

Taxonomic relationships in the *Hypericum ericoides* aggregate (*H.* sect. *Coridium*, Hypericaceae)

M^a Ángeles Alonso*, Jonás C. Agulló, José L. Villar, Ana Juan & Manuel B. Crespo

Departamento de Ciencias Ambientales y Recursos Naturales/Instituto de la Biodiversidad-CIBIO, University of Alicante, P.O. Box 99, ES-03080, Spain (*corresponding author's e-mail: ma.alonso@ua.es)

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A taxonomic revision of the *Hypericum ericoides* aggregate is presented based on morphological characters. This aggregate is endemic to the western Mediterranean basin and is currently included in *H.* sect. *Coridium*. Light microscopy and scanning electron microscopy techniques were utilized to check the diagnostic value of several characters that were neglected or overlooked in previous works. As a result, four well-characterized taxonomic entities are accepted: *Hypericum ericoides* L., *H. hispanicum* (Pau) M.A. Alonso, Agulló, J.L. Villar, Juan & M.B. Crespo *comb. nov.* [= *H. robertii* var. *hispanicum* Pau], *H. maroccanum* (Maire & Wilczek) Rivas Mart. [= *H. ericoides* subsp. *maroccanum* Maire & Wilczek], and *H. robertii* Coss. *ex* Batt. & Trab. For each one, the data on morphology, ecology, and distribution are reported. Nomenclatural types are also included, and an epitype for *H. ericoides* is designated. *Hypericum robertii*, a plant supposed to be restricted to Tunisia, is reported from eastern Algeria.

Introduction

The genus *Hypericum* (Hypericaceae) comprises small trees, shrubs and herbs with a worldwide distribution but concentrated in temperate areas especially in Eurasia, with a few representatives in Australia (Stevens 2007). Over 470 species classified in 36 sections have been described to date (for summary see Nürk & Blattner 2010).

Taxa of *Hypericum* sect. *Coridium* are characterized by whorled leaves, fruits that are longitudinally striate, vesiculose and coriaceous, as well as bracts, sepals and sometimes petals with blackish, red or amber-yellowish glands

(Ramos-Núñez 1993, Robson 2010). They occur mostly in the Mediterranean basin, spreading into central Europe and the Caucasus. The section was first described to include three species: *H. coris* from the mountains of southeastern France, Switzerland, and northern Italy (Pignatti 1982, Coste 1990, Greuter *et al.* 1986, Robson 2010), *H. empetrifolium* from the eastern Mediterranean basin (see Meikle 1985, Greuter *et al.* 1986, Fielding & Turland 2008, Robson 2010), and *H. ericoides* (in which several taxa have been segregated) from the coastal areas of the southwestern Mediterranean basin (Greuter *et al.* 1986, Ramos-Núñez 1993, Robson 2010). Four

additional taxa were added later to the section: *H. robertii* from Tunisia (Battandier & Trabut 1888), *H. amblycalyx* and *H. jovis*, both endemic to Crete and Greece (Fielding & Turland 2008, Robson 2010), and *H. asperuloides* from the central Caucasus to Dagestan (Robson 2010).

Taxa in the *H. ericoides* aggregate are defined by a perianth that is persistent for a long time after anthesis, stamens 30–35, fruit strongly striate, and seed surface reticulate-foveolate to granulose-punctuate (Ramos-Núñez 1993, Robson 2010). They are calcicolous plants growing mostly on sunny, rocky slopes. Four taxa have been mentioned in the aggregate at specific, subspecific or varietal ranks, as being related to either *H. ericoides* or *H. robertii*. *Hypericum ericoides* was described first (Linnaeus 1753). It occurs naturally in the eastern and southeastern Iberian Peninsula (see Valle & Morales 1980, Robson 1990, Ramos-Núñez 1993). Although in the protologue it was said to come from “Lusitania”, no modern records exist (Coutinho 1939, Franco 1971) and its presence in that territory has therefore been discarded (Ramos-Núñez 1993).

Battandier (see Battandier & Trabut 1888) validated *H. robertii*, a plant which occurred in Tunisia, and “*probablement à Tébessa*” (Algeria). More recently, both taxa were revisited by Maire and Wilczek (in Maire 1931), who described *H. ericoides* subsp. *maroccanum* from plants collected in Debdou (Morocco), and recognized *H. robertii* as *H. ericoides* subsp. *robertii*. Pau (1904) reported *H. robertii* in Almería, southeastern Spain, although some morphological divergences with regard to the typical Tunisian plants, as well as the disjunct distribution, lead him to segregate a particular Iberian taxon: *H. robertii* var. *hispanicum*. Nonetheless, Robson (2010) has recently treated all four cited taxa as synonyms of the earlier *H. ericoides*, which was therefore defined in a very wide sense.

In this framework, the principal objective of the present contribution is to explore taxonomic relationships among taxa in the *H. ericoides* aggregate, using both light and scanning electron microscopy to evaluate the usefulness of several morphological characters that were neglected or overlooked in previous works.

Material and methods

Over 110 dried herbarium specimens were studied from ABH, G, K, M, MO, MPU, P, PRC and W (acronyms according to Thiers 2013). They included extant type materials of all considered taxa. Wild populations were also sampled, and the vouchers were prepared and deposited at ABH (University of Alicante).

Following the methodology detailed in Ramos-Núñez (1982, 1993) and Robson (1977, 2010), 51 morphological (both quantitative and qualitative) characters were selected and analysed from leaves, inflorescences, bracts, sepals, petals, androecium, gynoecium, fruits and seeds. Observations were carried out under an OLYMPUS SZX12 binocular microscope, with a DFPL-1X-PF objective, incorporated micrometre, and an adapted digital camera OLYMPUS Altra 20. For some characters, such as leaf mucro, leaf papillae (e.g. density, shape and size) and seed testa sculpturing, scanning electron microscopy (SEM) was used. For that purpose, samples were directly glued on metallic stubs and coated with about 30 nm of gold prior to observations in a SEM JEOL 840.

LEAVES: The number of leaves per whorl was counted. From each individual, up to 30 leaves were studied, and their lengths and widths were measured. The presence or absence of a mucro, and the density, size, shape and colour of papillae were also recorded.

INFLORESCENCE: Length of inflorescence was measured from the lowermost bract to the base of the uppermost flower. The type of inflorescence was also recorded.

BRACTS: Size (length $\times$ width) of the lowermost bract was measured, and its position, persistence, shape, apex form and number of ribs were noted. The distribution and colour of glands on bracts, as well as the presence, length and colour of the gland stalk were also recorded.

SEPALs: Measurements (length $\times$ width) were taken from all sepals. Their shape, marginal features and number of ribs, as well as disposition and colour of glands were recorded.

PETALS: Persistence, length and colour of petals were recorded, as were the presence, location and colour of glands.

ANDROECIUM: Persistence, length and position of stamens were recorded.

FRUIT: Size (length $\times$ width), shape, colour and sculpturing, number of valves in dehiscence, and number and length of styles were recorded.

SEEDS: Size (length $\times$ width), shape and colour of completely ripe seeds were recorded. SEM images of testa sculpturing, which was defined according to the terminology of Stearn (2004), were taken.

Results

Accepted taxa

The studied individuals of the *Hypericum ericoides* aggregate can be grouped into four taxonomic entities that correspond to the four taxa described to date: *H. ericoides*, *H. robertii*, *H. robertii* var. *hispanicum* (hereafter *H. hispanicum*) and *H. maroccanum*.

Leaves

As in other taxa of *H. sect. Coridium*, the leaves are constantly in whorls of four, they are always linear and have revolute margins. Usually, the uppermost leaf whorl shows a clear morphological transition to bracts. In all cases, the leaf whorls are very close to each other, though in the Iberian endemics *H. ericoides* and *H. hispanicum* they are extremely approximate (< 1 mm) and the internodes are not distinct. Conversely, *H. maroccanum* shows looser whorls up to 3.8 mm apart, with distinct internodes, whereas in *H. robertii* they are more densely placed, about 1 mm apart, therefore it is closer to the Iberian taxa in this respect.

