NOTULAE TAXINOMICAE, CHOROLOGICAE, NOMENCLATURALES, BIBLIOGRAPHICAE AUT PHILOLOGICAE IN OPUS "FLORA IBERICA" INTENDENTES

TAXONOMIC NOTES ON *ERYNGIUM* (APIACEAE) FROM THE WEST MEDITERRANEAN

The following notes are the result of a revision of *Eryngium* undertaken to produce a generic account for *Flora iberica*. Sixteen species are recognised for the territory of the Iberian Peninsula, almost the same feature as that for N Morocco (S.L. Jury, ined. in *Checklist of Plants of Northern Morocco*). A comprehensive taxonomic index of the genus has been recently published –WÖRZ in *Stuttgarter Beitr. Naturk.* Ser. A, 596: 4 (1999)–, which provides useful information on available names and types. Part of the present notes are additions to this index, including matters on typification. Others refer to observations on morphological variability that have positive or negative taxonomic implications. A new record is given for a previously considered local endemic species.

E. galioides Lam., Encycl. 4: 757 (1798)

The occurrence of two rather different habits in this species has long been recognised –GAY in *Ann. Sci. Nat. Sér.* 3, 9: 169 (1848); LANGE in WILLK. & LANGE, *Prodr. Fl. Hispan.* 3: 12 (1874); WOLFF in *Engler, Pflanzenr.* IV.228(61): 114 (1913); PERDIGÓ & LLAURADÓ in *Lazaroa* 6: 197 (1984)–. However, its seems that the wide variability exhibited by this species is largely phenotipic and depends on the different environmental conditions in which the plant grows. A prolonged period of water availability is correlated with well developed unbranched main stems (up to 30 cm tall). These forms in which the dichasia are clearly off the ground and stem leaves are mostly alternate have been named *E. galioides* var. *leiocarpum* Wolff in Engler, Pflanzenr. IV.228(61): 114 (1913). In contrast, scarcity of water during the growing season seems to provoke a rapid ending of growth in the main stem. The main capitulum stands as close as a few millimetres from the root and the dichasia develop profusely from the pair of opposite leaves subtending the main capitulum. The resulting habit under these conditions is branched from the base, intricate, close to the ground and lacks opposite cauline leaves. These forms have been referred to *E. galioides* var. *trachycarpum* J. Gay in Ann. Sci. Nat. ser. 3, 9: 169 (1848). The precise type locality of this taxon –"Habitat in Lusitaniae paludosis (Tourn.!)..."– can be traced with the aid of HENRIQUES' work on Tournefort's explorations of Portugal. *(Bol. Soc. Brot.* 8: 191-261. 1890). The best match between the label attached to the type specimen (P-Tourn n.° 2944) and the list of Tournefort collections in Portugal is specimen n.° 344 (HENRIQUES, *op. cit.:* 215). According to these manuscripts the specimen was collected "Inter Bejam et Mertolam" (Baixo Alemtejo).

Both habits can be seen in the same pond in subsequent years under different conditions of water abundance (L. Medina, comm. pers.), an observation that supports their apparent phenotypic nature.

E. tenue Lam., Encycl. 4: 755 (1798)

The protologue indicates that the type is from Spain –"Cette plant croît naturellement en Espagne, sur les collines, & m'a été communiquée par M. Cavanilles, & par M. Vahl". Unlike other species, WÖRZ *(op. cit.:* 334) does not transcribe the label on the type specimen (Lam-P). The label, which I had the opportunity to see through a microfiche says: "Eryngium pumilum / Madrid S. Bernar. / ex hispan. D. Cavan." The exact type locality is rather obscure although it is suggested to

be in or near the city of Madrid. Another specimen of *E. tenue*, collected a hundred years later by Colmeiro (MA 84797), may give a clue about it. In this latter specimen the locality is spelled out as "altos de S. Bernardino". It is likely that both plants came from the same place within the city limits.

