Czech University of Life Sciences Prague

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Management and development potential of historic pluzina landscapes

Diploma Thesis

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DIPLOMA THESIS ASSIGNMENT

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Landscape Planning

Thesis title

Management and development potential of historic pluzina landscapes

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Objectives of thesis

The research carried out within this diploma thesis will help to create a basis for a Conception for the management and development for areas with preserved remnants of historic pluzina patterns, which is created within a broader project at the department of Land use and Improvement.

As cultural landscape preservation is to a large extent dependant on the users of these landscapes (such as residents, farmers, land owners, tourists and other stakeholders), a sociological research will be carried out to assess the needs and preferences of these people.

The collected data will be used to formulate recommendations of future use and development of the study areas.

Methodology

The research will be carried out using questionnaires, focusing on the individual groups of users of landscapes with preserved remnants of historic pluzina landscapes. The questionnaires will combine the assessment of visual preferences using photographs of these landscapes and verbal descriptions of values and needs connected to the landscape.

The proposed extent of the thesis

40 pages of text, graphic outputs

Keywords

pluzina, hedgerow, historic landscape pattern

Recommended information sources

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Prague on 11. 04. 2019

Declaration

I declare that I have worked on my diploma thesis titled "Management and development potential of historic pluzina landscapes" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the diploma thesis, I declare that the thesis does not break copyrights of any their person.

In Prague on 18th of April 2019

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I would like thank Ing. Kristina Janečková, PhD., for her advice during my work on this thesis and my friends and family for their support.

Management and development potential of historic pluzina landscapes

Abstract

This thesis is focused on the analysis of medieval pluzina landscape. The aim of the work was a sociological survey that assessed the preferences and needs of users of these landscapes (such as residents, farmers, landowners, tourists and other stakeholders). A questionnaire was made and divided into two parts - the first one focused on the personal data of the visitors and the second part focused on the overall awareness of the respondents about pluzinas and their perception of the importance of pluzinas. Subsequently, a questionnaire survey was conducted in situ in South Bohemia with users of these landscapes and subsequently with persons who work or study in the fields of agriculture. Subsequently, this data was compared and used to formulate recommendations for future use and development of study areas.

Keywords: hedgerow, pluzina, historic landscape pattern

Management a rozvoj potenciálu historických plužin

Abstrakt

Tato diplomová práce je zaměřena na analýzu středověkých plužin. Cílem práce byl sociologický průzkum, který posuzoval preference a potřeby uživatelů těchto krajin (jako jsou obyvatelé, zemědělci, vlastníci pozemků, turisté a další zainteresované osoby). Byl zhotoven dotazník, který byl rozdělen na dvě části - první se soustředila na osobní údaje návštěvníků a druhá část byla zaměřena na celkové povědomí dotazovaných o plužinách a jejich vnímání významu plužin. Poté se provedlo dotazníkové šetření in situ v jižních Čechách s uživateli těchto krajin a následně s osobami, kteří pracují či studují v zemědělsky zaměřených oborech. Následně se tato data porovnala a poslouží k formulaci doporučení budoucího využití a rozvoje studijních oblastí.

Klíčová slova: mezní pás, plužina, historická krajinná struktura

Obsah

1 Introduction

The landscape we are surrounded by is of a cultural nature. It has evolved over the centuries and reflects the cultural, economic and technical influence of that time. New elements of different forms have been added to the landscape over the centuries, reflecting the phenomena of the times. These are architectural structures, which are also objects of art, such as castles, chateaux, pilgrimage churches, as well as contemporary buildings such as bridges, lookout towers and transmitters. But they are also technical elements such as highways, railways, towers, masts, wind and photovoltaic power plants (Vorel & Kupka, 2011).

With the increasing population density and the intensification of the landscape, there have been major changes. Agriculture has changed the landscape in a significant way. The landscape scale has changed under the influence of the landscape's large-scale structure. The land was consolidated into large fields and the limits were abolished. In our territory, however, we can still find the original places where the remains of pluzinas have been preserved.

"We know what is beautiful, but we do not know what beauty is." (Wöbse, 2002).

Vorel and Kupka (2011) describe the character of the landscape as a phenomenon characterized by two basic characteristics - variability and non-repeatability. However, we can generally say that in landscape scenery we appreciate nature without buildings or harmony between buildings and the natural environment (Wöbse, 2002). Familiarity also plays an important role in aesthetic vision, as it reflects the direct experience of a given place that most often links in childhood (Svobodová, 2011).

2 Objectives

The aim of this study is to contribute to the issue of the preservation of historical pluzinas in the landscape. It is part of a larger project that deals with an evidence and research of these medieval landscape patterns at the national level.

This work first focuses on the description of the development of agriculture and settlement in the Czech Republic, the definition of pluzina and its types but also describes landscape elements that show remnants of pluzinas in the landscape. The last part of literature focuses on a perception of the landscape as a whole.

The next step is to obtain questionnaire data in selected localities in South Bohemia and among experts from agricultural fields, landscape architecture and ecology.

The sociological survey will be conducted in the form of a paper questionnaire and a personal interview. All data will be processed anonymously.

The resulting data will be interpreted in text and graphical forms. Individual questions will be described in detail, accompanied by graphical output. Two respondent groups will be compared with each other and the resulting data will also be processed using tables for better overview.

Evaluated data will serve as possible recommendations for further use and development of the study areas.

3 Literature Review

3.1 Historical Development of Settlements and Agriculture on the Territory of the Czech Republic

With the emergence of agriculture for the first time in mankind's long evolution there was a situation, there was a situation where the repertoire of natural livelihoods (cultural plants and domesticated animals) was not limited by regional ecosystems, but by taking innovation from more distant areas with other biomes (Löw & Míchal, 2003).

Gojda (2000) divides the development of the European landscape of temperate climate into 4 so-called cultural landscape archetypes. The development of the natural to the cultural landscape began in the neolithic period and so only the development from this time period is considered.

1. Landscape of prehistoric farmers
2. The intervention of the Romans and the emergence of a structured landscape
3. Medieval colonization
4. Landscape of modern times

3.1.1 Prehistory

The younger Stone Age began the irreversible process of changing the natural landscape (Gojda, 2000). At this time the man who grew crops and domesticated wild animals was a farmer.(Sklenička, 2003).

In the Neolithic system of migratory agriculture, one small community was farming on the territory of about 30 ha. The farming system was supplemental, and the soil land was divided into fields and land that was lying fallow for more than 2 years (Lipský, 1999). Farm families bred long-horned cattle and a small number of pigs, sheep and goats. The cattle was grazing only for 7-8 months and was driven into pens during the winter.

This was the first time there was an intentional reduction of the forest area. Grazing forest cattle illuminated the forests around human settlements. Deforested

areas then allowed the onset of xerothermic steppe species to develop as well as a new structure of shrubs and sprout growths (Sklenička, 2003).

After the soil lost its fertility settlements were moved to new places. The fertility-determined period for which a settlement could stay in one place is reported between 10 and 20 years (Sklenička, 2003). Thereafter, agricultural production had to be moved to another area, after the area was slashed-and-burned. While Lipský (1999) states that the natural regeneration of agricultural land requires 30 to 40 years, according to Sklenička (2003) it is between 50 and 80 years.