The leaves show several quantitative and qualitative features that are diagnostic for recognition of the studied taxa (Table 1). With regard to size (length $\times$ width), *H. maroccanum* has the longest leaves (on average 7.0×0.7 mm) and *H. ericoides* the shortest (on average 2.5×0.5 mm). The leaves in *H. hispanicum* (on average 3.8×0.85 mm) and *H. robertii* (on average 3.8×0.6 mm) are of similar size. The colour is

mostly green-glaucous, though two groups can be recognized: (1) the leaves of *H. robertii* and *H. ericoides* are yellowish-green to somewhat green-glaucous, and (2) *H. maroccanum* and *H. hispanicum* have intensely green-glaucous leaves.

The presence of an apical mucro on leaves also has taxonomic significance. *Hypericum robertii* has the longest mucro (ca. 0.1 mm). In *H. ericoides* it is shorter (ca. 0.06 mm), whereas in *H. hispanicum* and *H. maroccanum* they are extremely short (< 0.05 mm) or even absent (Table 1 and Fig. 1A).

The leaf papillae (Table 1) are in all cases transparent and uncoloured. They are very small (on average 13×18 μ m), more densely arranged (8 per 0.01 mm²) and reddish or yellowish in *H. robertii*. The papillae in *H. maroccanum* are larger (on average 27×44 μ m), more loosely placed (5 per 0.01 mm²) and uncoloured. In *H. ericoides* and *H. hispanicum* they are similarly loose (6 per 0.01 mm²), though smaller (on average 15×35 μ m, and 25×20 μ m, respectively), being uncoloured in the former and reddish or yellowish in the latter. Both *H. ericoides* and *H. robertii* have mamillate papillae, although they are very weak in the latter. In *H. hispanicum* the papillae are conical, whereas they are semi-ellipsoid in *H. maroccanum* (Fig. 1B).

Inflorescences

Inflorescences are usually dense pleiochasial cymes, or sometimes long monochasial cymes in some individuals. *Hypericum ericoides* has the shortest inflorescences (range = 1.2–4.0 cm, mean = 1.8 cm), and *H. robertii* the longest (range = 3–7 cm, mean = 4.1 cm). *Hypericum hispanicum* and *H. maroccanum* have inflorescences of intermediate lengths (range = 2.0–3.5 cm, means = 2.4 and 2.2 cm, respectively).

Bracts

As previously mentioned, in most of the sampled individuals a clear transition exists between the uppermost leaves and lowermost bracts, these

Table 1. Morphological comparison of the diagnostic characters of the four studied species.

Characters	<i>H. ericoides</i>	<i>H. hispanicum</i>	<i>H. maroccanum</i>	<i>H. robertii</i>
Leaves				
length × width (mm)	1.5–3.5 × 0.5	2.5–5.0 × 0.8–1.0	5.0–9.0 × 0.65–0.8	2.5–5.0 × 0.55–0.8
mucro (mm)	ca. 0.06	absent or < 0.05	absent or < 0.05	0.1
papilla:				
length × width (µm)	10–20 × 30–40	20–40 × 20	20–30 × 40–50	10–20 × 15–20
shape of papillae	mamillate	conic	semi-ellipsoid	mamillate
density of papillae (per 0.01 mm ²)	6	6	5	8
Bracts				
shape	triangular-ovate	elliptic-obovate	elliptic-obovate	triangular-oblong
persistence	persistent	persistent	deciduous	persistent
length × width (mm)	1.8–3.0 × 0.5–0.8	3.2–4.0 × 1.0–1.5	1.8 × 0.5	1.8–3.0 × 0.5–0.7
colour of glands	black	red-amber yellowish	black	black
colour the gland stalk	green with reddish tonalities	red-amber yellowish	green	red to brownish red
Sepals				
shape	elliptic-ovate	elliptic-ovate	elliptic-obovate	triangular-elliptic
length × width (mm)	2.0–2.5 (3.5) × 0.8–1.9	2.5–4.0 × 1.5–2.0	3.5–4.0 × 2.0–2.5	2.5–4.0 × 1.1–2.0
colour of glands	black	red-amber yellowish	black	black
Seeds				
length × width (mm)	0.7–1.1 × 0.3	1.0–1.5 × 0.3–0.5	1.5 × 0.3	1.5–1.7 × 0.3
testa sculpturing	reticulate-foveolate	reticulate-alveolate	reticulate-echinulate	reticulate

