



The historic character of a depopulating borderland: historic landscape characterisation on the Duero River

Kyle P. Hearn & Francesco Carrer

To cite this article: Kyle P. Hearn & Francesco Carrer (2022): The historic character of a depopulating borderland: historic landscape characterisation on the Duero River, Landscape Research, DOI: [10.1080/01426397.2022.2089351](https://doi.org/10.1080/01426397.2022.2089351)

To link to this article: <https://doi.org/10.1080/01426397.2022.2089351>



© 2022 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.



Published online: 28 Jun 2022.



Submit your article to this journal [↗](#)



Article views: 205





View related articles [↗](#)



View Crossmark data [↗](#)

The historic character of a depopulating borderland: historic landscape characterisation on the Duero River

Kyle P. Hearn^a  and Francesco Carrer^b 

^aDepartment of Human Sciences and Education, Public University of Navarre, Pamplona, Spain; ^bSchool of History, Classics and Archaeology, Newcastle University, Newcastle upon Tyne, UK

ABSTRACT

International borderland landscapes have a shared history through the movement of ideas, people, culture, and even conflict. Understanding the similarities and nuanced differences of temporal landscape change between frontiers requires approaches that can effectively detail and explain the territorial evolution of both countries. Historic Landscape Characterisation (HLC) is a valuable methodological tool originally used for landscape studies in the United Kingdom. Its application outside of Britain has been limited. In this pilot study, HLC is used in the Duero River borderland context of Spain and Portugal. It is a rural region with a common history, but it also presents new methodological challenges in the acquisition of source data and the creation of a typology that effectively characterises the region while also recognising the distinctiveness between nations. This research presents the development of the classes and broad types chosen for this analysis and demonstrates their diachronic evolution to the present.

KEYWORDS

Historic landscape characterisation; Portugal; Spain; borderlands; rural; depopulation

Introduction

The idea and significance of borders and frontiers have been discussed extensively for years. Numerous interpretations of the concept abound and can also be redefined specifically to regions with their creation, dissolution, and/or fortification varying with the socio-political climate of the historical time period. Formal definitions of border today vary from a 'Conventional line marking the limit of a state, separating the territories of two bordering states' in French to the more concise 'the confines/boundaries of the state' in Spanish, to 'the territorial zone immediately on the line between two nations' in Portuguese to the Cambridge definition of 'a line that has been agreed to divide one country from another'.¹ These definitions, however, can lead one to think of an impenetrable encapsulation of distinct nations. Although border walls, conflict, and militarisation may appear this way on the surface, in some areas and time periods, de facto cultural permeability generated by both legal and illicit trade and migration, often has persisted across borders despite de jure political divisions. In English, the use of the word 'borderland' can have different meanings because it can imply the concept of landscape, thus going beyond the lines separating nations and incorporate a much broader definition describing not a line of demarcation but rather a more modern interpretation used by the European Landscape

CONTACT Kyle P. Hearn  kylepatrick.hearn@unavarra.es

 Supplemental data for this article is available online at <https://doi.org/10.1080/01426397.2022.2089351>

© 2022 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

Convention (ELC) as 'an area as perceived by people, whose character is the result of the action and interaction of natural and/or human factors'.²

Borderlands have been and continue to be important landscapes for every nation. In Western Europe today they have a different and evolving interpretation of the creation of the European Union than they did in the Modern Period (late 15th – early 19th centuries) to much of the 20th century. Today, as the EU revisits issues of self-determination, economic crises, and migration, it faces enormous stresses to seek and even create commonalities between not only its member states, but also the countries and regions that the bloc shares its borders within Africa, Eastern Europe, and Asia. Finding common ground can occur from a more thorough understanding of the character and the human perception of the zones where nations transition together rather than viewing them as divided by exclusionary imaginary lines of division. As borders change continuously through history, understanding the historic landscape character of borderlands can expose commonalities and differences of historic landscapes influenced by socio-economic and cultural processes occurring in two neighbouring nations.

In conducting a temporal analysis of landscape history in a borderland area, tracing the development of how the region has evolved presents interesting challenges and questions. What similar aspects of both nations does the border area possess? What is maintained as distinct on either side of the border? In what ways have these similarities and contrasts manifested themselves physically on the landscape? What comparable spatial datasets are available to effectively characterise a borderland landscape? Elucidating these factors, requires a flexible methodology that can effectively demonstrate the evolution of a borderland region.

Historic Landscape Characterisation (HLC) is a methodology, developed in England, that can be adapted and used to characterise and display the diachronic evolution of the complete landscape through Geographic Information Systems (GIS) and an accompanying database (Turner, 2018, p. 42). This study aims to demonstrate an interpretation of the evolution of the historic character of the rural borderland research context where the Duero River separates Spain and Portugal using HLC. In addition, it will explain the process of adaptation of the English HLC methodology to this borderland context, discuss its challenges, and provide a summary of the results.

This HLC incorporates previous archaeological, historical, ethnographic data as well as historic maps and aerial photography and utilises them to find patterns of landscape use from present to past and map them. This research forms part of an ongoing interdisciplinary archaeological/historical project of the Social Structure and Territory Landscape Archaeology (EST-AP) group of the Spanish National Research Council (CSIC) detailing the temporal development and changes on the Duero River borderlands between Portugal and Spain (Hearn, 2021; Romero, 2015; Sánchez-Palencia, Romero, & Beltrán, 2018; Sánchez-Palencia & Beltrán, 2015). Three rural border towns on the Duero River from EST-AP's landscape archaeological work will pilot the HLC methodology in this study. They are Pino del Oro, Spain, Villardiegua de la Ribera, Spain, and Aldeia Nova, Portugal (Figure 1).

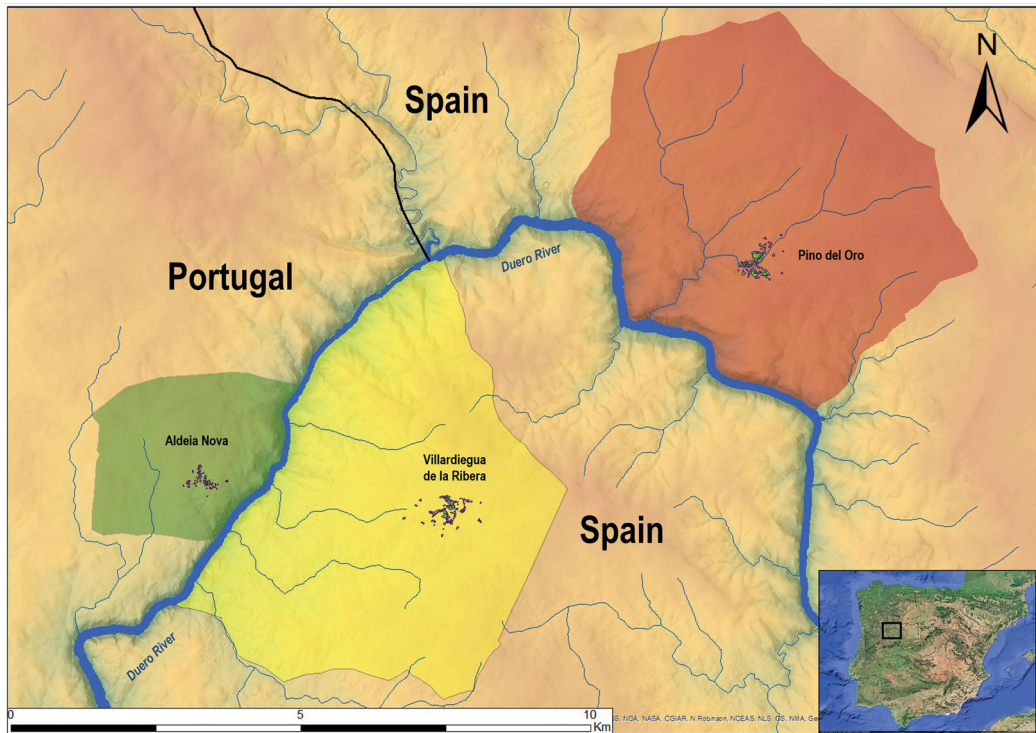


Figure 1. Villages covered in pilot HLC (elaboration Kyle Hearn).

The Duero River borderlands: a brief landscape history

Archaeological evidence from the Duero River valley suggests the existence of complex anthropogenic landscapes since the Protohistoric period. Pre-Roman hillforts dotted the banks of the deep ravined river canyon of the Duero. Roman conquest restructured the landscape and led to the disappearance of many of these settlements (Sánchez-Palencia et al., 2018). Newer rural settlements in the Roman period developed inland on the plains away from the Duero River during this time focussing on agropastoralism, the economic use of nearby woodlands, and an increase in gold mining (Romero, 2010, 2015; Sánchez-Palencia, Beltrán, Romero, Alonso, & Currás, 2010). Archaeological evidence is scant, but a discontinuity of settlement begins to appear after the decline of Roman control and the beginning of the medieval period. Historic records begin to document the region by the 12th century (Martín-Viso, 1996, 2000; Sánchez-Palencia et al., 2018). At this time a restructuring of the landscape occurred as competing interests dominated by monasteries, military orders, monarchies, and bishoprics, began to exert control to not only establish borders and consolidate populations, but also to accumulate wealth from local inhabitants through both rent and tithe payments (Alfonso-Antón, 1980; Fernandes, 2009). Once a new landscape organisation had been established, population centres further developed their agropastoral economies with the village landscape reflecting a territorial organisation optimised for the movement of pasture animals in accordance with the rotated planting of cereal crops in the village peripheries of nucleated settlements and the planting of horticulture near the village centres (Glick, 2003; Prada-Llorente, 2001; Sánchez-Gómez, 1995).