E. huteri Porta, Vegetabilia Itin. Iber.: 29 (1892)

It was described from a single locality in Sierra de la Sagra (Granada) and has been recently considered to be conspecific to *E. caespitiferum* Font Quer & Pau –in *Cavanillesia* 4: 30 (1931)– from the Moroccan Rif –JURY in *Lagascalia* 18(2): 273 (1996)–. The overall appearance is quite similar (branched woody rootstock, short stems, most stem leaves fertile). However, based on the characters commented below the plant from La Sagra and the Moroccan may not be conspecific. As stated in the protologue, *E. caespitiferum* seems to be close to *E. aquifolium* while *E. huteri* does not. Characters that distinguish *E. huteri* from *E. caespitiferum* are: leaf and bract venation (pinnate or pinnate-reticulate but reticulum lax with areoles of several mm vs. pinnate-reticulate, the reticulum very thin with areoles < 1mm), leaf division (deeply divided pectinate-spinose with long spines vs. dentate-spinose in *E. caespitiferum*), leaf colour (green with a whitish stripe along the main veins instead of clearly glaucous), bract length (2-3 times longer than the capitulum vs. 1.8-2 times in *caespitiferum*), and bract margin (bearing ca. 4 spinules on each side vs. 2). In contrast, some specimens in the northernmost part of the distribution area [J, Beas de Segura, Sierra de las Cuatro Villas, Natao, 30SWH1330, 1200 m, *S. Pajarón 1244 & al.*, 28-VI-1981, (MACB 39918)] do resemble the Riffean specimens described as *E. caespitiferum*. Not only the habit, leaf and bract venation, leaf division, and colour, but also the number of espinules in the bracts 3-4 instead of 4-8. It may be worth noting that the hybrid *E. mohamedanii* described by Font Quer & Pau –in *Cavanillesia* 4: 31 (1931)– between *E. caespitiferum* and *E. bourgatii* is sound and therefore it does not add extra uncertainty to the patterns of variation in *E. aquifolium*. Further work based on other evidence is needed to clarify the relationships within the whole group.

Eryngium huteri is thus endemic to Southern Spain but is not confined to Sierra de la Sagra because a new locality is here reported. A specimen collected 40 km apart from the type locality in the Cazorla-Segura range does correspond also to *E. huteri* [Sierra del Pozo (J), Quesada, Puerto Llano, WG0385, 1800 m, sobre terrenos arcillosos removidos en zona de repoblación, 18-VIII-1980, *C. Cebolla & C. Soriano* (MAF 105896)]. This specimen was recorded as very rare, sub *E. aquifolium* –CEBOLLA & SORIANO in *Lazaroa* 3: 221 (1980)–, but raises the possibility that the species occurs elsewhere within the Subbaetic massif.

E. aquifolium Cav. in Anales Ci. Nat. 3(7): 32 (1801)

Lectotypus: "Circa Algeciras junio", *Broussonet* (MA 84838), **here designated.**

Eryngium aquifolium Cav. is distributed in Southern Spain and Morocco. When referring to the geographic origin of his new species, Cavanilles mentioned two collections both by Broussonet: "El Sr. Broussonet la encontró en las cercanías de Tánger, y antes por Junio en las inmediaciones de Algeciras, en España". But, when Cavanilles described the plant he only referred to a single specimen –"el exemplar que poseo...".

There have not been major confusions about the identity of this species and there are good illustrations like WOLFF *–In:* ENGLER, *Pflanzenr.* IV.228(61): 118 fig. 22 (1913)–, DELAROCHE *–Eryng. Alep. Hist.*, tab. 10 (1808)–, and VALDÉS, TALAVERA & GALIANO (eds.) *–Fl. Andalucía Occid.* 2: 291 (1987)–. However, if the type indicated by GARILLETI *–Fontqueria* 38: 163 (1993)– is followed, the identity of the species cannot be maintained. This author indicates the sheet MA 475673 as the only suitable type material although he does not lectotypify explicitly. The same opinion is held in WÖRZ *–Stuttgarter Beitr. Naturk.* Ser. A, 596: 4 (1999)–. Such sheet contains three fragments (possibly corresponding to two specimens) and is the only one among those preserved in the separate collection of types (in MA) to hold a hand-written annotation by Cavanilles: "Eryngium aquifolium / Anales Vol. 3. Pag. / De Tanger. Broussonet". This material is in principle a type element. However, it has three problems: 1) It does not match the protologue. Cavanilles says that his specimen lacks the base and therefore he cannot refer to the basal leaves. Other details of the description like the blue colour of the inner side of bracts do not match the specimen either. 2) It clearly contains at least two specimens. The material fixed on another sheet (MA 475671) belongs to the same collection, presumably from Tanger. 3) The third problem, at least in terms of nomenclatural stability, is that the specimens contained in these two sheets do not correspond to the species we traditionally know as

E. aquifolium. The leaves in this material from Tanger do resemble those of *E. aquifolium* in their irregularly sinuate-dentate margin and in their obovate shape. However, the margin is more deeply and coarsely divided, the upper leaves are not lanceolate and the bracts are linear instead of lanceolate. Among the material kept in the Cavanilles collection in MA under *E. aquifolium*, there are three additional sheets (under the same number, MA 475672) that contain several specimens that are true *E. aquifolium*. One or two fragments may match the protologue but the rest have the rootstock and thus cannot be the specimen Cavanilles described. Besides, the labels attached indicate that the specimens in these three additional sheets were not available by the time of the original description.

