Canto & Rivas Mart., Lazaroa 23: 6 (2003 ['2002']). – Type: [Spain] Almeria, Sierra Nevada, between El Chullo and Cerro del Amirez, 6 vi 1988, *Talavera* & *Valdes* s.n. (holo SEV 136210; iso SEV 136211!).

Cytisus valdesii Talavera & P.E.Gibbs, Bot. J. Linn. Soc. 125: 340 (1997). – Type: [Morocco] Above village of Arround, Aït Mesan valley, 13 v 1871, *Hooker* s.n. (lecto K!, designated by Talavera & Gibbs, 1997).

Cytisus oromediterraneus subsp. *nevadensis* Rivas Mart., nom. inval. pro. syn., in Canto & Rivas Mart., Lazaroa 23: 6 (2003 ['2002']). – Based on: Spain, Granada, Puerto del Lobo de Sierra Nevada, 17 vii 1973, *Ladero* & *Valdes Bermejo* s.n. (MAF 94727 ×2).

Low ascending shrub, 0.2–0.6 m high. *Twigs* with short internodes, with 10–13 ribs T-shaped in transverse section, sericeous when young, glabrous when older; striae well-developed; twig apex ending in a sharp spike. *Leaves* mostly on young twigs, petiolate, unifoliolate; stipule with 3 ribs; petiole up to 1 mm long; leaflets 4–15 × 1–4 mm, linear, glabrescent to sericeous. *Flowers* few; pedicel 4–9 mm long. Upper lip of the *calyx* 2–4 mm long; lower lip 2–5 mm long; teeth 0.5–1 mm deep. *Corolla* yellow; standard 8–13 mm long, 6–12 mm wide, orbicular, more rarely elliptic, generally emarginate, glabrous; wings 8–13 mm long, as long as the standard and the keel petals, 2–4 mm wide, elliptic or oblong, with apex curved, glabrous; keel 8–12 mm long, as long as the standard, 2–4 mm wide, falcate or sub-falcate, generally glabrous, rarely pubescent on the lower margin. *Anthers* 0.5–1.6 mm long. *Style* pilose on the lower half. *Fruit* 13–26 × 5.5–8.5 mm, plane, elliptic, sericeous to villous, 1- to 2-seeded. *Seeds* 3–4.5 × 2.5–3.5 mm.

Distribution. Algeria, Morocco (Chaouia-Ouardigha, Fès-Boulemane, Sous-Massa-Drâa, Marrakech-Tensift-Al Haouz, Meknès-Tafilatet, Tadla-Azilal, Taza-Al Hoceima-Taounate), Spain (Almeria, Granada).

Flowering time. May–June.

Proposed IUCN conservation assessment. Least Concern (LC). This taxon is known from many localities across a wide area and there are no significant threats.

Taxonomic notes. Talavera & Gibbs (1997) were the first to subdivide *Cytisus purgans* auct. into four species, named *C. oromediterraneus* Rivas Mart., *C. balansae* (Boiss.) Ball, *C. galianoi* Talavera & Gibbs and *C. valdesii* Talavera & Gibbs. The delimitation of the four species was mainly based on the presence or absence of spines, the number of ribs on the stems, the hairiness of the stems, the size of the calyx and the standard petal. Canto & Rivas-Martinez (2003) considered the levels of variation between *Cytisus balansae*, *C. galianoi* and *C. valdesii* too low to distinguish taxa at species rank. They therefore recognised three subspecies of *Cytisus balansae*: *C. balansae* subsp. *balansae*, *C. balansae* subsp. *atlanticus* Canto & Rivas Mart. and *C. balansae* subsp. *nevadensis* Canto & Rivas Mart. The distinction was based on characters such as the degree of spinyness, the hairiness of juvenile stems, the number of ribs on the twigs and the shape of the hairs on the calyx. However, we found that these characters are not diagnostic in herbarium material, with intermediate states frequent and no marked geographic isolation. No other morphological characters distinguish subspecies within *Cytisus balansae*.

Nomenclatural notes. Lectotypification of *Sarothamnus balansae* Boiss.: the specimens labelled *Balansa* 918 contain two collections, one in flower made on 8 June

1853 and one in fruit made on 10 July 1853. The fruiting specimen from G is designated as lectotype as this was where Boissier worked and fruits are taxonomically important in the group.

Additional specimens examined. ALGERIA. s. l. v/vi 1883, *J. Battandier & L. Trabut* (P); 15 v 1971, *Davis* 52364 (E, RNG); 19 v 1971, *Davis* 52501 (RNG); 8 vi 1984, *D. Podlech* 38832 (G); 10 vii 1988, *A. Chabert* (G, P); 24 vi 1984, *A. Chabert* (LY).

MOROCCO. s. l. v 1871, *Dr Hooker* (P); 31 v 1913, *H. Powell* (MPU); 3 vii 1920, *R. Maire* (MPU); 13 iv 1924, 15 x 1927, *Weiller* 605 (P); *R. Maire* (MPU); 20 iv 1933, *R. Maire* (MPU); 20 vi 1927, *R. Maire* (MPU); 17 vii 1989, *M. Ait Lafkih et al.* 513 (RNG); 27 vi 1997, *C. Aedo et al.* 4399 (RNG, VAL); Aït Messan, 15 vi 1921, *E. Jahandiez* 772 (E, MPU); Aït Messan, 17 vi 1921, *Ch. D'Alleizette* (P); Aït Messan, 10 iv 1926, *H. Lindberg* 3749 (K); Bekrut, 3 vi 1924, *E. Jahandiez* 528 (MPU); Tamelmelt, *P. Crane* (RNG). **Chaouia-Ouardigha**: Aïn Kahla, 15 v 1924, *E. Jahandiez* 301 (E, MA). **Fès-Boulemane**: Daïet Achlef, 1 vi 1923, *E. Jahandiez* 388 (G, P); Salida Lucia Boulemane, 22 iv 1984, *Aparicio, Rowe & Silvestre* (RNG). **Marrakech-Tensift-Al Haouz**: 17 v 1981, *J. Fernandez Casas et al.* 4694 (RNG); Adrar-n-Oukaïmeden, 29 vi 2006, *A. Herrero et al.* 2968 (MA, RNG); Djebel Toubkal, viii/ix 1970, *Clayton & Brinklow* 26 (E); Djebel Toubkal, 24 vii 1973, *Davis* 55526 (E); Oukaïmeden, 11 vii 1984, *G. Lopez & F. Munoz Garmendia* 8957 (MA, RNG); Oukaïmeden, 25 vii 1997, *S.L. Jury et al.* 18121 (MA); Tanzat, 14 ix 1941, *C. Sauvage* 1505 (MPU); Tizi-n-Aït-Hamed, 3 vii 1997, *J. Güemes et al.* 1548 (VAL); Zaouiat Ahansal, 5 ix 2004, *P. Blanco* 5 ix 2004 (MAF). **Meknès-Tafilatet**: Djebel Ayachi, 10 vi 1992, *Optima Iter V* 417 (RNG); road to Midelt, 12 vi 1992, *Optima Iter V* 726 (RNG); Tizi-n-Tretten, 16 vi 1936, *R. Maire* (G); Tizi-n-Tretten, 18 vi 1938, *L. Faurel* (MPU). **Sous-Massa-Drâa**: Djebel Siroua, 18 v 1981, *S. Castroviejo et al.* 4756 (MA, RNG); Gorges du Dades, 20 vi 1974, *Reading Univ./B. M. Exped.* 868 (RNG); Ourika, 9 vii 1921, *R. Maire* s.n. (MPU); Tizi-n-Test, 30 v 1980, *A. Charpin et al.* 289 (G); Tizi-n-Test, 30 v 1980, *J. Fernandez Casas* 3255 (G, MA); Tizi-n-Test, 12 i 1982, *J. Fernandez Casas* 4689 (G, MA, RNG). **Tadla-Azilal**: Azilal, 21 vii 1984, *G. Lopez & F. Munoz Garmendia* 9263 (MA); El-Ksiba to Tinghir, 9 vii 1997, *A. Abaouz, M. Ait Lafkuh & A.J.K. Griffiths* 17708 (RNG). **Taza-Al Hoceima-Taounate**: Djebel Bou Ibane, 24 vi 1997, *C. Aedo et al.* 4190 (MA, RNG, VAL).

SPAIN. **Almeria**: 19 vi 1988, *B. Valdès, M.F. Watson et al.* 896 (RNG); Abrucena, 17 vi 1988, *B. Valdes, M.F. Watson et al.* 621/88 (G, RNG); Calar alto, 3 vii 2004, *Ciruelos & Pardo* s.n. (MAF). **Granada**: 23 iv 1996, *S.L. Jury* 17128 (RNG); Hueneja, Sierra Nevada, 19 vi 1992, *C. Aedo et al.* 388 (MA); Puerto de la Ragua, Sierra Nevada, 22 vii 1973, *B. Valdes* s.n. (MA); Puerto de la Ragua, Sierra Nevada, 19 vi 1988, *B. Valdes et al.* 951/88 (G, RNG); Sierra Nevada, vi 1902, *C. Pau* 60573 (MA); Sierra Nevada, v 1951, *C. Torres* s.n. (MA); Sierra Nevada, 6 vi 1963, *C.M. Stocken* 219.63 (E); Sierra Nevada, 5 vi 1970, *Archibald* 3489 (E); Sierra Nevada, 6 vi 1995, *S. Rivas-Martinez* s.n. (MAF).

3. Cytisus multiflorus (L'Hér. ex Aiton) Sweet, Hort. Brit. 112 (1826). – *Spartium multiflorum* L'Hér. ex Aiton, Hort. Kew. 3: 11 (1789). – *Genista multiflora* (L'Hér. ex Aiton) Spach, Ann. Sci. Nat., Bot. sér. 3, 3: 155 (1845), nom. illeg. – *Sarothamnus multiflorus* (L'Hér. ex Aiton) Samp., Anais Fac. Sci. Porto 19: 87 (1934). – Type: Stirp. Nov. tab. LXXXVII (1805), iconotype, see nomenclatural notes. **Fig. 5.**

Genista alba Lam., Encycl. 2: 623 (1788). – *Spartium album* (Lam.) Desf., Fl. Atlant. 2: 132 (1798). – *Cytisus albus* (Lam.) Link, Enum. Hort. Berol. Alt. 2: 241 (1822), non *Cytisus albus* Jacq. (1790). – *Spartothamnus albus* (Lam.) C.Presl, Abh. Königl. Böhm. Ges. Wiss. ser. 5, 3: 568 (1845). – *Spartocytisus albus* (Lam.) K.Koch,

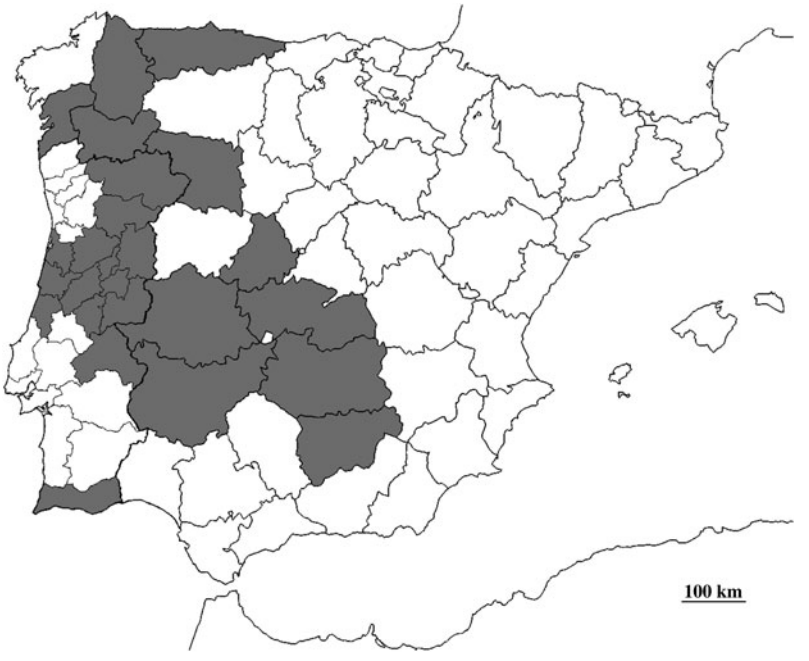

FIG. 5. Distribution of *Cytisus multiflorus* (L'Hér. ex Aiton) Sweet (area in grey).

Dendrologie 1: 31 (1869). – *Cytisus linkii* Janka, Termesztr. Füzet. 8: 70 (1884). – *Cytisus lusitanicus* Willk., Prodr. Fl. Hispan., Suppl. 256 (1893). – *Sarothamnus lusitanicus* (Willk.) Pau, Trab. Mus. Nac. Ci. Nat., Sér. Bot. 1: 34 (1922). – *Sarothamnus albus* (Lam.) Lainz, Bol. Inst. Estud. Asturianos, Supl. Ci. 15: 23 (1970). – Type: [Portugal] *Lamarck* s.n. (holo P-LA!).

Spartium dispermum Willk., Bot. Mag. (Roëmer & Usteri) 4 (11): 19 '35' (1790). – Type: Bot. Mag. (Roëmer & Usteri) 4 (11): tab. 2, lectotype designated here.

Sarothamnus parviflorus Willk. & Cutand. ex Willk., Linnaea 30: 95 (1859). – Type: Spain, Avila, Sierra de Gredos, vii 1855, *Isern* s.n. (Willkomm's collection) (holo COI?, photograph of the type seen at MA).

Erect shrub, 1–2 m high. *Twigs* unarmed, with 8 ribs T-shaped in transverse section, densely sericeous when young, glabrescent when older; striae superficial. *Leaves* petiolate, usually unifoliolate; petiole 1.5–8 mm long; short stipule with 2 ribs; leaflets 4–8 × 1–4 mm, generally linear, sometimes elliptic or obovate, sericeous. *Flowers* numerous; pedicel 2–5 mm long. Upper lip of the *calyx* 2–3 mm long; lower lip 2–3 mm long; teeth 0.5–1 mm deep. *Corolla* white; standard 9–11 mm long, 6.5–10 mm wide, orbicular, glabrous; wings 9–11 mm long, as long as the standard and the keel petals, 2–4 mm wide, generally sub-elliptic, sometimes oblong, with apex curved or pointed, glabrous; keel 9–11 mm long, as long as the standard, 2–4 mm wide, sub-elliptic or

falcate, generally glabrous. *Anthers* 0.7–0.8 mm long. *Style* sericeous. *Fruit* 15–31 × 5–6.5 mm, plane, oblong, villous, 1- to 7-seeded. *Seeds* 2.5–3 × 2–3 mm.

Illustrations in *Genisteas espanolas*, Lam. XLVII: 195 (Vicioso, 1955) and in *Flora Iberica* 47: 174 (Talavera *et al.*, 1999).

Distribution. Portugal (Castelo Branco, Coimbra, Faro, Guarda, Portalegre, Porto, Viseu), Spain (Asturias, Avila, Badajoz, Caceres, Ciudad Real, Jaen, Leon, Lugo, Orense, Pontevedra, Toledo, Zamora). Cultivated in Algeria, Belgium, Italy, the Netherlands, Switzerland, the United Kingdom and the United States.

Flowering time. April–May.

Proposed IUCN conservation assessment. Least Concern (LC). This taxon is known from many localities across a wide area and there are no significant threats.

Nomenclatural notes. Original material for *Spartium multiflorum*: L'Héritier's *Stirpes Novae* was published in nine volumes. Plate 86, mentioned by Aiton as the type specimen for *Spartium multiflorum* in 1789, appears in the seventh volume. That volume was issued together with the eighth and ninth volumes in August 1805. However, a conspectus of the seventh volume was published at the same time as the sixth volume in September 1791. Letters from L'Héritier to Dryander, who made a few descriptions in Aiton's *Hortus Kewensis*, referred to the position of the future plates of the seventh volume in 1788 (Buchheim, 1965). We can therefore assume that the plates were already drawn in 1789 when Aiton published his book. Note 2 of Article 9.2 of the ICBN (McNeill *et al.*, 2006) stipulates that original material comprises specimens or illustrations 'both unpublished and published either prior to or together with the protologue'. Therefore, plate 86 belongs to the original material. Other possible material would be specimens from L'Héritier, whose collection was sold to A.-P. de Candolle. However, no specimen from L'Héritier has been found in the G-DC collection. We suggest, therefore, that the name was based only on the plate, and there is no need for lectotypification.

Additional specimens examined. UNKNOWN COUNTRY. 1787, *Cambessedes* (MPU); 25 iv 1933, *E. Guinea* (RNG); *Hasskarl* 1579 (L).

PORTUGAL. s. l. vi 1916, *G. Sampaio* 2930 (L, MA). **Castelo Branco**: Serra da Gardunha, 2 v 2009, *C. Aedo et al.* 16379 (MA). **Coimbra**: iv 1881, *A. Moller* 1039 (P), iv 1881, *A. Moller* 1059 (G, MPU); iii 1890, *J. Daveau* (LY); 1935, *Scarlett* 118 (K); 29 iv 1936, *Kostermans & Kruyt* 757 (L); 23 iii 1939, *W. Rothmaler* 14672 (G); Pinhal de Marrocos, iv 1898, *M. Ferreira* 1579 (G, MA, MPU); Vila Franca, iv 1886, *A. Moller* 2152 (G, K, MPU, P); Vila Franca, vi 1887, *D'Araujo E Castro* vi 1887 (MPU); Vila Franca, 10 iii 1949, *J. Matos* 4244 (K, MA); Vila Franca, 1 iv 1955, *Matos & Marques* (L). **Faro**: Serra de Mandique, 22 iv 1968, *Malato-Beliz et al.* 5971 (MA). **Guarda**: Sabugal, 13 v 1970, *Malato-Beliz et al.* 8205 (MA); Serra da Estrella, 29 iv 1936, *Souza* 757 (L); Serra da Estrella, 29 iv 1994, *E. Rico et al.* 1123 (MA); Serra da Estrella, 23 vi 1987, *W.O. van der Knaap & J.F.N. van Leeuwen* 87-136 (L); Serra da Estrella, 14 vii 1987, *W.O. van der Knaap & J.F.N. van Leeuwen* 87-235 (L); Serra da Estrella, 18 v 1988, *W.O. van der Knaap & J.F.N. van Leeuwen* 88-27 (L); Serra da Estrella, Valesim, viii 1881, *J. Daveau* (LY). **Portalegre**: Campo Major, 27 ii 1980, *J. Guerra & Monjardino* 16284 (MA);

Castelo de Vide, 8 iii 1977, *Malato-Beliz et al.* 13080 (MA). **Porto**: Amarante, v 1908, *G. Sampaio* (MPU). **Viseu**: Caramulinho, 30 v 1972, *Malato-Beliz et al.* 11721 (MA).

SPAIN. s. l. vi 1860, *Anonymous* (K). **Asturias**: Brana de Arriba, 9 v 1835, *Dureau* 349 (P); Brana de Arriba, 9 vii 1835, *Hooker* 349 (K); Brana de Arriba, 12 vi 1864, *E. Bourgeau* (MPU); Brana de Arriba, 12 vi 1864, *G. Joad* (K); Brana de Arriba, 1864, *E. Bourgeau* 2635 (G, K, LY, P); Moal, 2 v 1982, *C. Aedo* (MA); Pesoz, 22 iii 1959, *S. Lainz* (E); Puerto de Leitariegos, 8 iv 1962, *S. Lainz* (E). **Avila**: Cuevas del Valle, 12 v 1995, *D. Sanchez-Mata et al.* PC9528 (MAF); Hoyocasero, 11 v 1985, *M. Luceno* & *P. Vargas* (MA); La Huguijuela, 21 v 1982, *D. Sanchez-Mata et al.* (MA); Mijares, 19 iv 1982, *D. Sanchez-Mata* & *Belmonte* (MAF); Mijares, 6 v 1989, *P. Canto* 28 (G, K, MAF, MPU); Mijares, 6 v 1989, *P. Canto* 18061 (G, MA); Mijares, 11 v 1995, *D. Sanchez-Mata et al.* PC9519 (MAF); Mijares, 10 v 1999, *P. Cubas* & *C. Pardo* PC9906 (MAF); Poyatos, 12 vii 1995, *P. Cubas* & *C. Pardo* 95119 (MAF); Puerto de Casillas, 11 v 1995, *D. Sanchez-Mata et al.* PC9514 (MAF); Puerto de Menga, 13 vi 1974, *G. Lopez* & *E. Valdes-Bermejo* 18062 (G, MA); Puerto del Pico, 31 iii 1994, *O. Lozoya* 31 iii 1994 (MA); Puerto del Pico, 10 v 1999, *P. Cubas* & *C. Pardo* PC9909 (MAF); Ramacastanas, 13 iv 1987, *P. Vargas* 1944 (MA); Ramacastanas, 31 iii 1994, *C. Sanz* 31 iii 1994 (MA); Serranillos, 16 vi 1979, *B. de Retz* 79305 (G); Sierra de Gredos, 29 vi 1972, *P. Gibbs* & *E. Dominguez* 12 (E); Sierra de Gredos, 23 vi 1974, *E.A. Leadlay* & *B. Petty* 44 (RNG). **Badajoz**: Albuquerque, 24 ii 1994, *A. Ortega* & *T. Rodriguez* 12/94 (MA); Albuquerque, 31 iii 1995, *A. Ortega* & *T. Rodriguez* 5/95 (G); Albuquerque, 15 iii 1996, *A. Ortega* & *T. Rodriguez* 48/96 (MA); La Codosera, 16 iii 1989, *J. Carrasco* 116/89 (MA). **Caceres**: Garrovillas, 24 ii 1994, *A. Ortega* & *T. Rodriguez* 16/94 (MA); Grimaldo, 27 iii 1953, *F. Bellot* & *B. Casaseca* (G); Hoyos, 30 iii 1977, *Moreno* & *Cubas* (MAF); Jaraicejo, 7 iii 1980, *D. Belmonte* (MA); Los Catorros, 29 iii 1945, *S. Rivas Goday* 29 iii 1945 (MA); Mesilla, 5 iii 1978, *S. Rivas-Martinez* 9346 (G, MA, MAF); Peraleda de la Mata, 3 iii 1994, *P. Navarro* (MA); Pueblonuevo de Miramontes, 19 iv 1991, *R. Gavilan* 16148 (G, MA, RNG); Puerto de Honduras, 4 vi 1976, *S. Rivas-Goday* & *Izco* 4 vi 1976 (MAF); Puerto de Perales, 30 iii 1977, *P. Cubas et al.* (MA); Sierra de Miravete, 9 iv 1969, *J. Fernandez Casas* 526 (MA); Sierra de Montanchez, 24 iv 1994, *Conti et al.* 628 (RNG); Sierra de Montanchez, 24 iv 1994, *Conti et al.* 655 (RNG); Trujillo, 19 iii 1968, *J. Borja* (MA); Trujillo, 2 iii 1985, *S. Silvestre* (MA); Trujillo, 25 ii 1989, *J. Perez Chiscano* (MA). **Catalonia**: La Corona, Santixo, 24 iv 1991, *A. Charpin et al.* 22560 (G). **Ciudad Real**: Retuerta del Bullaque, 1 iv 1980, *A. Barra et al.* 2312 (MA, RNG); Retuerta del Bullaque, 1988, *A. Barra et al.* 13220 (G, MA, MAF, MPU); Retuerta del Bullaque, 20 iii 1999, *V.J. Aran* & *M.J. Toha* 20 iii 1999 (MA). **Jaen**: Sierra Magima, between Cambil and Huelma, 30 v 1970, *Archibald* 3413 (E). **Leon**: 20 km SW of La Baneza, 18 v 1972, *R.K. Brummitt* & *A.O. Chater* 172 (K); Combarros, iv 1965, *C. Siphes* (L); Cubillos, 2 vii 1851, *Lange* (P); El Bierzo, 16 iv 1933, *W.* & *M. Rothmaler* 98 (MA, MAF); Ponferrada, 19 vi 1991, *G. Nieto Feliner* 75 (MA). **Lugo**: Antes de Arzogon, *R. Alvarez* 17526 (MA); Sierra del Caurel, vi 1990, *E. Blanco* 372 (MA); Villaframil, 28 iv 1955, *E. Carreira* (G, MA). **Orense**: 17 v 1972, *J. Fernandez Casas* (MA); Boboras, 5 iv 1986, *F. Silva-Pando* 166 (G); Bovoras, 5 iv 1986, *F. Silva-Pando* 3611 (MA); El Barco, 17 v 1972, *S. Lainz* (G); Santa do Invernadeiro, 18 iv 1973, *S. Castroviejo* (G, MA). **Pontevedra**: Golada, 17 iv 1958, *F. Bellot* & *B. Casaseca* (MA); O Rosal, 6 iv 1995, *J. Amigo* (MA). **Salamanca**: 23 iv 1967, *Brummitt* & *Ernst* 5809 (K). **Toledo**: 4 iv 1921, *D. Joaquin* (MAF); Calzada de Cropesa, 2 iii 1985, *S. Silvestre* (MA); Las Navillas, 9 v 2003, *M. Carrasco* 731 (MA); Mola de Toledo, 20 iv 1974, *A. Segura Zubizarreta* 7514 (MA); San Pablo de los Montes, 14 vi 1864, *E. Bourgeau* (K, P); Talavera La Reina, 16 iv 1863, *E. Bourgeau* 2415 (G, K, P); Talavera La Reina, *S. Albaille* 1461 (MPU). **Valencia**: Pinar de Antequera, 8 v 2004, *J. Lazaro Bello* (MA). **Zamora**: Villardeciervos, 12 v 1974, *E. Fuentes* (MA).