In this new time period the forest continued to be destroyed by firing and grazing in order to make space for agriculture. Forest pasture continues. The discovery of primitive ploughing allowed the establishment of stable settlements (Sklenička, 2003). However this created a problem, how to harvest crops in the agro-technical period. Ploughing could no longer produce mixtures with different aging times (Löw & Míchal, 2003) and the fields needed to be fallow for several years in order to restore fertility. The settlements did not move and so new agriculture land was not created. Instead the area was ploughed for 2 years then fallowed as a grassy area. Cattle prevented the area from being overgrown by nibbling and tramping the land (Sklenička, 2003).

The Chalcolithic settlement in the old settlement area was mostly made up of individual farms or small villages with an estimated annual need of 12-16 ha of pluzina. The settlement enclave was lined with vast bushes on abandoned fields and forests used for grazing (Löw & Míchal, 2003).

The emergence of bronze sickles increased the productivity of harvesting work and has enabled trouble-free harvesting in agro-technical terms (Löw & Míchal, 2003).

Ložek states that at this time prehistoric colonization culminated, and especially in the late Bronze Age, at the turn of the 2nd and 1st millennium BC and in the first half of the first millennium, the primeval settlement reaches its peak (as cited in Löw & Míchal, 2003). More settlements are established, especially along the watercourses, but also the local settlements spreads into the foothill areas (Sklenička, 2003). The old settlement area of Central Bohemia is connected with the late-settled districts in the south of the country (Löw & Míchal, 2003; Nový, 1974).

The value of the land increased because of a lack of tree roots. this allowed the first permanent fixation of cultivated land to appear (Löw & Míchal, 2003).

In the late Bronze Age, today's landscape is beginning to form. Cultural steppes have spread and significant erosion phenomena occurred (Sklenička, 2003).

In the Iron Age, man learned to use the scythe and other iron agricultural tools. In more fertile areas, the proportion of deforested forest areas increased because there was more consumption of firewood for iron production. This deforestation of the landscape caused its overall backligting and the subsequent change of the mesoclimate towards drying (Sklenička, 2003).

Research shows that under constant climatic conditions and the use of the then grassland management method, a number of people were able to live without depleting the food resources of their surroundings (Venclová & Kuna, 1995).

According to Venclová & Kuna (1995), it was important for communities of that time to keep the largest area of the forest for economic reasons - for wood supplies and winter forage fodder. As long as people did not turn the forest into well-kept meadows that produce the same amount of biomass on the territory that is 20 times smaller than the forest, they probably had no choice but to maintain wooded areas (as cited in Gojda, 2000).

There are a number of anti-erosion measures that have been part of advanced Celtic agriculture (Lipský, 1999).

3.1.2 The intervention of the Romans

The emergence of private land ownership was the prime moment for structured landscape. Around the beginning of our era, the Central European landscape is losing the original character of isolated non-forest enclaves that have been cultivated by prehistoric farmers' communities. Higher fragmentation is also due to the construction of other roads (Sklenička, 2003). The space was settled in enclaves, often in line formations in the basin of its middle and lower stream. The relative wealth of natural resources was a prerequisite that, with some technological advancement, the space would feed the farm settlers living there. The transformation of the landscape during Roman colonization laid the foundation for its present form (Gojda, 2000).

3.1.3 Early Middle Ages 6th – 12th century

The main features of the landscape structure remain unchanged. Monasteries, settlements and castles were founded (Sklenička, 2003).

In the early Middle Ages, the overall level of society, its technological maturity, the management system, and the structure of settlement are still rather similar to those that characterize the society of prehistoric communities. Yet at this time, we notice the first signs of change, sometimes significant, that pervade this society of the "Dark Ages" (Gojda, 2000).

3.1.4 High Middle Ages 13th - 15th century

At the beginning of the High Middle Ages, changes in the cultural (even economic) sphere accelerated These changes led to the foundation for today's European civilization, and in modern times, dominate and set the direction and pace of global development (Gojda, 2000).

The three-field system gradually increased. It increasing agricultural production in an old settlement areas and also expanded into newly populated areas (Škrabal & Štěpánek, 2003).

The forest area declined even more due to construction and iron production. Forests are dwindling to such an extent that in certain areas agricultural land becomes the prevalent culture. Cultivated area of agricultural land is increasing (Sklenička, 2003). But according to Lipský (1999) agricultural land occupies considerably less than today - about 30% on average.

Yoking the cattle made it easier to plough and old pluzinas were transformed into long fields (Boháč, 1986). An old pluzina is transformed into long fields (5 to 14 ha in area) thanks to new agricultural tools. Dynamic changes also occur in the settlement of the landscape. On the one hand, there are settlements of negligible areas, on the other hand there is a period of urban colonization (Sklenička, 2003).

Land consolidation in the period of great colonization (12th to 14th century) is considered as the most important stage in the development of this field until the 19th

century (Němčenko, 1976). During this time, there is an increase in local populations and the colonization of the previously unoccupied enclaves of the old settlement area, so-called internal colonization. The colonization of forest areas took place not only thanks to colonists from abroad, but also thanks to the establishment of monasteries and their pluzinas. In addition, the landscape was settled along the newly established residential castles and trade routes. Colonization began when the forest landscape was utilised by the network of enclaves. These enclaves were created by allocating a certain uninhibited area to nobles or monastic orders of Benedictines and others. Other enclaves settled close to defensive border castles and around them at the very least minimal agricultural background was created. These enclaves were from the beginning accompanied by the emergence of pluzinas, which served as a sustainable source of staple food for its own inhabitants (Löw & Míchal, 2003).

3.1.4 Early Modern Period 16th to 18th century

After the Hussite wars and the Thirty Years' War, landscape changed significantly (Sklenička, 2003). The fundamental change in landscapes must be linked to the new land use at that time. Under this term we can include the management of forests, fields and meadows, but also the influence of alleys, parks, roads, the first forms of industry and settlements, and the sacral and utility architecture of the countryside (Sádlo, 2008).

At that time, the population decreased by 30%, villages disappeared and many areas that were cultivated in the Middle Ages remained still afforested (Sklenička, 2003). Most of the country remained uncultivated and was temporarily left to natural conditions (Lipský, 1999). Only thanks to the downturn of the industry, the forest area was partially restored. The originally monotonous landscape of wetlands is mainly transformed into a more diverse structured mosaic of cultures (Sklenička, 2003).

The restoration of the proper cultivation of the landscape lasted until at least the 18th century when the foundation of the so-called Baroque Czech landscape was laid (Lipský, 1999). It can be said that during the 18th century arable land predominated in Bohemia over other landscape components (forests, pastures, meadows, ponds) (Lipský, 1999).

The Baroque period emphasized the connection between the surrounding countryside and the settlement (Sklenička, 2003) and axes and axis symmetry have entered the landscape composition (Löw & Míchal, 2003). Alleyways, which are based on mansions or pilgrimage sites, become a fashionable element (Sklenička, 2003).

In the period of the so-called raabisation (since 1777), the manor houses are divided among the subjects as tenants (Sklenička, 2003) and transferring corvée to cash benefit (Löw & Míchal, 2003).

In the landscape of all the types described above, pluzina was developed differently according to origin and historical development (Löw & Míchal, 2003).

3.1.5 Modern History 19th to 20th century

At the beginning of the 19th century, in all highly fertile areas, an alternate farming management system was introduced, replacing the existing three-farming system and allowing yields to be higher by at least half. So the area of arable land increased by about a quarter and fallow land was substantially reduced. (Löw & Míchal, 2003).