The late 18th to the mid 19th centuries witnessed the rise of yet another restructuring of the landscape. Land confiscations (*desamortizaciones*) broke up previous large church and secular land holdings (*señoríos*) with either local elites or even conglomerations of villagers purchasing much of this newly freed up land. The village landscape morphologically changed in some cases

with formerly large tracts of land now appearing as geometrically shaped parcels, as villagers, the state, or a new local aristocracy either owned and used the land or rented the now smaller tracts (Hearn, 2021; Pérez-Soba, 2013; Sánchez-Gómez, 1991). On the Portuguese side, the land changes were more aggressive than in Spain, as not just land from large landowners was sold but also large portions of communal lands were sold, resulting in a more parcelled village landscape (Espinha da Silveira, 1993).

By the 1960s, however, national and world events began to lead to landscape changes whose effects we still see today. In the early 1960s, Portugal's overseas empire began to crumble as wars for independence broke out throughout its colonies. The Portuguese conscripted many of its young men from villages to fight in many of these conflicts with some not returning. For those who returned, many answered a worldwide call that was also occurring in neighbouring Spain, a call for factory labour. In both nations, a massive outmigration occurred beginning in the 1960s and continues until the present. With this abandonment, over time the borderland landscape witnessed more vegetative growth where there had once been cultivation and pastoralism (Marques, 2011; Vilar, 2000).

Political policies have allowed for divergent effects between the two borderland nations. In Portugal since the 1990s on its border area, it has enacted an intense afforestation program with EU assistance³ that has created arboreal plantations of pine and oak for both environmental and economic benefit. These plantations are marked by their geometric shaped parcels of tree rows. On the Spanish side of the border, long term land management policies beginning in the late 19th century have altered the landscape. A public land watershed management system called *Montes de Utilidad Pública* (MUP), was introduced by the national government and administered by the regional and provincial governments (Figure 2) (Gallego-Martínez, Blanco, Sebastián-Amarilla, Pineda, & Blanco, 2002). In some Spanish municipalities, significant portions of municipal land are MUPs. In the village of Villardiegua de la Ribera, the MUP allows grazing for a small fee for use. Cultivation in these scrubland sectors, however, is not permitted.

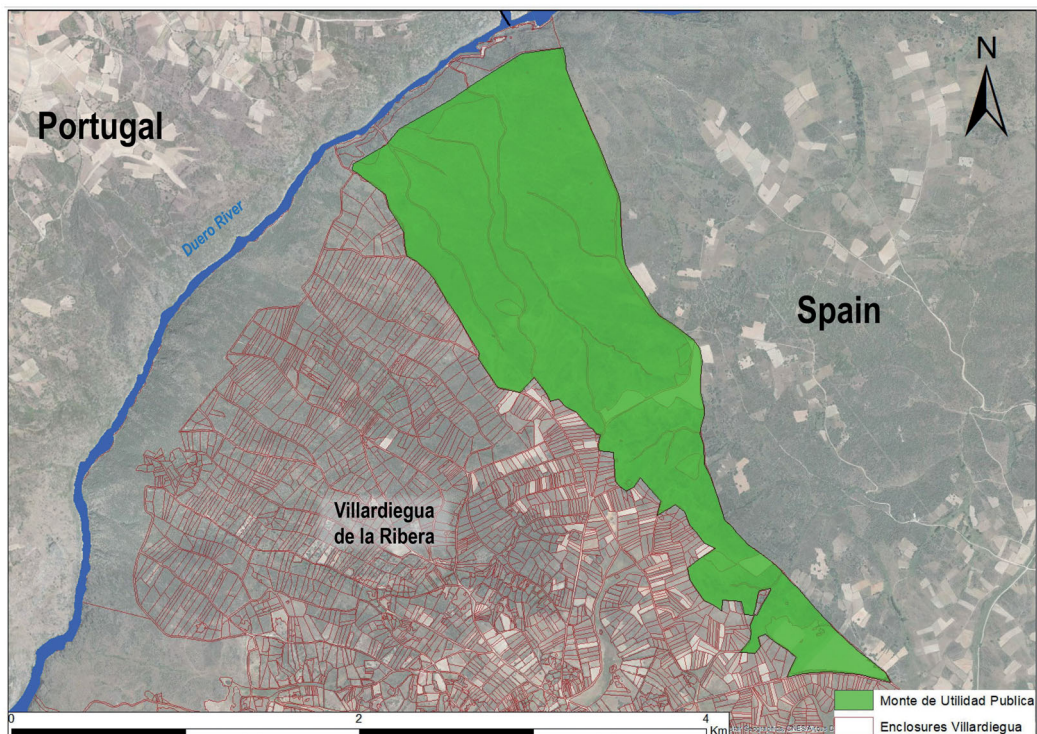


Figure 2. Publicly administered grazing lands, *Monte de Utilidad Pública* near private parcels in Villardiegua de la Ribera. Source: https://www.jcyl.es/junta/cma/20190521_Libro_del_CUP_de_Zamora_Abril_2019.pdf.

By the early 21st century, the Portuguese and Spanish governments recognising the ecological distinctiveness and aesthetic beauty of the region created an international park zone consisting of a strip of protected land passing through the borderland zone of the Arribes del Duero.⁴ By 2015, UNESCO declared the overlapping superimposed Meseta Iberica Biosphere protecting even more of the landscape.⁵

While the international protection of the landscape may have been lauded by environmental groups, with the regional wide population decline, the shift away from traditional agrosilvopastoral landscape management, and the increasing abundance of dry chapparal vegetation, the region has seen an increase in devastating wildfires resulting in significant loss of both the protected landscape and the small, remaining agropastoral economy (Marino, Bergua, & Piedrabuena, 2017).

Methodology: an overview of HLC

An applied historical-archaeological methodology, HLC was created in the United Kingdom to analyse landscapes diachronically by identifying broad aspects of the landscape as attributes and then aggregating various archaeological, historical, and contemporary sources that describe their historic dimension to temporally characterise the landscape (Herring, 1998). HLC aids people in improving their understanding of the historic depth of their landscapes. Moreover, it can provide them with the tools to create ‘new narratives and perceptions’ concerning future uses of the landscape. This aspect is one of the fundamental goals of the ELC of 2000 and HLC as a methodology encapsulates this ideal (Turner & Fairclough, 2007). Historic Landscape Characterisation is a methodology useful for both the historian and the archaeologist. However, instead of analysing landscape exclusively in the past, it is more holistic in that it describes not only the landscape and the way people use it in the present, but also provides evidence of the past that can still be found within it (Williams, 2008). The philosophy of understanding the past through the present in landscape study is not new. Marc Bloch with his *methode regressive* advocated for not only understanding the present landscape through the past, but also the reverse – to understand the past through an analysis of the present, to begin with, the understood and continue to the unknown (Darby, 2002, p. 113; Friedman, 1996, p. 171).

Although developed and used primarily in the UK (Turner, 2018, p. 40), examples of its use and relevancy in other contexts are present in Greece (Crow, Turner, & Vionis, 2011), Ireland (Lambrick, Hind, & Wain, 2013) and the United States (Barrett, Dingwall, & Gaffney, 2007; Puckett, 2013). Its implementation in the Iberian Peninsula has been limited to the region of Catalonia (Bolòs, 2010; Bolòs, Bonales, Flórez, & Martínez, 2016; Bolòs & Bonales, 2013, 2015; Turner, Bolòs, & Kinnaird, 2018). A transborder use of the method to date has not been attempted between Spain and Portugal.

The historic evolution of the landscape is tangibly marked with ‘structures, patterns, and communities’ both ‘human and semi-natural’ (Cornwall County, 2011). Intangible attributes are also associated to landscapes through people’s perceptions and the meanings, knowledge and memories they derive from them (Hearn, 2021). A flexible methodology, HLC works to find those attributes and patterns that best typify all aspects of a landscape through time. These patterns are recorded as polygons in a GIS environment, and recurrent tangible attributes are converted into standardised categories (or Broad Types) and stored in a series of database tables (Cornwall County, 2011; Crow et al., 2011; Dabaut & Carrer, 2020).

Criticism of HLC is that it is very much a top-down map-based approach that can miss the connection and nuances of landscape that people on the ground can truly perceive (Williams, 2008; Williamson, 2007). Addressing this deficiency, this study incorporates ethnographic information to better elucidate attributes and land use gleaned from participatory mapping with residents of the three villages in this HLC of this borderland area (Hearn, 2021).

Adapting HLC to the Duero River borderland area

Although the methodology of HLC follows the principles mentioned above, its presentation and organisation vary depending on the research projects and case studies addressed. The methodological presentation, analysis, and results of this HLC bear a hybrid resemblance of many different English HLCs. The structure of this HLC was developed at the McCord Centre for Landscape at Newcastle University, building on similar projects developed in this research centre, like the Northumberland and Tyneside HLCs.⁶

Familiarisation of the landscape was acquired by an in-depth ethnographic study based on numerous site visitations that included interviews with informants as well as ground truthing. Intensive background familiarisation of both primary and secondary historical and archaeological sources was essential to have a more complete understanding of the historical processes involved in the landscape's evolution.

