

**Mendel University in Brno  
Czech Society of Landscape Engineers – ČSSI, z.s.**

**Public recreation and landscape protection  
– with environment hand in hand!**



**Proceedings of the 15th Conference**

**Editor: Jitka Fialová**

**13th–15th May 2024, Křtiny**

**2024  
MENDEL UNIVERSITY IN BRNO**

**Czech Society of Landscape Engineers – ČSSI, z. s.,**



**and**

**Department of Landscape Management  
Faculty of Forestry and Wood Technology  
Mendel University in Brno**



**Public recreation and landscape protection  
—  
with environment hand in hand!**

**Proceedings of the 15<sup>th</sup> Conference**

**Editor: associate Professor Ing. Jitka Fialová, MSc., Ph.D.**

**13–15 May 2024  
Křtiny (Czech Republic)**

Under the auspices  
of prof. Dr. Ing. Jan Mareš, the Rector of Mendel University in Brno,  
of prof. Dr. Ing. Libor Jankovský, the Dean of the Faculty of Forestry and Wood Technology,  
Mendel University in Brno,  
of doc. Ing. Tomáš Vrška, Dr., the Director of Training Forest Enterprise Masaryk Forest  
Křtiny, Mendel University in Brno,  
of Ing. Dalibor Šafařík, Ph.D., the Chief Executive Office, Forests of the Czech Republic,



of Mgr. Jan Grolich, the Governor of South Moravia,

**south moravian region**

of PhDr. Ivan Bartoš, Ph.D., Minister of Regional Development of the Czech Republic,



and of Mgr. Marek Výborný, Minister of Agriculture of the Czech Republic,



in cooperation with Czech Bioclimatological Society, Nature Conservation Agency of the  
Czech Republic) and Partnerství, o.p.s., with the financial support of



The authors are responsible for the content of the article, publication ethics and the citation form. All the articles were peer-reviewed.

© Mendel University in Brno, Zemědělská 1, 613 00 Brno, Czechia

ISBN 978-80-7509-962-4 (print)

ISBN 978-80-7509-963-1 (online ; pdf)

ISSN 2336-6311 (print)

ISSN 2336-632X (online)

<https://doi.org/10.11118/978-80-7509-963-1>

Open Access. This book is licensed under the terms of the Creative Commons Attribution 4.0 International License, CC-BY 4.0 (<https://creativecommons.org/licenses/by/4.0/>)



## Contents

AGROECOLOGY IMPLEMENTED THROUGH BIOSYSTEMS ENGINEERING TECHNIQUES FOR RURAL LANDSCAPE PROTECTION <i>Roberto Puglisi, Salvatore Margiotta, Dina Statuto, Pietro Picuno</i> .....	9
ATTITUDE TOWARDS SUSTAINABLE TOURISM ACROSS GENERATIONS; A QUANTITATIVE APPLICATION ON X, Y, AND Z GENERATIONS <i>Cihan Yilmaz, Özlem Karatas, Eva Abramuszkinová Pavlíková</i> .....	14
CONTRIBUTION OF AN NGO TO ENVIRONMENTAL EDUCATION AT A PRIMARY SCHOOL THROUGH THE 'PROJECT GARDEN LABORATORY' <i>Katarína Slobodníková, Attila Tóth</i> .....	23
CROSS-BORDER DIMENSION OF (UN)SUSTAINABLE TOURISM IN BORDER REGIONS <i>Emil Drápela</i> .....	29
CULTURAL ECOSYSTEM SERVICES OF THE TRADITIONAL SOUTH BOHEMIAN LANDSCAPE ON THE EXAMPLE OF LAG TŘEBOŇSKO <i>Jiří Schneider, Eliška Pechancová, Ilona Zourková</i> .....	34
DEFINING A STRATEGY FOR MONITORING MARINE LITER IN THE PROTECTED AREA OF ASINARA ISLAND, BY INVOLVING THE LOCAL COMUNITY <i>Sonia Malvica, Radu-Daniel Pintilii, Marian Marin, Andreea Denis Andra Topârceanu, Donatella Carboni</i> .....	41
DEFORESTATION IN GABON: DETERMINANTS OF FOREST ACTIVITIES AND ECONOMIC GROWTH AMIDST LANDSCAPE PROTECTION AND CLIMATE CHANGE CRISIS <i>Dastan Bamwesigye, Evans Yeboa</i> .....	46
DESIGNING HEALTHSCAPES FOR THE DUDINCE SPA RESORT IN SLOVAKIA <i>Attila Tóth, Mária Bihuňová, Miroslav Čibik</i> .....	52
DETERMINATION OF THE HISTORICAL CULTURAL LANDSCAPES AND ITS APPLICATION IN LANDSCAPE PROTECTION AND PLANNING <i>Alena Salašová, Zuzana Fialová</i> .....	58
EFFECTIVENESS OF ECODUCTS AND HUMAN ACTIVITY <i>Ivo Dostál, Tomáš Libosvár, Zdeněk Hejkal, Martin Strnad, Martin Slepica, Josef Svoboda, Jiří Jedlička, Marek Havlíček, Václav Hlaváč</i> .....	64
EFFICIENCY OF FOREST NATURAL HABITATS CONSERVATION IN THE OUTER WESTERN CARPATHIANS (CZECH REPUBLIC) <i>Ivo Machar, Helena Kilianová, Stanislav Grill, Vilém Pechanec</i> .....	69
ENVIRONMENTAL EDUCATION OPPORTUNITIES FOR FUTURE TEACHERS <i>Martina Miškelová, Jitka Fialová, Marie Horáčková, Pavla Kotásková</i> .....	74
ENVIRONMENTAL PROTECTION AND SUSTAINABLE TOURISM OF CROSS-BORDER NATIONAL PARKS IN KOSOVO, MONTENEGRO AND ALBANIA: CONTINGENT VALUATION METHOD <i>Azdren Dolj, Taulant Dolj, Petra Hlavackova Dastan Bamwesigye</i> .....	80
EVALUATING THE RELATIONSHIP BETWEEN DEFORESTATION – PROTECTED AREAS: A NEW APPROACH IN CASE OF EASTERN CARPATHIANS FROM SUCEAVA COUNTY <i>Ana-Maria Ciobotaru</i> .....	86
FIELD LANDSCAPE AND ITS RESTORATION <i>Hedvika Psotová</i> .....	92