The field area has increased by 50% in the last century and this move took place at the expense of fallow land and pasture. In the second half of the 19th century, the area of agricultural land as a whole stopped growing (Lipský, 1999).

The forest reached the historically smallest extent in the first half of the 19th century. In the second half of the last century, they were already afforested in less fertile mountain areas. (Lipský, 1999).

The importance of the three new crops - potatoes, sugar beet, and corn - was so significant that the division of agricultural production areas was named after them. The area of arable land started to decline slowly in the 20th century, the area of orchards and gardens expanded significantly and some ponds were restored (Lipský, 1999).

After the First World War, the first land reform was carried out, which had completed the previously started land transition from the hands of aristocracy to the hands of new wealthy landowners, and the resulting economic units were of a smaller size (Löw & Míchal, 2003).

Unfortunately, the total area of historical rural landscapes was dramatically diminished during the second half of the 20th century (Sklenička, Kottová, & Šálek, 2017). Traditional land-use systems have been lost or reduced in past decades, as land-uses have focused either toward extensification and land abandonment or intensification (Plieninger, Höchtl, & Spek, 2006).

Since the 1950s, the landscape has undergone major, profound and dramatic changes. They were caused by fundamental political and economic changes, changes in ownership, but also by the transition of small-scale farming to socialist large-scale production. The first stage of the changes occurred in the 1950s and 1960s during the period of socialist collectivization (Lipský, 1999).

Unlike the fate of the people, the Communist dictatorship touched the landscape and settlements indirectly, but no less drastically. The principle of dictatorship still has a devastating effect. The use of three basic principles - central management, collectivization and the big use of chemistry in crop production were the main causes of degradation (Löw & Míchal, 2003).

Social changes after 1989 affected positively tendencies in almost all landscape attributes. Privatization, restitution, new forms of land consolidation and land-use planning, landscaping programs and other processes and activities have been able to influence significantly landscape development in the early 21st century (Sklenička, 2003).

Agricultural production areas are not only of agronomic importance but also indirectly contribute to the formation of the landscape. (Löw & Míchal, 2003).

3.2 Pluzina

3.2.1 Definition of Pluzina

The characteristics of the pluzina vary among authors. According to Gojda (2000), it is the economically exploitable part of a country belonging to a village. This includes all fields, meadows and pastures that are interconnected by a network of paths.

According to Černý (1992) the pluzina is all arable land, which disappeared together with medieval settlement and includes all sections and field tracks within the cadastral area of the municipality.

Molnárová (2008) and Sklenicka et al. (2009) see a pluzina as the part of the landscape where the remnants of the medieval pluzina structures were preserved.

Kuna et al. (2004) states that the pluzina is an integral part of the outside of built-up areas and characterizes their economic background.

Vařeka & Frolec (2007) determine pluzina as the nourishing plot of the peasant´s estate. It those parts of the economic area that were privately owned. Meadows, pastures, municipal forests and manor forests were not included in the pluzina.

3.2.2 Pluzina Typology

Černý (1979) describes in detail the types of pluzinas and divides them into:

- The segmental pluzina (Fig. 1) consists of unequally sized, differently shaped segments that are divided into parcels that differ in shape and size. The irregular shape is conditioned on uneven terrain. It can be found in smaller mass villages. Genetically, it is an old form of the pluzina, which also appears due to less favourable terrain at a later time (Černý, 1979).

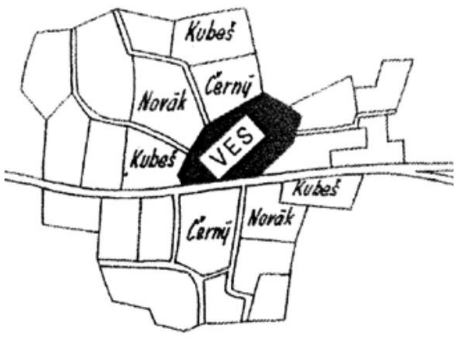


Figure 1: The segmental pluzina (Černý, 1979)

- The pluzina of splitted segments (Fig. 2) arises from the additional inheritance division of irregular crofts into sections that can be further divided into parallel narrow plots (Láznička, 1956).

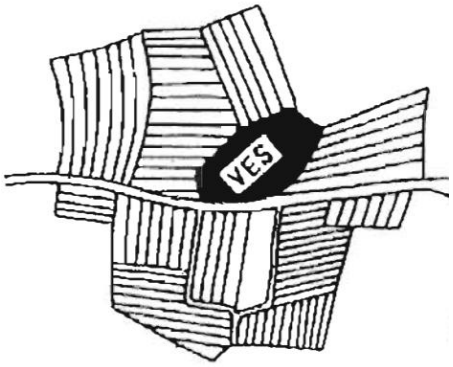


Figure 2:The pluzina of spitted segments (Černý, 1979)

- The pluzina of united segments - This pluzina (Fig. 3) is divided into regular parallel strips separated by a straight running parallel paths. The sections consist of short rectangular or rhomboidal plots. This type of the pluzina was created mostly by the agricultural arrangement of the original manor land. It is noticeable with its schematicity and regularity (Černý, 1979).

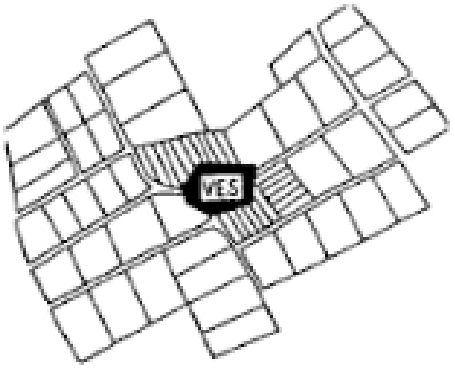
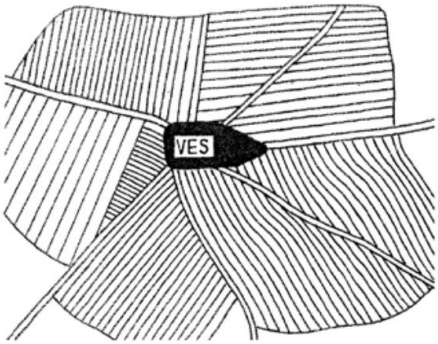


Figure 3: The pluzina of united segments (Černý, 1979)

- The sectional pluzina (Fig. 4) consists of several large rectangular, rhomboidal or other regular parts called sections, which are divided into narrow, long, parallel parcels. The width of the plots is between 2 meters and 20 meters, rarely more. The length is between 400 meters and 2 kilometers or more. The composition of the pluzina required the three-field system. We can see it on the plains of larger



settlements. (Černý, 1979).

- The pseudo-sectional pluzina (Fig. 5)- Unlike the sectional pluzina, the sections are smaller, irregular in shape, and the width of the parcels in different lines varies. It occurs in terrains with different relief features. This type was created secondarily by the parceling of larger sections (Černý, 1979).

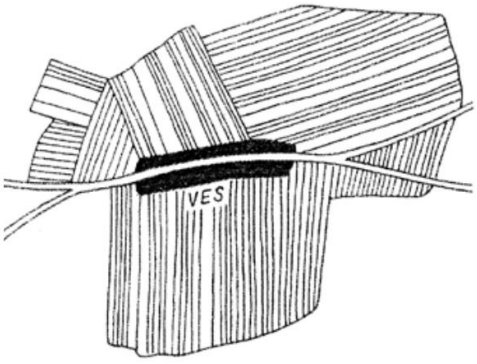
Figu  **1979)**

Figure 5: The pseudo-sectional pluzina (Černý, 1979)

- The lineic pluzina (Fig. 6) consists of wide parallel strips connected to a homestead, which usually end up at the boundary of the cadastre, and from strips outside the settlement, often parallel and adjacent to them. This type is the transition between sectional and croft pluzina. It occurs at the transition of plains to higher places (Černý, 1979).

