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SEPARATA DO
BOLETIM DA SOCIEDADE BROTERIANA
Vol. XLVII (2.ª série) — SUPLEMENTO

ABRIL

1974

Composição e impressão das Oficinas da Tipografia Alcobacense, Lda. — Alcobaça

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INTRODUCTION

THIS is a very difficult group of Umbelliferae, with two well-defined species and many variants. Further experimental work is necessary for an understanding of this atlantic and submediterranean orophytic group, which is related to the polymorphic *L. krapfii* Crantz and with *L. longiradium* Boiss., an isolated species from Southern Spain (Sierra Nevada).

Furthermore, it is a very good example of species living in isolated populations in orophytic exploited communities (Quercus-Pinus woods) as well as on very steep slopes with *Fagus sylvatica* (Pyrenees) (1) & (12).

I have seen material from COI, JACA and M. LAÍNZ' herbarium (Gijón), in addition to finding *L. eliasii* Sen. & Pau on numerous occasions in the subcantabrian region from Palencia-Navarra to Jaca, sometimes very near to luxuriant communities of *L. nestleri* (with *L. latifolium, Rubus idaeus, Sambucus racemosa, Urtica dioica, Stachys alpina,* etc.), but always on drier forested slopes; I have never found the hybrid between these two taxa.

In JACA we also have two sheets of *L. nestleri* with hairy rays and many other characters sufficient to describe it as a new subspecies *turolensis,* from Sierra de Gúdar, near Alcalá de la Selva (Teruel), collected together with N. Y. SANDWITH, n. 5047 (K-Hb. SANDW.).

It is in order to improve our biogeographical and ecological knowledge of these four taxa, that I write this note.

HISTORY, ECOLOGY AND CHOROLOGY

SAMPAIO's original description, modified, is as follows: «*L. thalictrifolium* Samp., Annaes da Academia Polytechnica do Porto 7: 53-54 (1912). *L. aquilegiaefolium* Brot., Fl. Lus. 1: 427 non Jacq.; *Ligusticum trilobum* Link in Schrad., Neu. Journ. 1: fasc. 2: 143 (1806); *L. nestleri* Mariz, Bol. Soc. Brot. 12: 202, non Soy.-Vill. — Differt a *L. nestleri* habitu valde alieno, foliolis glaberrimis, supra viridis, umbellis radiis glabris aut vix ad basem puberulis, involucratis 6-12 bracteis, et antheris albis. Hab. «Lusitania borealis».

«O aspecto desta planta é inteiramente diverso do do *L. nestleri,* com que foi confundido. Alem disso tem as folhas sempre tricompostas, glaberrimas, com foliolos menores e de recorte muito differente, as umbelas com raios glabros ou só um pouco puberulos junto da base, involucradas por 6-12 foliolos persistentes ou por fim caducos, e as anteras brancas».

«Do *L. eliasii* Sen. & Pau — de que possuo um exemplar autentico que me foi amavelmente cedido pelo illustre botanico espanhol C. PAU — afasta-se tambem consideravelmente, de modo a não poder ser com ele confundido, de modo algum, pelo aspecto diversissimo, por caracteres consideraveis das folhas, pelas umbelas com involucros polífilos e pelas anteras brancas».

I have seen the following material from Portugal (COI): Serra da Peneda (J. PAIVA & al.); Gerês (M. FERREIRA 1880 sheet with hispidulous rays, MOLLER 1883, 1884. R. FERNANDES & al., etc.); Bragança Mt. S. Bartholomeu (J. DE MARIZ 1888 with few unicellular hairs on the veins beneath the leaves), (also A. FERNANDES & al 24-VI-1955, no 5508. with few hairs beneath the leaves and 4-hermaphrodite umbels).

Ecologicaly (2) «L. thalictrifolium» is typical of more or less dense oak forests (*Quercus robur* ssp. *broteroana* Schwarz) (8), particularly those regenerated (with young trees) on a very good soil and plenty of decaying leaves, in an oceanic-temperate climate (800-1100 m alt.).

In N.W. Spain (Galicia), M. LAÍNZ (3) refers to this species from Montes Ancares to Becerreá (Lugo) and also from Cabañas Antiguas.

On the basis of our material (P. MONTS. & L. VILLAR 5937/72), I believe that in Peña Redonda (Palencia), south slopes 1800 m, the specimens collected approach *L. eliasii* Sen. & Pau. On the same mountain, 1400 m, M. LAÍNZ found *L. nestleri* (5) (6). In addition, this author mentions *L. nestleri* ssp. *eliasii* Laínz 1956 (4) from the driest part of Orense province: «ad vineas in Requián, prope Las Ermitas» (see the map).

In Portugal (*Thymelaea ruizii* communities), Miranda country, with a very similar climate, this more xerophytic taxon related to «L. thalictrifolium» may yet be found.

