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A Cultural and Environmental Assessment of a Landscape Archetype with Dispersed Settlements in Čadca Cadastral District, Slovakia

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Abstract: Special types of rural settlements in Slovakia, so-called dispersed settlements, are typical of several regions in the country. They are recognized as specific elements in a landscape and have a strong effect on local identity. They are a part of a historical landscape structure, constituting a unique natural and cultural heritage. For this reason, they deserve special attention in planning and management processes. Decision-making processes about the landscape that do not take into consideration that the inherent value of those structures could lead to their irreversible loss. This paper aims at the evaluation of specific landscape elements in the case study area and describes their effect in terms of the sociohistorical, environmental, and visual context and their influence on sustainability. Both cultural and environmental inventories were interpreted in relation to spatiotemporal land cover/use changes. The field inventory and geospatial analysis, using geographic information systems (GIS) tools, resulted in the categorization and evaluation of 63 dispersed settlement units in the study area of Čadca. We propose a management method, giving reasonable detail to proposed incentives, for each dispersed settlement unit category. The proposed methodology is intended to create a classification of the dispersed settlement units from the perspective of landscape archetypes. The cultural and environmental assessment of dispersed settlement units resulted in the definition of indicators signaling the presence of a particular archetype.

Keywords: historical agristructures; classification of dispersed settlements; assessment of landscape archetypes; spatial planning; sustainability



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1. Introduction

1.1. Archetypes of Cultural Landscapes

We recognize two basic landscape types: natural and a cultural landscapes [1]. Landscape represents a space with ongoing natural and anthropogenic processes where people pursue a variety of activities, thereby forming a landscape mosaic [2]. A cultural landscape reflects the land-use forms, creative mankind activities, related adjustments and changes in the terrain, and cultivation of domesticated crops and, last but not least, it is marked by human artefacts and the elements of the spiritual culture of human civilizations [3]. The key human activities by which the natural landscape is transformed into a cultural landscape include forestry, agricultural activities, water management activities, activities related to the construction of settlements, and transport systems, as well as activities linked to spiritual and religious cultures. Cultural landscapes are the result of a gradual reorganization of a territory, adapting its spatial structure and potential to meet economic and societal

needs [4]. Three kinds of cultural landscapes were established during three main historical periods: traditional landscapes (pre-18th century landscapes), landscapes of revolutionary years (landscapes of expanding industrialization and towns of the 19th century up to World War II) and new postmodern landscapes (postwar period) [5–8]. This article refers to traditionally agricultural landscapes. These landscapes remained preserved predominantly in submountain and mountain regions of Slovakia [9].

As basic types of cultural landscapes, archetypes represent an innovative approach to the classification and assessment of landscapes. They present the opportunity to study landscapes not only from a natural point of view but also in terms of a cultural heritage in the context of sociohistorical events that directly affect the development of landscapes [2,10,11].

Archetypes are collective sociological patterns described by the psychologist Carl Jung (1937–1958). Jacob (2016) paraphrased Jung's theory on archetypal images to explain that they exist all over the earth, are implemented in myths, and concurrently exist locally as autochthonous and individual products of unintentional origin [12]. The concept of a landscape archetype is generally understood as an “autochthonous visual amenity”, “autochthonous type”, “autochthonous form”, “original type”, “original form”, or “original pattern”. In landscape ecology, research on archetypes represents a relatively new approach. It has emerged in the context of research activities using old maps, vedute, historical photographs, paintings, entries in chronicles, almanacs, etc. [13–15]. The term “archetype of a landscape” has appeared in specialized literature where interests in the human and natural sciences are combined. Examples include works by several authors who bring together knowledge from archaeology, history, landscape ecology, and geography [16–19].

Within mosaics of cultural landscape, it is possible to identify certain landscape patterns that are different from the surrounding environment and may occur repeatedly [20]. They are recognized as archetypes in landscapes bearing significant features of the landscape character with a strong relationship to the local identity. They are a part of traditional (historical) landscape structures [21,22]. The term “landscape archetype” is therefore understood as a quasi-homogenous territorial unit with a characteristic form of relief, an equal mode and intensity of land use, and a typical representation of landscape patterns and their spatial distribution [23]. In determining landscape archetypes, it is necessary to integrate landscape classifications (types of landscapes) according to the selected criteria with an identification of the landscape patterns containing the traditional elements of landscape structures (types of historical structures in landscapes) [10].

This article focuses on landscape archetypes with dispersed settlements in Slovakia. Therefore, there is a need to explain the historical development of dispersed settlements in the context of submountain and mountain traditional agricultural landscapes. Archetypes of mountain ridges and plains with isolated and dispersed settlements are potentially the most widespread phenomena of the Western Carpathians [2]. This is also the study area of the Čadca cadastral district.

1.2. Historical Genesis of Dispersed Settlements in Slovakia and the Research Objectives

The so-called dispersed settlement represents a specific type of traditional rural settlement system in Slovakia, typical of several Slovak regions. Furthermore, it is one of the few preserved archetypes in the country. The term “dispersed settlement” describes separately standing individual houses or small groups of houses that are found in certain submountain or mountain areas [24]. The geographical character of the Slovak regions with dispersed settlements is shaped by the arrangement of settlements, depending on the geology, terrain, soil, and land cover characteristics. They are a product of the latest colonization wave in Slovakia, but their genesis in different regions was territorially and chronologically differentiated [25]. Three colonization processes formed the present traditional agricultural landscapes with dispersed settlements: the “Wallachian colonization” in the 15th century, the “Goral colonization” in the 17th century, and the “Kopanice colonization” in the 19th century. The formation of this specific settlement was also influenced by sociodemographic factors, such as population movements and settlements due

to military events. During all three colonization waves, the highlands, with an altitude of 500–800 m.a.s.l., were colonized because lower localities suitable for settlement were settled during earlier colonization waves. Human land use transformations of forests to pastures resulted in later phases of agricultural land use around dispersed settlements [9].

The basic function of the dispersed settlements was to allow for soil cultivation and general agricultural production in remote mountainous regions. Originally, they were established as temporary (seasonal) settlements and simple farm constructions (field barns, stables, chalets, and cots) for summer as well as winter cattle stabling. Later, these seasonal filial farms became the foundation of permanent settlements. Thus, historical rural settlement structures that have been preserved are a reflection of the complicated historical development of the Slovak settlement network in the landscape—a reflection of the human struggle with nature as well as the cultural and social changes of our society [26]. These settlements are composed of dispersed houses and agricultural plots with a variety of land uses, e.g., arable land, grassland, orchards, and vineyards can be found in southern Slovakia.

Since the 1950s, Communist reforms and the collectivization of agriculture have changed the landscape's character in many regions. Diverse, small-scale agricultural mosaics were merged into large fields, and the restriction of private animal husbandry led to the abandonment of grasslands. Relationships between farmers and agricultural land were interrupted. Consequent changes in the employment structure in the countryside and a decrease in the rural population, mainly in remote regions with dispersed settlement, led to the decay of these traditionally managed landscape archetypes. Thus, historical features have slowly disappeared, and old farmhouses have been transformed into vacation homes over the last half century [27].

Dispersed settlements are usually described in light of their sociohistorical, environmental, and visual aspects, and in the context of the land use sustainability. Currently, there is great demand for information on land use in the past as well as landscape management techniques associated with traditional land cultivation methods [28]. This reflects an increased demand in contemporary society for traditions associated with a higher quality of life in the countryside. Knowledge of the land use development of an area can thus be applied in current land-use planning as it uncovers landscape characteristics, such as the transformation degree or character [29]. For this reason, these areas deserve special attention in planning and management processes.

The main objective of the research was the investigation of the landscape archetype with dispersed settlements in northwestern Slovakia. An analysis of natural and sociological data and multitemporal geospatial analysis were expected to accomplish the categorization and assessment of dispersed settlements units (DSUs). Concurrently, the attitudes of residents collected through a sociological survey can lead us to confirm or reject our assumption that the landscape archetype with dispersed settlement will be preserved in the study area. The DSU assessment requires the creation of protection measures and incentives considered necessary for their preservation in the landscape. Based on the results, this article demonstrates the need to save the “landscape archetype” in the countryside, and not only through legislation or management by local governmental bodies. A “bottom up” planning approach and pressure from residents are considered to be very important factors in local governance and territorial planning.

2. Materials and Methods

2.1. Study Area

The study area is the Čadca cadastral territory (4319 ha), which is located in the northwestern part of Slovakia, in the Horné Kysuce region and in the center of the Čadca district (Figure 1). The town creates the urban core and historical center for 87 DSUs located in the town or its surroundings. The fact that the district town of Čadca, with almost 27,000 inhabitants, is situated in the center of the region cannot be overlooked; it has a partly urbanized and partly rural character. The average elevation of the study area

is 415 m a.s.l. and the highest point is Chotárny Vrch Hill (906.2 m a.s.l.). The study area is known for its specific traditional agri-structures related to dispersed settlements, such as terraced fields, a mosaic of meadows and pastures, and different forms of nonforest vegetation, usually tracking the land parcel division and creating geometric land cover patterns (Figure 2). The Horné Kysuce is an ethnographical region with a well-preserved ecosystem and a specific history. This ethnographical region consists of 11 villages that cooperate in a microregional association. It is located between the Javorníky Mountains, the Turzovská Vrchovina highlands, and the Moravsko-sliezske Beskydy Mountains. It is marginalized due to the location at the border of the country as well as its economic development. Significant differences can be observed within the region. The southern part between Čadca and Žilina is more industrialized and tourism friendly, while the northern part is less developed and thus is poorer [29].