Materials: data sources

Archaeological research has been very limited in the Duero River borderlands. Since the early 2000s, the EST-AP group of the Spanish National Research Council has conducted detailed archaeological excavation and survey work on both the Spanish and Portuguese border unveiling a more detailed understanding of human occupation and land use during the Protohistoric and Roman periods (Romero, 2015; Sánchez-Palencia, 2012; Sánchez-Palencia et al., 2018; Sánchez-Palencia & Beltrán, 2015; Sánchez-Palencia & Currás, 2010). Because HLC depends on prior 'well-researched' landscape case studies (Crow et al., 2011) to develop the character types that cover an entire landscape, this HLC will begin its earliest characterisation in the Protohistoric period building on the extensive landscape features researched by the EST-AP group. Although individual sources and other bodies of work will be incorporated into this study, EST-AP's research provides the most current archaeological understanding of the landscape.

Other works covering the medieval period have been essential. Most notable are the doctoral thesis and subsequent publications of Prada-Llorente that provide territorial analysis and regional landscape use vocabulary. This research has been invaluable for understanding the Spanish/Portuguese borderland from the late medieval to the present (Prada-Llorente, 2001, 2005, 2011, 2016, 2017; Prada-Llorente, Riesco-Chueca, & Herrero, 2013). For a complete list of the data sources and their rationale for use please consult the [supplementary material](#) of this study.

As part of an integrated approach to a diachronic landscape analysis, data and results acquired from the ethnographic mapping as in Hearn (2021) are used to better inform time depth in the HLC. [Table 1](#) lists the information obtained from ethnographic interviews and their function in informing both the historic processes and time depth of the broad types characterised in the HLC portion of this research.

Table 1. Ethnographic data incorporation into HLC.

| Ethnographic data | Function in HLC |
|--|---|
| Toponyms and terminology related to land use and territorial organisation | Some field names and place names have direct references to time periods and make references to ownership, type of land use (Hearn, 2021). Terminology from both countries to describe territorial organisation aided in development of broad types. |
| Location of watermills | Watermills in this study are an important timestamp to at least the Modern Period and possibly earlier. Although many have disappeared over the decades, the knowledge of their location allows for the mapping of ‘milling zones’ in the HLC. |
| Intangible aspects such as historic communal crop rotation patterns | Communal crop rotation patterns are intangible attributes that can be mapped. Although not always precise data when combined with current cadastre GIS data they can provide examples of land use to potentially the Modern Period and perhaps earlier. |
| Optimum locations on village landscapes for cereal cultivation and pastoralism | Difficult to date with precision, this soft knowledge can indicate where cultivation has occurred when compared with other sources such as the late 19th century planimetry maps that show types of land use and territorial organisation dating from the late Modern Period. |
| Past areas designated for wood collection from communal lands | Like the previous category, this information joined with the other data sets allows for analysis of communal land use and its geographic relationship to other parts of a village landscape. |

Two characteristics are found in the study area that are unusual for HLC mapping even at this scale and are emblematic of this landscape. The first and most notable are the prevalence of zones of series of late medieval/Modern Period watermills found in more turbulent parts of the streams in most of the villages (Figure 3) (Hearn, 2021). The second is the field rotation system, recorded through collective memory and participatory mapping.



Figure 3. Watermill zone (mills in middle ground and background) in Villardiegua de la Ribera, Spain (Photo Kyle Hearn).

A GIS-based methodology, HLC does not register individual sites (registered as point data in GIS), but areas of human use (as polygons). Although watermills from the medieval/Modern Periods have been geolocated with GPS as points, a strategy developed in this study was to view these concentrations of individual watermills along streams as work zones that had been accessed and utilised by people over time. At the local village scale of this HLC, these agglomerations of like features (the series of mills used by villagers) can be represented as HLC polygons along the stream course (Figure 4).

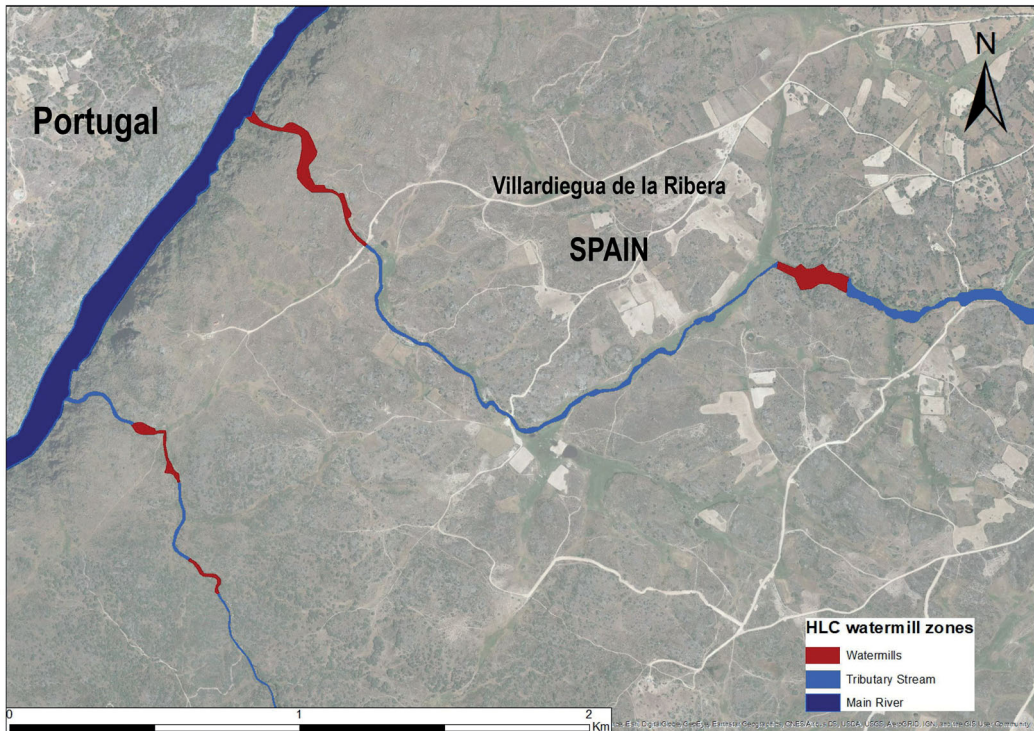


Figure 4. Watermill zones in the Villardiegua de la Ribera HLC (elaboration Kyle Hearn and Francesco Carrer).

The field rotation system, discussed in (Hearn, 2021), is incorporated into the HLC as an attribute. Polygons when drawn on a village landscape, depending on the time period and with the exemption of the smaller horticultural plots located at the villages' cores, fall into either a communal woodland which is not part of the crop rotation or a public or private part of the landscape that is or was part of the field rotation system. As the crop rotation in the study area is biennial, relevant polygons are registered in the data base entry as field rotation system 1 for the northern portion of the system or field rotation system 2 for the southern portion (Hearn, 2021).

Rationale for selection of classes, broad types, and time periods

HLCs use a level based form of classifying polygons. Interpreting polygons begins with a topmost level, least specific category, followed by a more detailed subcategory. Within this detailed subcategory attributes are added to further interpret the polygon. Using the Tyne and Wear HLC database organisational nomenclature, the term class refers to the most general category of landscape feature.

For the Duero River borderland HLC, seven classes have been identified: settlement, fields, rough ground, mineral, and water resource extraction (industrial), communication, terraces, and water. The next level beneath class is the broad types. These are more precise types that pertain to the seven classes. Classes and broad types in the database (Table 2) were selected after the familiarisation phase.

Table 2. Classes and broad types of Duero River HLC.

| Class | Broad type |
|--|--|
| Settlement | <ul style="list-style-type: none"> • Nucleated Settlement |
| Fields | <ul style="list-style-type: none"> • Enclosed Horticultural Plots – <i>Cortinos</i> • Larger Enclosed Mixed Pastoral/Cultivation Plots – <i>Cortinas</i> • Rectilinear Fields – Unincorporated Enclosed Plots • Strip fields • Unenclosed communal pasture • Communal River canyon pastureland |
| Rough ground | <ul style="list-style-type: none"> • Unenclosed and enclosed Woodland – <i>Monte Alto</i> • Unenclosed and enclosed Shrubland – <i>Monte Bajo</i> • Unenclosed denuded pasture lands • Plantation • Valles • Denuded ground |
| Industrial (water and mineral resources) | <ul style="list-style-type: none"> • Hydroelectric Dam • Mining Areas • Quarries |
| Communications | <ul style="list-style-type: none"> • Roads/Highways • Bridges |
| Terraces | <ul style="list-style-type: none"> • Braided Terraces • Step Terraces |
| Water source | <ul style="list-style-type: none"> • Tributary Stream • Tributary River • Main River • Reservoir |

For the municipalities in this study, agropastoralism until the late 20th century remained the largest most important economic activity on the landscape. The morphology of the territorial organisation based on agropastoralism dating back to the late medieval and Modern Periods is still clearly evident on the landscape. Rural abandonment beginning in the 1950s, saw to a near fossilisation of many of these features as fewer residents remained working on the landscape. The classes of fields and rough ground were chosen based on rural HLCs where agropastoralism has historically played a significant role in the landscape organisation to the present. For the specific historical development of the agropastoral characteristics of field types and rough ground and their morphologies typical of the borderland region, the studies of Sánchez-Gómez, Prada-Llorente, and Riesco-Chueca were consulted (Prada-Llorente, 2001, 2011, 2005; Prada-Llorente et al., 2013; Sánchez-Gómez, 1991, 1993). While other studies provide historical context and depth such as Martín-Viso's important historical research on the Duero basin of western Zamora (Martín-Viso, 1996, 2000, 2018), the non-English terminology used in the HLC and understanding of the organisation of the landscape come largely from Sánchez-Gómez and Prada-Llorente's work and is bolstered by ethnographic confirmation. A description of each broad type is provided below. These descriptions provide readers the local terminology that describes this historic agropastoral landscape.