FLOOD PROTECTION OF THE NIŽNÝ HRUŠOV VILLAGE USING WATER RETENTION MEASURES <i>Martina Zeleňáková, Natália Junáková</i> .....	97
FLORA OF SOUTH MORAVIAN VINEYARDS AND THE EDUCATION OF THE ELDERLY CITIZENS <i>Jan Winkler, Erika Hurajová, Petra Martínez Barroso, Kateřina Pevná, Lenka Kamanová</i> .....	103
FLOWERING DYNAMICS OF SELECTED PLANTS WITH ALLERGENIC POLLEN <i>Jaroslav Rožnovský, Milan Palát</i> .....	107
FOREST CEMETERIES – USAGE AND DIRECTIONS OF DEVELOPMENT. EXAMPLE OF CENTRAL POLAND AND EAST GERMANY <i>Andrzej Długoński, Beata Fortuna-Antoszkiewicz, Jan Łukaszkiwicz</i> .....	112
FREQUENCY ANALYSIS SEVERE METEOROLOGICAL DROUGHT IN THE EASTERN PART OF SLOVAKIA <i>Martina Zeleňáková, Tatiana Soláková, Miroslav Garaj, Hany F. Abd-Elhamid</i> .....	117
FROM POTENTIALS TO ECOSYSTEM SERVICES - THE ASSESSMENT OF ECOSYSTEM SERVICES IN SLOVAKIA <i>Radovan Pondelík</i> .....	125
FRUIT TREES AS IMPORTANT ELEMENTS OF URBAN GREEN SQUARES' VEGETATION – ON THE EXAMPLE OF THE MOKOTÓW DISTRICT IN WARSAW, POLAND <i>Kinga Kimic, Jakub Lewandowski</i> .....	131
GEOHERITAGE ENDANGERED BY EROSION: EXAMPLES FROM THE PRACHOV AREA <i>Artur Boháč, Petr Vacek</i> .....	137
GREEN BUDGET AS A FORM OF SOCIAL ACTIVATION TO IMPROVE THE URBAN ENVIRONMENT – CASE STUDY OF KATOWICE, POLAND <i>Kinga Kimic, Paulina Polko</i> .....	142
GUERRILLA GARDENING AS A CHALLENGE IN ENVIRONMENTAL EDUCATION? <i>Jana Dundelová</i> .....	147
HARMONIZING NATURE AND TECH: EXPLORING THE FUSION OF MOBILE TECHNOLOGY IN OUTDOOR ADVENTURE <i>Karin Baisová, Michal Marko, Štefan Adamčák, Jana Luptáková</i> .....	153
HOW ARE RECREATIONAL FACILITIES INFLUENCED BY THE NEW BUILDING ACT IN THE CZECH REPUBLIC? <i>Alena Kliková</i> .....	158
HOW CAN BOTTOM UP ACTIVISM CREATE A PUBLIC PARK: CASE STUDY OF EVOLUTION GARDEN IN ČEBOVCE (SLOVAKIA) <i>Katarína Miklášová, Anna Mária Mitrová, Ladislav Bakay</i> .....	163
IMPACT OF AIR TEMPERATURE DEVELOPMENT IN WINTER ON RECREATION <i>Jaroslav Rožnovský, Milan Palát</i> .....	168
IMPLEMENTING MULTI-TEMPORAL CARTOGRAPHY INTO A GIS FOR ANALYZING RURAL LANDSCAPE AND PROTECTING FOREST HERITAGE <i>Dina Statuto, Roberto Puglisi, Salvatore Margiotta, Pietro Picuno</i> .....	173
INFLUENCE OF UNDERGROUND WATER CHANGES ON STRUCTURE AND QUALITY OF VEGETATION <i>Ivan Il'ko, Viera Peterková, Slavomír Vojtilla, Marcel Raček</i> .....	178