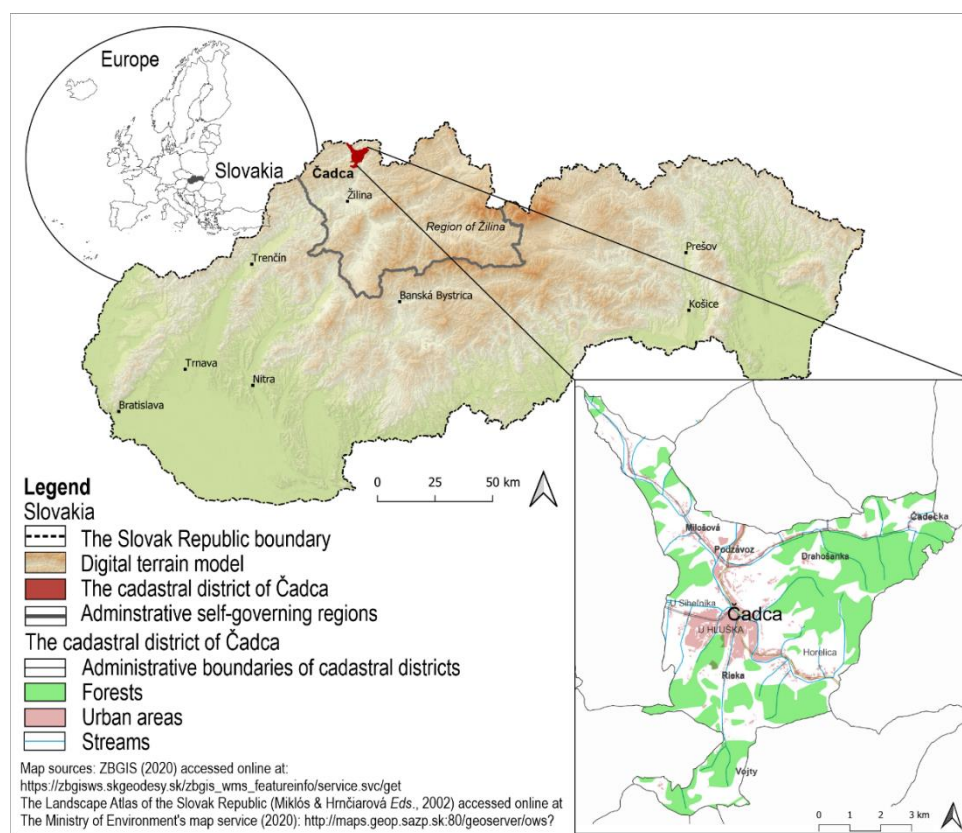


Figure 1. Location of the study area and target dispersed settlements (bold) in the cadastral territory of Čadca.

DSUs are specific features of the Kysuce region. A typical dispersed settlement is a hamlet that consists of several settlements lying on different landforms. The town of Čadca and dispersed settlements in its surroundings came into existence as a result of the herdsmen colonization. This colonization, determined by specific historical and socioeconomic circumstances, also had spatial manifestation. The previously uninhabited forest landscape was penetrated by dispersed rural residences, and enclaves of agricultural landscapes with arable land and meadows appeared. However, land use transformations were strongly limited by “natural laws”, so the most economically favorable localities with the easiest access were settled first and localities with less favorable conditions were colonized later.

What affected dispersed settlements in the Čadca municipal district the most was the Socialism period and the interventions of the Communist government. Transitions to collectivized and mechanized socialist agriculture caused many of these less favorable agricultural areas to become irrelevant. Furthermore, the siting of large engineering factories

in cities was connected with the construction of new housing estates and resulted in the migration of the population from dispersed settlements to cities. This was the beginning of their gradual depopulation. It forced employment to be redirected from agriculture to industry, and residents lost their ties to the agricultural land. Traditional cultivation methods have gradually ceased in agricultural landscapes and are rare nowadays.



Figure 2. An example of a typical dispersed settlement around Čadca town in the Horné Kysuce region of Slovakia.

2.2. Research Methodology

The methodology of research in this field is generally very broad. The investigation of landscape archetypes requires interdisciplinary knowledge of experts and the involvement of stakeholders [30]. As there is no universal methodology for mapping and evaluating this type of settlement for use in regional development and land use plans, we have set up steps to identify and evaluate dispersed settlement units to be able to propose their proper management (Figure 3). Our methodology aims to achieve a qualitative assessment of the landscape archetypes, consisting of dispersed settlements and related traditional land use forms on hilly terrains. Dispersed settlement archetypes capture the natural, biocultural, historical, and social value of the landscape. Therefore, axiological criteria were adopted for the categorization and assessment of the landscape archetypes. The result is an identification of the most valuable localities and a proposal of management measures for their preservation in the spatial and historical context of the surrounding rural landscape. An important phenomenon is the perception of the landscape archetype by stakeholders, especially local residents. Therefore, besides conventional landscape ecological research, a social survey (questionnaire) was also employed. The management measures are based on the needs of the local population, with the objective of allowing a good quality of life in the locality.

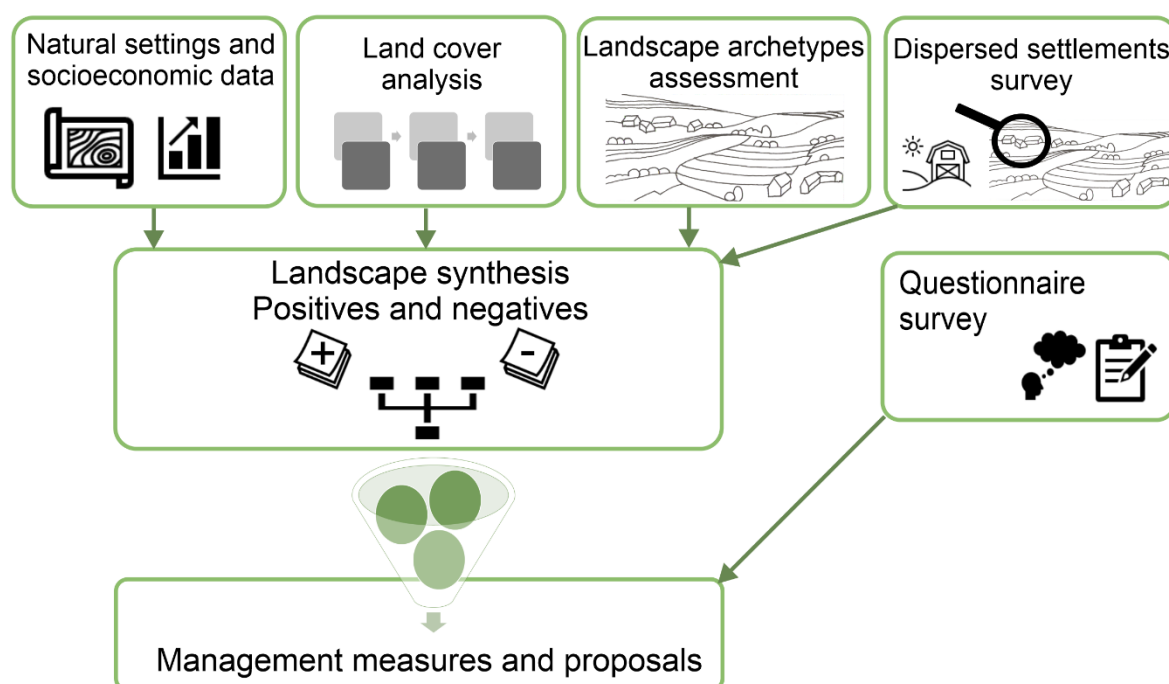


Figure 3. A methodological approach to the qualitative evaluation of landscape archetypes with dispersed settlements.

2.2.1. Analysis of Natural Settings and Socioeconomic Factors of the Study Area and the Field Survey

An analysis of a landscape using geographic information systems (GIS) with their options of various types of spatial operations on data from historical, environmental, and archaeological research brings a new dimension to the study of a landscape [31]. It also provides necessary background for the following methodological steps. Knowledge of the natural and socioeconomic characteristics of the present and past landscapes represents the philosophy of further landscape archetype evaluation. The first step was the analysis of the natural settings. Then, the analysis of the socioeconomic characteristics indicated the role of human factors in the land use. The socioeconomic characteristics of the study area focused on the history of the territory, trends in the number of inhabitants, dynamics of population, age and sex structures, nationality, religion and education structures, housing structure, and the economy, both agricultural and the forest economy (industry, unemployment, transport, and tourism). The demographic data were compiled from statistical yearbooks (2011) and from field research in the settlements (there is more information about the sociological survey in Section 2.2.4).