4. Cytisus oromediterraneus Rivas Mart. et al., Veg. Alta Mont. Cantabrica 264 (1984). – *Cytisus balansae* var. *europaeus* G.Lopez & C.E.Jarvis, Anales Jard. Bot. Madrid 40: 342 (1984). – *Cytisus balansae* subsp. *europaeus* (G.Lopez & C.E.Jarvis) Muñoz Garm., Anales Jard. Bot. Madrid 41: 477 (1985). – Type: [Spain] Sierra de Guadarrama, Lugares rupestres del Alto del Leon, en el grado subalpino (de Lüdi), sobre granito, 6 v 1945, *Rivas Goday* 1407 (holo MA 60554!; iso G!, K!). **Fig. 6.**

Cytisus purgans var. *grandiflorus* Deb. & E.Rev., Pl. Espagne (Teruel) 1895: 1079 (1895), nom. in sched. – Based on: Spain, Sierra de Guadalaviar, lieux arides, sur le calcaire, vi 1895, *Debeaux & Reverchon* 1079 (G!, L!, LY!, P!).

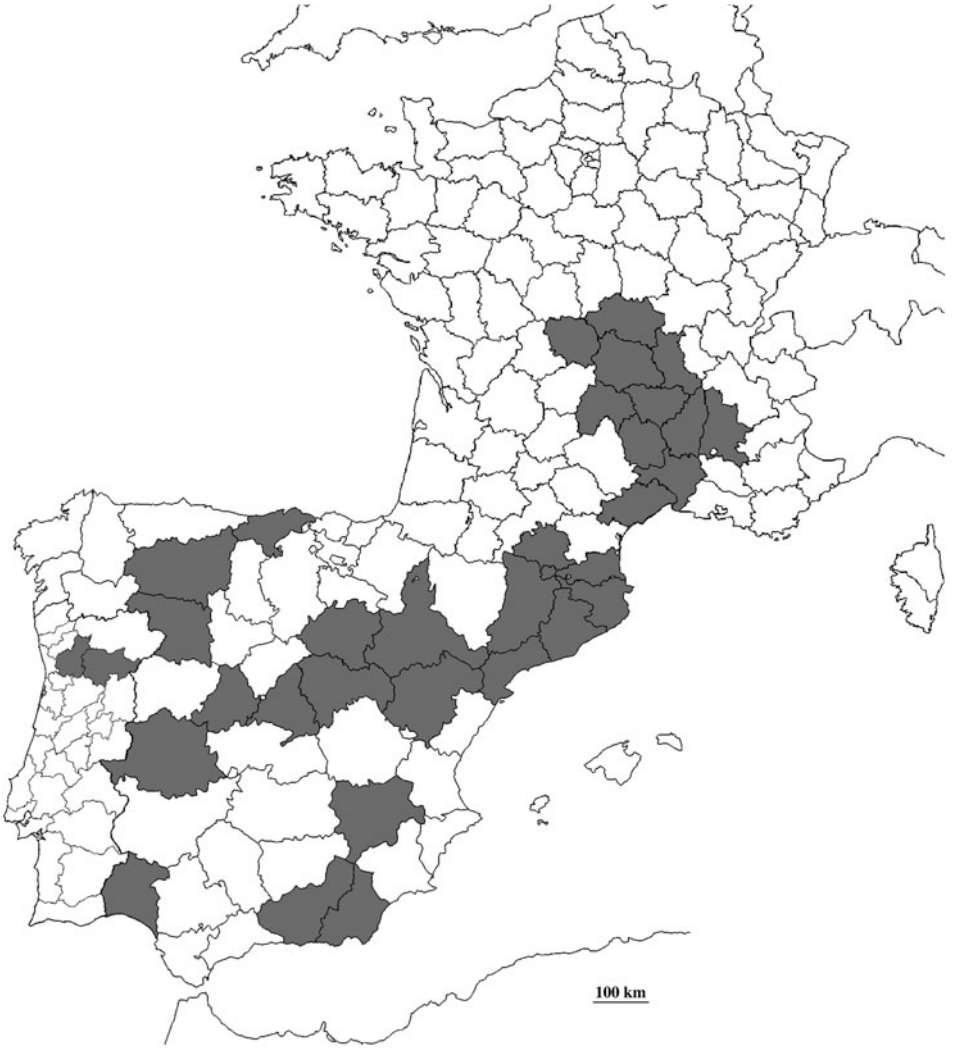

FIG. 6. Distribution of *Cytisus oromediterraneus* Rivas Mart. et al. (area in grey).

Genista purgans var. *brachycarpa* Rouy, Fl. France 4: 206 (1897). – Type: unknown (no material at LY under that name and no specimen associated with that name in the protologue).

Genista purgans auct. non L.: Gouan, Fl. Monsp. 474 (1764); De Candolle, Fl. Franç. 3, 4: 494 (1805) & Prodr. 2: 149 (1825); Duby, Bot. Gall. 1: 117 (1828); Rouy, Fl. France 4: 206 (1897); Coste, Fl. Descr. France 1: 300 (1901).

Spartium purgans auct. non L.: Amo, Fl. Fan. Penins. Iber. 5: 406 (1873).

Cytisus purgans auct. non (L.) Boiss.: Willkomm, Prodr. Fl. Hisp. 3: 456 (1877); Nyman, Consp. Fl. Eur. 157 (1878); Laguna, Fl. Forest. Espan. 2: 344 (1890); Vicioso, Bol. Inst. Forest. Invest. Exp. Madrid 72: 190 (1955); Frodin & Heywood, in Tutin et al., Fl. Eur. 2: 87 (1968); Quezel, in Maire, Fl. Afrique N. 16: 280 (1987).

Sarothamnus purgans auct. non (L.) Gren. & Godr.: Cadevall, Fl. Catalunya 2: 37 (1915).

Ascending shrub, 0.4–1 m high. *Twigs* with short internodes, unarmed, with 8 ribs T-shaped in transverse section, densely sericeous when young, glabrous when older; striae well-developed. *Leaves* rare, especially on young twigs, sessile or sub-sessile, unifoliolate; stipule with 2 ribs; leaflets 4–8 × 1–3 mm, generally linear, sometimes oblanceolate, sericeous. *Flowers* few; pedicel 2–10 mm long. Upper lip of the *calyx* 2–4 mm long; lower lip 2–4 mm long; teeth 0.5–1 mm deep. *Corolla* yellow; standard 9–13 mm long, 7–12 mm wide, orbicular, emarginate, glabrous; wings 9–13 mm long, as long as the standard and as long as or longer than the keel petals, 3–4 mm wide, elliptic or sub-elliptic, with apex curved, glabrous; keel 9–13 mm long, as long as the standard, 3–4 mm wide, falcate or sub-falcate, glabrous. *Anthers* 0.7–0.8 mm long. *Style* pilose on the lower half. *Fruit* 15–33 × 6–9 mm, plane, slightly curved, villous, 3- to 6-seeded. *Seeds* 3–4 × 2.5–3.5 mm.

Illustrations in *Genisteas espanolas*, Lam. XLVI: 191 (Vicioso, 1955) and in *Flora Iberica* 48: 176 (Talavera *et al.*, 1999).

Distribution. Andorra, France (Ardèche, Ariège, Auvergne, Cantal, Cévennes, Creuse, Drôme, Gard, Hérault, Loire, Puy-de-Dôme, Pyrénées-Orientales), Portugal (Guarda), Spain (Albacete, Almeria, Avila, Caceres, Cantabria, Catalonia, Gerona, Granada, Guadalajara, Huelva, Leon, Lerida, Lleida, Madrid, Soria, Teruel, Zamora, Zaragoza). Cultivated in the Netherlands and the United Kingdom.

Flowering time. April–May.

Proposed IUCN conservation assessment. Least Concern (LC). This taxon is known from many localities across a wide area and there are no significant threats.

Nomenclatural notes. Genista purgans, and combinations based on it, have been used by several authors to name the taxon which should rather be called *Cytisus oromediterraneus*. This confusion was due to an initial misnaming and subsequent attempt to designate the specimen *Löfling* 231b, Herb. Linn. No. 892.20 as a new type of *Genista purgans* (Lopez Gonzalez & Jarvis, 1984; Lopez Gonzalez, 1996).

This proposition was rejected by the committee for Spermatophyta (Brummitt, 1999). *Löfling* 231b is a specimen of *Genista scorpius* (L.) DC.

Additional specimens examined. ANDORRA. Vall d'Incles, 21 vi 2003, *A. Lluent* (MAF).

FRANCE. **Ardèche**: 13 vi 1938, *H. Croockewit* (L); Saint Agrève, 30 vi 1896, *E. Reverchon* (K); St Georges les Bains, 8 viii 1928, *Kruseman* (L). **Ariège**: Gèdre, iv/vi 1882, *C. Baenitz* (K, P). **Auvergne**: Gorge de Chasserae, vii 1961, *Andr. & Belotam* 1645 (L); Mont Dore, 19 vii 1980, *K. Kramer* 7374 (L); Mont Dore, 19 viii 2003, *Oyarzun & Cubas* (MAF); Mont Dore, Besse, 25 viii 1955, *A. Touw* 606 (L); Mont Dore, lac de Guéry, viii 1902, *C.-J. Pitard* (G); Puy de Sarrey, 25 viii 1955, *J. Barhman* 4913 (L). **Cantal**: 15 km from Massiac, 26 v 1962, *R.K. Brummitt, P.E. Gibbs & J.A. Ratter* 65 (E); Garabit, 29 v 1970, *S. Barrier & P. Boivin* (G); Le Falgoux, 27 vii 1950, *Drummond & Sandwith* 407 (K). **Cévennes**: Nord de Béziers, 11/12 vi 1870, *A. Leresche* (L); Près de Brusque, v/vii 1889, *H. Coste* (MPU); St Jean du Bruel, 15 vii 1966, *P. Florschütz* (L). **Creuse**: Crozant, 12 v 1885, *C. Legendre* 1234 (LY, P). **Drôme**: St Vallier, 26 iv 1865, *Chabert* (MPU); St Vallier, v/vii 1877, *Chabert* 1571 (P); Tain, 22 iv 1886, *C. Chatenier* (LY). **Gard**: Col de l'Asclié, 12 vi 1991, *Snoek* 24915 (L). **Haute-Vienne**: Rancon, 13 vi 1968, *E. Contré* 5530 (L). **Hérault**: Combes, 4 viii 1948, *G. Blanchet* (MPU); Pardaillon, 10 vi 1889, *E. Neyraut* (MPU); St Gervais, vii 1867, *E. Cosson* (P). **Loire**: Près de St Julien, Chapteuil, 24 v 1926, *G. Kohler* (G); St Chamond, *C. Billot* (LY); St Chamond, 1867, *Jordan* (K); St Chamond, Mont Pilat, 24 v 1858, *Maille* 981 bis (P); St Chamond, Mont Pilat, 24 v/28 vi 1858, *C. Ozanon* 2437 (G, LY, MPU, P); St Chamond, Mont Pilat, v/vi 1894, *C. Ozanon* (P); St Etienne, v 1874, *Glastien* (L); St Etienne, v 1881, *E. René* (L); St Etienne, v/vii 1883, *J. Hervier* v/vii 1883 (LY); St Etienne, v/vii 1884, *J. Hervier* (MPU); St Georges, 1868, *A. Le Grand* 1034 (L, MPU); St Just sur Loire, v/vi 1873, *A. Le Grand* (E); St Just sur Loire, vi 1906, *Legay* (MPU). **Lozère**: 1840, *Jordan* (P); Perjuret, 22 v 1954, *S. Vautier* (G). **Puy de Dôme**: Bourboule, 27 v/28 vi 1881, *P. Billiet* 38 (G, LY, MPU, P); Puy de Sancy, 10 viii 2002, *C. Aedo* 8389 (MA). **Pyrénées-Orientales**: 14 vi 1935, *van Soest* (L); 1944, *Rechinger & Sleumer* 803 (L); Canigou, *J. Ball* (K); Canigou, 16 vii 1872, *A. Guillon* (MPU); Courtal, 1 iv 1897, *Frère Sennen* (MPU); Le Veruet, v 1928, *A. Meebold* (K); Mont Canigou, *Reuter* (L); Mont Canigou, vi 1829, *Richard* (P); Mont Canigou, vi 1830, *H. van Heurck* (P); Mont Canigou, 23 vi 1966, *De Wilde* 11190 (K, L); Canigou, *J. Ball* (K); St Martin de Canigou, 8 vii 1872, *A. Guillon* (MPU); Vallée de Salse, 22 vi 1979, *F.M. Muller* 15099 (L); Vernet, 3 vi 1925, *Ellman & Sandwith* 1 (K); Vernet les Bains, x 1880, *J. Ball* (E); Vernet les Bains, 4 vi 1925, *Ellman & Sandwith* 36 (K).

PORTUGAL. **Guarda**: Mantegas, 29 iv 1994, *Conti et al.* 1075 (RNG); Mantegas, 2 v 1994, *Conti et al.* 1490 (RNG); Serra da Estrella, 18 vi 1938, *W. Rothmaler* 13699 (G); Serra da Estrella, 5 v 1951, *A. Fernandes et al.* 6090 (L, MA); Serra da Estrella, 28 v 1972, *F. Bellot & B. Casaseca* (MA); Serra da Estrella, 14 vi 1988, *N. Marcos & C. Gomez* (MA); Serra da Estrella, 2 v 1994, *E. Rico et al.* 1490 (MA); Serra da Estrella, Castelo Branco, 18 vi 1987, *W.O. van der Knaap & J.F.N. van Leeuwen* 87-88 (L); Serra da Estrella, Covao da Metade, *J. Daveau* 49 (G, MPU, P); Serra da Estrella, Guarda, 19 vi 1987, *W.O. van der Knaap & J.F.N. van Leeuwen* 87-102 (L); Serra da Estrella, SW of Guarda, 28 v 1972, *I.B.K. Richardson, V.H. Heywood & D.M. Moore* 31 (RNG).

SPAIN. **Albacete**: Sierra de Alcaraz, 4 km S of Vianos, 24 vi 1979, *R. U. Botany Dept. Exped.* 320 (VAL). **Almeria**: Abrucena, 17 vi 1988, *B. Valdes et al.* 621/88 (G); Sierra Nevada, 6 vi 1963, *C. Stocken* 219.63 (E); Sierra Nevada, 19 vi 1988, *B. Valdes et al.* 896/88 (G). **Avila**: 21 v 1997, *Crespo et al.* (RNG); Circo de Gredos, 15 vii 1983, *Gardner* 2049 (E, RNG); La Horeajada, 18 viii 1992, *S. Sardinero* 8 (MAF); La Serrota, 22 viii 1995, *D. Sanchez-Mata et al.* 95146 (MAF); Mijares, 6 v 1989, *P. Canto* 29 (G, VAL); Mijares, 11 v 1995, *D. Sanchez-Mata et al.* PC9517 (MAF); Mijares, 10 v 1999, *Cubas & Pardo* PC9902 (MAF); Navalguijo, 29 vi 1986, *M. Luceno &*

P. Vargas 1330 (MA); Puerto Castilla, 21 vi 1991, *S. Sardinero* (MAF); Valle de Ambles, 12 vii 1979, *M. Ladero* (MA). **Caceres**: Casares de Las Hurdes, 4 v 1994, *Conti et al.* 1670 (RNG). **Cantabria**: Alto Campoo, 6 viii 2008, *C. Aedo* 15848 (MA). **Catalonia**: Boven Unare, 9 vi 1936, *P. Buwalda* 2376 (L); Camprodon, Setcasas, Morens, vi 1847, *E. Bourgeau* 237 (G, P); Salardu, 8 vi 1936, *Bloembergen* 1849 (L); Setcasas, Morens, vi 1847, *E. Bourgeau* (LY). **Gerona**: 1 v 1963, *Kramer & Westra* 3580 (L); 19 vii 1983, *Bolos et al.* (VAL); Caralps, 19 vii 1993, *E. Monasterio et al.* 1096 (MA); Collada de Tosas, 23 vii 1967, *J. Fernandez Casas* 372 (MA); Puerto de Tossas, 10 vii 1988, *R. Morales et al.* 343 (MA). **Granada**: Puerto de la Ragua, 19 vi 1988, *B. Valdes et al.* 951/88 (G). **Guadalajara**: Checa, 28 v 1994, *J. Mateo* (VAL); Orea, 29 v 1994, *J. Mateo* (VAL); Orea, Pena de la Gallina, 24 iv 2004, *O. Mayoral & M.A. Gomez-Serrano* (VAL). **Huelva**: Los Paules, 18 viii 1984, *I. Aizpuru & P. Catalan* 1334.84 (MA). **Leon**: Arroyo de Valmorantin, 4 vi 2004, *E. Alonso & E. de Paz* (MAF, VAL); Between Potes and Rians, 8 vii 1978, *P. Harold & R. McBeath* 196 (E); Boca de Huergano, 13 vii 2006, *V. Aran* 6355 (MAF, VAL); De Geras a Collado de Aralla, 11 vi 2003, *P. Cubas & C. Pardo* (MAF); La Puebla de Lillo, 16 vii 1978, *J. Losa Quintana* 9349 (MA, RNG); Montes Agrilianos, 9 viii 1983, *G. Nieto Feliner* 962 (MA); Portilla de la Reina, 16 vi 2001, *R. Alonso & E. de Paz* (MAF, VAL); San Isidro, 28 ix 1973, *G. Lopez & E. Valdes-Bermejo* (MA); Sierra de Béjar, 14 vii 1991, *S. Sardinero* 24 (MAF); Truchas, 9 vii 1981, *G. Nieto Feliner* 207 (MA). **Lerida**: 20 km E of Adrall, 8 vii 1984, *C.J. Miles* 136 (RNG); Carratera Adrall-Sort, 6 viii 1987, *J. & C. Pedrol* 2281 (MA). **Lleida**: Aransa, Estany de la Pera, 30 vi 2004, *J. Riera et al.* 4818 (VAL); Puerto de la Bonaigua, 6 vii 1992, *C. Aedo et al.* 2107 (MA); Viliella, 15 vi 1950, *P. Montserrat* BCF40214 (VAL). **Madrid**: Alto del Leon, 6 v 1945, *S. Rivas Goday* (L); Braojos, 31 v 1918, *C. Vicioso* (MA); Cercedilla, 24 v 1934, *P. Capell* (VAL); Cotos, 14 ix 1989, *C. Martin* 219 (MA); De Miraflores al Puerto de la Morrueva, 15 vii 1970, *Costa* (VAL); Escorial, vii 1843, *J. Rodriguez* (MA); Escorial, iii/vi 1876, *A. Winkler* (P); Escorial, 2 vi 1924, *E. Ellman & C. Hubbard* 994 (K); Guadarrama, 1876, *E. Hackel* (MPU); Guadarrama, v 1935, *S. Atchley* 365 (K); Guadarrama, vii 1980, *Monsonet & Mateo* (VAL); Guadarrama, Altos de los Leones de Castilla, 21 vi 1968, *Demetrio Jimenez* (VAL); Gudillos, 16 v 1965, *F. Bellot* (MA); Leones de Castilla, 9 vi 1973, *S. Rivas-Martinez & M. Costa* 6661 (G, L, MA); Manzanares, vi 1854, *Isern* (MA); Navarredonda, v/vii 1863, *E. Bourgeau* 2413 (MA, MPU); Puerto de Caneneia, 1 v 1993, *L. Ciudad Real de la Plaza* (VAL); Puerto de Cotos, 19 vi 2002, *D. Sanchez Mata* (MAF); Puerto de Guadarrama, 27 v 1996, *P. Cubas & C. Pardo* PC9603 (MAF); Puerto de la Morcuera, 19 vi 1993, *Sobrados & Risco* (MAF); Puerto de la Morcuera, 1 vi 1997, *P. Canto* (MA, MAF); Robregordo, vi 1918, *C. Vicioso* (MA); Santa Maria de la Almeda, 18 v 1993, *J. Izco* (MA, VAL); Sierra de Guadarrama, 22 vi 1834, *E. Bourgeau* 2156 (K); Sierra de Guadarrama, 22 v 1973, *S.L. Jury & G. Nieto Feliner* 11177 (RNG); Sierra de Guadarrama, 30 vi 1978, *S. Rivas-Martinez* 16149 (MA, MAF, VAL); Sierra de Guadarrama, 16 v 1982, *A. Aguilella* (VAL); Sierra de Guadarrama, 1 iv 1990, *S. Rivas-Martinez* (MAF); Sierra de Guadarrama, 27 vi 1992, *Isern* 2490 (MA); Sierra de Guadarrama, 22 vi 1999, *C. Navarro* 2465 (MAF); Sierra de Guadarrama, Montes de Abantos, 22 vi 1999, *Pizarro & Navarro* 19104 (RNG, VAL); Somosierra, 28 v 1992, *A. Izuzquiza* 2423 (MA); Somosierra, 8 v 1994, *P. Garin* 17069 (MAF, RNG, VAL); Valle de Paular, 15 v 1982, *A. Aguilella* (VAL). **Murcia**: Cerdagne, Val de la Molina, 12 vii 1935, *Frère Sennen* (RNG). **Palencia**: Velilla del Rio Carrion, 17 vii 1992, *J. Aparicio, Tx. Perez & P. Urrutia* 10044 (VAL). **Salamanca**: Candelario, 30 v 1981, *E. Rico* 130 (G, MA, VAL); Candelario, 25 vii 1989, *S. Sardinero* (MAF); Pena de Francia, 4 vii 1946, *A. Caballero* (MA); Pena de Francia, 24 viii 1984, *J. Guiemes & P. Garcia-Fayos* (VAL); Plataforma del Calvitero, 30 vi 1985, *P. Galan et al.* (MA); San Lorenzo, 15 vi 1963, *Andreas & Schotsman* 1641 (L); Sierra de Béjar, 15 vi 2002, *D. Sanchez-Mata et al.* (MAF). **Segovia**: San Rafael, 16 v 1965, *F. Bellot* (MA). **Soria**: Alto de Piqueras, 8 vi 1967, *Bellot & Monasterio* 26295 (MA); La Poveda de Soria, 20 vi 1986, *J. Alejandre* 881.86 (MA); Montenegro de Cameros, 29 vi 1991, *A. Segura Zubizarreta* 40.104 (VAL); Puerto de Piqueras, 14 v 1973, *S. Castroviejo* (MA); Villartoso, 27 iii 1994, *A. Segura Zubizarreta* 43.495 (MA, VAL).

Teruel: Between Bronchales and Noguera, 6 vi 1962, *R.K. Brummitt, P.E. Gibbs & J.A. Ratter* 877 (E, RNG); Bronchales, 9 viii 1982, *Mateo & Aguilella* 82838 (VAL); Fuente del Puerto, 13 vi 1988, *G. Mateo* 566 (VAL); Orihuela del Tremedal y Bronchales, *D. Almagro* (VAL); Sierra de Guadalaviar, vi 1895, *E. Reverchon* 10492 (L). **Zamora**: Laguna de los Peces, 18 vii 2001, *Cubas & Oyarzun* 8 (MAF). **Zaragoza**: Moncayo, 11 vi 1983, *A. Aguilella* (VAL); Moncayo, 12 vi 1983, *Burgaz et al.* (MA); Purujusco, 30 vi 2005, *J.M. Pisco* 1101 (VAL).

Cultivated F1 hybrids of section Alburnoides

5. Cytisus × beanii Dallimore, Garden 67: 371 (1905). – Type: [United Kingdom] 24 v 1917, *Dallimore* s.n. (neo K!, designated here).

Cytisus beanii Nichols., Kew Hand-List Trees and Shrubs, ed. 2: 173 (1902) [*Beanii*], nom. inval.

Origin: *Cytisus ardoinoi* × *Cytisus oromediterraneus* (Steffen, 1929; Malécot *et al.*, 2009). *Cytisus* × *beanii* differs from *C. ardoinoi* in its less creeping habit and its unifoliolate leaves.

6. Cytisus × kewensis Bean, Gard. Chron. ser. 3, 19: 698 (1896). – Type: [United Kingdom] Arboretum Royal Gardens, Kew, 18 v 1896, *Anonymous* s.n. (lecto K!, designated here).

Origin: *Cytisus multiflorus* × *Cytisus ardoinoi* (Steffen, 1929; Malécot *et al.*, 2009). *Cytisus* × *kewensis* differs from *C. ardoinoi* in its taller habit, longer leaflets, pale yellow flowers and oblong keel.

7. Cytisus × praecox (Rob.) Hort, Bull. Misc. Inform. Kew 1892: 22 (1892). – *Genista praecox* Rob., Garden 21: 283 (1882). – Type: [United Kingdom] Royal Botanic Gardens, Kew, 3 v 1905, *Bean* s.n. (neo K!, designated here).

Origin: *Cytisus multiflorus* × *Cytisus oromediterraneus* (Steffen, 1929; Malécot *et al.*, 2009). *Cytisus* × *praecox* differs from *C. multiflorus* in its pale yellow flowers and its glabrescent fruits.

ii. Cytisus sect. **Spartopsis** Dumort., Fl. Belg. (Dumortier) 991 (1827). – *Sarothamnus* Wimm., Fl. Schles. 278 (1832). – *Cytisus* sect. *Sarothamnus* (Wimm.) Benth., Gen. Pl. 1: 484 (1865). – Type: *Cytisus scoparius* (L.) Link, designated by Talavera & Salgueiro (1999).

Cytisogenista Duhamel, Traité Arbr. Arbust. 1: 203 (1755), nom. rejic.

Cytisus (sect. *Sarothamnus*) subsect. *Grypotropis* Briq., Etud. Cytis. Alp. Marit. 146 (1894). – *Sarothamnus* sect. *Grypotropis* (Briq.) Asch. & Graebn., Syn. Mitteleur. Fl. 6, 2: 289 (1907). – Type: *Cytisus scoparius* (L.) Link, lectotype designated here.