LANDSCAPE ARCHETYPES – AN OPPORTUNITY FOR SUSTAINABLE RURAL TOURISM <i>Regina Mišovičová, Zuzana Pucherová</i> .....	183
LANDSCAPE-ARCHITECTURAL DESIGN IN THE RECREATION AREA NOVÁ DUCHONKA <i>Gabriel Kuczman, Viera Paganová</i> .....	189
LANDSCAPE-ARCHITECTURAL DESIGN OF THE BUKOVINKA FOREST PARK IN ZVOLEN <i>Mária Bihuňová, Katarína Pomahačová</i> .....	195
LANDSCAPE-ARCHITECTURAL DESIGN OF THE OLD ORCHARD IN LOCATION PRESEL'ANY FOR RECREATION AND WELL BEING <i>Viera Paganová, Gabriel Kuczman</i> .....	199
LIVESTOCK BREEDING AND MILK PROCESSING AS KEY FACTORS FOR THE PROMOTION OF AGRITOURISM ACTIVITIES IN BASILICATA <i>Carmela Lovallo, Salvatore Claps, Attilio Matera, Francesco Genovese</i> .....	206
MAPPING THE IN-BETWEEN – APPROACHES AND METHODS OF RESEARCHING URBAN VOIDS <i>Miroslav Čibik</i> .....	211
NEW ELEMENTS IN THE LANDSCAPE OF THE PAVLOVSKÉ VRCHY HILLS <i>Jana Konečná, Michal Pochop, Veronika Sobotková, Tomáš Pochop, Jana Podhrázká, Eva Nováková</i> .....	216
OPPORTUNITIES TO IDENTIFY SUITABLE SITES FOR THE IMPLEMENTATION OF SMALL WATER BODIES ON DRAINED AREAS <i>Jana Podhrázká, Josef Kučera, Petr Karásek, Jan Szturc, Michal Pochop</i> .....	222
PARK OF CHOCOLATE: DESIGN IDEAS FOR A HISTORICAL VILLAGE PARK AT A CHOCOLATE FACTORY <i>Attila Tóth</i> .....	227
POTENTIAL FOR CROWDSOURCED HYDROLOGIC DATA ON TFE MF KŘTINY AS A SIDE PRODUCT OF LOCAL RECREATIONAL ACTIVITIES <i>Jan Deutscher, Ondřej Hemr, Petr Hruza</i> .....	232
PRECIPITATION AND AIR TEMPERATURE TREND INVESTIGATION OF THE KOSICE BY TRADITIONAL APPROACHES <i>Yunus Ziya Kaya, Martina Zelenakova</i> .....	237
QUANTIFYING THE COOLING FUNCTION OF URBAN VEGETATION BASED ON IMAGE DATA ANALYSIS <i>Tereza Pohanková, Vilém Pechanec</i> .....	244
RECREATIONAL AND SPORT FLYING IN THE CONTEXT OF THE PROTECTION AND DEVELOPMENT OF THE NATURAL LANDSCAPE <i>Jiří Chlebek, Jaromír Hammer, Jitka Fialová</i> .....	249
RECREATIONAL POSSIBILITIES OF PUBLIC OPEN SPACES IN PÁROVCE, NITRA <i>Mária Bihuňová, Roberta Štěpánková</i> .....	253
RECREATIONAL POTENTIAL OF NEWLY BUILT POOLS <i>Jana Marková, Věra Hubačíková, Petr Pelikán</i> .....	258
RECREATIONAL POTENTIAL OF THE AGROKOMPLEX NATIONAL EXHIBITION CENTER, STATE ENTERPRISE IN THE CHRENOVÁ URBAN DISTRICT NITRA, SLOVAKIA <i>Zuzana Vinczeová, Roberta Legros Štěpánková, Roberta Štěpánková, Attila Tóth</i> .....	263