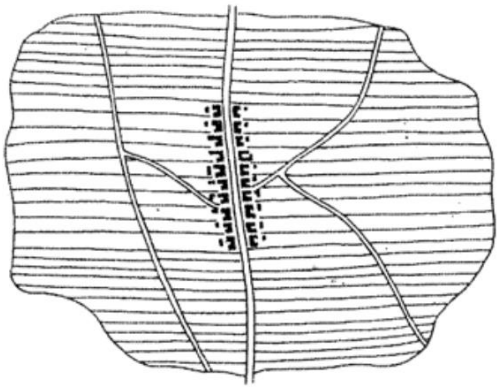


Figure 6: The lineic pluzina (Černý, 1979)

- The croft pluzina consists (Fig. 7) of belts of up to 100 meters wide, 2.5 kilometers long, which are parallel to the farmhouse and form a right angle with the village axis. It can be found in undulating and flat terrain (Černý, 1979).

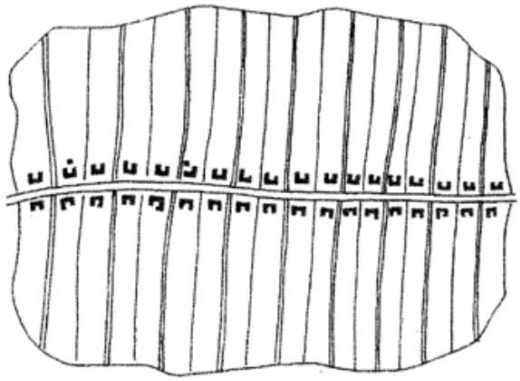


Figure 7: The croft pluzina (Černý, 1979)

- The radial croft pluzina (Fig. 8) (forest villages with distinctive village square) consists of wedge-shaped parcels surrounding the village from all sides. At the edge of the pluzina, the parcel ends are wider than the width of the parcel at the site where it is connected to the farmhouse. If the ring of parcels around the village is incomplete, it is called a fan-shaped croft pluzina (Černý, 1979).

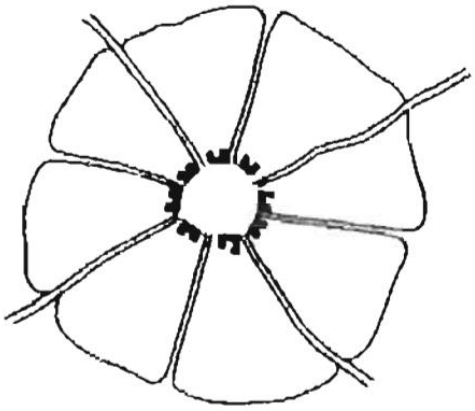


Figure 8: The radial croft pluzina (Černý, 1979)

On the one hand preserved relics of medieval pluzinas are considered of an important historical value of the landscape, on the other hand they are also grateful objects of visual perception (Sklenička & Pittnerová, 2005).

3.2.3 Elements of Extinct Pluzina

Field Margins

The field margin is one of the most characteristic features to distinguish a defunct pluzina or its parts. It constitutes a proper boundary between adjacent field plots or fields (Černý, 1973). It forms the lateral border of the extinct parcel and has four different forms in the cross section: mound, step, terraced and fault. (Černý, 1979).

The composition of the field margins depends on the terrain. Where the soil is not-rocky, it is built of clay. The rocky terrain is dominated by the crown of the field margin, but often the entire field margin is formed by a stone mound that reaches a height of 0.5 to 1 meter. The surface of such a wall is either plain, and the individual stones are clearly outlined or partially covered with lichen, moss, rotting manure or leaves.

There is a tendency for the field margins to run in the direction of the contour lines, ie across the slope. The reason for this was the easier way of ploughing, harvesting and its transport, but also the effort to prevent the soil from being washed away by rainfall. This principle is observed wherever the slope is steeper. Where the slope is milder, the boundary strips are sloping or even in the direction of a fall line. The most noticeable boundary strips are in sloping areas, allowing ploughing, and in places richer in surface stones (Černý, 1979).

The mound-shaped field margin (Fig. 9) occurs in flat terrain, but can also be found in sloping terrain if it runs in the direction of the slope. The cross-section has the shape of a flattened wall 2 to 3 m wide, both sides of which are mirror-symmetrical. Its height in the middle reaches 15 to 30 cm, exceptionally more. However, it can be also lower, which is observed especially in soils with higher moisture levels, where the boundary strip can disappear completely (Černý, 1979).

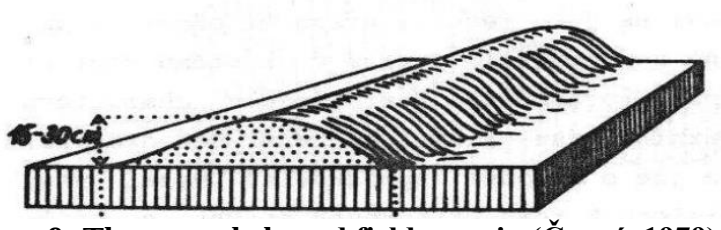
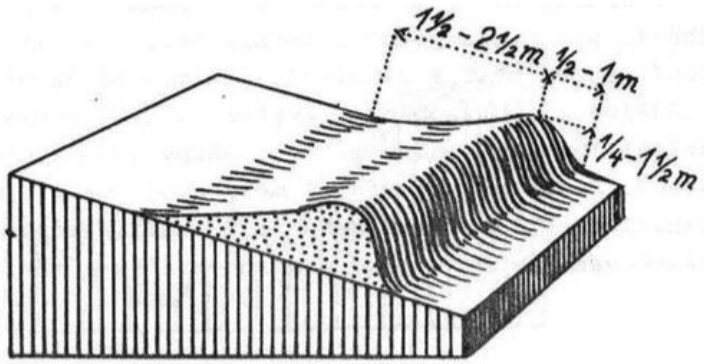


Figure 9: The mound-shaped field margin (Černý, 1979)

The step-shaped field margin (Fig. 10) occurs in terrains that are less or moderately sloping when the belt runs in the direction of the contour line or obliquely to it. In its transverse cross-section, it has the shape of a heavily rounded step. Its upper plateau is horizontal or slightly elevated toward the curvature, in a similar way to make the belt more visible and to catch water at the time of rainfall and not to flow over the crown of the belt to the next lower parcel. The slope site of the strip below the curvature is steep but never vertical. The belt height is less than the width of the upper deck. The steeper the slope, the higher the step. It can be as high as 1 to 1.5 m in height and is 1.5 to 3 m wide. In places where the strip did not leave an embossed print, we observe in some cases hints of stone piles that indicate the course of the boundary strip



(Černý, 1979).

The terraced (dike) field margin (Fig. 11) occurs in plots that run in the direction of the contour line on steeper slopes. While the farmer did not change the slope of the terrain for the plots mafked off by the field margin and the step, the opposite is the case. The slope is too steep and the water would flow quickly into the valley and wash away the topsoil. Therefore the farmer ploughed the top of his parcel

Figure 10: The step-shaped field margin (Černý, 1979)

and moved the soil to the bottom. The height of these strips is between 1 to 2.5 meters (Černý, 1979).

