

# TRANSHUMANCE

Papers from the International  
Association of Landscape  
Archaeology Conference, Newcastle  
upon Tyne, 2018

Edited by Mark Bowden and Pete Herring



Access Archaeology



# About Access Archaeology

*Access Archaeology* offers a different publishing model for specialist academic material that might traditionally prove commercially unviable, perhaps due to its sheer extent or volume of colour content, or simply due to its relatively niche field of interest. This could apply, for example, to a PhD dissertation or a catalogue of archaeological data.

All *Access Archaeology* publications are available as a free-to-download pdf eBook and in print format. The free pdf download model supports dissemination in areas of the world where budgets are more severely limited, and also allows individual academics from all over the world the opportunity to access the material privately, rather than relying solely on their university or public library. Print copies, nevertheless, remain available to individuals and institutions who need or prefer them.

The material is refereed and/or peer reviewed. Copy-editing takes place prior to submission of the work for publication and is the responsibility of the author. Academics who are able to supply print-ready material are not charged any fee to publish (including making the material available as a free-to-download pdf). In some instances the material is type-set in-house and in these cases a small charge is passed on for layout work.

Our principal effort goes into promoting the material, both the free-to-download pdf and print edition, where *Access Archaeology* books get the same level of attention as all of our publications which are marketed through e-alerts, print catalogues, displays at academic conferences, and are supported by professional distribution worldwide.

The free pdf download allows for greater dissemination of academic work than traditional print models could ever hope to support. It is common for a free-to-download pdf to be downloaded hundreds or sometimes thousands of times when it first appears on our website. Print sales of such specialist material would take years to match this figure, if indeed they ever would.

This model may well evolve over time, but its ambition will always remain to publish archaeological material that would prove commercially unviable in traditional publishing models, without passing the expense on to the academic (author or reader).



# Transhumance

Papers from the International Association  
of Landscape Archaeology Conference,  
Newcastle upon Tyne, 2018

Edited by Mark Bowden and Pete Herring

**Access Archaeology**





ARCHAEOPRESS PUBLISHING LTD  
Summertown Pavilion  
18-24 Middle Way  
Summertown  
Oxford OX2 7LG

[www.archaeopress.com](http://www.archaeopress.com)

ISBN 978-1-80327-128-6  
ISBN 978-1-80327-129-3 (e-Pdf)

© the individual authors and Archaeopress 2021

Cover: Summer hut first erected in 1520 in the Litschen valley, Axalp, Switzerland, now rebuilt at the Ballenburg museum, Brienz (photo: Pete Herring).



LANDSCAPE  
SURVEY GROUP

All rights reserved. No part of this book may be reproduced, stored in retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying or otherwise, without the prior written permission of the copyright owners.

This book is available direct from Archaeopress or from our website [www.archaeopress.com](http://www.archaeopress.com)

# Contents

<b>Contributors</b> .....	v
<b>Preface</b> .....	viii
<b>1. Introduction: the recognition of transhumance in Britain</b> .....	1
Mark Bowden <i>and</i> Pete Herring	
<b>2. Evidence for transhumance in British prehistory</b> .....	11
Mark Bowden	
<b>3. ‘Frequently the winter grazing grounds are many miles away from the summer ones’ .....</b>	<b>23</b>
<b>(Varro, de r.r. 2.2.9): a review of recent historical, anthropological and archaeological approaches to transhumance in Central and Southern Italy</b>	
Marinella Pasquinucci	
<b>4. The TraTTo project: paths and pastures from prehistory to modern times in Southern Tuscany: research approaches and activities</b> .....	<b>43</b>
G. Pizziolo, M. De Silva, N. Volante, D. Cristoferi <i>and</i> A. Zagli	
<b>5. Response diversity and the evolution of pastoral landscapes in the western Pyrenees Transhumance</b> .....	<b>63</b>
Ted L Gragson, Michael R. Coughlan, <i>and</i> David S. Leigh	
<b>6. Smart ways through the downs: cross-ridge dykes as markers of Late Bronze Age and Early Iron Age transhumance routes across the South Downs, Sussex, UK</b> .....	<b>77</b>
David Lea, Judie English <i>and</i> Dick Tapper	
<b>7. Extremes of British transhumance: Bronze Age and Inter-War; Dartmoor and Lewis</b> .....	<b>93</b>
Pete Herring	
<b>8. Intangible cultural heritage of transhumance landscapes: their roles and values</b> .....	<b>111</b>
– <b>examples from Norway, France and Spain</b>	
Bolette Bele, Véronique Karin Simon Nielsen, Almudena Orejas <i>and</i> José Antonio Ron	

## List of Illustrations

Cover image: Summer hut rebuilt at the Ballenburg open-air museum, Brienz, Switzerland. (Photograph Pete Herring)

Fig. 1.1: Group of ruins of huts on Brockabarrow Common, Bodmin Moor (Cornwall). (Photograph Pete Herring)

Fig. 1.2: Archaeologists discussing transhumant life with Pietro Romano, Monte Maro, Molise, Italy, August 1982. (Photograph Richard Hodges)

Fig. 1.3: The archaeology of transhumance on Spitzhoren near Gimmelwald in the Bernese Oberland, Switzerland. (Photograph Pete Herring)

Fig. 1.4: Summer hut rebuilt at the Ballenburg open-air museum, Brienz, Switzerland. (Photograph Pete Herring)

Fig. 1.5: Interior of summer hut seen in Fig. 1.4. (Photograph Pete Herring)

Fig. 2.1: Survey of shieling structures in the Cautley Valley (Cumbria). (Re-drawn from Bowden 1996, fig 4)

Fig. 2.2: Ingleborough (North Yorkshire). (Re-drawn from Bowden *et al* 1989, fig 1)

Fig. 2.3: Yarnbury hillfort (Wiltshire). (Re-drawn from an original by Mark Corney)

Fig. 2.4: Montpelier, Druidale, Isle of Man. (Re-drawn from an extract of a survey by the RCHME)

Fig. 3.1: Transhumant flocks: the 'tratturo' Pescasseroli-Candela in 1920. (Courtesy Archivio Fotografico Di Loreto)

Fig. 3.2: Italy: geographical names mentioned in the paper. (Drawing by G. Bonino, Genoa)

Fig. 3.3: Sulmona (L'Aquila), Museo Civico Archeologico, relief (1st. cent. AD). (Deutsches Arch. Inst. Rome, neg. 34.362)

Fig. 3.4: Saepinum (Sepino), the ancient drove-road and Roman via Minucia, later 'tratturo' Pescasseroli-Candela, enters the Boiano Gate. On the right, the inscription CIL 9, 2438. (Deutsches Arch. Inst. Rome, neg. 78.1471)

Fig. 3.5: Map of the main drove roads linking the district of L'Aquila with Foggia and south-east Italy. (Drawing by G. Bonino, Genoa)

Fig. 3.6: Foggia, Archive of the Customs of Foggia: map of the pasturage in the Foggia district. (Foggia, Archivio di Stato, Sez. Fotoriproduzione, lav. 329)

Fig. 3.7: Peluvinum (Ansindonia): the Roman drove road and via Claudia nova, later a 'tratturo', enters the town from west. (Ministero Beni Culturali e Ambientali, Aerofototeca, conc. 217, 21/05/64)

Fig. 3.8: The 'tratturo' Foggia-Ofanto crosses the Ofanto river on a Roman bridge. (Ministero Beni Culturali e Ambientali, Aerofototeca, conc. 407, 31/ 07/69)

Fig. 3.9: Map of the tratturo Celano-Foggia near Sulmona. (Foggia, Archive of the Customs of Foggia: Reintegre E. Capecelatro 1651-1656)

Fig. 3.10: ‘Shepherds penning their sheep, campagna’. (Etching by C. Coleman, Rome, 1850)

Fig. 3.11: Traditional enclosures in rope, Abruzzo, summer 1913. (Courtesy Archivio Fotografico Di Loreto)

Fig. 4.1: Historical transhumance in Tuscany: the Maremma area. (Source: Cristoferi 2020)

Fig. 4.2: The historical sources of the TraTTo project: a timeline.

Fig. 4.3: Topographical map of the study area.

Fig. 4.4: Field survey activities in Maremma Regional Park.

Fig. 4.5: Maremma Regional Park, Alberese: survey units.

Fig. 4.6: Maremma Regional Park, Alberese: modern sheep track and survey units.

Fig. 4.7: A shepherd and his herd exiting the city of Siena. Ambrogio Lorenzetti, The Buon Governo frescoes: detail. Siena, the Public Palace, 1337-1339. (Source: [www.wikimedia.com](http://www.wikimedia.com))

Fig. 5.1: Location of Larrau and the Soule Valley in the western Pyrenees on the border between France and Spain.

Fig. 5.2: The social subnetworks of shepherds in the territorial community of Soule in 1830 and their associated metrics.

Fig. 5.3: Flow of sheep from village-of-origin to inholdings and density of sheep within the commune of Larrau.

Fig. 5.4: The communal lands of Soule Valley within the commune of Larrau near Pic de Bizkarze. (Photograph Ted Gragson)

Fig. 6.1: The location of the South Downs Cross-Ridge Dyke Project study area.

Fig. 6.2: The location of possible north – south routes through the South Downs discussed in the text.

Fig. 6.3: Topography of the A23 route.

Fig. 6.4: Topography of the A24 route.

Fig. 6.5: Topography of the A285 route.

Fig. 6.6: Topography of the A286 route.

Fig. 6.7: Topography of the Ems and Lavant valleys routes.

Fig. 6.8: Ems and Lavant valleys route.

Fig. 6.9: Bronze Age settlements on the coastal plain and downs between Hayling Island and Chichester. (Data derived from Seager Thomas 2008; 2016 and the relevant Historic Environment Records)

Fig. 7.1: The cist on Whitehorse Hill, Dartmoor (Devon). (© Cornwall Archaeological Unit)

Fig. 7.2: Selection of beads found in the Whitehorse Hill cist. (© Cornwall Archaeological Unit)

Fig. 7.3: Replicas of ornaments found in the Whitehorse Hill cist. (© Dartmoor National Park Authority)

Fig. 7.4: Hut attached to a prehistoric boundary on Roughtor, Bodmin Moor (Cornwall).

Fig. 7.5: James Chapman's 1807-9 survey of Lewis as reduced by William Johnson in 1821: detail. (Reproduced with permission of the National Library of Scotland)

Fig 7.6: Loch Scarabhat Mhòr. (Photograph © Richard Webb)

Fig. 7.7: Kenina Macphail and her sisters, 1931. (Reproduced with permission of Kathryn Morrison)

Fig. 8.1: Map showing location of study areas.

Table 8.1: Characteristics of transhumance activities in the three study areas.

Table 8.2: Resources utilised in the three study areas.

Fig. 9.1: Cattle in Les Paturages de la Balme, near Contamines-Montjoie, France. (Photograph Pete Herring)

## Contributors

**Bolette Bele** is a researcher at the Norwegian Institute of Bioeconomy Research (NIBIO), Department of Landscape and Biodiversity. Her main research interests are traditional and ecological land-use aspects of cultural landscapes. More specifically, she focuses on intangible and biological heritage in landscapes, traditional land use practices, and the restoration and management of semi-natural nature types for maintaining biodiversity. She is involved in several national and European projects and has extensive experience in the field.

**Mark Bowden** joined the staff of the Royal Commission on the Historical Monuments of England in 1986 and subsequently worked as a Senior Archaeological Investigator at English Heritage and then Historic England until he retired in 2020. His research interests include landscape archaeology, hillforts, castles, designed landscapes, common land and the history of archaeological survey. He has published widely on these and related issues and has contributed to guidance and training courses on archaeological survey and investigation. He was Chair of the Landscape Survey Group from 2014 to 2021.

**Michael R. Coughlan** is a faculty research associate at the University of Oregon's Institute for Sustainable Environment. He received his doctorate from the University of Georgia in 2013. His research interests center broadly on human-landscape dynamics and the long-term interplay of land use and management, social institutions, and human agency through an approach that combines qualitative and quantitative methods informed by theory and method in cultural anthropology, archaeology, landscape ecology and geospatial science (GIS). He has topical interests in landscape fire (both 'wildfire' and 'prescribed fire'), sustainable forest management, and the long-term sustainability and conservation of soils and water.

**Davide Cristoferi** is FWO post-doctoral researcher in Economic and Social History at Ghent University and *maitre d'enseignement* at the Université Libre de Bruxelles. His research studies economic inequality by focusing on different mechanisms of expropriation, management and redistribution of land and land revenues across Tuscany and, in a comparative perspective, Western Europe in the late Middle Ages. In this regard, he studied the development of transhumance and the public management of common land in late medieval Southern Tuscany during his PhD at the University of Siena (2016).

**Michele De Silva** is a historical geographer and landscape archaeologist. Since 2000 he has taught different courses at the University of Florence and at the University of Siena, in the fields of geography, archaeology and digital humanities. He is technical manager of the LiEC (Laboratorio Interdisciplinare sulle Eredità Culturali -Interdisciplinary Lab for Cultural Heritage) at the Department of History, Archaeology, Geography, Fine and Performing Arts (SAGAS) University of Florence. He has developed GIS studies and historical geography research on rural landscapes and on the transhumance phenomenon in Tuscany since 2003. He is involved in the TraTTO project since 2015 and is responsible of the GIS management and historical cartography.

**Judie English** was engaged for many years in medical research during which time involvement with rescue excavation was replaced by a fascination with landscape archaeology. She completed a doctoral thesis on Bronze Age field systems under the supervision of the late Peter Drewett and has undertaken a number of analytical surveys of monuments in Surrey and Sussex.

**Ted L Gragson** is professor of Anthropology and Head of the Department of Anthropology at the University of Georgia. He previously served as IdEx Chair at the Université Toulouse and retains a collaborator appointment at that institution with the Laboratoire TRACES. He received his doctorate from The Pennsylvania State University in 1989. His research focuses on millennial landscape transformation during the Holocene (past 10,000 years) with a particular interest in how humans

manipulate and shape the landscape through their use and management activities. His recent research has centered on the Southern Appalachian Mountains of North Carolina and Georgia, USA, the Pyrenees Mountains of southern France, and the Ebro River Basin of Spain.

**Pete Herring** is a widely published landscape archaeologist and historian whose work began with examination of Brown Willy and Bodmin Moor in Cornwall for post-graduate research. Twenty-five years of landscape survey, research and characterisation in Cornwall were followed by 11 years working for Historic England in their Characterisation and Assessment teams. He returned to Cornwall Council to draft a Heritage Strategy for Cornwall before retiring in 2020. His interests range from Mesolithic flint scatters, Bronze Age stone rows, Iron Age cliff castles, medieval open fields and commons, deer parks, turf-cutting, tin mining and granite quarrying to suburbia. But transhumance remains a special passion.

**David Lea**, after a career in aviation, became involved in many excavations in Sussex and Hampshire, completing a Certificate and Diploma in Archaeology followed by an MA in Field Archaeology at the University of Sussex. He then moved on to landscape archaeology and involvement in analytical surveys of field systems and hillforts in Sussex and Surrey. David was a founding member of the Landscape Survey Group. Sadly, he died shortly before this book went to press.

**David S. Leigh** is a professor of Geography and the Director of the Geomorphology Laboratory at the University of Georgia. He received his doctorate from the University of Wisconsin in 1991. His research focuses on the geomorphic and stratigraphic expression of environmental change during the late Quaternary period (past 130,000 years) with complementary emphasis on geoarchaeology and site formation processes. His recent research areas include the Mixteca highlands of south-central Mexico, the Pyrenees Mountains of southern France, and the Blue Ridge Mountains of North Carolina, USA, where he examines millennial-scale effects on landscapes and soils caused by changes in land-use practices.

**Almudena Orejas** is a researcher in the Department of Archaeology and Social Processes (Institute of History), belonging to the Spanish Council for Scientific Research (CSIC). Her research focuses on landscape archaeology, particularly on ancient mining and agrarian landscapes. She has chaired several national and European projects and has contributed to more than 200 academic publications. She is involved in programmes oriented towards the promotion of cultural landscapes as heritage.