Fields

Cortinas. These are large, irregular-shaped enclosures surrounding the nucleated settlements. Their boundaries are typified by dry stone walls that employ a vernacular construction style found only in this borderland region (Figure 5). Their structure follows a pattern of periodically placed, very large polygonal flat slabs forming the initial base, followed by supporting stones of stabilisation and fill (Figure 6) (Sánchez-Gómez, 1991). Dating these walls with precision has yet to be done, but research suggests their construction originates in the Modern Period (Romero, 2015) and as early as the medieval period (Prada-Llorente, 2005, 2011).



Figure 5. Cortinas near Pino del Oro, Spain (Photo Kyle Hearn).



Figure 6. Cortinha near Aldeia Nova, Portugal (Photo Kyle Hearn).

Rectilinear Fields. Beginning in the 19th century and continuing to the present, many of these fields were created through several types of events; municipal governments selling communal lands on the peripheries of the *cortinas* for profit, large land holdings from absentee landlords called *dehesas* in the 19th and early 20th century being sold and then partitioned into smaller plots, or large family owned *cortinas* being divided among inheritors. The boundaries of rectilinear enclosed fields resulting from the sale of these lands is varied between the traditional stone borders and more contemporary cement or wooden posts with barbed wire tied between them.

Strip fields – *longueras/llatas*. Archival information dates this broad type from the mid-13th century. They were used predominately for rye crops due to the acidity of the soil (Alfonso-Antón, 1980). The morphology of these strip fields arises from the ease of planting, ploughing, and harvesting the crops (Prada Llorente, 2005). After each generation, they were divided between the inheritors into narrower strips. Boundaries of the *longueras* are often periodically placed simple stones called *lindes*.

Communal river pastureland – *Arribanzo*. The use of these canyon lands and precipices has been documented through the archaeological finds of Iron Age pre-Roman and later Romanised hillforts (Sánchez-Palencia et al., 2018). Consisting of chaparral vegetation, this broad type is marked by largely caprine and some ovine pasturing in the less steep areas (Figure 7). From the 15th to the 20th centuries, this broad type has been used for communal pasturing along the banks of the Duero River. In the late 20th century and early 21st century, this type fell under the jurisdiction of public lands of both Spain and Portugal in the form of natural parks with the declaration of an internationally protected park zone by 2002. It is considered to be the most sensitive and therefore the most protected and regulated due to its biodiversity (Sánchez-Vicente, 2010).



Figure 7. Canyon pasture of Pino del Oro, Zamora Spain (Photo Kyle Hearn).

Rough ground

Using terminology specific to the human environmental interaction of the region, the broad types of the rough ground class encompass past and present uses of village landscape areas utilised for firewood extraction, pasturing, building materials, and now ecological preservation.

Unenclosed and enclosed shrubland and woodland – monte bajo and monte alto. The word *monte* is an umbrella term covering two broad types of vegetation, *monte alto* and *monte bajo*. Until the park declarations by the early 21st century, most woodland resources had been managed as designated communal lands. The *monte alto* (municipal communal forest land) broad type was maintained by the town halls of each village. These woodland resources were used predominately for firewood and collecting acorns as livestock feed (Prada-Llorente, 2001, p. 160; Sánchez-Gómez, 1991, p. 45). The species most common in these communal lands were the holm oak and Pyrenean oak (*Quercus ilex* and *Quercus pyrenaica*). While *monte alto* to villagers is considered a woodland, to forest engineers in Spain, it is more nuanced and defined as ‘land occupied by an arboreal mass born from seed’.⁷

Since the Middle Ages, all villages maintained both woodland and shrubland areas (Prada-Llorente, 2011, p. 35). Residents refer to *monte bajo* as shrublands. Locations of these managed areas varied but were often found in areas of difficult accessibility and/or poor soil quality. This broad type is often marked by interspersed oak and shrubland and continues to be maintained by the limited grazing that still occurs on the landscape. It is perpetuated not by seed as the *monte alto* is, but by the growth of shoots from the roots and stems of the oak species, *Quercus ilex*.⁸ Human influence has contributed to both its distribution and now its proliferation in some villages. Before the 1960s it was a broad type typically found in the periphery of the villages and was maintained by rough grazing as well as the pruning of the predominate oak species.

Challenges in adapting HLC in the duero river borderlands

HLC depends on the availability of source material such as historical maps and aerial photography. The most significant challenge for this borderland HLC has been the different, varied, and sometimes disparate source material between Spain and Portugal. Both nations, as well as regional governments, have distinct administrations and territorial organisation. Funding for these administrative bodies also can vary as well resulting in limitations to the creation as well as access to source data. Before aerial photography, government mapping of towns and provinces has also varied. Of the two countries, Spain has provided the most diverse and abundant spatial data. The Spanish National Institute of Geography (IGN) has free, plentiful, and easily downloadable historical maps with a scale covering the municipal level at 1:25 000 (Figure 8).⁹



Figure 8. Historical 1906 municipal geometric map of Villardiegua de la Ribera. Source: <https://centrodedescargas.cnig.es/CentroDescargas/index.jsp>, Obra derivada de PACON 1870-1977 CC-BY 4.0 ign.es

Archival digitised and/or georeferenced aerial photography is also readily available on the Spanish side from the flights conducted in the late 1940s and again in the 1950s by the United States Air Force. Fortunately, for much of the border zone, the 1940s photography is available for both nations via the Spanish IGN, although it is of lesser resolution than the later 1950s images which are blacked out for Portugal. Colour and black and white aerial photography from the 1970s to the present is also readily available on the Spanish side. Like the 1940s photos, many of these photographic series capture significant portions of the bordering Portuguese landscape.¹⁰

Another significant difference in spatial data between the two nations is the cadastre system utilised in Spain, which provides current information of patterns of land cover and/or land use. Portugal does not have a cadastre system for much of the country, but the state Financing Institute for Agriculture and Fisheries (ISIP) does provide information about types of land use and land cover.

Local spatial knowledge acquired from participatory mapping has proven invaluable for both nations. Combining and comparing this information with archival data has filled temporal and spatial information gaps for the HLC (Hearn, 2021). It has contributed to mitigating another discrepancy between the two nations. In the Zamora province of Castile and Leon, Spain every village has a defined political border no matter its size, political affiliation, or dependency with a larger municipality. In Portugal, smaller villages that are part of a parish are called annexed villages and do not have formally recognised borders. To overcome this, local spatial knowledge from interviews established an 'ethnographic border' known only by the villagers themselves to establish the geographic parameters required for temporal landscape analysis.

Results/discussion

Examination of the landscape character from the Modern Period to the present demonstrates the changes in land use and land cover that historical events and human decisions have had on this borderland area. The evolution of this landscape is largely marked by changes in the fields and rough ground classes. The Modern Period in this region was a consolidation of many of the landscape broad types that would last until the mass emigration that began to occur in the 1950s (Figure 9). Since the late 1990s, rural abandonment, natural park creation, and wildfires have played a significant role in the transformation of character types in the region (Figure 10). Using Aldeia Nova, Portugal and bordering Villardiegua (de la Ribera), Spain as representative samples, the percentage of change of broad types of the total village areas has been investigated.

