

PHYTOSOCIOLOGICAL METHODOLOGY AND METHODICS IN WORKS BY LAJOS TIMÁR

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Abstract

A high proportion of works by L. TIMÁR's scientific oeuvre belongs to phytocenological literature. On the occasion of the 75th anniversary of his birth, a valuation of the methodology and methodics of his phytocenological works and a complete list of his publications are presented in this paper hoping that his forgotten or not sufficiently known works may get into the scope of scientific society by this commemoration.

Key words: history of vegetation science, TIMÁR LAJOS, Zürich-Montpellier Phytosociological School

Material and Methods

The citation of TIMÁR's publications issued from the peculiarities of this article does not follow the citation system of Acta Biol. Szeged.; titles of his works are cited by using the serial numbers of the "Bibliography", e.g. (See 10). The works of other authors are cited regularly and the cited works can be found in the "References".

Discussion

Disciplinary remarks

In TIMÁR's scientific concept, geobotany studied by him is an independent discipline of natural geography. Geobotany consists of the following parts: floristical geobotany (plant geography=phytogeography); its subject is the distribution of plant species in space (here geographical space), genetical geobotany (here vegetation history), cenological geobotany (description of the units of the vegetation and their classification) and ecological geobotany (effects of the environment, first of all abiotic, on the vegetation structure). In the modern sense, his geobotany does not correspond to "plant ecology", and neither is synonymous with "(plant)synbiology", because it is wider than that, as it includes chorology and the vegetation history, as well. At the same time, some parts of the methodological system of these (e.g. areal elements) have often been applied to answer questions of ecological features. The two

disciplines remained, cenological and ecological geobotany, are adequate for "synfenobiology" and "(plant)synecology"=Ökologie, respectively. These two form "synbiology" of plants together which is more or less equal with "plant ecology" (cf. JUHÁSZ-NAGY, 1986; PETERS, 1991). Geobotany, in this relation, corresponds to "vegetation science".

Science historical remarks

Although TIMÁR's first cenological article (See 1) was published in 1943, his phytosociological activity unfolded by the end of the 40s. At that time, the Zürich-Montpellier (ZM) Phytosociology School (first of all its BRAUN-BLANQUET approach) undoubtedly had the greatest influence on Hungarian geobotany. In laying the foundations of the dominance of this school, works of SOÓ (1934, 1950), ZÓLYOMI (1934) and FELFÖLDI (1942, 1943) had a decisive importance. ZÓLYOMI as the director of the Eötvös College led TIMÁR's attention towards geobotany (TIMÁR was a postgraduate student at that time). TIMÁR wrote his M.Sc. thesis (See 2,8) under the direction of academician Prof. SOÓ in 1946. These direct personal connections necessarily oriented him to accept ZM methodology and methodics.

A high degree of flexibility of the school had been shown at that time, and it was also very important in its acceptance, and it made the School almost exclusively applied: without any shocks, it was able to integrate into itself the most powerful results of the physiognomic schools (e.g. life forms, growing forms, areal elements), the consociation and typology theories of the northern traditions, the succession conceptions and the climax theories of the organismic schools as well as their gradually refining ideas on the inter- and intraspecific competition.

The ZM School had many different but more or less coherent branches. These are all agreed in some common assumptions, e.g. the basic unit of the vegetation is the association, which can be distinguished by its floristical composition, the units may be classified by the constant and so called 'character' species, the composition is mainly determined by abiotic factors (climate, soil conditions etc.), the composition is influenced by interspecific interactions (as a consequence, due to the existence of interspecific effects, the consistent concordancy presumption of the physiognomic schools was alternated to a certain extent). ZM School regards associations as being able to be classified into higher hierarchical syntaxa that also have character species on their own levels.

Although TIMÁR cited only a few textbooks in his works (SOÓ, 1934; FELFÖLDI, 1943) - knowing the library of the late Botanical Institute - supposedly, he could get the most well-known works of physiognomic schools (DE CANDOLLE, 1855; DRUDE, 1890; GRAEBNER, 1909; GRISEBACH, 1872; HAYEK, 1916; KERNER, 1863; WARMING and GRAEBNER, 1918), the impressive publication of MEUSEL (1939) had been at his disposal and he got information on the actual state of the 'Anglo-American' as well as Soviet vegetation science in way of his personal acquaintances with the leading Hungarian scientists who have had a great ability to overview whole scientific field (SOÓ and ZÓLYOMI, 1951).