**Marinella Pasquinucci** was full Professor of Ancient Topography and Professor of Maritime Archaeology, Professor for Doctoral courses in Classical Archaeology and in Ancient History (University of Pisa). She teaches ancient topography for specialized courses in archaeology (University of Florence). Her main research interests are landscape archaeology, western Mediterranean trade, and archaeometry of Roman pottery. She was a member of several European projects (ESF, Human Capital and Mobility, INTERREG, Culture 2000, ERASMUS, etc.) and of international research groups (Roman Craft and Trade [Leuven]; *Le monde insulaire en Méditerranée* [CNRS]; *Espaces intégrés et gestion des ressources naturelles dans l'Empire romain* [Quebec, Université Laval]). She is a member of the Comité de lecture of *Mélanges de l'École française de Rome*; an editorial board member of *Agri centuriati*; *Saguntum*; *Studi Liguri*; and an advisory board member for the *European Journal of Archaeology* (2016–2019; 2019–2022) and for the THEMES in Contemporary Archaeology monograph series (2019–2022).

**Giovanna Pizziolo** is senior researcher in Prehistory, Department of History and Cultural Heritage, and Director of the Master Degree course in “Geotechnologies applied to Archaeology” at the University of Siena. Her research focuses on prehistoric landscape and intrasite analysis of prehistoric dwelling and funerary contexts in Italy (from Mesolithic to Bronze Age). During several field survey activities

carried out also abroad (Europe and Africa) she developed different methods for the analysis of prehistoric settlement strategies and exploitation of natural resources. Her research studies deal also with questions related to prehistoric “hidden landscapes” in Italy. She proposes comparative studies on the assessment of archaeological potential at intrasite and intersite levels including the application of predictive modeling. Since 2015 she has been involved in the Tratto project and is responsible for prehistoric issues and field survey activities.

**José Antonio Ron Tejedo** is an archaeologist trained at the University of Oviedo. He specialises in ethno-archaeology, archaeological survey, and excavations, focusing on rural and mountainous areas in northern Spain. He is also a specialist in cultural heritage assessment and historic roads. He is a member of the IVGA project team, and he has been coordinator of the Network of Ethnographic Museums of Asturias.

**Véronique Karin Simon Nielsen** is a researcher at the Norwegian Institute for Cultural Heritage Research (NIKU), Department of Heritage and Society. Educated as an architect and a landscape researcher, she has professional and academic experience in architecture, cultural landscape approaches, and cultural heritage issues. Her research interests are topics related to heritage and landscape values in sensitive environments, localised geographical practices, and citizens’ participation. She is involved in several national and EU-funded research and innovation projects.

**Dick Tapper** after a career in finance and volunteering on various excavations, completed a Certificate and Diploma in Archaeology at the University of Sussex, writing a paper on Bronze Age hoards. Dick then spent two years at the Institute of Archaeology, London, obtaining a Masters degree in Practical Archaeology. He then returned to Sussex where he obtained his Doctorate re-excavating Black Patch, a Bronze Age site in Sussex.

**Nicoletta Volante** has been a Researcher since 2005 at the Department of History and Cultural Heritage of the University of Siena. She deals with prehistoric archaeology of the Neolithic and Metal Age periods in Central and Southern Italy, with particular attention to the relationship between man and the environment, focusing on the reconstruction of archaeological contexts and on natural resources and their exploitation. She is interested in ancient technology and methodological issues applied to the typological and technological analysis of artefacts (ceramic, stone and metal). She practices experimental archaeology in archaeological research and in public engagement.

**Andrea Zagli** is Associate Professor of Modern History, University of Siena, Department of History and Cultural Heritage, Director of the Master’s degree in ‘History and Philosophy’ and scientific manager of the TraTTo Project. His research fields are rural and environmental studies, and the social and economic history of the Early Modern Age. In the last decade, his research interests have widened to Florentine patrician private archives (Niccolini and Serristori in depth). He has published several works about the modern history of Tuscany. Since 1987 he has been a member of the Editorial Board and Scientific Committee of the historical review *Ricerche Storiche*.

## Preface

This volume stems from a Conference session at LAC2018, the fifth biennial Landscape Archaeology Conference organised by the International Association of Landscape Archaeology, which was held at the Universities of Newcastle and Durham in September 2018. The session was organised by the Landscape Survey Group and chaired by the editors.

The themes we asked our contributors to consider in the conference session were how transhumance in the British Isles (and elsewhere) might have:

- worked in a practical sense, within households and communities;
- originated, developed and declined;
- impacted social practice;

and what material and environmental impacts were left by transhumant practices on the landscape – i.e. what is the archaeological evidence?

In the event they approached these already rather broad questions rather widely – geographically, chronologically and methodologically – but we didn't think that this was a bad thing on the whole. Our starting point is that, though transhumance has been widely, deeply and well studied in other parts of Europe and the wider world, its study is still in its infancy in Britain – and especially in England – so a broad approach is justified. This volume could therefore be regarded as contributing to setting up the scene and themes for future work.

Not all the papers presented at the conference session are included here. Eugene Costello (on the ethnoarchaeology of the experience of young women in summer settlements in Ireland, Scotland, and Scandinavia), Andrew Fleming (on transhumance as a persistent cultural practice that can be modelled and found in later prehistoric central and southern England) and Karen Milek, with Alexander Oehler and David Anderson (on the material and environmental imprints of current and recent multiple human-animal communities in the extreme north of Eurasia) decided not to publish their papers here on the grounds that they were already published, or due to be published, elsewhere. The reader is referred to these works (Costello 2017; 2018a; 2018b; Fleming forthcoming; Kupiec *et al.* 2016; Kupiec and Milek 2018).

In the end two other contributors were also unable to contribute due to pressure of other work. They are Adrian Chadwick (on the archaeological evidence for later prehistoric and Romano-British transhumance that exploited seasonal availability of grazing in floodplains in England) and Igor Kulenović, with Šime Vrkić and Neda Kulenović (on regarding the landscape of the Velebit Mountain in Croatia in terms of the embodied practice of transhumance, where movement, and the tracks, hamlets and graves associated with it are not simply related to means of transportation but form an ontologically constitutive element of everyday life). On the other hand an extra paper, by one of the editors (MB), which had been withdrawn from the conference proceedings due to time constraints has been added here. Sadly, David Lea, the lead author of paper number 6 in this collection, died shortly before the book went to press.

The reader may wish to note that in papers dealing with Britain elevation measurements are expressed as metres OD, meaning above Ordnance Datum. Elsewhere elevations are expressed as m.a.s.l., or metres above sea level. There is effectively no difference between the systems.

The editors are extremely grateful to all the contributors to the conference and especially to those whose work appears here despite the unconscionable delays in publication caused by circumstances

beyond the editors' control, or which they failed to control. They also thank the LAC 2018 Organising Committee, especially Graham Fairclough and Sam Turner, and two anonymous referees whose thoughtful comments were responded to constructively by all authors. The book has been laid out and typeset by Phil Newman.

## References

Costello, E. 2017. Liminal learning: social practice in seasonal settlements of western Ireland. *Journal of Social Archaeology* 17: 188-209.

Costello, E. 2018a. Morphology of transhumant settlements in post-medieval south Connemara: a case study in adaptation, in E. Costello and E. Svensson (eds) 2018: 93-108.

Costello, E. 2018b. Temporary freedoms? Ethnoarchaeology of female herders at seasonal sites in northern Europe. *World Archaeology* 50:1: 165-184.

Costello, E. and E. Svensson (eds) 2018. *Historical Archaeologies of Transhumance across Europe*. Abingdon: EAA/Routledge, Themes in Contemporary Archaeology 6.

Fleming, A. forthcoming. Exploring the origins and character of transhumance in England.

Kupiec, P., K. Milek, G.A. Gísladóttir and J. Woollett 2016. Elusive sel sites: the geoarchaeological quest for Icelandic shielings and the case of Þorvaldsstaðasel, in north-east Iceland, in J.R. Collis, M. Pearce and F. Nicolis (eds) *Summer Farms: seasonal exploitation of the uplands from prehistory to the present*: 221-236. Sheffield: J.R. Collis Publications, Sheffield Archaeological Monographs 16.

Kupiec, P. and K. Milek 2018. Ethno-geoarchaeological study of seasonal occupation: Bhiliscleitir, the Isle of Lewis, in E. Costello and E. Svensson (eds) 2018: 75-92.



# 1. Introduction: the recognition of transhumance in Britain

Mark Bowden *and* Pete Herring

*This paper introduces the volume and addresses the main themes that are covered by the following papers. It discusses definitions and the practice of transhumance.*

**Key words:** *Britain, transhumance, shielings*

As editors we come to the subject of transhumance, the seasonal grazing of marginal grasslands, scrublands and wood pastures, mainly by cattle and sheep, usually accompanied by people, from different standpoints. MB's personal interest in the topic of transhumance stems from knowledge of the Royal Commission on the Historical Monuments of England's work in northern England (e.g. Ramm *et al.* 1970) and numerous unconnected encounters with traces of the practice in the Lake District, in the Howgill Fells on the borders of North Yorkshire and Cumbria (e.g. Bowden 1996: 5, figure 4), in the Gloucestershire Cotswolds (see e.g. Dyer 1996), on the Malvern Hills (Bowden *et al.* 2005: 24, 32) and on the uplands of south-west England (e.g. Newman 2011: 117). It was further stimulated by research into the various uses of common land in England, starting from the perhaps unpromising subject of urban commons (Bowden *et al.* 2009). But the more he found out about the practice of transhumance the more he realised that he knew nothing about it and it was this ignorance that stimulated his interest in organising this session. He was also aware, from attending conferences in other European countries, that transhumance was a lively area for research in many places (e.g. Collis *et al.* 2016; Costello and Svensson 2018), whereas it seemed to be rather a minority niche interest in Britain.

In this respect MB was fortunate in falling in with PH, who comes to this topic from a totally different direction, as someone who has long been involved with the study of transhumance, and has written extensively on the subject, mainly about early medieval Cornish transhumance (e.g. Herring 1996; 2012). Surveying and interpreting the small sub-rectangular huts on Bodmin Moor in Cornwall (Figure 1.1) affected his inner compass, attracting him always to the seasonal and the communal. This drew him up to interview and record the material culture of the 'Mediterranean' transhumants herding and milking white cattle high on Monte Mare (for which see Baker 1999 and 2006), when his attention should have been on the eighth-century monastery down below at Castel San Vincenzo (Figure 1.2). And so it has continued, in Ireland and England, and alpine France and Switzerland, where the sound of cowbells and the sight of tracks leading inexorably towards the mountains have always encouraged him to seek out the archaeology and the life of the booley, shieling and *alpage* (Figures 1.3 – 1.5).

His interest includes the ways that 'Alpine' transhumance contributed to shaping much of Europe's historic landscape, extending from the uplands and wetlands themselves to the core farmland where summertime management could be made better organised and more intensive by the livestock's removal. He recognised how the administration and policing of rights to and responsibilities on the commons and the ways to and from them threw light on early political structures (Herring 2016: 197–198; 2011).

MB was asked to give a paper at a Prehistoric Society workshop in 2017 on the subject of upland and lowland archaeology. This started him thinking that instead of studying what we perceive – in our



Figure 1.1: Group of ruins of sub-rectangular huts on the eastern slope of Brockabarrow Common on Bodmin Moor, Cornwall. Analysis and interpretation of sites like this contributed to a reappraisal of early medieval Cornwall (Herring et al. 2011). (Photograph: Pete Herring)

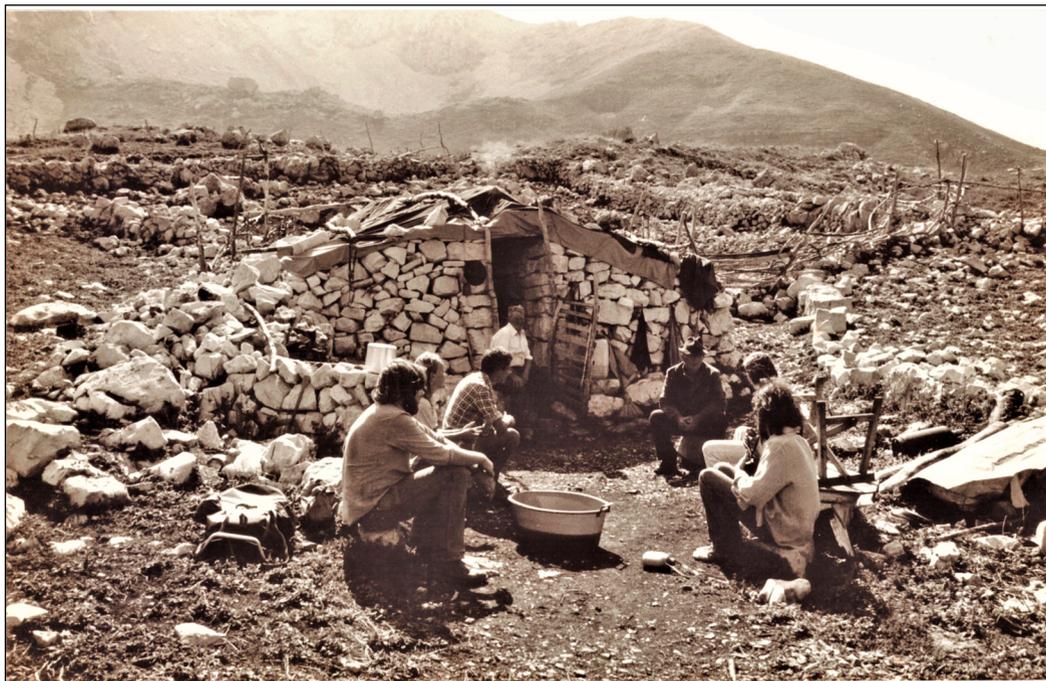


Figure 1.2: Archaeologists from the University of Sheffield, including Peter Herring (front right), meet and discuss transhumant life with Pietro Romano (in hat) in August 1982 outside his baracca, summer dwelling, on Monte Mare, Molise, Italy. His bed took up half the interior; the rest divided between storage of cheeses (1 or 2 made each day), food and wine, and a little space to sit, eat and drink. Cooking was done on an outdoor fire (behind screen to left of door). Pietro took 150 cows, 500 sheep and 15 horses up each year (June to September), overwintering them c. 30 kilometres to the south at San Pietro Infine, near Venafro. (Photograph: Richard Hodges)



*Figure 1.3: The archaeology of transhumance takes many forms. On the southern slopes of Spitzhoren, a middling mountain near Gimmelwald in the Bernese Oberland, Switzerland, is this scatter of stone clearance heaps, apparently created to improve the productivity of summer pastures. Nearer is the track that links the summer dwelling (a short way to the left of the shot) with the winter home (a long way to the right). When followed, this includes ramped causeways across soft ground and terraced tracks along precipitously steep rock faces, all carefully made to accommodate the c. 1.5-metre-wide wagons on which the summer's cheesemaking equipment was hauled (see also, Figure 3.3). (Photograph: Pete Herring)*

blinkered, urbanised, 21st century view – as the differences between upland and lowland, perhaps we need to concentrate on what unites upland and lowland – of which transhumance is a major, perhaps *the* major, component.

The Cumbrian shepherd James Rebanks has said: ‘if you stand in the sandstone villages in the fertile plain at the bottom of the Eden valley, you might think you are simply in a lowland area, a place for arable farming or dairy cattle, a place disconnected from the mountains in the distance. But it isn’t – it is bound to the mountains through the movement of the sheep downwards each autumn. The fells and the wide lush river valley are all part of one ancient inter-connected farming system’ (2016: 46-7). This is not transhumance: the animals move from farm to farm and there is no migration of people, but it is probably the descendant of a transhumant system – shieling huts have been recorded in the Cumbrian Fells (Ramm *et al.* 1970: 35-9, map 2).

The practice of transhumance is historically well attested across Britain and Europe, and in many other parts of the world, but it is a topic which we think has been understudied in Britain generally. There may be many reasons for this. It is possibly because in many areas of Britain transhumant practice died out at an early date, and is now only encountered in a modified form in only a few special areas, such as the Cumbrian Fells that James Rebanks works. This may be coupled with the early urbanisation and industrialisation of the British landscape, which has led to a general habit of ignoring the rural, except as a romantic ‘other’ encountered only through poetry, novels and landscape painting. British academics and researchers are not naturally focused on the realities of rural history, though there are many honourable exceptions. In other parts of the world transhumant practices continue, albeit perhaps in a muted form, and are therefore still in the eye of the research community.



