

Professor Ljerka Marković – Croatian botanist. On the occasion of her seventieth birthday



Lj. Marković

At the beginning of 2002 the Croatian botanist and full professor emeritus of the Faculty of Science, Zagreb University, Dr Ljerka Marković (nee Gospodarić) celebrated her 70th birthday.

Ljerka Gospodarić was born on February 24, 1932 in Zagreb, where she attended elementary school (1938–1942) and real gymnasium (1942–1950). She completed her course at the Faculty of Science, Zagreb University in 1955. After graduation she had a temporary post in the Botanical Garden of the Faculty of Science. After that she took on the post of assistant in the Botanical Institute of the same faculty, and in 1964 defended her doctoral dissertation entitled *Research into the Plant Sociology of Ruderal Vegetation in Croatia*. After this, she spent the 1965/66 academic year doing post-doctoral work in geobotany at the Botanical Institute in Stuttgart-Hohenheim with Professor Heinrich Walter, celebrated German ecologist.

In 1971 she achieved the degree of *dozent* on the basis of a dissertation on *Nitrophilous Vegetation of the Riparian Zone of the Sava River in Croatia* as well as an inaugural lecture on *Neophytes in the Vegetation of Croatia* delivered to the Faculty Council of the Faculty of Science in Zagreb. In 1972 she was elected assistant professor, in 1977 associate and in 1983 full professor of botany in the Botanical Institute of the Faculty of Science in Zagreb, where she worked until her retirement in October 1, 2000. As assistant she took part in the implementation of the practical teaching in systematic botany, geobotany and field teaching, and in the academic year 1971/72 she was confided the lectures of *Phylogeny and Systematics of Cormophytes* and the right to direct undergraduate dissertations.

After she was elected assistant professor she began her ample work in teaching, which lasted a full three decades. In this period she taught various courses to students of biology from various different courses in the undergraduate school (*Phylogeny and Systematics of Cormophytes*, *Phylogeny of Plants II*, *Cormophytes*, *Basic Botany*, *Field Teaching*) and in the graduate school (*Selected Chapters from Geobotany*, *Selected Chapters from the Phylogeny and Systematics of Cormophytes*, *Terrestrial Water Flora*, *Terrestrial Water Macrophyte Flora*) and trained many generations of biology students. As an excellent lecturer and as a highly responsible teacher she performed all her teaching duties to the great satisfaction of the students who regularly gave her very high marks. All who know her as a teacher will remember her for the extremely conscientiously prepared lectures and the interesting

and clear exposition of the material, and she is certainly among the best teachers of the Biology Division. As a director of studies she supervised eleven master's dissertations and one doctoral dissertation, and as member or chairperson of the examining commissions she took part in a great many examinations, defences of master's and doctor's dissertations.

Scientific work. From her high school days onwards the interest of Ljerka Marković was directed to botany, and this came particularly to the fore while she was a student and botany demonstrator and was involved in the field geobotany research of the team of Professor S. Horvatić, whose disciple she was. She particularly demonstrated her desire to take part in scientific research and her capacity to do so during the time she worked out her undergraduate dissertation when, systematically investigating the flora and vegetation in the surroundings of Zagreb, she discovered a new adventitious American species, *Sporobolus vaginaeflorus*, which had previously been recorded in Europe only in Italy. This was for her a powerful spur to dedicate the greater part of her scientific interests to research into adventitious plants, their colonisation, expansion and domestication, and their impact on the indigenous flora and vegetation. These endeavours resulted in discoveries of many invasive species in Croatia, such as, in addition to the species already mentioned, *Amaranthus crispus*, *A. gracilis*, *Artemisia verlotiorum*, *Chenopodium multifidum*, *Impatiens glandulifera*, *Iva xanthifolia* and *Sporobolus neglectus*. And then Ljerka Marković determined the distribution in Croatia of many species that had previously been recorded, as well as their roles in changes in natural and anthropogenic vegetation. The fifteen or so papers of Ljerka Marković that relate to phytogeographic and ecological problems of neophytes were a spur to many young investigators of the Croatian flora to address the expansion of neophytes. This is very important, since the colonisation of adventitious species is an increasingly common phenomenon, because of the ever increasing intensity of trade in various commodities by land, sea and air.