Erect or prostrate shrubs. *Twigs* alternate, unarmed, with 5 ribs V-shaped in transverse section or 8 ribs T-shaped in transverse section, pubescent to sericeous

when young, glabrescent or glabrous when older. *Leaves* well-developed, stipulate, petiolate or sessile, unifoliolate or trifoliolate; stipule with 2 ribs; leaflets linear, elliptic or obovate, pubescent with adpressed hairs. *Flowers* 1–2 in axillary clusters located along the twigs. *Calyx* campanulate, divided into two lips, generally glabrous, sometimes ciliate. *Corolla* yellow; petals about 20 mm long, sub-circular; standard orbicular, generally recurvate, glabrous; wings longer than or as long as the standard, elliptic, oblong or obovate, glabrous; keel petals longer than or as long as the standard; falcate, ciliate on the lower margin. *Stamens* 10. *Style* revolute inside the keel, glabrous or pilose. *Fruits* plane, oblong, ovoid or elliptic, 2- to 13-seeded. *Seeds* ovoid or elliptic, with large strophiole.

Key to the species

1a. Twigs pubescent when young; leaves sessile or sub-sessile, all unifoliolate _____ **8. Cytisus cantabricus**

1b. Twigs densely sericeous when young; leaves petiolate, unifoliolate and trifoliolate on the same plant _____ 2

2a. Twigs with 8 T-shaped ribs; leaflets linear to elliptic; calyx ciliate; fruits densely villous with long white hairs covering their whole surface ___ **11. Cytisus striatus**

2b. Twigs with 5 V-shaped ribs; leaflets elliptic, obovate or lanceolate; calyx glabrous; fruits glabrous, ciliate on margins, pilose or villous _____ 3

3a. Deep ribs; fruits generally ciliate on margins, rarely villous _____ **10. Cytisus scoparius**

3b. Attenuate ribs; fruits entirely glabrous or pilose _____ **9. Cytisus grandiflorus**

8. Cytisus cantabricus (Willk.) Reichb.f. & Beck, Icon. Fl. Germ. Helv. 22: 15 (1869). – *Sarothamnus cantabricus* Willk., Flora 34: 616 (1851). – *Genista scoparia* subsp. *richteri* Rouy, Fl. France 4: 205 (1897). – *Sarothamnus scoparius* subsp. *cantabricus* (Willk.) M.Lainz, Bol. Inst. Est. Asturianos 10: 195 (1964), nom. illeg. – *Cytisus scoparius* subsp. *cantabricus* (Willk.) M.Lainz ex Rivas Mart. et al., Trab. Dept. Bot. Fisiol. Veg. Madrid 3: 94 (1971), nom. illeg. – Type: [Spain] In dumetis montium prope Yrun et alibi in Guipuzcoa et Vizcaya, iv 1850/v 1850, *Collection plantes exotiques* 17 (lecto P!, designated here; isolecto G!). **Fig. 7.**

Sarothamnus cantabricus var. *dieckii* Lange, Diagn. Pl. Iber. 3: 14 (1893). – Type: [Spain] Reynosa, Cantabria, *Dr Dieck* 749 (holo C!).

Sarothamnus losae Pau, nom. in sched. – Based on: Santander: Espinosa de los Monteros, vi 1928, *Plantes d'Espagne*, *Dr M. Losa* 6692 (MA!).

Erect shrub, 1–2 m high. *Twigs* unarmed, with 8 ribs T-shaped in transverse section, pubescent when young, glabrous when older; ribs larger than striae. *Leaves* sessile or sub-sessile, unifoliolate; short stipule with 2 ribs; leaflets 5–10 × 1–5.5 mm, elliptic or obovate, pubescent with very short adpressed hairs. *Pedicel* 8–11 mm long. *Calyx*

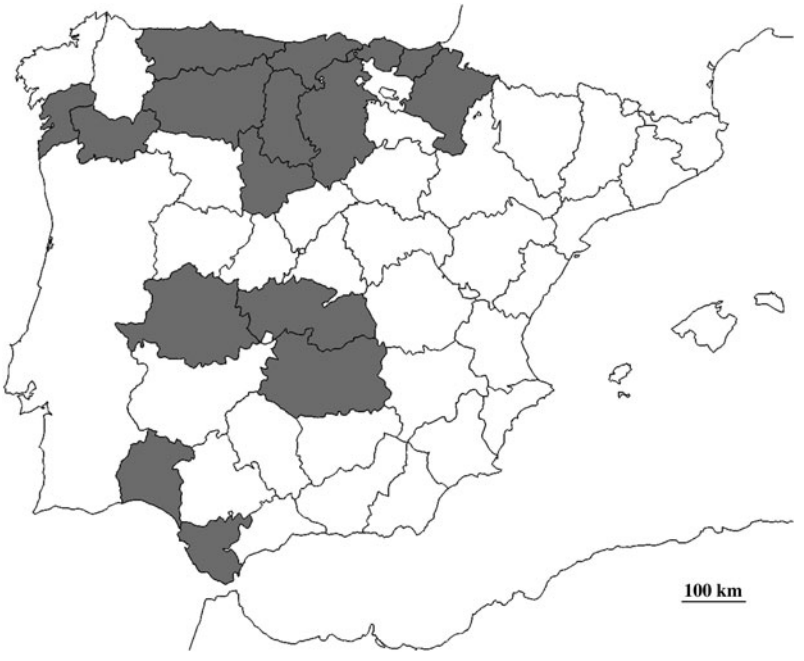

FIG. 7. Distribution of *Cytisus cantabricus* (Willk.) Reichb.f. & Beck (area in grey).

glabrous; upper lip 5–7 mm long; lower lip 5.5–8 mm long; teeth 0.5–1 mm deep. *Corolla* yellow; standard 19–24 mm long, 15–25 mm wide, orbicular, recurvate, glabrous; wings 18–24 mm long, longer or as long as the standard, as long as the keel petals, 6.5–9.5 mm wide, generally elliptic, sometimes oblong, glabrous; keel 19–25 mm long, longer or as long as the standard, 6.5–9.5 mm wide, falcate, pubescent on the lower margin. *Anthers* 1.8–2.5 mm long. *Style* pilose. *Fruit* 20–45 × 10–11 mm, plane, elliptic, villous, tangled hairs up to 5 mm long, 3- to 10-seeded. *Seeds* 2.5–3.5 × 2–3 mm, ovoid.

Illustrations in *Genisteas espanolas*, Lam. LI: 211 (Vicioso, 1955) and in *Flora Iberica* 44: 167 (Talavera *et al.*, 1999).

Distribution. Spain (Asturias, Burgos, Caceres, Cadiz, Cantabria, Ciudad Real, Huelva, Leon, Navarra, Orense, Palencia, Pontevedra, Santander, Toledo, Valladolid, Vizcaya).

Flowering time. April–June.

Proposed IUCN conservation assessment. Least Concern (LC). This taxon is known from many localities across a wide area and there are no significant threats.

Nomenclatural notes. Lectotypification of *Sarothamnus cantabricus*: the specimen of *Collection plantes exotiques* 17 seen at Kew is not a specimen of *Cytisus cantabricus*

but of *C. scoparius* (described below). We choose the specimen from P as the lectotype as it bears the author's handwriting.

Additional specimens examined. SPAIN. **Asturias**: Bajada del Puerto Ventana, 9 vii 1974, *S. Castroviejo* (MA); Oviedo, 18 vi 1979, *Amich, Rico & Sanchez* (MA, SALA); San Martin de Argolibio, Amieva, 2 v 1962, *J. Fernandez Casas* (MA); San Martin de Argolibio, Amieva, 2 v 1962, *S. Lainz* (RNG); Trescares, 13 v 1991, *C. Aedo* (MA). **Burgos**: Puerto de Piedrasluengas, 28 vi 1982, *Aguilella et al.* (VAL). **Caceres**: Parque National Monfragüe, 23 iii 1984, *M.B. Crespuo* (VAL). **Cadiz**: Facinas, 31 iii 1975, *J. Harris* 1425 (RNG). **Cantabria**: Cabezon de Liebana, 1 iv 1999, *J. Pizarro* (MAF); De Valdeprado a Pesaguero, 30 iv 1990, *M. Herrera Gallastegui* 15199 (SALA); Enmedio, 13 vi 1991, *C.J. Valle et al.* (SALA); Laredo, 25 v 1985, *H. Herrera* (MA); Monte Gulatrapa, 20 vii 1983, *C. Aedo* (MA); Pesagüero, 4 iv 1998, *M. Pardo de Santayana* 417 (MA); South of Pido, *D.W. Dresser* 426 (E); Valdeolea, 22 v 1999, *M. Pardo de Santayana* 787 (MA). **Ciudad Real**: Santa Elena to Despenaperros, 15 iv 1973, *F.A. Bisby, K.W. Nicholls & R.M. Polhill* 87 (RNG). **Guipuzcoa**: Entre Arechavalet y el Puerto de Arlaban, 11 v 1977, *M. Costa, E. Fuentes & M. Horjales* (SALA). **Huelva**: Matalascanas, 14 iii 1983, *I. Mateu et al.* (VAL); Matalascanas, 15 iii 1983, *I. Mateu et al.* (VAL). **Leon**: Branillin, 11 ix 1983, *C. Perez Morales* (VAL); Picos de Europa, 10 vii 1879, *E. Levier* (E, LY); Picos de Europa, 5 viii 1969, *J. Grimes* 283 (RNG); Picos de Europa, 6 viii 1969, *J. Grimes* 332 (RNG); Picos de Europa, 6 vii 1978, *P. Harrold & R.J.D. McBeath* 156 (E); Picos de Europa, supra Potes, 10/14 vii 1879, *E. Levier* (K); Picos de Europa supra Potes, ix 1880, *J. Ball* (K); Puerto de Ponton, 1 viii 1960, *D.W. Dresser* 1174 (E); Puerto de San Glorio, 1 vii 1982, *F. Llamas* (MA, VAL); Puerto de San Glorio, 1 vii 1982, *F. Llamas* 7456 (SALA); Puerto de San Glorio, 1 vii 1982, *F. Llamas* 82837 (VAL); Puerto de San Glorio, 3 vii 1987, *M. Ladero et al.* 3 vii 1987 (SALA). **Navarra**: Carretera entre el Collado de Aritxulegi y Lesaka, 26 v 1997, *Loidi et al.* 18059 (VAL). **Orense**: Sierra del Suido, 18 viii 1985, *X. Giraldez* (SALA). **Palencia**: Col de Piedras Luengas, 10 vii 1978, *A. Charpin* 14916 (G); Piedrasluengas, 14 vii 1974, *S. Rivas-Goday & E. Valdes-Bermejo* 14 vii 1974 (MA); Puerto de Piedrasluengas, 23 vii 1975, *A. Segura Zubizarreta* 8269 (VAL); Puerto de Piedrasluengas, 28 vi 1982, *G. Mateo* 82836 (VAL). **Pontevedra**: Cangas del Morrazo, 18 v 2009, *E. Rico et al.* (SALA). **Santander**: 6 km from Potes, 15 v 1972, *R.K. Brummitt & A.O. Chater* 97 (K); El Collado, 6 vii 1978, *S. Castroviejo et al.* 4117 (MA); Espinama, 7 ix 1944, *M. Martin & C. Vicioso* (MA); La Hoz de Abiada, 6 vi 1985, *Anonymous* 10266 (SALA); Puerto de Palombera, 25 iv 1982, *A. Barra* 9574 (MA). **Toledo**: Ventas de Pena Aguilera, Puerto del Milagro, 20 iv 1992, *G. Mateo* 6050 (VAL). **Valladolid**: Between Viana and Cabezon, v 1981, *Vermeulen-Fernandez* 125 (L). **Vizcaya**: Subida a los Tornos, 18 vii 1968, *H. Sanudo* (MA); Enecuri, Carretera de Bilbao a Algorta, 8 v 1976, *M. Horjales* (SALA).

9. Cytisus grandiflorus (Brot.) DC., Prodr. 2: 154 (1825). – *Spartium grandiflorum* Brot., Fl. Lusit. 2: 80 (1804). – *Genista grandiflora* (Brot.) Spach, Ann. Sci. Nat., Bot. sér. 3, 3: 155 (1845). – *Sarothamnus grandiflorus* (Brot.) Webb, Otia Hispan. ed. 2: 45 (1853). – Type: [Portugal] *Tournefort* 6312 with the mention '*Cytiso-genista lusitanica*, foliis myrti, siliquis tomentosis' (lecto P!, designated here). **Fig. 8.**

Cytisus affinis Boiss., Elench. Pl. Nov. 31 (1838). – *Sarothamnus affinis* (Boiss.) Boiss., Voy. Bot. Espagne 2: 134 (1845). – Type: [Spain] In collibus circa Estepona, Ronda, v 1837/vi 1837, *Boissier* 51 (lecto G!, designated here; isolecto E!, K!, MPU!, P!).

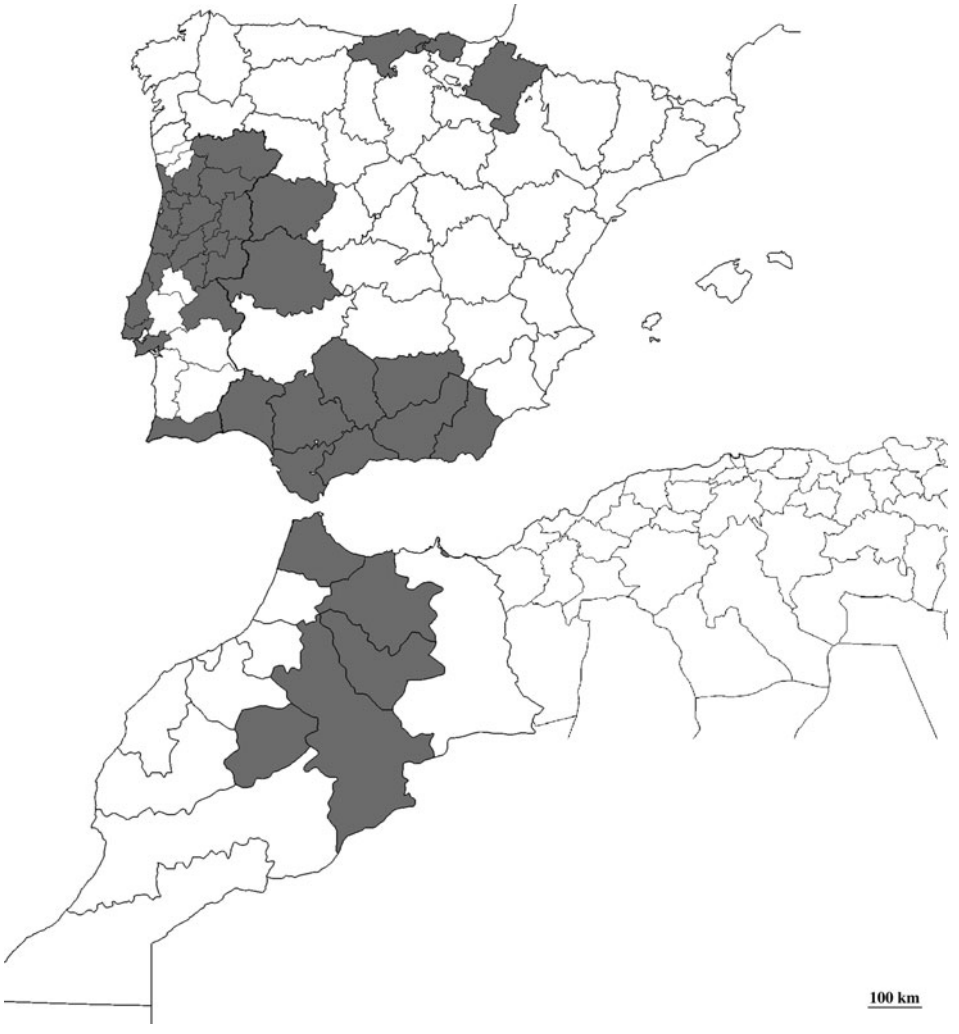

FIG. 8. Distribution of *Cytisus grandiflorus* (Brot.) DC. subsp. *grandiflorus* (area in grey).

Sarothamnus virgatus Webb, Iter Hispan. 52 (1838). – Locus typicus: In collibus Baeticis. Ex herbariis Ramburiano, not located.

Sarothamnus arboreus var. *barbarus* Jahand. & Maire, Bull. Soc. Hist. Nat. Afrique N. 14: 67 (1923). – *Cytisus barbarus* (Jahand. & Maire) Maire, Mém. Soc. Sci. Nat. Maroc 17: 30 (1926). – *Cytisus grandiflorus* subsp. *barbarus* (Jahand. & Maire) Maire, Cat. Pl. Maroc 2: 365 (1932). – Type: [Morocco] Grand Atlas, Reraya, Tansrart, bords de l'Acif Reraya, 16 vi 1921, *Jahandiez* 734 (lecto MPU!, designated here).

Cytisus barbarus var. *haplophyllus* Maire & Sennen, Bull. Soc. Hist. Nat. Afrique N. 23: 175 (1932). – *Cytisus grandiflorus* subsp. *haplophyllus* (Maire & Sennen) Maire,

Cat. Pl. Maroc 2: 365 (1932). – Type: [Morocco] Gurugu, vers Taquigriat, 16 vi 1931, *Plantes d'Espagne*, *Sennen* & *Mauricio* 7818 (lecto MPU!, designated here; isolecto G!, VAL!).

Cytisus grandiflorus subsp. *cabezudoi* Talavera, Anales Jard. Bot. Madrid 57: 213 (1999). – Type: [Spain] Huelva, Hinojos, Pasada de la Zorra, 7 iv 1997, *Gibbs* & *Talavera* s.n. (holo SEV 141267!).

Nomenclatural notes. Typification of *Spartium grandiflorum*: three synonyms of *Spartium grandiflorum* are mentioned in the protologue:

'Cytiso-Genista Lusitanica, foliis Myrti, siliquis tomentosis. Tourn. I. R. H. pag. 649'
'Cytiso-Genista Lusitanica, magno flore, Idem. Ibid.'
'Genista sylvestris repens, amplo flore, Lusitana. Grisl. Virid. Lusit. n.541.'

'I. R. H.' refers to '*Institutiones Rei Herbariae*' written by Tournefort in 1719. 'Virid. Lusit.' refers to '*Viridarium Lusitanium*' written by Grisley in 1749. No relevant drawing was associated with those names. Only the specimen *Tournefort* 6312 was found at P bearing the relevant phrase names 'Genista lusitanica magno flore aureo foliis myrti' and 'Cytiso genista lusitanica foliis myrti siliquis tomentosis'. These annotations unambiguously link this specimen to Tournefort. In the absence of Brotero's material at LISU and MO, we consider it likely that Brotero consulted Tournefort herbarium during his stay in Paris between 1778 and 1790. Thus the Tournefort material is part of the original material.

Lectotypification of *Cytisus affinis*: as most of Boissier's original material is preserved in G, the specimen from G was chosen as the lectotype for *Cytisus affinis*.

Lectotypification of *Sarothamnus arboreus* var. *barbarus*: Jahandiez and Maire based their description on two specimens. Even though the authors indicated 'Typus in Herbario Universitatis Algeriensis' in the protologue the lectotype we designate is the only specimen in Maire's collection that we could identify as a syntype.

Lectotypification of *Cytisus barbarus* subsp. *haplophyllus*: Maire's original material is preserved at MPU so the specimen from MPU is chosen as lectotype. That specimen also has a large number of leaves, all unifoliolate, a character which is highly diagnostic for *Cytisus barbarus* subsp. *haplophyllus*.

Proposed IUCN conservation assessment. Least Concern (LC), as for the most widespread subspecies *Cytisus grandiflorus* subsp. *grandiflorus*.

Key to the subspecies of Cytisus grandiflorus

1a. Leaflets usually glabrous or glabrescent; fruits pilose _____ **9a. Cytisus grandiflorus** subsp. **grandiflorus**

1b. Leaflets sericeous or pilose; fruits glabrous _____ **9b. Cytisus grandiflorus** subsp. **maurus**

9a. Cytisus grandiflorus (Brot.) DC. subsp. **grandiflorus**

Erect shrub, 1–3 m high. *Twigs* unarmed, with 5 ribs V-shaped in transverse section, attenuate, densely sericeous when young, glabrescent to pilose when older; ribs attenuate. *Leaves* petiolate, usually unifoliolate, rarely trifoliolate on young twigs; petiole 1–5 mm long; leaflets 9–20 × 4–9 mm, elliptic or lanceolate, generally glabrous or glabrescent. *Pedicel* 6–15 mm long. *Calyx* glabrous; upper lip 4.5–6 mm long; lower lip 5–6.5 mm long; teeth 0.5–1 mm deep. *Corolla* yellow; standard 15–24 mm long, 13–20 mm wide, orbicular, recurvate, glabrous; wings 15–24 mm long, longer than the standard, as long as or shorter than the keel petals, 6–8 mm wide, elliptic or sub-elliptic, glabrous; keel 15–24 mm long, longer than the standard, 6–8 mm wide, falcate, pubescent on the external margin. *Anthers* 1.4–2.7 mm long. *Fruit* 25–45 × 7–10 mm, plane, oblong, pilose, sometimes ciliate on margins; hairs 2–5 mm long, tangled, up to 12-seeded. *Seeds* 2–4.5 mm, ovoid.

Illustration in *Flora Iberica* 42: 161 (Talavera *et al.*, 1999).

Distribution. Morocco (Marrakech-Tensift-Al Haouz, Tanger-Tétouan, Taza-Al Hoceima-Taounate), Portugal (Castelo Branco, Coimbra, Evora, Faro, Guarda, Leiria, Lisboa, Portalegre, Porto, Viano do Castelo), Spain (Almeria, Andalusia, Caceres, Cadiz, Cantabria, Granada, Huelva, Malaga, Melilla, Navarra, Salamanca, Vizcaya).

Flowering time. March–June.

Proposed IUCN conservation assessment. Least Concern (LC). This taxon is known from many localities across a wide area and there are no significant threats.

Additional specimens examined. Morocco. s. l. Harcha, 11 iv 1937, *R. Maire* (MPU). **Marrakech-Tensift-Al Haouz**: 1 km below Oukaïmeden on road to Vallée de l'Ourika, 18 vii 1989, *M. Ait Lafkih et al.* 604 (RNG); 72 km from Marrakech, below Oukaïmeden, 16 vi 2001, *S.L. Jury* 18988 (RNG); Marrakech, 13 vii 1989, *D. Podlech* 47970 (G); Marrakech, de Oukaïmeden à Aït Lekak, 13 vii 1984, *G. Lopez & F. Munoz Garmendia* 9127 (MA, RNG); Oukaïmeden, 6 vii 1997, *Sequeira et al.* 3323 (VAL); Oukaïmeden, 14 vi 2001, *M. Rejdali, M. Ait, Lafkih & S.M. Young* 18905 (RNG); Oukaïmeden, c.75 km from Marrakech, 5 vi 2002, *S.L. Jury et al.* 19589 (RNG); Oukaïmeden to Ourika, 18 vii 1973, *Davis* 55305 (E); South from Marrakech, c.1 km below ski resort of Oukaïmeden, on road to Vallée de l'Ourika, 26 vii 1997, *S.L. Jury* 18216 (RNG). **Tanger-Tétouan**: 10 iv 1995, *A.J. Caruz, M.A. Mateos & F.J. Pina* 5512/95 (RNG); Bab Taza, 19 vi 1993, *J.M. Montserrat* 4130/5 (RNG); Bab Taza, 23 km from Chefchaouen, 18 iv 1974, *F.A. Bisby, K.W. Nicholls & J. Grainger* 1351 (RNG); Bab Taza, 23 km from Chefchaouen, 18 iv 1974, *F.A. Bisby, K.W. Nicholls & J. Grainger* 1352 (RNG); Oued Laou, 27 ii 1994, *S.L. Jury* 13467 (RNG); Track to Bou Ahmed, 22 iv 1995, *S.L. Jury* 16653 (RNG). **Taza-Al Hoceima-Taounate**: Beni-Seddat, 22 vi 1933, *Sennen & Mauricio* 8736 (MA, MPU); Beni-Seddat, Uarej, 22 vi 1933, *Frère Sennen* 8736 (VAL); Djebel Arekdi, 26 v 1981, *J. Fernandez Casas* 5135 (RNG); Djebel Outka, 16 v 1929, *E. Jahandiez* 231 (G); Ikaouen, 19 vi 1992, *Optima Iter V* 1428 (RNG); Taounate, Ikauene, 27 vi 1994, *M.J. Diez Dapena et al.* 3644/94 (RNG); Targuist, 23 v 1927, *Font i Quer* 287 (MPU); Taza, Bab Azhar, 3 vi 1929, *E. Jahandiez* 382 (E); Taza, Djebel Arekdi, 26 v 1981, *S. Castroviejo et al.* 5135 (MA).