TIMÁR's phytosociological works

Methodological characteristics

TIMÁR had a settled conviction that a cenological relevé is able to characterize its habitat (or environment) in an adequate way. That is why his numerous publications that according to their title seem to be floristical ones contain cenological data (See 5, 6, 9, 16, 18, 36, 38-40). His definitions of the association that have been declared in his works, interestingly, did not follow the association concept of SOÓ (1934) (which, however, originated from BRAUN-BLANQUET (1928)): "The association is a community of plants which has a certain and constant floristic composition repeating itself in its every specimen. It has uniform physiognomy and develops under similar environmental conditions". From TIMÁR's (quasi)definitions the criteria of 'constant floristic composition' and 'self-repetition in every specimen' are missing: "The (plant)associations as plant communities having sensibility against the changes of edaphical and microclimatological conditions present the real vegetation feature of a landscape. Thus the soil and the microclima can be characterized by them" (See 14, on page 490). Or "Every characteristic of a plant association is determined by the ecological relations of its habitats" (See 11, on page 55), namely, by emphasizing the abiotic habitat conditions, TIMÁR turned back to the classical definition of FLAHAULT and SRÖTER (1910): "The association is a community of plants with certain floristic composition, with uniform habitat conditions and uniform physiognomy." TIMÁR's works refer to the emphasis on habitat conditions as well as the prominence of the concordancy approach of the physiognomic schools. It can also be illustrated very well by the following quotation: "As the vegetation primarily depends on the climate, the soil and the water conditions its research is adequate and complete only in relation to them" (See 27, on page 228).

The other fact which questions the constant and certain floristic composition of every specimen of an association is issued from the characteristics of the objects that had been investigated by TIMÁR; A considerable part of his works studies the vegetation of river flood-plains including the communities that are in early stages of vegetation succession (See 1-3, 7, 8, 14, 17, 21,28,30,31). The other significant part of his works discusses weed communities (of plough-lands) (See 5, 9, 10, 11, 13, 18, 20, 22, 23, 26, 29, 32, 34, 35). In both cases, but particularly in the second one, a considerable variability characterizes the association specimens (phytocenoses). TIMÁR had no doubt that the mechanical application of BRAUN-BLANQUET's definition conduces to the inevitable increase of the number of cenotaxa in case of weed and ruderal communities. (As later it had been ensued cf. e.g. THEURILLAT and MORAVEC (1992).) In order to avoid this danger, he introduced the basic association conception (See 20). Unfortunately, his phytocenological results in this field did not become well-known, consequently, in all probability, vegetation units with facies or subassociation values and their seasonal variants (aspects) had been described as independent associations resulting an incalculable and unsuccedingly expanding syntaxa-system.

Another result of the object chosen by TIMÁR was his high interest shown in the vegetation units that change fast. He published several schemes of succession of river banks and weed communities (See 8, 11, 20, 34), but his explanation according to which the zonation system is the result of the succession led him to declare unfounded conclusions (See 34).

As a consequence of TIMÁR's undergraduate courses, he regarded vegetation mapping as the final synthesis of geobotanical work as well as the highest degree of the documentation of the vegetation: "One of the final aim of the studies of the associations is their localization in the field, namely, elaboration of geobotanical maps" (See 27, on page 230). As a realization of his aims, he published detailed vegetation maps in many of his works (See 3, 8, 30, 31, 33, 37). The importance of his activity in this field is emphasized by the fact that the 'International Bibliography of Vegetation Maps' knows about 30 published vegetation maps from Hungary from the 1943-1959 period, moreover, between 1943 and 1953 only TIMÁR's three vegetation maps are mentioned (HORVÁTH, 1966).

Methodical characteristics

In the tabulation of cenological relevés, TIMÁR applied a simplified BRAUN-BLANQUET method. His cenological relevés contain only the dominance values (on + and 1-5 scale) in every case, he did not apply the sociability values. Vitality values are only mentioned in exceptional cases (See 22), but the system of ELLENBERG (1952), which is, however, identical with that of Braun-Blanquet has already been referred to. The synthetical parameters (A-D values, constancy) were applied regularly.

The interpretation of the cenological data were almost entirely performed by the help of the life forms of RAUNKIAER (1937) and by the ranking of the species into areal element categories (MÁTHÉ, 1951). Statistical methods were not used.

The ecological (biological) spectrum based on the life forms is informative for the physiognomical characteristics of vegetation, it reflects the position of the association in the successional series as well as the abiotic factors, mainly the climatic ones, it refers to the existence of disturbance or even the natural conditions of the vegetation (See 1-3, 5, 7, 8-11, 13-15, 17-20, 22, 32-35, 37). The interpretation of the ecological spectrum may be extended for a given territory (See 14, 17, 21, 31). TIMÁR expressed his opinion on the habitat depending changes of life forms (See 29).

The floristical spectrum based on the areal element distribution in a community or a territory refers to the aboriginality, naturality and origin of the vegetation units. Indirectly, some conclusions can be drawn from the climatic demands of the vegetation (See 1-3, 5, 7-11, 13-15, 17-22, 32-35, 37). Although in TIMÁR's time the nature protection value estimation of a community or a territory was not such a central problem as it is nowadays, his moderate interpretations are exemplary from this point of view.

Summary

LAJOS TIMÁR augmented our knowledge mainly in the following fields of vegetation science: phytosociological description of the vegetation of flood-plains and their zonal and successional relations; rules of the development of weed communities and their cenological description and syntaxonomy; geobotany of the south-eastern part of the Great Hungarian Plain and description of its flora and vegetation.