2.2.2. Land Cover Analysis and Multitemporal and Spatial Context of Dispersed Settlements

Land use depends on land cover elements and processes forming the territorial development. These factors are important to consider in the assessment of landscape archetype conservation, regarding the aspect of a historical time horizon they represent [32]. The objective of this step is to provide a comprehensive view of the development of historical land use in the study area. Historical land use is the subject of numerous studies dealing with land use management, and GIS approaches [33] or the latest remote sensing technologies [34] are applied. First, we conducted a field survey with the support of orthophotos and contour maps of the basic national map series of the Slovak Republic. The analysis resulted in the elaboration of the land cover map. The content of the thematic map was verified in the field and two interviews with local experts and inhabitants enriched the theoretical land cover research, using literature with historical data [35].

Multitemporal land cover changes were evaluated through four time horizons. The changes were compiled in GIS and the results were interpreted from:

- Military maps (scale of 1:28,880): I. Military Map (1780–1784) and II. Military Map (1819–1824);
- Historical military topographic map (scale of 1:25,000) (after 1956);
- Orthomosaic photos (scale of 1:10,000) and the best base for land cover details was a colored large-scale aerial photo (2011);
- Aside from maps, accessible historical documents and time photos were also used.

Encountering four time horizons, we considered the basic groups of land cover categories: forest; permanent grassland; arable land; nonforest woody vegetation; water areas (streams and rivers); transport infrastructure; urban areas; other areas. The category of urban area, specifically a subcategory of dispersed settlements, is investigated further in Section 2.2.3.

2.2.3. Identification and Evaluation of Historical Structures in the Context to Landscape Archetypes with Dispersed Settlements

Landscape archetypes can be determined from the characteristics of a given area in terms of landform types (including small-scale landforms) (abiotic characteristics), landscape-forming processes (natural and anthropogenic), potential natural flora, as an important indicator for the evaluation of landscape change (biotic characteristics), the occurrence and arrangement of landscape elements (current and historical), types of allotments/forms of land use, cultural and historical patterns in a landscape, including monuments (down to the level of archaeological knowledge), structures representing cultural heritage, sociohistorical developmental milestones that have significantly influenced the territorial development, etc. [36]. The principle of the determination and classification of landscape archetypes lies in the strategic and methodically appropriate processing of all available input data into a spatial geo-database containing data on the attributes of all the above-described areas, including archaeological data. Through subsequent combinations of multilevel data meeting the given conditions and multiple spatial analyses, potential landscape archetypes are generated based on the geoprocessing outputs [37].

The identification, classification, and evaluation of specific landscape elements or landscape archetypes is not unambiguous because of the effect of information from various scientific disciplines. Similarly, in the application of different approaches to the classification of landscapes in landscape ecology, it is necessary to choose a specific decision criterion for the allocation of landscape archetypes. The most frequently applied classification criteria of a landscape include the type of landform, land use, size of landscape elements, diversity of landscape elements, etc. [38,39]. Determining landscape archetypes concerns the identification of certain landscape segments that can be characterized by their common features. These features differentiate them from their surroundings, with the priority indicators being relatively unchanged: the shape of the relief, long-term conservation of the way the land is used, a characteristic landscape mosaic with a high degree of conservation (in terms of time) of the spatial arrangement of the landscape elements, and the occurrence of historic landscape elements that constitute the pattern within the landscape mosaic [40].

In the comprehensive graphical classification of landscape archetypes, their value assessment and interpretation resulted in the identification of the most valued dispersed settlement locations. Archetypes are recurrent patterns, and they are basic elements or building blocks of socioecological relations that may recur in many places [41]. The defining criteria for the classification of archetypes at territorially different hierarchical levels are the proportion of landscape elements within the spatially defined part of a landscape, the types of small-scale landforms, the presence of landscape features related to the occurrence of traditionally cultivated land and/or cultural-historical monuments, and knowledge of the sociohistorical development of a given area, while necessarily taking into account the intensity and practice of land use. Based on these indicators, it is possible to compile not only a standard image of a landscape structure, but also a mosaic of the landscape that

shows the indicators signaling the preservation of archetypal (ancient, original) elements that could be the foundation for the classification of a landscape into particular archetypes. By abstracting patterns types, it is possible to create a classification of landscape archetypes.

Basic criteria for the landscape archetype were defined by Hreško et al. [2] at three levels: the first level (1) contains criteria of land use and landscape structure, emphasizing patterns; the second level (2) contains processes and the visual appearance of archetypes as distinguished features of the landscape character; the third and most detailed level (3) contains criteria determining the genesis of the archetype as georelief and morphodynamic attributes interacting with natural factors and human forces. The criteria were adjusted to assess the specific landscape archetypes with dispersed settlements, and we considered: (1) land use and landscape structure—landscape management practice in dispersed settlements and the settlement structure; (2) the visibility of distinguished features in the landscape—the visual exposure (visibility was verified from monitoring sites); (3) the contextual origin and development of the settlement in given natural settings, influencing further human economic and cultural activities—we identified traditional handcraft, typical architecture, preserved folk architecture, and the identity of residents.

2.2.4. Sociological Survey through a Questionnaire

The field work and interviews provided very important information on natural settings, socioeconomic conditions, and local processes [41]. In order to maintain the local population in the area, it is crucial to know their present way of life, their opinion on the local landscape, and their requirements, and to show them how to maintain their valuable landscape [42]. This can be achieved by a sociological survey that is a part of the proposed methodology. Based on its results and a socioeconomic forecast, it is possible to suggest measures for good quality of life for people in those specific forms of settlements.

We aimed to collect both qualitative and quantitative data on dispersed settlements, as perceived by residents, especially those living in the study area permanently. These residents were the target group of the questionnaire survey. The sociological survey was addressed to 75 residents, of whom 38 were inhabitants of Čadca town, 23 were from the Čadca district, 42 had parents from Čadca town or from the Kysuce region (23), and 44 planned to stay in Čadca town for the next five years. The qualitative approach was based on interviews and face-to-face communication with local people. Interviews were recorded, transcribed, and further analyzed using qualitative content analysis. Quantitative approaches aimed to collect the following data on the target group of the population: gender (male, female); age range (15–25, 26–35, 36–45, 46–55, and 56–65); the highest level of education (primary school, high school, or university); residence location (Čadca town, Čadca dispersed settlements, Čadca district, or other district); parental origin (Čadca town, Čadca district, or other district); type of residence (family home or flat); a plan to live in Čadca town for the next five years (yes or no); the type of house respondents would hypothetically build (traditional or modern); the importance of “place”, a kind of dispersed settlement present around Čadca town (very important, important, or not important); the landscape features around Čadca town (spruce forests, dispersed settlements, meadows, pastures, housing estates, fir-beech forests, terraces on slopes, and nonforest woody vegetation).

Quantitative data were gathered through guided interviews. The following questions were addressed to interviewees: 1. How well do you live in the “place”?; 2. What do you consider to be the positive and negative aspects of this type of housing?; 3. How do you evaluate the current situation and quality of the housing compared to in the past?; 4. What would you expect to be needed to improve the quality of life in the place?; 5. What is the relationship between indigenous (permanent) inhabitants and seasonal inhabitants (“cottagers”)?

Those who were interviewed had the following age/gender (rounded to the nearest five or 10) and housing status (permanent and seasonal inhabitants): 50 female permanent; 60 female seasonal; 80 female permanent; 60 male permanent; 25 female permanent; 40 male permanent; 50 male permanent; 80 male permanent; 80 female permanent; 55 female sea-

sonal; 55 male seasonal; 60 female permanent; 50 male seasonal; 40 male seasonal; 50 male seasonal; 80 female permanent; 60 female seasonal; 60 male seasonal; 60 female seasonal.

2.2.5. The Assessment of Landscape Archetypes with Dispersed Settlements for Proposals of Management Measures and Incentives

First, the positive and negative elements and phenomena influencing the quality of the landscape archetypes with dispersed settlements were evaluated. Negative elements and phenomena were divided into a real and a potential group. Dispersed settlements are recognized as specific features of the landscape character bearing unique natural and cultural value [43]. Therefore, both axiological attributes of natural and cultural heritage were considered. Positive and negative phenomena were identified during a field survey and from interviews with local experts and residents. Furthermore, they were interpreted in an orthomosaic photo. From a geospatial point of view, these elements and phenomena were divided into three groups: point, lines, and areas.

Secondly, types of DSU units were assessed according to their quality, and the DSUs with the highest quality were selected. This means these DSUs are the most important for the preservation of the landscape character and represent “healthy urban structures” in the landscape.

The analysis of the dispersed settlement units’ quality was based on the following procedure:

- Identification of orthomosaic photos purchased from Geodis, Ltd., Bratislava, Slovakia, 2011 and verification in the literature [35,44].
- The field survey and the inventory datasheet containing the following information and attributes: basic data; landscape evaluation concerning attributes of age and condition of family houses, condition of land use, preservation degree of folk architecture, settlement structure and the presence of historical agristructures; residents’ evaluation concerning the number of residents and character of the local community (permanent or seasonal inhabitants); other data on specific features increasing or degrading the DSU value. Examples and details are given in the Supplementary Materials.
- The relationships of the attributes were statistically evaluated using a formula of linear regression [45] expressed by the Pearson’s correlation coefficient using an online calculator [46].

The quality of DSUs was further applied in proposals of management measures and incentives and their application in territorial planning strategies. A categorization of DSU in the context of landscape archetype preservation is proposed in Section 4.2. Categories indicate the protection level of DSUs and related management measures and incentives.