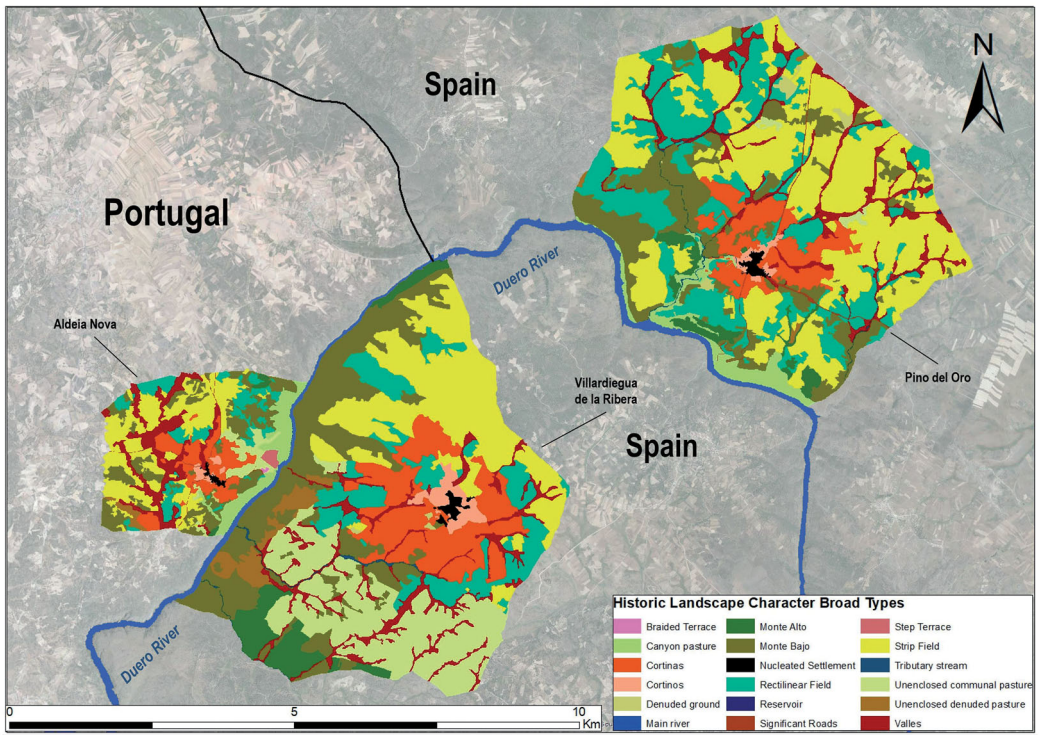


Figure 9. Broad types in the Modern Period (elaboration Kyle Hearn).

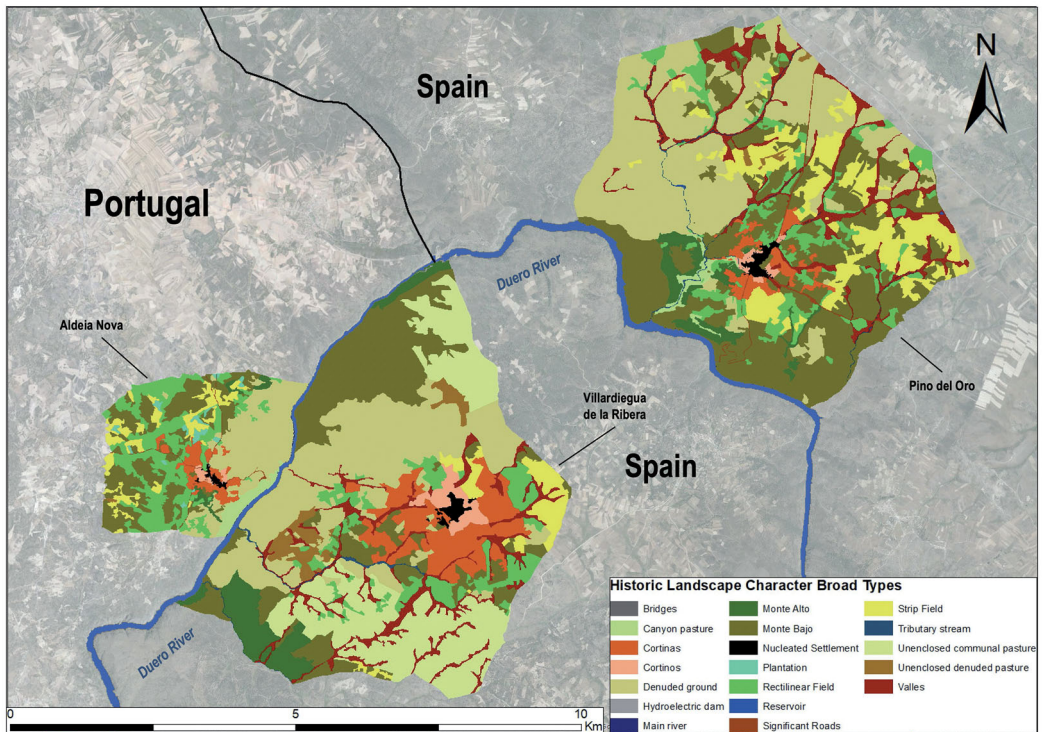


Figure 10. Broad types in the 2010s (elaboration Kyle Hearn).

Fields class

By the 17th and 18th centuries, the dry stone walled *cortinas* concentrically located around the nucleated settlements were well established and signified private use and management of these parcels for cultivation, pasturing, or wood resources. Over time some of these larger, irregularly shaped enclosures were divided among the descendants and formed smaller, more symmetrical blocks of parcels, becoming rectilinear fields. By the present day, some of these enclosures had been completely abandoned with their walls decayed and were now dense shrubland areas. Figure 11 for both villages shows the temporal decline of this broad type from 11.5% to 5.5% for Aldeia Nova and 12.8–8.4% for Villardiegua by the 2010s. In Figure 12, rectilinear fields, corresponding with the decrease of *cortinas*, increases diachronically until the 1970s. The *desamortizaciones* of the 19th century led to the sale of larger holdings from absentee secular and ecclesiastic landlords resulting in the symmetrical parcelling of these lands and increasing the quantity of rectilinear fields from 11% in Aldeia Nova in the Modern Period and peaking at roughly 36% by the 1950s and 60s. Another factor for the increase of rectilinear fields was the sale of communal lands in the 19th and early 20th centuries (Sánchez-Gómez, 1991, p. 55). According to ethnographic sources, the parcelling of lands was not as aggressive in Villardiegua as it was in Aldeia Nova as communal lands were seen as inviolable and were rarely sold. Villardiegua saw slight gains of rectilinear fields by the 19th century at 13% of the total area of the villages. Abandonment beginning in the 1950s followed by wildfires in the 2010s caused declines of rectilinear fields in both villages.¹¹ Strip fields in both villages witnessed little change until the migrations after the 1960s where shrublands began to replace these once ploughed lands (Figure 13).

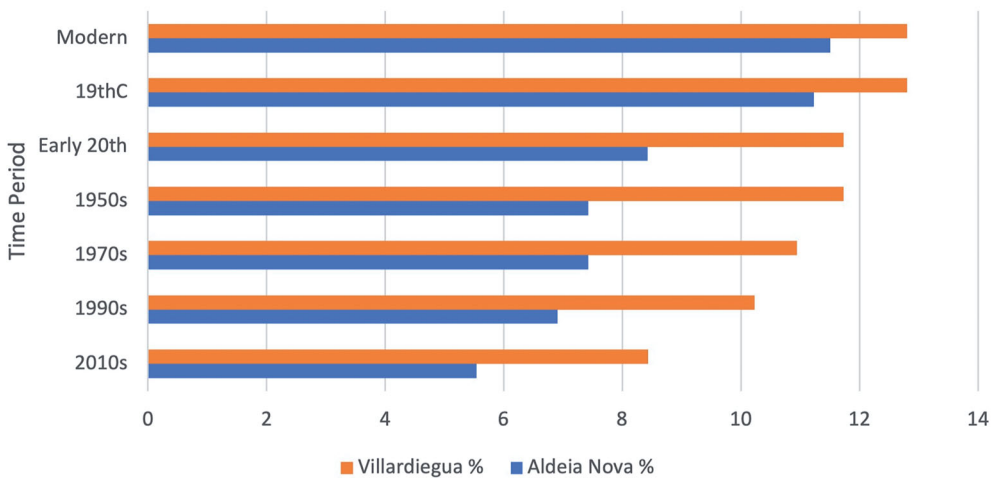


Figure 11. Temporal percentage of change of the *cortinas* broad type in Villardiegua, Spain and Aldeia Nova, Portugal (elaboration Kyle Hearn).

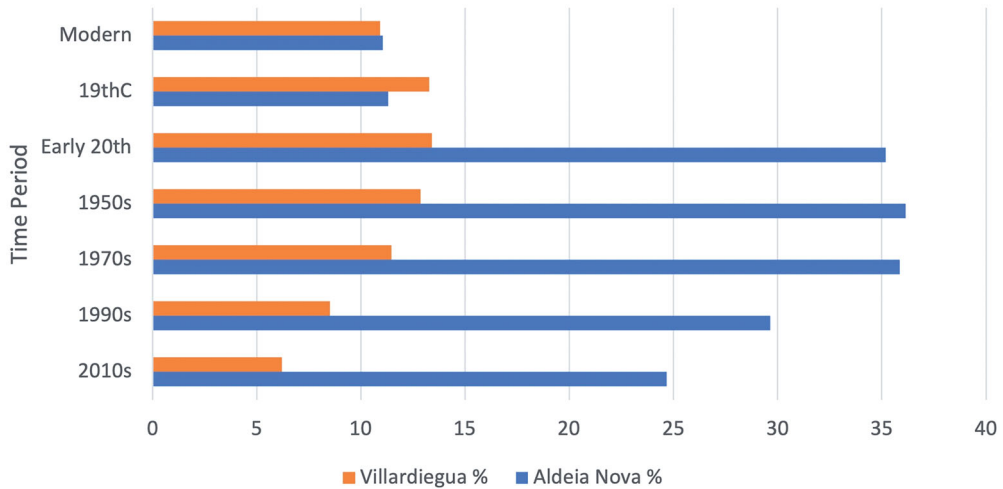


Figure 12. Temporal percentage of change of the rectilinear fields broad type in Villardiegua, Spain and Aldeia Nova, Portugal (elaboration Kyle Hearn).

