

# CULTURAL ECOSYSTEM SERVICES OF THE TRADITIONAL SOUTH BOHEMIAN LANDSCAPE ON THE EXAMPLE OF LAG TŘEBOŇSKO

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## Abstract

The article focuses on the identification and evaluation of cultural ecosystem services within the territory of the Local Action Group (LAG) Třeboňsko. The practical implementation of ecosystem services into decision-making processes, planning, monitoring, or economic mechanisms in the Czech Republic is still low. Besides the need for its dissemination in public administration, it is desirable to raise awareness within the organization of local action groups as a tool for local and rural development. Methodically, the article works with an expert estimation of the significance of cultural ecosystem services in terms of targeted management on a scale of 4 to 0 points. For the actual identification of cultural ecosystem services, the CICES system was used. Its ecosystem service classes were grouped into four groups - 9.1.1.1 Characteristics of ecosystems that enable activities supporting health, recovery, or pleasure through active physical or impressive interactions; 9.1.1.2 Characteristics of ecosystems that enable activities supporting health, recovery, or pleasure through passive or observational interactions; 9.1.1.3 Characteristics of ecosystems that enable intellectual interactions, research activities, or education; 9.1.1.4 Characteristics of ecosystems with heritage value - cultural, historical, traditional, regional heritage (biodiversity conservation also belongs to this group). To map the sources of cultural ecosystem services, the Consolidated Ecosystem Layer (KVES) was used. The model area of LAG Třeboňsko is unique with its pond landscape, where valuable natural ecosystems intersect with a historical pond management system. This is reflected in the widespread representation of cultural ecosystem service sources belonging to group 9.1.1.4 with the highest priority in terms of management.

**Keywords:** Regional development, Local Action Group, Ecosystem services, Cultural landscape

## Introduction

### *Cultural Ecosystem Services and Their Significance for Society*

Cultural Ecosystem Services (CES) represent intangible benefits that humanity derives from ecosystems. These benefits include aesthetic contributions that can serve as inspiration, reinforcement of cultural identity, a sense of belonging to the place where people live, spiritual experiences, or recreational activities. These services are crucial for improving the quality of life for individuals and communities as they foster the relationship between humans and nature, culture, thus contributing to overall human well-being. Cultural ecosystem services arise from the interaction between humans and the environment. They are non-material benefits that aid in assessing ecosystem services by revealing significant social aspects in the management of natural resources (Pascua et al., 2017).

The aesthetic and recreational values of ecosystems can directly contribute to the development of tourism, which is a crucial component of the economy in many regions. Recreational and aesthetic values of nature and landscape can attract visitors, generating income and job opportunities (TEEB, 2010).

Spiritual and cultural values of nature can strengthen regional identity and contribute to social cohesion through shared values and experiences. These values can also be utilized for educational and interpretive purposes, creating added value for visitors and local residents (Daniel et al., 2012).

These benefits of CES are fundamental aspects in regional development because they can act as a source for the development of local economies, strengthen social cohesion, support regional identity, and improve the quality of life for residents in the region.

### *Local Action Groups*

Local Action Groups (LAGs) act as independent networks of citizens, non-profit organizations, entrepreneurs, and public institutions dedicated to the development of rural regions, supporting the agricultural sector in accessing financial support from national and European Union funds through the LEADER method (French: Liaison Entrée Actions de Développement de Économie Rurale), which translates to "Linking activities for rural development." The main mission of LAGs is to support the quality of life and protection of the environment in rural areas, which includes effective management of grant funds.

The article focuses on the identification and evaluation of cultural ecosystem services within the territory of the Local Action Group (LAG) Třeboňsko. The practical implementation of ecosystem services into decision-making processes, planning, monitoring, or economic mechanisms in the Czech Republic is still low. Besides the need for its dissemination in public administration, it is desirable to raise awareness within the organization of local action groups as a tool for local development and rural development.

