



Origin and development of long-strip field patterns: A case study of an abandoned medieval village in the Czech Republic



Petra Houfková^{a,*}, Jiří Bumerl^{a,b}, Lukáš Pospíšil^c, Petr Karlík^d, Jaromír Beneš^a, Alexandra Bernardová^a, Michaela Hrabalíková^c, Kristina Janečková Molnářová^c, Michal Hejzman^e

^a Laboratory of Archaeobotany and Palaeoecology, Faculty of Science, University of South Bohemia, Branišovská 1760, CZ-37005 České Budějovice, Czech Republic

^b Institute of Archaeology, Faculty of Philosophy, University of South Bohemia, Branišovská 31a, CZ-37005 České Budějovice, Czech Republic

^c Department of Land Use and Improvement, Faculty of Environmental Sciences, Czech University of Life Sciences Prague, Kamýcká 129, CZ-165 21, Praha 6 - Suchbát, Czech Republic

^d Department of Dendrology and Forest Tree Breeding, Faculty of Forestry and Wood Sciences, Czech University of Life Sciences Prague, Kamýcká 129, CZ-165 21, Praha 6 - Suchbát, Czech Republic

^e Department of Ecology, Faculty of Environmental Sciences, Czech University of Life Sciences Prague, Kamýcká 129, CZ-165 21, Praha 6 - Suchbát, Czech Republic

ARTICLE INFO

Article history:

Received 10 October 2014

Received in revised form 26 June 2015

Accepted 27 June 2015

Available online 29 July 2015

Keywords:

Field boundaries
Radionuclide dating
Hedgerows
Landscape memory
Pluzina field pattern
Potsherd

ABSTRACT

Long-strip and terraced fields systems form significant elements of the current cultural landscape. When evaluating their significance, it is necessary to determine their origins and to further specify their development. However, archeological researchers have encountered problems in dating field systems that were exposed to intensive agriculture in the 20th century AD. In this study, we describe a combination of approaches used to confirm the current landscape's High Medieval origin of the long-strip terrace-like field system of the former village of Malonín, which is located in the Bohemian Forest Mts., Czech Republic. The methods employed are radionuclide dating, geographic information system (GIS)-based reconstruction using old maps, historical documents, and archeological and palaeobotanical records. Our study evaluated the historical significance of field boundaries in the form of hedgerows, which have stabilized the pattern of the agricultural landscape since medieval times. The results of this study provide a basis for further land use planning and for conserving the cultural landscape.

© 2015 Elsevier B.V. All rights reserved.

1. Introduction

Long-strip field systems and terraced field systems form agricultural landscapes showing a diverse morphology of fields and field boundaries. These systems reflect diverse recent and historical management based on local terrain typologies (Denevan, 2001; Fleming and Ralph, 1982; Matzat, 1988; Mitchell, 1990). Terraced slopes (Stanchi et al., 2012), terraced paddy fields (Iiyama et al., 2005) and hedgerow network landscape known as *bocage* (Baudry et al., 2000; Groot et al., 2010) have recently been subjected to conservation and careful management in recognition of their environmental and aesthetic value. Maintained field boundaries in the form of stone-walled terraces and hedgerows contribute to long-term soil conservation (Oshunsanya, 2013), improve topsoil retention (Goodman-Elgar, 2008), and reduce runoff and intense erosion (Bayer and Beneš, 2004; Seeger and Ries, 2008). Shelterbelts and hedgerows have been shown to be artificial linear features that enhance species biodiversity (Cornulier et al., 2011; DeClerck et al., 2010; Harvey et al., 2005; Le Cœur et al., 2002;

Pulido-Santacruz and Renjifo, 2011; Staley et al., 2012). In addition, present plant communities are influenced by the past land use of a particular landscape patch (Karlík and Poschlod, 2009). Field boundaries are a prominent indicator of former arable land use in recent grasslands or forests (Hejzman et al., 2013).

The establishment of a particular field system is generally difficult to date (Bevan and Conolly, 2011; Frederick and Krahtopoulou, 2000; Petersson, 1999), though in some cases ancient origins have been determined (Denevan, 2001; Gibson, 2001; Iriarte et al., 2010; Krahtopoulou and Frederick, 2008; Malpass, 1987). Archeological dating of artifacts is often the main source for assessing the age of terraced fields, but this information embraces rather long time intervals. Historical documents and maps are restricted by limited availability of sources. The combination of these sources with environmental methods (Košňovská et al., 2011; Sasaki and Takahara, 2011), archeological dating of artifacts and physical age determination based on ¹⁴C data (Bronk Ramsey, 2009), ²¹⁰Pb concentrations for sediment layers younger than 150 years, and the discrete stratigraphic chronometer ¹³⁷Cs peaks derived from atomic bomb testing in 1963–1964 AD and the Chernobyl accident in 1986 AD (Appleby, 2008; Gunten et al., 2009; He and Walling, 1997; Sanchez-Cabeza and Ruiz-Fernández, 2012) provide other powerful tools (Fernández Mier et al., 2014; Follain et al., 2009; Schoorl et al., 2004a,b; Wakiyama et al., 2010).

* Corresponding author.

E-mail address: petra.houfkova@gmail.com (P. Houfková).