Typical *L. eliasii* Sen. & Pau (Obarenes mountains, N. of Burgos province) is frequent in the Rioja and similar areas under a «subcantabrian climate» (7), a transitional climate between the oceanic shores and the driest Ebro Valley («foehn effect»). It prefers more or less superficially acidified soils on limestone rocks, open oak forests [*Quercus valentina* × *robur, Q. valentina* × *pyrenaica, Q. cerrioides* sensu C. VICIOSO (8) etc.]. *Thymelaea ruizii, Helictotrichon filifolium* ssp. *cantabricum* (Lag.) E. Paunero and *Endressia castellana* have similar chorology and ecology (1) (7). The distribution pattern is from Orense province (Galicia), (Miranda do Douro?), Sierra del Brezo (León-Palencia), «páramos» of Santander-N. Burgos, to the Rioja-Cameros (Logroño), as well as from mountains of Alava-Navarra to very near Jaca (700-900 m), Sinués (1200 m) and Hecho (Patraco de Urdués, 850 m) (See the map).

L. nestleri Soy.-Vill. extends from the E. Pyrenees to the Belagua valley (N. E. Navarra) as well as in other small areas in Sierras Urbasa-San Donato-Satrústegui, near Alsasua-Irurzún, 800-1200 m (W. Navarra). Near Bosque de Irati I found only *L. eliasii,* but is also possible to find *L. nestleri* in the Northern part of Navarra. In the Pyrenees of Aragón this species reaches the North slopes of Oroel (Jaca) 1000-1700 m and Sierra de Guara, 900-1900 m (nr. Huesca).

In the Southern part of Aragón (Teruel province) mention is made by Asso (9), and Rivas Goday & Borja (10) of *L. latifolium* sensu Asso («oritur en la cerrada de la balsa circá Linares, Folia saepius biloba, subhirsuta»); it is a critical plant («folia saepius biloba...») and is perhaps only a luxuriant form of our *L. nestleri* subsp. *turolensis* (see below).

On stony slopes of Gúdar mountains (Teruel) 1700--1800 m, there is a smaller form related to *L. nestleri* (*Siler nestleri* Riv. God. & Borja l. c. p. 433) (10), with 2-lobulated (terminal 3-lob.) leaf-segments and hairy rays.

The adjoining map and descriptions of the clearest morphological features for the four taxa, will aid specialists with a view to improving the systematic treatment of this interesting group.

The clear-cut morphological features and new taxa. — Determinations in the genus *Laserpitium* are always difficult (either no flowers or no fruit) and Experimental Taxonomy is essential for solving the main problems. Cytogenetical studies are projected.

L. eliasii Sennen & Pau, Bol. Soc. Arag. Ci. Nat. **6**: 25 (1907). *L. nestleri* subsp. *eliasii* Laínz 1956 (4). — Cf. Icon Cámara Niño, F. 1940 (11) from: Monte Tejero nr. Jubera 900-1000 m. Monte Clavijo 1000 m, Peñalmonte nr. Arnedillo (cum *Taxus baccata, Rhamnus alpinus, Ribes alpinum,* etc. 1200 m) and Peña Isasa 1300 m. All of them in Rioja Baja (Logroño).

From our collections (JACA hb) it is frequent also in Navarra, 400-1200 m, Olazagutia-Guirguillano (nr. Puente la Reina) to Irati-Sierra de Leyre. Rare in N. W. Aragón, from Salvatierra to Jaca-Hecho.

Very similar to the better-known subsp. *thalictrifolium,* with glaucous, larger and coriaceous folioles more cordate at base, bracts scarce and more caducous, larger wings and fruit, etc. Umbel-rays with prominent veins (T-shaped) and never scabrid in their inner face. In Hecho and Piétrola de Sinués, etc. (800-1250 m) *L. eliasii* is growing very near some patches with megaforbs (*Rubus idaeus, L. nestleri,*

etc.) and I have never found their hybrid (ecological and biological isolation).

L. eliasii subsp. **thalictrifolium** (Samp.) P. Monts., comb. nov. [*L. thalictrifolium* Samp., Ann. Acad. Polytech. Porto. **7**: 53 (1912)]. — Forb, taller than *L. nestleri,* the leaves glabrous (sometimes with very few unicellular hairs), glaucous (mainly beneath), more divided and with smaller folioles; usually heteromorphic leaves, the cauline with few and narrow segments. Umbels with more bracts than *L. nestleri* but also caducous, and 15-25 rays which have more distinct veins and which are not hairy on the internal face (only scabid very near the base); fruit and wings (1-1,4 mm) narrower than in *L. nestleri*; always with white flowers and yellow anthers. The terminal umbel is hermaphrodite and the lateral male (with the exception of one gathering from Bragança, A. Fernandes & al. n. 5508, which has 4-hermaphrodite umbels). Distributed in N. W. Iberian Peninsule, Galicia and Portugal.