### **Materials and methods**

Mapping was performed using the Consolidated Ecosystem Layer (KVES developed by CzechGlobe) and publicly available orthophoto maps. Since both sources may not be current, the ongoing result was consulted with LAG managers and updated as necessary. Ecosystem service resources were described at the level of Land Use/Land Cover types - e.g., arable land, natural/artificial water bodies, meadows, and pastures, etc. Each ecosystem service resource was described in terms of cultural ecosystem services - its potential for provision and possible ways of utilization and management by stakeholders.

For the assessment of cultural ecosystem services in the territory of LAG Třeboňsko, we have chosen an expert estimation of the significance of ecosystem services based on their management (i.e., whether the ecosystem service is the main or secondary goal of management with the given ES resource - ecosystem type) or utilization. This is our own original approach. The proposed scoring for the importance of individual types of ecosystems in providing, utilizing, and managing ES under current conditions in the Czech Republic is as follows:

**H** – Main ecosystem service - almost always managed (usually the main goal of management), utilized (protected by law, subject to trade, intensity of visitation) – value **4**

**V** – Secondary ecosystem service - almost always utilized (consumed, used), but not always the goal of management - value **3**

**O** – Occasional - the ecosystem has the potential for its utilization (produces function), but it is deliberately utilized rather rarely or, if frequently, in negligible scale - value **2**

**T** – Theoretical - The ecosystem has the potential for ES utilization but is not utilized as much (or was utilized in the past) - value **1**

Unused or unmanaged ecosystem services - value **0**, without designation.

When processing ecosystem service classes, we found the possibility to unify and merge cultural ecosystem services into four own categories based on the similarity and overlaps of the original CICES ecosystem service classes:

**9.1.1.1** Characteristics of ecosystems that enable activities supporting health, recovery, or pleasure through active physical or impressive interactions

**9.1.1.2** Characteristics of ecosystems that enable activities supporting health, recovery, or pleasure through passive or observational interactions

**9.1.1.3** Characteristics of ecosystems that enable intellectual interactions, research activities, or education

**9.1.1.4** Characteristics of ecosystems with heritage value - cultural, historical, traditional, regional heritage The overall value of significance for cultural ecosystem services is calculated according to the formula:

#### **Cultural Ecosystem Services (CES)**

$$CES = 9.1.1.1 + 9.1.1.2 + 9.1.1.3 + 9.1.1.4$$

### **Results**

The scoring values of the significance of cultural ecosystem services in terms of management are presented for ecosystem categories represented in the territory of LAG Třeboňsko in Table 1. Forest ecosystems, including intensively managed forests, generally have high significance.

Similarly, natural ecosystems in general. For water bodies and ecosystems, the impossibility of active water recreation often reduces their value, while conversely, the value of historical and cultural heritage, as well as the intrinsic value of nature, increases.

Tab. 1: Scoring values of the significance of cultural ecosystem services according to the significance in terms of and the goal of managing ecosystem service resources

<b>KVES Categories</b>	<b>9.1.1.1</b>	<b>9.1.1.2</b>	<b>9.1.1.3</b>	<b>9.1.1.4</b>	<b>Sum of CES</b>
Alluvial meadows	3	3	2	4	12
Swamps	1	2	2	4	9
Beech forests	3	3	2	4	12
Transport units	0	0	1	0	1
Oak and oakhornbeam forests	3	3	2	4	12
Intensive coniferous forests	3	3	2	3	11
Intensive broad-leaved forests	3	3	2	3	11
Intensive mixed forests	3	3	2	3	11
Degradated grasslands	1	3	2	2	8
Alluvial forests	3	3	2	4	12
Macrophyte vegetation of water bodies	0	1	2	4	7
Artificial urban green areas – parks, gardens, cemeteries	4	4	3	2	13
Mesic meadows	3	3	2	4	12
Wetlands and littoral vegetation	0	2	2	4	8
Introduced shrub vegetation	1	2	2	3	8
Discontinuous urban fabric	2	2	3	1	8
Arable land	1	0	2	4	7
Orchards and gardens	1	4	2	3	10
Industrial and commercial units	0	0	2	0	2
Natural shrub vegetation	2	3	2	4	11
Peatbogs and springs	1	2	2	4	9
Bog forests	3	3	2	4	12
Scattered greenery	3	3	2	4	12
Human influenced water bodies	2	3	2	3	10
Artificial rocks	0	0	1	2	3
Natural rocks	2	0	2	2	6
Dump and construction units	0	0	1	0	1
Spruce forests	3	3	2	4	12
Continuous urban fabric	1	1	1	0	3
Artificial urban green areas – recreation and sport areas	4	3	1	0	8
Dry pine forests	3	3	2	4	12
Dry grasslands	3	3	2	4	12
Ravine forests	3	3	2	4	12
Water courses	2	2	3	4	11
Heaths	3	3	2	4	12