*Figure 1.4: This summer hut, now rebuilt at the Ballenberg open-air museum at Brienz, Switzerland, was first erected in 1520 in the Litschen valley, Axalp at 1850 m. (6070 feet) a. s. l. It had no internal divisions, and the sleeping chamber was in the projection over the entrance, which created a sheltered space beneath, where a cow could be milked. The archaeological signature would be a simple rectangular stony bank. (Photograph: Pete Herring)*

One might also suggest that that the practice of transhumance in Britain, though it involved whole communities, was built around women’s work in particular, and has therefore been side-lined by studies which have been more likely to focus on a perceived ‘masculine’ experience of industry and heavy labour. As Svensson has said – though speaking of Scandinavia – ‘Mainstream archaeology and antiquarians were simply more interested in chieftains in great halls than in women and cattle in distant forests and mountains’ (2018: 16).



*Figure 1.5: Interior of the Litschen Valley summer hut shown in Fig 1.4, showing the simplicity and flexibility of arrangements, which were focussed on the fire and the copper cheese-making kettle on an arm fixed to a rotating spindle that allowed it to be swung over and away from the heat. (Photograph: Pete Herring)*

If so, they were not just excluding a major and influential part of rural society, but were also denying themselves a closer understanding of how the ways that transhumants accessed and used the commons reveal much about the very basis of our society and civilisation. Our common laws and customs developed, in part, from the administration necessary to manage and regulate communities and individuals as they drew from society's shared resources, like the undivided summer pastures (Oosthuizen 2013, 1-16).

As we will see, transhumance is also less simple than it may first appear. It is remarkably varied, and the fortunes of any one transhumance system ebb and flow as they reflect and influence changes in the wider rural society and economy.

## **Definitions**

Transhumance can be defined as the movement of animals and their keepers to new pastures at different seasons of the year, irrespective of distance; generally it involves the crossing of township boundaries and overnight dwelling of the keepers; it does not include the movement of animals to market or turning them over to a grazer, which is droving – one way movement to point of sale – which does not give rise to seasonal settlements. Conversely, some seasonal settlements are not related to transhumance; coastal fishing sites and the dwellings of those involved in woodland industries (Fox

1996b; Bowden 2000: 25-8; Bowden 2004: 166-8) were seasonal. Dwellings associated with mining, quarrying and construction sites (e.g. Jessop and Whitfield 2013: 60-3; Cardwell *et al.* 1995) could be seasonal as well. Nevertheless the terms 'shieling', 'shiel', 'scales', originally applied specifically to the shelters of transhumant pastoralists, were later applied in some areas to miners' huts, for instance, and thence to any small hut or temporary shelter (Ramm *et al.* 1970: 1), leading to some confusion.

Two types of transhumance have been identified.

The 'lesser transhumance' or 'Alpine transhumance' involves relatively small numbers of animals and short distances; animals and their keepers move to higher (or lower) pastures in spring or early summer. This is closely related to cultivation – the need to clear the lower slopes and valley bottoms, especially for fodder crops and hay. So, in the lesser transhumance the movement is not so much about searching for available pastures but about the greater usefulness of the lower ground for crops – it is a function of arable agriculture. There are numerous British examples.

The 'greater transhumance' or 'Mediterranean transhumance': this is driven by the relative lushness or desiccation of pastures in different regions at different seasons – the lower pastures are parched in summer, while the higher pastures are moist; the higher pastures are inhospitable in winter, while the lower pasture lands revive. This leads to the complex mass movements of large herds and flocks, often over several hundreds of miles. This latter style of transhumance is not so common in Britain but a form of 'greater transhumance' was practiced in Britain historically, where landowners with holdings in different *pays* moved their herds from manor to manor; even some peasants could use the system where intercommoning was available or where they could acquire access to distant pastures (Fox 1996a: 2-4, 10-11; 2012).

The latter form of transhumance is a system of interdependence between regions, with social and economic repercussions at both ends of its linkages (Fox 1996a: 12-15) but the former also, on a smaller scale, must have had considerable social and economic impact (Herring 2009, 47).

A number of different terms are used in different parts of Britain and Europe for the physical elements of the transhumance system – the huts, the pens, the routeways, the grounds themselves. For simplicity we use the term 'shieling' as a catch-all here.

### **The practice of transhumance**

The two forms of transhumance defined above are subject to debate (Costello and Svensson 2018: 3-4) and mask considerable complexity. Transhumance could be undertaken with different types of animals, different combinations of animals and could involve different social groups. It could take place in a wide variety of different landscape types. In some cases transhumance might involve almost the whole of a community going to the summering grounds initially, to clean, repair or re-build the necessary structures, with the majority then returning to the parent settlement and leaving a small group – often young females but sometimes also older women and boys – to tend the animals. In other areas, and particularly in southern Europe, transhumant herding was predominantly a male practice. Most forms of summering seem to have involved dairying activities and therefore required fairly substantial numbers of people to undertake the daily tasks (e.g. Gelling 1963: 170; Herring 1996: 39) but this need not always have been the case. Other non-agricultural tasks, such as crafts or extractive industries, might also take place at the shieling grounds. Secondary movements might take place from a 'heimseter' – a shieling ground close to the main settlement used for short periods in the spring and autumn – to a more distant summering ground; even shorter distance movements involved diurnal rather than seasonal movement and cannot be considered as transhumance at all (see Higham 1996: 56, 57-9). Or

a secondary movement might take place from the main shieling ground to a more distant one for part of the summer. Meanwhile contact was sometimes maintained between the shieling grounds and the parent settlement by individuals or small groups, often, excitingly, by the community's boys and young men (Herring, this volume; Costello 2018). Towards the end of the summer some people at the shieling grounds might return to the parent settlement to assist with harvest before the end of the summering season, leaving a smaller group to bring back the flocks and herds at the onset of autumn.

In some cases entirely different social groups were involved by tradition in the practice. In the borderlands of England and Scotland in the early 17th century shielings were organised by surname, so that small lowland communities were fragmented in the summer as men from a single settlement went to different shieling grounds according to their surnames and one shieling ground would be occupied by people who the rest of the year lived twenty miles or more apart from each other (Dixon 1972: 251). And in this case it was whole communities who went to the shieling grounds, leaving the parent settlements all but deserted (Ramm *et al.* 1970: 3).

This variety and complexity supports the conclusion that transhumance is a concept better to discuss than to define (Costello and Svensson 2018: 2).

Recent work sets aside romantic notions of European transhumance's 'timelessness', emphasising instead the particularity of each recorded system, in terms of place and historical context. The often rapidly changing economic and social conditions of the communities that practiced transhumance affected its practice (e.g. Collis *et al.* 2016; Costello and Svensson 2018).

We asked contributors to the conference session to address a number of related topics (see Preface): how transhumance worked, how it changed, how it impacted society and what evidence for the practice remains. This they did, with the results, a collection of discussions, recorded in the papers that follow.

## References

- Baker, F. 1999. The ethnoarchaeology of transhumance in the southern Abruzzi of Central Italy – An interdisciplinary approach, in L. Bartosiewicz and H.J. Greenfield (eds) *Transhumant pastoralism in southern Europe; recent perspectives from Archaeology, History and Ethnology*: 99-110. Budapest: Archaeolingua.
- Baker, F. 2006. Survey and Excavations on Monte Mare, 1985, in F. Baker, K. Francis, P. Hayes, R. Hodges, J. Patterson and P. Roberts, *The Field Surveys*, in K. Bowes, K. Francis and R. Hodges (eds) *Between Text and Territory, survey and excavations in the terra of San Vincenzo al Volturno*: 35-40. London: The British School at Rome, Archaeological Monograph 16.
- Bowden, M.C.B. 1996. Recent archaeological fieldwork in the Howgill Fells by the Royal Commission on the Historical Monuments of England. *Transactions of the Cumberland & Westmorland Antiquarian & Archaeological Society* 96: 1-11.
- Bowden, M.C.B. 2000. *Furness Iron: the physical remains of the iron industry and related woodland industries of Furness and southern Lakeland*. Swindon: English Heritage.
- Bowden, M.C.B. 2004. The Furness iron industry, in P.S. Barnwell, M. Palmer and M. Airs (eds) *The Vernacular Workshop: from craft to industry, 1400-1900*: 166-72. York: Council for British Archaeology Research Report 140.
- Bowden, M.C.B. with D. Field and H. Winton 2005. *The Malvern Hills: an ancient landscape*. Swindon: English Heritage.

Bowden, M.C.B., G. Brown and N.A. Smith 2009. *An Archaeology of Town Commons in England: 'a very fair field indeed'*. Swindon: English Heritage.

Cardwell, P., D. Ronan and R. Simpson 1995. *Batty Moss Navy Settlements, Ribbleshead, North Yorkshire: topographic and archaeological survey for the Yorkshire Dales National Park*. Barnard Castle: Northern Archaeological Associates report 95/23.

Collis, J.R., M. Pearce and F. Nicolis (eds) 2016. *Summer Farms: seasonal exploitation of the uplands from prehistory to the present*. Sheffield: J.R. Collis, Sheffield Archaeol Monographs 16.

Costello, E. and E. Svensson (eds) 2018. *Historical Archaeologies of Transhumance across Europe*. Abingdon: EAA/Routledge, Themes in Contemporary Archaeology 6.

Costello, E. and E. Svensson 2018. Transhumant pastoralism in historic landscapes: beginning a European perspective, in E. Costello and E. Svensson (eds) 2018: 1-14.

Dixon, P. 1972. Shielings and bastles: a reconsideration. *Archaeol Aeliana* 4.50: 249-58.

Dyer, C. 1996. Seasonal settlement in medieval Gloucestershire: sheepcotes, in H.S.A. Fox (ed) 1996: 25-34.

Fox, H.S.A. 1996a. Introduction, in H.S.A. Fox (ed) 1996: 1-24.

Fox, H.S.A. 1996b. Cellar settlements along the south Devon coastline, in H.S.A. Fox (ed) 1996: 61-9.

Fox, H.S.A. (ed) 1996. *Seasonal Settlement: papers presented to a meeting of the Medieval Settlement Research Group*. Leicester: University of Leicester, Vaughan Papers 39.

Fox, H.S.A. 2012 *Dartmoor's Alluring Uplands: transhumance and pastoral management in the Middle Ages*. Exeter: University of Exeter Press.

Gelling, P. 1963. Medieval shielings in the Isle of Man. *Medieval Archaeology* 6/7: 156-72.

Herring, P. 1996. Transhumance in medieval Cornwall, in H.S.A. Fox (ed) 1996: 35-44.

Herring, P. 2009. Early medieval transhumance in Cornwall, Great Britain, in *Medieval Rural Settlement in Marginal Landscapes – Ruralia* 7: 47-56.

Herring, P. 2012. Shadows of Ghosts: early medieval transhumants in Cornwall, in S. Turner and B. Silvester (eds) 2012: 89-105.

Herring, P. 2016. Medieval West Penwith, in P. Herring, N. Johnson, A.M. Jones, J.A. Nowakowski, A. Sharpe and A. Young *Archaeology and Landscape at the Land's End, The West Penwith Surveys 1980-2010*: 192-215. Truro: Cornwall Council.

Herring, P, A. Preston-Jones, C. Thorpe and I. Wood 2011. Early medieval Cornwall, *Cornish Archaeology* 50: 263-286.

Higham, M.C. 1996. *Aergi* names as indicators of transhumance: problems of the evidence, in H.S.A. Fox (ed.) 1996: 55-60.

Jessop, L. and M. Whitfield 2013. *Alston Moor, Cumbria: buildings in a north Pennine landscape*. Swindon: English Heritage, Informed Conservation series.

Newman, P. 2011. *The Field Archaeology of Dartmoor*. Swindon: English Heritage.

Oosthuizen, S. 2013. *Tradition and Transformation in Anglo-Saxon England: archaeology, common rights and landscape*. London: Bloomsbury.

Ramm, H., R.W. MacDowell and E. Mercer 1970. *Shielings and Bastles*. London: HMSO, Royal Commission on the Historical Monuments of England.

Rebanks, J. 2016. *The Shepherd's Life: a tale of the Lake District*. London: Penguin Books.

Svensson, E. 2018. The Scandinavian shieling – between innovation and tradition, in E. Costello and E. Svensson (eds.) 2018: 15-28.

Turner, S. and B. Silvester (eds) 2012. *Life in Medieval Landscapes; people and places in the Middle Ages*. Oxford: Windgather Press.



## 2. Evidence for transhumance in British prehistory

Mark Bowden

*Although a number of authors have considered the possibility of transhumance in British prehistory, the idea has not been pursued with great rigour. This is perhaps because a false dichotomy has been established in the minds of many between an upland and a lowland zone, whereas in reality these two zones always operated, for the human population, as two inter-linked parts of their world. After briefly reviewing some evidence for early historical transhumance, this paper looks at possible evidence for transhumant practices taking place in later British prehistory and particularly in pushing that evidence back into the Neolithic period and questioning its origins.*

**Key words:** *agricultural practice, Bronze Age, Iron Age, Neolithic, pastoralism, prehistory*

### Introduction

In historic periods it is relatively easy to identify archaeological remains that relate to transhumant practices, aided by available texts, and indeed for recent periods through ethnographic approaches. In prehistoric periods the challenge is greater – evidence which might point to transhumance is capable of alternative explanations. In mainland Britain work on this topic has been somewhat sporadic until now, perhaps because transhumance has been regarded as a peripheral, unimportant and small-scale activity (see volume Introduction). This paper will introduce these issues and, to some extent, set the background for some of the later papers in the volume.

Gardiner has argued convincingly that transhumance was not an enduring, ‘age-old’ practice; rather it is a changing practice constantly adapting to climatic, economic, political and social circumstances. Indeed in many places it is a transformative practice, preparing the ground (literally) for cultivation and permanent settlement through extensive grazing and the consequent manuring (2018: 109, 116). Therefore it is unrealistic to look for ‘continuity’ of practice in transhumance over long periods. Fleming takes a different view, arguing for transhumance as a ‘persistent’ cultural practice, continuing over millennia (forthcoming). Oosthuizen too has argued for ‘considerable stability over the prehistoric millennia’ in the governance of common resources (2013, 727), which might involve some transhumant practices. ‘Transience’ and ‘persistence’ are, however, not absolutes but two ends of a continuum. It is probable that the practice of transhumance has been more transient in some areas and times and more persistent in others. In the north of England, for instance, there are numerous ‘permanently’ occupied villages whose names indicate that they originated as summer shielings; among the questions we might want to ask are, how long did they remain seasonal settlements, how long did the transformation to ‘permanence’ take, and was it a straightforward one-way change. However, the question to be posed by this paper is about the origins of transhumance in Britain, and particularly in that part now called England. It is legitimate to ask whether forms of transhumance have been practiced in Britain at different times in prehistory.

