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CALLA PALUSTRIS L. (*ARACEAE*) IN CROATIA

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The boreal plant species *Calla palustris* L. (*Araceae*) was found in the Gorski Kotar region (Croatia, Yugoslavia), near the village of Sunger (between Delnice and Mrkopalj), in shallow depressions, in an open area within the wood complex of Sungerski lug (Fig. 1, 2, 3).

This is one of the southernmost localities of this rare plant in Europe. Flora Europaea (Vol. 5:298) does not note it for the territory of Yugoslavia.

Calla palustris L. Sp. Pl. 968 (1753) belongs to the boreal floral element (Walter, Straka 1970:291, Horvat, Glavač, Ellenberg 1974:72). Considering its distribution in Europe, Prime (1980: 289) notes »N., C. and E. Europe, westwards to Belgium and southwards to S. Romania and S. C. Russia. Au, Be, Cz, Da, Fe, Ga, Ge, He, Ho, No, Po, Rm, Rs (N, B, C, W), Su, [Br]«.

Calla grows in swamps and lake-margins as a significant element of communities belonging in the first place to alliances *Phragmition, Magnocaricion* and *Alnion glutinosae*. Oberdorfer (1979:112—113) notes it as the character species of the association *Cicuto-Caricetum pseudocyperi* Boer et Siss. in Boer 42 (*Phragmition*), and Phillippi (1977:134) noted it as a differential species of the same association. Runge (1980:54) took it as the character species of the association *Calletum palustris* (Oswald 23) Vanden Berghen 52 *(Magnocaricion)*, and Medwecka-Kornaś (1972:391) considers it as the character species for the association *Carici elongatae-Alnetum* W. Koch 26 *(Alnion glutinosae)* in Poland.

Nowadays, *Calla palustris* is a rare and very endangered species (cf. Korneck et al. 1978:298, Niklfeld et al. 1986:45), so, each new find deserves special attention.

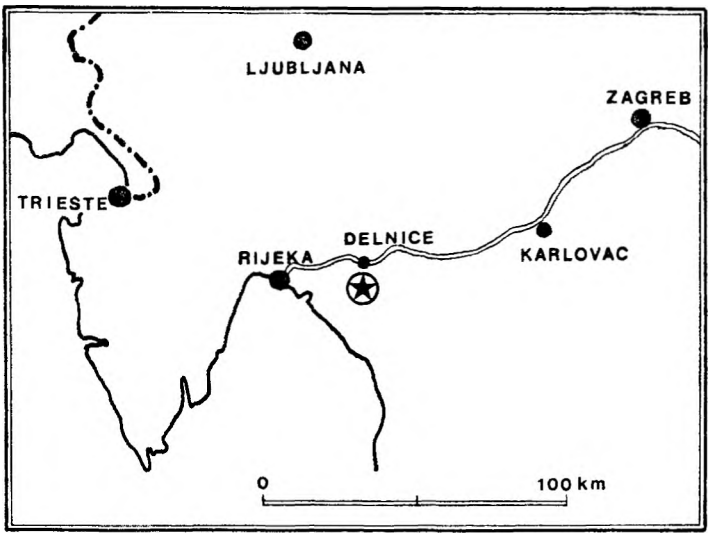

Fig. 1. A new locality of the species *Calla palustris* at Sunger in the Gorski Kotar region

In Yugoslavia this species was noted for Slovenia and Croatia. In Slovenia, *Calla palustris* has been found in the surroundings of Ljubljana (cf. Mayer 1952:388, Ravnik 1969:497, Riedl 1979:326),* and the localities where this plant still grows have been recorded by Skoberne (in Peterlin, Skoberne, Wraber 1985:64) in a map of distribution (see also Wraber and Skoberne 1989:76—77)

Several localities of *Calla palustris* in Croatia were cited already in the 19th century for Hrvatsko Zagorje and Slavonia (cf. Schlosser and Vukotinović 1869). The data on the habitat mentioned for this species by Schlosser and Vukotinović (1869:1154): »In locis humidiusculis ad sepes et in fruticetis . . .« do not agree entirely with the ecological properties of this plant. Nevertheless, we cannot neglect the fact that the Herbarium of the Botanical Institute in Zagreb (ZA) has a specimen preserved with Schlosser's label.

Bošnjak found this species in the period from 1916 to 1921 at Jasenačko polje on the border between the Lika and the Gorski kotar regions, but it did not grow there in 1925 (cf. Bošnjak 1928:66). This year (1989) we did not find it at Jasenačko polje, either.

Probably on the basis of the earlier data *Calla palustris* was mentioned later in the Croatian floristic literature but without localities (cf. Horvat 1942:395, Horvatić 1954:689, Domac 1984:527).