Portugal. s. l. iv 1886, *J. Daveau* (LISU); Prope Olisiponam, *Marti* (BR). **Castelo Branco**: Marvao, 25 v 1983, *R. Deschamps* 7199 (BR). **Coimbra**: Arredores de Coimbra, penedo da

Meditaçao, v 1879, *A. Moller* 400 (LISU); Arredores de Coimbra, penedo da Meditaçao, 1882, *J. d'A. Guimaraes* (LISU); Coimbra, 1876, *Henrique* (P); Coimbra, v 1886, *A. Moller* 2151 (BR); Coimbra, 4 v 1936, *W. & M. Rothmaler* 17070 (BR, MAF, VAL); Coimbra, 9 iv 1936, *Kostermans & Kruyt* 46 (L); Coimbra, pr. Santo Antonio dos Alivares, 4 v 1936, *W. & M. Rothmaler* (VAL); Penedo de Meditaçao, 22 iv 1948, *J. Matos* (K). **Evora**: Serra de S. Mamede, 28 iv 1994, *E. Rico et al.* 1026 (MA); Troia, 29 iii 1996, *S. Rivas-Martinez et al.* (MA). **Faro**: Faro, route de S. Brag, iv 1881, *J. Daveau* iv 1881 (LISU); Monte Gardo, 5 iv 1985, *J. Bouharmont* 17171 (BR); Portimao, 30 iii 1985, *J. Bouharmont* 17063 (BR); Près de Faro, 23 iii 1853, *E. Bourgeau* 1814 (K); Quarteira, 28 iii 1980, *M. Ladero et al.* (MAF). **Guarda**: Castelo Mendo, vii 1884, *A.R. da Cunha* (LISU); Serra da Estrela, 18 vi 1987, *W.O. van der Knaap & J.F.N. van Leeuwen* 87-89 (L); Serra da Estrela, viii 1881, *J. Daveau* (LISU); Serra da Estrela, 18 vi 1987, *W.O. van der Knaap & J.F.N. van Leeuwen* 87-92 (L); Souto do Bispo, 29 v 1972, *R. Brummitt* 12783 (K). **Leiria**: Caldas de Reinha, v 1882, *J. Daveau* 95 (MPU); Marinha Grande, 1880, *H. de Mendea* 1546 (LISU); Monte Sao Bartolommen, 16 v 1984, *F.A. Bisby* 1840 (K); Nazaré, 10 v 1994, *F. Sales & S. Neves* 134 (E). **Lisboa**: Malveira, 29 iv 1946, *B. Rainha* 21766 (G). **Portalegre**: Senhora de Pena, vi 1882, *A.R. da Cunha* (LISU). **Porto**: Gaia, Pedroso, v 1907, *G. Sampaio* (G); Porto, v 1918, *Frère Sennen* 4310 (MPU); Porto, v 1918, *G. Sampaio* 4310 (L); Porto, vii 1939, *J. Castro* (MAF); Porto, vii 1939, *J. Castro* 157/36 (VAL). **Viano do Castelo**: Val de Rosal, iv/v 1878, *J. Daveau* (K).

SPAIN. s. l. Pinal de la Plata, 7 iii/11 iv 1849, *E. Bourgeau* 120 (K). **Almeria**: Finana, Cerrom de la Cruz, 17 vi 1988, *B. Valdes et al.* 630 (RNG). **Andalusia**: Grazelama, 19 v/24 vi 1890, *Willkomm* 10 (BR); Sierra de Ronda, 1889, *Lange* 469 (BR). **Caceres**: Hervas, 18 iv 2009, *F. Cabezas & A. Quintanar* 1175 (MA). **Cadiz**: Sanlucan de Barrameda, iv 1965, *J. Borja* (RNG); Zahara, Subida al Puerto de las Palomas, 23 iv 1992, *J. Güemes* (VAL). **Cantabria**: De Valdeprado a Pesaguero, 30 iv 1990, *M. Herrera Gallastegui* 15199 (VAL). **Granada**: Las Alpujarras, 1 v 1990, *S.L. Jury et al.* 116 (RNG); Portugos, 6 iv 2001, *D. Sanchez-Mata et al.* (MAF). **Huelva**: Almonte, 12 iii 1978, *S. Castroviejo et al.* (K, L, MAF); Almonte, Parque Nacional de Donana, 12 iii 1978, *S. Castroviejo et al.* 9345 (BR, RNG); Between Hinojos and Almonte, 1 iv 1969, *V.H. Heywood, D.M. Moore et al.* 475 (RNG); Camping Dariana, 17 iii 1983, *A. Aguilella & P. Garcia-Fayon* (VAL). **Malaga**: Between Torrox and Cortijo de Benamay, 12 iv 1973, *Bisby, Nicholls & Polhill* 68 (RNG); El Madronal, mountains behind San Pedro on road to Ronda, 8 iv 1973, *Bisby, Nicholls & Polhill* 63 (RNG); Entre Monda y Ojen, 7 v 1973, *G. Lopez & E. Valdes-Bermejo* (VAL); Marbella to Ojen, 10 iv 1973, *Bisby, Nicholls & Polhill* 58 (RNG); Ojen, 18 iv 2003, *V.J. Aran & M.J. Toha* 5446 (VAL); Ronda, 1975, *J.W. Carr* (RNG); Ronda district, 8 v 1924, *E. Ellman & C. Hubbard* 263 (K); Serrania de Ronda, 30 v 1895, *Porta & Rigo* 111 (G); Serrania de Ronda, 9 iv 1973, *Bisby, Nicholls & Polhill* 50 (RNG); Sierra de Ronda, 28 vi/30 vii 1889, *E. Reverchon* 469 (K); Sierra Ojen, 9 iv 1973, *Bisby, Nicholls & Polhill* 61 (RNG); Sierra de Ojen, 29 iv 1977, *M. Ladero et al.* (VAL). **Melilla**: Gurugu, *Sennen & Mauricio* (MA); Gurugu, 10 iv 1929, *Font i Quer* 245 (G); Gurugu, 22 iii 1956, *Ruiz de la Torre* (MA); Gurugu, Taquigriat, 16 vi 1931, *Sennen & Mauricio* 7818 (G). **Navarra**: Artikutza, 5 vii 1983, *I. Aizpuru & P. Catalan* 83890 (VAL); Basaburua, 14 viii 2002, *J. Peralta & U. Donezar* 691 (SALA); Carretera entre el Collado de Aritxulegi y Lesaka, *Loidi et al.* 18059 (RNG); Ezkurra, 10 vii 1989, *I. Aizpuru & P. Catalan* 14162 (RNG, SALA, VAL). **Salamanca**: Pr. Carpio de Azaba, 27 v 1957, *S. Lainz* (K). **Vizcaya**: Miravalles, 12 iii 1913, *Hno. Elias* 1634 (LY).

9b. Cytisus grandiflorus subsp. **maurus** (Humbert & Maire) Auvray, **comb. nov.**

– *Cytisus maurus* Humbert & Maire, Mém. Soc. Sci. Nat. Maroc 15: 21 (1926).

– *Sarothamnus maurus* (Humbert & Maire) Raynaud, Bull. Soc. Bot. 121: 360

(1975). – *Cytisus scoparius* subsp. *maurus* (Humbert & Maire) Talavera, Anales Jard. Bot. Madrid 57: 212 (1999). – Type: [Morocco] In Atlantis Medii montibus supra urbem Taza: Daya Chiker, 17 vi 1925, *Maire* s.n. (holo MPU!). **Fig. 9.**

Short adpressed hairs on young twigs, older twigs glabrous. *Leaves* petiolate when trifoliolate, usually trifoliolate on young twigs, unifoliolate on older twigs; petiole up to 10 mm long; on young twigs, leaflets 6–10 × 3–5 mm, elliptic and more rarely obovate, sericeous; on older twigs, leaflets 6–10 × 3–5 mm, obovate, with fewer hairs. *Standard* 18–22 mm long, 16–22 mm wide. *Wings* as long as the keel petals. *Fruit* 25–40 × 7–10 mm, completely glabrous.

Distribution. Morocco (Taza-Al Hoceima-Taounate).

Proposed IUCN conservation assessment. Endangered (EN B2ab(v)). *Cytisus grandiflorus* subsp. *maurus* has been listed in only five different localities (Fougrach *et al.*, 2007). It is heavily grazed by wild animals (especially goats) which eat new shoots and fruits, causing a continuing decline in the number of mature individuals.

Additional specimens examined. Morocco. **Taza-Al Hoceima-Taounate, Djebel Tazzeka**: 2 vii 1938, *L. Faurel* (MPU); 9 vi 1961, *De Wilde & Dorgelo* 2915 (L); 14 vi 1980, *A. Charpin et al.* 963 (G); 24 v 1981, *J. Fernandez Casas et al.* 5020 (RNG); 16 v 1989, *B. Valdes et al.* (E); 16 vi 1992, *Optima Iter V* 1289 (RNG); 14 vi 1993, *J.M. Montserrat* 3695/5 (RNG); 1 xi 1993,

Fig. 9. Distribution of *Cytisus grandiflorus* (Brot.) DC. subsp. *maurus* (Humbert & Maire) Auvray (area in grey).

P. Gareia et al. (E); 24 iv 1995, *S.L. Jury et al.* 16836 (RNG); 9 vii 2007, *S. Jury* & *R. Shkwa* 21006 (MA); Bou Guerba, 31 v 1929, *E. Jahandiez* 349 (E); Entre Daya Chiken et Bab-bou-Idir, 18 v 1974, *J. Mathez* 7124 (MPU).

10. Cytisus scoparius (L.) Link, Enum. Hort. Berol. Alt. 2: 241 (1822). – *Spartium scoparium* L., Sp. Pl. 2: 709 (1753). – *Genista scoparia* (L.) Lam., Fl. Franç. 3: 619 (1779). – *Genista vulgaris* Gray, Nat. Arr. Brit. Pl. 2: 595 (1821), nom. illeg. – *Corema scoparium* (L.) Bercht. & J.Presl., Prir. Rostlin Aneb. Rostl. 3, 9: 88 (1830–1835). – *Sarothamnus vulgaris* Wimm., Fl. Schles. 278 (1832), nom. illeg. – *Sarothamnus scoparius* (L.) W.D.J.Koch, Syn. Fl. Germ. Helv. 152 (1835). – *Sarothamnus vulgaris* var. *scoparius* (L.) Timbal-Lagrave, Bull. Soc. Sci. Phys. Nat. Toulouse 2: 485 (1874). – *Genista scoparia* var. *vulgaris* Rouy, Fl. France 4: 204 (1897), nom. illeg. – *Cytisogenista scoparia* (L.) Rothm., Repert. Spec. Nov. Regni Veg. 49: 55 (1940). – Type: [Italy] *Burser* XXII: 33 (lecto UPS!, designated by Auvray & Malécot, 2011).

Genista hirsuta Moench, Methodus 144 (1794), non *Genista hirsuta* Vahl (1790). – Type: Tab. CCCXIII, Flora Danica 2, 7, Oederi (1767), iconotype.

Spartium angulatum Raf., Précis Decouv. Somiol. 31 (1814). – *Genista angulata* (Raf.) Poir., Encycl. (Lamarck), Suppl. 5: 688 (1817). – Type: [USA] En Maryland, près Annapolis, dans les bois, *Rafinesque* (not seen).

Cytisus glabratus Link, Phys. Beschr. Canar. Ins. 156 (1825). – *Sarothamnus scoparius* var. *glabratus* (Link) Webb & Berthel., Hist., Nat. Iles Canaries (Phytogr.) 3, 2: 59 (1835–1842). – Type: *A. Courant* s.n. Locus typicus: Loco angusto circumsribitur ad aquarum canalem supper oppidum Orotavense, nec alibi occurit. Type not seen.

Sarothamnus bourgaei Boiss., Diagn. Pl. Orient. ser. 2, 2: 6 (1856). – *Sarothamnus scoparius* var. *leiostylos* Willk. in Willk. & Lange, Prodr. Fl. Hispan. 3: 458 (1877). – *Cytisus scoparius* var. *bourgaei* (Boiss.) Briq., Etud. Cytis. Alp. Marit. 146 (1894), nom. illeg. – *Cytisogenista scoparia* var. *leiostylos* (Willk.) Rothm., Repert. Spec. Nov. Regni Veg. 49: 55 (1940). – *Sarothamnus vulgaris* var. *leiostylos* (Willk.) C.Vicioso, Bol. Inst. Forest. Invest. Exp. Madrid 72: 206 (1955). – *Cytisus scoparius* subsp. *bourgaei* (Boiss.) Rivas Mart. et al., Opusc. Pharm. Complut. 2: 107 (1986). – Type: [Portugal] Algarve, Bois à Monchique, 6 vi 1853, *Plantes d'Espagne*, *Bourgeau* 1812 (lecto G!, designated here; isolecto C!, E!, K!, P!).

Sarothamnus oxyphyllus Boiss., Diagn. Pl. Orient. ser. 2, 2: 7 (1856). – *Cytisus scoparius* var. *oxyphyllus* (Boiss.) Briq., Etud. Cytis. Alp. Marit. 147 (1894). – *Cytisogenista scoparia* var. *oxyphylla* (Boiss.) Rothm., Repert. Spec. Nov. Regni Veg. 49: 55 (1940). – Type: [Portugal] Algarve, Bois à Monchique, 9 vi 1853, *Plantes d'Espagne*, *Bourgeau* 1813 (lecto G!, designated here; isolecto E!, K!, P!).

Sarothamnus vulgaris var. *foliosus* Timbal-Lagrave, Bull. Soc. Sci. Phys. Nat. Toulouse 2: 485 (1874). – Type: [France] environs de Gadillac (TLF?, not located).

Sarothamnus vulgaris var. *sericeus* Timbal-Lagrave, Bull. Soc. Sci. Phys. Nat. Toulouse 2: 485 (1874). – Type: [France] bois situés entre Langon et Pujols (TLF?, not located).

Sarothamnus burgalensis Sennen & Elias, Bol. Soc. Iber. Ci. Nat. 26: 85 (1927). – Type: [Spain] Burgos, Sierra Obarenes, montagnes escarpées de Besantes, 23 v 1915, *Plantes d'Espagne*, *Elias* 4331 (holo BC [not seen]; iso JE!, MA!).

Sarothamnus eliasii Sennen, Bol. Soc. Iber. Ci. Nat. 26: 86 (1927). – Type: [Spain] Burgos: Viloria de Rioja, 14 vii 1921, *Plantes d'Espagne*, *Elias* 4332 (holo BC [not seen]; iso G!, JE!, MA!, MPU!, RNG!).

Genista vulgaris Garsault, Desc. Pl. Anim. 180 (1767), nom. inval., opus utique oppressum.

Spartium angulosum Gilib., Fl. Lit. Inch. 2: 79 (1782), nom. inval., opus utique oppressum.

Proposed IUCN conservation assessment. Least Concern (LC), as for most subspecies especially *Cytisus scoparius* subsp. *scoparius*, the most widespread and invasive subspecies.

Key to the subspecies of Cytisus scoparius

1a. Prostrate shrub _____ **10c. Cytisus scoparius** subsp. **maritimus**
1b. Erect shrub _____ 2

2a. Twigs all sub-parallel; keel glabrous __ **10d. Cytisus scoparius** subsp. **reverchonii**
2b. Twigs not all sub-parallel; keel ciliate on the lower margin _____ 3

3a. Fruit villous _____ **10b. Cytisus scoparius** subsp. **insularis**
3b. Fruit ciliate on margin _____ **10a. Cytisus scoparius** subsp. **scoparius**

Taxonomic notes. The infraspecific taxa within *Cytisus scoparius* all have well-delimitated, restricted distributions which rarely overlap with the distribution of the type subspecies. Therefore, we consider the taxa should be considered subspecies and not varieties.

Nomenclatural notes. Wimmer's names: Wimmer always followed the same logical order to describe genera in his *Flora von Schlesien* (Wimmer, 1832). After the name of the genus is its description, followed by the name of each species recognised within the genus. For each species, the name recognised by Wimmer is followed by a synonym or a pre-Linnean name and then its description. For *Sarothamnus vulgaris*, Wimmer cites *Spartium scoparium* as a synonym. The name *Sarothamnus vulgaris* is, therefore, superfluous.

Typification of *Spartium scoparium*: problems over the typification of *Spartium scoparium* have been discussed by Auvray & Malécot (2011). The former lectotype has been superseded in favour of the specimen *Burser* XXII: 33 from the Linnean collection on the grounds of conflict with the protologue (Auvray & Malécot, 2011).

Original material for *Cytisus glabratus*: the protologue mentions A. Courant as the collector of the potential type specimen. A. Courant spent some time in Orotava and

gave his plant collection to De Candolle. However, no specimen has been found in De Candolle's collection (G-DC) or in Link's collection (B).

Typification of *Sarothamnus bourgaei*: Boissier's original herbarium is located in Geneva. We therefore designate the specimen from G as the lectotype as it is the most likely to have been used by Boissier when he described *Sarothamnus bourgaei*.

10a. Cytisus scoparius (L.) Link subsp. **scoparius**

Erect shrub, 1–2 m high. *Twigs* unarmed, with 5 ribs V-shaped in transverse section, well-marked, densely sericeous when young, glabrous or glabrescent when older; ribs deep. *Leaves* petiolate, usually unifoliolate on young twigs, trifoliolate or unifoliolate on older twigs; stipule flat, with 2 ribs; petiole 2–5 mm long; leaflets 3–10 × 2–5 mm, central leaflet generally larger than the others, elliptic to obovate, pubescent with short adpressed hairs. *Pedicel* 6–10 mm long. *Calyx* glabrous; upper lip 4–5.5 mm long; lower lip 5–6.5 mm long; teeth 0.5–1 mm deep. *Corolla* yellow; standard 18–24 mm long, 14.5–20 mm wide, orbicular, recurvate, glabrous; wings 18–24 mm long, longer than the standard, as long as or shorter than the keel petals, 5–9 mm wide, generally elliptic, sometimes oblong, with curved apex, glabrous; keel 18–24 mm long, longer than the standard, 6–9 mm wide, falcate, ciliate on the external margin. *Anthers* 1.4–2.7 mm long. *Style* glabrous or slightly hairy. *Fruit* 20–50 × 7–12 mm, plane, oblong, ciliate on margins, up to 13-seeded. *Seeds* 2–4 × 2–3 mm, ovoid or elliptic.

Illustration in *Genisteas espanolas*, Lam. XLIX: 204 (Vicioso, 1955).

Distribution. Austria, Belgium, Canada (Vancouver Island), Canary Islands, France, Germany, India, Ireland, Italy, Luxembourg, the Netherlands, Poland, Portugal, Sark island, Slovenia, Spain, Switzerland, Ukraine, the United Kingdom, the United States of America. *Cytisus scoparius* subsp. *scoparius* is invasive in North America, Australia, Japan and New Zealand (Williams, 1981; Waterhouse, 1988; Bossard, 1991).

Flowering time. March–May.

Proposed IUCN conservation assessment. Least Concern (LC). This taxon is known from many localities across a wide area and there are no significant threats.

Additional specimens examined. UNKNOWN COUNTRY. v/vi 1857, *Hasskarl* (L); *K. Subramanian* 345 (L); *Lejeune* 732 (P).

AUSTRIA. Rothgraben, vi 1957, *A. Patzak* (E); Vienne, iv/viii 1893, *O. Krebs* (E).

BELGIUM. 5 vi 1969, *H. Schoenmakers* 233 (L).

CANADA. Vancouver Island, 8 v 1875, *Macoun* (K).

CANARY ISLANDS. Ténérife, *De la Péraudière* (P); Ténérife, Cumbre de l'Orotava, iv 1906, *C.-J. Pitard* 522 (L).

FRANCE. **Aisne**: Berlise, 15 v/vi 1889, *B. Riomet* 2828 (MPU). **Alsace**: 1865, *C. Meissner* 1865 (L); Haguenau, 28 v/2 vii 1850, *C. Billot* 529 (MPU). **Bretagne**: Pointe du Raz, 10 viii 1962, *F. Hekker* (L). **Cévennes**: *B. Smythies* 128 (E). **Eure-et-Loir**: Nogent-la-Motron, 29 vii 1884, *A. André* (MPU). **Finisterre**: Gorges du Trevezel, 4 vi 1996, *Santa* (MPU). **Gard**: Piécourt,

15 v 1894, *Aubouy* (MPU). **Gironde**: Cestas, 26 v 1961, *J. Wiebes* 1 (L). **Haute-Vienne**: 26 km from Limoges, 1 vii 1980, *Verdcourt* & *Vilmot-Dear* 5348 (K). **Hérault**: Coulouma, 24 vi 1915, *S. Albaille* (MPU); Gorges d'Héric, 26 v 1965, *A. Charpin* (G); Le Carous, 11 vii 1926, *S. Albaille* 872 (MPU). **Ile-de-France**: Bois de Boulogne, près de Paris, v 1879, *E. Ayasse* (G). **Indre et Loire**: Savonnières, 13 vi 1935, *E. Neyraut* (MPU). **Isère**: Jura de Crémieu, 29 v 1915, *J. Briquet* 1290 (G); Jura de Crémieu, 31 v 1915, *J. Briquet* (G); Ratz, 26 v 1902, *J. Briquet* 3391 (G); Ratz, 9 vi 1920, *J. Briquet* 6094 (G); Ratz, 8 vi 1922, *J. Briquet* 7066 (G); Ratz, 16 vi 1922, *J. Briquet* 7177 (G); Ratz, 17 vi 1922, *J. Briquet* 7227 (G); Uriage, 11 vii 1897, *E. Peyron* (G); Tullins, 25 v 1902, *J. Briquet* 3217 (G); Tullins, 2 vi 1925, *J. Briquet* 10371 (G). **Jura**: Chaîne du Bourget, 1 viii 1922, *J. Briquet* 8062 (G). **Lozère**: 4 vi 1978, *Symoens* 2141 (L). **Pyrénées**: Col de Pau, 25 vi 1966, *O. De Wilde* 11464 (L); Espinal, 18 vi 1964, *N. Sandwith* 6385 (K). **Pyrénées-Orientales**: 25 vii 1934, *D. Wyatt* 226 (K); Canigou, 11 vii 1851, *J. Ball* (E); Environs de Molitz, 28 vii 1876, *A. Guillon* (MPU); Vallée du Toch, *Massot* (MPU). **Saône et Loire**: La Mère Boitier, 1847, *J. Parseval* (P); Motte St Jean, 21 iv 1961, *A. Charpin* (G). **Savoie**: Bourget, 3 vii 1901, *J. Briquet* 1728 (G); Bourget, 4 vii 1901, *J. Briquet* 1843 (G). **Seine-et-Oise**: Maisse, 2 vi 1878, *E. Gaudefroy* 2009 (K, LY, MPU).

GERMANY. Liebenstein, 12 vi 1908, *H. Rottenbach* (L); Reichardtsdorf, vii 1899, *J. Brand* (L).

INDIA. **South India**: Nilgiri forest, 8 ii 1963, *K. Subramanian* 32 (L).

IRELAND. Kerry, Gearhaneen river, 17 vi 1938, *Burtt* 684 (K).

ITALY. Domo d'Ossola, vi/viii 1872, *E. Ayasse* (G); Elba, Monte Capanne, 20 v 1962, *Kramer* & *Westra* 3514 (L); Lac de Côme, 9 vi 1952, *S. Vautier* (G); Valle d'Aosta, Etroubles, 28 vii 1966, *R. Brummitt* 5537 (K).

JAPAN. **Kyushu Island**: Hazozaki, 10 v 1928, *K. Ichikawa* 54 (L).

LUXEMBOURG. Bavigne, 15 vi 1954, *E. Mennega* (L).

NETHERLANDS. 17 vi 1859, *Hasskarl* (L); Leiden, Hortus botanicus, 18 v 1946, *Van Ooststroom* 8344 (L); Posbank, vi 1970, *Lieftink* & *Uyterwaal* (L); Vola di Lugo, 9 viii 1958, *B.K. Boom* 35995 (L); Wageningen, 20 v 1925, *B.K. Boom* 818 (L); Zundert, 15 vi 1955, *B.K. Boom* 29732 (L).

POLAND. Stolp, 1906, *A. Lüderwaldt* 1282 (L); Brzesko, 15 iv 1967, *Frey* 33 (L).

PORTUGAL. Terceira, v 1838, *C. Hochst* (G).

SARK ISLAND. Between Seigneurie and Port à la Jument, 24 vii 1930, *Ballard* 522A (K).

SLOVENIA. Tisnov, 6 vi 1925, *J. Suza* 333 (K).