### Early historic transhumance

The evidence for transhumance in early historic periods comes in many forms: place names, documentary references, landscape features (Figure 2.1), excavated archaeological remains. However,

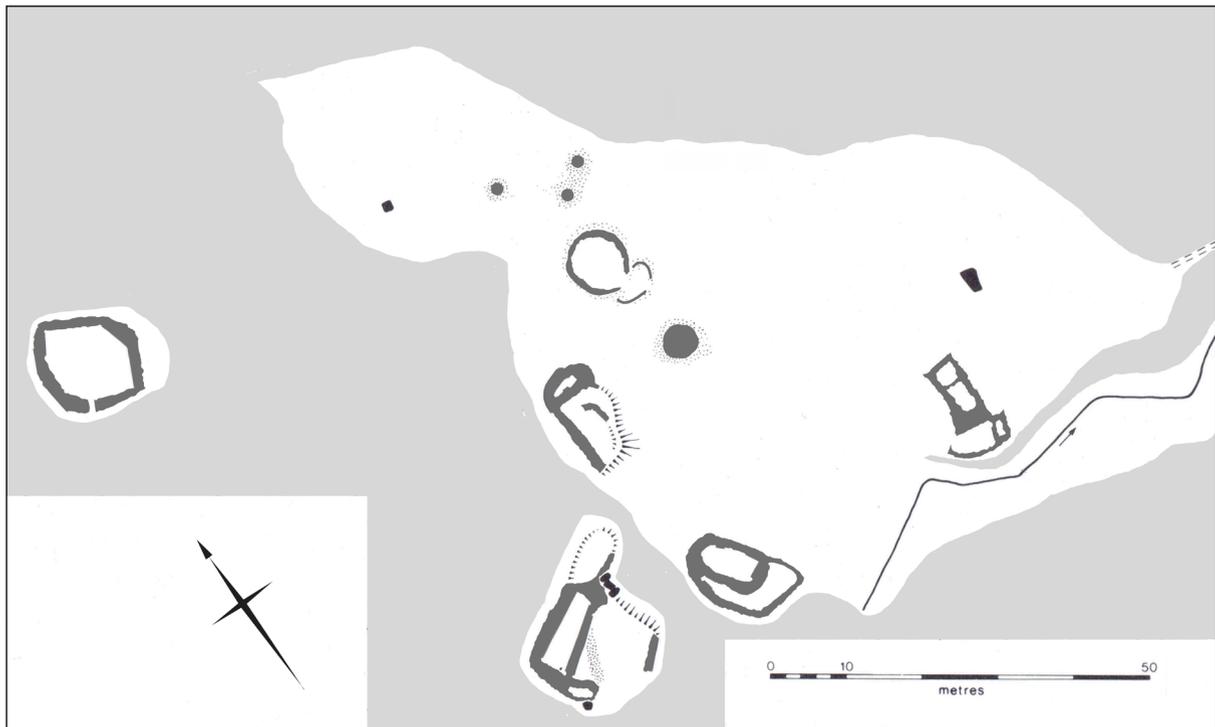


Figure 2.1: Survey of shieling structures on a shelf by a spring, high on the southern shoulder of the Cautley Valley (Cumbria), in the shelter of Cautley Crags and overlooking Cautley Spout waterfall; at least two phases of activity can be identified but the dates are unknown. (Re-drawn from Bowden 1996, figure 4)

it has been thought difficult to prove the existence of transhumance through survey and excavation for earlier periods; this may be part of the reason why transhumance has barely been considered seriously by most British prehistorians.

Cornish place names demonstrate the transformation of shieling sites to more permanent settlements in early periods; two 'havos' summering sites had not only become permanent settlements but estate centres by 1066 (Herring 1996: 35). Stone huts and enclosures on Bodmin Moor and elsewhere have been plausibly interpreted as shieling huts and associated animal pens of the first millennia BC and AD where there is no evidence for transhumant practices continuing into the high medieval period – seasonal grazing was then organised on a commercial basis (Herring 1996: 36-7). Fox has gathered convincing evidence for early medieval transhumance on Dartmoor and elsewhere (2011, esp 140-57).

Kentish 'drove' roads or 'drifts' link permanent settlements in the north of the county to their transhumant grounds on the Weald, which were particularly used as swine pasture (Everitt 1986: 35-9, map 1; Hooke 2011: 144-5); place name evidence suggests that these are of early medieval origin at least and the growth of permanent settlement on the Weald from the 11th century saw the waning of this transhumance, though the movement of sheep from Romney Marsh and other coastal marshes to higher land in winter continued until the 19th century (Everitt 1985: 33, 38). Transhumance was practiced in the Sussex Weald in the early medieval period as well (Brandon 1978: 85; and see Lea *et al.* this volume). Provision of distant summer pastures for communities in the well cultivated Warwickshire Avon and Severn valleys in the early medieval period is attested (Bowden *et al.* 2005: 32; Hooke 2011: 148, fig 10). There is also place name evidence for early medieval transhumance in the wolds of Leicestershire and Nottinghamshire (Fox 1989: 86-9). Gardiner gives further examples of transhumance in the period AD 500-1200 (2018: 110-14).

Transhumance was not a universal practice, however. It has never been practiced in large parts of Ireland (Costello 2018: 93). In the Derbyshire Peak District, where we might expect to find it, no evidence has yet been seen (John Barnatt and Graham Guilbert pers. comm.), though there is possible documentary evidence for seasonal grazing in and around the Peak Forest in the 15th century (Cox 1905: 408). Even where transhumance is known to have been practiced it is not always possible to show that its origins are significantly earlier than the high medieval period; though there is place-name evidence for Viking ‘seters’ on Lewis (Herring this volume), for instance, in large parts of Scotland (Dixon 2018: esp 68; Kupiec and Milek 2018: 75) evidence for earlier transhumance is fleeting at best.

Some potentially early sites are just hard to date reliably. A possible seasonal settlement on Garsdale Common, Cumbria, consisting of some small huts with enclosures probably designed for sheep and cattle, represents the earliest visible activity on the Common (NRHE number 972456) but its absolute date is unknown. It is assumed to be medieval but it could conceivably be earlier. In this case the relatively small provision for human habitation with relatively large animal enclosures might suggest that dairying was not practiced. Oosthuizen, however, argues that the evidence for human habitation on a shieling ground reflects not such mundane practicalities but the governance of the grazing rights and that a meagre provision might indicate that a collective herd was controlled under a ‘common property regime’ (2013, 723). A common property regime is an institution through which common property rights are governed so as to ensure an equitable distribution of resources and a balance between short-term maximization of output and long-term sustainability (Oosthuizen 2016, 4). Under such a regime flocks and herds could be cared for at their summer grazings by a small number of people appointed by the communities, rather than by members of each household. This would not be full transhumance, with all the deep social implications of that practice.

### **Pushing the evidence back into prehistory**

Some writers on British prehistory have mentioned transhumance in passing without exploring in any depth what they mean by the term or what it implies, to which I plead guilty (Bowden 2000: 13-14; Style 2009: 26, 29) but others have been more explicit and careful. Fleming and Collis, for instance, considered transhumance when studying the Bronze Age of Dartmoor (Collis 2016: 2), as did Loveday in relation to cursus construction in the 36th century calBC, though he is clearly not convinced that it was occurring at that date (2016: 76). On the European Continent the picture is somewhat different. Transhumance has been postulated for the Bronze Age in Italy on what the author admits are grounds of ‘logic and surmise’ rather than archaeological evidence (Pearce 2016: 54) but which are nevertheless persuasive. This is supported by other studies in the same region (Nicolis *et al.* 2016), in the southern French Alps (Walsh and Mocci 2016), in the Czech Republic and elsewhere (Dreslerová 2016; Brigand *et al.* 2016).

It has sometimes been stated that evidence for transhumance would be difficult if not impossible to discover by archaeological methods alone (Fox 1996: 9-10, gives examples) but this is too pessimistic. There was an ebb and flow to seasonal grazing systems: seasonal use of grazing lands was characteristic of periods when land use was relaxed and the ratio of land to people favourable; under population pressure seasonal settlements could become permanently occupied but this could reverse if population numbers fell again (Fox 1996: 16-17). As stated above, the almost inevitable impermanence of transhumant systems has also been suggested by Gardiner (2018). This complicates the picture for early periods but, if true, may offer clues in the stratigraphy of features on suspected seasonal settlement sites.

Other activities at the summer grounds, such as craft or industrial tasks, may also leave archaeological traces but it would require detailed intrusive research to tie them specifically to seasonal use, such as the soil micromorphological studies that have demonstrated seasonal use of shieling huts in Iceland and the Hebrides (Kupiec *et al.* 2016; Kupiec and Milek 2018). However, in the study mentioned above

Pearce has made a convincing case for the linking of transhumance with Bronze Age metallurgy in the southern Trentino (2016: 53-4; see also Migliavacca 2016). Can similar cases be made for transhumance in Britain through prehistory?

### The Iron Age

There is illuminating literary evidence for transhumance from the Roman Republic and Empire (Pasquinucci this volume) but tying down the evidence from the non-literate Britain of the same period is more problematic. Nevertheless, recent research in the South-West peninsula points to the potential for scientific analysis to demonstrate the practice of seasonal grazing in Roman Britain (Rippon *et al.* 2021: 82). Seasonality has been tentatively recognised in the Late Iron Age in England. Four papers given at the Late Iron Age Oppida conference, at the University of Reading on 22 April 2017, referred to the possibility of transhumance but the evidence presented was contradictory, or at least conflicting. Tom Moore, discussing the Cutham and Scrubditch enclosures at Bagendon, Gloucestershire, of the 4th-1st centuries BC, noted a long period of use but little evidence of intercutting features and suggested that this indicated seasonal use, possibly as wood pasture or some other form of communal use in the Middle Iron Age. On the other hand Colin Haselgrove, talking about The Tofts, Stanwick, North Yorkshire, suggested seasonal occupation on the basis of many intercutting features rather than few, therefore arguing from the opposite evidence to Tom Moore's. Mike Fulford suggested seasonal or episodic

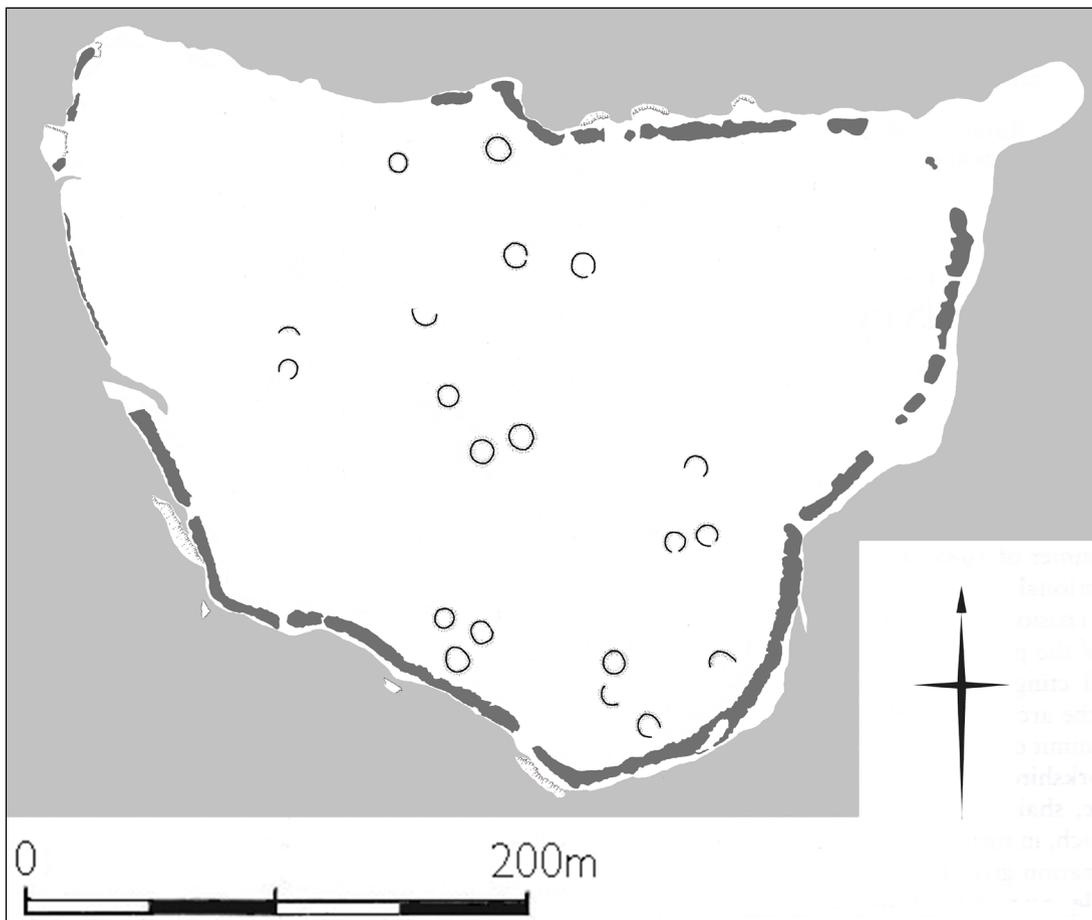
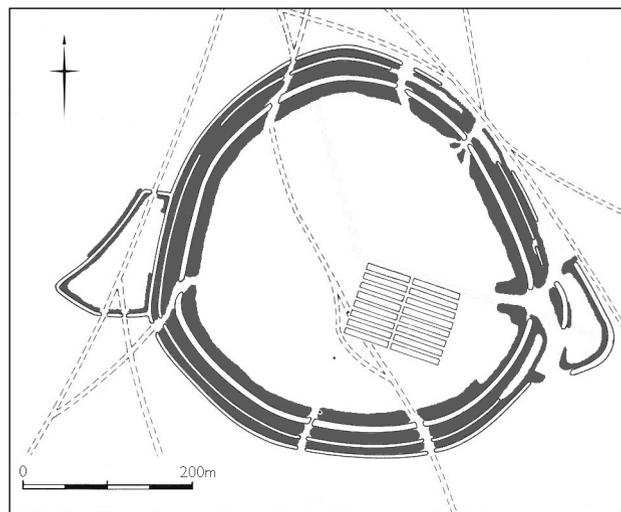


Figure 2.2: Ingleborough (North Yorkshire), an exposed plateau at 723m OD with a fragmentary stone-built rampart surrounding the remains of up to twenty possible round houses and steep slopes falling away on all sides. The dating of the site is uncertain. (Re-drawn from Bowden *et al.* 1989, figure 1)

occupation in the Late Iron Age at Calleva, Hampshire, because there was little emphasis on water use in the late 1st century BC-early 1st century AD – the site was too dry in the summer. Niall Sharples presented a large Late Iron Age enclosure near Ilchester Roman town, Somerset, a very low-lying site within the edge of Somerset Levels, which he argued convincingly can only have been seasonally used – it was too wet in the winter. This example reminds us that summering can be to low-lying marshes rather than to uplands; at our LAC conference session Adrian Chadwick presented several examples from eastern England, arising from recent commercial archaeological work, where low-lying Iron Age settlements were clearly seasonal.

Considering earlier stages of the Iron Age, it has been suggested that some Iron Age hillforts may have been seasonally used, on the basis of the perceived hostility of their environments during winter (Bowden *et al.* 1989: 270; Bowden 2000: 13-14; Bowden *et al.* 2005: 24-5). This is perhaps more convincing in some cases than in others – Ingleborough (North Yorkshire) is in a far more exposed and elevated location (Figure 2.2) than British Camp (Herefordshire). However, excavated and archaeoenvironmental evidence from The Breiddin (Powys) suggests that this hillfort was ‘never densely nor permanently occupied’ but was used for seasonal grazing (Buckland *et al.* 2001: 68, 71-3). Ian Brown has gathered further examples of hillforts which might have had a role in transhumance, including Tre’r Ceiri (Gwynedd), and notes that the ‘Celtic’ festivals of Beltane (1st May) and Samain (1st November) might coincide with the main



*Figure 2.3: Yarnbury hillfort (Wiltshire), the Iron Age and later phases; in contrast to Ingleborough, this hillfort, on rolling downland at 167m OD, could have been occupied at all seasons; the rectangular earthworks of the early 19th-century sheep fair can be seen in the south-eastern part of the fort, representing commercial activity at a time when the wool trade in southern Wiltshire was at its height; the pens overlie a track that itself post-dates the hillfort but which has then been diverted to avoid the pens.*

*(Re-drawn from an original by Mark Corney)*

yearly movements of livestock (2009: 210-11, 226). May Day certainly seems to have been a widespread choice for movement to the summer pastures (for example Allen 1979, 51). However, the beginning of November might be considered rather late for a return from summer pastures when late September (Michaelmas) or October (Hallowe'en) is generally preferred (for example Evans 1939, 209). There is one very tangential and circumstantial link relating hillforts to seasonal settlement; Harold Fox noted the prevalence of fairs at the end of the summer grazing season (1996: 15) and it is notable how many fairs were held at hillforts in England until late in the historic period. Yarnbury (Wiltshire) provides an excellent example (Figure 2.3) with its annual sheep fair, which has left distinctive archaeological traces (Bowden 1999: 116-17, fig 87), but there are many others, such as Uffington Castle (Oxfordshire)

(Miles *et al.* 2003: 126). However, it would be ahistorical in the extreme to assume that such historically attested events were evidence of continuity of practice from the middle Iron Age, so this remains an interesting anecdote rather than evidence. Indeed, the archaeological evidence at Yarnbury demonstrates different phases of activity between the Iron Age use of the site and the establishment of the sheep fair.