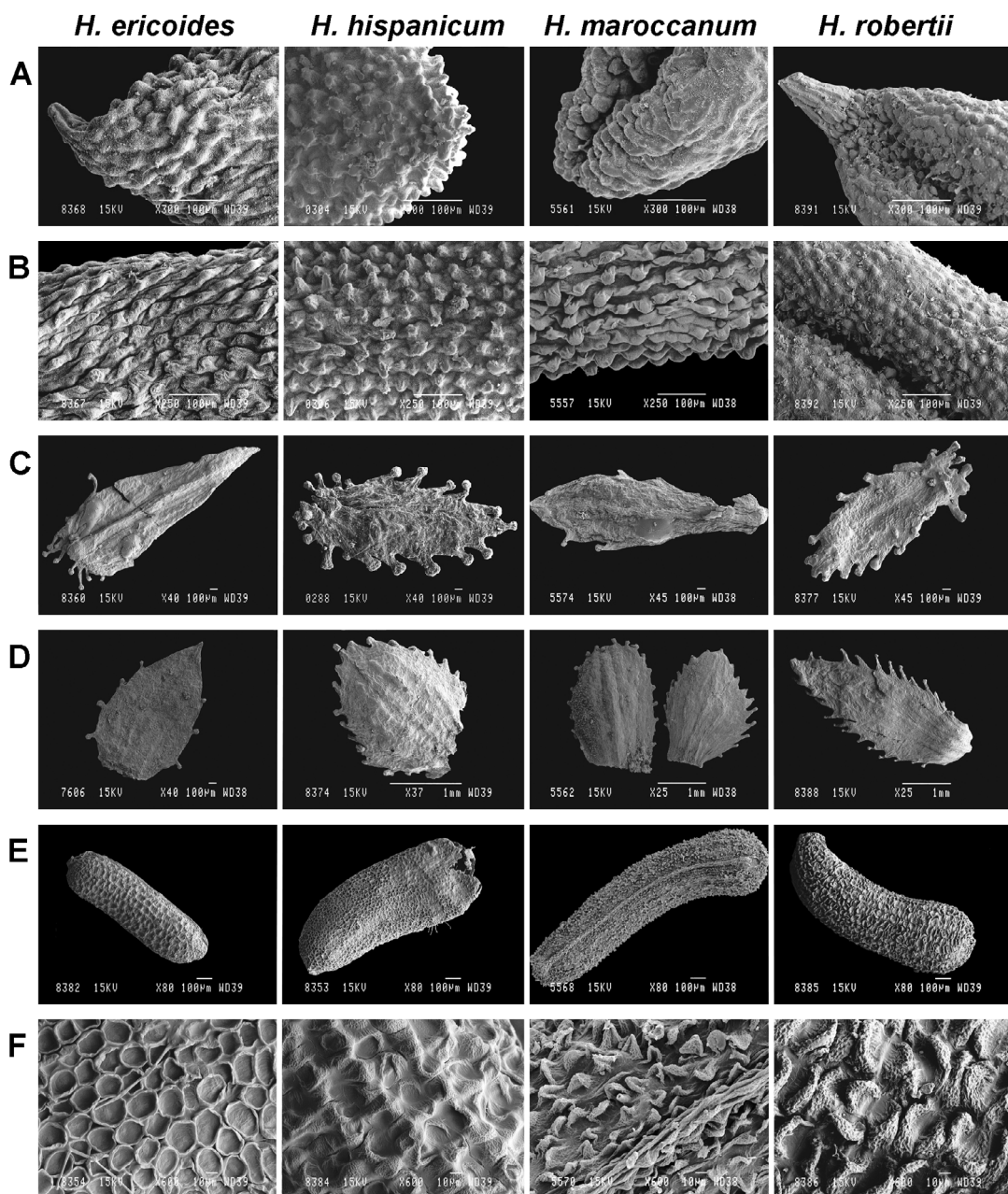


Fig. 1. SEM images of some morphological characters of the studied taxa. — **A:** Leaf apex. *H. ericoides* (ABH17177), *H. hispanicum* (ABH52755), *H. maroccanum* (G00305567), *H. robertii* (MA77972). — **B:** Leaf surface. *H. ericoides* (ABH17177), *H. hispanicum* (ABH52755), *H. maroccanum* (G00305567), *H. robertii* (MA77972). — **C:** Bracts. *H. ericoides* (ABH40651), *H. hispanicum* (MA77971), *H. maroccanum* (G00305567), *H. robertii* (MA77972). — **D:** Sepals. *H. ericoides* (ABH45523), *H. hispanicum* (MA77971), *H. maroccanum* (G00305567), *H. robertii* (MA77972). — **E:** Seeds. *H. ericoides* (ABH45523), *H. hispanicum* (MA77971), *H. maroccanum* (G00305567), *H. robertii* (MA77972). — **F:** Seed testa surface. *H. ericoides* (ABH45523), *H. hispanicum* (MA77971), *H. maroccanum* (G00305567), *H. robertii* (MA77972).

being 4-whorled or even 6-whorled in some plants of *H. robertii*. Upper bracts are always opposite. They are usually persistent, except in *H. maroccanum* which has early deciduous bracts. The bracts are always acute but variable in shape (Table 1). *Hypericum ericoides* has triangular-ovate bracts (on average 2.4×0.7 mm), with three distinct ribs. In *H. hispanicum*, they are elliptic-obovate or sometimes triangular, on average 3.6×1.3 mm, 1–3-ribbed, somewhat similar to those in *H. maroccanum*, in which they are obovate, ca. 1.8×0.5 mm, and 3-ribbed. In *H. robertii* the bracts are triangular-oblong, on average 2.4×0.68 mm, with two distinct ribs.

Bract glands

The glands on bracts are diagnostic (Table 1). Only *H. hispanicum* has red or amber-yellowish glands, whereas in the other three taxa they are black. Similarly, the colour of the gland stalk is diagnostic, and is sometimes very different from the gland itself. It is red or amber-yellowish in *H. hispanicum* (identical to the gland colour), and the stalks are deep red to brownish-red in *H. robertii*. They are green in *H. maroccanum* and in *H. ericoides*, though in the latter they can have a reddish tinge, both being distinctly different from the gland colour.

Glands are located differently in each taxon. *Hypericum hispanicum* and *H. robertii* have the glands regularly distributed along margins, always stalked or sessile on teeth, but in the former they are more numerous in the basal part of leaves. Conversely, the glands in *H. maroccanum* are stalked and placed mostly on the upper half of leaf margins. *Hypericum ericoides* has scattered stalked glands on the basal half and sessile glands on the margins, sometimes mixed with few stalked ones (Fig. 1C).

Sepals

The sepals in all four studied taxa have 3–5 distinct ribs and are somewhat elliptical, though some variation is observed (Table 1). They are commonly ovate in *H. hispanicum* and *H. ericoides*, obovate in *H. maroccanum* and some-

times in *H. ericoides*, and triangular in *H. robertii*. The sepals are usually acute or only occasionally obtuse, with the exception of *H. maroccanum* in which they are rounded. *Hypericum ericoides* has the smallest sepals (on average 2.25×1.35 mm), and *H. maroccanum* the largest ones (on average 3.7×2.25 mm). The sepals in *H. hispanicum* (on average 3.25×1.75 mm) and *H. robertii* (on average 3.25×1.55 mm) are of similar size, and are closer to those of *H. maroccanum*. However, there is some variation in the sepal width in a single flower.

Major differences exist in the glands and margin. *Hypericum ericoides* sepals have entire margins occasionally with some scattered teeth, and with some marginal black glands. Those in *Hypericum hispanicum* have very small teeth on their margins, with sessile, red to amber-yellowish glands. The sepals in *Hypericum maroccanum* and *H. robertii* have deeper teeth on the margins, and they have black glands (Fig. 1D).

Petals

In all studied taxa, the petals are yellow and persistent, 4.5–5.5(7) mm long, with distinct nerves and occasionally some black glands. Only *H. robertii* differs in being densely glandular at the petal apex, the glands being red to amber-yellowish.

Androecium

Stamen filaments are long persistent, grouped in three fascicles, about 4.0–5.5(6) mm long in all taxa. In *H. hispanicum* and *H. robertii* also the anthers are persistent.

Fruits

Fruit is a septicidal capsule, light brown, longitudinally striate, with three long styles. *Hypericum ericoides* has the smallest fruits ($2.0\text{--}3.5 \times 1.5\text{--}2.5$ mm; on average 2.5×2.3 mm), pyriform or ellipsoid and with styles up to 1.5 mm long. The largest fruits are those of *H. maroccanum* ($3.0\text{--}5.0 \times 4.0\text{--}5.0$ mm; on average 4.5×4.75

mm); they are ovoid and have 2.5–3.0 mm long styles. In *H. hispanicum* and *H. robertii* the fruits are also large [$2.2\text{--}5.0 \times 2.5\text{--}3.0$ mm (on average 3.2×2.7 mm) and $3.5\text{--}4.0 \times 2.5\text{--}3.5$ mm (on average 3.7×2.8 mm), respectively], globose, and with styles 2.0–3.0 mm and 2.4–2.7 mm long, respectively.

Seeds

Seeds are comma-shaped, deep brown to blackish. They are smaller in *H. ericoides* (on average 0.9×0.3 mm) and larger in *H. robertii* (on average 1.55×0.3 mm) (Fig. 1E and Table 1). Sculpturing of the testa surface is a strongly diagnostic character. It is reticulate-foveolate in *H. ericoides*, reticulate-alveolate in *H. hispanicum*, reticulate-echinulate in *H. maroccanum*, and simply reticulate in *H. robertii* (Fig. 1F and Table 1).

Discussion

Recent comprehensive cladistic analyses of *Hypericum* based on morphology (Nürk & Blattner 2010) have shown that *H. sect. Coridium* is strongly supported as monophyletic (1.00 PP, Bayesian inference), showing many plesiomorphic features (e.g. shrubby habit, indumentum absent, leaves subsessile, glands dark, perianth pentamerous, petals persistent, or seeds cylindrical). Furthermore, traditional characters (e.g., bract margin, gland disposition, or seed testa sculpturing) are useful for taxonomy as well as for phylogenetic reconstruction. The phylogeny obtained by Nürk and Blattner (2010) shows some congruency with the previous partial ITS molecular-based trees by Crockett *et al.* (2004). In the current study, features such as the linear, papillose and 4-whorled leaves, the persistent petals and androecium, and the striate capsule, were common to all studied taxa, and they can indeed be used to define the *Hypericum ericoides* aggregate and the whole *H. sect. Coridium*. The most recent publication on that section (Robson 2010) treats the *H. ericoides* aggregate as a single taxon (*H. ericoides*), and therefore it is not possible to discuss more accurately his results for most characters.

Leaf colour has been used to separate *H. asperuloides* from *H. ericoides* (Robson 2010), the leaves of the former being only glaucous on the underside. Within the *H. ericoides* aggregate, the leaves are more intensely glaucous in the southwestern taxa *H. maroccanum* and *H. hispanicum*, which could be related to the warm and semiarid conditions in which the plants occur. Internodal distances between leaf whorls are distinctly smaller in the Iberian taxa *H. ericoides* and *H. hispanicum*, differing markedly from those in the geographically closer taxa *H. coris* (to the north) and *H. maroccanum* (to the south), in which the whorls are placed about four times further apart. This character should, therefore, be regarded as a result of morphological convergence in neighbouring areas, not directly related to climatic conditions.