Fortunately, in the MA general collection there is a previously unnoticed specimen that seems to be *the* one Cavanilles actually had in his hands when describing *E. aquifolium* (fig. 1). It is a single specimen that matches Cavanilles detailed description in all its terms, including size, shapes and colour of all the organs. A hand-written label

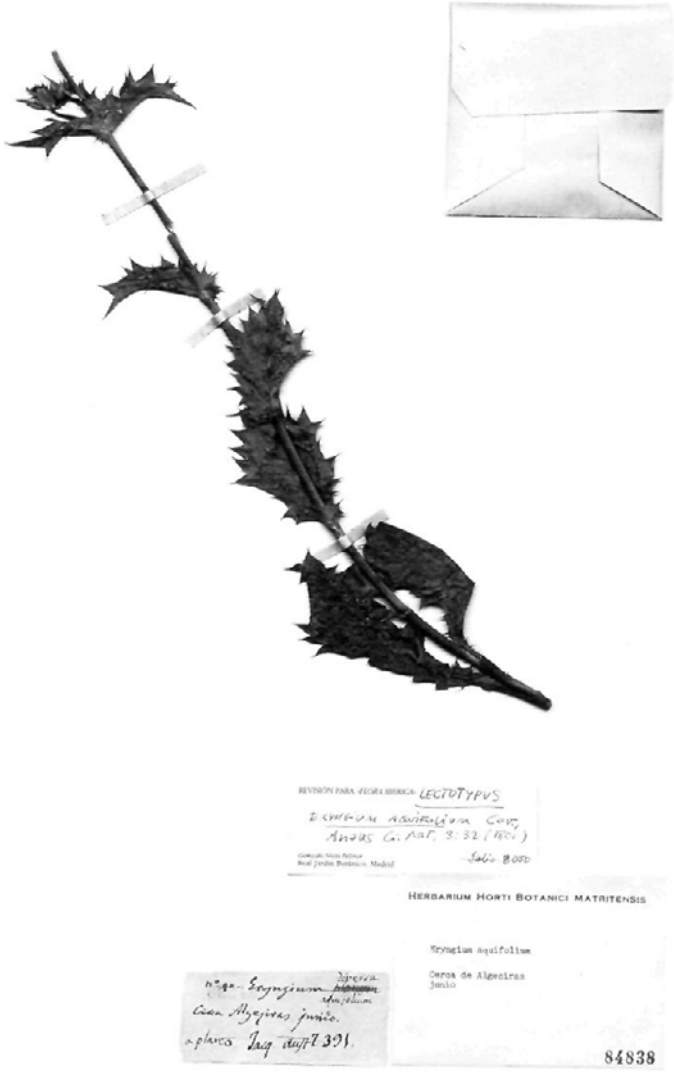

Fig. 1.–Lectotype of *Eryngium aquifolium* Cav. (MA 84838).

by Broussonet says "n.° 40. Eryngium planum / Circa Algeciras junio. / a plano". But the epithet "planum" is crossed and two words are added (in Cavanilles hand-writing): "diversa", possibly announcing the misidentification and "aquifolium". A further annotation in unidentified handwriting (possibly José Demetrio Rodríguez) says "Jacq. Austr. T 391". This specimen is likely to be the holotype but since the specimens coming from Tanger can be also considered type elements, the best solution is to propose a formal lectotypification.

The only remaining problem albeit actually circumvented by the present lectotypification, is the identity of Broussonet's material from Tanger. It resembles *E. dichotomum* Desf. But lacking capitula, being in not a good condition and possibly being mixed, its identification remains doubtful.

E. bourgatii Gouan, Ill. Observ. Bot.: 7, tab. 3 (1773) ["Bourgati"]

Unless conserved, *Eryngium bourgatii* would be displaced by one name by Miller never used by other authors to designate this species: *Eryngium pallescens* [*"pallescente"*] Mill., Dict. Ed. 8 n.° 5 (1768). This unnoticed name was found by WÖRZ –*Stuttgarter Beitr. Naturk.* Ser. A, 596: 4 (1999)–. A proposal to conserve Gouan's name has been submitted (Nieto Feliner, ined.)