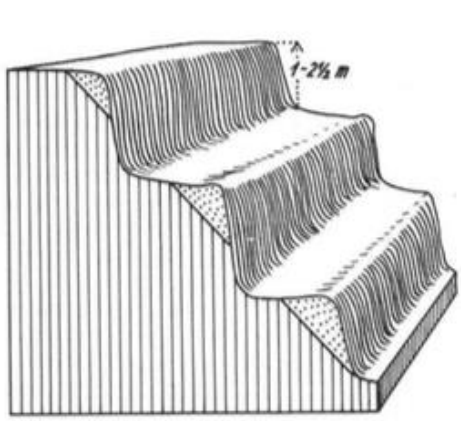


Figure 11: The terraced (dike) field margin (Černý, 1979)

The fault field margin (Fig. 12) is relatively rare. It appears to be a terrain edge or a soil break. It occurs on smaller slopes,where the contour line is. Depending on the nature of the terrain, it may pass into the mound-shaped field margin or the step-shaped field margin (Černý, 1979).

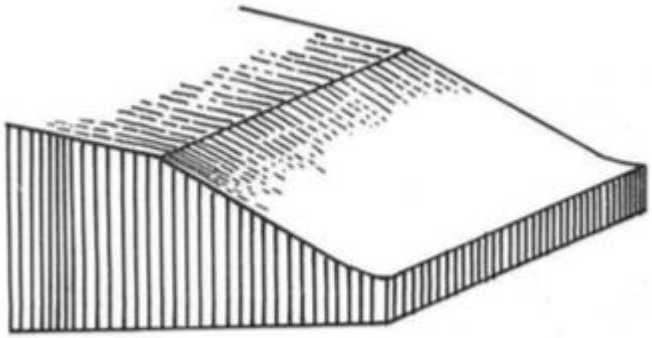


Figure 12: The fault field margin (Černý, 1979)

The land tenure of a medieval farmer consisted of one parcel or several plots separated by each other. The block parcel is one whose sides ratio is approximately equal to a maximum of 2.5: 1. In contrast, the parcel strip has the shape of an elongated rectangle. The narrow belt plot is 40 meters wide, the width of the wide belt parcel ranges from 500 to 1500 meters (Černý, 1973).

Beds

Beds are narrow strips of arable land, where the width varies from 4 to 12 meters, separated by grooves. As a rule, more beds run longitudinally through a field plot, only exceptionally across. In wide beds, the platform is slightly depressed in the middle. Beds are usually 4 to 7 meters wide and 200 to 500 meters long. The height of the bed reaches a maximum in the middle of its width and is 0.1 to 0.3 meters (Černý, 1973).

The reason for creating beds is still not fully understood. Beds were formed by ploughing from the center of the bed using gradual rolling up the clay to the bed (Prostředník & Šída, 2003).

Piles of Stones

The elliptically elongated shape of the piles within the parcels in the direction of its longer axis can be explained as a consequence of avoiding the ploughman with the coating and plough. The same is true of an elliptical shape for piles placed on the field margins. We can encounter the heaps of a round or irregular plot at headlands and in the places with natural barriers. The piles of collected stones were most often piled on the boundaries of the plots, that is, on headlands and along the field margins (Moravec, 2005).

Headland

A headland can also be considered as s certain boundary or a field margin. It is the place where the ploughing equipment was rotated. The headland is perpendicular to the direction of ploughing and the course of the field margins (Černý, 1973). The field margins covered with vegetation can become as a landscape of matrix (Perglová, 2010).

3.2.4 Pluzina Boundaries

The formation of pluzina boundaries is dependent on terrain (Černý, 1973). In landscapes that are vertically structured, borders will be created or influenced largely by geographic formations. In plain lands, pluzina borders are more often formed artificially.

Most often pluzina ends at the edge of plateaus in places or near places where the terrain begins to descend into the valley. In many cases they are watershed, slope ridges, a line connecting the highest situated terrain waves, watercourses and the edges of stream or river terraces. The artificial boundary is made up of roads or edges of adjacent pluzinas. Less often, a smaller or even longer stretch of the side pluzina border does not copy either a natural or an artificial border line, and is formed by the strips of land on the side of the boundary parcel or the bed grooves. We find the end of the plots and thus the pluzina where the lateral boundary strips or the grooves disappear, and are often given by the occurrence of stone piles behind the headland that has not created any embossed prints and can only be assumed (Černý, 1979).

3.2.5 Hedgerows

Hedgerows accomplish various functions for society and the farmer that are both economically and ecologically significant (Forman and Baudry, 1984).

They are human-made components that have contradictory roles recognised by different people, from those who plant or let them grow, to ecologists or visitors. Today hedges have primarily ecological and cultural values. They are connected linear structures such as rows of shrubs or trees and they are notable landscape elements. They are artifacts of disappearing rural cultures and act as shelters for species that are unable to exist in other farm-land. It is a structure that can create a network in the landscape (Baudry et al., 2000).

Hedgerow landscapes may be regarded as greenways, as they provide ecological, agronomic, cultural and aesthetic benefits (Burel and Baudry, 1995).

Hedgerows along with associated elements such as ditches and earth banks have been made to manage physical fluxes, such as water, for drainage or irrigation, soil particles, to reduce erosion or wind. They are also a source of different products when wood is the most important and it can come in forms of wood such as timber, fenceposts or firewood. (Baudry et al., 2000).

Hedgerows accomplish various functions for the society and the farmer that are both economically and ecologically significant (Forman and Baudry 1984).

The functions of scattered green and hence limiting strips of pluzina can be divided into the following areas:

The Ecological Function - Hedgerows serve as a refuge for a number of plants and animals (Sklenička, 2003; Baudry, 1996) such as insects, invertebrates, insectivores, predatory mammals etc. (Porter, 1990). They generally increase biodiversity through the presence of an ecosystem interface (ecotone) (Sklenička, 2003; Šarapatka & Niggli, 2008).

The Aesthetic Function - Hedgerows create a typical landscape character, harmonize landscape space and mediate eg. rhythm, symmetry, heterogeneity, gradation etc.

The Orientation Function - Hedgerows help animals to orient themselves in an otherwise monotonous landscape (Sklenička, 2003), prevent trespassing and give direction to pedestrians (Porter, 1990).

The Soil Protection Function - Most often their function lies in the interruption of the slope or in the protection against wind erosion (Sklenička, 2003). The Recreational Function - They provide shade to man and animals.

The Historical Function - These elements have been created in connection with historical events (Sklenička, 2003).

3.3 Perception of Landscape and Landscape Character

The aesthetic value in the landscape is a key aspect of landscape assessment. On the other hand, the effect on aesthetic value becomes one of the controversial aspects of landscape character assessment, which can be easily used to question the objectivity of landscape character assessment as such. The aesthetic value is methodically difficult to grasp because it is associated with a purely subjective approach (Vorel & Kupka, 2011).

Familiarity is the relationship between man and landscape, indicating the affection of a person for a particular landscape that is familiar to him (eg the landscape of home). Familiarity reflects the direct experience of the area, as the places where people form a familial relationship are, above all, places associated with their childhood or the places of their current residence, as well as those that are often visited or used regularly (such as recreation facilities, employment, etc.) (Svobodová, 2011).

