

Dedicated to Prof. dr. LJUDEVIĆ ILIJANIĆ on the occasion of his 70th birthday.

Additions to the flora of Plitvice Lakes National Park (Croatia)

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In the flora of Plitvice Lakes National Park 1146 vascular flora taxa have been found, divided into 109 families. In this paper, 102 new vascular flora plant species are noted, bringing the number of the taxa found within the old Park boundaries in the research so far to 1248. In 1997, the Park's area was expanded by 10000 ha to the present 29462 ha. This significant increase in the area will certainly result in a higher number of plant taxa being found in the Plitvice Lakes National Park.

Key words: Plitvice, Lakes, National Park, flora, Croatia

Introduction

The Plitvice Lakes National Park extends in the southwest part of Croatia over the ranges of Velika Kapela and Lička Plješivica (Fig. 1), at an altitude of from 417m (the Korana River) to 1280 m (Seliški vrh). Because of its natural, geographic, geological, ethnographical and ethnological peculiarities, in 1979 this region was put on the list of the worlds heritage by UNESCO.

For a long time, the area where the Plitvice Lakes National Park is located was sparsely populated and rather isolated. Despite that, the first data, albeit scarce, date from the beginning of the nineteenth century (WALDSTEIN and KITAIBEL 1802, 1805, 1812). Floristic research into this area was intensified in the mid- and late nineteenth century, and continues even today.

We would like to refer to some of the first authors who are connected with research into the vascular flora in the area of the Park, like VUKOTINOVIĆ-FARKAS (1859), SCHLOSSER and VUKOTINOVIĆ (1869), SCHLOSSER-KLEKOVSKI (1884) and HIRC (1877, 1900, 1908).

Vegetation research was started much later, in the nineteen-fifties, after the area around the Plitvice Lakes was proclaimed a national park in 1949, and primarily deals with the exploration of the forest vegetation, which covers approximately 80% of the Park vegetation. The most important researchers in this field were PLAVŠIĆ-GOJKOVIĆ et al. (1972), PELCER (1976), TRINAJSTIĆ (1970, 1972)

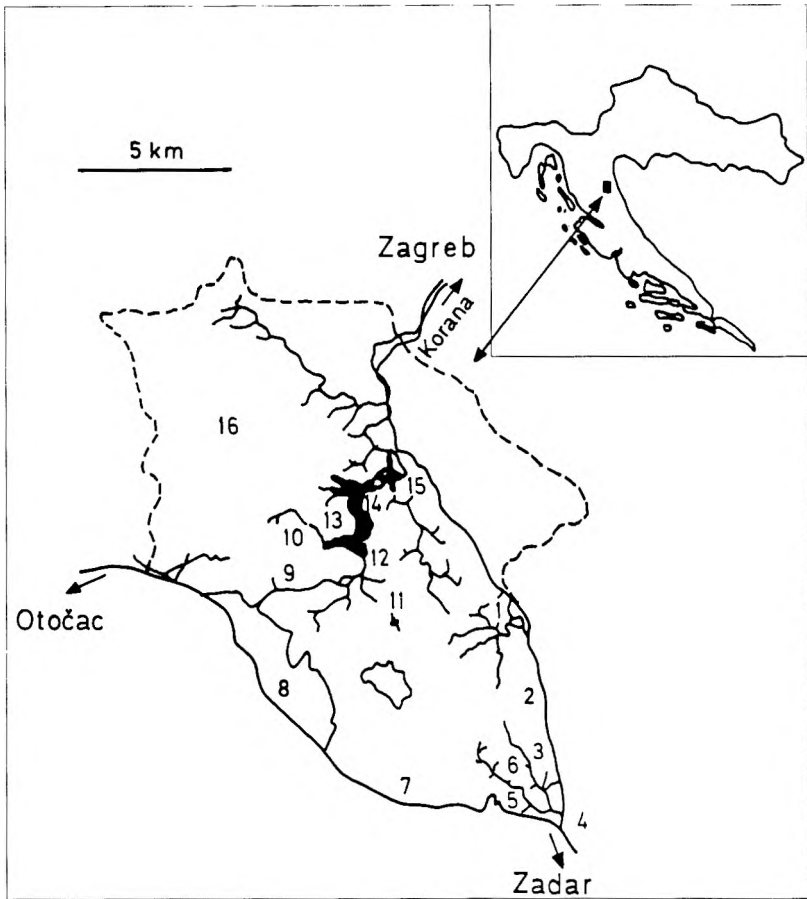


Fig. 1. The research area of the Plitvice Lakes National Park. 1 – Prijeboske bare, 2 – Korenička Kapela, 3 – Rudanovac, 4 – Borje, 5 – Vrelo, 6 – Vreljske bare, 7 – Homoljačko polje, 8 – Brezovačko polje, 9 – Končarev Kraj, 10 – Bijela rijeka, 11 – Crna rijeka, 12 – Plitvički Ljeskovac, 13 – Prošćanski vrh, 14 – Prošćansko Lake, 15 – Galovac Lake, 16 – Čorkova uvala