Gland colour is one of the most widely used characters to separate taxa in *H. sect. Coridium* (Robson 1977, 2010, Ramos-Núñez 1993, Peñas & Giménez 2003). However, this character is not the best for separation of taxa within the *H. ericoides* aggregate. The glands are constantly black in *H. ericoides* and *H. maroccanum*, though sometimes a weak reddish tinge can be observed. In *H. hispanicum*, the glands are red or amber-yellowish, this being a diagnostic feature that can be observed even in herbarium specimens collected almost a century ago. With regard to the Tunisian *H. robertii*, some controversial data exist. Although Maire (1931) and Robson (2010) mentioned black glands in that species, Pau (1904, 1922) described a red-glanded taxon from the Almería-region (*H. robertii* var. *hispanicum*) reporting no differences in the gland colour. Certainly, the herbarium material of *H. robertii* has black glands, though sometimes the teeth and part of the bract or sepal are tinged deep red. Recently, Robson (2010) re-assessed the gland colour and confirmed that the glands are black in the whole *H. ericoides* aggregate (including *H. robertii*), though stating that some Spanish populations (*H. hispanicum* as treated here) produce red glands. Consequently, this character is diagnostic for the latter taxon.

With regard to bract length, and despite the data presented by Ramos-Núñez (1993), most bracts in *H. ericoides* are up to 3 mm long (not 1–2 mm) and in *H. hispanicum* they are 3–4 mm

(not 2–3 mm). Nonetheless, the latter taxon tends to have larger bracts. *Hypericum robertii* has smaller bracts, similar in size to those of *H. ericoides*. The deciduous bracts of *H. maroccanum* (a feature unique to this taxon) made achieving a sufficient number of measurements difficult, but its bracts were always similar to those of *H. ericoides*.

The sepal shape has been used to segregate the Iberian taxa in the aggregate (Ramos-Núñez 1993). However, our measurements indicate that *H. ericoides* has a wider range of variation than expected, the sepals usually being ovate but sometimes elliptical or even obovate. This character is, therefore, not diagnostic between *H. ericoides* and *H. hispanicum*, since both taxa have mostly ovate sepals. *Hypericum maroccanum* instead has obovate sepals with a very rounded apex, a feature that allows easy recognition in most cases. Furthermore, although Robson (2010) mentioned that all sepals are equal in shape and size, we occasionally found flowers in which their widths differed.

Sculpturing of the seed testa surface has been used in taxonomy at specific level in *Hypericum* (Ramos-Núñez 1982). It is also a useful feature for studies of fossil records and palaeogeography of the genus (see Meseguer & Sanmartín 2012). In the *H. ericoides* aggregate, each of the four studied entities had a unique pattern, which supports their segregation. Our results agree with those of Ramos-Núñez (1982), who described the sculpturing pattern in *H. ericoides*. However, no previous information exists about testa sculpturing for the rest of the taxa in the aggregate.

According to our results, constant morphological differences exist in many characters among the four taxa in the aggregate of *H. ericoides*, which allow easy recognition. A unique combination of characters can be defined for each taxonomic entity, distributed in the western Mediterranean. The morphological characters separating the four taxa in this aggregate are as distinct as those allowing the segregation of the Cretan *H. amblycalyx* and *H. jovis*, and even more distinct than the features used by Robson (2010) to distinguish the three subspecies of *H. empetrifolium*, for instance. Accordingly, the specific rank is here accepted for all taxa in the *H. ericoides* aggregate.

Taxonomic treatment

Hypericum ericoides L.

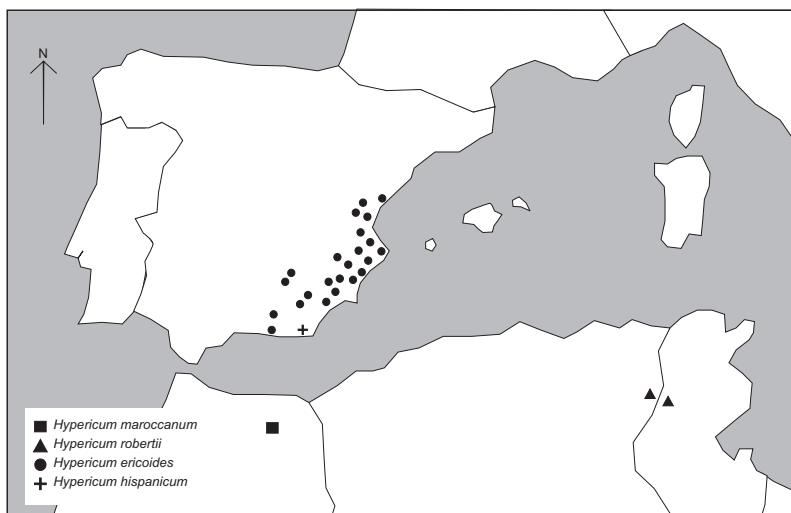
Sp. Pl.: 785 (1753). — TYPE LOCALITY: “Habitat in Lusitania, Hispania”. — LECTOTYPE (designated by N. Robson in Jarvis 2007: 582): [icon in] Plukenet, Phytographia: tab. 93, f. 5. 1691. — EPTYPE (designated here): Spain. Alicante, Sierra de Borbuño, 30SYH1244, 100 m, 13.X.1996 E. Camuñas (ABH 32306).

Leaf whorls very close (< 1 mm), with indistinct internodes. Leaves 1.5–3.5 × 0.5 mm, yellowish-green to somewhat green-glaucous, with a short apical mucro (ca. 0.06 mm); papillae small (10–20 × 30–40 µm), loosely placed (6 per 0.01 mm²), uncoloured, mamillate. Bracts persistent, 1.8–3.0 × 0.5–0.8 mm, triangular-ovate, with 3 marked ribs; glands black, on green stalks sometimes reddish tinged, scattered on the basal half, those on margins sessile and sometimes mixed with a few stalked ones. Inflorescence 1.2–4.0 cm long. Sepals 2.0–2.5 × 0.8–1.9 mm, ovate or sometimes obovate, subacute, with entire margins or occasionally with some scattered teeth, bearing some marginal black glands. Petals occasionally with some black glands at the apex. Stamens with deciduous anthers. Fruit 2.0–3.5 × 1.5–2.5 mm, pyriform or ellipsoid, with styles up to 1.5 mm long. Seeds 0.7–1.1 × 0.3 mm; testa surface reticulate-foveolate.

DISTRIBUTION: East of the Iberian Peninsula, from the North of Valencia region towards Granada and Almería in the south (Fig. 2).

In the protologue, Linnaeus (1753) mentioned this taxon from Portugal (“Lusitania”), after synonymy taken from Plukenet (1691: tab. 93, 1696: 189) and Tournefort (1700: 256), who referred to a Portuguese tomentose plant (*Hypericum tomentosum*, *Lusitan[ic]um*, *minimum* Tourn., Elém. Bot. 1: 222. 1694), that most likely does not represent *H. ericoides*. However, Ramos-Núñez (1993) excluded its presence in the western Iberian Peninsula. Among the material revised in the present work a specimen was seen from G, which was collected by E. Reverchon in “Portugal: Lieux rocheux á Torres-Novas; août, 1890”. This specimen indeed matches *H. ericoides*. Nevertheless, no recent records of this plant exist in Portugal, nor is it included in modern Portuguese floras (Coutinho 1939, Franco 1971). Perhaps

Fig. 2. Geographical distribution of the studied taxa.