Most of the authors dealing with the perception of landscapes mention three major psychological aspects that have some influence on human perception. These are cultural influences, evolutionary aspects and personality characteristics of the observer. It is assumed that certain psychological behaviour, inclinations, cognitive and emotional aspects are to some extent inborn and hereditary (Svobodová, 2011).

Vorel (1999) that some places in the landscape will cause aesthetically pleasing perceptions and feelings for most people. They are conventionally acceptable values that include the symbols of human harmony with the landscape and the natural harmony of nature and symbols of the constant renewal of nature and the power of eternity.

Therefore, we can generalize some features that have generally acceptable aesthetic values. Vorel (1999) mentions:

- visible use of natural areas as a watercourses framed by shrubs or forests, rugged edge of forest, meandering watercourse with accompanying greenery
- application of significant ecosystems in the landscape scene (eg rocky slope covered with grass and shrubs or littoral vegetation of the pond)
- a natural character of landscape dominants and horizons (eg rocky and forested horizons or striking shape of the terrain dominance)
- a natural environment that shows the traditional way of farming (typical segmentation of agricultural areas, vineyards)
- a balanced relationship between natural and naturally close areas along with agricultural areas
- landscape with a high number of scattered greenery (solitary trees, linear vegetation, woody field margins)
- soft landscape structure
- the harmony of the natural environment with buildings of a traditional character, both material, form and scale
- harmony of natural environment with prominent architectural landmarks (Stations of the Cross, pilgrimage church)

4 Characteristics of the Study Area

4.1 Sumrakov

Figure 13: Landscape of Sumrakov (ziveobce.cz)

The first mention of this formerly independent village dates back to 1356. It was located 3 km southeast of Studená and then the village was connected to Mrákotín. It has been part of Studená since 1976. Today there are 95 permanent residents. Sumrakov is located on the opposite side of the hill "Babí Hora" than Horní Bolíkov. There is a system of smaller fish ponds in the vicinity of Sumrakov. Sumrakov occupies an area of 7.39 km2.

Studená is situated in the basin of Student's creek at the foot of the highest peak of the Czech-Moravian Highlands Javořice (837 m above sea level). There live about 1,700 inhabitants. Studená is connected with smaller municipalities including Sumrakov, where live about 600 inhabitants (Sumrakov, 2019).

4.2 Mrákotín

Figure 14: Local church in Mrákotín (wikipedia.cz)

Mrákotín is a small town in the district of Jihlava in the Vysočina Region. It is located at an altitude of 545 meters, approximately 6 kilometers west of Telč. There are 888 inhabitants. The first written mention of Mrákotín dates back to 1385, but it is assumed that the village of this name was founded in the 12th century.Mrákotín is located 7 km west of Telč, 5 km from Javořice. The township currently has 915 inhabitants. Its extensive cadastre includes a significant portion of the Javořice forests (Mrákotín, 2007).

5 Methodology

5.1 Questionnaire Construction

A questionnaire was created by Ing. Kristina Molnarova Ph.D. and divided into two parts. The first part includes general data on gender, age, education, etc., and the second part focuses on pluzinas and the relationship of respondents to them.

The first part of the questioning was held in the period 7th - 31st September 2018 in southern Bohemia, around the villages Mrákotín and Sumrakov, where pluzinas occur. The second part was held in Prague where experts in agriculture field were asked.

In total, 100 respondents from all age groups were inquired. The questioning was carried out in the form of an interview and subsequent writing of respondents' answers, because this method proved to be the most effective.

Respondents were assured that the information would be anonymous and therefore gave true and complete answers. The interviewees were not limited in time and could have any additional questions.

5.1.1 Creating a Questionnaire

In total, the questionnaire consists of 18 questions, at the beginning of the questionnaire are placed factual questions that provide information about the respondent in terms of gender, age, education, etc. The second part focuses on pluzinas and the relationship of respondents to them.

5.1.2 Respondents in the Questionnaire Survey

A total of 100 people participated in the survey. 50 people, mainly local residents or tourists were surveyed in southern Bohemia directly in places where pluzinas are present, and the remaining 50 respondents were people studying or working in agriculture forestry field and having notions of pluzinas.

These two groups were then compared - their relationship and perception to the pluzinas, their significance, and the landscape, which has its specific character.

6 Results

Answers to all 18 questions from 100 respondents were rewritten and they were then processed and evaluated.

Group No. 1 (1 - 50) includes respondents from the site and group No. 2 (51 - 100) the ones from the agricultural sector.

Group No. 1

The questionnaire was conducted in South Bohemia, where the highest number of respondents were addressed in Sumrakov. Of the total number of 50 persons, men accounted for 56% and women 44%.

The largest age group was the 50 to 64 years, which represented 30% of the respondents and the second and the third age group (both 24 %) was 65 years and more and 36 to 49 years. The youngest age group (18 to 26) had the smallest percentage of 6 %.

When asked about the highest level of education, 50% of the respondents said they are secondary school graduates (school leaving examination), 26% university graduates and 14% with no graduation. 66% of people have never worked in farming industry, but 14% have been employed and 16% graduated from the school in this field.

When asked about their relationship to the local landscape, 74% said they were residents of the site and 74% of them were living there since birth. 24% of people were visitors, 16% were mere landowners, and 14% were farmers and landlords.

54 % of people live here since birth, 10 % have been living here for 26 years and more and also 10% have been coming here for 10 to 15 years. 8 % of respondents have been coming here for 26 years and more and 6 % for less than 4 years.

Although most of the interviewees lived in the survey site, they did not know the term pluzina. Only 2 out of 50 respondents suspected what this term is. Most respondents heard it for the first time and could not define it. After explaining what this term means, 54% of them were aware of pluzina existence at the site, 30% were unsure of it and 16% knew it.

When asked what is the importance of the presence of historical pluzinas in the local landscape for respondents, 66% of them said that the agricultural, 32% aesthetic. 16% of people considered their main function in the boundaries of the land.

Another question concerned a conservation of pluzina in the landscape. 66% of the respondents would certainly be for preservation and 22% said they probably would be.

After questioning the preservation of pluzina in the landscape, respondents were asked if they would be for restoring pluzina in the landscape. 44% of people would be for restoring historic pluzinas, 32% said “probably yes”, 10% of respondents were unable to assess and 10% said “rather not”.

74% of respondents see the importance of locals knowing about the occurrence of pluzinas in the local landscape but only 24% think visitors should know about them too.

In addition, respondents were asked to assess what specific features in the local landscape with the remnants of historical pluzinas are, in their opinion, essential and characteristic. The respondents answered this question differently and answers of all types appeared but the visual aspect and importance of biodiversity prevailed.

When asked if they knew about any activity that would destroy the local landscape, only a few people responded. One interviewee mentioned a large land purchase, other private property, and another monocultural agriculture.

85.7% of people evaluated the impression of the landscape wonderfully, the rest evaluated it with a good impression. There was no one to whom the local landscape was unpleasant.

The vast majority of respondents wanted the present state of pluzinas use to stay the same. Only a few people have proposed cattle breeding, fruit orchards, cycling or hiking trails.

At the end of the questionnaire, 44% of respondents replied that they did not want to take part in the usage of pluzinas, but 56% said they did, and 30% of it passively and 26% actively.

Group n. 2

Group Two included experts from the field of agriculture.