and PRPIĆ (1972, 1979). At the same time, numerous investigations were conducted on the algae in the Lakes, as well as on the mosses and lichens around them.

Manure experiments were conducted on the wet meadows in the Park (BREGEŠ et al. 1962, 1969), Phytosociological research was made on the wet meadows containing the species *Scilla litardieri* (GAŽI-BASKOVA et al. 1982).

Systematic study of the grassland areas of the Park, as well as of its vascular flora, was not started until the year 1984. ŠEGULJA and KRGA worked on that until the war in 1991. In that time, most of the grassland vegetation and vascular flora of the Park was explored. Partial results of those investigations were published in several papers, e.g. ŠEGULJA and KRGA (1988; 1989a, b; 1990a, b, c; 1991), ŠEGULJA (1992), ŠEGULJA and HRŠAK (1994a, b, 1995).

Results and Discussion

The flora of the Plitvice Lakes National Park was published in »Plitvički bilten« No. 5 (KRGa 1992). In that paper, 1146 vascular flora taxa were noted in the Plitvice Lakes National Park, divided into 109 families.

102 more plant species of the vascular flora which are found in this area can be added to that figure, so that the flora of the Park in its old boundaries numbers 1248 species. Research into the newly added areas of the Park (10000 ha) will certainly result in a higher number of vascular plant taxa being found in the Plitvice Lakes National Park.

The plant species here noted for the first time in the Plitvice Lakes National Park (102 species) are sorted alphabetically by their families and within families by species name. Plant species nomenclature follows the practice of Flora Europaea.

Aspidiaceae

Polystichum setiferum (Forsk.) Woynar – in a forest on the Čorkova uvala area

Athyriaceae

Matteuccia struthiopteris (L.) Tod. – in a shallow depression in the forest to the north of the Plitvice Hotel, and on the edge of the forest by the southern shore of Galovac Lake

Amaranthaceae

Amaranthus graecizans L. (= *A. angustifolius* Lam.) – in the grove by the restaurant in Borje

Amaranthus lividus L. – in and around the arable land in the area of Kapela Korenička and Korenica

Amaranthus hybridus L. – in a field in the area of Končarev kraj

Apiaceae

Astrantia carniolica Jacq. – most often on the edges of beech forests, but also in the forest to the west from Proščansko Lake

Athamanta turbith (L.) Brot. subsp. *haynaldii* (Borbás et Uechtr.) Tutin. – grasslands in Čorkova uvala – rare

Bupleurum praealtum L. – grasslands in Čorkova uvala and Končarev kraj

Bunium alpinum Waldst. et Kit. subsp. *montanum* (Koch) P. W. Ball – grasslands on the hill in Končarev kraj

Trinia glauca (L.) Dumort. – some grasslands in Brezovačko polje

Asteraceae

Adenostyles alpina (L.) Bluff et Fingerh. (= *A. glabra* (Miller) DC. – along the path on the edge of the beech forest in Brezovačko polje

Ambrosia artemisiifolia L. – along the main road from Korenička kapela to Borje

Artemisia verlotiorum Lamotte – along the edge of the grove at the restaurant in Borje

Aster bellidiastrum (L.) Scop. – along the edge of the beech forest at Proščansko Lake

Bidens tripartita L. – ruderal vegetation in Kapela Korenička area

Chamomilla recutita (L.) Rauschert (= *Matricaria chamomilla* L.) – along a path near Homoljački klanac

Cirsium canum (L.) All. – wet meadows in Vreljska bara area

Conyza canadensis (L.) Cronq. – weed vegetation in the area of Kapela Korenička and Korenica

Crupina vulgaris Cass. – grassland on rolling terrain near Vrelo

Erigeron annuus (L.) Pers. – weed vegetation in the area of Kapela Korenička and Korenica