In West Navarra, and particularly Peña Redonda (Palencia), there are strains of subsp. *eliasii* with smaller folioles similar to those of subsp. *thalictrifolium*; this is a problem to be resolved by Experimental Taxonomy. It is clear that the affinities of subsp. *eliasii* are stronger with subsp. *thalictrifolium* than with *L. nestleri;* the two species are biologically isolated.

L. nestleri subsp. **turolensis** P. Monts., subsp. nov. — This taxon from Sierra de Gúdar-El Monegro 1700-1900 m (Teruel), on shaded slopes (9) (10), is quite different from the Pyrennean one and remains very isolated from the main area (see map).

«Differt a typo: Radiis umbellarum densissime hirsutis, antheris purpurascentibus et petalis albidis. Bracteis umbellarum magis persistentibus et cum apice elongato hispidulo. Hab. in montibus turolensibus Sierra de Gúdar-Monegro dictis, 1700-1800 m in Barranco de la Gitana, supra La Vega de Alcalá de la Selva, cum clarissimo amico N. Y. Sandwith, die 9-VII-1957 inveniebamus. Typus JACA, leg. P. Montserrat, cotypus in K, leg. N. Y. Sandwith 5047.

The Pyrennean taxon, subsp. *nestleri,* has red-purple anthers and petals (sometimes petals red only in the dorsal--apical part) and more hairy leaves. We can easily distinguish *L. nestleri* (both subsp. *nestleri* and subsp. *turolensis*) from *Laserpitium latifolium* by means of the glabrous primary ridges on fruit and also the foliole shape; the hairy umbel-rays (subsp. *turolensis*) are convergent with *L. latifolium,* hence the records of ASSO (9) and RIVAS GODAY & BORJA (10).

Further considerations. — The Pyrennean *L. nestleri* group is also variable but at present it is impossible to make a good systematic study of it; Sierra de Guara, North face of Oroel mountain, Ordesa valley and all the Central Pyrenees are interesting and suitable localities for cytogenetical and experimental taxonomic studies; there are ecological specializations, for instance to open beech forests (sometimes together with *Taxus* or fir) or outside the forest, under cliffs on rich soil (animal droppings), etc. All the *L. nestleri* group is relict, segregated in small populations on very old mountains.

Now it becomes possible to have an idea of the four main taxa, including two good species:

L. eliasii subsp. *thalictrifolium* (West part) in climax communities (oceanic oak forest) of *Quercus robur* subsp. *broteroana* (8); it is in my opinion the nearest to the archetype of this group.

L. eliasii subsp. *eliasii* restricted to slopes with eroded soil and a drier climate (suboceanic to submediterranean) (7) of N. Spain (N. N. E. Portugal??) and from the subcantabrian part of the Ebro Valley (7) to near Jaca in contact with *L. nestleri* like other subcantabrian endemics (1) (7) (12).

L. nestleri, a Pyrennean orophyte with a subspecies in Sierra de Gúdar, and possibly in E. Pyrenees; similar chorology to *Pinus uncinata* Miller (N. E. Spain) (W. Alp. Mar.), it is necessary to study the West part of Alpes Maritimes in connection with the orophytic E. European taxa (*L. krapfii* and particularly *L. gaudinii*).

L. nestleri subsp. *turolensis* P. Monts., quite different from typical *L. nestleri,* having a restricted area in Gúdar mountains (like *Pinus uncinata*). I do not know *L. longiradium* Boiss. to make a comparative study with orophytic taxa from Southern Spain.

Our chorological map, and ecological descriptions of the 4 taxa will aid botanists interested in the origin and evolution of these orophytic mediterranean relicts.

ACKNOWLEDGMENT

I am grateful to Prof. ABÍLIO FERNANDES, Director of the Instituto Botânico de Coimbra for his kindness in sending me material of *L. eliasii* subsp. *thalictrifolium*; to M. LAÍNZ (Gijón) for his material and help on this difficult group. (I have seen their sheets in 1972, but not now, for to compare, when I am writing this note). I am also indebted to F. FILLAT for drawing the maps; he and L. VILLAR, have assisted me with the English and French texts.

RESUMÉ ET COMMENTAIRES

Le groupe *L. nestleri* dans la partie N. de la Péninsule ibérique.

Il est toujours difficile d'étudier un échantillon d'Ombellifère et plus encore si on a besoin de distinguer entre une forme luxuriante de *L. nestleri* et une autre réduite du *L. latifolium*; jamais on trouve de bon matériel récent et complet.