References

- BRAUN-BLANQUET, J. (1928): *Pflanzesociologie. Grundzüge der Vegetationskunde.* - Springer, Berlin. pp. 330.
- CANDOLLE, A.M. DE (1850): *Geographie Botanique.* - Masson, Paris, 2 Vols. pp. 1365.
- DRUDE, O. (1890): *Handbuch der Pflanzengeographie.* - Engelhorn, Stuttgart. pp. 582.
- ELLENBERG, H. (1952): *Landwirtschaftliche Pflanzesoziologie. II. Wiesen und Weiden und ihre standörtliche Bewertung.* - Eugen Ulmer, Stuttgart. pp. 143.
- FELFÖLDY, L. (1942): *Szociológiai vizsgálatok a pannóniai flóratérség gyomvegetációján (Soziologische Untersuchungen über die pannonische Ruderalvegetation. In Hungarian with German summary).* - *Acta Geobot. Hung.* 5, 87-140.
- FELFÖLDY, L. (1943): *Növénysoziológia (Phytosociology. In Hungarian).* - Debrecen. pp. 135.
- FLAHAULT, C. and SCHRÖTER, C. (1910): *Rapport sur la nomenclature phytogéographique.* - *Actes 3me Congr. Internat. Bot., Bruxelles I,* 131-164.
- GRAEBNER, P. (1909): *Pflanzengeographie.* - Quelle and Meyer, Leipzig. pp. 165.
- GRISEBACH, A. (1872): *Die Vegetation der Erde nach ihrer klimatischen Anordnung.* - Englemann, Leipzig, 2 Vols. pp. 603 and 709.
- HAYEK, A.E. (1916): *Die Pflanzendecke Österreich-Ungarns.* - Deuticke, Leipzig, Wien. pp. 601.
- HORVÁTH, A.O. (1966): Hungary. In: KÜCHLER, A.W. (ed.): *Vegetation maps of Europe.* - University of Kansas Libraries, Lawrence, 372-396.
- JUHÁSZ-NAGY, P. (1986): *Egy operatív ökológia hiánya, szükséglete és feladatai (The lack, the need and tasks of an operative ecology. In Hungarian).* - Akadémiai Kiadó, Budapest. pp. 251.
- KERNER, A. (1863): *Das Pflanzenleben der Donauländer.* - Wagner, Innsbruck. pp. 348.
- MÁTHÉ, I. (1951): *Florisztikai növényföldrajz. (Floristical geobotany).* In: SOÓ, R. and ZÓLYOMI, B. (eds.): *Növényföldrajzi térképezési tanfolyam jegyzete (Compiled lectures of the course on geobotany and vegetation mapping. In Hungarian).* - Vácrátót, Budapest, 38-43.
- MEUSEL, H. (1939): *Die Vegetationsverhältnisse der Gipsberge im Kyffhäuser und im südlichen Harzvorland. Ein Beitrag zur Steppenheidefrage.* - *Hercynia* 2, 1-372.
- SOÓ, R. (1934): *A növényföldrajz alapvonalai (Fundamentals of geobotany. In Hungarian).* - Debrecen. pp. 35.
- SOÓ, R. (1950): *A korszerű növényföldrajz kialakulása és mai helyzete Magyarországon (Die Entwicklung und heutige Lage der modernen Geobotanik in Ungarn. In Hungarian).* - *Ann. Biol. Univ. Debrecen I,* 4-26.
- SOÓ, R. and ZÓLYOMI, B. (eds.) (1951): *Növényföldrajzi térképezési tanfolyam jegyzete (Compiled lectures of the course on geobotany and vegetation mapping. In Hungarian).* - Vácrátót, Budapest. pp. 186.

- THEURILLAT, J.-P. and MORAVEC, J. (1992): Index of new names of syntaxa published in 1989. - *Folia Geobot. Phytotax.*, Praha 27, 69-101.
- WARMING, E. and GRAEBNER, P. (1918): *Warming's Lehrbuch der ökologischen Pflanzengeographie*. - Borntraeger, Berlin, 3rd ed. pp.988+64.
- ZÓLYOMI, B. (1934): A Hanság növényközösségei (Die Pflanzengesellschaften des Hanság. In Hungarian with German summary). - *Vasi Szemle* 1, 146-174.

Bibliography

/1/ TIMÁR, L. (1943): A tutajok növényzete a Tisza szegedi szakaszán (Die Pflanzenwelt der Flösse auf dem Szegeder Abschnitt der Tisza. In Hungarian with German summary). - *Acta Bot. Univ. Szeged* 2, 43-53.

[A description of the vegetation of rafts consisting of trees tied to each other. The trees originally lived along the upper part of River Tisza before they had been felled out; 82 species: Th 35.3 %, H 37.5 %, G 3.8 %, M 5.5 %, Ch 1.6 %, HH 14.5 %, *Cicuta virosa* and a new adventive: *Galinsoga hispida*; 10 cenological relevés: *Bidentetalia* mainly *Bidentetum*, *Echinochloo-Polygonetum*.]

/2/ TIMÁR, L. (1947): Les associations végétales du lit de la Tisza de Szolnok à Szeged. - *Acta Geobot. Hung.* 6, 70-82.