Galinsoga parviflora Cav. – weed vegetation in Končarev kraj

Leucanthemum atratum (Jacq.) DC. subsp. *platylepis* (Borbás) Heywood (= *L. croaticum* (Horvatić) Horvatić) – grassland vegetation in Končarev kraj

Pulicaria dysenterica (L.) Bernh. – in the ditches along a path in Prijeboj area

Senecio doronicum (L.) L. – in a forest in Čorkova uvala

Boraginaceae

Cerintho minor L. – near the houses in the abandoned gardens in Čujić Krčevina

Pulmonaria angustifolia L. – a forest in Proščanski vrh area

Brassicaceae

Armoracia rusticana P. Gaertner, B. Mayer et Scherb. – in gardens and on a grassland in Rudanovac area

Alyssum montanum L. – grassland on the top of the hill near a village in Končarev kraj area

Alyssum minus (L.) Rothm. – on the edge of the gardens in Kapela Korenička area

Cardamine impatiens L. – along the edge of a forest in Plitvički Ljeskovac area

Draba muralis L. – in Vrelo Koreničko

Diplotaxis muralis (L.) DC. – in an abandoned garden at Lukića Kuće in Brezovačko polje area

Erysimum odoratum Ehrh. – along the path on the edge of a forest in Visibaba area

Hesperis matronalis L. – on the edge of Kosa forest, along the path and Proščansko Lake

Campanulaceae

Asyneuma canescens (Waldst. et Kit.) Griseb et Schenk – brush on the northern edge of Brezovačko polje

Campanula rapuncululus L. – grasslands in Homoljačko polje area

Edraianthus tenuifolius (Waldst. et Kit.) A. DC. – in stony places near Vrelo village

Legousia speculum-veneris (L.) Chaix in Vill. – in the crops at Kapela Korenička

Caryophyllaceae

Cerastium grandiflorum Waldst. et Kit. – on the edge of the forest in Čorkova uvala

Cerastium semidecandrum L. – in grassland vegetation in the Homoljačko polje area

Minuartia viscosa (Schreber) Schinz et Thell. – in grassland vegetation in Brezovačko polje area

Myosoton aquaticum (L.) Moench. – in swamp vegetation near the mouth of the Crna rijeka and Bijela rijeka rivers, 2 to 3 km away from Plitvički Ljeskovac

Silene sendtneri Boiss. – in grassland vegetation in Čorkova uvala

Ceratophyllaceae

Ceratophyllum demersum L. – in the water of Proščansko Lake

Chenopodiaceae

Polycnemum arvense L. – a pasture along the road Borje – Vrhovine in the western part of Brezovačko polje

Cichoriaceae

Crepis conysifolia (Gouan) A. Kerner – grasslands in a part of Homoljačko polje

Chondrilla juncea L. – south-exposed slopes of Brezovačko polje

Hieracium racemosum Waldst. et Kit. ex Willd. – in a forest in the Proščanski vrh area

Sonchus asper (L.) Hill – grassland vegetation in the Homoljačko polje area

Sonchus palustris L. – swamp meadows in the Prijebojska bara and Vreljska bara areas

Cistaceae

Helianthemum nummularium (L.) Miller – dry grasslands in Končarev kraj

Dipsacaceae

Dipsacus laciniatus L. – near the houses in Plitvički Ljeskovac

Knautia dinarica (Murb.) Borbás – forests in Čorkova uvala

Knautia illyrica G.Beck – grasslands in Čorkova uvala and Končarev kraj

Euphorbiaceae

Euphorbia brittingeri Opiz ex Samp. (= *E. verrucosa* L.) – grasslands in the Brezovačko polje and Homoljačko polje areas, and in Končarev kraj

Euphorbia esula L. – grasslands in Kapela Korenička area

Euphorbia helioscopia L. – gardens in Kapela Korenička

Euphorbia humifusa Willd. – along the edge of the path near Plitvički Ljeskovac

Fabaceae

Lathyrus montanus Bernh. (= *L. macrorrhizus* Wimmer – grassland on the south-exposed slopes around Brezovačko polje

Vicia sativa L. subsp. *cordata* (Wulfen ex Hoppe) Ascherson et Graebner – grasslands in Homoljačko polje

Gentianaceae

Gentiana lutea L. subsp. *symphyandra* (Murb.) Hayek – only a few specimens in grasslands at Vukmirovići

Linaceae

Linum perenne L. – on the edge of the forest on the northern slopes around Brezovačko polje

