



Bulletin

International association for landscape ecology

LANDSCAPE ECOLOGY IN EDUCATIONAL PROGRAMS AND TRAINING COURSES

Report from a questionnaire distributed to all IALE members

The capacity to transfer scientific advances throughout educational programs is a good indicator of the flourishing of a discipline. In fact, education is the basis for transmission of principles, theories and applications to students, professionals and decision makers. For the abundance of published material in theoretical and applied fields, landscape ecology provides excellent conditions to seed ideas and results to a broad spectrum of utilizers, regardless of age.

Recently the IALE Secretariat distributed to all members around the world a questionnaire to evaluate the state of the art of educational programs in landscape ecology. The reaction of members has not been entirely adequate, especially in terms of the number of replies (48 of 1200 contacts) but, thanks to the authority of those colleagues who have filled in the questionnaire, some useful indications and comments can be drawn.

Landscape ecology is taught in the universities of 23 of the 33 countries in which the IALE has contacts (Table 1). Generally the courses are limited to graduate students, and the length of the courses ranges from a minimum of 10 hours to one year. Most of the courses are not permanent.

The title of the courses offers a broad range of arguments and perspectives. Special attention is paid to nature conservation, landscape planning and remote sensing (Table 2). The training and experience of teachers mostly pertains to biology (8) and geography (7). Ecology and nature conservancy (3), landscape architecture, natural history and physical geography (2), plant sciences, remote sensing, applied landscape geography, tourism geography, soil science, fine arts,

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PRESENT STATE AND NEW TRENDS IN THE DEVELOPMENT OF LANDSCAPE ECOLOGY

The Jubilee X International Symposium, "Present state and new trends in the development of landscape ecology", organized on the occasion of the 30th anniversary of the Foundation of Slovak Landscape Ecology and also the jubilee of its founder, Prof. RNDr. Milan Ruzicka, Dr.Sc., was held at Smolenice Castle on 21–24 November 1994.

The aim of this jubilee international symposium was to evaluate thirty years of development of landscape ecology in Slovakia in an international context and to indicate perspectives for its further development. At this meeting, 80 professionals from 11 European countries took part. Domestic participants – ecologists, geographers, biologists, architects and others – made up half the scientific community. The most foreign participants were from the Czech Republic (10) and Poland (5), demonstrating good mutual cooperation between these countries in the sphere of landscape ecology research. Besides the traditionally participating countries (Austria, Germany, The Netherlands, Denmark, Hungary), relatively young republics – Byelarus, Croatia and Slovenia – also took part.

The scientific program was divided into five thematical blocks:

- Theory and methodology of landscape ecology
- Assertion of landscape ecology in practice
- Landscape ecological and environmental education
- Environmental philosophy and policy
- 30 years of landscape ecology in Slovakia

The introduction was devoted to appreciation of the work of Prof. RNDr. Milan Ruzicka, Dr.Sc. He is not only the founder of the landscape ecology school in Slovakia, but he has also established a tradition of

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agronomy and management (1) are also represented.

English textbooks such as Landscape Ecology, Theory and Application (Naveh & Lieberman, 1984) and Landscape Ecology (Forman & Godron, 1986) are used in 33% of the courses. Twenty-eight percent of the textbooks adopted are translated into a local language. However, 33% of the courses use only manuscripts and articles. In many cases, textbooks are used together with selected papers. Probably local necessities and the great variety of courses create problems in the choice of the most efficient material to stimulate students. Also, the provisional character of the courses discourages the purchase of expensive books, and teachers often provide

Country	No. of courses	Duration
USA	7	7w, 1s, 63h, 1s, 1s, 1s, 1s
The Netherlands	7	18m, 20l, 8h, 2w, 2w, *, *
Italy	5	4m, 20h, 20h, 1y, 1y
Belgium	3	45h, 60h, *
Denmark	3	2m, 60h, *
Israel	3	1s, 1s, *
France	2	10h, 12h
UK	2	1y, *
Czech Republic	2	1y, *
Poland	2	1s, 15h
Australia	1	1m
Austria	1	2w
Hungary	1	48h
Greece	1	1s
Argentina	1	40h
Colombia	1	35-80h
New Zealand	1	65h
Ireland	1	8w
Slovenia	1	1y
Cuba	1	64h
Japan	1	*
Germany	1	*
Canada	1	*

Tab. 1 - Number of courses per country. In total we have received questionnaire forms from 23 countries and we have annotated 48 courses. The duration is indicated: h=hours, w=weeks, m=months, s=semester, y=year, l=lesson, *duration not indicated

their classes with photocopies of articles and book chapters.