3. Results

3.1. Natural Settings and Social Conditions of Study Area in Relation to Land Use Managed by Dispersed Settlements

As previously mentioned, the town of Čadca and its dispersed settlement came into existence as a result of herdsmen colonization. The previously uninhabited forest landscape was penetrated by enclaves of agricultural arable-meadow landscape, usually with dispersed rural settlements.

Due to the change in economic utilization, some areas of permanent grassland remain unused. Ultimately, this trend allows for the spreading of herbs and grasses, the self-seeding of woody plants, and the secondary succession of the landscape. Sometimes it amounts to the disturbance of biodiversity and devastation of the landscape. There is a serious risk that, in the foreseeable future, it will lead to an irreversible decrease in or even loss of biodiversity linked to these specific biotopes in this area, as a result of their abandonment and a subsequent rapidly advancing forest succession, or under the pressure of capital construction, which decreases the diversity of the landscape, not respecting the biological and ecological values of the area. The dispersed settlement in the study area mostly remained in its original form and shape. Cottagery becomes more prominent and

may be the impulse for the next development of the studied area. We recorded the process of the transformation of houses into vacation homes; new residents are either descendants of the original residents or people from the cities looking for relaxation and recreation in this natural environment. The favorable localization in a tourist-attractive intact landscape, in a mosaic of meadows, pastures, and forests, gives rise to an increase in short-term use and subsequently a change in the housing stock. A positive element of this change is, in a majority of cases, the preservation of the original architecture, which may positively influence the perception of this area for prospective visitors.

Landscape and its structure are influenced by land use and its intensity. This intensity corresponds to the human population of the area. Currently, dispersed settlements in the vicinity of Čadca no longer fulfill their primary agricultural function. The local population of dispersed settlements keeps animals and grows crops, but significantly less than in the past. However, surrounding grasslands are managed mainly by the villages' collective farms and not by individual farmers. Dispersed settlements are currently used both as residences and as vacation homes. These functions protect dispersed settlements from extinction. We have observed an increase in the dispersed settlement population in the last five years in comparison to the overall decrease in population in the town core (Table 1). While the overall town population decreased (2.35%), this decrease manifested itself in the central part of the town. The population in the center decreased by 4.47%, while the population of dispersed settlements increased by 4.29%. This situation is also reflected in the overall relative proportion of the dispersed settlement population, whose share increased from 24.14% to 25.79%. This increase in the dispersed settlement population is rare and, due to this fact, we also evaluated the selected landscape potentials of these municipal districts that are created by dispersed settlements.

Table 1. Evolution of the population in Čadca town.

	Population	Population of Village Centers	Population of Dispersed Parts	Share of Population in Settlement Centers (%)	Population of Dispersed Settlements (%)
1961	11,620	8556	3064	73.6	26.4
2007	25,751	19,533	6218	75.79	24.14
2012	25,144	18,659	6485	74.21	25.79
Difference (in %) 2007–2012	−2.35	−4.47	4.29	−1.58	1.65
Difference (in %) 1961–2012	216.38	218.08	211.65	1.39	−0.61

3.2. Evaluation of Land Cover and Historical Structures of the Landscape Archetypes with Scattered Settlements

3.2.1. Current Land Cover in the Study Area

Currently, forests (artificial spruce forests for wood production) prevail in the study area (46%; 1966 ha) and there is an extensive urban area covering 18% (766 ha) of the Čadca cadastral district. Agricultural landscapes are dominated by grassland (12%; 528 ha) and nonforest woody vegetation (16%; 691 ha), while arable land covers only 5% (221 ha) (Figure 4). Using historical material and archival photos, we also found arable land on terraces currently covered by permanent grassland. Transport infrastructure covered 2% (84 ha), water areas and streams 1% (55 ha), and other areas (cemeteries, etc.) had coverage below 1% (8 ha).

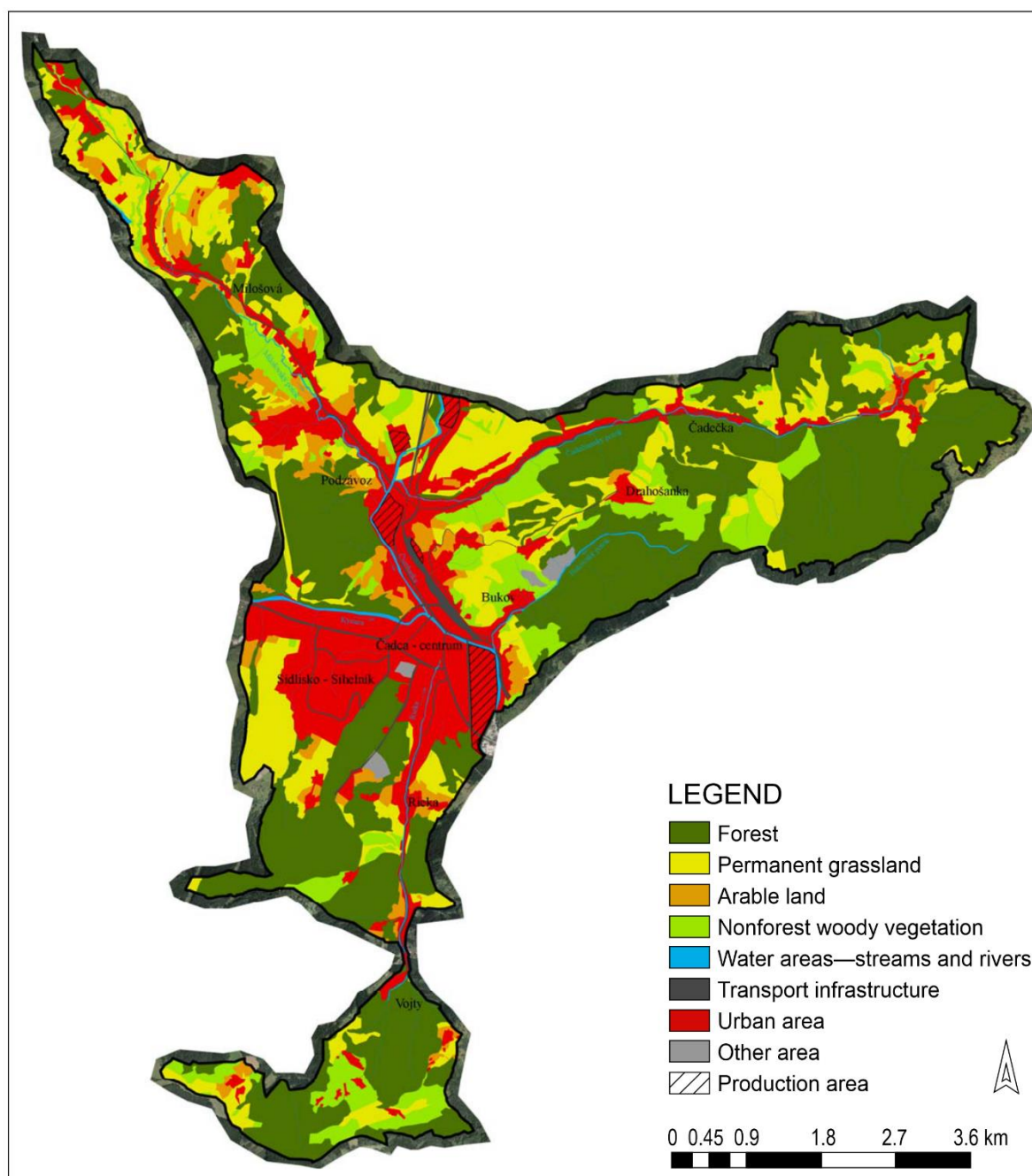


Figure 4. Current land cover of the study area.

3.2.2. Multitemporal Land Cover Changes

Land cover is affected by the intensity of human land use. This intensity corresponds with the population in the area (as characterized in Section 3.1). Multitemporal changes are presented in a graph of land cover changes in four time horizons (Figure 5).

Currently, dispersed settlements in the vicinity of Čadca town do not fulfill their primary function, which used to be agriculture, i.e., the keeping of animals and growing of crops associated with living in houses traditionally built from natural materials, especially wood. We cannot say that the inhabitants of dispersed settlements do not keep animals or grow crops, but we can certainly say that they do not do so as much as in the past. Figure 5 demonstrates that the proportion of permanent grassland in the study area was much higher in the past (47% after 1956; 30% in 1819–1824; 54% in 1780–1784) than in the

current land cover (12%; 2011). Currently, permanent grasslands (meadows and pastures) are managed by the collective farms. On the places of former small strips of arable soil and extensively used grassland, different stages of succession have begun to appear since the last half-century.