It is noteworthy that Hayek's »Prodromus florae peninsulae Balcanicae« did not cite this plant for Croatia or any other part of the Balkan Peninsula (cf. Hayek 1933).

* It is interesting, however, that *Flora Europaea*, as mentioned previously (Prime 1980:289) does not note Yugoslavia as the area of distribution of *Calla palustris*. It could be concluded that its author considers all the earlier data doubtful.

Fig 2. and 3. *Calla palustris* on the natural habitat at Sunger with dominant moss species of *Sphagnum* and *Polytrichum* (August 1, 1988).

Recently, *Calla palustris* was investigated citotaxonomicaly on the specimens from Crna Mlaka (cca 25 km southwest of Zagreb) and Varaždinske Toplice (cca 10 km southeast of Varaždin) in Croatia and from Ljubljansko Barje near Ljubljana in Slovenia (Bedalov 1983:29).

A few years ago *Calla palustris* was found in the Gorski Kotar region, near the village of Sunger (surroundings of Mrkopalj) in the forest complex of Sungerski lug (Fig. 1) at the altitude of about 800 m a.s.

There, *Calla palustris* grows in open area, in shallow dolines within the wood (Fig. 2 and 3) where we noted the following species on an area of 25 sq. m on 1 August 1988:

*Sphagnum palustre**	5
Calla palustris	4
Sphagnum fallax s. s.	3
Juncus effusus	2
Polytrichum commune	2
Carex brizoides	1
Vaccinium myrtillus	+
Carex sp. (veg.)	+
Salix aurita	(+)

Considering the dominance of *Sphagnum* one can conclude that there is high air humidity and soil moisture on this habitat. This is quite understandable in view of high precipitations, amounting up to about 2500 mm per year on an average, and a relatively low, mean yearly air temperature of about 7.7° C (Delnice).

The habitat is situated in the complex of coniferous forest (association of *Blechno-Abietetum* Ht. 50), which increases the air humidity even more, enabling the development of thick moss layer.

This find shows that the rare and interesting boreal species *Calla palustris* is certainly a member of Croatian flora. As we know, this is one of the most southern localities of this species in Europe, so it deserves our attention. It is possible to suppose that it also grows somewhere else on similar habitats in the Gorski Kotar region and it is necessary to pay a special attention to this species in further vegetational investigations.

The species *Calla palustris*, and even more so, its habitat as a whole, should be protected by law.

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SAŽETAK

CALLA PALUSTRIS L. (*ARACEAE*) U HRVATSKOJ

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Vrsta *Calla palustris* L. (zmijinac) nađena je u Sungerskom lugu (kraj Sungera) između Delnica i Mrkoplja u Gorskom kotaru (sl. 1). Tamo ona raste na čistinama u malim ponikvama u šumskom kompleksu zajednice *Blechno-Abietetum* Horv. U sastojinama zmijinca (sl. 2 i 3) dominiraju mahovi tresetari (*Sphagnum palustre* i *Sph. fallax*).

U Hayekovu djelu »Prodromus florae peninsulae Balcanicae« (1933) nije ta biljka navedena za Hrvatsku niti za bilo koje drugo područje Balkanskog poluotoka. Ni u djelu »Flora Europaea« (Vol. V, 1980), gdje je rasprostranjenost označena po državama, Jugoslavija nije navedena kao područje rasprostranjenosti zmijinca, iako u florističkoj literaturi odavno

postoje podaci o nalazištima u Hrvatskoj i u Sloveniji. Iz toga se može zaključiti da su ranije objavljena nalazišta smatrana spornima.

Najnoviji podaci o recentnim nalazištima te biljke u Sloveniji (Peterlin, Skoberne, Wraber 1985, Wraber i Skoberne 1989) pokazuju, međutim, da *Calla palustris* još uvijek raste tamo, a naš nalaz u Gorskom kotaru nesumnjivi je dokaz da je ta vrsta također recentni član i hrvatske flore. U tom smislu valja dopuniti podatke u »Evropskoj flori«.

Kako je zmijinac općenito rijetka vrsta, a kao borealni florni element u našem području s fitogeografskog i ekološkog gledišta vrlo zanimljiva, neophodno je tu biljku, odnosno njezina staništa u cjelini, zakonski zaštititi. Osim toga, pri daljnjim floristićkim i vegetacijskim istraživanjima valja joj i nadalje posvetiti odgovarajuću pažnju, jer se s dosta sigurnosti može pretpostaviti da na sličnim staništima raste još ponegdje u Gorskom kotaru.

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