The following figures present the spatial representation of cultural ecosystem services in the territory of LAG Třeboňsko within individual groups (figures 2 – 5) and their overall sum (figure 6). Figure 1 presents the diversity of ecosystems in the Consolidated Ecosystem Layer (KVES) as sources of cultural ecosystem services.

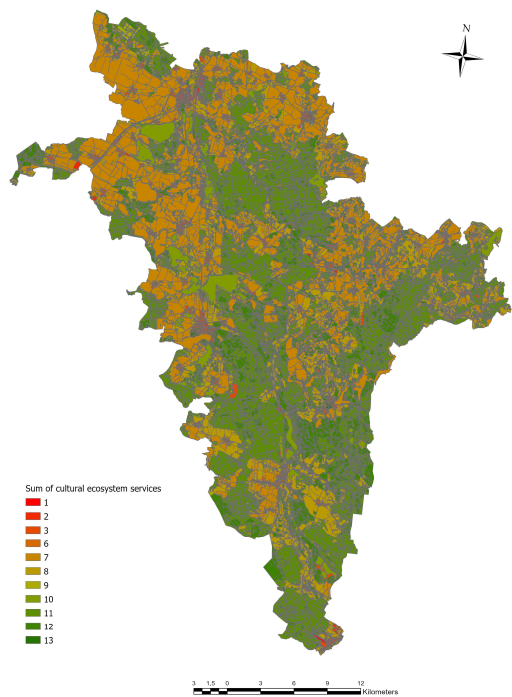


Fig. 1: Consolidated ecosystem layer in the territory of LAG Třeboňsko

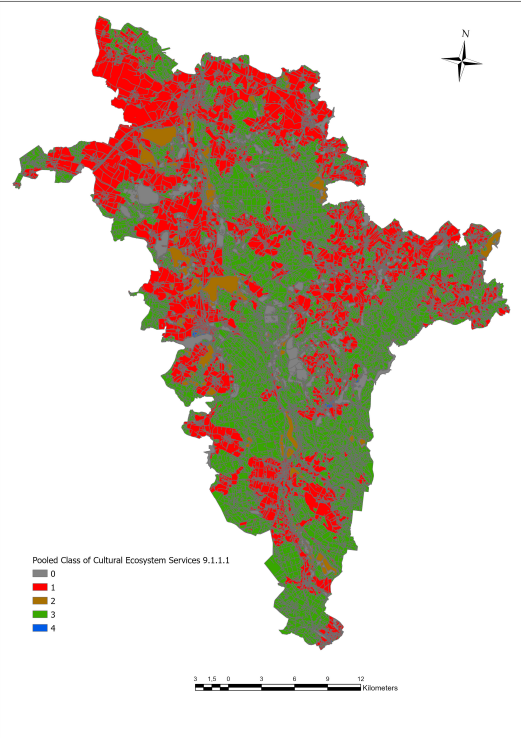


Fig. 2: Assessment of the potential management and utilization of cultural ecosystem services in LAG Třeboňsko - Characteristics of ecosystems that enable activities supporting health, recovery, or pleasure through active physical or impressive interactions 9.1.1.1