[A preliminary report to 8; A short description of *Phragmition*, *Nanocyperi-on=Elatini-Eleocharition*, *Agrostidion=Agropyro-Rumicion*, *Bidenton=Bidentetalia*, *Arction lappae*, *Salicion albae* incl. *Salicion triandrae* alliances; succession seria for sandy, silty and clayey river banks; geomorphological profiles of flood-plain cross sections.]

/3/ TIMÁR, L. (1946-47): Egy szolnoki zátonysziget benépesedése (La colonisation d'un îlot de sable près de Szolnok. In Hungarian with French summary). - *Alföldi Tud. Int. Évk.* 2, 165-170. (1948).

[Vegetation map; 4 cenological relevés: *Dichostyldi-Gnaphalietum* (?), *Chenopodium rubri*; 62 species: Th 45.1 %, H 42.0 %, M 1.6 %, G 6.4 %, HH 4.9 %.]

/4/ TIMÁR, L. (1948): A Tisza- és Marosmente új növényei (Neue Pflanzenfunde im Gebiete des Tisza- und Marosflusses /sic!/. In Hungarian with German summary). - *Borbásia* 8, 58-61.

[New species, subspecies, varietas and formas (73); new for *Crisicum* 20, e.g. *Eleusine indica*, *Potentilla norvegica*, *Euphorbia maculata*.]

/5/ TIMÁR, L. (1949): A háború utáni gyomosodás (Expansion des mauvaises herbes après la deuxième /sic!/. guerre mondiale. In Hungarian with French summary). *Acta Geobot. Hung.* 6, 108-113.

[10 cenological relevés from *Amarantho-Chenopodietum*, and 10 from *Polygonetum avicularis=Sclerochloo-Polygonetum* in the towns of Szeged and Szolnok.]

/6/ TIMÁR, L. (1949): Az *Asperula humifusa* M.B. Magyarország új növénye *Asperula humifusa* M.B. eine neue Pflanzenart in Ungarn. In Hungarian with German summary). - *Borbásia* 9, 101-102. (1950).

[On a trampled habitat of Szeged in a high number.]

/7/ TIMÁR, L. (1950): A Marosmeder növényzete (Die Vegetation des Flußbettes des Maros. In Hungarian with Russian and German summaries). - *Ann. Biol. Univ. Szeged* 1, 117-136.

[Zonation system; cenological relevés: *Cypereto-Juncetum=Cypero-Juncetum bufonii* (5), *Echinochloeto-Chenopodietum polyspermi=Echinochloo-Bidentetum* (5), *Convolvulus-Echinochloa-Polygonum* 'complex' (5), *Bidentetum tripartitea Bidens* fac. (5), *Xanthium italicum* fac. (5), *Echinochloeto-Polygonetum lapatifolii* (5), *Populeto-Salicetum triandrae=Salicetum triandrae* (5); enumeratio: 229 species and formas.]

/8/ TIMÁR, L. (1950): A Tiszameder növényzete Szolnok és Szeged között (Die Vegetation des Flußbettes der Tisza zwischen Szolnok und Szeged. In Hungarian with Russian summary). - Ann. Biol. Univ. Debrecen 1, 72-145.

[Historical review; ecological and geomorphological characterization of territories; vegetation map; cenological relevés: *Scirpo-Phragmitetum* (22), *Dichostylieto-Gnaphalietum* (14), *Agrostidetum albae* (See 2) (28), *Bidentetum tripartitae* (20), *Echinochloeto-Polygonetum* (6), consoc. *Echinochloa* (15), *Chenopodietum rubri=glauco-rubri* (5), *Populeto-Salicetum Salix triandra* fac.=*Salicetum triandrae* (28), *Amarantho-Chenopodietum* (9), *Hordeetum murini=Bromo arvensi-Hordeetum murini* (5), *Polygonetum avicularis* (See 5) (9), *Salicetum mixtum=Salicetum albae-fragilis* (?) (10); enumeratio: 432 species.]

/9/ TIMÁR, L. (1950): Az *Euphorbia maculata* L. elterjedése és társulásviszonyai (Verbreitung und Zönologie der *Euphorbia maculata* L. In Hungarian with Russian and German summaries). - Ann. Biol. Univ. Debrecen 1, 208-210.

[In trampled habitats; 5 cenological relevés, constant species are *Euphorbia maculata*, *Digitaria sanguinalis*, *Polygonum aviculare*, *Taraxacum officinale*; history of spreading.]

/10/ TIMÁR, L. (1950): A szegedi vár növényzete (Vegetation der Burgruine von Szeged. In Hungarian with Russian and German summaries). - Ann. Biol. Univ. Debrecen 1, 211-213.

[70 plant species incl. 6 mosses new for Szeged e.g. *Polygonum kitaibelianum*; 2 cenological relevés with *Sisymbrium loeseli* and *Erodium ciconum*.]

/11/ TIMÁR, L. (1951): Vegetációtanulmány kerti gyomjainkon (Vegetations-studie an unseren Gartenkräutern. In Hungarian with Russian and German summaries). - Ann. Sect. Horti- et Viticult. Univ. Sci. Agric. 2/2, 55-71. (1953).

[Cenological relations of the garden weeds; in spring: *Consolida orientalis* - *Vicia striata* ass. (20), in autumn: *Hibiscus trionum* - *Eragrostis megastachia* ass. (20) and 16 relevés from different cenoses; successional relations.]