In various areas of the world, field systems have created specific patterns, each with its own historical origin. In the Czech Republic, a specific landscape mosaic is shaped by field systems of neighboring villages (Černý, 1979; Gojda, 2000). A field system originally belonging to a single High Medieval village is called “pluzina” in the Czech language. As this is a regionally specific phenomenon, the term *pluzina* has been adopted in English language scientific literature (Sklenicka et al., 2009). Each *pluzina* consists of a number of individual fields, long parallel plots with a minimum of transversal separators, which are connected with individual farmsteads in the village. From the 13th century AD, most of the High Medieval field structures were organized into long, narrow parallel plots mainly in response to the new, single direction tillage technology (Bayer and Beneš, 2004). According to the local geomorphology, the field boundaries can take the form of terraces, mounds, or clearance walls (Fleming and Ralph, 1982; Kuna and Tomášek, 2004), while some boundaries are also defined by hedgerows. Although the structural attributes have frequently been preserved, the hedgerow network was massively reduced in the 20th century AD due to the intensification of agriculture and further extensification of land management (Molnářová, 2008; Sklenicka et al., 2009).

The objective of this study is to reconstruct and date the changes in the *pluzina* field pattern of the deserted former village of Malonín, which is currently characterized by the presence of a well-preserved abandoned long-strip field system with a terrace-like morphology.

Using the combination of the dating approaches mentioned above, we attempt to answer the following questions:

- 1) How old is the field system in the study site?
- 2) Is the dating of the field system using written resources, pottery chronology, and radiocarbon methods consistent?
- 3) Was the field system established when the village was being established, and was it stable during the centuries that followed?

2. Material and methods

2.1. A description of the study site

The study was conducted within the 216 ha area of the former village of Malonín, situated in the cadastral area of the village of Frantoly, Prachatice region, in the foothills of the Bohemian Forest, Czech Republic (Fig. 1). The elevation of the study site ranges from 660 to 735 m. The mean annual temperature is 5–6 °C, and the mean annual precipitation is about 700 mm.

Previous archeological excavations carried out in the built-up former village area determined that its origin was High Medieval (Beneš, 1995), coinciding with the settlement activity in the region in the second half of the 13th century AD (Boháč, 1983; Profous, 1951). This is further in accordance with data on the colonization of other marginal areas in the Czech Republic (Klápště, 2005; Sláma, 1976; Žemlička, 2002). No

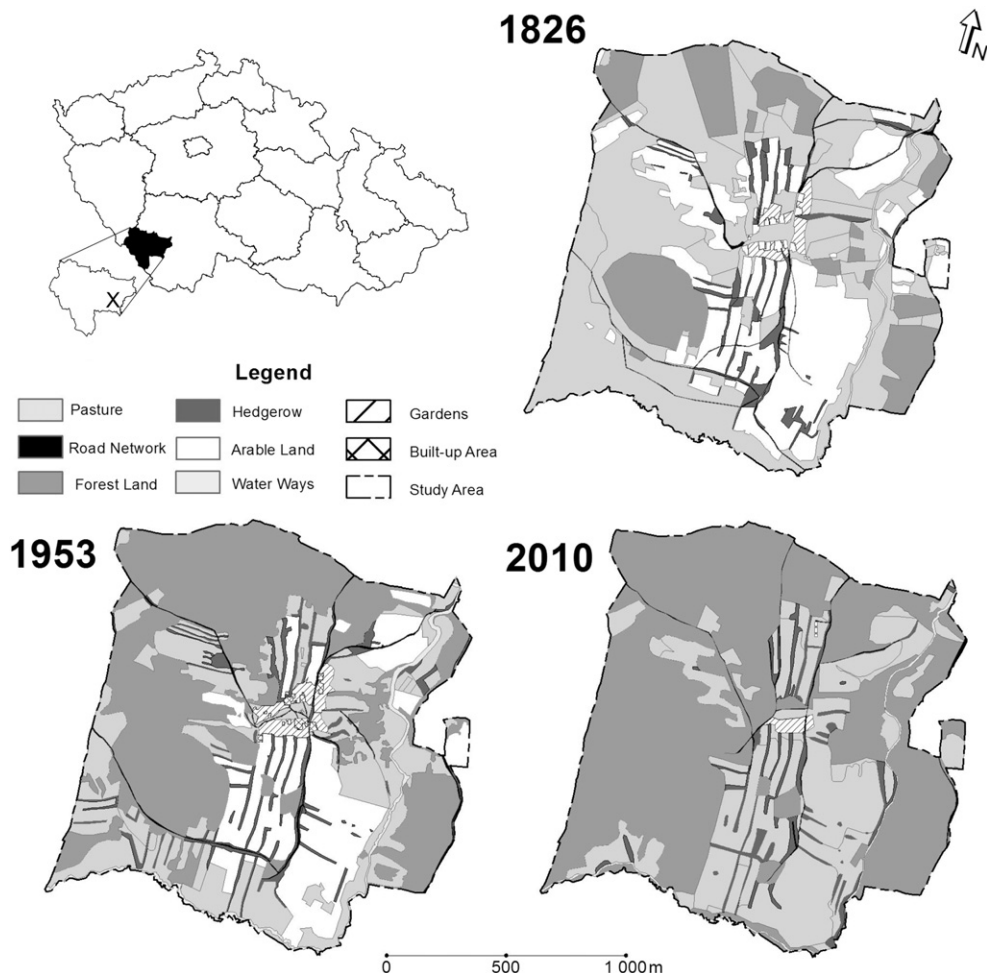


Fig. 1. Location of the former Malonín village within the Czech Republic (14.079 E, 48.971 N). The dark area marks the Prachatice region, the study site is marked as X. Land cover maps of the Malonín area originate from 1826, 1953, and 2010. Dominant soils are Dystric Cambisols.

Download English Version:

<https://daneshyari.com/en/article/4571081>

Download Persian Version:

<https://daneshyari.com/article/4571081>

[Daneshyari.com](https://daneshyari.com)