Professor Marković devoted not less attention to our indigenous Croatian flora, and published, on her own or as co-author, the finds of new species in the Croatian flora, as well as new finds of rare plants known earlier in our indigenous flora (*Botrychium matri-cariifolium*, *Carex buekii*, *Gagea spathacea*, *Trifolium spumosum*), as well as surveys of the vascular flora of some of the more precisely defined areas of Croatia (around Senj, Krka National Park, Zrinska Gora, around Krapinske Toplice, the ruderal flora of the Đakovo area).

With respect to extent and results, still more significant is the research that Ljerka Marković carried out into various types of nitrophilous vegetation, primarily into ruderal communities, communities of the forest edge, riparian communities and some nitrophilous grasslands. The results of this research became well known to geobotanists, not only in Croatia, but in Europe at large, and were heeded and quoted in many scientific papers in foreign and international journals (for example, *Acta Bot. Acad. Sci. Hungar.*, *Ann. Bot. Fennici*, *Biologicke prace*, *Decheniana*, *Documents phytosociol.*, *Feddes Repertorium*, *Folia Geobot. Phytotax.*, *Giornale Bot. Ital.*, *Hercynia*, *Hydrobiologia*, *Rozprawy Českoslov. akad. ved*, *Tuexenia*, *Veroeff. Geobot. Inst. ETH* and so on) as well as in botany reference works and manuals and monographs (for example in *Die Pflanzengesellschaften Nordwestdeutschlands*, *Die Pflanzengesellschaften Oesterreichs*, *Die Vegetation der Erde in oeko-physiologischer Betrachtung*, *Süddeutsche Pflanzengesellschaften*, *Vegetace ČSSR*, *Vegetation Suedosteuropas* and others). As acknowledged expert who without any doubt best knew the nitrophilous vegetation of Croatia and neighbouring regions, Professor

Marković received an invitation from the Biological Institute of the Slovene Academy to investigate the ruderal vegetation of Slovenia. She carried out this project confided to her with great success, as seen from the list of works published, and with her papers on the nitrophilous vegetation of Croatia, Slovenia and Montenegro had a major influence on the further development of such kinds of research in this part of Europe.

In her research into the nitrophilous floodplain grasslands of the alliance *Agropyro-Rumicion* Ljerka Marković determined a new association, *Trifolio-Agrostietum stoloniferae* Marković 1973, and within the context of forest edge vegetation from the alliance *Alliarion* she also found two communities new to science, ass. *Myrrhoidi-Geranium lucidi* Marković 1992 and subass. *Alliario-Chaerophylletum temuli poetosum silvicolae* Marković 1992. These discoveries highlighted the phytogeographic specificity of the nitrophilous vegetation of the alliance *Alliarion* on the southern border of its range in the sub-Mediterranean vegetation zone of Croatia. She also studied the laws of the distribution of the communities of riparian zones, with special reference to the ecological features of the habitats (the water regime of the rivers, the configuration of the banks, the characteristic of the substrate and the quality of the river water). These results were also important from a practical point of view, because these communities could serve as a reliable indicator of ecological conditions, particularly as indicator of the quality of river water, i.e., of its greater or lesser pollution.

Ljerka Marković directed two scientific projects and several scientific assignments. She took an active part in the mapping of vegetation and the elaboration of the *Vegetation Map of Croatia*, and as co-author printed maps of the real vegetation on a scale of 1:100,000, the sections of Pula, Dugi otok and Žirje. She treated all the genera of the families of *Amaranthaceae*, *Balsaminaceae*, *Geraniaceae*, *Malvaceae*, *Oxalidaceae*, *Polygonaceae*, *Urticaceae*, as well as 13 genera from other families in the works *Analitička flora Jugoslavije*, *Index florae Croaticae* or in the Red Book of Plant Species of the Republic of Croatia, and took part in the treatment of many species for the new Red Book, which is now in preparation.