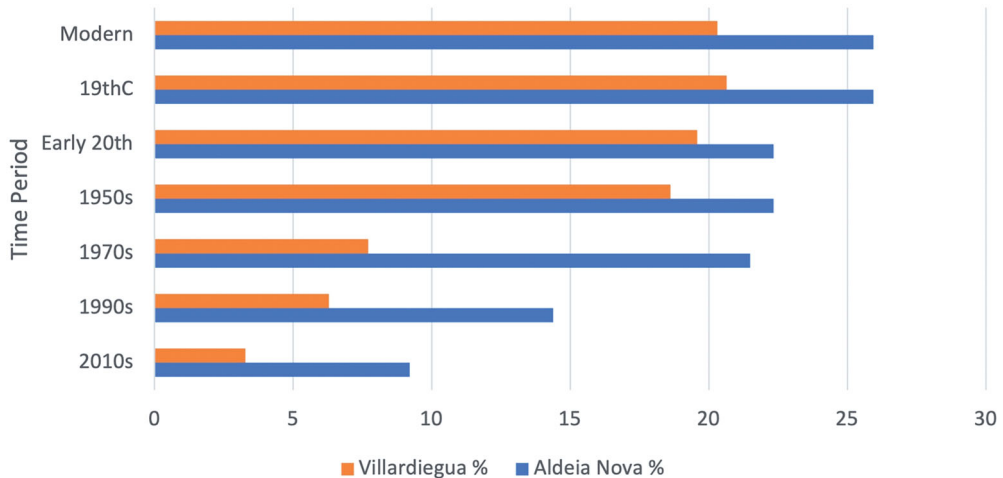


Figure 13. Temporal percentage of change of the strip fields broad type in Villardiegua, Spain and Aldeia Nova, Portugal (elaboration Kyle Hearn).

Rough ground class

The loss of population brought on by emigration in this area is evident. The population shift led to the increase of several rough ground classes and the creation of another. Shrublands, *monte bajo* increased in all three villages as well as woodlands, *monte alto* replacing other previous broad types peaking after 1990. By the 2010s, devastating wildfires burned many hectares of this broad type that is now represented as denuded ground. Canyon pasture in Aldeia Nova was also drastically affected. Plantations, a new broad type that began in the 1990s from EU-supported afforestation programs and common to the Portuguese side in this region, is reflected in Aldeia Nova in [Figure 10](#) (Nobre, 2010).

Until the continuing outmigration of the 60s and 70s, and the later park declarations of the late 1990s and early 2000s this resource was used and managed. Today, however, with the advent of the international park zone and the restrictions placed on the remaining residents, woodlands and shrublands have increased in size in areas that were once cultivated and/or pastured. As a result, species such as juniper (*Juniperus oxycedrus*) have seen an upsurge in their range in both the canyons and

high plains of the region (Marino et al., 2017). Younger oak saplings which would have been eaten by cattle or later pruned for firewood are left to grow unchecked with grasses causing a thick dry brush that is susceptible to wildfires.

Much of *monte alto* today is often the result of the lack of human interaction on the landscape for an extended period of time whereby chaparral species left unchecked have produced seed and have grown. This is the case for Villardiegua de la Ribera. It saw only increases after the 1950s and the wildfire path did not pass through its more forested zones. Aldeia Nova being smaller than Villardiegua does not have the territorial space for large portions of many broad types. It was more intensely cultivated in its smaller confines. Despite having a lesser percentage of the *monte alto* broad type, it had a pattern of rise and decline due to afforestation, abandonment, natural park creation, and consequent wildfires (Figure 14).

Shrublands, *monte bajo* saw a drastic increase between the 1950s and 1970s in Villardiegua and between 1970s and 1990s in Aldeia Nova. Reaching near parity in the 1990s largely due to abandonment, both villages saw decreases of *monte bajo* in the 2010s largely due to the wildfires which increased denuded ground (Figure 15).

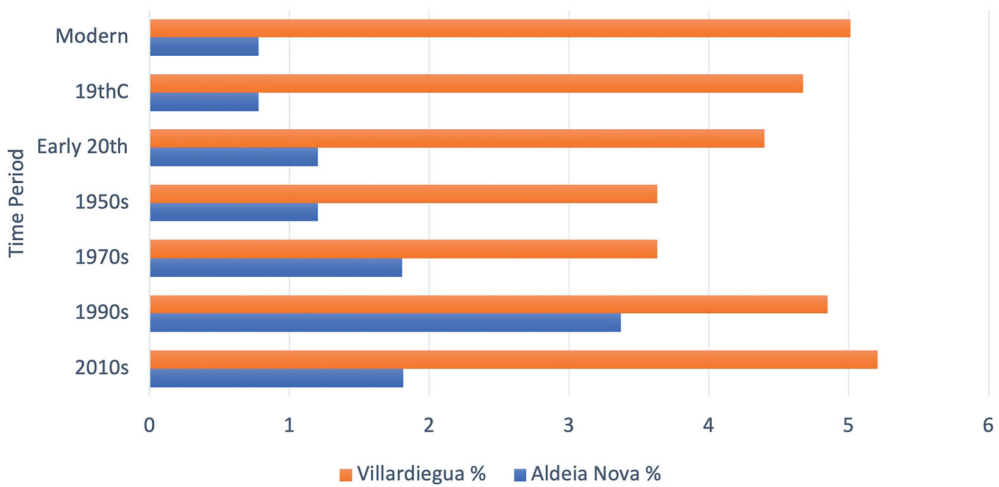


Figure 14. Temporal percentage of change of the *monte alto* broad type in Villardiegua, Spain and Aldeia Nova, Portugal (elaboration Kyle Hearn).

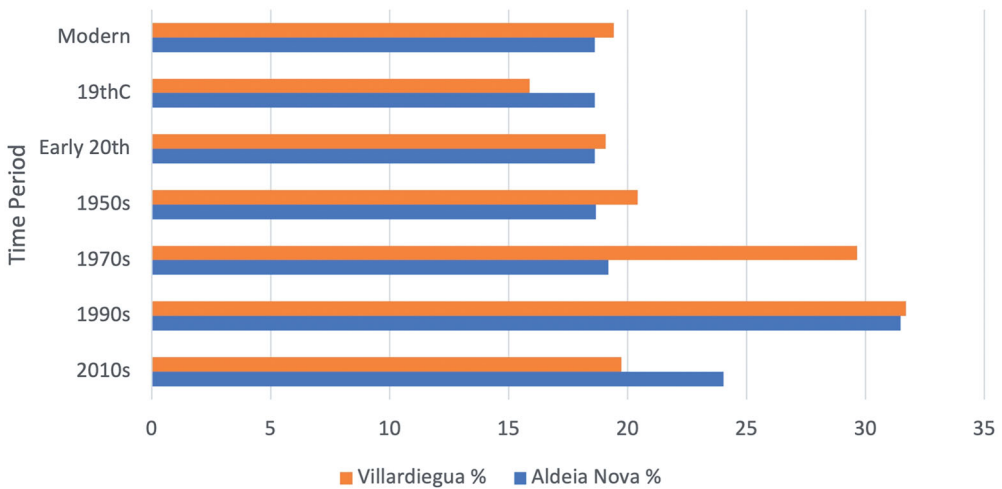


Figure 15. Temporal percentage of change of the *monte bajo* broad type in Villardiegua, Spain and Aldeia Nova, Portugal (elaboration Kyle Hearn).

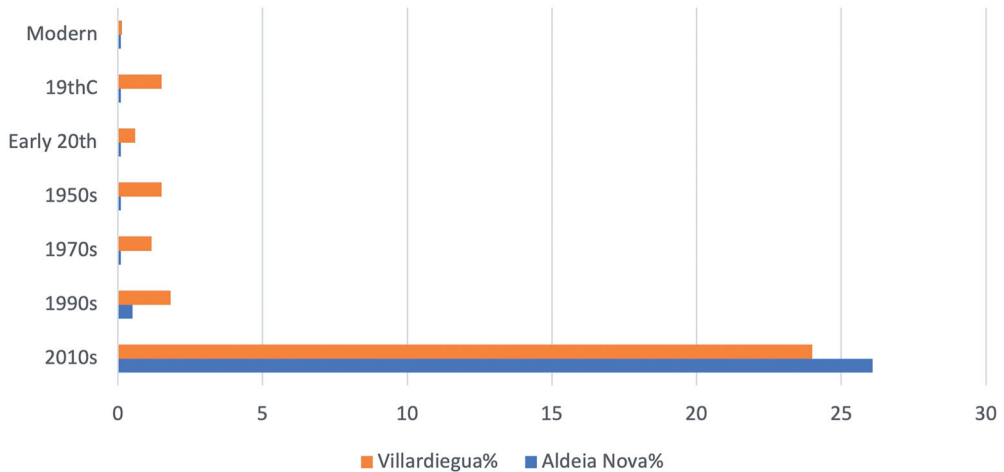


Figure 16. Temporal percentage of change of the denuded ground broad type in Villardiegua, Spain and Aldeia Nova, Portugal (elaboration Kyle Hearn).