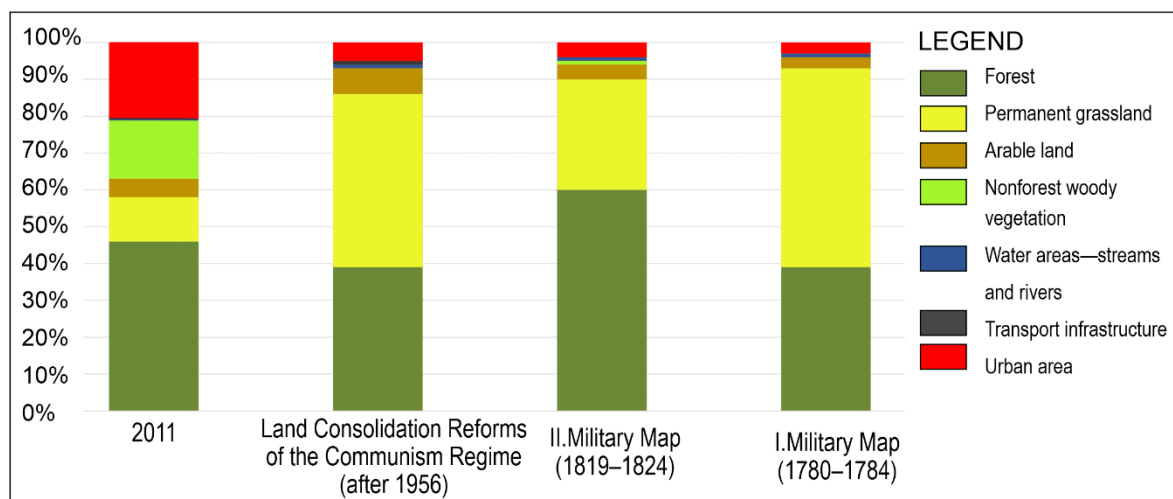


Figure 5. Multitemporal land cover changes in four time horizons.

We can conclude that urbanization growth was marked in the 21st century (18%; 2011), while, after 1956, the urban area covered only 7%; in 1819–1824 it was 4%; in 1780–1784 it was only 3%.

3.2.3. Evaluation of Historical Structures Related to Landscape Archetype with Dispersed Settlements

Inhabitants living in family houses of DSUs cultivate the surrounding landscape to a certain level. If they perform primary agricultural production in a traditional way, they influence the landscape character positively and we can call them “landscape gardeners”, maintaining the landscape archetypes. Historical structures that are characteristic of the study area are classified in Figure 6. They cover 14.3% of the total study area. The most abundant were historical structures with arable land, meadows, and pastures (7.3%; 316 ha) with typical historical landforms on the slopes—agricultural terraces outside of settlement units. Terraces are currently used mainly as gardens or meadows, but 49 ha of terraces were covered with nonforest woody vegetation, indicating insufficient cultivation and that ongoing natural successive processes have started. These findings are also supported by the evaluation of land cover changes in Figure 5. The afforestation of the study area over the last 70 years has dramatically changed the landscape character.

The second most abundant were historical structures with dispersed settlements with prevailing nonforest woody vegetation outside of the settlement’s units (3.5%; 149.4 ha). They suffer from the intensification of urbanization and the densification of buildings inside DSUs. A specific DSU called “płace” preserved in its original historical form without a new building remained in only 0.7% of the study area, representing 21 DSUs. These are the most abundant historical structures, and the most visually exposed, and represent distinguished features of the landscape.

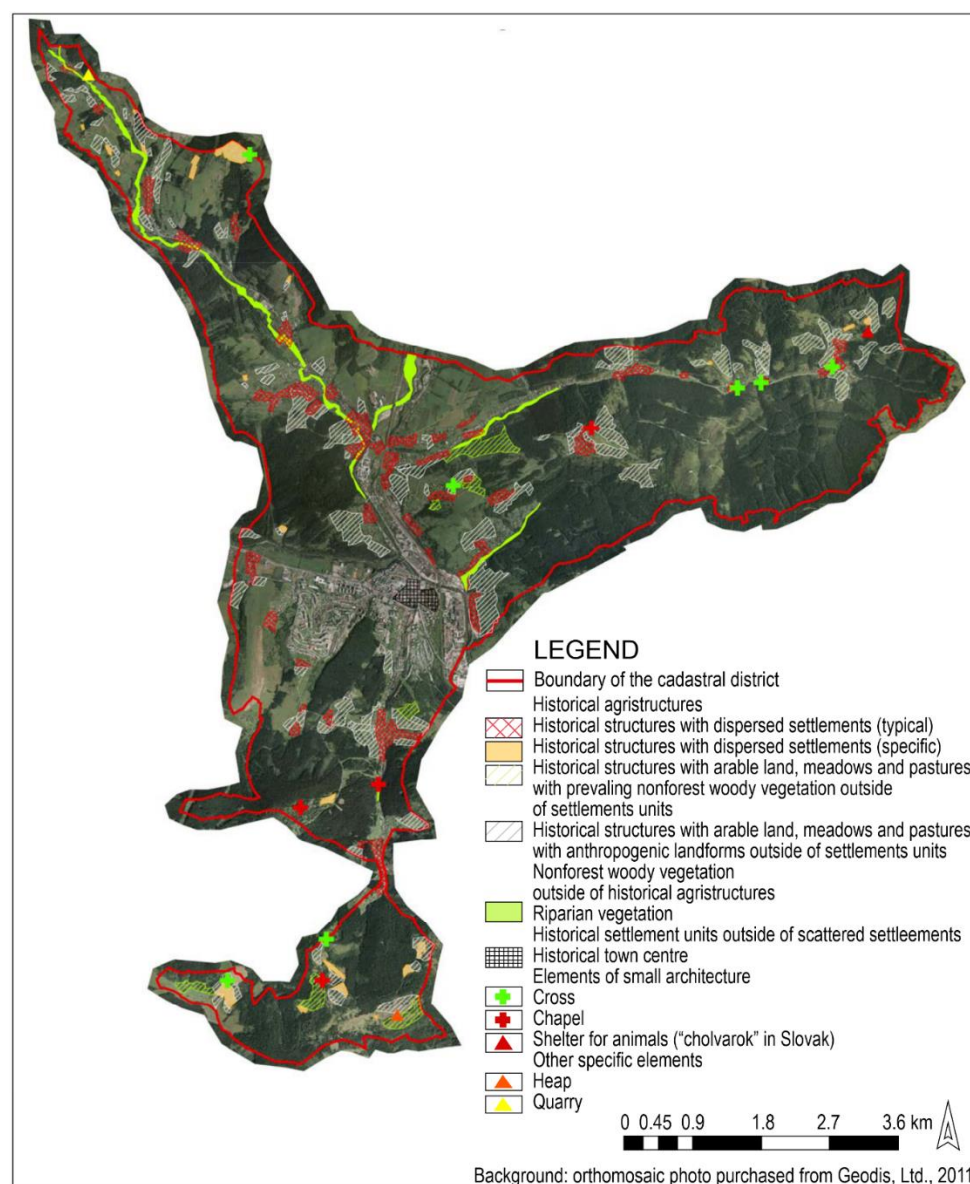


Figure 6. Classification of historical agristruktures, dispersed settlement units, and other historical elements.

3.3. Sociological Survey Results

The quantitative results of the questionnaire survey are shown in Figure 7. More women took part (68%), and the most abundant age group was 15–35 (74%), with most interviewees having a high school (52%) or university degree (41%). Respondents have their origins directly in the town of Čadca (40%) or in the district of Čadca (31%), and most also have parents with origins in the town of Čadca (56%); however, only 59% of respondents stated that they are willing to stay in the town. Most respondents consider the presence of “pľace”—dispersed settlements around the town—to be very important (76%); only 3% considered this kind of settlement to be unimportant, and most respondents stated that they were hypothetically willing to build a traditional house (72%). The most recognized distinguished features were spruce forests (23%) and “pľace” (19%), followed by meadows and pastures and housing estates (both at 18%), fir-beech forests (10%), terraces on slopes (8%), and nonforest woody vegetation (4%).