SPAIN. s. l. 4 vii 1953, *C. Regel* (G). **Asturias**: La Bobia, 17 vii 1956, *E. Carreira* (MA); Somiedo, 20 vii 1958, *E. Guinea* (MA). **Avila**: Casillas, 11 v 1995, *D. Sanchez-Mata et al.* PC9515 (MAF); Hoyos del Espino, 29 vi 1927, *Lacaita* 404/27 (G); La Lastra, 12 vii 2000, *P. Rodriguez-Rojo* (MAF); Navarrevisca-Burgohondo, 31 v 2004, *Sanchez-Mata* & *Enrique* E14 (MAF); Puerto de Casillas, 12 vii 1995, *P. Cubas* & *C. Pardo* 95115 (MAF); San martin del Pimpoller, 17 vii 1983, *Gardner* 2092 (RNG); Sierra de Gredos, *P. Vargas* 173PV99 (MA). **Badajoz**: Cabeza del Buey, 23 v 1971, *J. Fernandez Casas* (MA); Merida, 16 iv 1994, *E. Rico et al.* 93 (MA); Merida, Proserpina pond, 19 iv 1993, *Conti et al.* 93 (RNG). **Burgos**: Covarrubias, 24 v 1998, *M. Rodrigo* (MA); Montorio, 30 vi 1988, *P. Galan* & *G. Lopez* 3236 (MA). **Caceres**: Aliseda, 29 iii 1997, *B. Rocher* & *J. Soler* 6653 (MA); Banos de Montemayor, 14 v 1994, *A. Caballero* (MA); Cuacos de Yuste, 21 iv 2003, *M. Carrasco* (MAF); Guadalupe, 21 vi 1948, *A. Caballero* (MA); Merina, Proserpina pond, 19 iv 1994, *Conti et al.* 632 (RNG); Toril, 3 vi 1993, *G. Aragon* & *J. Castillo* 447 (MA); Villareal de San Carlos, 6 iii 1985, *C. Fabregat* (VAL). **Cantabria**: Monte Tolono, 21 vii 1987, *P. Urrutia* & *J. Alejandre* 1546.86 (MA). **Catalonia**: Sierra de Montseny, 16 iv 1977, *Adema* & *Aleva* 731 (L); Santa Fe, 8 iv 1934, *Kruseman* (L); Val de la Molina, 12 vii 1935, *Frère Sennen* (RNG). **Ciudad Real**: Valdepenas, 27 v 1989, *M. Carrasco et al.* (MAF). **Cordoba**: Valle del Guadalmellato, 4 iv 1980, *M. Arenas* (RNG). **Coruna**: Porto do Son, 20 iv 1992, *J. Amigo* & *M. Romero* (MA). **Gerona**: vi 1932,

Frère Sennen (RNG); 17 iv 1977, *Adema* & *Aleva* 740 (L); 27 iv 1977, *Adema* & *Aleva* 851 (L); 16 v 1986, *E. Castells* & *J. Pedrol* 1229 (MA); 16 v 1986, *E. Castells* & *J. Pedrol* 1240 (MA); Ribes de Freser, 8 vi 1969, *J. Fernandez Casas* 974 (MA). **Granada**: Jerez del Marquesado, Arroyo de Alcazar, 16 vi 1988, *B. Valdes et al.* 413 (RNG); Sierra Nevada above Pinos Genil, 13 iv 1973, *Bisby, Nicholls* & *Polhill* 78 (RNG). **Guadalajara**: La Huerce, 7 vii 1987, *F. Lamata* (MA). **Leon**: Candin, Rio de la Vega, 27 vi 1994, *Crespo et al.* (RNG); El Bierzo, 8 v 1933, *W. Rothmaler* 159 (MA); Embalse del Rio Luna, 1 vii 1983, *E. Bayon et al.* 8655 (MA); Los Barrios de Luna, vi 1964, *H. Sleumer* 4830 (L); San Emiliano, 14 vi 1970, *S. Rivas-Goday et al.* (MAF). **Lugo**: Cervantes, 26 viii 1992, *C. Navarro* & *E. Monasterio* 982 (MA); Piedrafita de Cebreros, 3 viii 1990, *E. Carreira* (MA); Santa de Avicares, v 1986, *F. Puche* & *A. Carain* (VAL); Villardiaz-Fonsagrada, vii 1955, *E. Carreira* (MA). **Madrid**: Aldeo del Fresno, 4 v 1983, *Martinez et al.* (MA); Aldea del Fresno, 18 vi 2007, *J. Calvo* 767 (MA); Barranco Redubia, 2 v 1916, *C. Vicioso* (MA); Between Villalbia and Collado Mediano, 16 iv 1973, *Bisby, Nicholls* & *Polhill* 88 (RNG); Buitrago, 4 vi 1918, *C. Vicioso* (MA); Casillas, 15 vi 1984, *Sanchez-Mata* & *Molina* (MAF); Cercedilla, 8 vii 1992, *Sobrados* & *Risco* (MAF); Manzanares El Real, 9 vi 1988, *A. Izuzquiza et al.* 1518 (MA); Montejo de la Sierra, vii 1954, *A. Rodriguez* (MA); Navacerrada, vii 1911, *Beltran* (MA); Pinède de Chamartin de la Rosa, *Hno. Jeronimo* 3343 (MPU, RNG); Rascafria, Los Batanes, 2 v 1998, *P. Canto* (MAF); Sierra de Guadarrama, vi/vii 1914, *C. Vicioso* (MA); Sierra de Guadarrama, 17 vii 1978, *S. Rivas-Martinez* 14165 (G, MA, MAF, RNG); Sierra de Guadarrama, 22 vi 1999, *Pizarro* & *Navarro* 2455 (MAF); Sierra de Guadarrama, El Ventorrilo, 17 vii 1978, *S. Rivas-Martinez* (RNG); Sierra de Guadarrama, montes de Abantos, 22 vi 1999, *Pizarro* & *Navarro* 19105 (RNG). **Navarra**: 26 v 1997, *J. Loidi et al.* 18059 (G); Basaburua, 14 viii 2002, *J. Peralta* & *U. Donezar* 691 (VAL); Bigüezal, versant nord de la Sierra de Leyre, 9 vi 1985, *L. Villar* 202385 (RNG); Goiqueta, borde de Aliseda, 22 iv 1991, *A. Boccilla Martinez* (VAL). **Palerma**: Ficurra, iii/iv 1902, *Ross* 320 (L). **Salamanca**: Carretera de Montforte, 28 vi 1946, *A. Caballero* (MA). **Segovia**: Pradena, 14 vii 1985, *T. Romero* (MA). **Soria**: Baja del Moncayo, 1 vi 1993, *L. Ceballos* (MA); Puerto de Piqueras, 26 viii 1968, *J. Fernandez Casas* 583 (MA). **Toledo**: Castillo de Bayuela, 3 vi 1996, *S. Rivas-Martinez* & *P. Canto* (MAF); Navalcon, 30 v 2001, *D. Sanchez-Mata* & *Enrique* E4 (MAF). **Valladolid**: Between Viana and Cabezon, v 1981, *Vermeulen-Fernandez* 125 (L); Entre Olmedo y Medina del Campo, 30 vi 1978, *S. Rivas Goday* (MAF); Olmedo, v 1903, *D. Gutierrez* (MA). **Vizcaya**: Bilbao, 1 v 1947, *E. Guinea* 1179 (RNG); Bilbao, v 1947, *E. Guinea* (MA); Biscayes, Miravalles, *Hno. Elias* 1634 (RNG); Laguardia, 22 vi 1985, *J. Alejandre* 1407.85 (MA); Ondarroa, 13 iv 1984, *Loidi* (MAF); Villareal de Alava, 9 vi 1981, *J. Alejandre* 1371.81 (MA). **Zamora**: Sanabria, 19 vi 1995, *Sanchez-Mata* & *Pardo* 9573 (MAF); Sierra Culebra, 19 vi 1995, *Sanchez-Mata* & *Pardo* 95165 (MAF).

SWITZERLAND. s. l. Bois de Fermens, 5 v 1859, *Schleicher* (G); Bois de Fermens, vi/viii 1888, *P. Paiche* (G); Bois de Ferney, 12 vi 1878, *C.-L. Naville* (G); Hottingen, 7 vii 1887, *G. Kohler* (G). **Lausanne**: Gärten von Ouchy, 14 v 1904, *C. Baenitz* (MPU). **Tessin**: Locarno, 22 v 1946, *J. Simonet* (G); Morcote, v 1858, *Mercier* (G); Rovio, 19 vi 1979, *L. Favrot* (G). **Vaud**: Bûchillon, 6 vi 1928, *O. Meylan* 292 (G); Bûchillon, 15 vii 1928, *O. Meylan* 601 (G); Buschillon, 17 vi 1915, *G. Kohler* (G).

UKRAINE. 1868, *A. Andrezejowski* 60 (P).

UNITED KINGDOM. s. l. vi 1929, *S. Pearce* vi 1929 (K). **East Suffolk**: Covehittre, 5 vi 1977, *G. Lewis* 67 (K). **Greater London**: Teddington Lock, 20 vi 1932, *A. Bullock* (MAF). **Surrey**: 13 viii 1882, *Buysman* 652 (L); v 1887, *J. Gamble* 18791 (K); v 1887, *J. Gamble* 30459 (K); Barnes Common, 26 iv 1928, *C. Hubbard* (K); Claygate, 1837, *H. Watson* (L); Pirbright, 1 vi 1958, *H.M. Burkill* 1502 (L); Richmond Park, 13 vii 1927, *W. Turrill* (K); Weycombe, 10 v 1959, *Hutchinson* 170 (L).

UNITED STATES. **California**: Mendocino County, Noyo, 12 vii 1998, *D. Sanchez Mata* (MAF). **Delaware**: St Georges, 19 v 1930, *H. Moldenke* 1259 (K). **New Jersey**: Union County,

10 vii 1952, *H. Moldenke* 21314 (L). **Oregon**: Portland, 25 vi 1920, *G. Fischer* (L); Taft, vii 1931, *H.R. Bennett* 1669 (L). **Washington**: v 1928, *Grant* (L).

Cytisus scoparius subsp. **scoparius** f. **albus** (G.Don) Schneider, Ill. Handb. Laubholzk. 2: 42 (1907). – *Cytisus scoparius* var. *albus* G.Don, Gen. Hist. 2: 155 (1832). – Type: France, Auvergne, entre Clermont et Volvic, *Unknown* s.n. (neo ANG!, designated here).

Genista scoparia var. *albiflora* Tinant, Fl. Luxemb. 358 (1836). – *Spartium scoparium* var. *albiflorum* (Tinant) N.H.F.Desp., Fl. Sarthe 47 (1838). – *Sarothamnus scoparius* [subsp. *vulgaris*] f. *albiflorus* (Tinant) Ulbrich, Natürschätze der Heimat 1: 8 (1920). – *Sarothamnus scoparius* var. *albiflora* (Tinant) A.Chev., Bull. Bot. France 67: 319 (1920). – Type: France, Auvergne, entre Clermont et Volvic, *Unknown* s.n. (neo ANG!, designated here).

Corolla white.

Nomenclatural notes. Typification of *Cytisus scoparius* var. *albus*: in the absence of material attributable to G. Don at BM, or in any other herbaria, we neotypify his name using a specimen with the same phenotype. The neotype bears the word '*alba*' and has paler flowers than the type of *Cytisus scoparius*.

Typification of *Genista scoparia* var. *albiflora*: we were unable to locate Tinant's material with that name. We neotypify the name with the same specimen as for *Cytisus scoparius* var. *albus* to fix the application of the name.

Cytisus scoparius subsp. **scoparius** f. **andreanus** (Puiss.) Zabel, Handb. Laubholzk.-Ben. 263 (1903). – *Genista andreana* Puiss., Rev. Hort. [Paris] 43: 372 (1886). – *Sarothamnus scoparius* var. *andreana* (Puiss.) André, Rev. Hort. [Paris] 43: 373 (1886). – *Spartium scoparium* var. *andreanus* (Puiss.) Düesberg, Gartenflora 40: 9 (1891). – *Cytisus scoparius* var. *andreanus* (Puiss.) L.Dippel, Handb. Laubholzk. 3: 680 (1893). – *Genista scoparia* [var.] *andreana* (Puiss.) Burvenich, Bull. Arboric. Culture Potag. Floric. 1903: 242 (1903). – *Sarothamnus scoparius* subvar. *andreanus* (Puiss.) Asch. & Graebn., Syn. Mitteleur. Fl. 6: 291 (1907). – *Sarothamnus andreanus* (Puiss.) Chevalier, Bull. Soc. Bot. France 67: 318 (1921). – *Sarothamnus scoparius* subsp. *andreanus* (Puiss.) P.Fourn., Quatre Fl. France (ed. 1): 537 (1936). – Type: Plate named *Genista andreana*, Revue horticole, 43: 372 (1886), lectotype designated here.

Wing petals reddish.

Nomenclatural notes. An isonym of *Sarothamnus andreanus* (Puiss.) Chevalier is reported in the literature: *Sarothamnus andreanus* (Puiss.) Bergmans, Vaste Pl. Rotsheesters 487 (1924).

Typification of the name *Genista andreana*: in the absence of herbarium material the plate published with the protologue is the only original material available.

Additional specimens examined. NETHERLANDS. Boskoop, 14 v 1934, *B.K. Boom* 8068 (L); Boskoop, 21 v 1934, *B.K. Boom* 8145 (L); Den Haag, 10 v 1938, *W. Marquardt* 418 (L).

Cytisus scoparius subsp. **scoparius** f. **bicolor** (Massé) Auvray, **comb. et stat. nov.** – *Genista scoparia* var. *bicolor* Massé, Revue Hort. 275 (1850). – *Sarothamnus scoparius* var. *bicolor* (Massé) Stubbe, Plötzlich entstehende Variationen an Tieren und Pflanzen 153 (1963). – Type: France, Ernée, 7, rue Kennedy, Jardin, 13 v 2008, *A. Le Gloanic et al.* 1 (neo INH!, designated here).

Standard white. Rest of the corolla yellow.

Nomenclatural notes. The neotype is the only specimen of *Cytisus scoparius* seen with variegated white and yellow flowers. The specimen was collected in Ernée in 2008, the locus typicus of the form *andreanus*.

Cytisus scoparius subsp. **scoparius** f. **sulphureus** (Goldring) Rehder, Bibliogr. Cult. Trees 361 (1949). – *Cytisus scoparius* var. *sulphureus* Nicholson, Kew Hand-List Trees and Shrubs 1: 117 (1894), nom. nud. – *Cytisus scoparius* var. *sulphureus* Goldring, Gard. Mag. (London) 44: 580 (1901). – *Cytisus scoparius* var. *pallidus* Goldring, Garden 61: 299 (1902), nom. illeg. – Type: [France] Baugé, 1810, *Augustin Nicaise Desvaux* s.n. (neo ANG!, designated here).

Genista scoparia var. *pallescens* Tinant, Fl. Luxemb. 358 (1836). – *Cytisus scoparius* var. *pallescens* (Tinant) Magnel, Bull. Soc. Roy. Bot. Belg. 57: 67 (1924). – Type: [France] Baugé, 1810, *Augustin Nicaise Desvaux* s.n. (neo ANG, designated here).

Spartium scoparium f. *ochroleucum* Dippel, Handb. Laubholzk. 3: 680 (1893), nom. nud. – *Cytisus scoparius* f. *ochroleucus* hort. ex Zabel in Beissner et al., Handb. Laubholzk.-Ben. 263 (1903), nom. nud.

Cytisus scoparius var. *sulfureus* A.F.Schwarz, Abh. Naturh. Ges. Nürn. 18, 2: 160 (1912), nom. illeg., non *Cytisus scoparius* var. *sulphureus* Goldring (1901). – Type: [Germany] Nürnberg, 2 vi 1887, *Schwarz* s.n. (holo NHG!).

Sarothamnus scoparius f. *sulfureus* Ulbrich, Natürschätze der Heimat 1: 8 (1920). – Type: [France] Baugé, 1810, *Augustin Nicaise Desvaux* s.n. (neo ANG!, designated here).

Sarothamnus scoparius var. *sulphureus* A.Chev., Bull. Bot. France 67: 319 (1920). – *Cytisus scoparius* var. *sulphureus vel ochroleucus* M.Vilmorin & Bois, Frutic. Vilmor. 50 (1904), nom. inval. – Type: [France] Baugé, 1810, *Augustin Nicaise Desvaux* s.n. (neo ANG!, designated here).

Corolla pale yellow.

Nomenclatural notes. No original herbarium specimen has been seen for the epithets *sulphureus* Goldring, *sulphureus* A.Chev., *sulfureus* Ulbrich, and *pallescens* Tinant, and no suitable illustration has been found in the protologues. We therefore designate neotypes here. To fix the application of all these names, we choose to use the same neotype for all of them. The neotype bears the description '*Floribus*

subalbis', the Latin for 'flowers nearly white', the best match for 'pale yellow' found in the literature.

10b. Cytisus scoparius subsp. **insularis** (S.Ortiz & I.Pulgar) Auvray, **comb. et stat. nov.** – *Cytisus insularis* S.Ortiz & I.Pulgar, Bot. J. Linn. Soc. 136: 340 (2001). – Type: [Spain] Pontevedra, Ria de Pontevedra, Illa de Ons, 25 v 1998, *Ortiz & Pulgar* 785 (holo SANT; iso BM, K!, MA!, SANT).

Twigs more robust, with 5 ribs V-shaped in transverse section, deeper than in subspecies *scoparius*, short adpressed hairs on young twigs, older twigs glabrous. *Leaves* sessile or with short petiole, unifoliolate; leaflets 6–10 × 2–4 mm, elliptic. Lips of the *calyx* up to 8 mm long. *Standard* ovate; wings 7–9 mm wide; keel 7–9 mm wide, pubescent on the external margin. *Fruit* 30–45 × 10–12 mm, plane, linear-elliptic, ciliate on margins, with short hairs up to 1 mm long, villose on the surface, with tangled hairs up to 3 mm long, 10- to 16-seeded. *Seeds* 3–4 × 2–2.5 mm, ovoid. Illustration in Ortiz *et al.* (2001: 342).

Distribution. Spain (Pontevedra: Ons Island).

IUCN conservation assessment. Endangered (EN) (Ortiz *et al.*, 2004).

Taxonomic notes. *Cytisus scoparius* subsp. *insularis* was recently discovered on Ons Island by Ortiz *et al.* (2001). This taxon has 5 V-ribbed twigs and fruits with ciliate margins, two characters that are highly specific to *Cytisus scoparius* within section *Spartopsis*.

Additional specimens examined. SPAIN. **Pontevedra**: Illa de Ons, 8 viii 1998, *I. Pulgar* 49417 (MA); Illa de Ons, 14 viii 1998, *I. Pulgar* 49419 (MA); Illa de Ons, 16 v 2002, *I. Pulgar* (MA, MAF).

10c. Cytisus scoparius subsp. **maritimus** (Rouy) Heywood, Bot. Soc. Brit. Isles Proc. 3: 176 (1959). – *Genista scoparia* var. *maritimus* Rouy, Fl. France 4: 204 (1897). – *Sarothamnus scoparius* subsp. *maritimus* (Rouy) Ulbrich, Mitt. Deutsch. Dendrol. Ges. 135 (1921). – Type: [France] Sables maritimes ou sur les côteaux du littoral, en France on en Corse (LY?, not located). **Fig. 10.**

Sarothamnus scoparius var. *prostratus* C.Bailey, Proc. Manchester Lit. Soc. 6: 49 (1866). – *Cytisus scoparius* var. *prostratus* (C.Bailey) F.Hand. ex A.B.Jacks., Gard. Chron. ser. 3, 105: 387 (1939). – *Cytisus scoparius* subsp. *prostratus* (C.Bailey) Tutin, Fl. Brit. Isles 416 (1952). – Type: [United Kingdom] Cornwall, The Lizard, 13 vii 1866, *C. Bailey* s.n. (lecto MANCH!, designated by Earl & Rich, 2001).

Prostrate shrub. Short adpressed hairs on young twigs, older twigs glabrous. Leaves usually unifoliolate.

Distribution. France (Bretagne), United Kingdom (Cornwall).

Proposed IUCN conservation assessment. Least Concern (LC). This taxon has a reduced range of distribution but there are no significant threats to its survival.

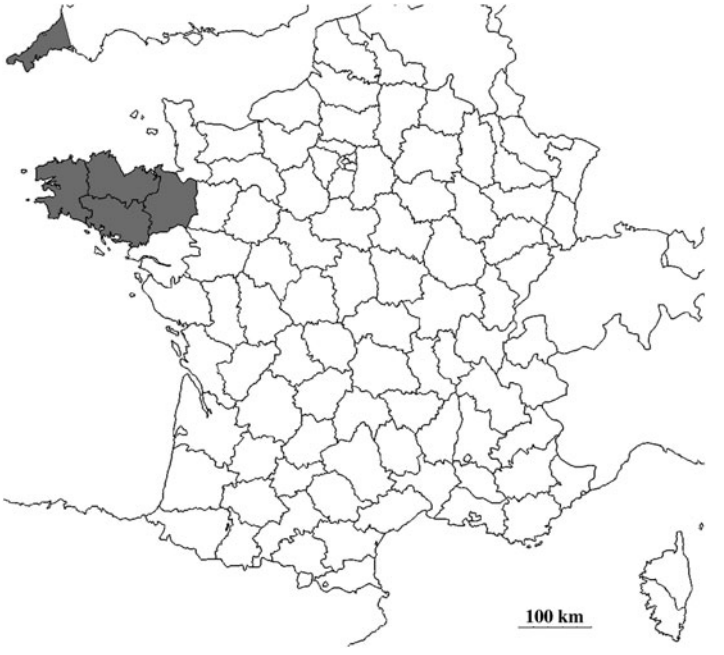

FIG. 10. Distribution of *Cytisus scoparius* (L.) Link subsp. *maritimus* (Rouy) Heywood (area in grey).

Nomenclatural note. Typification of *Genista scoparia* var. *maritima*: Rouy's original material is mostly preserved in LY. However, we could not find original material in Rouy's collection there. In spite of the absence of a type, *Sarothamnus scoparius* var. *prostratus* is included as a synonym of *Cytisus scoparius* subsp. *maritimus* based on the description of the latter, being the only subspecies of *Cytisus scoparius* with a prostrate habit.

Additional specimens examined. UNITED KINGDOM. **Cornwall**: *Cunnack* 306 (MANCH); *Cunnack* (MANCH); Lizard, vi 1873, *E.A. Lomax* (MANCH).

10d. Cytisus scoparius subsp. **reverchonii** (Degen & Hervier) Rivas Goday & Rivas Mart., Trab. Dept. Bot. Fisiol. Veg. Madrid 3: 94 (1971). – *Sarothamnus reverchonii* Degen & Hervier, Magyar Bot. Lapok. 5: 6 (1906). – *Sarothamnus scoparius* var. *reverchonii* (Degen & Hervier) Cuatrecasas, Estudio sobra la Flora y la Vegetación del Macizo de Mágina 324 (1929). – *Cytisus reverchonii* (Degen & Hervier) Bean, Bull. Misc. Inform. Kew 1934: 224 (1934). – *Sarothamnus vulgaris* var. *reverchonii* (Degen & Hervier) C.Vicioso, Bol. Inst. Forest. Invest. Exp. Madrid 72: 206 (1955). – *Sarothamnus scoparius* subsp. *reverchonii* (Degen & Hervier) Rivas Goday & Rivas Mart., Anales Inst. Bot. Cavanilles 25: 170 (1969). – Type: [Spain] Jaen, in aridis prope 'Pozo', vi 1905/vii 1905, *Reverchon* 4620 (lecto BP!, designated here; isolecto E!, G!, LY!, MA!, MPU!, P!). **Fig. 11.**

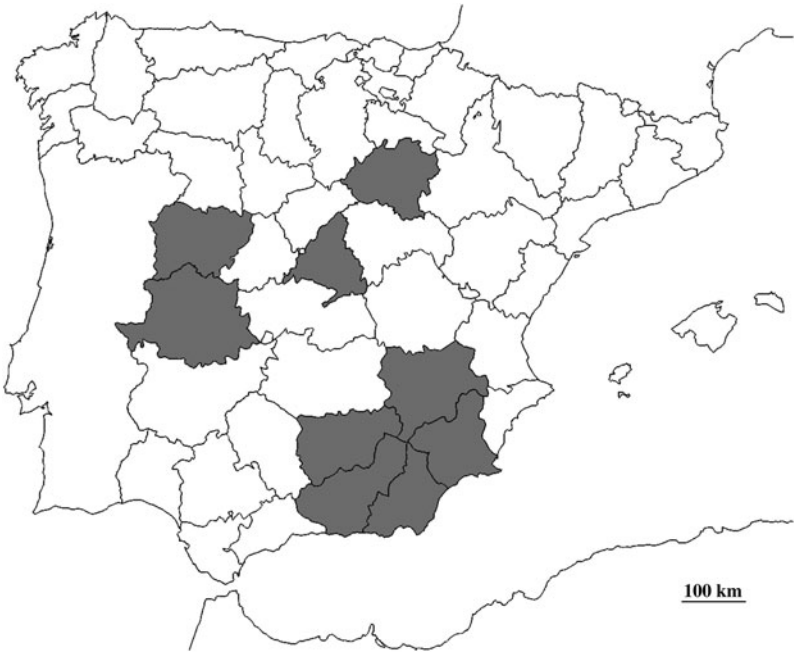

FIG. 11. Distribution of *Cytisus scoparius* (L.) Link subsp. *reverchonii* (Degen & Hervier) Rivas Goday & Rivas Mart. (area in grey).

Erect shrub, 0.5–1 m high. *Twigs* all sub-parallel to the main one and more robust. *Leaves* rare, all unifoliolate; petiole short or non-existent, 0–1 mm long; leaflets 7–15 × 3–5 mm, elliptic, glabrous. *Standard* 18–22 mm long, 13–18 mm wide, sometimes recurvate; wings 5–7 mm wide, oblong or sub-elliptic; keel 5–7 mm wide, glabrous. *Fruit* usually larger than for the type subspecies, 10–12 mm wide, with long hairs on the margins. *Seeds* 3–4 mm long, elliptic.

Distribution. Spain (Albacete, Almeria, Caceres, Granada, Jaen, Madrid, Murcia, Salamanca, Soria).

Proposed IUCN conservation assessment. Least Concern (LC). This taxon is known from many localities across a wide area and there are no significant threats.

Nomenclatural note. Most type specimens from Degen are located in BP and B. Most type specimens from Hervier are located in C, CGE, F and L. No specimen from B, CGE and no specimen of *Reverchon* 4620 from C, F or L was seen. We therefore choose the specimen from BP as the lectotype for *Sarothamnus reverchonii*.