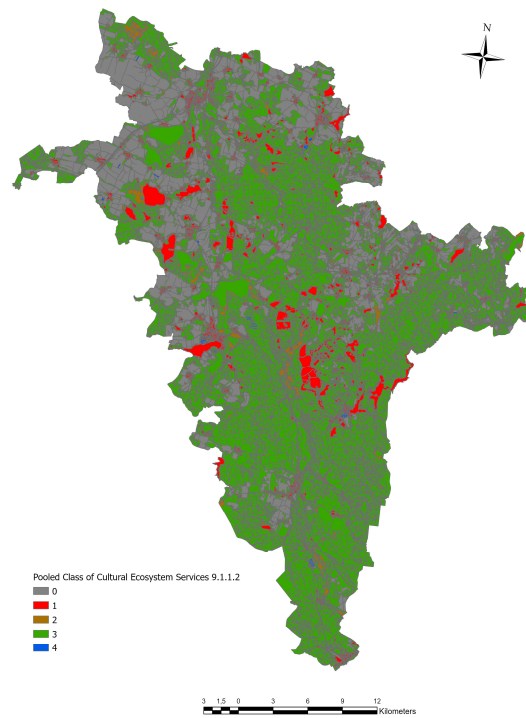


Fig. 3: Assessment of the potential management and utilization of cultural ecosystem services in LAG Třeboňsko - Characteristics of ecosystems that enable activities supporting health, recovery, or pleasure through passive or observational interactions 9.1.1.2

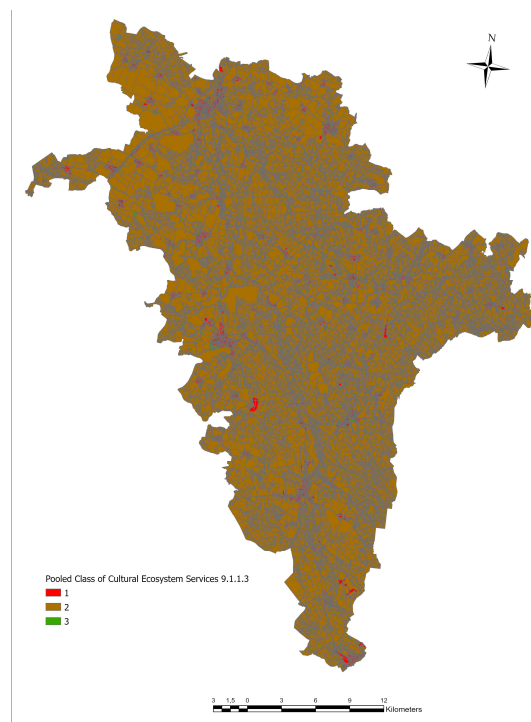


Fig. 4: Assessment of the potential management and utilization of cultural ecosystem services in LAG Třeboňsko - Characteristics of ecosystems that enable intellectual interactions, research activities, or education 9.1.1.3

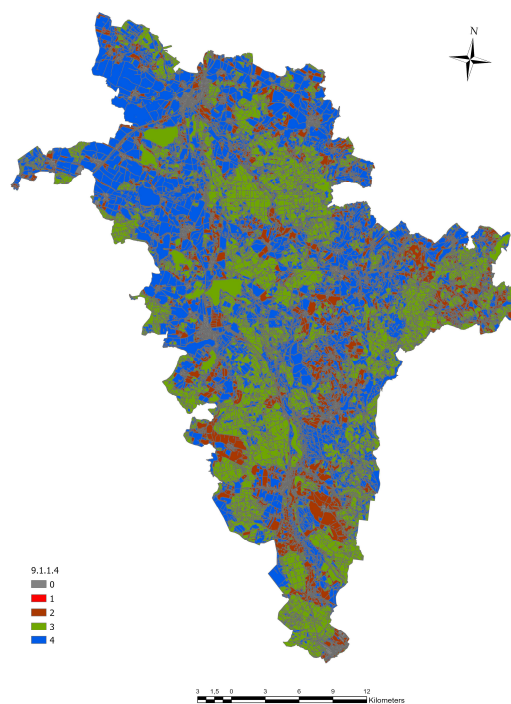


Fig. 5: Assessment of the potential management and utilization of cultural ecosystem services in LAG Třeboňsko - Characteristics of ecosystems that have heritage value - cultural, historical, traditional, regional heritage 9.1.1.4