On the other hand, there is possible evidence of feasting related to transhumance during the late Bronze Age- early Iron Age transition. The huge middens of this period, of which about 30 are now known across southern Britain, were created by widespread communities gathering with their animals at specific times of the year, probably autumn and spring when the flocks and herds were moved to lower or higher ground. This is attested by animal bone assemblages suggesting autumn or spring slaughter, as at Potterne and East Chisenbury (Wiltshire) respectively (Waddington *et al.* 2019: 86).

Transhumance sites on the Isle of Man have been attributed mainly to the early medieval period or later but it has been tentatively suggested that the circular structure found beneath one later shieling at Block Eary might represent evidence for Iron Age or earlier transhumance (Gelling 1963: 171; Quine 1996: 45, 47). The RCHME surveyed an area at Montpelier, Druidale, in 1995 and accepted the prevailing view that the shielings were probably of medieval date and that a nearby group of hut circles (NRHE:

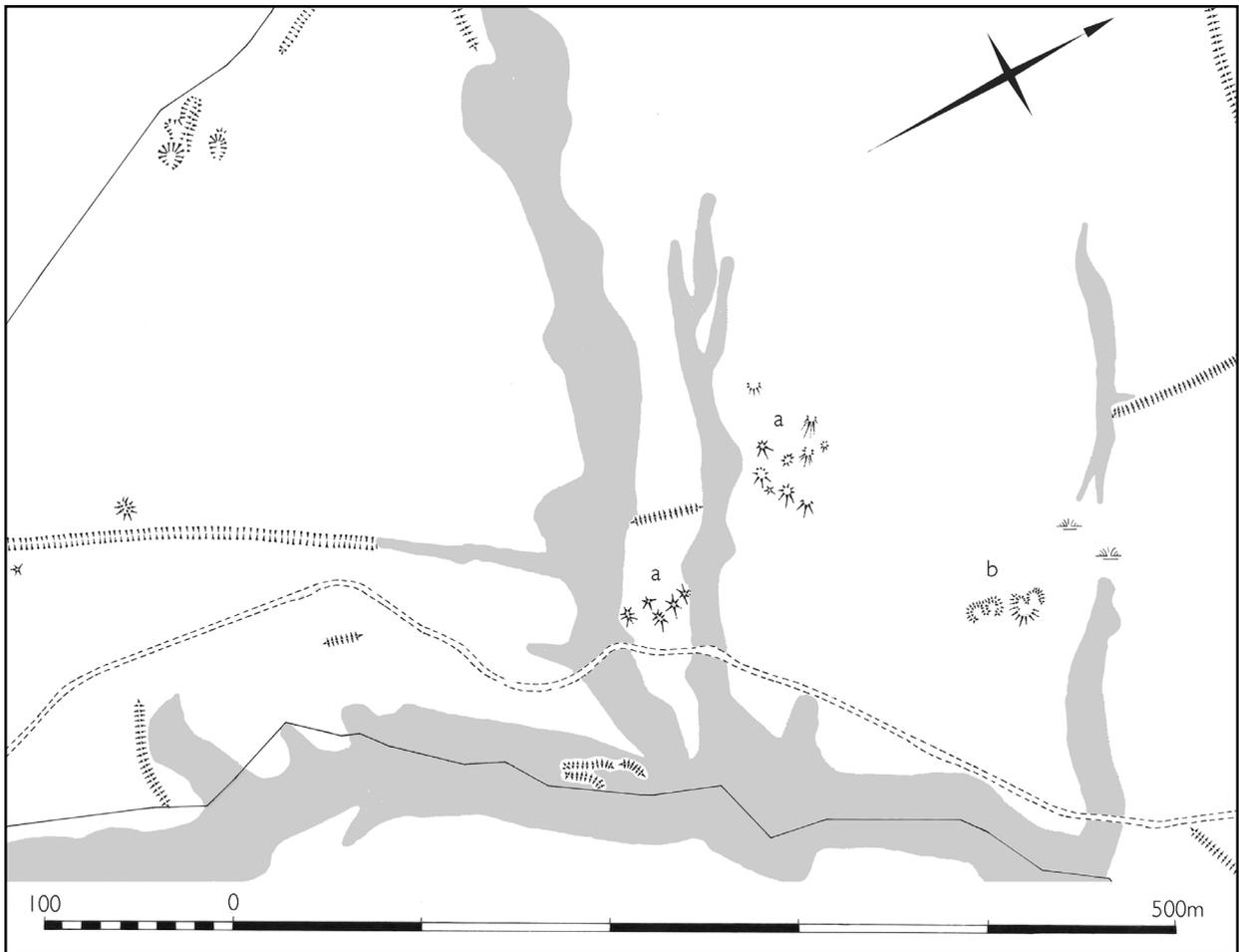


Figure 2.4: Montpelier, Druidale, Isle of Man; a block of upland landscape divided by dry valleys (grey tone) with groups of shieling huts (a) which are probably of medieval or early medieval date; could the prehistoric hut circles (b) also be evidence of seasonal use, as suggested for hut circles on Dartmoor and Bodmin Moor? (Re-drawn from an extract of a survey by the Royal Commission on the Historical Monuments of England)

30899: SC 38 NW 13) was of Iron Age or earlier date but there was no discussion as to whether the latter represented ‘permanent’ or seasonal settlement (Figure 2.4). This is a question requiring further research. Similar questions surround the smaller huts found within abandoned earlier round houses on Bodmin Moor and Dartmoor (Fleming 1988: 76-7, figs 43 and 44), or the Iron Age re-use of Bronze Age houses at Garrow (Herring 2012: 97), or the prehistoric round house beneath a post-medieval shieling hut at Hafod y Nant Criafolen (Allen 1979, 48).

### ***The Bronze Age***

The probably mid to late Bronze Age cross ridge dykes of the Sussex Downs, restricting access, directing to approved entry points and restricting movement along ridges and spurs might also be related to transhumant movement (Lea *et al.* this volume). From earlier in the Bronze Age, the White Horse Hill, Dartmoor, burial of a young woman with a striking range of burial goods opens a picture on a woman’s world and raises conflicting views of liminality (Herring this volume). This adds to the tentative identification of settlements at Holne Moor, Dean Moor and Shaugh Moor as shieling sites of the earlier Bronze Age (Fleming 1988: 103, figure 66) and the similar identification as shielings of settlements on Bodmin Moor in the middle Bronze Age and into the Iron Age (Herring 2008: 82,90-1). That cattle were of significance in the Early Bronze Age is demonstrated by numerous instances of the placement of cattle remains in special deposits, often with human remains (Towers *et al.* 2010), continuing Neolithic practice (see below). Unfortunately the latter discoveries do not as yet throw any definite light on the practice of transhumance in Britain, in contrast to the continental examples mentioned above. Oosthuizen, however, suggests that there is evidence for common seasonal grazing on the Fens in the Bronze Age, in large stockyards, and in the Neolithic period, at causewayed enclosures (2016, 1).

### ***The Neolithic***

One of the most unexpected discoveries from recent research in the Stonehenge landscape concerns the livestock at Durrington Walls during the late Neolithic, in the mid-3rd millennium BC (Chan *et al.* 2016). Remains of large numbers of pig and cattle were recovered, indicating that these animals arrived on the hoof and that the pigs were mainly slaughtered in late autumn and winter. Strontium isotope analysis on cattle teeth showed the widest possible range of values for the British Isles, with more than 80% of the animals having originated off the chalk; 17 animals were possibly from Devon or Cornwall but possibly also from northern England or Scotland; a further 6 animals were from an area of pre-Cambrian geology, possibly in Scotland but possibly the Malvern Hills or elsewhere in the English midlands. Oxygen isotope analysis similarly showed great variability; 19 animals were originally from the west of Britain but a small number had possibly spent some time to the east of Salisbury Plain. Many of these animals moved directly from their regions of origin to Durrington immediately before slaughter, so this evidence of the movement of animals cannot be taken as evidence of transhumance; the authors say it is ‘suggestive of mass driving rather than trading’ (Chan *et al.* 2016: 38). It has been noted that there is clear evidence for seasonal settlement at Durrington Walls, with consumption patterns far from those expected at a permanently occupied settlement (Albarella and Payne 2005). Nevertheless, this seasonality is thought to be connected with the raising of the sarsens at Stonehenge (Stonehenge Stage 2), involving the marshalling of huge quantities of resources – this is an extremely unusual situation. On the other hand some variation within individual teeth was seen, indicating that ‘these animals were moving between areas of differing geological conditions during tooth development’ (Viner *et al.* 2010: 2818); this does seem possibly to suggest the practice of transhumance at this period.

Evidence for agricultural practice in the middle Neolithic (c.3300-2900 cal BC) is sparse and difficult to interpret. The Peterborough Ware pits of central southern England contain little if any evidence for cereal cultivation or the presence of sheep/goat. At face value these people were not raising crops or

keeping flocks; the former seems possible, the latter unlikely. In fact these pits contain a very restricted range of things – pig and cattle bones and hazelnut shells in fairly large quantities, with some evidence for dairying in the deposits on the pottery. They represent repeated short-term use of particular places (Worley *et al.* 2019). What they are telling us in effect is that these people were doing different things at different times of year – autumn and winter in the case of filling the pits with what is probably the remains of small-scale feasting. This is not *per se* evidence for transhumance but transhumance is one possible explanation, or part of a possible explanation. Seasonal grazing of the Fens in this period is also attested (Oosthuizen 2016).

In the early Neolithic the approach may be seen from the other direction, that the development of crop cultivation tied a proportion of the population to a permanent or semi-permanent settlement site, tending the crops through the summer (Jones 2000: 82-3; Style 2009: 25). This implies that another part of the population was moving away from this ‘home base’ seasonally with the flocks and herds, exploiting a wider range of pastures and protecting the cultivated crops. The causewayed enclosures of the period around 3600calBC, such as those at Etton and Haddenham in the Fens, have been widely interpreted as seasonal meeting places that might imply the practice of transhumance (Oosthuizen 2016: 1), and though Oswald *et al.* (2001: 119, 130-2) sounded a cautionary note they also supported the idea of seasonal use for at least some of these sites.

Isotopic studies of early Neolithic populations in south-western Germany have been able to differentiate between individuals who lived almost exclusively in the lowlands and those who spent at least part of their lives in adjacent uplands. The evidence is complex and shows change through the earlier Neolithic. There is an unresolved question as to whether the individuals exploiting the uplands – women in the earlier phase, men later – were indigenous hunter-gatherers or pastoral specialists (Bentley 2007: 125-6). There is a further suggestion that herding and cultivation may have been specialisms practiced within families and, from isotopic analysis of cows’ tooth enamel, that transhumance was certainly being practiced (Bentley 2007: 133-4). Although the evidence so far is inconclusive it indicates how much could be learned from a combination of isotopes and ancient DNA in the future (Bentley 2007: 129). Bickle (2016) has developed ideas from this research, looking (amongst other things) at the question of whether the differences observed between male and female skeletons indicate a patrilocal society. It might be legitimate to ask whether the more varied diets of women in the sample is evidence of the women undertaking transhumance at this early date. Whether the same patterns might be observed in Britain remains to be seen.

Meanwhile this research suggests a blurring of hunting/gathering and herding activities. This raises the question of whether transhumant modes of pastoral activity are a natural development from Mesolithic lifestyles. Though there is a debate between proponents of a predominantly ‘indigenous’ British Neolithic and a more ‘colonising’ British Neolithic, the reality is likely to have been complex and ‘mixed’; different groups of indigenous hunter/gatherers and different groups of incoming or adopting farmers may have interacted in a variety of ways (Cummings and Harris 2011 and commentators). More recently it has been suggested that the traditional view of early hunter-gatherers as mobile and early agriculturalists as sedentary should be reviewed or even reversed (Leary and Kador 2016). In this model transhumance could be a development or intensification of former hunting practices rather than a pale shadow of them. There are difficulties with this, however. For instance, the evidence suggests that the newly imported, herded animal species were treated differently to native wild species, did not interbreed and may have occupied different parts of the landscape (Cummings and Harris 2011: 366-7). There is no direct connection therefore between human relationships with aurochs and human relationships with cattle, for instance. But that human relationships with cattle were ‘special’ is demonstrated by the widespread use of cattle skulls and other bones, often in conjunction with human bones, in early Neolithic ceremonial deposits; this suggests a fictive ‘kinship’ between humans and cattle, so that the

early Neolithic period sees not a novel exploitation of animals but an entirely new partnership with them (Ray and Thomas 2003). In this model transhumance would be an entirely new practice, unrelated to hunting, and might be seen as another element of the novel Neolithic ‘package’.

So, although superficially it would be neat to see moving with flocks and herds in the practice of transhumance as being directly descended from moving with migrating animals in the practice of hunting, this is probably not the case. One major difference may be a gender issue; if it is right to assume that hunting was predominantly a male practice, the evidence from south-west Germany may hint that transhumance in north-west Europe was a predominantly female practice from the beginning.

### Acknowledgements

I am grateful to Dr Mike Allen who first prompted me to organise a conference session on this topic. I am also grateful to my co-organiser and co-editor, Pete Herring, from whom I have learnt much about transhumance and other things. The survey of the shieling site at Druidale was undertaken by Keith Blood, Amy Lax and Colin Lofthouse for the Royal Commission on the Historical Monuments of England. The survey at Cautley was undertaken by the author with David Kenyon for the RCHME. The site on Garsdale Common was also surveyed by the RCHME (Historic England Archive Collection no 859340) but unfortunately it has not proved possible under the restrictions of the Covid-19 pandemic to obtain a copy for detailed study.

### References

- Albarella, U. and S. Payne. 2005. Neolithic pigs from Durrington Walls, Wiltshire, England: a biometrical database. *Journal of Archaeological Science* 32(4): 589-99.
- Allen, D. 1979. Excavations at Hafod y Nant Criafolen, Brenig Valley, Clwyd, 1973-4. *Post-Medieval Archaeology* 13: 1-59.
- Bentley, A. 2007. Mobility, specialisation and community diversity in the Linearbandkeramik: isotopic evidence from the skeletons, in A. Whittle and V. Cummings (eds) *Going Over: the Mesolithic-Neolithic transition in North-West Europe* Proceedings of the British Academy 144. OUP for the British Academy: 117-40.
- Bickle, P. 2016. Varied mobility in the Neolithic, in J. Leary and T. Kador (eds.) 2016: 14-27.
- Bowden, M.C.B. (ed.) 1999. *Unravelling the Landscape: an inquisitive approach to archaeology*. Stroud: RCHME/Tempus.
- Bowden, M.C.B. 2000. *British Camp or Herefordshire Beacon*. English Heritage Survey Report 4/2000.
- Bowden, M.C.B. with D. Field and H. Winton 2005. *The Malvern Hills: an ancient landscape*. English Heritage: Swindon.
- Bowden, M.C.B., D.A. Mackay and N.K. Blood. 1989. A new survey of Ingleborough hillfort, North Yorkshire. *Proceedings of the Prehistoric Society* 55: 267-71.
- Brandon, P. 1978. Medieval Sussex, in P. Drewett (ed.) *Archaeology in Sussex to 1500* Council for British Archaeology Research Report 29: 84-6.