RECREATIONAL USAGE OF THE CENTRAL PART OF THE JAVORNÍKY MTS <i>Vladimír Juško, Stanislav Azor, Jakub Bočko</i> .....	268
RECREATIONAL USE OF LAND: UNVEILING THE MODERN FRONTIER OF OUTDOOR ADVENTURE – GEOCACHING <i>Stanislav Azor, Michal Marko, Štefan Adamčák</i> .....	273
REDUCING THE NEGATIVE IMPACT OF TOURISM ON THE ENVIRONMENT BY USING RAIL TRANSPORT. CASE STUDY: BUCHAREST NORD-BRASOV ROUTE <i>Adrian-Nicolae Jipa, Camelia Teodorescu, Ioana Voinea, Darius Nestoriuc</i> .....	277
ROADSIDE TREES – AN IMPORTANT ELEMENT OF THE OPEN AREAS' LANDSCAPE <i>Beata Fortuna-Antoszkiewicz, Jan Łukaszewicz, Piotr Wiśniewski, Andrzej Długoński, Natalia Boiko</i> .....	282
SAFETY PROVIDING ROLE OF URBAN PARKS – A CASE STUDY OF CENTRAL PARK (NEW YORK, USA) <i>Paulina Polko, Kinga Kimic</i> .....	288
STRENGTHS AND THREATS OF TOURISM IN THE HRANICE KARST <i>Hana Vavrouchová, Petra Opletová, Jozef Sedláček, Kristýna Kohoutková</i> .....	292
STRIP CROP ROTATION IN FARMLAND MANAGEMENT: AN INNOVATIVE APPROACH TO SOIL CONSERVATION AND ENHANCING THE AESTHETIC AND RECREATIONAL POTENTIAL OF THE LANDSCAPE <i>Petr Karásek, Michal Pochop, Eva Nováková, Tomáš Pochop, Josef Kučera</i> .....	296
SUITABLE AND UNSUITABLE ROOF COVERINGS FOR SMALL BUILDINGS IN THE LANDSCAPE <i>Pavla Kotásková, Jitka Fialová</i> .....	301
TEMPORAL TRENDS OF HUMAN ACTIVITY IN THE LANDSCAPE AND IN THE CROSSING STRUCTURES ACROSS MAIN ROADS IN AUSTRIA <i>Mořic Jurečka, Jitka Fialová, Florian Danzinger, Christoph Plutzer, Petr Čermák</i> .....	306
THE “PLACE MEANING” CONCEPT IN EDUCATION: A CASE STUDY FROM THE BOHEMIAN PARADISE PROTECTED LANDSCAPE AREA, CZECHIA <i>Dominik Rubáš, Anežka Nejedlová, Tomáš Matějček</i> .....	311
THE BLATNÁ WATER DITCH – AN EXAMPLE OF CONNECTING MULTIPLE INTERESTS WHILE PRESERVING A FUNCTIONAL MONUMENT OF TECHNICAL HERITAGE <i>Miloš Rozkošný, Miriam Dzuráková, David Honek, Jaromír Florian, Aleš Vyskočil, Kateřina Sedláčková, Zbyněk Sviták</i> .....	318
THE ENVIRONMENTAL ASPECT OF TOURISM AND RECREATION ALSO AFFECTS THE VALUE OF RESIDENTIAL PROPERTIES <i>David Brandejs, Pavel Klika</i> .....	322
THE FUTURE OF DESIGNED LANDSCAPES IN THE NATIONAL PARK <i>Kristýna Kříčková, Alena Salašová</i> .....	327
THE IMPORTANCE OF HISTORICAL VINEYARD LANDSCAPES IN NATURE CONSERVATION AND RECREATION <i>Marek Havlíček, Hana Skokanová, Tomáš Slach, Marie Vymazalová, Markéta Šantrůčková</i> .....	332
THE REQUALIFICATION OF ANCIENT ROADS FOR PUBLIC RECREATION <i>Zoe Godosi, Pietro Picuno</i> .....	338
THE URBAN GREENERY OF THE BRNO CITY AS AN ENVIRONMENT FOR PEOPLE'S RECREATION AS WELL AS THE LIFE OF LARGE WILD MAMMALS <i>Jakub Drimaj</i> .....	343

TOURISM USE OF POST VOLCANIC RESOURCES IN COVASNA, ROMANIA AND THE IMPACT ON THE NATURAL ENVIRONMENT <i>Camelia Teodorescu, Adrian Nicolae Jipa, Ana-Irina Lequeux-Dinca, Darius Nestoriuc, Ioana Voinea</i> .....	346
TREES AS A PART OF SMALL SACRAL ARCHITECTURE IN THE LIPTOV REGION <i>Marek Hus</i> .....	351
URBAN PARK AS A LANDSCAPE ARCHITECT'S LABORATORY; THE IMPORTANCE OF OPEN EDUCATION AND POPULARIZATION IN THE CONTEXT OF CURRENT ENVIRONMENTAL SOCIAL DEMANDS <i>Jan Łukaszkiwicz, Beata Fortuna-Antoszkiewicz, Andrzej Długoński, Piotr Wiśniewski</i> .....	359
VISITORS' PERSPECTIVES ON SUSTAINABLE TOURISM: A COMPARATIVE STUDY OF NATIONAL PARKS IN KOSOVO, MONTENEGRO AND ALBANIA <i>Azdren Doli, Taulant Doli, Dastan Bamwesigye</i> .....	365
VISUAL EXPOSURE OF MONUMENTS ON CYCLE ROUTES IN THE NITRA SELF-GOVERNING REGION <i>Adam Čaplák, Henrich Grežo</i> .....	371
VISUAL POLLUTION AND ITS IMPACT ON THE URBAN LANDSCAPE: A CASE STUDY OF BUCHAREST'S CITY CENTER <i>Ioana Voinea, Aurel Gheorghilas, Adrian-Nicolae Jipa, Camelia Teodorescu, Darius Nestoriuc</i> .....	376
VISUAL POLLUTION PROVIDED BY BUILDINGS WITH A HIGH DEGREE OF DECAY AND ITS IMPACT ON THE URBAN LANDSCAPE: A CASE STUDY OF BRĂILA CITY CENTER <i>Darius Nestoriuc, Ioana Voinea, Adrian-Nicolae Jipa, Camelia Teodorescu, Aurel Gheorghilas</i> .....	381
WALK WITHOUT DESTROYING, PROTECT WITHOUT PROHIBITING ; NATURE : ACCESS UNDER CONDITIONS <i>Philippe Pesteil</i> .....	386
WAYS OF BUILDING A RECIPROCAL RELATIONSHIP BETWEEN THE INTERVENTION AND ITS HOST STRUCTURE <i>Miroslav Čibik</i> .....	393
WILL THE GLOBAL CLIMATE CHANGE-INDUCED CHANGES IN THE STRUCTURE OF OUR FORESTS BRING ABOUT A SIGNIFICANT CHANGE IN THE REPRESENTATION OF ALLERGENIC TREE SPECIES? <i>Petr Kupec</i> .....	399
YOUTHS PERCEPTIONS OF AGROFORESTRY IN UGANDA: MOTIVATIONS AND WILLINGNESS TO PARTICIPATE IN HIGHLAND AGROFORESTRY TREE PLANTING AND LANDSCAPE PROTECTION <i>Dastan Bamwesigye, Evans Yeboa, Seval Ozbalci, Jitka Fialova, Robert Tweheyo, Obed Asamoah</i> .. .....	403