Reverchon's specimen was incorrectly labelled as occurring with other Iberian plants (cf. Soriano 1987: 128, Segarra 1999). We, therefore, discarded the presence of *H. ericoides* in Portugal, a taxon which otherwise is widely distributed in the littoral areas of eastern and southeastern Iberian Peninsula. Robson (in Jarvis 2007) lectotypified this name using an illustration in Plukenet (1691) that depicts a plant belonging to *H. sect. Coridium*, and coming “*ex Hispaniae*”. However, the illustration is not very accurate and could also represent other taxa in the section (e.g. *H. hispanicum*). Therefore, to warrant current use of the name we designate here an epitype collected in eastern Iberian Peninsula that supports the lectotype. See Appendix for the selected specimens examined.

Hypericum robertii Coss. ex Batt.

in Batt. & Trab., Fl. Algérie (Dicot.): 183. [*robertii*] 1888. — *Hypericum ericoides* subsp. *robertii* (Coss. ex Batt.) Maire & Wilczek, Bull. Soc. Hist. Nat. Afrique N. 22: 285. 1931. — TYPE LOCALITY: “Tunisie, probablement à Tébessa [Algeria]”. — LECTOTYPE (designated by Robson 2010): Tunisia. Feriana, July 1884 (fr.), *Robert* (Société Dauphinoise, 1885, no. 4800) (P 05151241!).

Leaf whorls close, with indistinct internodes (ca. 1 mm). Leaves 2.5–5.0 × 0.55–0.8 mm, yellowish-green to somewhat green-glaucous, with a long apical mucro (ca. 0.1 m); papillae 10–20

× 15–20 µm, densely arranged (8 per 0.01 mm²) and with a reddish or yellowish colour, mamillate, weak. Bracts persistent, 1.8–3.0 × 0.5–0.7 mm, triangular-oblong, with 2 marked ribs; glands black, on a deep red to brownish-red stalk. Inflorescence 3–7 cm long. Sepals 2.5–4.0 × 1.1–2.0 mm, triangular, acute, with deep teeth on margins bearing black glands. Petals with numerous red to amber-yellowish glands at the apex. Stamens with persistent anthers. Fruit 3.5–4.0 × 2.5–3.5 mm, globose, with styles 2.4–2.7 mm long. Seed 1.5–1.7 × 0.3 mm; testa surface simply reticulate.

DISTRIBUTION: Until now, it has only been found in the mountains between Kasserine (Tunisia) and Tébessa (Algeria) (Fig. 2).

This taxon was originally thought to be a Tunisian endemic, though in the protologue it was already cited with doubt from Tébessa (Algeria). Indeed, we studied one collection from that site, which is conserved at G (no. 00305576). This is the first Algerian locality of *H. robertii*, which extends its distribution considerably to the east. Regarding the type specimen, Robson (2010) mentioned a collection at P, but did not indicate any sheet number. Among the material at P, five sheets (P05151229, P05151234, P05151235, P05151238, and P05151241) fit in general terms the data in the lectotype selection. However, there is only one sheet (P05151241) that bears a label exactly matching the text of Robson (2010). It is therefore regarded here as the lectotype.

***Hypericum hispanicum* (Pau) M.A. Alonso, Agulló, J.L. Villar, Juan & M.B. Crespo, comb. nova**

Hypericum robertii var. *hispanicum* Pau, Bol. Soc. Aragonesa Ci. Nat. 3: 290. 1904. — TYPE locality: “Julio-Almería-208 ... muestra comunicada por Barras, recogida por el Sr. Fernández Navarro”. — HOLOTYPE: Spain. Almería-208, Julio, Fernández Navarro (comm. Barras!) (MA77969). — NOTE: This sheet belongs to Pau’s personal herbarium, and is labelled by F. Alcaraz as “Lectotypus; ejemplar superior; 4.7.1985”. However, this apparently unpublished lectotypification is superfluous, since data in the protologue are enough to regard the whole sheet of MA77969 as the holotype.

Hypericum robertii auct. hisp., *H. ericoides* auct.

Leaf whorls very close (< 1 mm), with indistinct internodes. Leaves $2.5\text{--}5.0 \times 0.8\text{--}1.0$ mm, deep green-glaucous, with apical mucro extremely short (< 0.05 mm) or absent; papillae small ($20\text{--}40 \times 20$ μm), loosely disposed (6 per 0.01 mm^2), reddish or yellowish, conical. Bracts persistent, $3.2\text{--}4.0 \times 1.0\text{--}1.5$ mm, elliptic-obovate or sometimes triangular, 1–3-ribbed; glands and stalks equally red or amber-yellowish, more numerous on the basal part, those on teeth sometimes sessile. Inflorescence $2.0\text{--}3.5$ cm long. Sepals $2.5\text{--}4.0 \times 1.5\text{--}2.0$ mm, ovate, acute, with very small teeth on margins bearing sessile red glands. Petals occasionally with some black glands at the apex. Stamens with persistent anthers. Fruit $2.2\text{--}5.0 \times 2.5\text{--}3.0$ mm, globose, with styles $2.0\text{--}3.0$ mm long. Seeds $1.0\text{--}1.5 \times 0.3\text{--}0.5$ mm; testa surface reticulate-alveolate.

DISTRIBUTION: In Almería (SE Spain), restricted to a few very arid locations. It is not sympatric with *H. ericoides* (Fig. 2).

Pau (1904) described this taxon from materials collected in Almería (SE Spain) by Fernández-Navarro, which he received from A. Barras in Almería. Pau observed some differences between the Spanish plants and the typical Tunisian *H. robertii* (e.g. leaves smaller, bracts with shorter teeth, and sepals obovate), which led him to describe the taxon *H. robertii* var. *hispanicum*. He later (Pau 1922) pointed out that his plant had been confused with *H. ericoides* by Lange (1866), which indirectly suggested a morphological similarity between the taxa. However, Pau never proposed the combination “*H. ericoides* var. *hispanicum* (Pau) Pau”, contrary to the synonymy in

Flora iberica (Ramos-Núñez 1993). This taxon, here treated as a distinct species, is only known from a few localities around Sierra de Gádor, Almería province (see Losa & Rivas Goday 1974, Giménez 2001, Mota et al. 2005), and it is currently regarded as threatened (EN, according to the IUCN categories) in the red book of Spanish flora (see Peñas & Giménez 2003, as *H. robertii*).

***Hypericum maroccanum* (Maire & Wilczek) Rivas Mart.**

Itinera Geobot.: 486. 2011. — *Hypericum ericoides* L. subsp. *maroccanum* Maire & Wilczek, Bull. Soc. Hist. Nat. Afrique N. 22: 285. 1931. — HOLOTYPE: Maroc Oriental: Debdou, rochers calcaires à Flouch, au dessus du marabout de S. Ali Mekassem, 1000 m, 10.IV.1928, E. Wilczek 191 (MPU002621).

Leaf whorls loosely placed (up to 3.8 mm apart), with distinct internodes. Leaves $5.0\text{--}9.0 \times 0.65\text{--}0.8$ mm, with apical mucro extremely short (< 0.05 mm) or absent; papillae large ($20\text{--}30 \times 40\text{--}50$ μm), loosely disposed (5 per 0.01 mm^2), uncoloured, semi-ellipsoid. Bracts early deciduous, ca. 1.8×0.5 mm, obovate, 3-ribbed; glands black, always on green stalks, mostly located on the upper half of margins. Inflorescence $2.0\text{--}3.5$ cm long. Sepals $3.5\text{--}4.0 \times 2.0\text{--}2.5$ mm, obovate, rounded at the apex, with deep teeth on margins bearing black glands. Petals occasionally with some black glands at the apex. Stamens with deciduous anthers. Fruit $3.0\text{--}5.0 \times 4.0\text{--}5.0$ mm, ovoid, with styles $2.5\text{--}3.0$ mm long. Seeds ca. 1.5×0.3 mm; testa surface reticulate-echinulate.

DISTRIBUTION: Only known from three locations in eastern Morocco (Fig. 2).