To date Ljerka Marković has published fifty-nine scientific papers in national and international journals and proceedings. Apart from research into geobotany she has also been involved in the study of the history of floristic and vegetation research in Croatia, and published nine well-received articles throwing light on the conditions in which the botanical discipline developed in the past. She also wrote several occasional articles to mark other scientists' birthdays or *in memoriam* articles. She has presented the results of her scientific work with great success at many national and international scientific conferences, and her communications have regularly excited the interest of those attending conferences.

Ljerka Marković is a member of a number of international and national scientific associations, such as the *International Association for Vegetation Science*, *European Weed Research Society*, *Ostalpin-dinarische Gesellschaft fuer Vegetationskunde*, *Hrvatsko biološko društvo*, *Hrvatsko prirodoslovno društvo*, and *Hrvatsko ekološko društvo*, of which she was a founding member, and in the period from 1980 to 1982 she was the vice-president of this association. As member of organisation committees she took part in the preparations of one international and several national scientific conferences.

In her home faculty, Ljerka Marković carried out various duties, and in the academic year of 1973/74 she was the head of the Biology Division, from 1989–1991 head of the Bo-

tanical Institute, and in the graduate school was a long-time member of the Commission for Post-Graduate Studies in the Natural Sciences in the field of Biology; from 1995 to 2002, she was a member of the Main Commission for the Area of Natural Sciences – Biology Field of the RC, and was a member of various committees and commissions of the Biology Department of the Faculty of Science.

From 1971 to 1976 she was also a member of the editorial board of the *Fragmenta herbologica Croatica*, and from 1976 was a member of the editorial board of *Acta Botanica Croatica*. From 1993 to 1998, during the highly unpropitious wartime and early post-war years carried out the responsible duties of chief editor of this, the only botanical journal in Croatia.

For her dedicated and successful work as university teacher on November 3, 2000 she received the Memorial Medal of the University as a mark of gratitude for her contribution to the progress of Zagreb University, and on April 21, 2001, on the occasion of the Days of the Faculty of Science the Faculty Council gave her a Certificate of Appreciation by way of recognition for her fertile contributions to the development of teaching during her many years of work in the Faculty.

Even after her retirement, Professor Ljerka Marković DSc continued her active scientific work, endeavouring to process and publish many of her scientific results that had not yet been published. In the Botanical Institute, where she spent many years of her teaching career, she is always a welcome visitor and received with great kindness by her co-workers and other members of the community, who on this occasion, marking her seventieth birthday, wish her good health and many more successes and a great deal more satisfaction in the discipline that she chose and fell in love with while she was still at secondary school.

Ljudevit Ilijanić

List of the published scientific papers of Ljerka Marković

1. GOSPODARIĆ, LJ., 1958: Novi prilog flori okolice Zagreba. *Acta Bot. Croat.* 17, 151–157.
2. HORVATIĆ, S., GOSPODARIĆ, LJ., 1960: *Sporobolus vaginaeflorus* (Torr.) Wood u biljnom pokrovu Hrvatske. *Acta Bot. Croat.* 18/19, 79–103.
3. GOSPODARIĆ, LJ., 1960: Novo nalazište svojte *Leontopodium alpinum* Cass. var. *kra-sense* Derg. u Hrvatskoj. *Acta Bot. Croat.* 18/19, 105–106.
4. MARKOVIĆ-GOSPODARIĆ, LJ., 1963: Dvije zanimljive ruderalne biljke u flori Hrvatske. *Acta Bot. Croat.* 22, 233–237.
5. MARKOVIĆ-GOSPODARIĆ, LJ., 1965: Prilog poznavanju ruderalne vegetacije kontinentalnih dijelova Hrvatske. *Acta Bot. Croat.* 24, 91–136.
6. MARKOVIĆ-GOSPODARIĆ, LJ., 1966: Die verbreitetsten Pflanzengesellschaften der Ruderalvegetation Kroatiens. *Angewandte Pflanzensoz. (Wien)* 18/19, 205–209.
7. MARKOVIĆ-GOSPODARIĆ, LJ., 1968: Istraživanja akumulacije mineralnog dušika na staništima dviju nitrofilnih zajednica u južnoj Njemačkoj. *Acta Bot. Croat.* 26/27, 53–70.
8. HORVATIĆ, S., ILIJANIĆ, LJ., MARKOVIĆ-GOSPODARIĆ, LJ., 1968: Biljni pokrov okoline Senja. *Senjski zbornik* 3, 298–323.