The denuded ground broad type does include over-grazing and forest clear-cuts, but wild-fires have been the primary cause of this type. In ethnographic interviews, informants in all villages expressed that before migration, the lands were more cultivated with more pasture animals on the landscape. If fires did occur, they were quickly extinguished by a community wide effort due to the greater number of people living on and engaged in agropastoralism. [Figure 16](#) shows the drastic increase in denuded ground between the 1990s to the present in the two villages.

Conclusion

Conflict, socioeconomic inequities, and more recently climate change have made borderland regions more relevant than ever before as people live and transition through these areas. They are territories worthy of more profound understanding not just in their present state but to discern the temporal landscape changes caused by human decisions and policy. Understanding the historical development of borderland landscapes requires interdisciplinary multi-perspective approaches that can incorporate historical, archaeological, and geospatial data as well as people's perceptions.

In this study, we have adapted and demonstrated the utility of the HLC methodology in a borderland context as a tool to characterise and understand the nuanced temporal development of this international region. Despite the challenges faced by working with different cross-border datasets, the HLC, as a flexible methodology, for this region was aided with the incorporation of a defined ethnographic component. This soft data revealed common contemporary perceptions of both sides of the border landscape and was instrumental in the development of an encompassing group of broad types to effectively characterise this international region. This ethnographic data when combined with historical data aided in the explanation of the differences in the territorial evolution between nations. The temporal anthropic influence on the landscape, characterised by the HLC, complemented contemporary ethnographic perceptions of landscape change and provided new diachronic spatial data revealing the effects of landscape policy decisions and rural abandonment. The resulting maps and statistics derived from the HLC highlighted both the historical commonalities between the nations as well as their distinctiveness. In this borderland region, HLC demonstrated the consequences of rural abandonment for both countries: a decline in agropastoralism, increased vegetation, followed by a significant loss of vegetation on the landscape

due to wildfire. The effects of distinct historical landscape policies between the nations have also been highlighted in the HLC. For the Portuguese case study, a more aggressive sale and parcelling of land diachronically have been made evident through an increase in the rectilinear fields broad type. Moreover, since the 1990s, afforestation programs have contributed to an increase in vegetation. On the Spanish side, however, the policy of publicly managed watershed zones has played a significant role in maintaining or expanding broad types in the fields class in these areas. For both borderland case studies, natural park creation and its consequent effects of increased vegetation also demonstrated in the HLC are revealed as a cross-border shared issue that will require international collaboration to effectively manage in the coming years. In future studies, combining the subjective HLC approach with other more empirical spatial data sets such as remote sensing will provide a more complete image of diachronic landscape evolution.

Once a borderland's historical development is thoroughly understood and a useful and diverse array of data sources is acquired, HLC can be an effective tool to analyse temporal landscape transformation and provide adaptable models. The flexible nature of HLC spatial data can be used to inform stakeholders on how to best manage these changes from local, regional, and transnational borderland perspectives.

Notes

1. These definitions of 'border' are from the translations of the word into French, *frontière*, Spanish, *frontera*, and Portuguese, *fronteira*. Their definitions can be found at: Dictionnaire de L'Académie Française <https://www.dictionnaire-academie.fr/article/A9F1766> in French, Dicionario de la lengua Española <https://dle.rae.es/frontero> in Spanish, Dicionário Priberam <https://dicionario.priberam.org/fronteira> in Portuguese, and the Cambridge dictionary <https://dictionary.cambridge.org/dictionary/english/border>
2. The ELC of 2000 <https://www.coe.int/en/web/landscape/the-european-landscape-convention>
3. Two afforestation programs changed the landscape on the Portuguese side of border: the European Economic Community Initiatives (EEC, No 2080/92, <https://op.europa.eu/s/oJB2>) in the 1990s and the RURIS, joint EU and Portuguese government forestation program (<https://www.ifap.pt/fta-ruris-regras>) in the early 2000s (Nobre, 2010).
4. For Portugal: <https://dre.pt/application/conteudo/520437>. For Spain: <https://www.boe.es/buscar/doc.php?id=BOE-A-2002-9246>.
5. Source: <https://en.unesco.org/biosphere/eu-na/meseta-iberica>
6. The Northumberland HLC is downloadable at: https://archaeologydataservice.ac.uk/archives/view/northumberland_hlc_2015/downloads.cfm. The Tyneside and Wear HLC is available at: <https://www.ncl.ac.uk/media/wwwnclacuk/mccordcentre/files/report-2014-1.pdf>
7. https://www.mapa.gob.es/estadistica/pags/anuario/2010/AE_2010_12_Metodologia.pdf
8. https://www.mapa.gob.es/estadistica/pags/anuario/2010/AE_2010_12_Metodologia.pdf
9. Please consult the [supplementary data](#) for a description of these historical maps and aerial photography
10. Aerial photographic series do exist in Portugal, but they are not easily accessible from the two main proprietors: the Army GeoSpatial Institute and the Directorate General for the Territory. Costly to attain, they are often not digitized, downloadable, or georeferenced for GIS use.
11. A downloadable map of burn areas from 2005 to 2013 for the Portuguese region is available at: https://ssaigt.dgterritorio.gov.pt/i/Planta_de_condicionantes_30901_29.jpg.

Acknowledgments

We are grateful for the support from Almudena Orejas of the Spanish National Research Council, Eloísa Ramírez of the Universidad Pública de Navarra, and Sam Turner, Alex Turner, and Niels Dabaut of Newcastle University. Special thanks also go to Marisol Velasco Fernández of the Servicio Territorial de Medio Ambiente in Zamora, Spain for the careful preparation of the wildfire shapefiles for the study area. Open access funding provided by the Universidad Pública de Navarra.

Disclosure statement

No potential conflict of interests was reported by the author(s).

Funding

This research was supported by a doctoral research fellowship from the Universidad Pública de Navarra and support from the Institute for Advanced Social Science Research (I-COMUNITAS). Additional financial support is from the project LOKI (Local Economies, Imperial Economy: Western Iberia (II B.C.–II A.D.)) [PID2019-104297GB-I00].

Notes on contributors

Kyle P. Hearn is a doctoral candidate at the Department of Human Sciences and Education in the Patrimony, Societies, and Borderland Spaces programme at the Public University of Navarre in Pamplona, Spain. He received an MA from the University of Arizona in Latin American Studies with a concentration in cultural and natural resource management and an MA in Applied Anthropology from Oregon State University with a focus on community based resource management. His research is focussed on diachronic landscape change analysis utilising interdisciplinary approaches such as ethnography, GIS, and remote sensing.

Francesco Carrer is a Newcastle University Academic Track research fellow. A prehistoric archaeologist by training, he specialised in the study of archaeological and historical landscapes, with particular attention to mountain and pastoral landscapes. His expertise includes the use and development of GIS and statistical tools for the analysis of spatial patterns and the simulation of landscape processes. He collaborates with archaeologists, environmental scientists and landscape researchers in the UK, Italy, France, Spain, Switzerland, Austria, Turkey, and the USA and coordinates multidisciplinary fieldwork projects in the Alps. He is the UK lead for the Erasmus+ project 'PECUS – European Landscapes of Transhumance'. He is a member of national and international interest groups for the development of computational methods in landscape archaeology and history.

ORCID

Kyle P. Hearn  <http://orcid.org/0000-0003-3555-2692>

Francesco Carrer  <http://orcid.org/0000-0003-4397-4502>

References

- Alfonso-Antón, M. (1980). *La colonización cisterciense en la meseta del Duero. El dominio de Moreruela (siglos XII-XIV)* (Doctoral thesis). Universidad Complutense de Madrid.
- Barrett, G., Dingwall, L., & Gaffney, V. (2007). *Heritage management at Fort Hood Texas: Experiments in historic landscape characterisation*. Oxford: Archaeopress.
- Bolòs, J. (2010). PatHisCat: A project to discover the landscape of the past and manage the countries of the future. *Territori i Societat: El Paisatge Històric, La Caracte*, (V), 371–408.
- Bolòs, J., & Bonales, J. (2013). *Atlas històric de Menàrguens*. Menàrguens: Ajuntament de Menàrguens and la Fundació Pública Institut D'Estudis Ilerdencs.
- Bolòs, J., & Bonales, J. (2015). *Atles històric d'Almacelles. El paisatge històric d'un municipi de la comarca del Segrià des de la Prehistòria fins a l'actualitat*. Almacelles: Ajuntament D'Almacelles.
- Bolòs, J., Bonales, J., Flórez, M., & Martínez, A. (2016). *Caracterització històrica del paisatge cultural Priorat-Montsant-Siurana*. Retrieved from http://www.catpaisatge.net/pahiscat/docs/CHPC_PRIORAT-MONTSANT-SIURANA.pdf
- Cornwall County. (2011). *Cornwall historic landscape character texts (2008)* (Issue 01872). Retrieved from https://archaeologydataservice.ac.uk/archives/view/cornwall_hlc_2014/downloads.cfm.
- Crow, J., Turner, S., & Vionis, A. (2011). Characterizing the historic landscapes of Naxos. *Journal of Mediterranean Archaeology*, 24(1), 111–137. doi:10.1558/jmea.v24i1.111
- Dabaut, N., & Carrer, F. (2020). Historic landscape characterisation: Technical approaches beyond theory. *Landscapes*, 21(2), 152–167. doi:10.1080/14662035.2020.1993562
- Darby, H. (2002). *The relations of history and geography: Studies in England, France and the United States* (M. Williams, Ed.). Exeter: University of Exeter Press.
- Espinha da Silveira, L. (1993). La desamortización en Portugal. *Ayer*, 9, 29–60. <https://dialnet.unirioja.es/servlet/articulo?codigo=184867&orden=0&info=link>
- Fernandes, M. (2009). *A Ordem do Templo em Portugal (das origens à extinção)* (Doctoral thesis). Universidade do Porto.
- Friedman, S. (1996). Marc Bloch, sociology and geography: Encountering changing disciplines. In *Cambridge studies in historical geography*. Cambridge: Cambridge University Press. doi:10.1017/CBO9780511584732
- Gallego-Martínez, D., Blanco, J., Sebastián-Amarilla, J., Pineda, J., & Blanco, S. (2002). Política forestal y producción de los montes públicos españoles: Una visión de conjunto, 1861-1933. *Revista de Historia Económica - Journal of Iberian and Latin American Economic History*, 20(3), 509–541.

