STUDIA BOTANICA HUNGARICA
(Antea: Fragmenta Botanica)
XIV. 1980 p. 73-78

Rare Ferns of Hungary II.
New species in Hungary: Osmunda regalis L.

By

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(Received November 28, 1979)

Abstract: During a collecting trip in the Nature Preservation Area of Barcs (near Darány) in July of 1978, in the alder fenwood of Nagyberek, the authors discovered a new member of the Hungarian flora: Osmunda regalis L. Besides the description of the locality, the results of coenological investigations are published.

Owing to its unique natural environments, the surroundings of Barcs (South-West Hungary) have been well known for a long time. It had been proposed to protect the region of the stream Rigóc as far back as in 1931, but the project was realized only in 1974 when the "Nature Preservation Area of Barcs" (henceforth abbreviated NPAB) was established (Map. 1). Under different natural environmental conditions many kinds of plant communities develop in this region. Extensive common juniper plantations (Juniperus communis L.) can be found on the dry, acidic sands (Festuca-corynephoretum-juniperetosum). The Old Juniper Woodland (close to the village of Istvándi) is best known for its beauties. The presence of Lycopodium clavatum L. and Nardus stricta L. is notewothy. There is such an undisturbed world of living beings in Nagyberek (part of the NPAB) that is incomparable in our country. On the swampy region, known as Csirkota, we have found an further locality of marsh pennywort (Hydrocotyle vulgaris L.) wich occurs sparsely in the NPAB. Many scientists investigated and collected in the alders-sphagnums-bog but the presence of Osmunda was unknown so far. This bog remained undisturbed up to the present day.

In July of 1978 at the margin of the bog we came across huge, magnificent "bouquets" of Osmunda regalis L. (Fig. 1-2). There were some 30 stocks with leaves of more than one metre long, well developed sporophyllums on every stocks. We gathered sporiferous fronds of the previous year, too. In Nagyberek Osmunda regalis L. grows only on that single, restricted locality. This colony hides itself among alders and oaks at the margin of the fenwood.

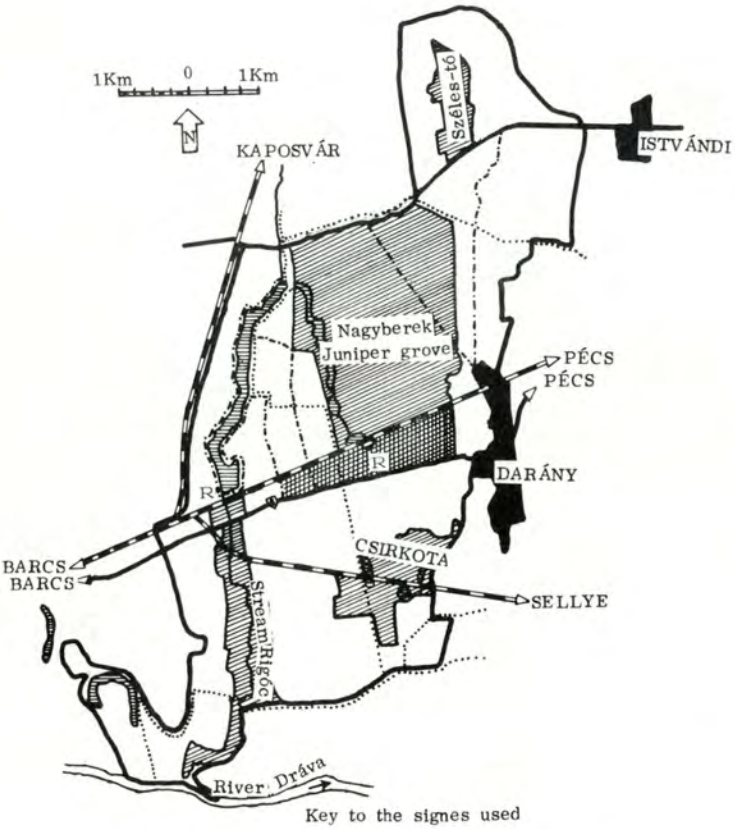
The old oaks visibly are the last seed trees of the former oakforest surrounding the copse, for a few metres farther there is a young Scotch fir (Pinus silvestris) plantation.