/12/ TIMÁR, L. (1951): Vadvirágok Szeged piacain (Wilde Blumen auf den Märkten von Szeged. In Hungarian with Russian and German summaries). - Ann. Sect. Horti- et Viticult. Univ. Sci. Agric. 2/2, 109-116. (1953).

[122 species: 99, incl. grasses and decoration, 23 for medicinal use, 7 for their fruits; *Ornithogalum boucheanum*, *Castalia=Nymphaea alba*, *Eryngium planum*, *Clematis integrifolia*, *Gentiana pneumonanthe* (from Pusztamérges).]

/13/ TIMÁR, L. (1951): Gyomvizsgálatok a Szeged-körményeki kender-, len- és gyapotvetésekben (Examination of weeds in the hemp, flax and cotton crops around Szeged. In Hungarian with English and Russian summaries). - Ann. Biol. Univ. Hung. 1, 447-454. (1952).

[Cenological relevés (10-10) from the stands of different cultivated plants. *Convolvulus arvensis* is a constant species in every stand. The important species are: *Chenopodium album*, *Setaria viridis* in hemp culture, *Adonis aestivialis*, *Sinapis arvensis*, *Cirsium arvense*, *Polygonum amphibium*, *P. convolvulus* in flax cultures and *Setaria viridis* in cotton culture.]

/14/ TIMÁR, L. (1952): A Délkelet-Alföld növényföldrajzi vázlata (Pflanzengeographische Skizze des südöstlichen Alföld. In Hungarian). - Földr. Értes. 1, 489-511.

[A geobotanical survey of the south-eastern part of the Hungarian Lowland: flood-plains of the rivers Berettyó and Körös (909 species), loess terrain of Békés-Csanád (757 species), flood-plain of the river Maros (705 species); historical remarks; a short review of plant associations; floristical and ecological analyses of 1092 species.]

/15/ TIMÁR, L. (1952): Egyéves növénytársulások a Szeged környéki szikesek iszapján. I. (Einjährige Pflanzengesellschaften auf dem Schlamm der Alkaliböden in der Umgebung von Szeged. In Hungarian with German and Russian summaries). - Ann. Biol. Univ. Hung. 2, 311-321. (1954).

[Cenological relevés from *Crypsidetum aculeatae* (10), *Heliotropieto (supini)-Verbenetum supini*=*Heliotropio-Verbenetum supinae* (40) and first description of *Lythro-Pulicarietum* association (10 relevés).]

/16/ TIMÁR, L. (1952): Adatok a Tiszántúl (Crisicum) flórájához (Angaben zur Flora des Gebietes jenseits der Theiss. In Hungarian with German and Russian summaries). - Ann. Biol. Univ. Hung. 2, 491-499. (1954).

[Historical remarks; 483 species, varietas and formas: 1 *Charales (Tolypella prolifera)*, 16 *Lichenes*, incl. *Physcomitrium pyriforme*, 44 *Bryophyta*, 3 *Pteridophyta*, 186 *Spermatophyta*.]

/17/ TIMÁR, L. (1953): A Tiszamente Szolnok és Szeged közti szakaszának növényföldrajza (Pflanzengeographie der Theiss-Gegend von Szolnok bis Szeged. In Hungarian). - Földr. Ért. 2, 87-113.

[A geobotanical survey of the vegetation of the Tisza flood-plain between Szolnok and Szeged; postglacial vegetation history; review and floristical analysis of communities: river bank (353 species), flood-plain (614 species), dams (513 species), flood-plain saved from inundation (incl. halophilic vegetation) (cc. 700 species), 919 species altogether; short survey of plant communities.]

/18/ TIMÁR, L. (1954): Ackerungskräuter auf alkalischem Lössboden in der Umgebung von Szeged. With Russian summary. - Acta Bot. (Acad. Sci.) Hung. 1, 193-214.

[A description of segetal vegetation of salt-affected loess based soils: *Matricarieto (chamomillae)-Atriplicetum litoralis consoc. Hordeum, Triticum* and *Zea* (50 relevés); ecological and floristical analyses of 157 species; enumeratio.]

/19/ TIMÁR, L. (1954): A Tisza hullámterének növényzete Szolnok és Szeged között. I. Vizi növényzet (*Potametea* Br.-Bl. et Tx.) (Die Vegetation des Flutraums der Tisza zwischen Szolnok und Szeged. I. Wasservegetation (*Potametea* Br.-Bl. et Tx.). In Hungarian with Russian and German summaries). - Bot. Közlem. 44, 85-98.

[Cenological relevés: *Nuphareto-Castalietum albae*=*Nymphaetum albo-luteae* (10), *Nymphoidetum* (10), *Nymphaetum albo-luteae*, *Trapa consoc.* (10), *Myriophyll(et)o-Potametum* (10), *Lemn(et)o-Utricularietum* (10), *Ranunculetum aquatilis-polyphylli* (1); floristical analysis of 76 species; zonation system.]