## ENVIRONMENTAL EDUCATION OPPORTUNITIES FOR FUTURE TEACHERS

*Martina Miškelová<sup>1</sup>, Jitka Fialová<sup>2</sup>, Marie Horáčková<sup>1</sup>, Pavla Kotásková<sup>2</sup>*

<sup>1</sup> Department of Social Sciences, Institute of Lifelong Learning, Mendel University in Brno, Zemědělská 5, 613 00 Brno, Czech Republic

<sup>2</sup> Department of Landscape Management, Faculty of Forestry and Wood Technology, Mendel University in Brno, Zemědělská 3, 613 00 Brno, Czech Republic

<https://doi.org/10.11118/978-80-7509-963-1-0074>

### Abstract

With the ever-increasing impact of human activity on the environment, it is necessary to fully realize that the current trend of interference with nature cannot be continued, as we are reaching a situation where the very essence of life on Earth is beginning to be threatened. Environmental or ecological education is becoming increasingly important as a result of the ongoing serious environmental problems that are beginning to have a very significant impact on human living conditions.

The aim of environmental education carried out in schools should be to guide children and young people not only to act responsibly and create attitudes that support sustainable life on Earth, but also to accept their responsibility for the state of the environment and to spend their free time in the proper and sustainable way.

**Keywords:** environmental education, experiential pedagogy, forest pedagogy, recreation, free time

### Introduction

Průcha and Veteška (2012 p. 93) define it as "education and training of youth and adults for nature protection, environmental care and sustainable development." Within adult education, environmental education is most often implemented in the form of awareness-raising activities or as part of vocational education programmes (Průcha and Veteška, 2012, p. 94).

A full understanding of the concepts of 'sustainable development' and 'sustainable life on Earth' can only be achieved through responsible environmental education that will accompany pupils and students throughout their studies at all levels of school. Environmental education (EE) is therefore essential to raise awareness of the need to protect the environment, preserve and improve the quality of life, now and for future generations (Severiche-Sierra et al., 2016).

In order to achieve the goals of environmental education, it is important that teachers who engage in such activities are themselves convinced of the importance and relevance of developing the necessary knowledge and skills for sustainable living. According to Bendel and Kucharska (2008), quality education can only be realized by qualified and motivated teachers, which can be related not only to the direct educators of students, but also to the education of future teachers. In this context, great emphasis is placed on current teachers, as they should possess the necessary professional competencies to be able to transfer their knowledge and skills to future candidates for the teaching profession. In this regard, Dytřtová and Krhutová (2009) emphasise the necessary shift in teacher education, as they point out that it is necessary to move from a model of imparting knowledge to students to guiding students to take ownership of their own learning.

### Environmental education in the Czech Republic

It can be stated that environmental education in the Czech Republic is trying to adequately adapt to the rapid changes in the field of sustainable development and environmental protection. The Ministry of the Environment (MoE) is the guarantor of environmental education in the Czech Republic, through the State Programme of Environmental Education, Education and Awareness, the so-called "State Programme of Environmental Education". In the Czech formal school system, in both primary and secondary education, EVVO is implemented through the Framework Educational Programmes (FEPs), which are developed by the Ministry of Education, Youth and Sports (MoEYS) and are binding for schools. The curricula are subsequently developed into school education programmes (SEPs), the content and implementation of which is fully within the competence of individual schools, taking into account

the focus and level of education provided. EVSE in primary and secondary schools is most often implemented within the framework of a so-called cross-cutting theme that cuts across relevant subjects, e.g. Man and the Environment (Framework, 2023). Veteška and Tureckiová (2008, p. 144) state that awareness of the basic ecological context, environmental problems and the principles of sustainable development of society form an integral part of the civic competences, which are part of the system of so-called key competences in the framework educational programmes.

It is evident that in recent years more and more researchers have become interested in environmental issues in the concept of man in relation to nature in their research and professional studies, both abroad and at home, not only in relation to the education and training of young people of all ages, but also with a focus on the adult public. The field of environmental education is developing very rapidly as a result of changes in the changing environment. In response, educators and their future students need to be prepared to deal with environmental issues in their daily lives, because human well-being is closely linked to environmental well-being and the long-term future of society depends on attitudes towards sustainability. The preparedness and contribution of teachers, influencing a change in their thinking and their own understanding of the importance of sustainable development for society and the education of future generations is therefore considered significant. This fundamental importance of the role of the teacher, which is reflected in the relationship with the pupil, must also be reflected in a change in the way future teachers are educated. The professional qualifications of each teacher are certainly of paramount importance within the profession, but the level of social, emotional and civic competences also plays a very important role.