9. MARKOVIĆ-GOSPODARIĆ, LJ., 1969: O rasprostranjenju i sastavu asocijacije *Sclerochloetum durae* Br.-Bl. 1931 u Hrvatskoj. Acta Bot. Croat. 28, 239–243.
10. HORVATIĆ, S., ILIJANIĆ, LJ., MARKOVIĆ-GOSPODARIĆ, LJ., 1970: O biljnom pokrovu Slavonije. Proc. 1. Meeting of the Scientists of Slavonia and Baranja, Osijek, 287–318.
11. MARKOVIĆ, LJ., 1970: Prilozi neofitskoj flori savskih obala u Hrvatskoj. Acta Bot. Croat. 29, 203–211.
12. MARKOVIĆ, LJ., HULINA, N., 1970: *Eleusine indica* (L.) Gaertn. u širem području Zagreba. Acta Bot. Croat. 29, 213–215.
13. MARKOVIĆ, LJ., 1970: Beitrag zur Kenntnis der Ruderalvegetation von Gusinje und seiner Umgebung. Mittl. Ostalpin-din. Ges. Vegetkde. 11, 101–108.
14. MARKOVIĆ, LJ., 1973: Die Flutrasengesellschaften in der Umgebung von Zagreb. Ber. Geobot. Inst. ETH (Zürich) 51, 198–205.
15. MARKOVIĆ, LJ., 1973: *Sporobolus neglectus* Nash, nova adventivna vrsta Jugoslavije. Acta Bot. Croat. 32, 237–242.
16. MARKOVIĆ, LJ., 1973: O vegetaciji rubova šuma u brdsko-planinskom području zapadne Hrvatske. Proc. Yugoslav symposium on weed control in hilly and mountainous areas, Sarajevo, 111–116.
17. MARKOVIĆ, LJ., 1975: O vegetaciji sveze *Bidention tripartiti* u Hrvatskoj. Acta Bot. Croat. 34, 103–120.
18. MARKOVIĆ, LJ., 1975: *Botrychium matricariifolium* (Retz.) A.Br. ex Koch u flori Hrvatske. Acta Bot. Croat. 34, 157–158.
19. MARKOVIĆ, LJ., 1977: O biljnom pokrovu željezničkih pruga u kontinentalnim dijelovima Hrvatske. Proc. Yugoslav conference about herbicide treatment on railroads and dams, Zagreb, 76–90.
20. MARKOVIĆ, LJ., 1978: Uebersicht der Ruderalpflanzengesellschaften in Jugoslawien. Acta Bot. Slov. Acad. Sci. Slovaca (Bratislava) Ser. A, 3, 302–309.
21. MARKOVIĆ, LJ., 1978: Travnjačka vegetacija sveze *Agropyro-Rumicion* u obalnom pojasu Save u Hrvatskoj. Acta Bot. Croat. 37, 107–130.
22. MARKOVIĆ, LJ., 1978: *Iva xanthifolia* Nutt. i *Amaranthus gracilis* Desf. – dvije nove pridošlice u flori Hrvatske. Acta Bot. Croat. 37, 207–210.
23. MARKOVIĆ, LJ., 1978: Prilog poznavanju zajednice *Junco-Menthetum longifoliae* Lohm. 1953 na području Notranjskog u Sloveniji. Mittl. Ostalpin-din. Ges. f. Vegetkde. 14, 231–236.
24. MARKOVIĆ, LJ., 1979: Das *Sclerochloo-Polygonetum avicularis* in der Trittvegetation Nordkroatiens. Acta Bot. Croat. 38, 87–94.
25. MARKOVIĆ, LJ., 1979: Neofiti kao šumski korovi u poplavnim područjima kontinentalne Hrvatske. Proc. 1. Yugoslav Conference about Weed control in Forestry, Sarajevo, 21–29.
26. MARKOVIĆ, LJ., 1979: Ekološki aspekti u prostornom rasporedu vegetacije reda *Bidentetalia tripartiti* na rijeci Savi u SR Hrvatskoj. Proc. 2. Congr. Jugosl. Ecol., Zagreb, 1, 731–740.