/20/ TIMÁR, L. (1954): Szeged és környéke vetési gyomvegetációja (Segetal vegetation of Szeged and its surroundings). - Thesis, Budapest, pp. 4.

["Cenological characteristics of the weed vegetation in case of similar agrotechnological utilization are determined by the soil and the dependent segetal community. The kind of the cultivated plant is not decisive from this point of view."]

"The basic association ... is the association of ploughland weeds, which develops on certain soil types of a territory from spring to autumn without sowing of the cultivated plant. It has optimal floristical composition, developing from the seed bank of the soil. Its total composition can be studied in experimental plots or old-field that are free from anthropogenic impacts."

Lectors of the dissertation were R. SOÓ and G. UBRIZSY.]

/21/ TIMÁR, L. (1954): A Tiszazug növényföldrajza (Pflanzengeographie des Gebietes Tiszazug. In Hungarian). - Földr. Ért. 3, 554-567.

[Geobotanical survey of Tiszazug; review of plant communities; history of the research of the flora and vegetation; floristical and ecological analysis of 424 species of four main habitats: flood-plains (220), halophilic vegetation (237), loess based soils (144) and sand dunes (168).]

/22/ TIMÁR, L. (1955): Pflanzenschädlinge zwischen den Eisenbahnschienen am Theissufer. - Acta Biol. Szeged 1, 95-112.

[Plants on the railways; vitality values; cenological relevés from the weed associations: *Amarantho-Chenopodietum* (15), *Carduo-Onopordietum acanthii=Onopordetum acanthii* (5), *Melilot-Echietum vulgaris=Echio-Molinietum* (5), *Tribulo-Tragetum racemosi* ((5); floristical and ecological analysis of 286 species; enumeratio.]

/23/ TIMÁR, L. (1955): Egy veszedelmes gyomkártevő előőrsei Szegeden (Pioneers of a dangerous noxious plant in Szeged. In Hungarian). - Délmagyarország, Jan. 18. p. 4.

[Distribution and expansion of *Ambrosia artemisiaefolia=elatiior*.]

/24/ TIMÁR, L. (1955): Egy elfelejtett szegedi természetkutató: LÁNYI BÉLA (BÉLA LÁNYI, a forgotten naturalist of Szeged. In Hungarian). - Délmagyarország, Febr. 17. p. 4.

[Curriculum vitae and scientific activity of B. LÁNYI.]

/25/ TIMÁR, L. (1956): Megemlékezés LÁNYI BÉLÁRÓL (1879-1918) (In memoriam BÉLA LÁNYI (1879-1918). In Hungarian). - Bot. Közlem. 46, 177-178.

[See 24; publication list.]

/26/ TIMÁR, L. (1956): Kontinentaler und mediterraner Klimacharakter in den Getreidesaaten in der umgebung von Szeged. - Acta Geogr. Szeged 2, 31-35.

[Analysis of the proportion of continental and mediterranean weed species in floras of Crisicum, Praematricum, Szeged and Hungary depending on soil types and the seasonal dynamics of the vegetation.]

/27/ TIMÁR, L. (1956): A növényföldrajzi kutatások módszerei a természeti földrajz szempontjából (Geographical aspects of the geobotanical methodology. In Hungarian). - Földr. Ért. 5, 227-232.

[Main concepts of geobotany: e.g. landscape units, vegetation history, plant association, floristical-phytocenological indication, vegetation mapping and their possible role in geography.]

/28/ TIMÁR, L. (1956): A Tisza ősi emlékei (Ancient heritage of river Tisza. In Hungarian). - Délmagyarország, Febr. 10. p.3.

[Sasér, Tőserdő.]

/29/ TIMÁR, L. (1956): Kevesebb gyom - nagyobb termés (Less weed - more harvest. In Hungarian). - Délmagyarország, Apr. 25. p. 3.

[Harmful weeds in surroundings of Szeged: 267 species on hard soils: 29 in corn, 163 in lucerne, 137 in autumn hoed plant cultures and 91 on stubble fields, 213 species on sandy soils: in order as above 121, 85, 80 and 80.]

/30/ TIMÁR, L. (1956): A Tiszazug geobotanikai térképe (Geobotanische Karte des "Tiszazug". In Hungarian). - Abstracts of the 1st Congress of the Hungarian Biological Society, Budapest, p. 64.

[See 37.]

/31/ TIMÁR, L. (1957): Geobotanical map of the Tiszazug. - Acta Biol. (Acad. Sci.) Hung., Suppl. I. p.4.

[See 37.]

/32/ TIMÁR, L. (1957): Zöologische Untersuchungen in den Äckern Ungarns. - Acta Bot. (Acad. Sci.) Hung. 3, 79-109.

[Floristical and ecological analysis of weeds, See 29; soil analyses; cenotaxonomy of weed associations: *Trifolio-Medicaginion*, *Lolium (remoti)-Linium usitatissimi*, *Consolido-Eragrosti(di)on poidis=minoris*, *Tribulo-Eragrosti(di)on poidis=minoris*; literature: 56 titles.]

/33/ TIMÁR, L. (1957): Die botanische Erforschung des Sees Fehértó bei Szeged. - Acta Bot. (Acad. Sci.) Hung. 3, 375-389.