The regionalism from which landscape ecology derives (Farina, 1993), and the actual worldwide diffusion of this discipline force us to present educational programs capable of meeting the real needs of students and other users. To achieve this goal it is becoming a matter of urgency to work toward the production of an educational program in landscape ecology to be described in detail in a textbook with the capacity to illustrate theories and paradigms of landscape ecology as well as demonstrating, with examples, the capacity of landscape ecology to function as a problem-solving oriented science; therefore, regional examples of nature conservation, land management, land restoration and new decision-making tools such as the Red Books (Trzyna, 1992) have to be included in these programs.

I hope that this commentary and data can be used for a better understanding of the worldwide efforts to teach landscape ecology and stimulate the opening of a preferred channel, and to create a permanent forum, both devoted to educational experience. Hopefully, the symposium dedicated to education during the World Meeting in Toulouse next August will present a new opportunity for all members to debate the educational theme in landscape ecology.

Almo Farina

Acknowledgements

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Landscape management 1
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Vegetation cartography 1
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Landscape ecology, genesis of man to the landscape 1
Landscape science and land development 1
Plant design for landscape restoration 1
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Collection and analysis of landscape ecological data 1
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Plant ecology, desert ecology, ecological methods 1
Environmental planning and management 1

Tab. 2 - Titles of the courses and frequency in the sample of 44 in which landscape ecology is taught.

References

Farina, A. - Editorial comment: From global to regional landscape ecology. *Landscape Ecology* 8:153-154. Forman, R.T.H. & Godron, M. 1986 - *Landscape Ecology*. Wiley & Sons, New York. Naveh, Z. & Lieberman, 1994 - *Landscape Ecology: Theory and Applications*. Springer-Verlag, New York. Trzyna, T.C. (ed.) 1992 - *Red Books for Threatened Landscapes*. Proceedings of a Symposium on Red Books for Threatened Landscapes. CESP Working Paper 4.

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international landscape ecology symposia, held in Slovakia at regular three-year intervals. At the VI International Symposium, which took place at Píšťany in 1982, the International Association of Landscape Ecology (IALE) was established and Professor Ruzicka installed as a vice-president of it.

In the first block, "Theory and methodology of landscape ecology", thirteen contributions were presented, treating

the solution of theoretical-methodological questions as an objective of landscape ecology study, the position of landscape ecology in the structure of sciences, questions of stability, structure, injury, sensibility of landscape and other problems. A part of this section was devoted to the problems of asserting new technical means in landscape ecological planning – the creation of GIS, interpretation of satellite data, and so on.

The second block, "Assertion of landscape ecology in practice", had the greatest number of contributions (23). The lectures dealt mainly with the solution of the following problems:

- Sustainable development of society
- Evaluation and mapping of biotopes
- Creation of territorial systems of ecological stability
- Evaluation of ecosystems stability in landscape
- Ecological optimization of agricultural landscape
- Ecological planning of urban structures
- Monitoring of life environment

The aim of the third block, "Landscape ecological and environmental education", was to map the present state of ecological and environmental education. The small number of contributions were insufficient to evaluate the complex educational processes in the sphere of landscape ecology in Slovakia. Three lectures dealt with the teaching of ecology and environmentalistics in the universities (representatives of newly-created faculties and departments of ecology, landscape ecology and environmentalistics), and other contributions included an evaluation of ecological education now being taught at universities within the framework of related branches and an evaluation of the standard of ecological and environmental education in high and basic schools, until recently not included in curriculae, and nowadays only sparsely dealt with. In this section only two foreign participants gave lectures, evaluating the state of ecological and environmental education in neighboring Austria, and dealing with assertion of landscape ecological methods of landscape planning, appreciating the Slovak landscape ecology school.