Additional specimens examined. SPAIN. **Albacete**: Alcaraz, 24 v 1993, *S. Castroviejo et al.* 12664 (MA); Casas de Carrasco, 7 vi 1995, *D. Sanchez-Mata et al.* 95166 (MAF); Las Crucetillas, 17 vi 1982, *D. Belmonte et al.* 17 vi 1982 (MAF); Puerto de Crucetillas, 6 vi 1995, *P. Cubas et al.* 9547 (MAF); Vallée de Ripoar, v/vi 1850, *E. Bourgeau* 613 (K); Yeste, 12 iv 1981,

C. Soriano 956 (MA). **Almeria**: Santa de Maria, 29 iv 1995, *J. Soler et al.* 2253 (MA); Sierra de Maria, 18 vi 1934, *Hno. Jeronimo* 9110 (MAF, RNG); Sierra de Maria, v/vii 1899, *E. Reverchon* 1065 (LY); Velez Rubio, 16 v 1991, *F. Garcia* & *S. Silvestre* (G). **Caceres**: El Camocho de Herva, 20 vii 1946, *S. Rivas Goday* (MAF). **Granada**: Casillas de Rio Segura, 14 vii 1971; *J. Molero* & *J. Fernandez Casas* (MA); Castril, 21 v 1978, *A. Charpin et al.* 2435 (MA); El Gallardo, 28 v 1970, *J. Fernandez Casas* (MA); Puebla de Don Fabrique, 16 v 1988, *M.L. Manso et al.* 15204 (MA, MAF, RNG); Sierra de Guillimona, 14 vi 1986, *Bayon et al.* 1364 (MA); Sierra de Guillimona, Barranco de Torilla, 23 vi 1988, *B. Valdes et al.* 1732 (G, RNG); Sierra de Harana, 4 v 1973, *O. Socorro* & *J. Hurtado* (MA); Sierra Maria, 13 vi 1960, *S. Rivas Goday* (MAF). **Jaen**: Above Rio Segura, near La Toba, 27 vi 1955, *V.H. Heywood* 2989 (RNG); Alcaudete, 26 iv 1986, *C. Fernandez* & *E. Gutierrez Urena* JAEN 860309 (G); Calar de Siles, 10 vii 1971, *S. Rivas-Goday et al.* (MAF); De Siles a Orcera, 5 vi 1995, *P. Cubas et al.* 9555 (MAF); Hornos, 4 v 1985, *C. Soriano* 943 (MA); Pontones, 18 iv 1975, *Gonzales Rebollar* & *Soriano* 2933 (MA); Pontones, 6 v 1985, *C. Soriano* 944 (MA); Pontones, 5 vii 1985, *C. Soriano* 945 (MA); Quesada, 16 vii 1975, *C. Soriano* 2930 (MA); Santiago de la Espada, 6 vii 1985, *C. Soriano* 947 (MA); Sierra de Cazorla, 30 vi 1948, *V.H. Heywood* & *P.H. Davis* 405 (E, RNG); Sierra de Cazorla, vii 1951, *V.H. Heywood* 1512 (RNG); Sierra de Cazorla, 2 viii 1951, *V.H. Heywood* 1865 (RNG); Sierra de Cazorla, 25 vii 1971, *J. Fernandez Casas* 25 vii 1971 (MA); Sierra de Cazorla, 14 viii 1976, *C. Campo* & *M. Tortosa* 4236 (MA); Sierra de Cazorla, Barranco de los Valdeazorillos, 26 vii 1951, *V.H. Heywood* 1706 (RNG); Sierra de Segura, vii 1890, *Porta* & *Rigo* 448 (E, K); Siles, 1 v 1985, *C. Soriano* 951 (MA); Siles, 15 v 1986, *C. Soriano* 954 (MA); Subida a Santa de Magina, 15 vi 1982, *Molero Masa et al.* (MA); Torres de Albanchez, 29 iii 1986, *C. Soriano* 946 (MA). **Madrid**: Pedrezuela, 24 v 1985, *E. Monasterio-Huelin* & *A. Galan* (G). **Murcia**: El Gigante, 10 v 1970, *J. Fernandez Casas* (MA); Moratella, 24 iv 1997, *C. Aedo et al.* 1048 (MA); Sierra de Moratella, 15 vii 1974, *A. Charpin* & *J. Fernandez Casas* 10450 (G). **Salamanca**: La Fuente del Lobo de Bejar, 19 viii 1941, *S. Rivas Goday* (MAF). **Soria**: Alto de Piqueras, 22 viii 1998, *Ciruelos* & *Pardo* 9643 (MAF).

11. Cytisus striatus (Hill) Rothm., Feddes Repert. Spec. Nov. Regni Veg. 53: 149 (1944). – *Genista striata* Hill, Veg. Syst. 13: 63, t. 13 App. (1768). – *Cytisus pendulinus* L.f., Suppl. Pl. 328 (1782), nom. illeg. – *Genista pendulina* (L.f.) Lam., Encycl. 2(2): 623 (1788), nom. illeg. – *Cytisus pendulinus* var. *genuinus* Cout., Fl. Portugal 326 (1913), nom. illeg. – *Spartium striatum* (Hill) Samp., Herb. Port. 145 (1913). – *Sarothamnus striatus* (Hill) Samp., Bol. Soc. Brot. Ser. 2: 226 (1935). – Type: Plate 13, Hill, Veg. Syst. 13: 63 (1768), lectotype designated here. **Fig. 12.**

Spartium lusitanicum Mill., Gard. Dict., ed. 8: n°57 (1768). – *Genista lusitanica* (Mill.) Spach, Ann. Sci. Nat., Bot. sér. 3, 3: 155 (1845), nom. illeg., non *Genista lusitanica* L. (1753). – *Sarothamnus lusitanicus* (Mill.) Pau, Mém. Mus. Ci. Nat. Barcelona, sér. Bot. 1: 34 (1922). – *Cytisus lusitanicus* (Mill.) Maire, Bull. Soc. Hist. Nat. Afrique N. 22: 286 (1931), non *Cytisus lusitanicus* Willk. (1893). – Type: [Portugal] Plant on the left-hand side on *Tournefort* 6313 with the mention '*Cytisus lusitanicus*, foliis exiguis, magno flore, siliqua tomentosa' (lecto P!, designated here).

Cytisus patens L. (in Murr.), Syst. Veg., ed. 13: 555 (1774). – *Sarothamnus patens* (L.) Webb, Iter Hispan. 51 (1838). – *Cytisogenista patens* (L.) Rothm., Repert. Spec. Nov. Regni Veg. 49: 55 (1940). – Type: [Sweden] Herb. Linn. n. 912.8 (lecto LINN!, designated by Cristofolini in Turland & Jarvis, 1997).

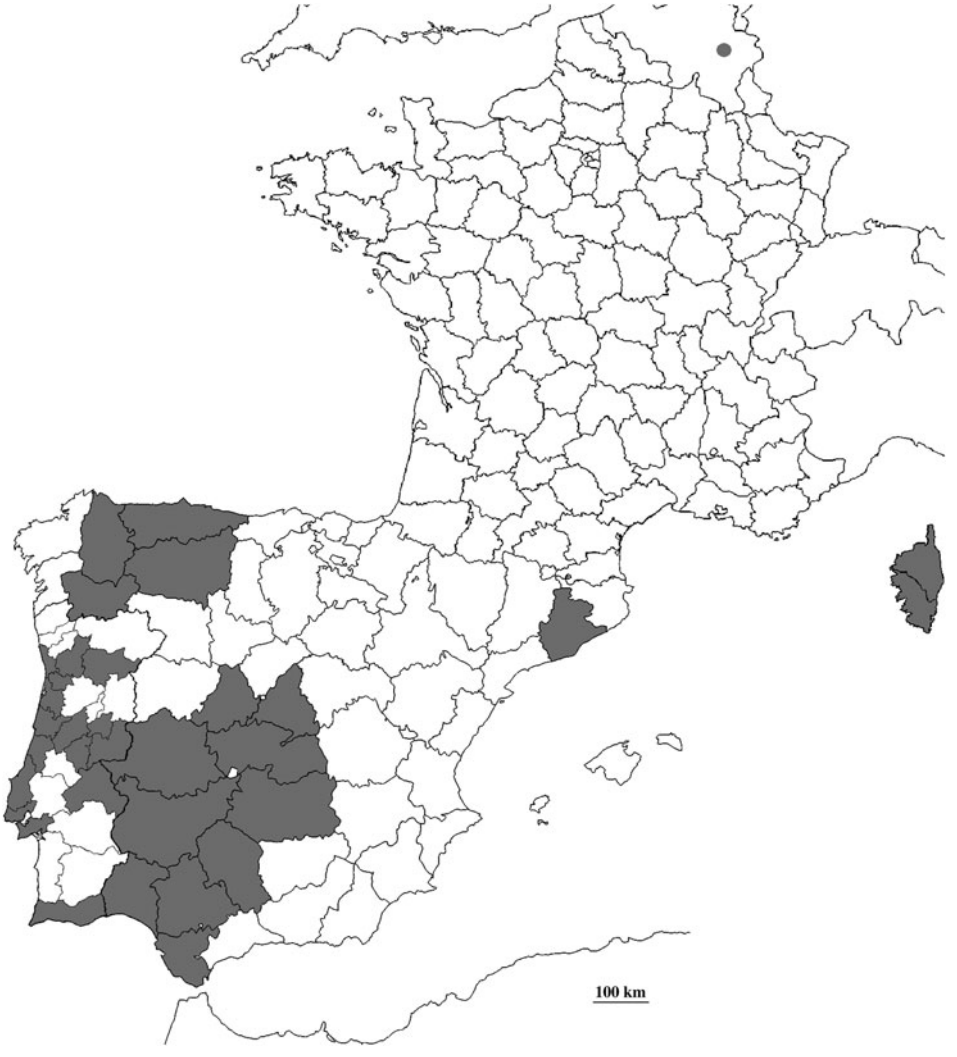

FIG. 12. Distribution of *Cytisus striatus* (Hill) Rothm. subsp. *striatus* (area in grey).

Spartium procerum Willd., Enum. Pl. 2: 743 (1809). – *Cytisus procerus* (Willd.) Link, Enum. Hort. Berol. Alt. 2: 241 (1822). – *Spartium patens* 'raça' *procerum* (Willd.) Samp., Herb. Port. 63 (1913). – *Spartium striatum* 'raça' *procerum* (Willd.) Samp., Herb. Port. 145 (1913). – *Sarothamnus striatus* var. *procerus* (Willd.) C.Vicioso, Anales Jard. Bot. Madrid 6(2): 45 (1946). – *Sarothamnus patens* var. *procerus* (Willd.) C.Vicioso, Bol. Inst. Forest. Invest. Exp. Madrid 72: 215 (1955). – Type: [Portugal] In Lusitania, *Willdenow* s.n. (holo B!).

Sarothamnus eriocarpus Boiss. & Reut., Diagn. Pl. Nov. Hisp. 10 (1842). – *Cytisus boissieri* Briq., Etud. Cytis. Alp. Marit. 148 (1894). – *Cytisus eriocarpus* (Boiss & Reut.)

Rchb. & Beck in Rchb., Icon. Fl. Germ. Helv. 22: 15 (1900–1903), non *Cytisus eriocarpus* Boiss. (1843). – *Cytisus pendulinus* var. *eriocarpus* Cout., Fl. Portugal 326 (1913). – *Cytisogenista eriocarpa* (Boiss. & Reut.) Rothm., Repert. Spec. Nov. Regni Veg. 49: 56 (1940). – *Cytisus striatus* var. *eriocarpus* (Boiss. & Reut.) Heywood, Agron. Lusit. 18: 87 (1956). – *Sarothamnus striatus* subsp. *eriocarpus* (Boiss. & Reut.) Lainz, Aport. Conocim. Fl. Gallega 6: 29 (1968). – *Cytisus striatus* subsp. *eriocarpus* (Boiss. & Reut.) Rivas Mart., Anales Inst. Bot. Cavanilles 34: 540 (1974). – Type: [Spain] Sierra de Toledo supra San Pablo de los montes, vii 1841, *Reuter* s.n. (lecto G!, designated here; isolecto G!, K!).

Sarothamnus welwitschii Boiss. & Reut., Pugill. Pl. Afr. Bor. Hispan. 28 (1852). – *Cytisus welwitschii* (Boiss. & Reut.) Rchb. & Beck in Rchb., Icon. Fl. Germ. Helv. 22: 15 (1900–1903). – *Cytisus pendulinus* var. *welwitschii* (Boiss. & Reut.) Cout., Fl. Portugal 326 (1913). – *Cytisogenista welwitschii* (Boiss. & Reut.) Rothm., Repert. Spec. Nov. Regni Veg. 49: 55 (1940). – *Sarothamnus striatus* var. *welwitschii* (Boiss. & Reut.) C.Vicioso, Anales Jard. Bot. Madrid 6(2): 45 (1946). – *Sarothamnus patens* subvar. *welwitschii* (Boiss. & Reut.) C.Vicioso, Bol. Inst. Forest. Invest. Exp. Madrid 72: 216 (1955). – *Cytisus striatus* var. *welwitschii* (Boiss. & Reut.) Heywood, Agron. Lusit. 18: 88 (1956). – *Cytisus striatus* subsp. *welwitschii* (Boiss. & Reut.) Rivas Mart., Lagascalia 15: 116 (1988). – Type: [Spain] in sylvis montosis inter Algesiras et Alcala de los Gazules, vi 1849, *Boissier & Reuter* s.n. (lecto G!, designated here; isolecto K!).

Sarothamnus welwitschii var. *gallecicus* Willk. in Willk. & Lange, Prodr. Fl. Hispan. 3: 459 (1877). – *Cytisus welwitschii* var. *gallecicus* (Willk.) Briq., Etud. Cytis. Alp. Marit. 149 (1894). – *Sarothamnus striatus* f. *gallecicus* (Willk.) C.Vicioso, Anales Jard. Bot. Madrid 6(2): 45 (1946) [*gallaecicus*]. – *Sarothamnus patens* f. *gallecicus* (Willk.) C.Vicioso, Bol. Inst. Forest. Invest. Exp. Madrid 72: 217 (1955). – Type: [Spain] Puerto de Piedrafita, Gallecio, 23 vii 1852, *Lange* s.n. (lecto C!, designated here).

Cytisus × *canescens* A.Terrisse, Monde Pl. 436: 3 (1989) [pro hybr.: *Cytisus oromediterraneus* × *scoparius*]. – Type: [France] In ora silvae ''des Ares'', prope Quérigut (09); UFM : 31 T DH 2824; altitudo supra mare: ca 1420m; 26 août 1988 (BBF-BOSC, not located).

Nomenclatural notes. Typification of *Spartium lusitanicum*: Miller cites 'Cytiso-Genista Lusitanica, magno flore', a name provided by Tournefort in '*Institutiones Rei Herbariae*'. No original herbarium material from Miller himself has been found. We therefore choose a specimen from Tournefort's collection. Specimen *Tournefort* 6313, matching both the description and the name given in '*Institutiones Rei Herbariae*', is the most suitable.

Typification of *Sarothamnus eriocarpus* and *Sarothamnus welwitschii*: most type specimens from Boissier and Reuter are located in G. We therefore choose the best preserved specimen from G as the lectotype for *Sarothamnus eriocarpus* and for *Sarothamnus welwitschii*.

Typification of *Sarothamnus welwitschii* var. *gallecicus*: a few syntypes are cited in the protologue from amongst which the lectotype chosen here is the only specimen of the original material we could locate.

Taxonomic notes. Sampaio (1913) mentions 'raças' as a rank between 'especies' and 'variedades'. This rank is not recognised by the ICBN (McNeill *et al.*, 2006) but is validly published under Articles 4.3 and 35.3 of the ICBN.

Proposed IUCN conservation assessment. Least Concern (LC), as for both subspecies.

Key to the subspecies of Cytisus striatus

1a. Twigs supple; standard not emarginate _____ **11a. Cytisus striatus** subsp. **striatus**
1b. Twigs robust; standard emarginate ____ **11b. Cytisus striatus** subsp. **megalanthus**

11a. Cytisus striatus (Hill) Rothm. subsp. **striatus**

Erect shrub, 1–3 m high. *Twigs* supple, unarmed, with 8 ribs T-shaped in transverse section, densely sericeous when young, glabrescent when older. *Leaves* petiolate, unifoliolate on the upper part of young twigs, trifoliolate at the base of young twigs and on older twigs; stipule with 2 ribs; petiole 2–10 mm long; leaflets 2–10 × 1–5 mm, linear to elliptic, with pointed apex, pubescent with short adpressed hairs. *Pedicel* 5–10 mm long. *Calyx* ciliate; upper lip 3.5–6 mm long; lower lip 4.5–6 mm long; teeth 0.5–2 mm deep. *Corolla* yellow; standard 18–23 mm long, 15–22 mm wide, orbicular, recurvate, glabrous; wings 18–24 mm long, longer than or as long as the standard, as long as the keel petals, 7–9 mm wide, elliptic, oblong or obovate, rarely falcate, glabrous; keel 18–24 mm long, longer or as long as the standard, 7–9 mm wide, falcate, glabrous or pubescent on the lower margin. *Anthers* 1.2–1.7 mm long. *Style* pilose. *Fruit* 15–30 × 7–12 mm, plane, oblong or ovoid, densely villous, adpressed hairs up to 4.5 mm long covering the whole pod, leaving its shape undistinguishable, 2- to 8-seeded. *Seeds* 3–4 × 2–3 mm, ovoid.

Illustration in *Flora Iberica* 43: 164 (Talavera *et al.*, 1999).

Distribution. Belgium (Liège), France (Corse), Portugal (Braga, Castelo Branco, Coimbra, Faro, Guarda, Leiria, Lisboa, Madeira, Portalegre, Porto, Viano do Castelo), Spain (Algeciras, Asturias, Avila, Badajoz, Barcelona, Caceres, Cadiz, Ciudad Real, Cordoba, Huelva, Leon, Lugo, Madrid, Orense, Sevilla, Toledo). *Cytisus striatus* subsp. *striatus* is invasive in North America (Zouhar, 2005).

Flowering time. March–May.

Proposed IUCN conservation assessment. Least Concern (LC). This taxon is known from many localities across a wide area and there are no significant threats.

Additional specimens examined. BELGIUM. **Liège**: Embourg, 20 vi 1998, *J. Lambinon* 19106 (MAF); Embourg, 20 vi 1998, *J. Lambinon* 98/654 (MA).

FRANCE. **Corse**: Lama, 13 vii 1991, *J. Lambinon* 91/Co/240 (MA); Smapolo, 16 vii 1999, *J. Lambinon* 99/Co/353 (G).

PORTUGAL. s.l. Above Grey, 11 vii 1947, *J. Sinclair* (E); 20 vii 1953, *M. da Silva* 1923 (G). **Braga**: Serra do Gerez, Albergaria, vi 1890, *A. Moller* 969 (MPU). **Castelo Branco**: Covilha, 17 vi 1933, *W. Rothmaler* 13673 (G); Penhas de Saude, 10 vii 1974, *E. Leadlay* & *B. Petty* 347 (E); Serra de Gois, 17 vii 1973, *P. Litzler* 77/1172 (MPU); Serra entre Gois et Pampilhosa, 17 vii 1973, *P. Litzler* 73/1170 (MPU). **Coimbra**: Arganil, 24 vii 1982, *A. Marques* 2277 (MA); Coimbra, 13 v 1982, *A. Marques* 1904 (MA); Choupal, v 1884, *A. Moller* 1746 (G, MPU); Vilafranca, vi 1883, *A. Moller* (LY); Vilafranca, vi 1889, *A. Moller* (G); Vilafranca, 18 v 1949, *J. Matos* (K). **Faro**: 26 iv 1983, *P. Leenhouts* 1676 (L); Monchique, 24 v 1938, *W. Rothmaler* 13340 (G); Sierra de Monchique, 4 viii 1876, *C. Campo* & *M. Tortosa* 4226 (MA). **Guarda**: Entre Guarda et Valhelhas, 16 vii 1983, *E. Bayon et al.* 8674 (MA); Entre Manteigas y Seia, 28 vii 1995, *Ciruelos* & *Pardo* 95139 (MAF); Serra da Estrela, 20 vii 1945, *Fontez et al.* 1186 (BR); Serra da Estrela, 14 vii 1973, *M. Ladero et al.* (MA, MAF); Serra da Estrela, Castelo Branco, 18 vi 1987, *W.O. van der Knaap* & *J.F.N. van Leeuwen* 87-78 (L); Serra da Estrela, Guarda, 18 vi 1987, *W.O. van der Knaap* & *J.F.N. van Leeuwen* 87-90 (L). **Leiria**: Pinhal de Leiria, 15 vii 1973, *P. Litzler* 73/1171 (MPU). **Lisboa**: Cintra, vii 1850, *J. Gay* (K); Cintra, 13 v 1938, *W. Rothmaler* 13149 (G); Entre Cascaes et Cabo de Roca, v 1890, *J. Daveau* (MPU); Serra de Cintra, v 1840, *Anonymous* (E). **Madeira**: Gully, 9 ix 1984, *Davis* 70371 (E). **Portalegre**: Monte Paleiros, 28 iv 1994, *E. Rico et al.* 955 (MA). **Porto**: 27 v 1918, *G. Sampaio* 4311 (G, L). **Viano do Castelo**: Val de Rosal, 1878, *J. Daveau* (P); Val de Rosal, iv/v 1878, *J. Daveau* 268 (G).

SPAIN. s. l. 6 vii 1932, *C. Pau* (MA); 1974/1977, *J.W. Carr* (RNG); Matapuerpen, 13 vi 1954, *E. Guinea* 1534 (RNG). **Algeciras**: 1849, *Boissier* & *Reuter* (E); 21 iv 1926, *H. Lindberg* 704 (B); Sierra de Palma, 26 iv 1873, *R. Fritze* (G); Sierra de Palma, 19 v 1876, *Winkler* (K); Sierra de Palma, 1887, *E. Reverchon* (L); Sierra de Palma, 1887, *Rouy* 71 (E); Sierra de Palma, 17 vii 1887, *E. Reverchon* 71 (E, G, LY, MA, MPU); Sierra de Palma, 20 iv/27 vii 1887, *E. Reverchon* (LY); Sierra de Palma, 22 iv/15 v 1895, *Porta* & *Rigo* 112 (B, E, K). **Asturias**: Sala, vi/vii 1862, *E. Bourgeau* 2632 (E, G). **Avila**: Candeleda, 22 v 1991, *A. Herrero* (MA); Candeleda, 23 iv 2004, *F. Cabezas et al.* 2726 (MA); El Arenal, 12 viii 1986, *M. Luceno* & *P. Vargas* (MA); Gredos, 7 vi 1980, *C. Aedo* (MA); Mijares, 19 iv 1982, *Sanchez-Mata* & *Belmonte* (MAF); Puerto del Pico, viii 1852, *Isern* (MA); Puerto del Pico, 27 vii 1856, *M. Graells* (K); Sierra de Gredos, v/vii 1863, *E. Bourgeau* 2414 (K, MPU); Sierra de Gredos, Puerto del Pico, 6 ix 1975, *H. Ern* 207 (B); Subida a la Sierra de Gredos, 12 vii 1968, *A. Sanudo* (MA). **Badajoz**: Apiorno, 24 v 1994, *C. Cuadrado* & *E. Blanco* 598 (MA). **Barcelona**: Massif de Tibidabo, 6 iv 1926, *Frère Sennen* (L). **Caceres**: Banos de Montemayo, 23 v 1944, *A. Caballero* (MA); El Cano de Canaveral, 13 v 1943, *S. Rivas Goday* (MAF); Garganta de Bejar, 30 vi 1973, *S. Rivas-Goday et al.* (MAF); Guadalupe, 19 vi 1946, *C. Vicioso* (MA); Guadalupe, 17 vi 1948, *A. Caballero* (MA); Guadalupe, 20 v 1949, *A. Caballero* (MA); Guadalupe, 23 v 1949, *A. Caballero* (MA); Guadalupe, 9 iv 1993, *S. Castroviejo* 12642 (MA); Las Hurdes, 4 v 1994, *Conti et al.* 1671 (RNG); Navatrasierra, 12 viii 1965, *M. Ladero* (MAF); Près de Guadalupe, 26 vii 1977, *P. Litzler* 77/250 (MPU); Salorino, 25 iv 1994, *E. Rico et al.* 674 (MA); Salorino, Sierra de san Pedro, Puerto de Elice, 25 iv 1994, *Conti et al.* 674 (RNG); Sierra Hervas, 6 vii 1973, *P. Litzler* 73/1168 (MPU); Subida al Puerto de Perales, 18 vi 1961, *S. Rivas Goday* (MAF); Südrand der Sierra de Gata, 1 v 1967, *H. Scholz* & *P. Hiepko* 821 (B). **Caceres/Salamanca**: Puerto de Perales, 12 vii 1973, *P. Litzler* 73/1229 (MPU). **Cadiz**: 200 m uphill from Facinas, 7 iv 1973, *Bisby, Nicholls* & *Polhill* 27 (RNG); 1 km E of Facinas, 9 iii 1977, *Adey, Bisby* & *Polhill* 45b (RNG); Above Facinas, 15 iii 1977, *Adey* 178 (RNG); Betin, 17 v 1925, *P. Font i Quer* & *E. Gros* 256/21 (B, RNG); Facinas, 7 iv 1974, *F.A. Bisby, K.W. Nicholls* & *J. Grainger* 1314 (RNG); Los Barrios, 8 v 1922, *E. Gros* 200/30 (B, MAF, RNG). **Ciudad Real**: Chorreras, 4 v 1998, *R. Garcia Rio* (MA); Puebla de Don Rodrigo, 30 vi 1991, *F. Castilla* & *C. Martin-Blanco*

662 (MA). **Cordoba**: 1 vi 1979, *M. Diaz et al.* 5040/79 (MA); San Calixto, 19 v 1979, *L. Corral & P. Fernandez* 4578/79 (MA). **Huelva**: Castano del Robledo, 21 v 1982, *A. Charpin et al.* 17053 (G); Costegone, 10 vi 1921, *C. Pau* (MA); Hinojales, 20 v 1943, *C. Vicioso* (MA); Linares de la Sierra, Sierra de Aracena, 20 iv 1994, *Conti et al.* 201 (RNG); Riotinto, 16 viii 2007, *J. Calvo* 1417 (MA); Santa Ana la real, 16 v 2001, *C. Evrard* 12735 (BR); Sierra de San Gines, 20 vi 1942, *C. Vicioso* (MA). **Leon**: Finolledo, 13 vi 1991, *A. Penas et al.* (MA, MAF). **Lugo**: vii 1964, *Lugo, Bellot & Borja* (RNG); 11 vii 1971, *A. Sanudo* (MA); 14 vii 1986, *E. Carreira* (MA); Cervantes, 26 viii 1992, *C. Navarro & E. Monasterio* 983 (MA); Louteiro, vii 1957, *E. Carreira* (MA); Ludro, 13 viii 1929, *Kruseman* (L); Riberas de Lea, 25 vii 1956, *E. Carreira* (MA); Villardiaz-Fonsagrada, 14 vii 1955, *E. Carreira* (G). **Madrid**: *Isern* (MA); Ponton de Oliva, 20 vii 1858, *Isern* (MA); Presa de El Villar, 26 vi 2002, *P. Rodriguez-Rojo* (MAF). **Malaga**: Palmitera, 23 vi 1972, *J. Fernandez Casas* (RNG). **Orense**: Pereiro de Aguiar, 31 viii 1994, *V. Gracia* (MA). **Pontevedra**: 9 viii 1975, *S. Rivas-Goday & B. Valdes* (MAF). **Salamanca**: Entre Cristobal et Colzada de Bejar, 26 vii 1983, *S. Rivas-Martinez et al.* (G, MAF); Sierra de Gata, 1 iv 1984, *D. Sanchez Mata* 33 (K). **Sevilla**: Constantina, Arroyo del Gualbarcar, 5 vi 1984, *I. Lopez, J.A. Serveto & C. Vazquez* (RNG). **Toledo**: Hontannar, 26 v 2003, *V. Aran* 5492 (MAF); Montes de Toledo, vii 1841, *Reuter* (MA); Montes de Toledo, vi 1963, *J. Borja* (MAF); Pantana de Cijara, 25 v 1968, *E. Galiano et al.* (G); San Pablo de los Montes, 13 vi 1924, *P. Font i Quer & E. Gros* 208/30 (B, G, MA, MAF, RNG); Sierra del Castanar, 4 vii 1979, *A. Molina & A. Velasco* (G, MAF); Sierra de Toledo, San Pablo de los Montes, 14 vi 1854, *E. Bourgeau* 2202 (E, G, K, MPU).