[Geological history; vegetation history; enumeratio: 4 *Fungi*, 25 *Bryophyta*, 1 *Pteridophyta*, 111 *Spermatophyta*; floristical and ecological analysis; cenosystematical overview: *Potamion*=*Potamogetonion*, *Hydrocharition*, *Ruppion maritimae*, *Bolboschoenion*: *Bolboschoenetum amritimi* (20 relevés), *Nanocyperion*, *Verbenion supinae*, *Thero-Salicornion*, *Puccinellion*, *Beckmannion*, *Festucion pseudovinae*, *Bidention*, *Polygonion avicularis*, *Onopordion*, *Consolido-Eragrostion*, *Matricario-Chenopodion*; zonation system; vegetation map: 35 units.]

/34/ TIMÁR, L. (1957): Zonációtanulmányok szikes vizek partján (Zonationstudien an den Ufern von sodahaltigen Gewässern. In Hungarian with German summary). - Bot. Közlem. 47, 157-163.

[Studies on the zonation systems of a shell-hole and a navy-pit; 12 cenological relevés with various, mostly ruderal vegetation.]

/35/ TIMÁR, L. und UBRIZSY, G. (1957): Die Ackerungskräuter Ungarns mit besonderer Rücksicht auf die chemische Unkrautbekämpfung. (With Russian and English summaries). - Acta Agron. (Acad. Sci.) Hung. 7, 123-155.

[Floristical and ecological analyses of weeds; herbicide resistance studied against 2,4D-Type and MCPA-Type herbicides; list of 732 species according to their habitat type (7) and their degrees (4) of herbicide-resistance; literature: 62 titles.]

/36/ TIMÁR, L. and BODROGKÖZY, Gy. (1957): A *Lythrum linifolium* KAREL. et KIRIL. Magyarországon (*Lythrum linifolium* KAREL. et KIRIL. in Ungarn. In Hungarian with German summary). - Bot. Közlem. 47, 119-121.

[Between Tiszásas and Tizsakürt among *Lythrum hyssopifolium*; drawings by V. CSAPODY.]

/37/ TIMÁR, L. und BODROGKÖZY, Gy. (1957): Die Pflanzengeographische Karte von Tiszazug. - Acta Bot. (Acad. Sci.) Hung. 5, 203-232.

[Geological and pedological characterization of the territory; cenotaxonomical system of the plant associations: *Hydrocharetalia*=*Hydrocharietalia*, *Potametalia*, *Isoetetalia*=*Nanocyperetalia*, *Molinietalia*, *Puccinellietalia* incl. *Crypsidetalia* and *Artemisio-Festucetalia*, *Festucetalia sulcatae*=*valesiacae*, *Secalino-Violetalia*=*Eragrostetalia* and *Secalietalia*, *Bidentetalia*, *Onopord(i)etalia*, *Plantaginetalia*, *Salicetalia*; soil-plant relationships; vegetation map: 40 units.]

/38/ TIMÁR, L. (1960): Gombák a Tizsántúlról (Pilze aus dem Gebiete jenseits der Theiss. I. In Hungarian with Russian and German summaries). - Bot. Közlem. 48, 235-238.

[4 *Phycomycetes*=*Peronosporales*, 16 *Ascomycetes*, 64 *Basidiomycetes* = *Basidiomycota*: 42 *Holobasidiomycetes* and 22 *Phragmobasidiomycetes*.]

/39/ BOROS, Á. and TIMÁR, L. (1962): A Tisza-Körös-Maros közének mohái I. (Die Moose des Gebietes zwischen dem Körös-Maros und der Theiss I. In Hungarian with German summary). - Fragmenta Bot. 2, 33-52.

[History and critical review of the earlier bryological researches of the territory; classification of the species according to their habitats; 15 cenological relevés of *Grimmia pulvinata* - *Tortula muralis* ass.; phytosociological remarks; enumeration: 20 livermoss species.]

/40/ BOROS, Á. and TIMÁR, L. (1963): A Tisza-Körös-Maros közének mohái II. (Die Moose des Gebietes zwischen dem Körös-Maros und der Theiss II. In Hungarian with German title). - Fragmenta Bot. 3, 77-96.

[The enumeration continues: 99 *Bryophyta* species; See 39.]

Documented lectures

/41/ TIMÁR, L. (1943): A tutajok növényzete a Tisza szegedi szakaszán (Die Pflanzenwelt der Flösse auf dem Szegeder Abschnitt der Tisza). - Botanikai Szakosztály 470. ülés. Dec. 9. (Ref. Bot. Közlem. 41. (1944), p. 78.) [See 1.]

/42/ TIMÁR, L. (1947): A Tiszameder növényzete Szolnok és Szeged között (Die Vegetation des Flußbettes der Tisza zwischen Szolnok und Szeged). - Botanikai Szakosztály 493. ülés. Jan. 9. (Ref. Bot. Közlem. 44. (1947), p. 79.) [See 2 and 8.]