High-quality preparation for the teaching profession should be based on a perfect combination of theory and practice. This fact is also becoming increasingly important in the field of environmental literacy of teachers and, consequently, in the implementation of ESD. However, numerous studies show that teachers often lack systematic support in their own environmental and sustainability education (cf. Kiraz et al., 2023). Horká (2005) points out that environmental education in Czech schools is education only about nature, not for nature. Teachers are unsure of the information and therefore prefer to avoid topics related to current environmental issues. We believe that this is one of the reasons why teachers make use of professional training centres that can stand in for them. This fact is very alarming and needs to be addressed.

Environmental education in secondary schools is reflected in the curriculum only cross-curricularly, within the aforementioned theme of Man and the Environment. However, this does not appear to be sufficient. This is also confirmed by Činčera (2013), who, based on his research, points out the narrow interpretation of the objectives of environmental education by teachers. At the same time, he reports another worrying finding, that teachers include programs that are not interrelated with each other with problematic effectiveness, such as talks, competitions or lectures. The author believes that activities conducted in this way can have only a minimal impact on the creation of the necessary environmental competences in pupils. Ilovan et al. (2018) point out that the most effective methods of EVVO tend to be informal outdoor activities (hikes, walks, camps, expeditions), travel and visits to different places, campaigns for reforestation, trips to nature and specific activities in nature. This finding is echoed by Horká (2005) who states that teachers should use teaching methods that lead to an understanding of the relationships and connections between living and non-living nature and human activities. The Framework Educational Programmes (FEP) support these ideas, as one of the main objectives is to understand the position of humans in relation to nature, the effects of human activity on the environment in the context of their own responsibility for their actions. Not only knowledge and skills, but also an understanding of values in relation to the natural environment are seen as important outcomes.

### **Experiential and forest pedagogy**

In line with the above, we therefore believe that effective educational methods and techniques in ESD are particularly those that activate and stimulate pupils' awareness of the importance of the environment and sustainable development, i.e. methods that enable self-directed and experiential learning. According to Kotrba and Lacina (2011, p. 48), the principle of activating educational methods is mainly the dynamics of the educational process, which draws pupils into the subject matter in a non-violent way, thus "increasing their interest" in the educational content and activating pupils' own learning work with an emphasis on thinking and problem solving

(ibid.). Experiential learning is then defined by Veteška (2016, p. 218) as an activity that is based on "active search for non-traditional creative approaches and collaborative problem solving in the field." Experiential learning, according to Veteška (ibid.), usually takes the form of a group training, program, or game." Experiential learning very significantly promotes learning through personal experience, emphasizing personal responsibility, activation and teamwork. In this type of learning, the process of reflection and self-reflection on the activities undertaken also plays an important role, consolidating the information learned and fixing the lived experience.

Thus, experiential pedagogy, i.e. educational activities implemented in direct interaction with nature (and in nature), is becoming increasingly important in the practice of ESD. In the context of the system of pedagogical sciences, experiential pedagogy can be considered a borderline pedagogical discipline. Over time, the partial experimental author's educational courses in nature have established themselves as content-stable practical courses and educational activities for a wide range of interested people, including university students. An important example of good pedagogical practice in the field of experiential pedagogy is the Lipnice Holiday School, which has been pioneering the development of experiential pedagogy in the Czech environment for almost half a century (Prázdňinová, n. d.), both practically, i.e. Hanuš et al., 2021, p. 58). It is clear that as a result of expanding urbanization and modern lifestyles, which entail, among other things, an increasing proportion of sedentary jobs and stress levels, the health status of today's society is gradually deteriorating. It is evident that current, albeit highly modern, health care cannot satisfactorily address these problems. However, natural and green areas have been shown to have significant potential to improve human health (Karjalainen, Sarjala, & Raitio, 2010). Forest environments support human mental and physical health in many ways. Forests help to reduce stress and relieve fatigue. Thus, they significantly improve the psychological and physical state of humans. However, being in nature does not necessarily have only a recreational and relaxing function. A wide range of educational activities can also be carried out in the forest environment. Another example of an activating educational method and inspiration for experiential forest pedagogy is the educational system of forest wisdom, which, according to Hanuš et al. (2021, p. 22), in accordance with the teachings of the founder of the so-called woodcraft, i.e. forest wisdom, Ernest T. Seton, highlights human instincts, namely "the ability, the skill to live and survive in nature" (ibid.). The relevance of forest wisdom to experiential pedagogy lies particularly in "the recognition of the individual path and respect for one's own free growth," (Hanus et al., 2021, p. 23) and in "education through nature, where nature is not only the environment and means of education, but also a wise teacher of life" (ibid.).

### **An example of good practice in environmental education for future teachers**

As an example of good practice in the professional training of future teachers aiming to transform thinking towards a responsible attitude towards sustainable development is the Institute of Lifelong Learning of Mendel University in Brno, which prepares students for the future profession of teaching at secondary vocational schools within the framework of the Bachelor's degree programme Teaching Practical Education and Vocational Training (hereinafter referred to as UPVOV). Within this training, great emphasis is placed on the connection between theory and practice.