The alders-sphagnums-bog is an ideal place for Osmunda regalis L., since this species favours limeless, acidic soil, stagnant swamps and humid, mild climate in winter (Hegi 1927). The species is found along the Atlantic Coast of the world (Foerster 1978) (Map. 2). Osmunda regalis L. prevailed here presumably due to the same environmental complex that made it possible for Sphagnum to subsist. Seedlings of Osmunda regalis L. had been found in 1979, it means that the species can be propagated (ex verbis of T. Seregélyes).

The Osmundaceae family is represented by this single species in the recent flora of Europe (Map. 3). Considering the distribution of this species in Europe (Jalas et Suominen 1972), this locality is remarkably far from the others. There are also two doubtful data (Jávorka 1925) in the Transylvanian Alps and in Yugoslavia (Snežnik Mt.).

The species is an Atlantic member of the European flora, its presence is quite unexpected in Hungary. According to recent data this locality is the most continental one in flatlands. The

Map 1



Key to the signes used

- Railway
- Highroad
- Forest-path
- Stream
- Village
- Village margin
- Water surface
- Resting forest
- Strictly protected area
- Border of the protected area
- R Resting place

number of this locality is 0071A* which is obtained in the quadrate grid (Niklfeld 1971) used in mapping the Central European flora. We made some coenological investigations on the scene of presence squarely to the margin of the bog, samples 2 x 2 metres were taken in groups of five. The covering values are sign according to Braun-Blanquet (1951) as abundancy-dominancy value of species. Nearly half of the species of the samples taken in the alder-sphagnums-bog is Mediterranean or Atlantic in origin (Soó 1964-73). The rest is divided among Eurasian, Eurosiberian or cosmopolitan and circumpolar (see Table 1) regions. It can be seen on Table 2 that Osmunda regalis L. is found together with Carex elongata L. in every sample and five times with Juncus effusus L. and four times with Dryopteris carthusiana (Vill.) H. P. Consequently, Osmunda regalis L. is a member of the Dryopteridi-Alnetum community.

Having transformed covering values of Braun-Blanquet to percentage values we counted the diversity values (H'') and evennes (J) of herb layer (Table 3).

Thus, Osmunda regalis L. is found in those samples where the diversity values (H'') are average or higher than average, since there are six places with high diversity values in our samples and Osmunda regalis L. is found in four of them.

Finally, it is very difficult to decide wether Osmunda regalis L. is a newly discovered relict or it planted itself in the last decades because its area getting ever restricted.

Table 1. The species list of samples

European-Mediterranean sp.:
- Alnus glutinosa

European (-Mediterranean) spp.:
- Quercus robur
- Lysimachia vulgaris
- Galium rotundifolium

Eurasian (-Mediterranien) spp.)
- Frangula alnus
- Rubus caesius
- Populus tremula
- Carex vulpina
- Polygonum convolvulus
- Potentilla erecta

Atlantic, Amphiatlantic spp.:
- Osmunda regalis
- Padus serotina
- Veronica officinalis

Eurasian-Eurosiberian spp.:
- Betula pendula
- Spirea salicifolia

Eurasian sp.:
- Peucedanum palustre

Eurosiberian spp.:
- Carex elongata
- Calamagrostis canescens

European spp.:
- Molinia coerulea
- Holcus mollis

Circumpolar spp.:
- Fragaria vesca
- Agrostis tenuis
- Sphagnum sp.
- Dryopteris carthusiana
- Stellaria media
- Polytrichum sp.

Cosmopolitan spp.:
- Juncus effusus
- Poa compressa

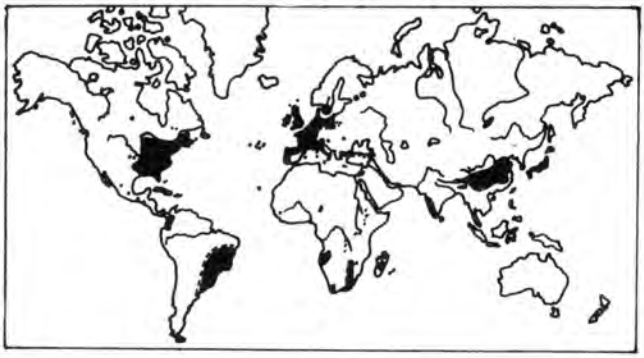
Grateful acknowledgements are due to Mr. I. Szabó, inspector of nature protection for his helping guidance and Mr. F. Németh for helping our coenologic investigations.