Guttiferae

Hypericum humifusum L. – a pasture in the western part of Brezovačko polje

Onagraceae (Oenotheraceae)

Circaea intermedia Ehrh. – forests in Čorkova uvala

Epilobium lanceolatum Sibastian et Mauri – in the water of Proščansko lake

Oenothera biennis L. – near the restaurant at Borje

Phytolaccaceae

Phytolacca americana L. – by the hedge near Lukić kuća in Brezovačko polje

Polygonaceae

Bilderdykia convolvulus (L.) Dumort. – along the Bijela rijeka river and the path to the west of Plitvički Ljeskovac

Bilderdykia dumetorum (L.) Dumort. – along the Bijela rijeka river and the path to the west of Plitvički Ljeskovac

Polygonum minus Hudson – ruderal vegetation by Plitvički Ljeskovac

Rumex hydrolapathum Hudson – swamp vegetation by the Bijela rijeka river 1–2 km from Plitvički Ljeskovac

Ranunculaceae

Thalictrum foetidum L. – on the edge of the forest along the path to Čorkova uvala

Rosaceae

Crataegus laevigata (Poiret) DC. – south-facing slopes around Brezovačko polje

Potentilla inclinata Vill. (= *P. canescens* Besser) – a pasture along the Borje - Vrhovine road in the western part of the Brezovačko polje

Rubus plicatus Weihe et Nees – on the edge of a forest in the Karleušine plase area

Spiraea salicifolia L. – near the houses along the road and the Bijela rijeka river to the west of Plitvički Ljeskovac

Saxifragaceae

Saxifraga adscendens L. – on Crni vrh, at 800 m a.s.

Saxifraga aizoides L. – on Veliki Javornjak, at 1000 m a.s.

Santalaceae

Thesium bavarum Schrank – grasslands in Čorkova uvala

Scrophulariaceae

Chaennorrhinum minus (L.) Lange in Willk. et Lange – among the roses at the restaurant in Borje

Kickxia elatine (L.) Dumort – as a weed in arable land in the Kapela Korenička area

Misopates orontium (L.) Rafin. – among the roses at the restaurant in Borje

Odonites verna (Bellardi) Dumort (= *O. rubra* Besser) – on the edge of grassland and hedge at Lukić kuća in Brezovačko polje area

Scrophularia scopolii Koppe – on the edge of a forest in the Karleušine plase area

Solanaceae

Solanum luteum Miller – near a forest path in the Karleušine plase area

Solanum nigrum L. emend. Miller – weed vegetation in the Kapela Korenička area

Vitaceae

Parthenocissus quinquefolia (L.) Planchon – near Lukić kuće on the western wall of a farmhouse in Brezovačko polje

Cyperaceae

Carex serotina Mrat subsp. *serotina* (= *C. oederi* auct., non Retz.) – swamp meadows at Čujjića Krčevine village

Carex ornithopoda Willd. – on the edge of the forest by Proščansko Lake toward Ljeskovačka bara

Cyperus flavescens L. (= *Pycneus f.* (L.) Rehenb.) – grasslands in the western part of Brezovačko polje

Juncaceae

Juncus buffonius L. – a pasture on the western part of Brezovačko polje

Juncus gerardi Loisel. – grasslands in the Rudanovac and Vreljske bare area

Juncus tenuis Willd. – grasslands in Rudanovac and Vreljske bare area

Orchidaceae

Coeloglossum viride (L.) Hartman – on the edge of a forest in the Karleušine plase area

Epipactis atrorubens (Hoffm.) Besser – a swamp meadow in the Drakulić rijeka area

Orchis mascula (L.) L. – a forest in the Karleušine plase area

Orchis simia Lam. – grasslands in the Rudanovac area

Poaceae

Cynodon dactylon (L.) Pers. – along the paths in the Kapela Korenička area

Echinochloa crus-galli (L.) Beauv. – weed vegetation in the Kapela Korenička area

Hordeum vulgare L. – a culture in the Končarev kraj area

Sesleria tenuifolia Schrader subsp. *kalnikensis* (Jv.) Deyl – southern exposure of forest edges in the Gornja jezera area

Sorghum halepense (L.) Pers. – weed vegetation at Krčevina village

Conclusion

In addition to 1146 species of vascular flora noted in Plitvice Lakes National Park by KRGA (1992), 102 additional species should be added to that number, which are in this paper noted for the first time in this region. Therefore, the total number of the vascular plant species found so far within the old boundaries of Plitvice Lakes National Park amounts to 1248.

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