In direct relation to the aim of this paper, we draw on a selected part of the profile of a graduate of the UPVOV study programme, where graduates of the teacher training programme acquire the ability to lead students to an interest in environmental issues. Future teachers will learn to use methods and forms of teaching that will lead pupils to understand the interconnections and interdependence between human society and nature. This way of teaching will create a space for understanding the true value of nature as a prerequisite for their environmentally conscious behaviour in their personal and professional lives. This knowledge and skills will lead to responsible behaviour and therefore to the promotion of sustainable development and sustainable living.

Experts from this workplace aspire to create a multidisciplinary research team that will combine professional pedagogical and didactic knowledge in the field of EVVO with practical activities implemented by experts from the field of forestry, agriculture and regional development from Mendel University in Brno. The aim of these activities is to connect innovative, activating, self-experiential and experiential pedagogical methods with the practice of forest pedagogy and

experiential education with nature and in nature. This interdisciplinary connection also aims to appeal to change the thinking of future educators and increase their environmental literacy, to strengthen their understanding of the position of humans in nature and their awareness of their own responsibility for their actions towards the environment and, last but not least, to empower future educators to take a responsible approach to environmental education of future generations.

### **Examples of how the environment of the Masaryk Forest School Křtiny can be used for teaching future teachers**

The best environment for future teachers who are preparing for their future career at MENDELU is certainly the Masaryk Forest School Křtiny (hereinafter referred to as the Křtiny Forest School), which is owned by the University.

The first practical example of educating future teachers with an emphasis on environmental content is the Trail of Praise for Trees. This educational trail leads from the square in Křtiny to the Křtiny Arboretum along a path among the trees. The trail has 13 stops, the trail information panel can be found on the square in Křtiny, a map is included. Nothing prevents teachers from following the trail of 13 stories of trees along a path about 2 km long. Birch, hornbeam, larch, fir, maple, oak, spruce, pine, ash, lime, crane, beech and the beauty of exotic trees will be presented. The trees were planted 15 years ago, but in order to allow visitors to observe the features of each species, compare and properly perceive the forest, the creators of the trail from the School Forest Enterprise Křtiny made it accessible after the trees had grown. Throughout the years there was a need for care, which culminated in recent years, and in 2023 the trees were tagged and panels were installed at the individual sites, from which the teacher and his pupils can learn a lot of interesting things about the individual trees. The panel also includes a QR code which, when scanned, also provides information on the species planted.

The second example of an educational activity that teachers can apply in environmental education is a demonstration of an active approach to the issue of sustainable development and its involvement in environmental education. This is the School Forest activity, where the teacher leads his/her pupils to long-term care of the landscape and forest in cooperation with experts and forest managers on the territory of the Křtiny State Forest Enterprise. This professional workplace offers the opportunity to establish your own school forest, which is cared for by the class collective from the first class to the last. ŠLP Křtiny will clear and level the clearing so that the pupils can plant new trees. Pupils go to the forest at least twice a year - in spring and autumn. They monitor the condition of the trees, observe, record and photograph the increasing biodiversity of the site. If necessary, after a few years, they cut the grass to avoid choking the small trees, paint the terminal part of the trees to prevent them from being eaten by wild animals, and monitor the trees for any pests or fungi. If necessary, they pick up trash. Patronage of memorials and wells can be carried out in a similar way. A school class, under the guidance of a teacher, adopts a selected forest well or memorial to be cared for at regular intervals throughout their primary school attendance. If necessary, they will carry out the cleaning of the well, either on their own or, if major intervention is necessary, they will report the repair to the person in charge of the care of these forest attributes. The whole class participates in the activity as a school collective. The class receives a patronage plaque signed by the director of the Křtiny Forest Management Unit, which the class can have framed and hang in the classroom as a reminder of their own work and involvement in activities aimed at protecting the forest and nature. The most important thing is to realize the value of human work and conscious care. Pupils and future teachers can get the info how to spend their free time and recreate themselves in the forest and do it in the most sustainable way they could.

### **Conclusion**

In the context of the above, we therefore strongly see the preparation of future teachers as a key factor in changing mindsets towards sustainable development and sustainable recreation for future generations. If teachers themselves are not only sufficiently informed about what environmental protection, sustainable development, and a friendly approach to environmental issues are, but also take the importance of the above as their own, accepting the necessity to change their own thinking and approach to the environment and sustainable development, they can much more effectively transmit their attitudes, knowledge and experience in the field of ESD to their pupils and students. At the same time, they will realise the importance of the need to

care for the forest environment and the benefits for teachers and especially pupils resulting from this when implementing the practice in the field of EVVO on the territory of ŠLP Křtiny.