- Brigand, R., O. Weller, F.A. Tencariu, M. Alexianu and A. Asăndulesei 2016. Ovine pastoralism and mobility systems in Romania: an ethnoarchaeological approach, in E. Costello and E. Svensson (eds) 2016: 245-63.
- Brown, I. 2009. *Beacons in the Landscape: the hillforts of England and Wales* Oxford: Windgather.
- Buckland, P.C., M. Parker Pearson, A. Wigley and M.A. Girling 2001. Is there anybody out there? A reconsideration of the environmental evidence from the Breiddin hillfort, Powys, Wales. *Antiquaries Journal* 81: 51-76.
- Chan, B., S. Viner, M. Parker Pearson, U. Albarella and R. Ixer 2016. Resourcing Stonehenge: patterns of human, animal and goods mobility in the late Neolithic, in J. Leary and T. Kador (eds.) 2016: 28-44.
- Collis, J.R. 2016. Summer farms: an introduction, in J.R. Collis, M. Pearce and F. Nicolis (eds) 2016: 1-20.
- Collis, J.R., M. Pearce and F. Nicolis (eds) 2016. *Summer Farms: seasonal exploitation of the uplands from prehistory to the present*. Sheffield: Sheffield Archaeol Monographs 16. JR Collis.
- Costello, E. 2018. Morphology of transhumant settlements in post-medieval south Connemara: a case study in adaptation, in E. Costello and E. Svensson (eds) 2018: 93-108.
- Costello, E. and E. Svensson (eds) 2018. *Historical Archaeologies of Transhumance across Europe* Themes in Contemporary Archaeology. London: European Association of Archaeologists/Routledge.
- Cox, J.C. 1905. Forestry, in W. Page (ed.) *Victoria County History of Derby* 1. 397-425. London: Archibald Constable.
- Cummings, V. and O. Harris 2011. Animals, people and places: the continuity of hunting and gathering practices across the Mesolithic-Neolithic transition in Britain. *European Journal of Archaeology* 14(3): 361-82.
- Dixon, P. 2018. What do we really know about transhumance in medieval Scotland? in E. Costello and E. Svensson (eds) 2018: 75-92.
- Dreslerová, D. 2016. *Salaš*: summer farming and transhumance in the Czech Republic from a (pre)historic and environmental perspective, in J.R. Collis, M. Pearce and F. Nicolis (eds) 2016: 33-46.
- Evans, E.E. 1939. Donegal survivals. *Antiquity* 13: 207-22.
- Everitt, A. 1986. *Continuity and Colonisation: the evolution of Kentish settlement*. Leicester University Press.
- Fleming, A. 1988. *The Dartmoor Reaves: investigating prehistoric land divisions*. London: Batsford.
- Fleming, A. forthcoming. Exploring the origins and character of transhumance in England.
- Fox, H.S.A. 1989. The people of the wolds in English settlement history, in M. Aston, D. Austin and C. Dyer (eds) *The Rural Settlements of Medieval England*. 77-101. Oxford: Basil Blackwell.
- Fox, H.S.A. 1996. Introduction, in H.S.A. Fox (ed.) 1996: 1-23.
- Fox, H.S.A. (ed.) 1996. *Seasonal Settlement: papers presented to a meeting of the Medieval Settlement Research Group* Vaughan Paper 39: University of Leicester.

- Fox, H.S.A. 2011. *Dartmoor's Alluring Uplands* Exeter: Exeter University Press.
- Gardiner, M. 2018. The changing character of transhumance in earlier and later medieval England, in E. Costello and E. Svensson (eds) 2018: 109-20.
- Gelling, P. 1963. Medieval shielings in the isle of Man. *Medieval Archaeology* 6/7: 156-72.
- Herring, P. 1996. Transhumance in medieval Cornwall, in H.S.A. Fox (ed.) 1996: 35-44.
- Herring, P. 2008. Commons, fields and communities in prehistoric Cornwall, in A. Chadwick (ed.) *Recent Approaches to the Archaeology of Land Allotment* British Archaeological Reports International Series 1875. 70-95. Oxford: Archaeopress.
- Herring, P. 2012. Shadows of Ghosts: early medieval transhumants in Cornwall, in S. Turner and R. Silvester (eds) *Life in Medieval Landscapes; people and places in the Middle Ages*. 89-105. Oxford: Windgather Press.
- Jones, G. 2000. Evaluating the importance of cultivation and collecting in Neolithic Britain, in A.S. Fairbairn (ed.) *Plants in Neolithic Britain and Beyond*. Neolithic Studies Group Seminar Papers 5. 79-84. Oxford: Oxbow Books.
- Kupiec, P., K. Milek, G.A. Gísladóttir and J. Woollett 2016. Elusive sel sites: the geoarchaeological quest for Icelandic shielings and the case of Þorvaldsstaðasel, in north-east Iceland, in J.R. Collis, M. Pearce and F. Nicolis (eds) 2016: 221-36.
- Kupiec, P. and K. Milek 2018. Ethno-geoarchaeological study of seasonal occupation: Bhilliscleitir, the Isle of Lewis, in E. Costello and E. Svensson (eds) 2018: 75-92.
- Leary, J. and T. Kador 2016. Movement and mobility in the Neolithic, in J. Leary and T. Kador (eds) 2016: 1-13.
- Leary, J. and T. Kador (eds) 2016. *Moving on in Neolithic Studies: understanding mobile lives*. Neolithic Studies Group Seminar Papers 14. Oxford: Oxbow.
- Loveday, R. 2016. Monuments to mobility? Investigating cursus patterning in southern Britain, in J. Leary and T. Kador (eds) 2016: 67-109.
- Migliavacca, M. 2016. Shepherds and miners through time in the Veneto Highlands: ethnoarchaeology and archaeology, in J.R. Collis, M. Pearce and F. Nicolis (eds) 2016; 57-71.
- Miles, D., S. Palmer, G. Lock, C. Gosden and A.M. Cromarty 2003. *Uffington White Horse and its Landscape* Oxford Archaeology/Oxford University School of Archaeology.
- Nicolis, F., E. Mottes, M. Bassetti, E. Castiglioni, M. Rottoli and S. Ziggotti 2016. Going up the mountain! Exploitation of the Trentino highlands as summer farms during the Bronze Age: the dosso Rotondo site at Storo (northern Italy), in J. R. Collis, M. Pearce and F. Nicolis (eds) 2016: 109-38.
- Oosthuizen, S. 2013. Beyond hierarchy: the archaeology of collective governance. *World Archaeology* 45: 714-29.
- Oosthuizen, S. 2016. Beyond hierarchy: archaeology, common rights and social identity. *World Archaeology* 48: 1-14.

Oswald, A., C. Dyer and M. Barber 2001 *The Creation of Monuments: Neolithic causewayed enclosures in the British Isles*. Swindon: English Heritage.

Pearce, M. 2016. Hard cheese: upland pastoralism in the Italian Bronze and Iron Ages, in J.R. Collis, M. Pearce and F. Nicolis (eds) 2016: 47-56.

Quine, G. 1996. Medieval shieling on the Isle of Man; fact or fiction? in H.S.A. Fox (ed.) 1996: 45-54.

Ray, K. and J. Thomas 2003. In the kinship of cows: the social centrality of cattle in the earlier Neolithic of southern Britain, in M. Parker Pearson (ed.) *Food, Culture and Identity in the Neolithic and Early Bronze Age*. British Archaeological Reports International Series 1117: 37-44.

Rippon, S. and D. Gould with G. Müldner and D. Frémondeau 2021. Regional identities in the Roman period: Dumnonia and the wider South-West of Britain, in S. Rippon and N. Holbrook (eds) *Roman and Medieval Exeter and Their Hinterlands: from Isca to Excester*. 45-102. Oxford: Oxbow.

Style, P.G.A. 2009. Polished axes, petroglyphs and pathways: a study of the mobility of Neolithic people in Cumbria. University of Central Lancashire Undergraduate Dissertation. Available at: [academia.edu/search?utf8=✓&q=polished+axes+petroglyphs+pathways](https://academia.edu/search?utf8=✓&q=polished+axes+petroglyphs+pathways) (Accessed 30 April 2020).

Towers, J., J. Montgomery, J. Evans, J. Mandy and M. Parker Pearson 2010. An investigation of the origins of cattle and aurochs deposited in the Early Bronze Age barrows at Gayhurst and Irthlingborough. *Journal of Archaeological Science* 37(3): 508-15.

Viner, S.J. Evans, U. Albarella and M. Parker Pearson 2010. Cattle mobility in prehistoric Britain: strontium isotope analysis of cattle teeth from Durrington Walls (Wiltshire, Britain). *Journal of Archaeological Science* 37: 2812-20.

Waddington, K., A. Bayliss, T. Higham, R. Madgwick and N. Sharples 2019. Histories of deposition: creating chronologies for the Late Bronze Age – Early Iron Age transition in southern Britain. *Archaeological Journal* 176: 84-133.

Walsh, K. and F. Mocci 2016. An historical ecology of the Neolithic to Medieval periods in the southern French Alps: a reassessment of ‘driving forces’, in J.R. Collis, M. Pearce and F. Nicolis (eds) 2016: 183-202.

Worley, F., R. Madgwick, R. Pelling, P. Marshall, J. Evans, A. Lamb, I. Lopez-Doriga, C. Bronk Ramsey, E. Dunbar, P. Reimer, J. Vallender and D. Roberts 2019. Understanding middle Neolithic food and farming in and around the Stonehenge World Heritage Site: an integrated approach. *Journal of Archaeological Science Reports* 26: 1-19.

### 3. 'Frequently the winter grazing grounds are many miles away from the summer ones' (Varro, de r.r. 2.2.9): a review of recent historical, anthropological and archaeological approaches to transhumance in Central and Southern Italy

Marinella Pasquinucci

*This paper gathers together the essential points of knowledge acquired on transhumance mainly in Central - Southern Italy in both Roman and modern times. The history of research on this subject, the importance of textual evidence and the debate about the continuity/non-continuity of such practices are considered. As for the advancement of future research, the great potential of analytical landscape archaeology and multidisciplinary studies is suggested.*

**Key words:** Central Italy, South Italy, Epyrus, Roman conquest, M. T. Varro, Customs of Foggia, Roman Customs, Customs of the pastures of Siena

#### **Introduction**

Since antiquity pastoral mobility and various forms of transhumance (as defined by Greenfield 1999a:15, that is 'an animal production and land use strategy involving the movement of herds of domestic herbivores between altitudinally differentiated and complementary pastures') have characterized many areas of Italy, including Sicily and Sardinia. In particular, the Alps and the Apennines offer large and rich summer pastures complementary to winter grazing in the valley floors or the plains, either adjacent or located at a considerable distance (Figure 3.1).

Vertical and horizontal, short- and long-distance, small- and large-scale transhumance was and is practised on various scales in specific geographical and historical contexts. This practice has persisted over time (Greenfield 1999b: 9; Baker 1999; Russo 2002) with diachronic divergences linked with political, social and economic factors (e.g. subsistence and market economies), varying through time (Pasquinucci 1979; 2016a). Pasquinucci 2016a and 2016b, and the bibliographies in those papers and this one, enable an overview of recent historical and archaeological work on Italian transhumance to be gained. Landscape archaeology and scientific analyses, such as those of animals' teeth, play increasingly important roles in this.

In particular, transhumance has been closely documented and studied in Central and South Italy (see below: the 'Central/South Adriatic' Italian District; the 'Tyrrhenian' District). Here the Apennines and the adjacent coastal plains located both West and East of the Apennines (respectively the 'Tyrrhenian' and 'Adriatic' districts) offered large seasonal pastures (Figure 3.2). Traditionally, the uplands were exploited from May/June to September/October, the lowlands from September/October to May/June.

In this brief review, I will only touch upon some essential points of the knowledge acquired on this vast and complex subject, above all giving some pointers regarding the diachronic characteristics of the landscape, the subject of the Newcastle conference session, and of the road infrastructures that are an important part of it. Since the environment and the climate are the prerequisites of transhumance, in Central and South Italy as elsewhere this practice persisted over the centuries, with obvious variations



Figure 3.1: Transhumant flocks: the 'tratturo' Pescasseroli-Candela, running from Abruzzo in central Italy to Apulia in the far south east, in 1920 (Courtesy Archivio Fotografico Di Loreto). Flock owners (members of the Di Loreto family including two women) and shepherds, in the area Ponte della Zittola. In the foreground, Maremmano-Abruzzese sheepdogs (a breed of traditional livestock guardian dogs) and pack mules.

in scale, routes and mode of travel depending on some factors (e.g. pasture dimensions, grazing rights, peace/war, drove or herding road conditions, economic benefits, historical-political situations, etc.).

### The 'Central/South Adriatic' Italian District

Transhumance is well documented and widely studied in the "Central/South Adriatic" Italian district where, since the origins of animal husbandry, seasonal migrations exploited the summer pastures in the Apennines (part of Sabina, South Umbria, Abruzzi, Molise, Campania) and the winter ones located in the adjacent valley floors, coastal plains and in South Eastern Italy (Tavoliere di Puglia, Puglia and adjacent Basilicata), depending on various factors including population density, agricultural practices and economic investments which varied over time (Pasquinucci 1979).

In pre-Roman times short/medium distance transhumance in sub-regional and regional districts was regulated by customs and agreements. The preconditions for the establishment of large transhumant herds are identified in the availability of very extensive pastures and adequate capital. Rome progressively conquered very large territories in South and Central Italy, and turned part of them into Roman *ager publicus* (state domain which might be leased for farming or stockbreeding according to regulations that changed through time: Burdese 1952; Gargola 1995; Tibiletti 2007), which due to the nature of the soil, was above all grazing land. By the end of the 3rd century BC such Roman common grazing lands in Central-South Eastern Italy were very large. In the same period, the Roman ruling classes gained abundant incomes and plenty of slaves from victorious campaigns. Such factors stimulated conspicuous investments in sheep/goats (mostly) and cattle breeding in these areas. The traditional transhumance

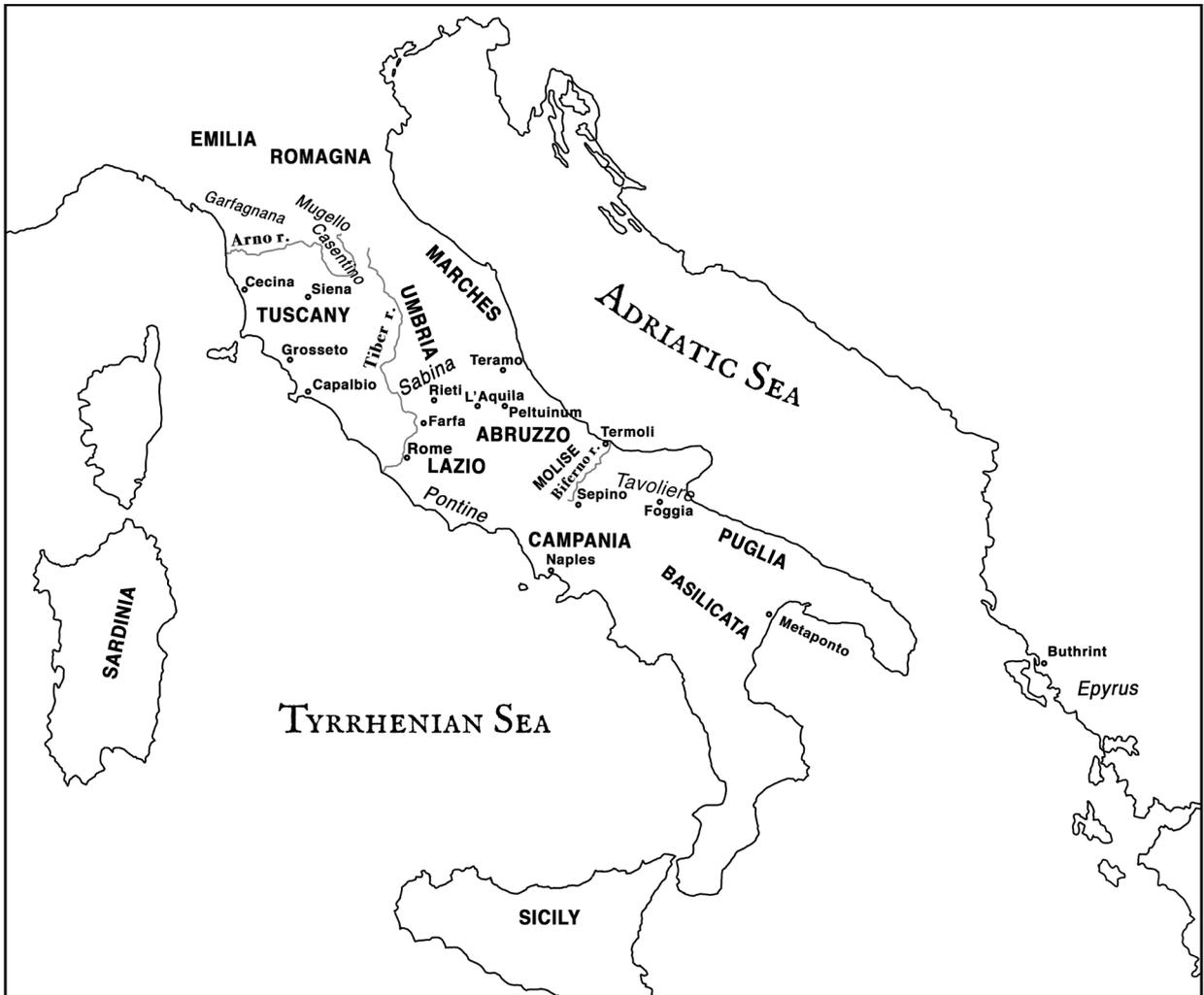


Figure 3.2: Italy: geographical names mentioned in the paper. (Drawn by G. Bonino, Genoa)



Figure 3.3: Sulmona (L'Aquila), Museo Civico Archeologico, relief (1st cent. AD) showing transhumant shepherds and flocks (Deutsches Arch. Inst. Rome, neg. 34.362). Carts and/or pack animals were used by transhumant shepherds to carry up the equipment for cheese making, hurdles and nets for enclosures, utensils, etc.

was turned into a market-oriented practice (Gabba and Pasquinucci 1979) (Figure 3.3). The markets of Rome and other cities, as well as the provisioning of the military (including with dairy products, meat, wool and hides) made the practice highly profitable during the late Roman Republican period and the Empire.