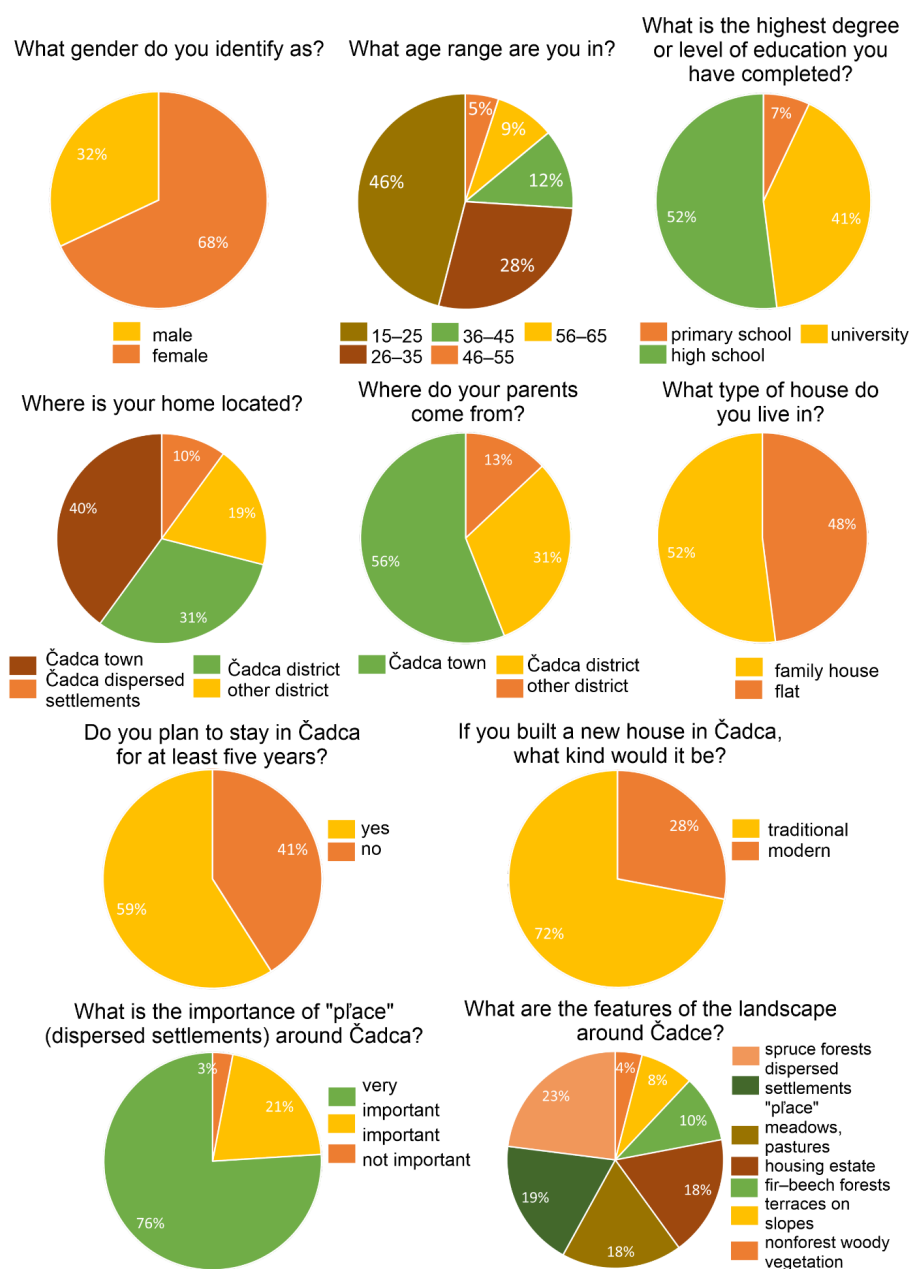


Figure 7. Results of the sociological survey.

The qualitative survey was performed with 19 interviewees. The average age was 60 (60 for permanent residents and 55 for seasonal residents); we had 10 female and nine male respondents; 10 of the inhabitants were permanent and nine were seasonal. Answers from interviewees are summarized and provided in the results, according to the numbering used in the guided interview.

1. Living in the "place" is considered healthy due to the clean environment. Good relationships between permanent and seasonal inhabitants make for a calm atmosphere.

2. The most positive factor was considered to be the opportunity for a close relationship with nature. The most negative factor was considered to be insufficient land maintenance (including agricultural land and forests) and powerlessness to improve the situation.

3. Comparing the current situation and recent history in relation to land ownership, the interviewees consistently stated that the hereditary division of land into very small parcels remained from the past. On the one hand, this creates an interesting landscape

pattern. On the other hand, it poses a risk of land abandonment because small parcels are not useful for any business activity.

4. Inhabitants are aware of the disappearance of the landscape character, which is very important to attract tourists to the area. Therefore, the quality of life in the “place” requires more intensive management of agricultural land suffering from overgrowth with shrubs.

5. Social and cultural relationships between permanent and seasonal inhabitants are good and a friendly atmosphere prevails.

3.4. The Assessment of Landscape Archetypes with Dispersed Settlements

3.4.1. The Assessment of Positive and Negative Elements and Phenomena Influencing the Quality of the Landscape Archetype with Dispersed Settlements

The map in Figure 8 contains the following positive elements and phenomena related to the landscape archetype of dispersed settlement units: natural monuments, viewing points that are important for tourists and for the visual landscape quality monitoring (marked by numbers in the map), elements of natural and cultural dominance, chapels, crosses, and springs. Furthermore, this group includes tourist trails, riparian vegetation, and areas of agricultural historical land use and DSUs with above-average quality and average quality, which are features of the landscape.

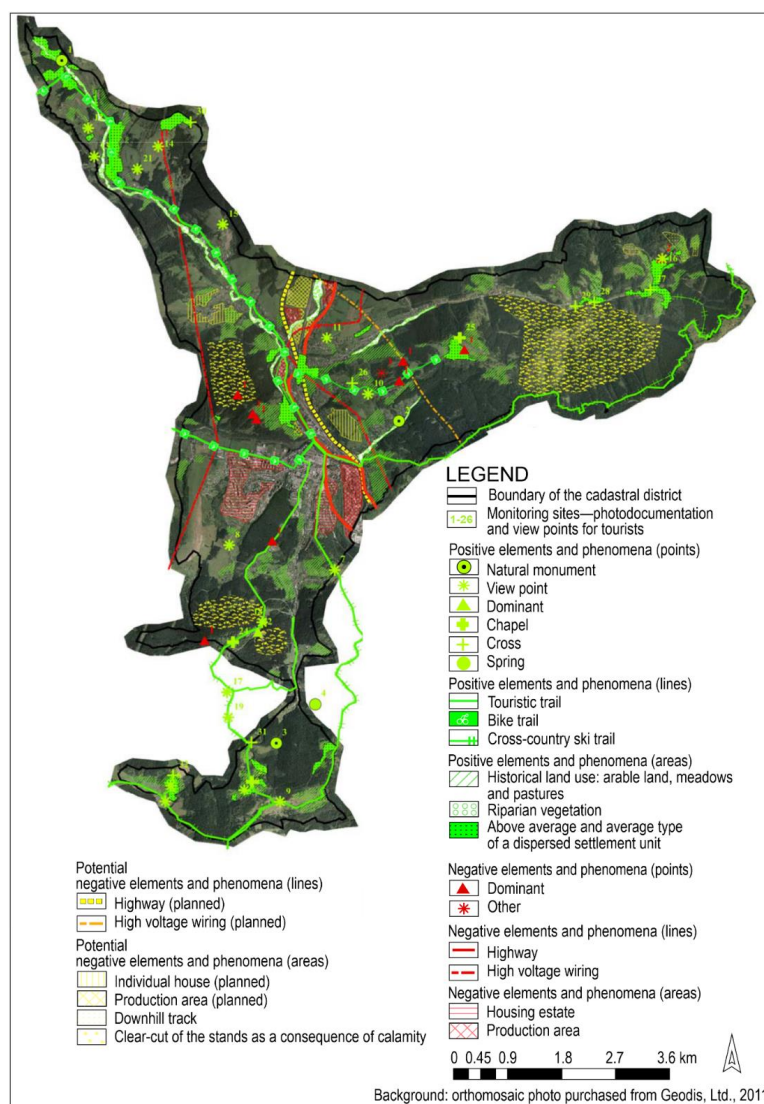


Figure 8. Positive and negative landscape objects and phenomena of the study area.

Real negative elements and phenomena are represented by technical elements, high-voltage wiring, housing estates, production areas (services, industry, etc.), and highways. Potential negative elements and phenomena are not present in the current landscape, but they may have future damaging effects on the landscape archetype with dispersed settlements. Therefore, we also included potential highways, high-voltage wiring, individual houses, production areas (services, industry, etc.), downhill tracks, and clear-cut forest stands as a consequence of storms.

3.4.2. The Assessment of the Quality of DSUs for Proposals of Future Measures and Incentives

Characterizing landscape archetypes with dispersed settlements in detail, we have inventoried 64 DSUs around Čadca town and grouped them into four categories depending on attributes indicating their quality (Figure 9). The total area of DSU is 492 ha, which is 64.2% of the urbanized area and 11.4% of the total area of Čadca cadastral district. Based on the quantitative evaluation of the DSUs' coverage, and considering their height visibility in the cadastral territory of Čadca, we can conclude that Čadca has a strongly rural character, featuring the landscape archetype with dispersed settlements.