This taxon was first described from the material collected by Wilczek in 1928. For the purposes of this study, the type locality was visited in order to make new collections. However, not a single individual was found during the fieldwork. The localities of the vouchers collected by Gandoger in 1909 (see Appendix) were not found on maps, and they remain enigmatic.

Identification key to the taxa of *Hypericum* sect. *Coridium*

The following key is based on Robson (2010), to

which taxa of the *Hypericum ericoides* aggregate were added.

1. Petals and stamens persistent after flowering; capsule valves with wholly linear vittae or sometimes with oblique vesicles; seeds linear-foveolate or papillose ... 2
1. Petals and stamens deciduous after flowering; capsule valves with oblique to globose vesicles; seeds papillose 7
2. Leaves smooth, narrowly linear, glaucous beneath; internodes elongate (4–35 mm) inflorescence cylindrical to pyramidal or subcorymbiform; sepal marginal glands sessile 3
2. Leaves papillose above, linear; wholly glaucous; internodes very short (1–5 mm); inflorescence corymbiform; sepal marginal glands on cilia 4
3. Capsule valves longitudinally vittate; seeds linear-foveolate *H. asperuloides*
3. Capsule valves with oblique vesicles; seeds papillose *H. coris*
4. Leaves with apical mucro ca. 0.1 mm long, weak papillae; inflorescence 3–7 cm long; petals with numerous red to amber-yellowish glands at the apex *H. robertii*
4. Leaves with apical mucro up to 0.06 mm long or absent, distinct papillae; inflorescence 1.2–4 cm long; petals occasionally with some black glands at the apex 5
5. Internodes up to 3.8 mm, distinct; leaves 5–9 mm long; bracts early deciduous; sepals 2.0–2.5 mm wide, rounded at the apex *H. maroccanum*
5. Internodes up to 1 mm, indistinct; leaves 1.5–5 mm long; bracts persistent; sepals 0.8–2 mm wide, acute or obtuse 6
6. Leaves 1.5–3.5 mm long, yellowish-green to green-glaucous; sepals 2.0–2.5 mm long; bracts 1.8–3.0 × 0.5–0.8 mm, triangular-ovate, with black glands on green stalks (sometimes reddish tinged); seed testa reticulate-foveolate *H. ericoides*
6. Leaves 2.5–5.0 mm long, deep green-glaucous; sepals 2.5–4.0 mm long; bracts 3.2–4.0 × 1.0–1.5 mm, elliptical-obovate or sometimes triangular, with glands red to yellowish-amber, on stalks of the same colour; seed testa reticulate-alveolate *H. hispanicum*
7. Sepals with marginal black glands; leaves in whorls of 3 (4 in *empetrifolium*) 8
7. Sepals with margin eglandular or with minute pale glands; leaves nearly always in whorls of 4 10
8. Stems erect; inflorescence 8–40-flowered; seeds cylindrical *H. empetrifolium* subsp. *empetrifolium*
8. Stems ascending to prostrate; inflorescence 1–7-flowered; seeds ellipsoid 9
9. Stems ascending, habit pulviniform; inflorescence 4–7-flowered *H. empetrifolium* subsp. *oliganthum*
9. Stems prostrate, habit espalier-like; inflorescence 1–4-flowered *H. empetrifolium* subsp. *tortuosum*
10. Sepals oblong to obovate-oblong, 1–2 mm long, laminar glands linear; capsule ovoid, lateral glands elongate *H. amblycalyx*
10. Sepals triangular, minute; laminar glands absent; capsule almost prismatic, lateral glands vesicular *H. jovis*

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References

- Battandier, J. A. & Trabut, L. C. 1888: *Flore de l'Algérie. Dicotylédones*. — Tipographie Adolphe Jourdan, Alger.
- Coste, H. 1990: *Flores descriptives et illustrées de la France, de la Corse et des contrées limitrophes*, Tome 1. — Albert Blanchard, Paris.
- Coutinho, A. X. P. 1939: *Flora de Portugal*. — J. Cramer ed., Letershausen.
- Crockett, S. L., Douglas, A. W., Scheffler, B. E. & Khan, I. A. 2004: Genetic profiling of *Hypericum* (St. John's wort) species by nuclear ribosomal ITS sequence analysis. — *Pl. Med.* 70: 1–7.
- Fielding, F. & Turland N. (ed. Mathews, B.) 2008: *Flowers of Crete*. — Royal Botanic Gardens, Kew.
- Franco, J. A. 1971: *Nova flora de Portugal (Continente e Açores)*, vol. 1. — Lisboa.
- Giménez, E. 2001: *Bases botánico-ecológicas para la restauración de la cubierta vegetal de la Sierra de Gádor (Almería)*. — Ph.D. thesis, ined. Universidad de Almería.
- Greuter, W., Burdet, H. M. & Long G. 1986: *Med-Checklist. A critical inventory of vascular plants of the circum-mediterranean countries*, vol. 3: *Dicotyledones (Convolvulaceae-Labiatae)*. — Conservatoire Botanique de Genève.
- Jarvis, C. E. 2007: *Order out of chaos: Linnaean plant names and their types*. — The Linnean Society of London & the Natural History Museum, London.
- Lange, J. M. C. 1866: *Pugillus plantarum imprimis hispanicarum, quas in itinere 1851–52 legit John Lange*. IV. — *Vidensk. Meddel. Dansk Naturhist. Foren. Kjøbenhavn*, ser. 2, 7: 30–204.
- Losa, M. T. & Rivas-Goday, S. 1974: Estudio florístico y geobotánico de la provincia de Almería. — *Archivos del Instituto de Aclimatación C.S.I.C.* 13(2): 112–237.
- Linnaeus, C. 1753: *Species plantarum*. — Laurentius Salvius, Stockholm.
- Maire, R. 1931: Contribution à l'étude de la flore de l'Afrique du Nord (fascicule 18). — *Bulletin de la Société d'histoire naturelle de l'Afrique du nord* 22: 275–325.
- Meikle, R. D. 1985: *Flora of Cyprus*, vol. 2. — Bentham-Moxon Trust, UK.
- Meseguer, A. S. & Sanmartín, I. 2012: Paleobiology of the genus *Hypericum* (Hypericaceae): a survey of the fossil record and its palaeogeographic implications. — *Anales del Jardín Botánico de Madrid* 69(1): 97–106.