- Glick, T. (2003). Early Christian agriculture. In M. Gerli (Ed.), *Medieval Iberia: An encyclopedia* (pp. 38–42). Boca Raton, FL: Routledge.
- Hearn, K. (2021). Mapping the past: Using ethnography and local spatial knowledge to characterize the Duero River borderlands landscape. *Journal of Rural Studies*, 82, 37–53. doi:10.1016/j.jrurstud.2021.01.024
- Herring, P. (1998). *Cornwall's historic landscape: Presenting a method of historic landscape character assessment*. Truro: Cornwall County Council and English Heritage.
- Lambrick, G., Hind, J., & Wain, I. (2013). *Historic landscape characterisation in Ireland: Best practice guidance*. Kilkenny: Heritage Council.
- Marino, J., Bergua, S., & Piedrabuena, M. (2017). The vegetal heritage in the Zamoran Arribes del Duero: The formations of the juniper forests of *Juniperus oxycedrus* L. subsp. *badia* (H. Gay) Debeaux. *Cuadernos Geográficos*, 56(3), 90–115.
- Marques, J. (2011). A emigração portuguesa em tempos de imigração. *Polígonos. Revista de Geografia*, 20, 115–129. <https://doi.org/10.18002/pol.v0i20.52>
- Martín-Viso, I. (1996). Una comarca periférica en la Edad Media: Sayago, de la autonomía a la dependencia feudal. *Studia Historica. Historia Medieval*, 14, 97–155.
- Martín-Viso, I. (2000). *Poblamiento y estructuras sociales en norte de la Península Ibérica: Siglos VI-XIII*. Salamanca: Ediciones Universidad de Salamanca.
- Martín-Viso, I. (2018). Organización campesina y dominios en la cuenca del Duero medieval. *Sociedades Precapitalistas*, 7(2), 1–15.
- Nobre, S. (2010). Apoio à florestação de terras agrícolas: o caso do Planalto Mirandês e da Terra Fria. In *VIII Colóquio Ibérico de Estudos Rurais* (p. 17). Lisbon: Asociación Española de Economía Agraria, Sociedad Portuguesa de Estudios Rurales.
- Pérez-Soba, I. (2013). Los montes de utilidad pública: un patrimonio con mucho pasado y mucho futuro. *Ambienta*, 104, 54–72.
- Prada-Llorente, E. (2001). *Sayago: Evolución histórica y proyección futura de su estructura territorial* (Doctoral thesis). Escuela Técnica Superior de Arquitectura de Madrid.
- Prada-Llorente, E. (2005). Paisaje agrario: Antropología de un territorio. *Ciudad y Territorio. Estudios Territoriales*, XXXVII(154), 343–372.
- Prada-Llorente, E. (2011). *Paisaje agrario transfronterizo. Estudio comparado Tierra de Sayago (Zamora)-Concelho de Miranda (Distrito de Braganza)*. Retrieved from https://www.mapa.gob.es/es/ministerio/servicios/informacion/sayago_miranda_tcm30-103103.pdf
- Prada-Llorente, E. (2016). Paisajes de enlace para el clima: la costumbre trasterminante y el aprovechamiento de rastrojeras en la provincia de Zamora. In *Pastores: Trashumancia y Ganadería Extensiva* (pp. 43–69). Zamora: Fundación Caja Rural de Zamora.
- Prada-Llorente, E. (2017). Redes y archi-texturas del paisaje ibérico. Trasterminancia en la frontera del Duero. *Ambienta*, 120, 124–139. https://www.miteco.gob.es/app/publicaciones/art_datos.asp?articuloId=1764&codre- vista=AM
- Prada-Llorente, E., Riesco-Chueca, P., & Herrero, T. (2013). Paisaje e imagen: Formas y herencias en la construcción cultural del territorio agrario. *Estudios Geográficos*, 74(275), 557–583. doi:10.3989/egregor
- Puckett, H. (2013). *A cultural landscape study and history of the San Francisco Mining District and Frisco, Southwest Utah, United States* (Doctoral thesis). University of Birmingham.
- Romero, D. (2010). El contexto arqueológico: el yacimiento de El Picón. In I. Sastre & A. Beltrán (Eds.), *El bronce de El Picón (Pino del Oro). procesos de cambio en el occidente de Hispania* (pp. 39–50). León: Junta de Castilla y León. <https://patrimoniocultural.jcyl.es/web/jcyl/PatrimonioCultural/es/Plantilla100Detalle/1284217981403/Publicacion/1284223058927/Redaccion>
- Romero, D. (2015). *Territorio y formaciones sociales en la zona Astur-Lusitana del Duero* (Doctoral thesis). Universitat de Valencia, Valencia, Spain.
- Sánchez-Gómez, L. (1991). *Sayago: ganadería y comunalismo agropastoril*. Zamora: Caja España.
- Sánchez-Gómez, L. (1993). *Las dehesas de Sayago: explotación, trabajo y estructura social*. Zamora: Caja España.
- Sánchez-Gómez, L. (1995). Cows, sheep, peasants and landowners. The social logic of animal spaces in a rural region of Western Spain. *Anthropozoologica*, 21, 55–62. <https://sciencepress.mnhn.fr/sites/default/files/articles/pdf/az1995n21a5.pdf>
- Sánchez-Palencia, J. (2012). La minería Romana de Pino del Oro y de su entorno inmediato (Zamora.) In J. Sánchez-Palencia (Ed.), *Minería Romana en Zonas Interfronterizas de Castilla y León y Portugal* (pp. 181–214). León: Junta de Castilla y León.
- Sánchez-Palencia, J., & Beltrán, A. (2015). *Minería y civitates del noreste de Portugal (MinCINEP IV) Memoria de la campaña (2014-15)*. Unpublished.
- Sánchez-Palencia, J., Beltrán, A., Romero, D., Alonso, F., & Currás, B. (2010). *La zona minera de Pino del Oro (Zamora) guía arqueológica*. Retrieved from https://bibliotecadigital.jcyl.es/es/catalogo_imagenes/grupo.do?path=10111562

- Sánchez-Palencia, J., & Currás, B. (2010). El contexto geoarqueológico: La zona minera de Pino del Oro. In I. Sastre & A. Beltrán (Eds.), *El Bronce de Picón (Pino del Oro). Procesos de cambio en el occidente de Hispania* (pp. 15–38). Valladolid: Junta de Castilla y León.
- Sánchez-Palencia, J., Romero, D., & Beltrán, A. (2018). Enclosures and settlement strategies in the Arribes del Duero (Zamora-Bragança). In *Archaeology in the River Duero Valley* (pp. 147–173). Cambridge: Cambridge Scholars Publishing.
- Sánchez-Vicente, D. (2010). Arribes del Duero: Una vision interdisciplinar. In P. Ramos-Castellanos (Ed.), *El Hombre y el Medio Ambiente* (pp. 214–244). Salamanca: Ediciones Universidad de Salamanca.
- Turner, S. (2018). Historic landscape characterisation: An archaeological approach to landscape heritage. In G. Fairclough, I. Sarlöv Herlin, & C. Swanwick (Eds.), *Routledge handbook of landscape character assessment* (pp. 37–50). Boca Raton, FL: Routledge. doi:10.4324/9781315753423-3
- Turner, S., Bolòs, J., & Kinnaird, T. (2018). Changes and continuities in a Mediterranean landscape: A new interdisciplinary approach to understanding historic character in western Catalonia. *Landscape Research*, 43(7), 922–938. doi:10.1080/01426397.2017.1386778
- Turner, S., & Fairclough, G. (2007). The archaeology of landscape character in Europe. In D. Hicks & L. McAtackney (Eds.), *Envisioning landscape: Situations and standpoints in archaeology and heritage* (pp. 120–145). Walnut Creek, CA: Left Coast Press.
- Vilar, J. (2000). Las emigraciones españolas a Europa en el siglo XX: Algunas cuestiones a debatir. *Migraciones & Exilios. Cuadernos AEMIC*, 1(1), 131–159.
- Williams, L. (2008). *02 Landscape of Northumberland*. Retrieved from <https://bit.ly/3tdW4Ap>
- Williamson, T. (2007). Historic landscape characterisation: Some queries. *Landscapes*, 8(2), 64–71. doi:10.1179/lan.2007.8.2.64