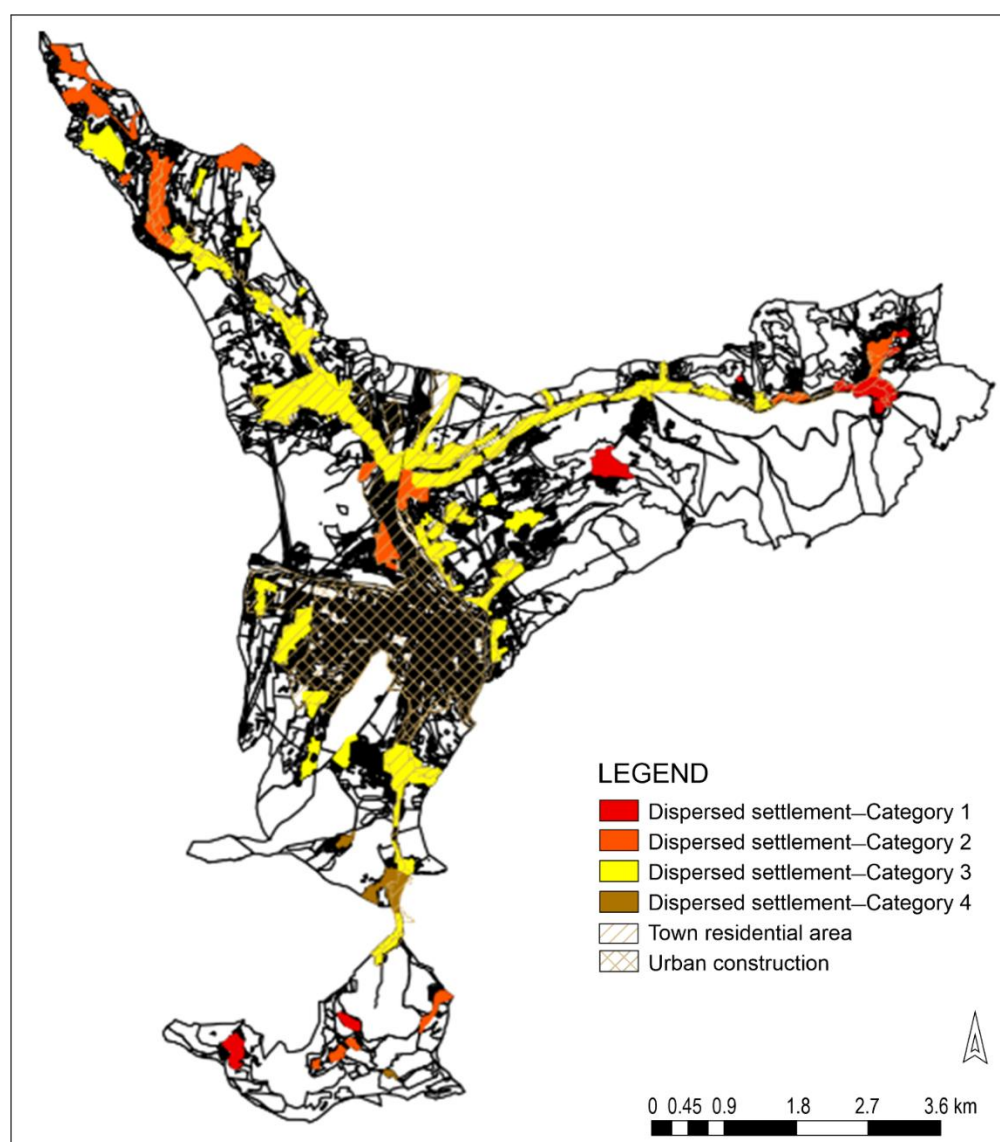


Figure 9. Categories of dispersed settlement units based on the degree of their quality.

DSUs were classified into four categories (Figure 9). The first DSU represents locations

(a total of seven DSUs) of the highest quality, where their local environment authenticity is the best preserved. From the quantity point of view, the third DSU category prevails in the area (a total of 38 DSUs), followed by the second DSU category (16) and the fourth DSU category (three), which exhibited the lowest quality.

The synthesis of factors that were considered for the quality evaluation of DSU categories (Supplementary Materials) included a summary of various characteristics (the age and condition of the family home; exterior yard conditions; preservation status of folk architectural elements; preservation status of the original settlement structure; preservation status of historical landscape structures; household occupation; the character of the local community; other) and expected trends of their future management and development.

Category 1. According to our statistical and cartographic analysis, we can conclude that the DSU of the most valuable first category was present mainly in the marginal parts of the Čadca cadastral territory at the end of valleys, where we can observe the following attributes of DSUs: well-maintained houses constructed before 1960 with well-preserved folk architecture elements; actively cultivated plots using traditional practices; the settlement structure corresponding with the historical arrangement; agricultural terraces with arable land and meadows. More than three-quarters of the houses were occupied, while the number of permanent residents was equal to that of temporary ones. The quality of houses, including preserved features of folk architecture and exterior yard conditions, did not exhibit the highest quality. Historical land use is best preserved in the first category of quality of the DSU. The preservation of this category requires compliance with the rules of folk architectural protection and the continuation of traditional agriculture on small land parcels. This category will require extensive maintenance in the future. Therefore, the presence of permanent inhabitants cultivating surrounding historical agristruktures is important for sustainable land use.

Categories 2 and 3. Family houses in both categories are not so ancient as in Category 1. The quality of houses and exterior yard conditions are comparable with the first category. However, the preservation status of folk architectural features and historical landscape structures in the surrounding DSUs is lower in comparison with the first category. Houses are occupied almost equally by both kinds of inhabitants, permanent and seasonal. From a landscape management point of view, it is crucial to focus on the settlements of Categories 2 and 3 prevailing in the study area and, thus, markedly influencing the landscape character of the cadastral territory. On the other hand, we have to note that the most abundant third DSU category has lower potential for the protection of dispersed settlements in the landscape character.

Category 4 occurs in only three localities, and from the aspect of the landscape's character, preservation this DSU category does not play a key role. The municipality plans more intensive urbanization in these settlements' units. Family homes in this DSU contain minimal preserved features of folk architecture and the agricultural landscape in their surroundings is modern without features of traditional land use. Two DSUs are located in the vicinity of Čadca town and are considered to be suburban zones where the construction of new houses is expected.

4. Discussion and Conclusions

4.1. Landscape Archetypes of Dispersed Settlements as Distinguished Features of the Landscape Character

Traditional land use practices employed by generations of ancestors constitute the basis for a multifunctional and sustainable agricultural landscape and, therefore, the need for their proper documentation has attracted more attention from experts on land use policy in recent decades [47,48]. It should be noted that the identification and description/evaluation of landscape archetypes as a part of historical landscapes [10] directly depend on the existence of appropriate and high-quality background documents and methodology grounded on a geographical basis by applying exact classification criteria [16]. This paper employs a methodical approach based on an exact dataset and criteria that were used for the assessment of landscape archetype with dispersed settlements. Spatiotemporal datasets of

land cover were evaluated using GIS tools and the knowledge base on archetypes was supplemented with axiological attributes of DSU (historical structures of the landscape and positive elements and phenomena).

A type of landscape is a category characterized by common (shared) as well as specific basic natural and derived cultural features. DSUs, surrounded by traditional land use forms and replicating traditional folk crafts in elements of the architecture, appear as distinguished features of the landscape. The sociological survey confirmed some residents' identification with a dispersed settlement called "pl'ace" (19%) and residents expressed the very high importance (76%) of dispersed settlements in the Čadca district. Many residents (72%) are interested in a hypothetical family house constructed in a traditional style. The guided interview confirmed the inhabitants' awareness of the landscape archetype with dispersed settlements and active managements of agricultural plots in the surroundings of DSUs, called "pl'ace" by the residents. Social relationships among permanent and seasonal inhabitants are very good. Both types of inhabitants would like to solve the problem of the insufficient use of agricultural plots suffering from overgrowth by shrubs. They feel frustrated because they do not have knowledge of how to improve the situation. We can conclude that residents feel connected to DSUs and might be actively involved in the management and protection of the landscape archetype with dispersed settlements. Residents might share with the local governance bodies not only the maintenance of their family homes but also the maintenance of the surrounding agricultural landscape regarding the preservation of the visually exposed valuable DSUs. Hence, local governmental bodies should take the initiative and invite residents into a dialogue on the management of the landscape archetype with dispersed settlements.

The determination and recognition of landscape archetypes in European landscapes/countries correspond with the aims of the European Landscape Convention, which was framed under the auspices of the European Council (note: the convention was submitted for signature on 20 October 2000 at a conference of European ministers in Florence, Italy). Each country that ratified the convention is bound to legally accept the landscape as an essential component of people's environment, as an expression of the diversity of their common cultural and natural heritage, and as the foundation of their identity. In addition to other commitments imposed on countries that ratified the European Landscape Convention, these countries are obliged to identify their own types of landscapes for the purpose of improving general landscape knowledge; to analyze their characteristics and the forces and pressures transforming them; to take note of their changes; to assess the types of landscapes identified, taking into account the particular values assigned to them by the involved parties and/or the population. Within the framework of the Convention, the countries commit themselves to apply measures for the protection of landscapes, with management and planning including natural, rural, urban and peri-urban areas, mainland areas, inland waters, and marine areas. The convention applies not only to those types of landscapes that may be considered outstanding but also to ordinary and/or damaged landscapes. It combines the protection of both natural and cultural heritage [49].

4.2. Proposals of Management Measures and Incentives for Landscape Archetype with Dispersed Settlements

By employing an appropriate set of methodologies and tools, we are able to understand the historical landscape structure and use this knowledge for spatial planning and management in individual communities and/or regions. Examples from abroad confirm that areas of dispersed settlements occur all over Europe and in many countries (e.g., Ireland, England, Sweden, the Alpine region). Here, studies focusing on their preservation and spatial development were implemented into planning documents and, in some cases, they achieved positive results [50–54]. The Swedish rural development plan defines the advantages of the specific settlement forms, also concerning the dispersed settlements, and, as bearers of landscape values, these settlements have to be taken into account in decision-making processes. Furthermore, their relationship with tourism and recreation is emphasized.

An important factor in terms of the possible preservation of dispersed settlements is the number of permanent residents. This factor is quite different in Čadca from other parts of Slovakia as the population increases. This factor may be influenced particularly by the good access to the town center, with relatively good job facilities and public services. This is confirmed by the number of inhabitants present inside each DSU. There is only one DSU that does not have a permanent resident, while 21 DSUs had more than 100 inhabitants. DSUs with the most intensive population growth enlarge at the expense of the town center, while we can observe a decrease in population in remote and less accessible dispersed settlements at the borders of the cadastral district, especially at the national border with the Czech Republic.