Ancient written sources (both literary and epigraphic, including legal texts) provide important evidence about many aspects of transhumance in Central Italy and other areas, including Epyrus. In this area T. P. Atticus was the owner of land near Buthrotum (Buthrint) (Varro, *de re rustica*, hereafter *de r. r.*, 2.2.1-2; 2.2, 20). As is known, he is Varro's principal interlocutor in the *de re pecuaria* (see below) where he mainly deals with sheep breeding (*de r. r.* 2.2.2-20) showing the competence of someone who raised large and above all small livestock (sheep and goats) on a large scale (Pasquinucci 1979; Pasquinucci 1986). Such written evidence supplies an invaluable framework for the study of ancient transhumance in areas where only archaeological data is available and it makes a fundamental contribution to developing the best methodology possible for investigating the archaeological evidence of transhumant pastoralism (Pasquinucci 1990b).

Marcus Terentius Varro wrote about animal husbandry in the second book of his *de re rustica* (37/36 BC?), also entitled *de re pecuaria*, a source of great significance for this subject (Pasquinucci 1979, 108-134; Pasquinucci 2002). Varro was born in or near Reate (now Rieti, in the Sabina region) to a family reputed to be of equestrian rank, and was deeply rooted in this district, where he owned a large farm. He declares his direct experience in long-distance large-scale transhumance of sheep/goats between Sabina and Samnium (*de r. r.* 2.1.16), Sabina and Apulia (*de r. r.* 2.2.9), in cattle transhumance between Sabina and Apulia (*de r. r.* 3.17.9) and in mules vertical transhumance in Sabina (*de r. r.* 2.1.17; 2.8.5). He writes, in the first person or in the form of a dialogue with subject-matter experts, about purchasing animals, pasturage (preferable location, time, manner), breeding (from conception to birth), the proper number of females and males in each flock, health, dogs, etc. As for shepherds, he notes that the transhumant ones had to be stronger than the others 'for neither old men nor boys can easily endure the hardships of the travel and the steepness and roughness of the mountains' (Varro, *de r. r.* 2.2.3).

In Roman Italy the flocks were led between the seasonal pasturages along dedicated drove roads (*calles*) and public roads (*viae*): in 111 BC the network was already largely established and used, since the Agrarian Law (*lex agraria epigraphica: Corpus Inscriptionum Latinarum*, hereafter *CIL*, 1, 200 = *CIL* 1<sup>2</sup>, 585) granted rights of way. Passage along the *calles* and *viae* was free (Pasquinucci 1979: 102-106, 140). A tax (*scriptura*) was collected by the *publicani* for pasturing on Roman *ager publicus* (state domain). We do not know whether tax collection happened in the mountains or in the plains or along the drove roads. In the post-medieval period (see below) the payment was collected in specific areas next to the drove roads and near the winter pasturage in the plain. In the Roman Republican period, flocks belonged to lower-, medium- and upper-class owners. Under the Empire, very large flocks belonged to the emperor; lower, medium- and upper-class owners still existed.

Arguments arising from the passage of the flocks are frequently documented by ancient writers and inscriptions. In particular, disputes between farmers and shepherds were especially frequent. During seasonal transfers animals could escape from the control of the shepherds and trespass in the fields causing damage to the crops. On account of this, the farmers reacted against the shepherds. In other cases the farmers hurt, on their own initiative, the shepherds or stole one or more sheep (Pasquinucci 1979: 106-107). At Saepinum (Sepino), at the Boiano Gate, the inscription *CIL* 9. 2438, dated AD 169/172, documents controversies which arose along the local drove roads between the *conductores gregum oviariorum* (contractors) and the magistrates and *stationarii* (local police officers) who checked the transhumant shepherds and animals. During the protests, some animals were lost (Laffi 1965; Lo Cascio 2000) (Figure 3.4).



Figure 3.4: Saepinum (Sepino), the ancient drove-road and Roman via Minucia, later 'tratturo' Pescasseroli-Candela, enters the Boiano Gate. On the right, the inscription CIL 9, 2438 (Deutsches Arch. Inst. Rome, neg. 78.1471) concerning local controversies involving the transhumant flocks: 'Bassaeus Rufus and Macrinus Vindex to the magistrates of Saepinum...A copy of the letter written to us by Cosmus, freedman of the Emperor a rationibus...we admonish you that you abstain from committing outrages on the contractors for the sheep flocks with great hurt to the Fiscus...' (ll. 1-5, transl. M. H. Crawford). At this time Fiscus meant the Emperor's private property.

Winter pasture and arable agriculture were always likely to have been complementary. In ancient times the animals would most probably have been distributed among a number of farms, in the areas periodically left as pastures during the biennial/triennial rotation of cereal crops, depending upon the size of the available areas. In modern times the *Dohana* fixed the winter pasturage on perennial grassland and on land unploughed, because of the crop rotation and used as temporary pasturage. The advantages gained were resting the land, its fertilisation and thus enrichment of its pasture (Pasquinucci 1979: 150).

The shepherds needed abundant quantities of salt to scatter on pastures for the animals' nutrition and to preserve and store livestock products, including hides. Therefore, whenever possible they took advantage of the saltpans located near the pastures. They also profited from the healing waters located near the grazing grounds for the welfare of the animals (Santillo Frizell 2004). Washing the sheep in the sea or salted water was also considered a useful hygienic practice to disinfect their skin, above all before the shearing (Cato, *de agri cultura*/on agriculture, of c160 BC, 96. 1-2; Columella, *de re rustica*/on agriculture, of the 1st century AD, 7. 4.19; Palladius, *de re rustica*/on agriculture, of the late 4th or early 5th century AD, 6).

The cult of the Italic Hercules, a mythic Italic shepherd, appears to have been closely linked with the areas and paths of transhumance, as was the case with the cult of Silvanus, a deity who protected flocks and herds (Van Wonterghem 1973; Van Wonterghem 1998; Jensen 1962).

In Late Antiquity, transhumance was still practiced on a large scale, as documented until the 6th century (Volpe 2010: 15, quoting *Codex Theodosianus/ Theodosian Code*, of AD 438, 7.7.2; *Cassiodorus Variarum*, of AD 537/538, 1.2; *Corpus Inscriptionum Latinarum* 9, 2826). The concern of late imperial legislation to prevent brigandage by shepherds may reasonably be taken to reflect the continuing importance of transhumance. A lost inscription (*CIL* 9, 2826) from the Adriatic coast (between the River Biferno and Termoli) dated to the last years of the Empire or to the Gothic period, seems to imply the existence of the same system as that described by Varro (*de r.r.* 2.1.16) (Gabba 1985; Gabba 1988).

It is impossible to hypothesize that transhumance stopped in the Middle Ages as it is in fact deeply rooted in the economy of these areas, but there must have been changes in flows and adjustments in at least some of the tracks. In the 12th and 13th centuries, with William I and William II and then Frederick II, the Norman and Swabian domination took important measures to defend and increase sheep farming between Abruzzo and Puglia.

Large-scale, long-distance transhumance was resumed in the mid-15th century, when Alfonso 'the Magnanimous' of Aragon, King of Naples, (1396-1458) instituted the *Dohana menae pecudum Apuliae* (Customs of transhumant livestock in Puglia) (AD 1447) which remained in force until 1806 (see below). The *Dohana* encouraged transhumance through the availability of large seasonal pasturages and drove roads 111 m wide (*tratturi*) (Figure 3.5). Extensive documentary and cartographic evidence about its centuries-long activities is in the Archives in Naples and Foggia; of peculiar interest is the *Dohana menae pecudum Apuliae* Archive (Foggia) (Marino 1988). Alfonso of Aragon regulated transhumance, perhaps looking both at the models of the Mesta (in Castile) and at the Casa de Ganaderos of the Kingdom of Aragon, both dating back to the 13th century, and at the institutions of Lazio (see below).

Initially, the *Dohana*, which was based first in Lucera and then in Foggia, was imposed on all the breeders of the Kingdom who had more than 20 sheep and offered foreigners, upon payment of an annual fee ('fida'), the right to winter the flocks, every year, in the fiscal pastures located in coastal areas of Teramo and Molise ('Doganella d'Abruzzo' and 'Regi Stucchi') and in the Tavoliere of Puglia. The payment was collected in specific areas next to the drove roads and near the winter pasturage in the plains. Flocks had right of passage on all roads and exclusive access to an annual market at Foggia. Here an annual fair

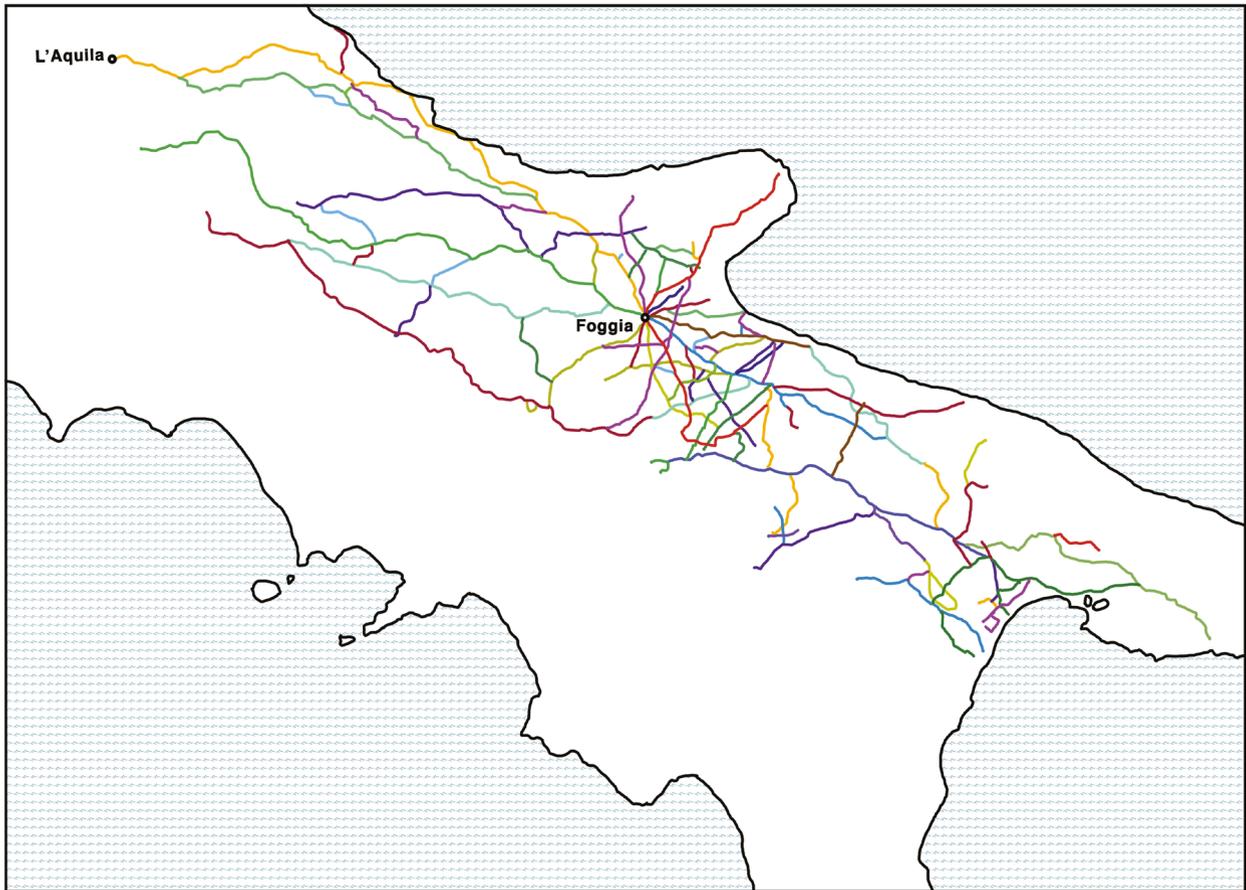


Figure 3.5: Map of the main drove roads ('tratturi') linking the district of L'Aquila with Foggia and south-east Italy. Each colour is a different 'tratturo'. The network was supplemented by minor tracks named 'tratturelli' and 'bracci'.  
(Drawn by G. Bonino, Genoa)

was expanded and sheep farming products, including wool, had to be sold here, not elsewhere. Thanks to the *Dohana's* regulations, salt could be purchased at half price. Flocks and shepherds were protected by horse guards ('cavallarii') during the seasonal journeys. In addition to supervising compliance with the laws and collecting the fees, the *Dohana* divided and distributed its pastures through a system that provided for the leasing (to individuals or groups of breeders) of plots of land commensurate with the size of the flocks. Permanent pasture areas and areas temporarily left for pasture for the multiannual rotation of cereal crops were envisaged, with that triple advantage of rest, fertilization of the soil (through dunging), and consequently richer grasses for lambs. Other grazing areas were reserved for working oxen. The *Dohana* pastures could accommodate more than a million sheep, in addition to large livestock. Subsequent regulations permitted the cultivation of vines, as well as olive and almond trees, within the *Dohana* pastures (Figure 3.6).

For the seasonal transfers of livestock, the *Dohana* created a complex network of grassy paths (see Figure 3.5), subject to precise regulations and the payment of a toll depending on the route, divided into *tratturi* (111.11 m wide), *bracci* (55 m wide) and *tratturelli* (18 to 55 m wide), and marked by *riposi*, large grassy spaces for stopovers for men and animals during the seasonal movements. This network connected the area of L'Aquila with the Tavoliere di Puglia and the environs of Foggia with those of Metaponto. The layout of the pasture roads of the *Dohana* partly coincided with the ancient drove roads and/or Roman *viae publicae* and *calles* (Pasquinucci 1979: 177-181).