* This locality is marked by "Darány" in Niklfeld's map.

Table 2. Covering values and frequency of the species in the samples

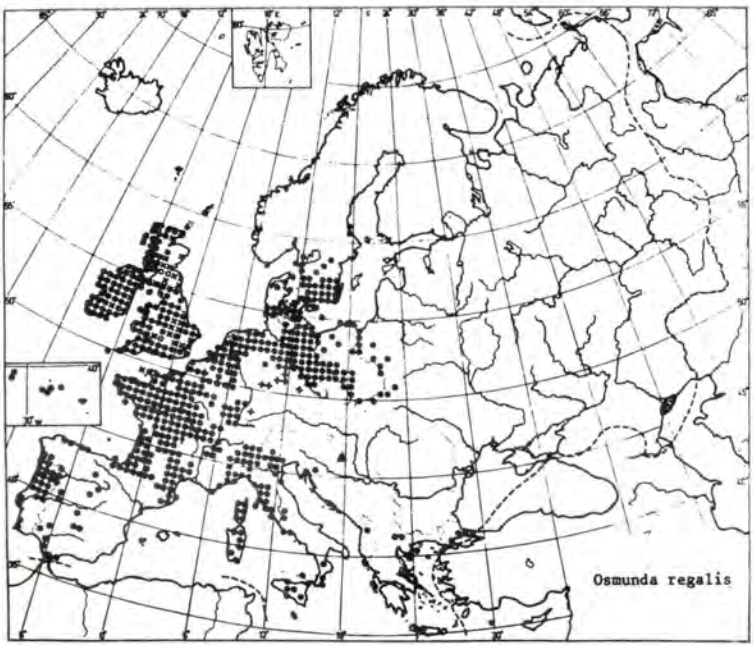
Species	Frequency	Covering values in the samples														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Quercus robur	8	3	5	5	4		3	3	2							3
2 Betula pendula	2	2	+													
3 Alnus glutinosa	10			+	3	+	+	+	2		2			+	2	2
4 Frangula alnus	7		1	2			1	+	+			+				+
5 Rubus caesius	7	+			+		1	+	2	+				+		
6 Rubus sp.	3	+	+	1												
7 Fragaria vesca	3	+	+	+												
8 Galium rotundifolium	3	+	+				+									
9 Poa compressa	1	+														
10 Agrostis tenuis	7	1	+	+									5	5	5	5
11 Holcus mollis	1	+														
12 Padus serotinus	3	+		+	+											
13 Carex vulpina	2	+					+									
14 Polygonum convolvulus	1	+														
15 Populus tremula	3	+			+				+							
16 Osmunda regalis	7		4	+			3	2	2	2		2				
17 Molinia coerulea	3		+	1	2											
18 Lysimachia vulgaris	8		+	+	+	+			+			+	+	+		
19 Veronica officinalis	1		+													
20 Stellaria media	1		+													
21 Potentilla erecta	2		+	+												
22 Carex elongata	13		+	1	2	1	+	+	+	+	+	2	+		+	+
23 Dryopteris carthusiana	7			1	+		+	+	+					+	+	
24 Juncus effusus	12			1	+	4		+	+	5	5	2	2	+	2	+
25 Polytrichum sp.	1			+												
26 Peucedanum palustre	4			+				+				+			+	
27 Spirea salicifolia	1				+											
28 Sphagnum sp.	3										+	1				+
29 Calamagrostis canescens	1										+					

Map 2



Area of Osmunda reglais L. in the world

Map 3



Area of Osmunda regalis L. in Europe
completed with its new presence in Hungary ▲

Table 3. Diversity values (H''), evenness values (J) and number of species (S) in the samples

Samples	H''	J	S
1	3.3347	o.9639	11
2	1.2305	0.3432	12
3	3.0801	0.8090	14
4	2.0417	0.6441	9
5	0.3747	0.2364	3
6	1.2322	0.4389	7
7	1.6017	0.5705	7
8	1.9142	0.6381	8
9	0.7379	0.3689	4
10	0.2590	0.1295	4
11	2.1319	0.7594	7
12	0.7319	0.3689	4
13	0.3420	0.1473	5
14	0.8074	0.3477	5
15	0.3420	0.1473	5

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Osmunda regalis L.