The reduction or complete end of livestock husbandry has led to land abandonment and the overgrowth of grassland in some areas. This secondary succession of the landscape allows for the spreading of weed species that affect biodiversity and can cause cultural devastation [55]. There is a serious risk that land abandonment and subsequent rapidly advancing forest succession will lead to irreversible decreases in or even loss of biodiversity, linked to these specific biotopes requiring land management. On the other hand, current urbanization trends towards the construction of new residences or commercial areas may cause another decrease in biodiversity and of the cultural landscape, especially when not respecting the biocultural, historical, and ecological value of the area.

The sustainability of these structures is in the spotlight because they have lost their primary agricultural function. The most frequently mentioned issues are associated with recreation and tourism, specifically agrotourism and traditional crafts. Even though the population of dispersed settlements is not decreasing, the self-supplying production function significantly declines.

The transformation of houses into vacation homes is widespread. Dispersed settlements often have both functionalities in Slovakia, being used as residences and recreational properties [56,57]. A similar situation has been observed in other European countries of the Eastern Bloc, such as Poland [58]. These functions protect dispersed settlements from extinction. However, we note that the discontinuous urbanization growth of vacation homes in the countryside, mainly in the case of uncontrolled illegal urban sprawl, may pose a risk for infrastructure, common services, nature, and not least for residents supplying primary agricultural production. Therefore, a methodological concept of the recreational discontinuous urbanization of the countryside is needed, as demonstrated by Jiménez et al. [59] in a case study from the Extremadura province in Spain.

As only seven DSUs of the highest quality in Category 1 have been preserved in the cadastral territory, it is necessary to pay a special attention to Categories 2 and 3 (the most abundant) as well. We do not recommend utilizing special management measures for Category 4 of the DSUs, as they are part of suburban structures and do not have the typical elements of the landscape archetype of dispersed settlements. The results of the social survey should be included in the management plan because residents expressed interest in DSUs.

Figure 10 shows the results of the article. Accordingly, we propose the following management degrees:

1. First level of DSU protection—Intended to maintain and preserve the entire original settlement structure in a given landscape archetype of DSU, including all elements of folk architecture. In the case of new construction or the reconstruction of traditional buildings, typical regional architectural elements must be strictly respected. These elements are mainly visual features of the landscape and are related to DSU 2 and DSU 3 (viewpoints for tourists and monitoring sites are marked by numbers in Figure 10).
2. Second level of DSU protection—Intended to maintain and preserve the partial original settlement structure in a given landscape archetype of DSU, including some elements of folk architecture. In the case of new construction or reconstruction of traditional buildings, its typical regional architectural elements must be strictly respected. These elements are not visible features of the landscape or related to DSU 3.

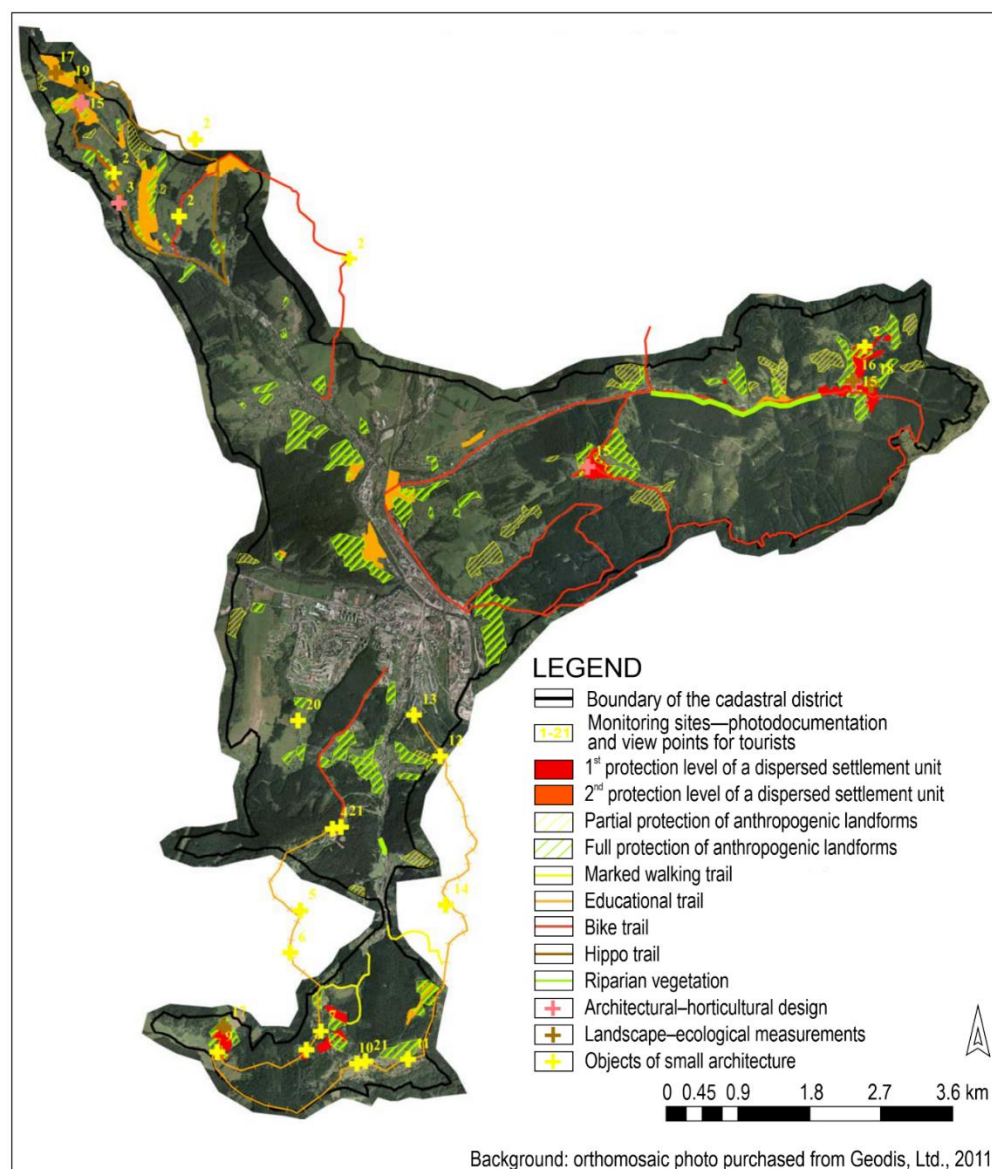


Figure 10. Landscape management plan of the study area considering the importance of the quality of DSU Categories 1 and 2 for the preservation of the landscape character.

4.3. Strategic Planning of Sustainable Land Use Management and Maintenance on Landscape Archetypes with Dispersed Settlements

Current landscape planning processes are often inspired by historical landscape structure design. Scientific and professional articles about historical landscape structures are usually not too comprehensive [54]. More attention needs to be given to the aspects of spatial planning and management. It is necessary to assess the landscape values that could be damaged by improper landscape management. In this way, we could irretrievably lose archetypal assets that are essential to preserve landscape character. In the majority of countries, territorial planning is an effective tool for the protection, planning, and management of landscapes. Numerous examples from Scandinavia, the USA, the UK, and some alpine countries have proven that it is not impossible; consistent protection of the landscape and economic growth are two sides of the same coin. Consistent implementation of such a development scenario is not a short-term issue and ultimately requires modification in Slovakia, where industrial yield still prevails. This quantitative paradigm is driven by executives, but fortunately is in line with the opinion of a majority of professionals and the public [60–63]. This paper has focused on an investigation of the current state of landscape

archetypes with dispersed settlements and their historical land use aspects in the context of the natural and cultural landscape value in the Kysuce region. The results demonstrate the need to preserve the historical landscape structure and traditional land use related with dispersed settlements in this region. It is important to impose legislation preserving the countryside, not only through local governmental bodies but also through societal pressure. The essential prerequisite for a successful implementation of the strategy of sustainable development of landscape archetypes with dispersed settlements in the Kysuce region would not be contradictory but a mutually supporting resolution of accumulated problems. The protection of nature, landscape, sights, historical landscape structures, and landscape character (*genius loci*) should be regarded as a stimulus and not as a restriction. Stimulus is understood to be not at the expense of the scale, degree, efficiency, and quality of landscape protection, as well as the smart and sensible administration of the entire region.

A key strategic middle-term objective is to achieve the effective protection and sensible interpretation of natural and cultural values, as well as the sustainable development of dispersed settlements. It is evident that there is a need for mutual understanding that these types of rural landscapes represent one of the key territorial entities of Slovakia from the viewpoint of natural and cultural historical value, so their protection, proper integration, and interpretation is urgent. A prerequisite of success is the existence of multiple protected areas, a range of significant natural sites, several historically valuable complexes, and historical structures of the rural landscape preserved in several areas. All of these, as well as other partial values, together create the unique character of the Kysuce regional landscape. Another strategic objective is to reverse the depopulation trend of rural settlement and improve the demographic structure of inhabitants in the given area. This is linked to the creation of suitable job opportunities, an increase in the quality of social and technical infrastructure, and the extension of possibilities for cultural, social, and sporting activities, etc. It also means an overall increase in the rural quality of life and an adequate level of prosperity in the countryside.

Supplementary Materials: The following are available online at <https://www.mdpi.com/2071-1050/13/3/1200/s1>.

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