27. MARKOVIĆ, LJ., 1980: Zajednica *Polygono-Chenopodietum* Lohm. 1950 u vegetaciji sprudova rijeke Save u Hrvatskoj. Acta Bot. Croat. 39, 121–130.
28. MARKOVIĆ, LJ., 1980: Zajednica *Juncetum tenuis* u vegetaciji utrina zapadnih dijelova Jugoslavije. Proc. 1. Conference on Weed Science, Banja Koviljača, 233–239.
29. MARKOVIĆ, LJ., 1981: *Chenopodium integrifolium* Worosch. in der Pflanzendecke Kroatiens. Acta Bot. Croat. 40, 229–232.
30. MARKOVIĆ, LJ., 1981: Zur Syntaxonomie der *Xanthium italicum*-Bestaende in Kroatien, Proc. Int. Symp. I.V.f.V. Rinteln, Vaduz, 279–288.
31. MARKOVIĆ, LJ., 1982: Die nitrophile Saumgesellschaft *Anthriscetum trichospermae* in Nordkroatien. Acta Bot. Croat. 41, 103–110.
32. MARKOVIĆ, LJ., 1982: Zur Kenntnis der Schlagvegetation im Bereich des *Abieti-Fagetum dinaricum* in Slowenien. Proc. Int. Symp. I.V.f.V. Rinteln, Vaduz, 601–612.
33. MARKOVIĆ, LJ., 1982: Ruderalna vegetacija ter vegetacija posek in gozdnih robov. In: Tolmač k vegetacijskim kartam. Vegetacijska karta Postojna L 33–77, 96–112. SAZU, Ljubljana.
34. MARKOVIĆ, LJ., ŠTAMOL, V., 1983: *Trifolium spumosum* L. na otoku Braču. Acta Bot. Croat. 42, 127–129.
35. MARKOVIĆ, LJ., 1984: Ruderalna vegetacija Gorskog kotara. Acta Bot. Croat. 43, 257–272.
36. MARKOVIĆ, LJ., 1984: Zajednica *Glycyrrhizetum echinatae* u hrvatskom dijelu Posavine. Radovi ANU BiH (Sarajevo) 76, 23, 131–137.
37. MARKOVIĆ, LJ., 1984: Die Ruderalvegetation im dinarischen und vordinarischen Gebiet Sloweniens. Razprave SAZU (Ljubljana) 25, 69–120.
38. MARKOVIĆ, LJ., 1984: Zur Verbreitung und Vergesellschaftung von *Impatiens glandulifera* in Kroatien. Acta Bot. Slov. Acad. Sci. Slovacae Bratislava, ser. A, Suppl. 1, 209–215.
39. MARKOVIĆ, LJ., 1985: *Chaerophylletum bulbosi* in Nordkroatien. Acta Bot. Croat. 44, 47–51.
40. ŠTAMOL, V., MARKOVIĆ, LJ., 1985: Prilog flori otoka Brača. Acta Bot. Croat. 44, 99–106.
41. ILJANIĆ, LJ., MARKOVIĆ, LJ., 1986: *Panicum dichotomiflorum* Michaux in the surroundings of Zagreb. Acta Bot. Croat. 45, 137–139.
42. MARKOVIĆ, LJ., 1987: Das *Urtico-Aegopodietum* in Nordwestkroatien. Acta Bot. Croat. 46, 73–79.
43. MARKOVIĆ, LJ., REGULA-BEVILACQUA, LJ., 1988: Ueber das *Dipsacetum pilosi* in Nordkroatien. Acta Bot. Croat. 47, 77–82.
44. MARKOVIĆ, LJ., MIKULIĆ, S., 1989: *Gagea spathacea* (Hayne) Salisb. u flori Hrvatske. Acta Bot. Croat. 48, 169–172.
45. MARKOVIĆ, LJ., 1990: Die Ruderalflora in Doerfern der Đakovština. Razprave 4, SAZU (Ljubljana) 31, 137 – 152.
46. MARKOVIĆ, LJ., ILJANIĆ, LJ., LUKAČ, G., HRŠAK, V., 1990: Pregled istraživanja biljnog pokrova na području Nacionalnog parka Krka. Proc. Symp. National Reserve Krka. Ecol. Monogr. 2, 449–470.