11b. Cytisus striatus subsp. **megalanthus** (Pau & Font Quer) Rivas Mart. & Belmonte, Opusc. Bot. Pharm. Complut. 5: 73 (1989). – *Sarothamnus megalanthus* Pau & Font Quer in Font Quer, Iter Marocc. 1927: 289 (1928). – *Cytisus megalanthus* (Pau & Font Quer) Font Quer, Cavanillesia 1: 73 (1928). – Type: [Morocco] Atlante Rhiphaeo, in quercetis juxta Bu-Meziat, 16 vi 1927, *Iter Maroccanum*, *Font Quer* 288 (lecto MPU!, designated here; isolecto BC!, G!, MA!). **Fig. 13.**

Twigs robust, with 8 ribs T-shaped in transverse section, more marked and deeper than the type subspecies. *Standard* emarginate; wings as long as or shorter than the keel petals, generally falcate; keel glabrous.

Distribution. Morocco (Taza-Al Hoceima-Taounate).

Flowering time. May–June.

Proposed IUCN conservation assessment. Least Concern (LC). This taxon is abundant in spite of a reduced range of distribution and there are no significant threats to the survival of this subspecies.

Nomenclatural note. The specimen from MPU is chosen as lectotype due to the presence of both flowers and fruits and its availability online.

Additional specimens examined. Morocco. **Taza-Al Hoceima-Taounate**: 15 km SW of Ketama, 19 vi 1992, *Optima Iter V* 1481 (RNG); 28.1 km before Issaguen on road from Ketama, 8 vi 2007, *S.L. Jury & R. Shkwa* 20985 (RNG); Al Hoceima, Azila, Koudinat Tighighine, 30 vi 1993, *J.A. Mejias & S. Silvestre* (E, RNG); Al Hoceima, cerca de Tleta Ketama, 28 v 1981, *J. Fernandez Casas* 5270 (RNG); Azib de Ketama, 22 vi 1934, *Sennen & Mauricio* 9322 (G, MA, MAF, MPU, VAL); Bab Amegas, 17 vi 1928, *R. Maire* (MPU); Bab Berred,

FIG. 13. Distribution of *Cytisus striatus* (Hill) Rothm. subsp. *megalanthus* (Pau & Font Quer) Rivas Mart. & Belmonte (area in grey).

15 iv 1992, *A. Galan et al.* (MAF); Bab Tasiat, 6 vi 1956, *Ruiz de la Torre* (MA); Djebel Tidiquin, 18 viii 1870, *Davis* 50716 (RNG); Est de Lliano-Amarillo, 6 vi 1955, *Jovet-Ast et al.* 13294 (MPU); Ikauene, entre Taounate et Ketama, 27 v 1994, *M.J. Diez Dapena et al.* 3637/94 (RNG); Imasinen, 13 vi 1929, *R. Maire* (MPU); Ketama et Beni Seddat, 6 vii 1932, *Sennen* & *Mauricio* 8382 (G, MA, MAF, MPU, VAL); Salida de Ketama, 10 vi 1996, *M.A. Mateos* & *J.M. Montserrat* 5776/3 (RNG); Tidighin, 14 vi 1929, *R. Maire* (MPU).

Cultivated F1 hybrid of section Spartopsis

12. Cytisus × **dallimorei** Rolfe, Gard. Chron. ser. 3, 47: 397 (1910). – Type: [United Kingdom] Royal Botanic Gardens, Kew, 14 v 1912, *Bean* s.n. (neo K!, designated here).

Origin: *Cytisus scoparius* f. *andreanus* × *Cytisus multiflorus* (Steffen, 1929; Malécot *et al.*, 2009). *Cytisus* × *dallimorei* differs from *C. scoparius* f. *andreanus* by smaller, pink and purple flowers with obovate standard petals and sub-elliptic wings.

iii. Cytisus sect. **Verzinum** (Raf.) Talavera, Anales Jard. Bot. Madrid 57: 214 (1999). – *Verzinum* Raf., Sylva Tellur. 23 (1838). – *Cytisus* [sect. *Sarothamnus*] subsect. *Verzinum* (Raf.) Briq., Etud. Cytis. Alp. Marit. 149 (1894). – *Sarothamnus* sect.

Verzinum (Raf.) Asch. & Graebn., Syn. Mitteleur. Fl. 6, 2: 289 (1907). – Type: *Cytisus arboreus* (Desf.) DC., designated by Talavera & Salgueiro (1999).

Erect or ascending shrubs. *Twigs* alternate, with 8–13 ribs T-shaped in transverse section, pubescent or sericeous when young, glabrescent when older. *Leaves* stipulate, petiolate or sessile, generally trifoliolate; stipules with 2 or 3 ribs; leaflets obovate with apex usually truncate and principal venation deeply sunken. *Flowers* 1–2 in axillary clusters. *Calyx* campanulate, divided into two lips, ciliate. *Corolla* yellow; standard orbicular, emarginate, glabrous; wings longer than or as long as the standard, elliptic, oblong or obovate, with curved apex, glabrous; keel petals longer than or as long as the standard, obovate, glabrous or pubescent on the lower margin. *Stamens* 10. *Style* curved inside the keel, glabrous or pubescent. *Fruit* plane, oblong to curved, 1- to 9-seeded. *Seeds* ovoid, with large strophiole.

Key to the species

1a. Twigs unarmed, with 8 ribs; leaves petiolate; stipule with 2 ribs _____ **13. Cytisus arboreus**

1b. Apex of the twigs slightly spiky, twigs with 10–13 ribs; leaves sessile or subsessile; stipule with 3 ribs _____ **14. Cytisus malacitanus**

13. Cytisus arboreus (Desf.) DC., Prodr. 2: 154 (1825). – *Spartium arboreum* Desf., Fl. Atlant. 2: 131, t. 177 (1798). – *Genista arborea* (Desf.) Poir. in Lamarck, Encycl. Suppl. 2: 719 (1812). – *Verzinum arboreum* (Desf.) Raf., Sylva Tellur. 23 (1838). – *Sarothamnus arboreus* (Desf.) Boiss., Voy. Bot. Espagne 2: 137 (1845). – *Sarothamnus arboreus* var. *normalis* Maire, Fl. Afrique N. 17: 296 (1941), nom. inval. – *Cytisus arboreus* subsp. *eu-arboreus* Maire, Catal. Pl. Maroc. 2: 364 (1932), nom. inval. – Type: [Algeria] *Schaw* 91 (René L. Desfontaines' collection) (holo P!). **Fig. 14.**

Sarothamnus baeticus Webb, Iter Hisp. 52 (1838). – *Cytisus baeticus* (Webb) Steud., Nomencl. Bot. ed. 2, 1: 477 (1840). – *Cytisus arboreus* subsp. *baeticus* (Webb) Maire, Mém. Soc. Sci. Nat. Maroc 7: 171 (1924). – *Sarothamnus arboreus* subsp. *baeticus* (Webb) C.Vicioso, Bol. Inst. Forest. Invest. Exp. Madrid 72: 222 (1955). – Type: [Spain] In montosis prope Alcala, *Webb* s.n. (holo FI!).

Sarothamnus gaditanus Boiss. & Reut., Diagn. Pl. Nov. Hisp. 10 (1842). – Type: [Spain] Cadix, *Monnard* 957 (lecto G!, designated here).

Sarothamnus catalaunicus Webb, Ann. Sci. Nat. Bot. ser. 3, 9: 63 (1848). – *Cytisus catalaunicus* (Webb) Briq., Etud. Cytis. Alp. Marit. 149 (1894). – *Genista catalaunica* (Webb) Rouy, Fl. France 4: 205 (1897). – *Cytisus malacitanus* subsp. *catalaunicus* (Webb) Heywood, Feddes Repert. 79: 22 (1968). – *Cytisus arboreus* subsp. *catalaunicus* (Webb) Maire, Pl. Marocc. Nov. 2: 2 (1929). – *Cytisus arboreus* [subsp. *catalaunicus* Maire] var. *catalaunicus*, Cat. Pl. Maroc 2: 365 (1932). – *Cytisogenista catalaunica* (Webb) Rothm., Repert. Spec. Nov. Regni Veg. 49: 56 (1940). – *Sarothamnus arboreus* subsp. *catalaunicus* (Webb) C.Vicioso, Bol. Inst. Forest.

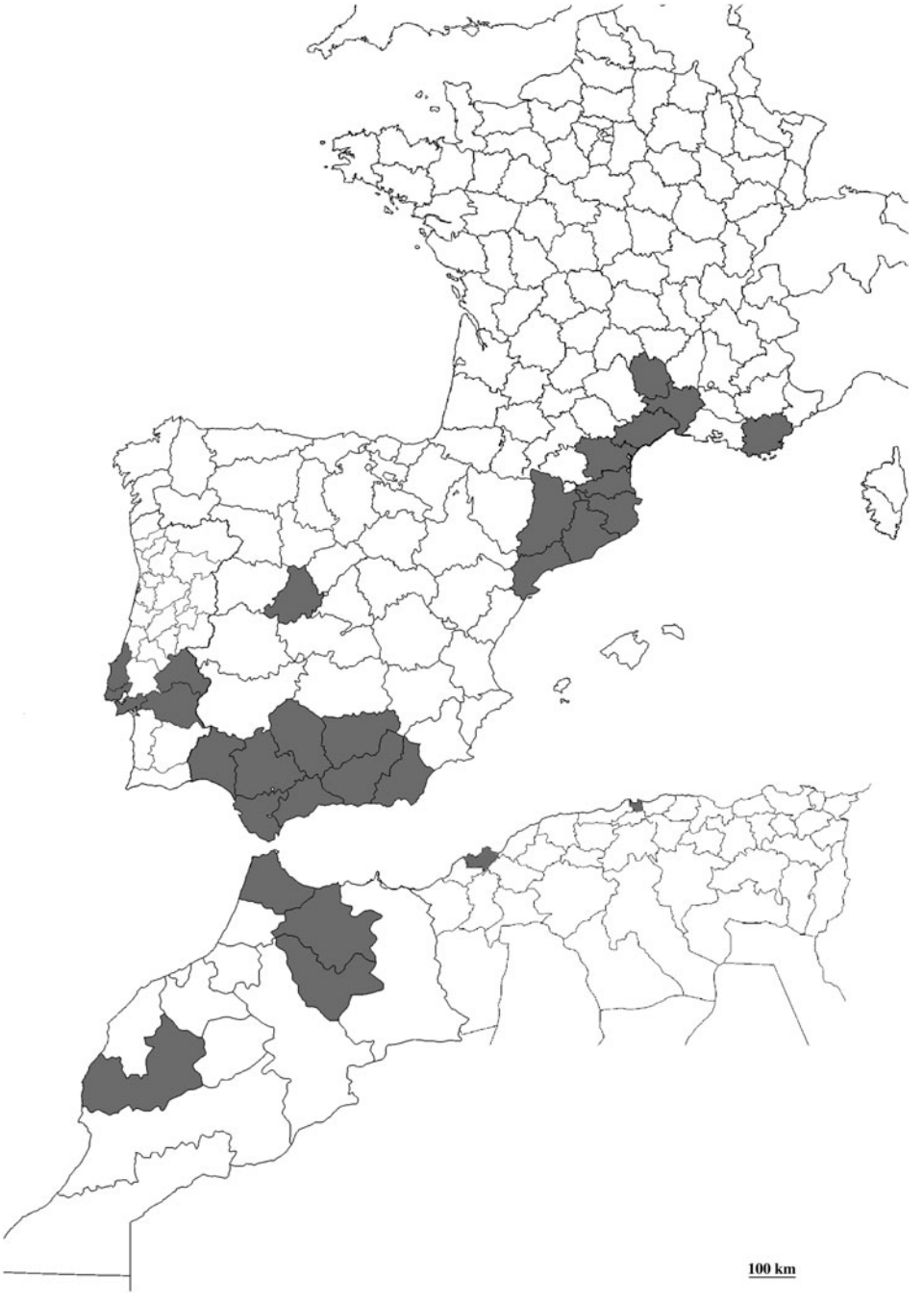

FIG. 14. Distribution of *Cytisus arboreus* (Desf.) DC. (area in grey).

Invest. Exp. Madrid 72: 218 (1955). – Type: [Spain] Forêt de Racasens, près St Clément, 28 v 1847, *Bourgeau*, *Pyrénées Espagnoles* 743 (lecto K!, designated here; isolecto G!).

Sarothamnus carlierus Companyo, Hist. Nat. Dep. Pyr. Règn. Vég. 2: 165 (1864). – Type: [France] Pyrénées-Orientales, Banyuls-sur-Mer, le long de la rivière, 1 iii 1852/1 v 1852, *Penchinat* 1432 (holo BC [not seen]; iso L!, MPU!).

Cytisus baeticus var. *macranthus* Ball, Spicil. Fl. Marocc. 402 (1878). – *Cytisus arboreus* subsp. *macranthus* (Ball) Maire, Fl. Afrique N. 17: 298 (1941). – Type: [Morocco] in clivo septentrionali montis Djebel Kebir legi florentem mense Aprili (holo K?, not seen; iso MPU).

Cytisus arboreus var. *transiens* Maire, Bull. Soc. Hist. Nat. Afrique N. 19: 82 (1928). – *Cytisus arboreus* subsp. *transiens* (Maire) Maire, Fl. Afrique N. 17: 297 (1987). – *Cytisus transiens* (Maire) Talavera, Anales Jard. Bot. Madrid 57(1): 215 (1999). – Type: [Morocco] Christian, iv 1927, *Jahandiez & Weiller* 38.27 (lecto MPU!, designated here).

Cytisus arboreus var. *leiocladus* Maire, Bull. Hist. Nat. Afrique N. 19: 38 (1928). – Type: [Morocco] Moyen Atlas, Djebel Taralft à Mrirt, 25 iii 1915, *Dr Nain* s.n. (lecto MPU!, designated here).

Cytisus arboreus var. *africanus* Pau & Font Quer, Iter Marocc. 286 (1928). – Type: [Morocco] In quercetis, versus collem Ferrah dictum, prope Targuist, 29 vi 1927, *Iter maroccanum*, *Font Quer* 286 (lecto BC!, designated here; isolecto G!, MA!, MPU!).

Cytisus arboreus var. *tetuanensis* Pau, Iter Marocc. 180 (1928). – Type: [Morocco] In quercetis suberis vallis Lau, 12 v 1928, *Iter maroccanum*, *Font Quer* 180 (lecto MA!, designated here; isolecto BC!, MPU!).

Cytisus baeticus f. *emarginatus* Font Quer, Iter Marocc. 310 (1930), nom. in sched. – Based on: In declivibus, umbrosis montis Beni Hasmar, 14 iii 1930, *Iter maroccanum*, *Font Quer* 310 (BC!, MA!, MPU!).

Cytisus arboreus [subsp. *catalaunicus*] var. *intermedius* Maire in Emb. & Maire, Pl. Marocc. Nov. 2: 2 (1929). – *Sarothamnus arboreus* var. *intermedius* (Maire) C.Vicioso, Bol. Inst. Forest. Invest. Exp. Madrid 72: 222 (1955). – Type: [Morocco] In Atlantis Medii montibus: in valle amnis Zloul prope Ahermoumou, 17 vi 1927, *Maire* s.n. (holo MPU!).

Cytisus arboreus var. *haplotrichus* Maire, Bull. Hist. Nat. Afrique N. 22: 39 (1931). – Type: [Morocco] Grand Atlas, Ourika, broussailles sur les grès et les schistes entre Asguine et Arbalou, 8 vii 1921, *Maire* s.n. (lecto MPU!, designated here).

Cytisus arboreus [subsp. *catalaunicus*] var. *genuinus* Emb. & Maire, Pl. Marocc. Nov. 2: 2 (1929), nom. illeg. – *Cytisus arboreus* [subsp. *catalaunicus*] var. *eu-catalaunicus* Maire, Cat. Pl. Maroc 2: 365 (1932), nom. illeg. – Based on: Montagnes de Taza, gorges de l'Oued taza, 22 iii 1923, *Maire* s.n. (MPU!).

Cytisus baeticus f. *melillensis* Sennen, Diagn. Nouv. 154 (1936). – Type: [Spain] Melilla, Gurugu, 19 v 1932, *Sennen & Mauricio* 8403 (lecto G!, designated here; isolecto MA!, MAF!, MPU!).

Cytisus arboreus var. *extravagans* Font Quer, Mem. Acad. Cienc. Barcelona 25: 14 (1936). – Type: [Morocco] In declivibus dumosis Dj. Sidi Tual, 16 iv 1935, *Font Quer* s.n. (holo BC!).

Cytisus arboreus var. *leiocarpus* Maire, Bull. Hist. Nat. Afrique N. 32: 208 (1941). – Type: [Morocco] Moyen Atlas, Aït Issehaq, terrains argileux des montagnes, ii 1941, *Ollivier* 538 (lecto MPU!, designated here).

Erect shrub, 1–3 m high. *Twigs* unarmed, with (7–)8 ribs T-shaped in transverse section, densely sericeous when young, glabrescent when older. *Leaves* petiolate, trifoliolate; stipule with 2 ribs; petiole 5–10 mm long; leaflets 4–20 × 4–10 mm, generally obovate, rarely elliptic, with apex usually truncate, glabrous to sericeous. *Pedicel* 5–10 mm long. *Calyx* ciliate; upper lip 3–4.5 mm long; lower lip 3–5.5 mm long; teeth 0.5–2 mm deep. *Corolla* yellow; standard 14–20 mm long, 5–12 mm wide, orbicular, emarginate, glabrous; wings 14–21 mm long, longer or as long as the standard, as long as the keel petals, 5–9 mm wide, elliptic, oblong or obovate, with curved apex, glabrous; keel 14–21 mm long, longer or as long as the standard, 7–10 mm wide, obovate, mostly glabrous but pubescent on the lower margin. *Anthers* 1.2–1.7 mm long. *Style* glabrous or slightly hairy. *Fruit* 22–50 × 4–10 mm, plane, oblong to curved, glabrous to sericeous, 3- to 9-seeded. *Seeds* 3–4 × 2–3 mm.

Illustrations in *Genisteas espanolas*, Lam. LIII: 220 (Vicioso, 1955) and in *Flora Iberica* 45: 169 (Talavera *et al.*, 1999).

Distribution. Algeria (Alger, Oran), France (Pyrénées-Orientales, Roussillon, Var), Morocco (Grand Casablanca, Marrakech-Tensift-Al Haouz, Meknès-Tafilatet, Rabat-Salé-Zemmour-Zaer, Sous-Massa-Drâa, Tadla-Azilal, Tanger-Tétouan, Taza-Al Hoceima-Taounate), Portugal (Beja, Evora, Lisboa, Setubal), Spain (Almeria, Andalusia, Avila, Barcelona, Cadiz, Catalonia, Cordoba, Gaditana, Gerona, Malacitana, Malaga, Melilla, Sevilla).

Flowering time. March–May.

Proposed IUCN conservation assessment. Least Concern (LC). This taxon is known from many localities across a wide area and there are no significant threats.

Taxonomic notes. Cytisus arboreus has previously been subdivided into many subspecies and varieties which are here considered synonyms. Recent work has based the division of *Cytisus arboreus* on the length and shape of the hairs on the fruits and the hairiness of the twigs (Maire, 1987; Talavera *et al.*, 1999; Tahiri & Ouyahya, 2007). However, based on herbarium studies, it would appear that those characters are highly dependent on the climate and the maturity of the plant. Fruits tend to lose their hairs at maturity. Twigs also seem to be more pubescent when they are juvenile. These impressions have been confirmed by studies in the field (Joël Mathez, Alain Dobignard, pers. comm.). No other morphological characters distinguish taxa within *Cytisus arboreus*.

Nomenclatural notes. Typification of *Sarothamnus gaditanus*: the protologue cites specimens collected by Monnard and Picard in 'Baetica, provincia Gaditana prope Chiclana'. The specimen *Monnard* 957 from Boissier's collection bears the annotation 'Sarothamnus gaditanus Boiss et Reut.' written by Boissier.

Typification of *Cytisus catalaunicus*: in the absence of material at FI-WEBB, a specimen from K was chosen as lectotype as it bears some handwritten information on the locality and ecology of the plant collected by Bourgeau.

Original material for *Cytisus baeticus* var. *macranthus*: the specimen from MPU comprises just one flower and one fruit.

Typification of *Cytisus arboreus* var. *transiens*: the lectotype chosen best matches the protologue collection location.

Typification of *Cytisus arboreus* var. *leiocladus*: the lectotype chosen perfectly matches the information in the protologue for the collector, place and date of collection ('Hab. In quercetis Atlantis medii: in monte Taralft supra Mrirt, Dr Nain, 1915').

Typification of *Cytisus arboreus* var. *africanus*: the specimen from BC is chosen as most of Pau's type specimens are housed there.

Typification of *Cytisus arboreus* var. *tetuanensis*: the specimen from MA is chosen as lectotype as this is a particularly good specimen.

Typification of *Cytisus arboreus* var. *haplotrichus*: the specimen chosen as lectotype bears Maire's annotation 'v. haplotrichus'.

Typification of *Cytisus arboreus* f. *mellilensis*: the specimen from G is chosen as lectotype due to the quality and quantity of plant material.

Typification of *Cytisus arboreus* var. *leiocarpus*: the material chosen as lectotype matches perfectly the locality and collector mentioned in the protologue and bears Maire's annotation 'v. leiocarpus'.

Additional specimens examined. UNKNOWN COUNTRY. 29 vi 1895, *Cornu* & *Franchet* (P); iv 1886, *H. Duterte* (MPU); *Chiclana et al.* 543 (P).