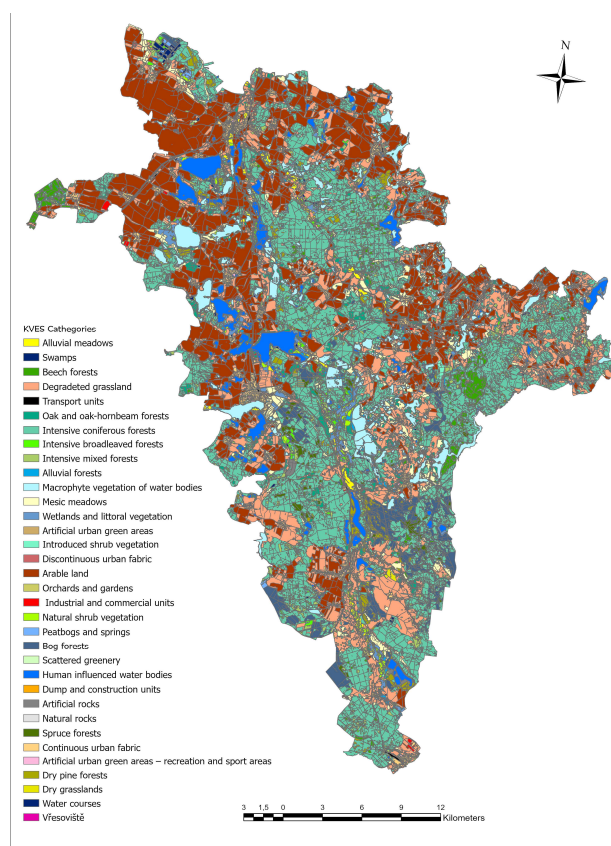


Fig. 6: Total value of cumulative classes of cultural ecosystem services in LAG Třeboňsko

## Conclusion

For the evaluation of cultural ecosystem services, expert estimation was used in terms of significance as a management goal. Although this method is subject to subjective interpretation, mapping of cultural ecosystem services in the territory of the Local Action Group Třeboňsko has shown to be a relevant methodological approach. From the results, it is evident that the traditional, well-preserved, harmonious cultural landscape of Třeboňsko, with a mosaic of natural and extensively managed agricultural ecosystems, represents a significant source of cultural ecosystem services.

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## Souhrn

Článek je zaměřen na identifikaci a vyhodnocení kulturních ekosystémových služeb v rámci území místní akční skupiny (LAG) Třeboňsko. Praktická implementace ekosystémových služeb do rozhodovacího procesu, plánovacích, kontrolních či ekonomických mechanismů je v České republice stále nízká. Kromě potřeby jejího šíření ve veřejné správě je žádoucí zvyšovat povědomí i v rámci organizace místních akčních skupin jako nástroje pro místní rozvoj a rozvoj venkova. Metodicky článek pracuje s expertním odhadem významnosti kulturních ekosystémových služeb z hlediska cílového obhospodařování na škále 4 – 0 bodů. Pro vlastní identifikaci kulturních ekosystémových služeb byl využit systém CICES. Jeho třídy ekosystémových služeb byly sdruženy do čtyř skupin - **9.1.1.1** Charakteristiky ekosystémů, které umožňují činnosti podporující zdraví, zotavení nebo potěšení prostřednictvím aktivních fyzických nebo působivých interakcí; **9.1.1.2** Charakteristiky ekosystémů, které umožňují činnosti podporující zdraví, zotavení nebo potěšení prostřednictvím pasivních nebo pozorovacích interakcí; **9.1.1.3** Charakteristiky ekosystémů, které umožňují intelektuální interakce, výzkumné aktivity nebo vzdělávání; **9.1.1.4** Charakteristiky ekosystémů, které mají hodnotu odkazu - kulturního, historického, tradičního, regionálního dědictví (do této skupiny patří i ochrana biodiverzity). Pro zmapování zdrojů kulturních ekosystémových služeb byla použita Konsolidovaná vrstva ekosystémů (KVES). Modelové území LAG Třeboňsko je unikátní svojí rybníční krajinou, v níž se setkávají cenné přírodní ekosystémy s historickým systémem rybníkaření. To se odráží v plošně rozsáhlém zastoupení zdrojů kulturních ekosystémových služeb, patřících do skupiny 9.1.1.4 s nejvyšší prioritou z hlediska obhospodařování.

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