/43/ TIMÁR, L. (1949): Az *Asperula humifusa* M.B. Magyarország új növénye *Asperula humifusa* M.B. eine neue Pflanzenart in Ungarn). - Magyar Növénytani Társaság 75. ülés, Oct. 4. (Ref. Borbásia 9. (1949), p.140.) [See 6.]

/44/ TIMÁR, L. (1953): A magyar biológiai ötéves terv (The Hungarian biological Five Year Plan). - A Magyar Biológiai Egyesület Szegedi Csoportja és a Csongrád Megyei Tanács Oktatási Osztálya által rendezett Pedagógiai ankét, Febr. 5. (Ref. Biol. Közlem. 4. (1956), p.75.)

[Report on the biological program of the Hungarian Academy of Sciences based on SOÓ's (not ZÓLYOMI's!) publication: MTA Biol. Oszt. Tud. Közlem. 2, 317-359.]

/45/ TIMÁR, L. (1953): A Tisza hullámterének növényföldrajza (Geobotanical survey of the Tisza floodplain). - Magyar Biológiai Egyesület Szegedi Csoportja 9. ülés, Apr. 13. (Ref. Biol. Közlem. 4. (1956), p. 76.) [See 17.]

/46/ TIMÁR, L. (1953): Beszámoló az egyesület 1952-53 évi munkájáról és további feladatairól (Report on the works of the (Hungarian Biological) Society in 1952-53 and the further programs). - Magyar Biológiai Egyesület Szegedi Csoportja 12. ülés, June 23. (Ref Biol. Közlem. 4 (1956), p.76.)

/47/ TIMÁR, L. (1953): Két behurcolt növény (*Iva xanthifolia* NUTT., *Eleusine indica* GAERTEN) elterjedési prognózisa (Expansion prognoses of two adventive plants (*Iva xanthifolia* NUTT. and *Eleusine indica* GAERTEN)). - Magyar Biológiai Egyesület Szegedi Csoportja 13. ülés, Sept. 29. (Ref. Biol. Közlem. 4. (1956), p. 77.)

[*Eleusine indica*: Budapest, Szeged, *Iva xanthifolia*: Lakitelek.]

/48/ TIMÁR, L. (1953): A Szeged környéki szikes lösz vetési gyomjai (Ackerungkräuter auf alkalischem Lössboden in der Umgebung von Szeged). - Magyar Biológiai Egyesület Szegedi Csoportja 15. ülés, Nov. 17. (Ref. Biol. Közlem. 4. (1956), p. 77.) [See 18.]

/49/ TIMÁR, L. (1954): A Tiszazug növényföldrajzi térképezés I. (Geobotanical mapping of Tiszazug I.) - Magyar Biológiai Egyesület Szegedi Csoportja 24. ülés, Oct. 26. (Ref. Biol. Közlem. 4. (1956), p. 79.) [See 21., 30., 31., 37.]

/50/ TIMÁR, L. (1955): Növényi kártevők a vasúti sínek között (Pflanzenschädlinge zwischen den Eisenbahnschienen). - Magyar Biológiai Egyesület Szegedi Csoportja 28. ülés, Febr. 22. (Ref. Biol. Közlem. 4. (1956), p. 81.) [See 22.]

/51/ TIMÁR, L. (1955): Növényzonációk törvényszerűségei szegedi példák alapján (Remarks on the rules of the zonation of plants by examples from Szeged). - Magyar Biológiai Társaság Szegedi Osztálya (sic!) 33. ülés, Oct. 31. (Ref. Biol. Közlem. 6. (1958), p. 79.) [See 34. (?)]

/52/ TIMÁR, L. (1956): Gyomtanulmány Szeged belvárosából (*Amarantho-Chenopodietum albi* SOÓ) (Weed studies from the centre of Szeged (*Amarantho-Chenopodietum albi* SOÓ)). - Magyar Biológiai Társaság Szegedi Osztálya 38. ülés, March 27. (Ref. Biol. Közlem. 6. (1958), p. 81.)

[A cenological description of five facies of *Amarantho-Chenopodietum*: *Chenopodium album*, *Amaranthus retroflexus*, *A. deflexus*, *A. crispus*, *Polygonetum avicularis complex*.]

Related publications

/53/ GALLÉ, L. (1960): Zuzmók TIMÁR LAJOS hagyatékából (Flechten aus dem botanischen Nachlass von L. TIMÁR. In Hungarian with German summary). - Bot. Közlem. 48, 239-244.

[48 species, several varieties and forms, incl. some rare *Physcia* species.]

/54/ SOÓ, R. (1962): TIMÁR LAJOS emlékezete (1918-1956) (Erinnerung an L. TIMÁR. In Hungarian with German summary). - Bot. Közlem. 49, 175-179.

[Curriculum vitae and scientific activity; bibliography: 39 titles.]

/55/ KOVÁCS, Gy. (1966): TIMÁR LAJOS (L. TIMÁR. In Hungarian). - Jászkunság 12, 139-140.

[Commemoration.]

An unpublished (?) manuscript

/56/ TIMÁR, L. (cc. 1955): Népies növénynevek a Tiszamentérlől (Populistic names of plants from the Tisza valley. In Hungarian). - Manuscript, Dept. of Bot., pp. 24.

[541 Hungarian names.]