50 people were interviewed and 50% were men and 50% were women. The most respondents (38 %) were aged 27 to 35 years, the second biggest group were people between the age of 18 to 26. 16 % represented group 36 to 45 years, only 8 % were people 50 to 64 years old and 2 % were older than 65 years.

When asked about the highest level of education, 84% of the respondents responded they are university graduates and 6 % are secondary school graduates (school leaving examination). Most of them work or study in the field of landscape architecture and landscape planning, but ecologists or organic farmers also participated in the questionnaire.

Respondents from Group n. 2 are not residents of the site but were acquainted with the research site. They saw pictures from Mrákotín and Sumrakov during the questionnaire to get closer outlook of what the local landscape look like.

The vast majority of respondents knew the term pluzina and was able to define it. From a brief definition of “field” through “farmed areas that belong to a village” to “a narrow field that usually extends from one house in the village and continues, for example, to a forest. It is bounded by a narrow line that can now be overgrown with trees.” Some have defined pluzina as an arable land in villages or as a part of farmland.

74% of people see the importance of a pluzina in the cultural-historical context and at the same time 70% see the importance in an aesthetic aspect. 64% of respondents see their value also in agriculture.

When asked if pluzinas should be preserved, 84% said yes and 16% said they “probably yes”. 62% of the respondents were for the restoration of pluzinas in the landscape and 34% answered "probably yes".

The vast majority think that inhabitants should know about existence of pluzinas in the local landscape and 64 % think that tourists should know about them too.

The most common answer to the question of what is the essential function in the landscape with pluzinas, was the production of food in terms of production function

and the non-productive function was maintaining a large species diversity, aesthetic function and maintaining the landscape's potential.

When asked about possible unfavorable activities that can harm the landscape with pluzinas, more respondents reacted than in group n. 1. They mentioned for example, unsuitable farming methods, collectivization, monoculture farming, land consolidation or logging.

Group n. 2 mentioned more usage of pluzina landscape than the first group. As a suitable use were mentioned orchards, existing use, but also cycling paths or placement of educational boards for tourists or horse breeding and constructions for hunting.

All respondents were interested in participating in some way of using pluzinas either actively or passively.

7 Discussion

For both groups of respondents, a pluzina is mainly of importance in cultural-historical, agricultural and aesthetic, which confirm Oreszczyn & Lane (2000) who found out that various groups (farmers, public, experts) view hedgerows similarly. Research was conducted in England and most interviewees said they perceive hedgerows not only to preserve biodiversity in the country, but also as part of the country and as a national identity. According to Guth Jarkovský, Johanis, & Filipová (2010), the historical type of pluzina should be protected and preserved.

Most of the interviewees were certainly for preserving pluzinas in the countryside (66 % Group n. 1 and 84 % Group n. 2). As Burel and Baudry (1995) state, hedgerows should really start to be preserved and preserve their ecological, but also recreational and cultural value. The results of the questionnaire in Britanny (France) show that the views on hedgerows differ between farmers and non-farmers. Non-farmers perceive hedgerows as important for nature and from a visual point of view and their disappearance would mean a disaster for the landscape, according to farmers, only hedges at the border of the property should be preserved. However, according to my questionnaire, both groups were of similar opinion in order to preserve pluzinas.

According to (Groot, Jellema, & Rossing, 2010) removing existing hedgerows could disrupt the socio-cultural character of landscape expressed in particular patterning. In addition, hedgerows are unique ecological habitats. Moreover, their removal would be very expensive.

After removal of hedgerows, many problems increased such as damage by wind (to plants and buildings), soil erosion, an increase of floods, crop disease problems and changes in microlima (Burel and Baudry, 1995; Mérot, 1999; Kristensen and Caspersen, 2002).

Plieninger et al. (2006) says that disappearance of hedgerows in landscape in England has been due both to the intensification of agriculture and to its extensication which then followed land abandonment.

The respondents answered mainly essential features such as visual aspects and importance for biodiversity as correspondates with Burel and Baudry (1995). Hedgerows are considered as major elements sustaining biodiversity in many agro-ecosystems (Baudry et al., 2000)

Both groups of respondents mostly rated the impression of the local landscape as excellent. This can be linked to the notion of familiarity, which plays an important role in our aesthetic vision, as the places where people form a familiar relationship are, above all, places associated with their childhood, the places of their current residence, as well as those they often visit or otherwise relax (e.g. recreational places) (Svobodová, 2011). This explanation can be applied mainly to the first group because the vast majority of respondents were either local residents or regular visitors.

The second group was not the residents of the research sites. But they were shown the pictures of the local landscape and the landscape was rated very similarly. According to Vorel (1999), there are places that are generally aesthetically pleasing. They create pleasant feelings because they include harmony between man and nature. Among the factors that have generally acceptable aesthetic values are, for example, landscape with and high number of scattered greenery such as solitary trees, linear vegetation or woody field margins or balanced relationship between natural and natural close areas along with agricultural areas. All these aspects were shown in the pictures.

Some intervieews mentioned the reason why a landscape might be disrupted. For example, collectivization was mentioned and according to Sklenička (2003), the first wave of collectivization took place during the 1950s, when agricultural units were founded in the spirit of the motto "unity - one community". The second wave is called the merger of farms on the principle of "one cooperative – conglomerate of municipalities".

The results from (Molnárová, 2008b) shows that dissapearing of hedgerows happened in the Czech Republic even more than in other European countries. The length was reduced, connectivity between hedgerows was lost and loss of features concerning ecological functions. These results are not surprising, as the Czech Republic was under a Communist regime between 1951 to 1989. Government at that time concentrated on intensification and collectivization of agriculture which lead to hedgerow's destruction and dissapearing.

8 Conclusion

In this work, a sociological survey was conducted which examined the preferences and needs of landscape users with historical pluzina patterns and was part of a broader project at the department of Land use and Improvement.

The necessary data were collected in the places of Mrákotín and Sumrakov in southern Bohemia and in Prague. Local residents and tourists were interviewed outside in the landscape of south Bohemia and experts from the agricultural field were then asked in Prague. During the interview, they were shown photos of the examined sites.

The results of the questionnaire revealed that the term pluzina is a unknown among the public. However, these medieval field structures are an important landscape element. It is significant for its socio-cultural and historical value.

However, after acquainting themselves with the significance of historical pluzina, most respondents wished to preserve pluzina pattern in the landscape, mainly because of its aesthetic and agricultural influence. From the questionnaire it was clear that intervieews were aware of this, and perhaps unconsciously. Both the locals and the experts rated the land including pluzinas very positively.

Based on these data, it is be possible to plan further use and development of the landscape not only in these specific localities but in all other pluzina landscape.

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10 Appendix

The Questionnaire

DOTAZNÍK

„Zhodnocení hospodářského využití krajin s plužinami, zjištění potřeb a preferencí potenciálních uživatelů těchto krajin“

Datum uskutečnění průzkumu: Místo uskutečnění průzkumu:

ČÁST A: údaje o respondentovi

1. **Vaše pohlaví je:**
   a. Žena
   b. Muž

2. **Do jaké věkové kategorie patříte?**
   a. 18-26
   b. 27-35
   c. 36-49
   d. 50-64
   e. 65 a více

3. **Vámi doposud dosažené, řádně ukončené vzdělání je:**
   a. Základní
   b. Vyučen/a bez maturity
   c. Vyučen/a s maturitou
   d. Středoškolské s maturitou
   e. Vyšší odborné
   f. Vysokoškolské

Je-li to možné, doplňte, prosím, zaměření vašeho studia:.....