Based on the degree of division of the leaves, the width of the leaf lobes, as well as on the occurrence of scales on the mericarps, two varieties have been recognised in the Iberian Peninsula. *Eryngium bourgatii* var. *pyrenaicum* Lange *(In:* WILLK. & LANGE, *Prodr. Fl. Hispan.* 3: 12. 1874) would correspond to the northern part of the territory and include less dissected leaves with relatively wide lobes and almost scaleless mericarps. Plants from the central and southern mountain ranges have profoundly dissected leaves bearing linear strongly spiny leaf lobes, and densely scaly fruits –*E. bourgatii* var. *hispanicum* Lange in Willk. & Lange, Prodr. 3: 12 (1874)–. Although the fruit character seems to be too variable, there is a trend in leaf shape roughly corresponding to the two varieties. Further, the characteristic bluish colour of the species in the central and northern populations does not hold for the Andalusian plants –*E. bourgatii* var. *viridescens* Reverchon, Pl. d'Espagne, n.° 1147 (1903), nom. nud. in sched. mss.; cf. HERVIER in *Bull. Acad. Int. Géogr. Bot.* 15(187/188): 96 (1905)–. However, obscure geographical limits and a significant number of exceptions in such trend recommend caution in recognising intraspecific categories. A phylogeographic study would be helpful to throw some light on this problem.

E. grosii Font Quer, Index Sem. Hort. Bot. Barcinon. 1938: 12 (1938)

This morphologically distinct species, endemic to Sierra de Almijara (Málaga), has been reported to be monocarpic –G. LÓPEZ in *Anales Jard. Bot. Madrid* 36: 279 (1980)–. It is true that shoots do not flower the first year and that flowering stem wither after fruiting but the whole plant does not die. The life form is very similar to that in the common *E. campestre*. The flowering stems are detached from a very specific predetermined ring at the base of the stem during the fruiting state, but the subterranean rootstock remains alive after this. The main difference with *E. campestre* is that basal leaves in *E. grosii* are never present with flowering stems.

E. campestre L., Sp. Pl.: 233 (1753)
E. dichotomum var. *ramosissimum* Loscos & Pardo in Willk. (ed.), Ser. Inconf. Pl. Aragon.: 46 (1863)
E. duriberum Sennen & Pau in Bull. Acad. Int. Géogr. Bot. 16(206): 76 (1906)
E. campestre f. *duriberum* (Sennen & Pau) Perdigó & Llauradó in Lazaroa 6: 192 (1984)

Morphological variability in leaf characters associated with the development of individual organisms is well known in Apiaceae –cf. CERCEAU-LARRIVAL in *Bull. Soc. Bot. France* 126: 39-53 (1979)–. Certain alterations of the normal ontogenetic sequence of leaf shape appear to be responsible for morphotypes that have received taxonomic recognition. The first adult leaves on seedlings of *E. campestre* are undivided, obovate-oblong to elliptic, with dentate-spinulose margin as opposed to the typical basal leaves in adult individuals (trisect with bipinnatisect segments). Occasionally, adult individuals with a thick rootstock present a leaf rosette of undivided juvenile leaves. Exceptionally, individuals of this kind are found in flower, in which case the stem leaves are also undivided and the stems are less profusely branched than normal. One such form was described as *E. duriberum* Sennen & Pau –*In: Bull. Acad. Int. Géogr. Bot.* 16(206): 76 (1906)–. PERDIGÓ & LLAURADÓ –*In: Lazaroa* 6: 192 (1984)– reported that living plants identified as *E. duriberum* transplanted from the wild (Sierra de Villarroya, Zaragoza), recovered the normal divided leaves by the second year in cultivation. This finding support the criterion that altered

morphotypes should not receive taxonomic recognition at the species level. The only reason to doubt is a certain concentration of this "abnormal" forms in the central-northern part of Spain (provinces of Bu, Vi, Z).

Another such unusual specimens caused a similar confusion –*E. dichotomum* var. *ramosissimum* Loscos & Pardo in WILLK. (ed.), *Ser. Inconf. Pl. Aragon.*: 46 (1863)–. Two factors presumably contributed to the description of a specimen of *E. campestre* under another species. The first is that the type material (from COI) has undivided leaves of the kind described above and is thus one of those abnormal forms. The second is that BOISSIER –*Voy. Bot. Espagne* 2: 236 (1840)– had recorded erroneously the otherwise North African species *E. dichotomum* Desf. from Serranía de Ronda on the basis of a sterile specimen.

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