The fourth block, "Environmental philosophy and policy", was relatively poorly represented, with only four contributions. Two lectures dealt with the philosophy of global ecological problems – theory of catastrophes, global collapse, and so forth. The remaining contributions dealt with questions of the utilization of landscape ecology in urban and environmental policy.

The fifth block, "30 years of landscape ecology in

Slovakia", consisted of three contributions evaluating the state of landscape ecology in Slovakia. Lecturers stated that two schools have been most important in the development of this discipline, namely the biological-geographical school, formed in the Institute of Landscape Ecology and Institute of Experimental Biology and Ecology of the Slovak Academy of Sciences, and the geographical school, developing in the Geographical Institute of the Slovak Academy of Sciences.

The biological-geographical school has tended to elaborate questions dealing with landscape planning; it started with biological planning of the landscape, which progressed to ecological planning of the landscape. One of the most important achievements of this school is the development of the method of landscape ecological planning known as LANDEP. This method has been successfully applied in seven countries on three continents. It is also one of the methods recommended by Agency 21. Other key problems which have been dealt with by this school are the evaluation of biotopes in landscapes, methods of evaluation of biotope qualities based on the structure of selected animal groups, methods of evaluation of landscape stability and biodiversity, creation of territorial systems of ecological stability, territorial systems of stress factors, evaluation of conflicts of interest in landscape, optimization of land use on the basis of ecological limits, etc.

The core of the landscape ecological research of the

geographical school lies in landscape ecological syntheses (Mazur et al., 1980). One of its greatest successes is the Atlas SR (Mazur et al., 1980). It emphasizes the elaboration of questions of landscape potential, stability of landscape structure, carrying capacity, injury, load and sensibility of landscape, etc.

Despite the difficult conditions under which Slovak landscape ecology has been developed (during 1975-1990 it had no institutional base), it has achieved international successes and has decisively shared in the forming of a world landscape ecology movement. However, a number of unresolved questions remain. Professor Ruzicka summarized in his conclusion: "One of the permanent problems is the need to deepen complexity of landscape ecological researches, which will be required in the future to elaborate more thoroughly new methods and approaches to the study and evaluation of biota on the basis of real and spatial differentiation of biotopes and landscape biodiversity. The positive phenomenon in the development of landscape ecology is its successful application in practice by means of landscape ecological planning, EIA and other ecological bases as a part of environmental ecology". He also noted that conditions have been created to enable more intensive and wider assertion of ecology and environmentalistics in the educational system.

Zita Izakovicov

DIARY

• Beijing, China 11-15 August
1995 9th International Conference
on state of the art in ecological
modelling. Contact: Dr.L.Kvang,
Inst. of Zoology, 19 Zhongguancun
Lu, 100080 Beijing
Phone: 86-1-2555612
Fax: 86-1-2565689

• Toulouse, France 27-31 August
1995 IALE Congress 1995: The
future of our landscapes. Contact:
Henri Decamps, Centre d'Ecologie
CNRS, 29 rue Jeanne Marvig,
31055 Toulouse Cédex, France.
Fax: +33 62269999

• The Hague, The Netherlands 17-
21 September 1995
Habitat fragmentation & infrastruc-
ture. Contact: Congress office ASD,
P.O.Box 40, 2600 AA Delft, the
Netherlands. Tel: +31 15 120234,
Fax: +31 15 120250

• Reading, UK 19-20 September
1995 The 4th annual UK-IALE
meeting will be held on the 19-20th
of september 1995 in Reading. The
theme will be: Landscape ecology -
Theory and Application. Contact:
Dr. G.H. Griffiths, Dept. of Geo-
graphy, University of Reading,
Whiteknights, Reading RG6 2AB,
UK. Tel. 44-01734-318733
Fax 44-01734-755865.

• Beijing, China 19-21 September
1995
International symposium on Biodi-
versity in Agriculture. Contact: San-
dra Bukkens, Instituto Nazionale
della Nutrizione, Via Ardeatina, 546
00178 Rome, Italy. Fax: 39-6-
51957031 Phone: 39-6-5032421

• Jerusalem, Israel June 1996
6th International Conference on
Preservation of Our World in the
Wake of Change. Contact: Yosef
Steinberger, Dept. of life Sciences,
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52900 Israel.
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