4. **Byl/a jste nebo jste v současnosti zaměstnán/a v oboru zemědělství či zrovna tento obor studujete?**
   a. Ano, jsem zaměstnán/a.
   b. Ano, byl/a jsem zaměstnán/a.
   c. Ano, studuji.
   d. Ano, studoval/a jsem.
   e. Ne, nejsem a nebyl/a jsem zaměstnán/a.
   f. Ne, nestuduji a nestudoval/a jsem.
   g. Jiná možnost:..... (prosím, doplňte)

5. **Do jaké skupiny, dle Vašeho názoru ve vztahu k místní krajině, zapadáte:**
   a. Obyvatel místní krajiny
   b. Návštěvník místní krajiny, turista

c. Člen zájmového sdružení (zaměřené na místní krajinu a nakládání s ní)
d. Zemědělec bez vlastnictví půdy
e. Zemědělec a zároveň vlastník půdy
f. Pouze vlastník půdy

6. **Žijete v místě uskutečnění tohoto dotazníku, či sem opakovaně jezdíte? Doplňte časový údaj.**
   a. Žiji zde:
      i. Od narození, nepřetržitě bez přerušení až do současnosti *(při výběru této možnosti již neberte ohled na nabízené možnosti časového rozmezí níže)*
      ii. Méně než 4 roky
      iii. 5-15 let
      iv. 16-25 let
      v. 26 let a více
   b. Jezdím sem:
      i. Méně než 4 roky
      ii. 5-15 let
      iii. 16-25 let
      iv. 26 let a více
   c. Jsem zde poprvé.

ČÁST B: Zjištění potřeb a preferencí uživatel krajin s plužinami

7. **Jak byste stručně a vlastními slovy charakterizoval/a pojem plužina:**

   .....
   .....

8. **Máte povědomí o přítomnosti historických plužin v místě uskutečnění tohoto dotazníku?**
   a. Ano, určitě.
   b. Ne, vůbec.
   c. Nevím, nejsem si jistý/á.

9. **Jaký má pro Vás význam přítomnosti historických plužin v místní krajině?**
   a. Kulturně-historický význam
   b. Zemědělský význam
   c. Ohraničení pozemku
   d. Estetický význam
   e. Žádný
   f. Jiná možnost:.....
   ...

   (prosím, doplňte)

10. **Byl/a byste pro zachování historických plužin v místní krajině?**
    a. Ano, určitě.

b. Nejspíš ano.
c. Nejspíš ne.
d. Ne, vůbec.
e. Nevím, nejsem schopný/á posoudit.

11. Byl/a byste pro obnovu historických plužin v místní krajině?

a. Ano, určitě.
b. Nejspíš ano.
c. Nejspíš ne.
d. Ne, vůbec.
e. Nevím, nejsem schopný/á posoudit.

12. Myslíte si, zda je důležité, aby obyvatelé měli povědomí o přítomnosti historických plužin v místě jejich bydliště?

a. Ano, určitě.
b. Ne, vůbec.
c. Nevím, nejsem schopný/á posoudit.

13. Je podle Vás důležité, aby měli o přítomnosti historických plužin povědomí i např. turisté?

a. Ano, určitě.
b. Ne, vůbec.
c. Nevím, nejsem schopný/á posoudit.

14. Ohodnoťte ve dvou kategoriích, jaká konkrétní funkce v místní krajině s pozůstatky historických plužin, je dle Vašeho názoru zásadní a charakteristická. Ke každé z uvedených možností zakroužkujte hodnotu dle vámi uváženého významu od 1 (zcela zásadní význam) do 5 (žádný význam).

Z hlediska produkční funkce:

a.	produkce potravin	1. zcela zásadní	2. zásadní	3. průměrný	4. téměř žádný	5. žádný
b.	těžba nerostných surovi	1. zcela zásadní	2. zásadní	3. průměrný	4. téměř žádný	5. žádný
c.	těžba dřeva	1. zcela zásadní	2. zásadní	3. průměrný	4. téměř žádný	5. žádný
d.	produkce energie	1. zcela zásadní	2. zásadní	3. průměrný	4. téměř žádný	5. žádný
e.	průmyslová výroba	1. zcela zásadní	2. zásadní	3. průměrný	4. téměř žádný	5. žádný
f.	Jiná možnost:	1. zcela zásadní	2. zásadní	3. průměrný	4. téměř žádný	5. žádný

.....

.....

(prosím, doplňte)

Z hlediska mimoprodukční funkce:

g.	Udržení velké druhové rozmanitosti	1. zcela zásadní	2. zásadní	3. průměrný	4. téměř žádný	5. žádný

h.	Udržení potenciálu krajin	1. zcela zásadní	2. zásadní	3. průměrný	4. téměř žádný	5. žádný
i.	Estetická funkce krajiny	1. zcela zásadní	2. zásadní	3. průměrný	4. téměř žádný	5. žádný
j.	Retenční funkce krajiny	1. zcela zásadní	2. zásadní	3. průměrný	4. téměř žádný	5. žádný
k.	Bydlení	1. zcela zásadní	2. zásadní	3. průměrný	4. téměř žádný	5. žádný
l.	Rekreační funkce	1. zcela zásadní	2. zásadní	3. průměrný	4. téměř žádný	5. žádný
m.	Jiná možnost:	1. zcela zásadní	2. zásadní	3. průměrný	4. téměř žádný	5. žádný

.....

.....

(prosím, doplňte)

15. Pokud je v historických plužinách v této oblasti prováděna činnost, o které se domníváte, že ji ničí, uveďte, o kterou činnost se jedná a čím krajinu devastuje. V jiném případě otázku vynechejte.

.....
.....

.....
.....

16. Jaký je Váš celkový dojem z místní krajiny s historickými plužinami?

a. Výborný
b. Dobrý
c. Průměrný / neutrální
d. Špatný
e. Velmi špatný / skličující

17. Jaké využití historických plužin v místní krajině shledáváte vhodnými do budoucna? Ke každé z uvedených možností zakroužkujte hodnotu od 1 (velmi vhodné) do 5 (zcela nevhodné):

Stávající využití	Zalesnění	Zvětšení zemědělských pozemků – odstranění mezí	Ovocné sady
Plochy pro bydlení v místech zaniklých usedlostí	Plochy pro bydlení – novodobá parcelace		
Cyklostezky	Cesty pro pěší turistiku		
Plochy pro průmysl, logistiku, haly	Stavby pro výkon myslivosti (např. posedy)		
Umístění naučných tabulí pro turisty	Informace pro turisty v podobě QR kódů		

Pěstování rostlin za účelem využití biomasy pro energetické účely

Solární panely Větrné elektrárny

Těžba nerostných surovin Zornění stávajících pozemků

18. **Měl/a byste v budoucnu zájem podílet se na některém ze způsobů využití historických plužin uvedených v otázce 17? Pokud ano, doplňte využití, na kterých byste se podíleli, jakým způsobem by probíhala vaše účast.** *(Aktivně = tvůrce, zprostředkovatel dané činnosti – např. chovatel skotu, tvůrce naučných tabulí / Pasivně = jako uživatel – např. zákazník místní farmy, turista využívající informace)*

    a. Ano, měl/a bych zájem, podílel/a bych se na
    ..... aktivně/pasivně
    b. Ne, neměl/a bych zájem.