## References

- Bendel, S., Kucharská, A. (2008). Kapitoly ze školní pedagogiky a školní psychologie: skripta pro studenty vykonávající pedagogickou praxi. Praha: Univerzita Karlova, Pedagogická fakulta 2008, ISBN 978-80-7290-366-5.
- Činčera, J. (2013). Paradigmatická proměna domácího pojetí environmentální výchovy. *Pedagogika*. 43(2), 182 – 197.
- Dytrtová, R., Krhutová, M. (2009). *Učitel. Příprava na profesi*. Praha: Grada, ISBN 978-80247-2863-6.
- Hanuš, R., Haková, J., a kol. (2021). *Praktická učebnice zážitkové pedagogiky*. Praha: Nadace Pangea, ISBN 978-80-270-9208-6.
- Horká, H. (2005). *Ekologická dimenze výchovy a vzdělávání ve škole 21. století*. Brno: Masarykova univerzita.
- Ilovan, O., Dulama, E., Botan, C., Havadi Nagi, K. et al. (2018). Environmental education and education for sustainable development in Romania. Teachers perceptions and recommendations. *Journal of Environmental Protection and Ecology*. 19. 350-356.
- Karjalainen, E., Sarjala, T., Raitio, H., 2010. Promoting human health through forests: overview and major challenges. *Environmental health and preventive medicine*, 15(1): 1-8.
- Kiraz, A., Albakoush, I. A. A. & Köprülü, F. (2023). PERCEPTIONS OF LECTURERS ON SUSTAINABLE ENVIRONMENTAL EDUCATION. *Synesis* (ISSN 1984-6754), 15(4), 124–140. [online]. Dostupné z <https://seer.ucp.br/seer/index.php/synesis/article/view/2725>
- Kotrba, T., Lacina, L. (2011). *Aktivizační metody ve výuce*. Brno: EURION.
- Lesnická a dřevařská fakulta Mendelovy univerzity v Brně. 2023. Stezka Chvála stromů turistů zavede ze Křtin až k nedalekému arboretu. [online]. Dostupné z: <https://idf.mendelu.cz/stezka-chvala-stromu-turisty-zavede-ze-krtin-az-k-nedalekemu-arboretu/>
- Lesní mysl. Síla lesa. [online]. Dostupné z: <https://lesnimysl.cz/o-lesni-mysli/sila-lesa/>
- Prázdninová škola LIPNICE. [online]. Dostupné z <https://psl.cz/o-nas/>
- Průcha, J., Veteška, J. (2012). *Andragogický slovník*. Praha: Grada Publishing. ISBN 978-80-247-3960-1.
- Rámcové vzdělávací programy (2023). Ministerstvo školství, mládeže a tělovýchovy České republiky. [online]. Dostupné z <https://www.msmt.cz/vzdelavani/skolstvi-v-cr/skolskareforma/ramcove-vzdelavaci-programy>
- Severiche-Sierra, C., Gomez-Bustamante, E. & Jaimes-Morales, J. (2016). As the Basis of Environmental Education and Culture Strategy for Sustainable Development. *Telos-revista interdisciplinaria en ciencias sociales*, 18(2), 266-281
- Státní program environmentálního vzdělávání, výchovy a osvěty (2000). Státní program environmentálního vzdělávání, výchovy a osvěty a environmentálního poradenství na léta 2016-2025. Ministerstvo životního prostředí České republiky. [online]. Dostupné z [https://www.mzp.cz/cz/statni\\_program\\_evvo\\_ep\\_2016\\_2025](https://www.mzp.cz/cz/statni_program_evvo_ep_2016_2025)
- Veteška, J. (2016). *Přehled andragogiky*. Praha: Portál. ISBN 978-80-262-1026-9
- Veteška, J., Tureckiová, M. (2008). *Kompetence ve vzdělávání*. Praha: Grada Publishing. ISBN 978-80-247-1770-8

## Souhrn

Vzhledem ke stále rostoucímu vlivu lidské činnosti na životní prostředí je nutné si plně uvědomit, že v současném trendu zásahů do přírody nelze pokračovat, neboť se dostáváme do situace, kdy začíná být ohrožena samotná podstata života na Zemi. Environmentální či ekologická výchova nabývá na významu v důsledku přetrvávajících závažných problémů životního prostředí, které začínají mít velmi výrazný dopad na životní podmínky lidí. Cílem environmentální výchovy realizované ve školách by mělo být vést děti a mládež nejen k odpovědnému jednání a vytváření postojů podporujících udržitelný život na Zemi, ale také k přijetí odpovědnosti za stav životního prostředí a k vhodnému a udržitelnému trávení volného času.

**Contact:**

Mgr. Martina Miškelová

E-mail: [martina.miskelova@mendelu.cz](mailto:martina.miskelova@mendelu.cz)

Open Access. This article is licensed under the terms of the Creative Commons Attribution 4.0 International License, CC-BY 4.0 (<https://creativecommons.org/licenses/by/4.0/>)



**Title: Proceedings of the 15<sup>th</sup> Conference Public recreation and landscape protection – with environment hand in hand!**

Editor of the proceeding: associate Professor Ing. Jitka Fialová, MSc., Ph.D.

Publisher: Mendel University in Brno, Zemědělská 1, 613 00 Brno, Czechia

Print: Mendel University Press, Zemědělská 1, 613 00 Brno, Czechia

Edition: 1<sup>st</sup> Edition, 2024

No. of pages: 412

No. of copies: 60

ISBN 978-80-7509-962-4 (print)

ISBN 978-80-7509-963-1 (online ; pdf)

ISSN 2336-6311 (print)

ISSN 2336-632X (online)

<https://doi.org/10.11118/978-80-7509-963-1>