Le problème est encore plus grand en Espagne; on peut distinguer quatre bons taxa, avec une aire et une écologie différentes; c'est pour cela et pour aider les spécialistes intéressés par la flore méditerranéenne et par les études caryologiques à la fois que nous avons dessiné la petite carte ci-jointe; nous faisons aussi la description des traits essentiels pour les bien connaître sur le terrain. A la fin nous faisons la division dans deux espèces qu'on peut bien distinguer.

En effet, dans la partie occidentale de l'aire on trouve l'ancien *L. eliasii* subsp. *thalictrifolium* (Samp.) P. Monts., comb. nov., de la Galice et Portugal, des chênaies climaciques montagnardes très atlantiques (600-1100 m), humides et un peu éclaircies.

L. eliasii Sen. & Pau (*L. nestleri* subsp. *eliasii* Laínz 1956) se rencontre dans les forêts claires, sol calcaire, dans les pentes raides soumises au climat subcantabrique (7), entre le climat cantabrique et le plus sec du Bassin de l'Ebre (subméditerranéen), il vit dans les chênaies à sol peu stabilisé et aussi dans les fentes du karst calcaire; il abonde dans l'aire de la carte.

L. nestleri Soy.-Vill. vit dans les Pyrénées Or., Centrales et Occidentales (sûrement il dépasse un peu Belagua vers l'Ouest) et il arrive aussi à l'Oroel (Jaca) et Guara (Huesca). On trouve aussi une aire réduite dans Urbasa-Satrústegui (Navarre); il change un peu dans chaque aire isolée, surtout Oroel, Guara et Urbasa.

L. nestleri subsp. *turolensis* P. Monts., subsp. nov. est très différente du type et nous en avons fait une nouvelle sous-espèce, localisée aux sommets de la Sierra de Gúdar--El Monegro, 1700-1900 m (Teruel), près de l'aire relictuelle du *Pinus uncinata.*

Il s'agit d'un bon exemple de distribution caractéristique de ce que nous avons déjà dit (12), montrant les connexions anciennes entre la partie méridionale du Bassin de l'Ebre et les Pyrénées d'une partie et avec le Nord des provinces de Burgos, Palencia et Léon de l'autre. Il faut faire attention à ce fait pour mieux comprendre d'autres problèmes de distribution semblables.

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(6) Note of P. MONTSERRAT. I saw in 1972 the material from M. LAÍNZ herbarium, but I have not it with me for to compare now.

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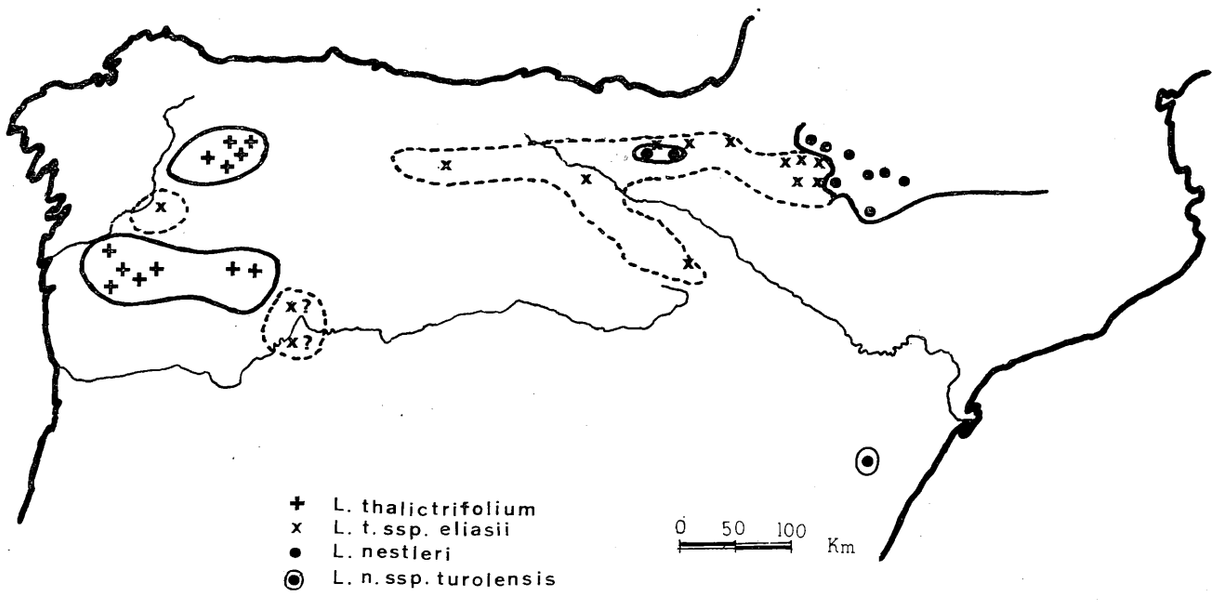

The **Laserpitium nestleri** group in the N. Iberian Peninsula