ALGERIA. s. l. 1850, *de Marsilly* (P); 30 km from Tizi-Ouzou, 29 iv 1976, *D.A.* & *S.J. Sutton* 100 (RNG); Bou Zarea, 9 iii 1867, *J. Moggridge* 231 (K); Le Ghar-Rouban, 3 iii 1935, *A. Faure* (MPU); Sidi-Aïssa, 1 v 1916, *R. Maire* (MPU); Sidi Djilali, 5 v 1916, *R. Maire* (MPU); Sidi Djilali, 24 v 1933, *R. Maire* (MPU). **Alger**: iii 1837, *N. Bové* (G, K); 1841, *G. Munby* (K); ii 1856, *T. Birch Wolfe* (K, P); 1938, *A.W. Trethewy* 50 (K); Chiffah, 20 ii 1881, *Chabert* (LY); Convalle Chifa prope Blidah, 26 i 1856, *J. Ball* (K); Forêt de Baïnem, ii 1912, *J. Battandier* (MPU); Forêt de St Ferdinand, iii/v 1947, *A. Dupuis* & *L. Faurel* 140 (G); Gorges de la Chiffah, 20 ii 1872, *A. Chabert* (G); Gorges de la Chiffah, v 1880, *J. Battandier* (MPU); Gorge de la Chiffa, près Blidah, 16 vii 1854, *Cosson* (MPU); Near Zeralda, iii/v 1947, *Dubuis* & *Faurel* 440 (K); Près Alger, 1871, *Hasskarl* (L); St Eugène, 17 ii/3 v 1863, *Durando* 510 (MPU, P); St Eugène, i/iv 1884, *J. Battandier* & *L. Trabut* 195 (G, L); St Eugène, BouZarea, 9 iii 1867,

E. Paris 231 (MPU); Vallon des Consuls, ii 1881, *C. Allard* 3238 (G, LY, MPU, P). **Oran**: *J. Battandier* (MPU); ii 1859, *T. Birch Wolfe* (K); Bossuet, 17 vi 1930, *A. Faure* (E); Bou Elélis, 24 ii 1907, *A. Faure* (MA); Cassaigne, iv 1887, *J. Battandier* & *L. Trabut* 241 (L, MPU); Forêt de M'Sila, 1937/1939, *A. Faure* (MPU); Forêt de M'Sila, 15 iii 1980, *M. Misset* (G); Forêt de M'Sila, près El Ançor, 11 vii 1930, *A. Faure* (E, VAL); Gharrouban, 23 v 1856, *E. Bourgeau* (G); Les Andalouses, 23 iii 1911, *A. Faure* (E, L, MPU); Les Trembles, iv/v 1931, *A. Faure* (MAF); Les Trembles, 3 v 1931, *A. Faure* (K); M'Sila, 18 iv 1922, *Ch. D'Alleizette* 4094 (G, MPU); M'Sila, iii/vii 1930, *A. Faure* (G, K); Miserghin, 19 xii 1852, *B. Balansa* 379 (E, G, K, MPU, P); Misserghin, ii 1920, *Ch. D'Alleizette* (MA); Misserghin, 15 ii 1922, *Ch. D'Alleizette* (BR); Montagnes de Lion, 7 iv/8 v 1890, *Doumergue* (MPU); Near Zeralda, 28 v 1939, *R. Maire* (K); Ravin du Lion, 3 v 1927, *Weiller* (MPU); Santa Cruz, 8 iii 1904, *A. Faure* (LY); Zéralda, 1 iii 1925, *R. Maire* 4921 (G, MA, MPU).

FRANCE. **Pyrénées Orientales**: 15 iv 1898, *Frère Sennen* (MPU); Banyuls, 19 iv 1968, *Andr. et al.* 1645 (L); Banyuls, 20 iv 1969, *P. Heukels* 72 (L, P); Banyuls-sur-Mer, iii/v 1850, *Boutigny* & *Penchinat* 530 (G, LY, MPU, P); Banyuls-sur-Mer, 1852, *Dr Penchinat* 1431 (L, MPU); Banyuls-sur-Mer, 5 iv 1882, *Boutigny* 1570 bis (G, LY, MPU); Banyuls-sur-Mer, 27 ii 1883, *Boutigny* 1570 ter (G, LY, MPU); Collioure, 23 iv 1886, *H. Duterte* 1396 (G, LY, MPU); Collioure, 13 iv 1887, *C. Flahaut* (MPU); Coteaux de Régleille, 19 vi 1871, *A. Guillon* (MPU); Forêt de Racasens, 24 v 1849, *E. Bourgeau* (LY); Ille, 15 iii 1891, *Pons-Simon* 607 (G); Molitg, 25 vii 1876, *A. Guillon* 1570 (G, LY, MPU); Molitg, 1897, *Frère Sennen* (MPU); Port Vendre, 1855, *Dr Penchinat* 242 (G, K, L, LY, MA, MPU); Près d'Ille, iv 1891, *Pons-Simon* 3047 (G, LY, MPU); Près d'Ille, iv 1891, *S. Pons* 1396 bis (LY, MPU); Ravin de Banyuls, 15 iv 1949, *J. Terré* 933 (G, K); Réglisse, 18 iv 1871, *A. Guillon* (L); Vallon de Banyuls, 3 iv 1871, *A. Guillon* (MPU). **Roussillon**: Illa de Tet, 30 v 2009, *T. Buira* & *J. Calvo* JC3738 (MA). **Var**: Ile de Porquerolles, 26 v 1890, *L. Legré* (LY).

MOROCCO. s. l. v 1871, *Dr Hooker* (K, P); Aït-Smala, 10 iv 1937, *R. Maire* (MPU); Beni-Bu-Yahi, Djebel Kerker, 14 vi 1933, *Sennen* & *Mauricio* 8734 (G, VAL); Chaouia, 9 iii 1936, *J. Gattefossé* 472b (G, K); Col de Jerada, iv 1992, *J. Martin* 6061 (K); Djebel el Kalaa, 11 v 1928, *Font i Quer* 810871 (RNG); Djebel el Kalaa, 4 vi 1928, *Font i Quer* 810872 (RNG); Djebel Kerker, 22 iv 1934, *Sennen* & *Mauricio* 9321 (MAF); Djebel Zerhoun, 13 iv 1971, *Davis* 51235 (E, RNG); Ezzhilige, 24 iii 1976, *J. Lewalle* 8231 (BR); Gaba-el-Araix, 5 iv 1929, *Font i Quer* 309 (G, MA); Ioundra, 3 iv 1958, *Whiting* & *Richmond* 231 (K); Khatouat, 8 iv 1937, *R. Maire* (MPU); Oulad-Hammou, 28 iii 1974, *Sutton, Miller* & *Russell* 56 (RNG); Tala Mzalla, 12 v 1929, *Font i Quer* 243 (G, MA, MPU); Tesacut, 5 iv 1929, *Font i Quer* 244 (G, MA); Tid-Kid, 21 i 1921, *Font i Quer* 242 (G); Toufliat, 9 iv 1952, *A. Easton* 22 (K); Zaer, sud de Ezzhiligia, 27 i 1967, *Mathez* & *Veilex* (MPU). **Grand Casablanca**: Aït Issehaq, *Ollivier* 538 (MPU). **Marrakech-Tensift-Al Haouz**: 2 iv 1921, *H. Romieux* 1257 (G); Aït Ourin, 6 iv 1972, *Davis* 54067 (E, RNG); Forêt de Ghoujdama, 5 v 1979, *Achal* 79/99 (MA); Forêt de Ghoujdama, 5 v 1979, *F. Damblon* 79/99 (RNG); Near Asni, 14 iv 1969, *Davis* 49389 (E). **Meknès-Tafilatet**: Daïet Achlef, 8 vi 1923, *E. Jahandiez* 475 (G); Kerrouchen, 11 v 1925, *E. Jahandiez* 228 (K). **Rabat-Salé-Zemmour-Zaer**: Mamora, Aïn Jorra, 30 iv 1924, *E. Jahandiez* 242 (E); Oued Kharifla, 20 ii 1977, *J. Lewalle* 8620 (BR); Temara, 12/13 iii 1887, *Grant* (BR, MPU). **Sous-Massa-Drâa**: Djebel Amisten, *Cosson* (MPU); Tiz-n-Test, 31 iii 1972, *D. Bramwell et al.* 516 (K, RNG). **Tadla-Azilal**: Azilal, 21 iii 1923, *E. Jahandiez* 6 (E, MPU); Azilal, 22 iii 1923, *E. Jahandiez* 21 (MA); Azilal, 7 iv 1923, *E. Jahandiez* 105 bis (G, MPU); Beni Mellal, 23 iv 1986, *D. Podlech* 41620 (G); Beni Mellal, 5 iv 1985, *J. Fernandez Casas et al.* 8934 (MA); Ksiba, 9 iv 1937, *R. Maire* (G, MPU); Rif Azila, 27 v 1994, *J. Lambinon* & *G. Van Den Sande* (MA). **Tanger-Tétouan**: *Salzmann* (MPU); v 1849, *Boissier* & *Reuter* (G); iv 1871, *Dr Hooker* (K); iii 1911, *C.-J. Pitard* 655 (G); iv 1911, *C.-J. Pitard* 654 (G); iv 1911, *C.-J. Pitard* 656 (K); 1938, *A.W. Trethewy* 5 (K); Assifane, Taria, 3 v 1995, *M.A. Mateos, E. Ramos* & *J. Villareal* 6149/95 (RNG); E from Charafat, 24 ii 1995, *S.L. Jury*

et al. 16113 (RNG); Entre Bab Taza y Bab Berred, 23 vi 1994, *S. Talavera et al.* 4104/94 (RNG); Djebel Kebir, iii 1911, *C.-J. Pitard* 653 (G); Le Ras Foughal, 4 v 1933, *A. Faure* (L, MA, MPU); Metalza, Djebel Tendri, 27 v 1933, *Sennen & Mauricio* 8735 (MPU, VAL); Subida al Jebel Tassaot, 21 vi 1994, *S. Talavera et al.* 3878/94 (RNG); Talembote, Subida al Djebel Tassaot, 16 iii 1995, *M.A. Mateos et al.* 4756/95 (RNG). **Taza-Al-Hoceima-Taounate**: 28 i 1964, *J. Mathez* 1229 (MPU); 18 km NW of Targuist, 27 ii 1994, *S.L. Jury et al.* 13514 (RNG); Aknoul, 1 iii 1994, *S.L. Jury et al.* 13694 (RNG); Bab Taza, 15 vi 1928, *R. Maire* (MPU); Bab Taza, 18 iv 1974, *F.A. Bisby, K.W. Nicholls & J. Grainger* 1353 (RNG); Bab Taza, 7 vi 1996, *M.A. Mateos & J.M. Montserrat* 5601/4 (RNG); Between Targuist and Beni Hadifa, 30 vi 1993, *M.J. Diaz, M. Etlaftski & B. Valdes* 1153/93 (RNG); Bou Cider, 27 vi 1938, *L. Faurel* (MPU); El Mancha, 4 iii 1964, *J. Mathez* 1315 (MPU); Entre Ketama y El-Jebha, 9 iv 1994, *J.M. Montserrat & B. Valdès* 2861/94 (RNG); Lau, 12 v 1928, *Font i Quer* 180 (G); Oued Laou, 8 vi 1995, *A. Borattynski & A. Romo* 8439/5 (RNG); Rabat, 6 iv 1933, *R. Maire* (MPU); Taza, 22 iii 1923, *R. Maire* (MPU); Tissouka, 14 vi 1928, *R. Maire* (MPU).

PORTUGAL. **Beja**: Odemira, iii 1899, *G. Sampaio* 1580 (G, MA, MPU, P); Odemira, 7 ii 1939, *W. Rothmaler* 14462 (G). **Evora**: Entre Ourique et Garvao, vi/vii 1885, *J. Daveau* 1195 (G, MPU, P); Evora, v 1882, *J. Daveau* 62 (LY, MPU, P); Reguengos, 6 iv 1996, *Sales & Hedge* 96/21 (E); Santiago do Cacem, 25 iii 1981, *L. Grandvaux Barbosa* 13518 (MA); Vendas Novas in Transtagana, 10 iv 1949, *Fernandes & Sousa* 2978 (L). **Lisboa**: Serra da Cintra, v 1840, *Anonymous* (E); Serra da Cintra, vi 1882, *J. Daveau* (LY). **Setubal**: Serra de Grandola, 31 iii 1971, *Davis* 50886 (E).

SPAIN. **Algeciras**: 10 iii 1841, *Anonymous* (K); 1849, *Reuter* (K); vi 1849, *Boissier & Reuter* (G); Sierra de Palma, 2 v/17 vii 1887, *Rouy* 10 (BR); Tarifa, 12 v 1873, *Dr C. Bamps* (BR); Tarifa, 12 v 1914, *Dr C. Bamps* 756-14 (BR). **Almeria**: Sierra de Bacares, *Isern* (MA). **Andalusia**: Grazalema, 10 v/24 vi 1890, *E. Reverchon* 10 (E, LY, MPU, P); Zahara, 31 iii 1975, *J. Harris* 1430 (MA, RNG). **Avila**: Puerto del Pico, 6 v/20 vii 1863, *E. Bourgeau* 2414 (LY); Puerto del Pico, 19 viii 1889, *Rouy* (LY). **Barcelona**: 1910, *Frère Sennen* (L); Est de la Roca, 2 iv 1977, *P. Litzler* 77/181 (MPU); Massif du Tibidabo, 8 vi 1910, *Frère Sennen* (L); Massif du Tibidabo, xii 1910, *Frère Sennen* (L); Massif du Tibidabo, 21 iv 1912, *Frère Sennen* 1380 (E, MA); Massif du Tibidabo, 6 iv 1926, *Frère Sennen* (L); Massif du Tibidabo, 24 v 1926, *Frère Sennen* (L); Massif du Tibidabo, 21 iii 1928, *Frère Sennen* 6550 (MA); Massif du Tibidabo, viii 1930, *Frère Sennen* (RNG); Montealegre, *Isern* (MA); San Feliu de Lobregat, iii 1945, *P. Capell* (VAL); San Pol de Mal, Maresme, 2 iv 1984, *X. Font* (VAL); Serra de Collserola, 29 iii 1975, *A. Hernandez* (MA); St Vincent de Montalt, 14 iii 1989, *J. Llistosella* (VAL); Tiana, 25 iii 1990, *X. Giraldez* (MA); Vers Horta, iv 1916, *Frère Sennen* (MA). **Cadiz**: 1 km NW of Bolonia, 20 iv 1994, *J. Heald* 9 (RNG); 5 km E of Zahara, 6 iv 1974, *F.A. Bisby, K.W. Nicholls & J. Grainger* 1306 (RNG); Alcala de los Gazules, 3 vi 1849, *E. Bourgeau* 119 (E, G, K, LY, MPU); Alcala de los Gazules, 6 vi 1925, *P. Font i Quer & E. Gros* 28/10 (G); Alcala de los Gazules, 3 iv 1986, *G. Mateo* (VAL); Alcornocal del Barranco de Ojen, 23 iv 1976, *M. Ladero et al.* (MA, MAF); Benacoaz, 13 iv 1983, *Aparicio et al.* 7968 (MA); Benalup de Sidonia, 17 iii 1974, *A. Gonzalez & G. Lopez* (MAF, VAL); Bornos, 13 iv 1976, *Borja et al.* (MAF); Cerca de Medinasidonia, 18 xi 1972, *J. Fernandez Casas* (MA); El Bosque, 21 vi 1972, *J. Fernandez Casas* (MA); El Chaparral, San Roque, 26 iv 1922, *E. Gros* 200/30 (MA, MAF, RNG, VAL); Grazalema, vii 1884, *Rouy* (MPU); Los Barrios, 30 iv 1972, *J. Hartado* (MA); Los Barrios, ii 1980, *J. Fernandez Casas* 10335 (G); Los Barrios, 1 xi 1980, *J. Fernandez Casas* 2942 (BR, MA, MAF, RNG); Meala de los Gazules, *E. Bourgeau* (K); Pinal de Puerto Real, 4 iv 1850, *E. Bourgeau* (G); Puerto Real, *Chiclana* (MA); Rio Guadarranque, 22 iv 1967, *H. Merxmüller & F. Oberwinkler* 22737 (G); Sierra del Nino, 23 iv 1976, *S. Castroviejo & E. Valdes-Bermejo* 99 (MA); Ubrique, 30 iv 1983, *Aparicio & Silvestre* (MA); Tarifa, 5 iv 1985, *M. Luceno & P. Vargas* (MA); Vejer de la Frontera, 9 iii 1984, *F. Fernandez Gonzalez et al.*

1141 (MA, VAL). **Catalonia**: Espolla, 1908, *Frère Sennen* 539 (LY, MA, MPU, RNG). **Ceuta**: Sierra de Benzu, 29 v 1957, *Ruiz de la Torre* (MA). **Cordoba**: Hornachuelos, 13 iii 1981, *P. Fernandez & I. Porras* 492/81 (MA); Hornachuelos, 1 vi 1981, *P. Fernandez & I. Porras* 4684/81 (MA). **Gaditana**: 19 iii 1845, *Willkomm* 513 (K); Jimera, 29 v 1985, *Porta & Rigo* 113 (G, K, MA, MPU, P). **Gerona**: Llagostera, 27 iii 1997, *F. Gomez Manzaneque et al.* (MA); Serra de Clara, 29 v 1967, *Colaris* 1746 (L); Tossa, 9 iv 1934, *M. Kruseman* (L); Tossa, 15 vi 1936, *P. Buwalda* 2653 (L). **Granada**: Forrox, *J. Domingo* (G). **Malaga**: 4 km S of Ronda, 3 iv 1978, *Davis* 61512 (E); Around Ronda and Atajate, v 1837, *E. Boissier* (K, L); D'Estepona a Igualija, vi 1896, *Rouy* (LY); Farajan, 8 iv 1931, *L. Ceballos* 60424 (MA); Malaga road, iii 1957, *J. Brinton-Lee* 15 (K); Ronda, 29 iv 1936, *B.K. Boom* 11909 (L); Ronda, near Costes de la Fratera, 9 v 1924, *E. Ellman & C. Hubbard* 319 (K); Sauceda, 4 iii 1973, *B. Casaseca* (MAF); Serrania de Ronda, vi 1851, *J. Ball* (E); Sierra Bermeja, 22 iv 1976, *S. Castroviejo & E. Valdes-Bermejo* 69 (MA); Sierra de Nueva, 10 v 1924, *E. Ellman & C. Hubbard* 343 (K); Sierra de Ronda, 10 iv 1959, *D. Brinton-Lee* (E). **Melilla**: Gurugu, *Font i Quer* 809155 (RNG); Gurugu, 10 iv 1932, *H. Mauricio* 8377 (G, MA, MAF, MPU); Gurugu, 19 v 1932, *Sennen & Mauricio* 8403 (G, VAL); Gurugu, vers Basbel, 16 vi 1931, *Sennen & Mauricio* 7817 (G, MA, MAF, MPU, VAL); Nador, Gurugu, 2 vii 1993, *M.J. Diaz, M. Etlaftski & B. Valdes* 1422/93 (RNG). **Sevilla**: 23 iv 1969, *P. Gibbs et al.* 1223.69 (E); Algamitas, 19 iv 1975, *E. Ramos* (MAF).

14. Cytisus malacitanus Boiss., Elench. Pl. Nov. 32 (1838). – *Sarothamnus malacitanus* (Boiss.) Boiss., Voy. Bot. Espagne 2: 137 (1840). – *Sarothamnus catalaunicus* var. *malacitanus* (Boiss.) Pau, Nueva Contrib. Fl. Gran. 34 (1922). – *Cytisus arboreus* [subsp. *catalaunicus*] var. *malacitanus* Maire, Cat. Pl. Maroc 2: 365 (1932). – *Sarothamnus arboreus* var. *malacitanus* (Boiss.) C.Vicioso, Bol. Inst. Forest. Invest. Exp. Madrid 72: 221 (1955). – *Cytisus arboreus* subsp. *malacitanus* (Boiss.) Malag., Sin. Fl. Ibér. 36: 571 (1976). – Type: [Spain] San Anton prope Malaga, 1833, *Boissier* s.n. (lecto G!, designated by Burdet *et al.*, 1988; isolecto E!, G!, K!). **Fig. 15.**

Sarothamnus rotundatus Pau, Mém. Mus. Ci. Nat. Barcelona, sér. Bot. 1: 34 (1922). – *Sarothamnus arboreus* var. *rotundatus* (Pau) C.Vicioso, Bol. Inst. Forest. Invest. Exp. Madrid 72: 222 (1955). – Type: [Spain] Sierra Bermeja, Barranco del Madronal y las Minas, 18 v 1919, *E. Goss* s.n. (holo MA!).

Cytisus moleroi Fern.Casas, Exsicc. Nobis 3: 4 (1980). – *Cytisus malacitanus* subsp. *moleroi* (Fern.Casas) A.Lora et al., Acta Bot. Malac. 23: 235 (1998). – Type: [Spain] Malaga, prope oppidulum Canete la Real, 3 ii 1980, *Fernandez Casas* 2954 (holo MA!; iso BC!, G!, L!, MAF!, RNG!).

Ascending shrub, 0.2–1 m high. *Twigs* with 10–13 ribs T-shaped in transverse section, pubescent when young, with short erect hairs, glabrous when older; apex somewhat spiky. *Leaves* rare, sessile or sub-sessile, unifoliolate on young twigs, trifoliolate on older twigs; stipule with 3 ribs; leaflets 3–8 × 1–4 mm, obovate, pubescent and ciliate on margins. *Pedicel* 5–10 mm long. *Calyx* ciliate; upper lip 2.5–4 mm long; lower lip 3.5–5 mm long; teeth 0.5–1 mm deep. *Corolla* yellow; standard 13–17 mm long, 11–15 mm wide, orbicular, emarginate, glabrous; wings 13–17 mm long, as long as or shorter than the keel petals, 4–7 mm wide, generally elliptic, sometimes oblong, with curved apex, glabrous; keel 13–18 mm long, longer or as long as the other petals, 7–8 mm wide, obovate, generally glabrous. *Anthers* 0.7–1.1 mm long. *Style* glabrous.

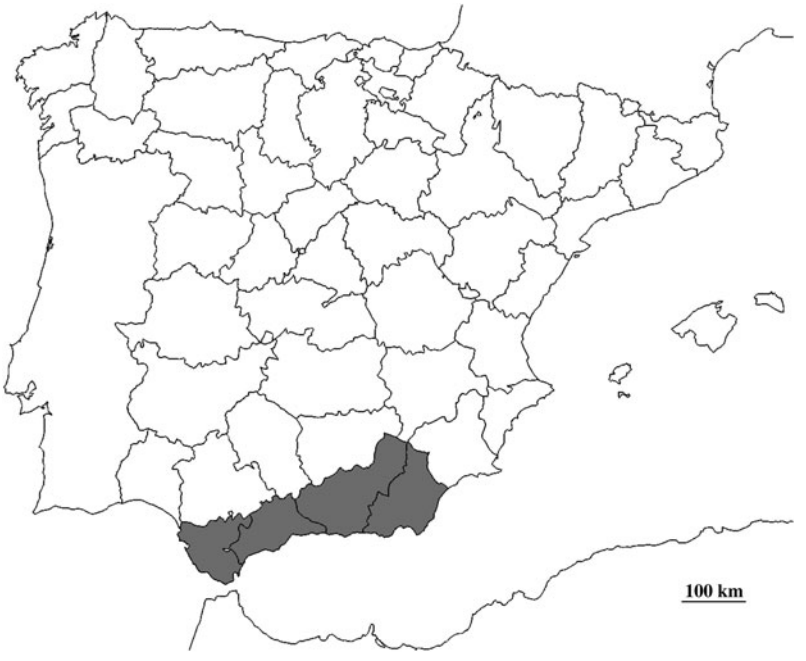

FIG. 15. Distribution of *Cytisus malacitanus* Boiss. (area in grey).

Fruit 20–47 × 7–9 mm, plane, oblong, sericeous or villous, adpressed hairs up to 3 mm long on the surface, 1- to 9-seeded. *Seeds* 2.5–4 × 2–3.5 mm.

Illustration in *Flora Iberica* 46: 171 (Talavera *et al.*, 1999).

Distribution. Spain (Almeria, Cadiz, Granada, Malaga).

Flowering time. March–May.

IUCN conservation assessment. Near Threatened (NT) (Moreno, 2008).

Additional specimens examined. SPAIN. **Almeria**: Berja a Adra, 18 iii 1984, *G. Mateo* & *R. Lazaro* 84.1829 (VAL). **Cadiz**: Marbella, Sierra Bermeja, 9 iii 1984, *F. Fernandez Gonzalez et al.* 1142 (MA, VAL). **Granada**: Almunecar, 11 iii 1974, *J. Fernandez Casas* (MA); Orgiva-Albunol, 18 i 1979, *Molero Masa* (MA); Restabal, 23 iv 1972, *J. Fernandez Casas* (MA); Restabal, 4 iii 1980, *M. Ladero et al.* (MA); Salobrena, 26 ii 1972, *J. Fernandez Casas* (MA). **Malaga**: 1889, *Lange* 466 (K); 19 ii/29 iv 1889, *E. Reverchon* 466 (E, G, K, LY, MPU); 5 v 1957, *D.B.L.* 33 (K); Alhaurin de la Torre, 19 iii 1979, *Leidse Bot. Excursie* 98 (L); Alhaurin de la Torre et Alhaurin el Grande, 25 v 1976, *G. Lopez* 1964 (MA); Estepona, 25 iii 2004, *V.J. Aran* & *M.J. Toha* 5075 (VAL); Ronda, 7 v 1964, *C. Stocken* 352.64 (E); Ronda/San Pedro road, 9 iv 1973, *F.A. Bisby, K.W. Nicholls* & *R.M. Polhill* 53 (K, RNG); Sierra Bermeja, 27 iv 1931, *I. Ceballos* & *C. Vicioso* (MA); Sierra Bermeja, above Estepona, 13 iv 1978, *Davis* 61704 (E).

Insufficiently Known

Cytisus multiflorus (L'Hér. ex Aiton) Sweet f. **incarnatus** (Lodd. et al.) Rehder, Bibliogr. Cult. Trees 362 (1949). – *Spartium multiflorum* var. *incarnatum* Lodd. et al., Bot. Cab. 11: t. 1052 (1825). – *Cytisus albus* var. *incarnatus* (Lodd. et al.) Sweet, Hort. Brit. [Sweet], ed. 3: 156 (1839). – *Cytisus incarnatus* (Lodd. et al.) K.Koch, Dendrologie 1: 32 (1869). – Type: Bot. Cab. 11: t. 1052 (1825), iconotype.

Cytisus albus var. **rosea** Stapf, J. Roy. Hort. Soc. 52: 257 (1927). – Type: Bot. Mag. 143: t. 8693 (1916), iconotype.

Those two names refer to a taxon distinguished from *Cytisus multiflorus* by the colour of the corolla, pale pink instead of white. Based on their descriptions, these names might be synonyms. However, no specimens have been seen for either of them.

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The base maps for the distribution maps are available free for use from www.d-maps.com (D. Dalet, 2007–2012).

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