- Mota, J. F., Cueto, M., Pérez-García, F. J., Garrido, J. A., Martínez-Hernández, F., Medina-Cazorla, J. M., Sola, A. J. & Schwarzer, H. 2005: Contribución al conocimiento de la flora de Andalucía: citas novedosas de la provincia de Almería, el elemento estenócoro. — *Acta Botánica Malacitana* 30: 227–231.
- Nürk, N. M. & Blattner, F. R. 2010: Cladistic analysis of morphological characters in *Hypericum* (Hypericaceae). — *Taxon* 59: 1495–1507.
- Pau, C. 1904: Nuevas formas españolas de plantas. — *Boletín de la Sociedad Aragonesa de Ciencias Naturales* 3: 288–293.
- Pau, C. 1922: Las herborizaciones del Sr. Gros por la región almeriense. — *Butlletí de la Institució Catalana d'Història Natural* 22: 30–33.
- Peñas, J. & Giménez, E. 2003: *Hypericum robertii* Coss. ex Batt. — In: Bañares, A. G., Blanca, Güemes, J., Moreno, J. C. & Ortiz Bañares, S. A. (eds.), *Atlas y libro Rojo de la Flora Vascular Amenazada de España*: 718–719. Dirección General de Conservación de la Naturaleza, Madrid.
- Pignatti, S. 1982: *Flora d'Italia*, vol. 1. — Edagricole, Bologna.
- Plukenet, L. 1691: *Phytographia, pars altera*. — Sumptibus auctoris, Londinium.
- Plukenet, L. 1696: *Almagestum botanicum*. — Sumptibus auctoris, Londinium.
- Ramos-Núñez, A. 1982: Estudio biosistemático del género *Hypericum* L. (Guttiferae) en la Península Ibérica e Islas Baleares. I. Caracteres seminales. — *Trabajo del Departamento de Botánica* 12: 45–62.
- Ramos-Núñez, A. 1993: *Hypericum* L. — In: Castroviejo, S., Aedo, C., Cirujano, S., Laínz, M., Montserrat, P., Morales, R., Muñoz Garmendia, F., Navarro, C., Paiva, J. & Soriano, C. (eds.), *Flora iberica*, vol. 3: 157–185. C.S.I.C., Madrid.
- Robson, N. K. B. 1977: Studies in the genus *Hypericum* L. (Guttiferae). 1. Infrageneric classification. — *Bulletin of the British Museum of Natural History (Botany)* 5: 291–355.
- Robson, N. K. B. 1990: Studies in the genus *Hypericum* L. (Guttiferae). 8. Sections 29. *Bathys* (part 2) and 30. *Trigynobrathys*. — *Bulletin of the British Museum of Natural History (Botany)* 20: 1–151.
- Robson, N. K. B. 2010: Studies in the genus *Hypericum* L. (Hypericaceae) 5(2). Sections 17: *Hirtella* to 19: *Coridium*. — *Phytotaxa* 4: 127–258.
- Segarra, J. G. 1999: Nueva localidad de *Asplenium marinum* (Aspleniaceae) en la costa levantina de la Península Ibérica. — *Anales del Jardín Botánico de Madrid* 57(1): 157–158.
- Soriano, C. 1987: *Significación de distribuciones fitocorológicas en la Serranía de Cazorla*. — Ph.D. thesis, Escuela Técnica Superior de Ingenieros de Montes, Universidad Politécnica de Madrid, Madrid.
- Stearn, T. W. 2004: *Botanical Latin*, 4th ed. — Timber Press, Portland.
- Stevens, P. F. 2007: *Hypericaceae*. — In: Kubitzki, K. (ed.), *The families and genera of vascular plants* 9: 194–201. Springer, Berlin & Heidelberg.
- Thiers, B. 2013: *Index Herbariorum*: A global directory of public herbaria and associated staff. — New York Botanical Garden's Virtual Herbarium. [Available at <http://sweetgum.nybg.org/ih/>].
- Tournefort, J. P. 1700: *Institutiones rei herbariae*, 1. — Typographia Regia, Paris.
- Valle, F. & Morales, C. 1980: Localización de algunos táxones interesantes de la provincia de Granada. — *Anales del Jardín Botánico de Madrid* 37(1): 101–112.

Appendix

SELECTED SPECIMENS EXAMINED: *Hypericum ericoides*. **Spain**. Albacete: Between Alcaraz and Yeste, 200–2000 m, V. 1891, *Porta & Rigo* [Iter II Hispanicum 1890 No. 399] (K *s.n.*, G *s.n.*). Sierra de las Huebras, pr. El Pozo, 30SWH4168, 1400 m, 28.VI.1988, B. Valdés *et al.* [Genève 1993 No. 414882] (G *s.n.*, RNG *s.n.*). Sierra de Segura, SSW de Yeste, Collado de Malandante, 38°10'N 2°27'W, 28.VI.1979, P.F. Cannon *et al.* (RNG *s.n.*). Alicante: Pinoso, Sierra del Reclot, Tres Fuentes, 30SXH7549, 750 m, 9.VII.1995, A. Navarro (ABH15584). Alicante, Sierra de Borbuño, 30SYH14, 200 m, 28.VIII.1994, N. R. Ibáñez-Pastor (ABH13033). *Ibidem*, 30SYH1244, 100 m, 13.X.1996, E. Camuñas (ABH32306). Alicante, Sierra Grossa, 30SYH2349, 150 m, 12.X.1997, E. Camuñas & M. B. Crespo (ABH38290). Alicante, cerca de Los Gallos, 30SYH1648, 80 m, 9.X.1996, E. Camuñas & M. B. Crespo (ABH30676). Alicante, Rincón de Santana, 30SYH2052, 100 m, 11.X.1996, E. Camuñas (ABH30714). Hondón de las Nieves, Sierra de Crevillente, 30SXH8739, 830 m, 1.VII.1994, M. Vicedo & R. Vicedo (ABH10662). Villena, Sierra de Enmedio, 30SXH7671, 600 m, 9.VII.1996, L. Serra (ABH19940). Benifato, Penyes del Bc. d'Alfarara, 30SYH3983, 1000 m, 9.VII.1993, J. L. Solanas (ABH7915). Villena, 25.VI.1992, C. Calabuig (ABH7177). Villena, Cerro de la Virgen, 30SXH7978, 600 m, 16.VII.1994, M. A. Alonso & M. D. Vargas (ABH10665). Vall de Laguard, Barranc de l'Infern, 30SYH4897, 320 m, 12.VII.1997, L. Serra, J. J. Herrero-Borgoñón & A. Olivares (ABH46821). Alcoi, ctra. Alacant, pr. Bco. de la Batalla, 30SYH2082, 720 m, 7.VIII.1991, L. Serra (ABH18964). Orihuela, Cabezo Ros, 30SXH7822, 100 m, 19.V.1996, P. Espinosa & Y. Martínez (ABH32070). Orihuela, Monte de San Miguel, 18.VI.1852, Guirao [E. Bourgeau, Pl. d'Espagne, No. 1583] (G *s.n.*, K *s.n.*). Confrides, Castell de Confrides, 30SYH3984, 1100 m, 27.III.1993, J. L. Solanas (ABH4822). Agost, pr. estación ferrocarril, 30SYH05, 18.VII.1954, Amengual [Genève 1990 No. 372653] (G *s.n.*, RNG *s.n.*, ABH15734, ex dupla MA). Monóvar, Sierra de Reclot, Gorgori, 30SXH7951, 800 m, 1.V.1994, A. Navarro (ABH15592). Petrel, S^a Cid, 30SXH9662, 610 m, 12.IX.1993, A. Juan & J. C. Cristóbal (ABH6393). Benitatxell, Puig Llorensa, 31SBC5389, 400 m, 15.VII.1992, A. Barber (ABH1816). Santa Pola, Cabo de Santa Pola, Gran Alacant, 30SYH1632, 125 m, 1.X.1996, J. C. Cristóbal & N. Martínez (ABH30041). *Ibidem*, 30SYH1733, 120 m, 14.VI.1997, J. C. Cristóbal & N. Martínez