47. MARKOVIĆ, LJ., 1992: Die Vegetation des Verbandes *Alliarion* in Kroatien. Acta Bot. Croat. 51, 77–88.
48. MARKOVIĆ, LJ., LUKAČ, G., 1993: Verbreitung und Standorte von *Chamomilla suaveolens* in Kroatien. Nat. Croat. 2, 89–98.
49. ILJANIĆ, LJ., MARKOVIĆ, LJ., STANČIĆ, Z., 1994: *Impatiens balfourii* Hooker fil. in Kroatien. Acta Bot. Croat. 53, 115–119.
50. MARKOVIĆ, LJ., LUKAČ, G., 1994: Fitocenološka pripadnost sastojina čičoke (*Helianthus tuberosus* L. s.l.) u zapadnoj Hrvatskoj. Proceedings of the Symposium: 100th anniversary of birth of Ivo Pevalek, Koprivnica, 63–69.
51. MARKOVIĆ, LJ., 1996: Ruderalna vegetacija. In: J. Gregori et al. (Ed.): Narava Slovenije, stanje in perspektive. Proc. Symp. on natural heritage. Nature in Slovenia, present state and prospects. Ecological Society of Slovenia, Ljubljana, 113–136.
52. SMITAL, A., MARKOVIĆ, LJ., RUŠČIĆ, M., 1998: O širenju vrste *Artemisia verlotiorum* Lamotte u Hrvatskoj. Acta Bot. Croat. 55/56, 53–63.
53. ŠEGULJA, N., ILJANIĆ, LJ., MARKOVIĆ, LJ., 1998: Prikaz i analiza flore Zrinske gore. Acta Bot. Croat. 55/56, 65–69.
54. ŠOŠTARIĆ, R., MARKOVIĆ, LJ., 1998: The Flora of Krapinske Toplice (Croatia). Acta Bot. Croat. 55/56, 101–118.
55. Alegro, A., Marković, Lj., 1999: *Carex buekii* Wimm. (Cyperaceae) in the flora of Croatia. Nat. Croat. 8, 101–107.
56. MARKOVIĆ, LJ., RUŠČIĆ, M., 1999: *Chenopodium multifidum* L. in the Croatian flora. Nat. Croat. 8, 459–463.
57. MARKOVIĆ, LJ., 2000: Die Ruderalvegetation im subpannonischen Gebiet Sloweniens. Razprave 4, SAZU, Ljubljana 16, 2, 95–178.
58. HRUŠKA, K., MARKOVIĆ, LJ., 2001: Study on the effects of anthropization on natural woodland ecotones. J. Med. Ecol. 2, 15–20.
59. MARKOVIĆ, LJ., 2002: *Malva pusilla* Sm. in der Ruderalvegetation Sloweniens. Razprave 4, SAZU, Ljubljana 18, 3, 283–291.