(ABH36880). Hondón de las Nieves, La Canalosa, Sierra Cofer, 30SXH7941, 550 m, 23.VII.2008, *B. Amat & J. C. Agulló* (ABH52763). Between Alcoi and Jijona, 30.VII.1948, *V. H. Heywood & P. H. Davis* [Iter Hispanicum 1948 No. 919] (K *s.n.*). Denia, Cabo San Antonio, 31SBC59, 80 m, 27.IV.1980, *J. Molero* [Genève 1983 No. 256507] (G *s.n.*). Sierra Mariola, 24.VI.1858, *Boissier* [Herbier Barbey-Boissier] (G *s.n.*). Almería: Vélez-Blanco, Muela de Montalviche, 18.VII.1895, *Willkomm* [Herbier Barbey-Boissier] (G *s.n.*). Entre María y Vélez Blanco, Cortijo del Peral, 1600–1800 m, 3.V.1979, *F. García, T. Luque & B. Valdés* (RNG *s.n.*). Castellón: Almenara, Las Lagunas, 30SYK4004, 5 m, 14.IV.2004, *M. B. Crespo, M. A. Alonso, M. Martínez-Azorín & E. Camuñas* (ABH50885). Segorbe, 2.VIII.1887, *Pau* (K *s.n.*). Segorbe, Sierra de Segorbe, 400 m, VIII-1891, *E. Reverchon* [Pl. d'Espagne No. 624] (G *s.n.*, K *s.n.*). Segorbe, 2.VIII.1888, *C. Pau* [Flora selecta exsiccata No. 1909] (G *s.n.*). Granada: Granada, Sierra de Alfacar, 20.VIII.1852, *Pedro del Campo* [Pl. de la prov. de Grenade No. 25] (G *s.n.*, K *s.n.*). Alfacar, Alfacar mountain, X-1838, *Rambur* [Herb. J. Gay] (K *s.n.*). Puebla de Don Fadrique, 400–2000 m, 27/29.VII.1985, *Porta & Rigo* [Iter IV Hispanicum 1895 No.101] (K *s.n.*). Puebla de Don Fadrique, Cuerda de los Mirabiles, 38°01'N 02°35'W, 1800 m, 5.VII.1979, *P.F. Cannon et al.* (RNG *s.n.*). Puebla de Don Fadrique, Sierra de Guillimona, Barranco de Torilla, 30SWG3812, 1500 m, 23.VI.1988, *B. Valdés, M.F. Watson et al.* (RNG *s.n.*). Alfacar, Sierra de Alfaguara, *Boissier* [Herbier Barbey-Boissier] (G *s.n.*). Lújar, Sierra de Lújar, 28.V.1977 [Herb. J.W. Carr] (RNG *s.n.*). Jaén: Montes de Cazorla, 25.VI.1948, *V. H. Heywood & P. H. Davis* [Iter Hispanicum 1948 No. 363] (K *s.n.*). Montes de Cazorla, Barranco de la Garganta, 25.VI.1948, *V. H. Heywood & P. H. Davis* [Flora of Spain No. 136] (K *s.n.*). Montes de Cazorla, Agujeros de San Pedro, 11.VIII.1948, *V. H. Heywood & P. H. Davis* [Iter Hispanicum 1948 No. 957] (K *s.n.*). Sierra de Cazorla, Carretera El Vadillo-Fuente del Espino, 20.IX.1973, *V. H. Heywood & D. M. Moore* (RNG *s.n.*). Sierra de Cazorla, Arroyo de la Garganta, 30SWG0994, 31.VII.1983, *A.M. Hernández* (RNG *s.n.*). Murcia: Abanilla, Sierra Quibas, 30SXH6742, 670 m, 24.X.2001, *S. Tito* (ABH45523). Lorca, sierra de Tercia, 3.V.1928, *E. Ellman & N. Y. Sanwith* [Flora of Spain No. 1021] (K *s.n.*). Murcia, IX-1812 [Herbarium Hookerianum 1867] (K *s.n.*). Sta. Eulalia, Sierra de Espuña, 500 m, 22.VIII.1929, *Hno. Jerónimo* [Pl. d'Espagne-F. Sennen 1929 No. 7248] (G *s.n.*). *Ibidem*, 580 m, 4.VII.1929, *Sennen & Jerónimo* [Pl. d'Espagne-F. Sennen 1929 No. 7118] (G *s.n.*). Valencia: Poble de Vallbona, 30SYJ1289, 150 m, 28.VI.1992, *M. B. Crespo* (ABH1844). Almiserat, les Eretes, 30SYJ3413, 400 m, 30-3-1996, *J. J. Herrero-Borgoñón* (ABH18282). Alberique, urb. Punta del Júcar, 30SYJ1330, 40 m, 22.IX.1996, *M. B. Crespo* (ABH19873). Sierra Mariola, VII-1858, *Boissier & Reuter* [Herbier Barbey-Boissier] (G *s.n.*). *Ibidem*, VII-1858, *Boissier & Reuter* [Herbier Henri Bernet] (G *s.n.*). Llombai, Pou de les Fontanelles, 30TYJ0651, 160 m, 25.VII.1998, *Marín Campos* [Genève 1999 No. 482898] (G *s.n.*, ABH40651). Alfarp, Camí Pedreñals, VIII-1986, *D. Sánchez-Mata* [Genève 1990 No. 353996] (G *s.n.*). *Ibidem*, VIII-1986, 300 m, *D. Sánchez-Mata* [Genève 1989 No. 338639] (G *s.n.*, RNG *s.n.*). Alfarp, Camí Pedreñals, 30SYJ1151, 100 m, 8.VIII.1979, *D. Sánchez-Mata* (RNG *s.n.*). Llombay, 15.IV.1983, *Stübing* [Exsiccata I Univ. Valencia No. 25] (RNG *s.n.*). Ayora, Sierra de Palomera, 13.IV.1984, *S.L. Jury, F.J. Rumsey & M.J. Vaggies* (RNG *s.n.*). Unknown: Las Cabañas, 10-IX, *S. Ph. Giuseppi* (K *s.n.*, Flora of Spain No. 16). I-1819, *Léman* [Herb. J. Gay] (K *s.n.*). **Portugal**. Ribatejo: Santarém, Torres Novas, VIII-1890, *Reverchon* (G *s.n.*, Herbier de E. Ayasse) [unprobable, very likely with wrong label]. — *Hypericum robertii*. **Algeria**. Tébessa: Tébessa, VI, *Luis-André Girod?* (G00305576). **Tunisia**. Kasserine: Djebel Chambi, in cacumine ad rupes, 13.V.1987, *A. Letourneux* (P05151229 pro parte). Haidra, *A. Letourneux* (MPU009216). Feriana, VII-1884, *Robert* [Société dauphinoise, 1885 no. 4800] (P05151229 pro parte, P05151234, P05151235, P05151238, P05151241, MPU009217, MPU009218, G00305579). *Ibidem*, 7.II.1967 (MPU *s.n.*). *Ibidem*, VII-1884, *Robert* [Flora selecta exsiccata No. 1387] (P05151229 pro parte, MPU *s.n.*). *Ibidem*, 900 m, 12.IV.1912, *H. Humbert* (G00305575). *Ibidem*, VII-1884, *Robert* (G00305573, P05151235, P05151230). *Ibidem*, VII-1884, *Robert* (G00305578). *Ibidem*, in collibus lapidosis, 22.VI.1884, *A. Letourneux* [Mission botanique en Tunisie, 1884] (P00388984, P05151237). *Ibidem*, Fesum Camesmida ad rupes, 20.VI.1884, *A. Letourneux* [Mission botanique en Tunisie, 1884] (P05151236). *Ibidem*, fissures des rochers, VII.1884, *Robert* (P05151233, P05151239). Fentes des rochers a Feriana, VIII-1884, *Robert* (P05151231). — *Hypericum hispanicum*. **Spain**. Almería: Aguadulce, Bco. Palmer, 30SWF4175, 100 m, 11.VII.2008, *A. Juan, M. Mart.-Azorín, J. L. Villar & J. C. Agulló* (ABH52755). Almería, *Fernández Navarro* (MA77969; holotypus). Entre Vúcar y Félix, 400 m, 9.XI.1969, *Fernández-Casas* (MA328302). Almería, Barranco de las Canteras, 3.VI.1921, *E. Gros* (MA77971). Almería, Barranco de las Canteras, 7.VI.1921, *E. Gros* (MA77970, G). Almería, 26.V.1927, *E. Ellman & E. Helme* [Flora of Spain No. 326] (K *s.n.*). Almería, 29.V.1924, *E. Ellman & C. Hubbard* [Flora of Spain No. 894] (K *s.n.*). — *Hypericum maroccanum*. **Morocco**. Oriental: Debdou, Flouch, 1000 m, 10.IV.1928, *E. Wilczek 191* (MPU002621: holotype; RAB007744). *Ibidem*, Flouch, Dj. Kel-el-Abiod, 1300 m, 10.IV.1928, *E. Wilczek et al.* (G00305571). *Ibidem*, 1000–1200 m, 10.IV.1928, *E. Wilczek et al.* (G00305567). Unknown: Djebel Bou Afahni, *M. Gandoger* (MO6271085). *Ibidem*, V-1909, *M. Gandoger* (G00305577). Ech Chaoun, 1909, *M. Gandoger* (MO6271084). *Ibidem*, VI-1909, *M. Gandoger* (G00305572).