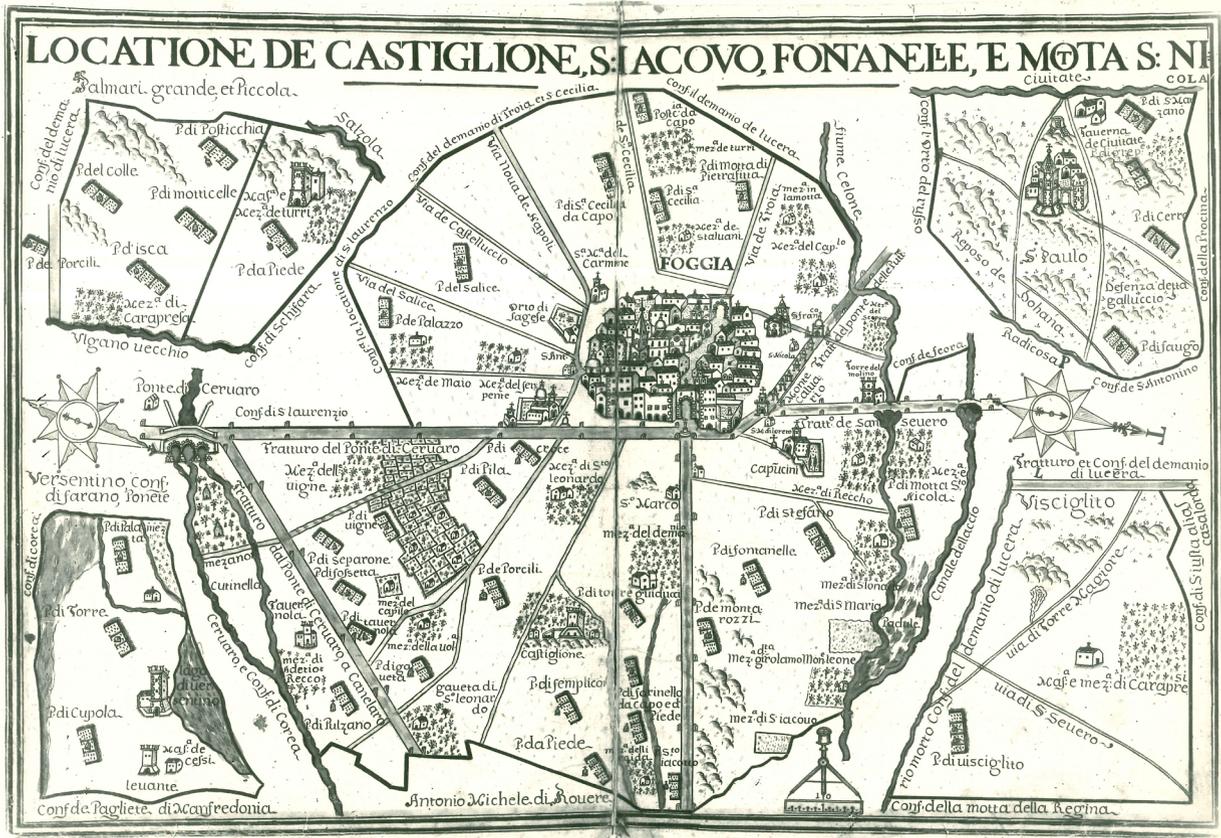


Figure 3.6: Foggia, Archive of the Customs of Foggia: map of the pasturage in the Foggia district, Atlas A. Michele, *Piante delle locazioni* (Foggia, Archivio di Stato, Sez. Fotoriproduzione, lav. 329). The map shows the city, the main 'tratturi' marked by boundary stones on the edges, roads, rivers, bridges, the cultivated areas, etc. The letter 'P.' followed by a local name identifies the various pasture areas ('poste').

The proximity of Samnite (pre-Roman and Roman?) hillforts to post-medieval *tratturi* makes it legitimate to suppose that several *tratturi*, or at least long segments of them, are to be traced back to pre-Roman and Roman drove roads. For example, *Peltuinum*, a pre-Roman and Roman town in the *Vestini* territory, was crossed by the Roman *Via Claudia Nova*, which in post-medieval times became a *tratturo* (Pasquinucci 1979) (Figure 3.7).

With the centuries-old *Dohana* administration, the network of paths of traditional transhumant pastoralism crystallized on the ground, remaining substantially unchanged in the fundamental routes taken until the first decades of the nineteenth century and imparting peculiar characteristics to the landscape of the central-southern Adriatic side (Pasquinucci 1990a) (Figure 3.8). The written and graphic documentation, kept in the *Dohana* archives in Foggia and Naples, is impressive (Pasquinucci 1981).

In the area subject to the *Dohana*, it was necessary to keep a close check on the usability of these pasture routes, as they were often obstructed by the construction of buildings and the planting of crops that hindered the transit of livestock. The written (from the 16th century) and graphic (from the 17th century) documentation attests to numerous significant checks ('reintegre') which in many cases led to the modification of segments of the pasture routes rather than to the demolition of buildings or removal of crops (Figure 3.9). Normally, the fords remained fixed points, but the routes, especially near inhabited centres, could undergo modifications like the meandering of a river, while the fundamental direction remained unchanged. Today the network of sheep/cattle tracks is only partially recognizable

Figure 3.7: *Peltuinum* (Ansidonia): the Roman drove road and via Claudia nova, later a 'tratturo', enters the town (in Abruzzo) from west (Ministero Beni Culturali e Ambientali, Aerofototeca, conc. 217, 21/05/64). In the foreground, the structure on the right hand side of the road is a Roman funerary monument; in the distance, the town enclosed by walls.

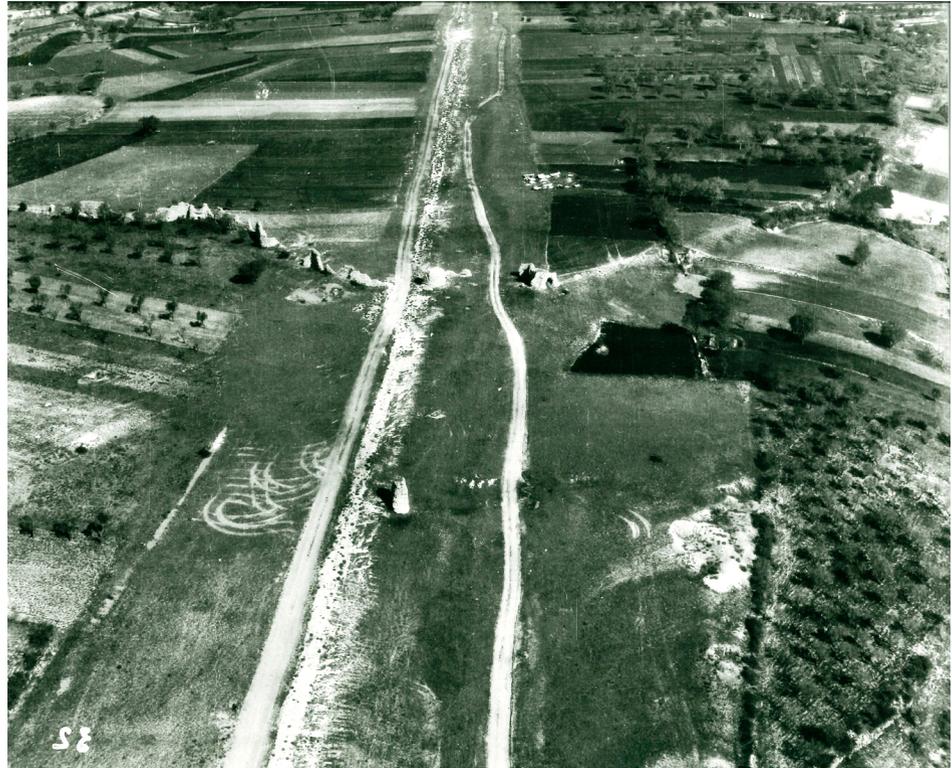


Figure 3.8: The 'tratturo' Foggia-Ofanto crosses the Ofanto river (rising in Basilicata) on a Roman bridge (Ministero Beni Culturali e Ambientali, Aerofototeca, conc. 407, 31/07/69). On the right-hand side of it is the modern bridge. The white arrows mark the 'tratturo' edges.



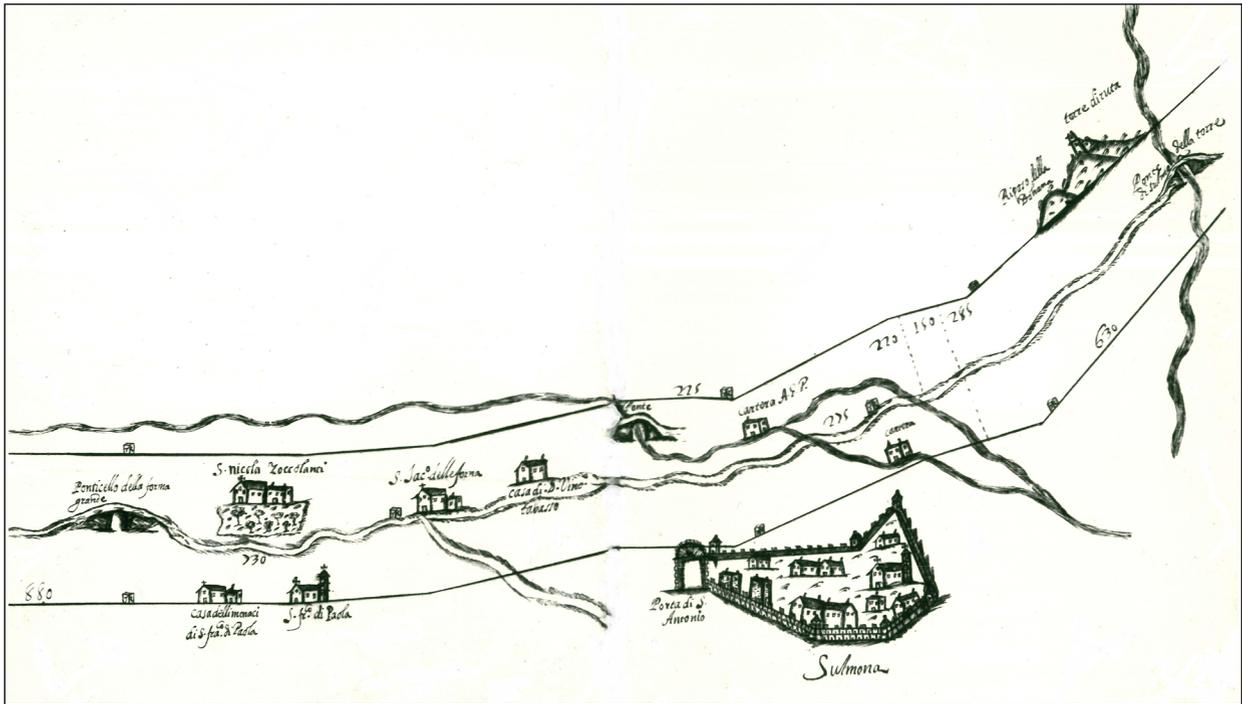


Figure 3.9: Map of the tratturo Celano-Foggia near Sulmona (L'Aquila) (Foggia, Archive of the Customs of Foggia; Reintegro E. Capececelatro 1651-1656). The city is surrounded by walls; the 'tratturo' edges are marked by boundary stones; along the track are churches, monasteries, houses, bridges, etc. Top right a 'riposo della Dohana' (resting area for transhumant flocks and shepherds).

and subject to landscape constraints because usurpations and property sales have progressively reduced its extent by interrupting or reducing the tracks. Therefore, to study the tracks in a diachronic perspective, territorial microanalyses are necessary where the documentation allows.

### The 'Tyrrhenian' District

The winter pastures located in central and southern Tuscany, above all on the coast, in the Viterbo area, in the Roman and Pontine countryside, have traditionally been used as complementary to the summer pastures on the Apennine mountains, from the Lunigiana to the mountains of Umbria, the Marche and Abruzzo, and especially the area of Aquila, and Molise. From the pastures located on the central Italian hills, it was possible to spend the winter in the coastal areas of the Marche and Abruzzo (Pasquinucci 1990b: 169).

In the early Imperial Age, a letter from Pliny the Younger gives a lively and effective picture of the transhumant livestock, large and small, grazing in winter in the coastal strip south of the Tiber (Pliny the Younger, *Epistulae/Letters*, of the 1st century AD, 2.17. 3). Archaeological, topographical, archaeozoological, documentary research and the study of the diffusion of cults enhance our knowledge of pastoralism in these areas in antiquity (Mengarelli 2010).

In the Tuscan and Lazio areas mentioned above, the transhumance between the mountain and coastal pastures was regulated by three Customs that guided management of territorial areas called Siena, the Patrimony of Saint Peter, and Rome. They are documented respectively from the first decades of the 15th century, from the 14th century, and from the 15th century. The last two were dependent on the Papal Government (Imberciadori 1971; Maire Vigueur 1981; Dell'Omodarme 1988; 1996). Unlike the

Aragonese *Dohana*, they did not create a network of dedicated livestock tracks. For seasonal livestock transfers ordinary roads were used, partly corresponding with those of the Roman Age (including the Via Flaminia, Salaria, Tiburtina), with checkpoints at the passes or, near Rome, at the bridges (Pasquinucci 1990b: 169).

In Tuscany, the transfers lasted 7-15 days and took place along traditional itineraries called Dogana or Maremma roads, on whose two sides there was a 14 m-wide grassy strip for the transiting animals to graze. For the Roman countryside in the 16th century it was sanctioned that transfers should take place along the ways identified as 'customs roads', on whose sides the animals had the right to graze for an extension of about 40 m (twenty 'canes': Pasquinucci 1990b: 172). To reach the central-Tyrrhenian plains from the central Italian Apennines, the Via Flaminia, the Salaria and the Tiburtina were used, called by the shepherds themselves 'Roman' and 'consular', and various branches as well as some streets of Rome itself (used at night, according to eyewitnesses).

In this context, the role of Sabina is of particular interest. This region formerly included parts of the current Lazio, Umbria and Abruzzo regions. Sabina was crossed by the Via Salaria, an ancient route connecting the coastal Lazio area rich in saltpans (essential for human and animal nutrition, for the preservation of food products, etc., whence the road name) with the Adriatic coast (Pasquinucci 1990b: 169). Part of the region's produce gravitated towards the market of Rome, which constituted the most important commercial outlet.

Here pastoral activities have taken on multiple forms. Written (Varro, *de r. r.* 2.1.17; 2.8.5; 2.2.9; 3.17.9) and archaeological sources (which include the spread of the cult of Hercules) attest in particular to both vertical and horizontal or long-distance transhumance in the Roman period (Pasquinucci 1990b: 169-170; Van Wonterghem 1973; cf. Letta 1992). The documentation becomes more extensive in medieval, modern and contemporary times. Documents from the Farfa monastery (located near Fara Sabina, in the province of Rieti) attest to the role of the monastery in breeding livestock, transhumant and otherwise, from the second half of the 8th century AD. Regulations on the use of public pastures and the protection of livestock during transfers date back to the mid-9th century.

In medieval and modern times, the horizontal transfers of livestock that occurred in the territory of ancient Sabina took place between the summer Apennine pastures and the winter ones located on the coastal plain between the Grosseto and Pontine areas, or on the Adriatic coast of Abruzzo and Puglia. It follows that the region was a sort of focal point for livestock transfers directed both towards the plains of the Tyrrhenian coast and towards the Adriatic, Abruzzese and Apulian ones (Pasquinucci 1990b, 170-173).

### ***The 'Dogana romana' (Roman Customs Duties)***

The Popes, aware of Rome's food needs, paid attention to agriculture and pastoralism in the Roman countryside, which supplied the city with cereals, fruit and vegetables, meat, cheese, ricotta and wool. In the Statutes of Rome, as early as the 13th century, there were rules intended to regulate the migration of herds. Between the 13th and 14th centuries, landed property in Lazio was mainly divided between the Church, religious bodies and feudal lords. As early as the 14th century the renting of pastures provided very high income for the Apostolic Chamber, even though the papacy was more concerned with the development of cereal crops. These were less profitable, but allowed an occupation of the territory through a network of populated villages and consequently better control of the state.

The pastures were rented for the most part to the owners of small livestock (Figure 3.10) and especially sheep flocks, even though there was a good percentage of cattle and horses. It is not clear when exactly



Figure 3.10: 'Shepherds penning their sheep, campagna', etching from *A Series of Subjects Peculiar to the Campagna of Rome and Pontine Marshes* designed from nature and etched by C. Coleman, Rome, 1850.

the taxation of livestock, inasmuch as it was transhumant, was introduced (see below). It is certain that in the early 15th century there were already two Pasture Customs in the Roman countryside, one called the 'Dogana della Provincia del Patrimonio di S. Pietro' (Province of the Patrimony of St. Peter), the other 'Dogana della Città di Roma' (Customs of the City of Rome). The former was imposed on the use of State pastures, which included those ceded for use to communities and individuals. It extended from the gates of Rome to the borders with Tuscany and Umbria. The latter collected the fees paid by the animal owners who used the pastures belonging to the City.

Some scholars maintain that the Livestock Customs of the Province of the Patrimony were established with a bull of Boniface IX dated 7 September 1402, which granted safe conduct, from the Pontifical Authority, to all the herds that went to the pastures of the Province of the Patrimony, but it does not mention any institution for pasture management (see Maire Vigueur 1981). According to Maire Vigueur (1981), the creation of the Customs of the Patrimony of Saint Peter would have occurred between 1402 and 1424, thanks more to Martin V (1417-1431) than to his predecessors. In 1452 Nicholas V disciplined and codified the matter, insisting on the physical protection of men and herds and flocks, guaranteeing a special jurisdiction and exemption from the payment of all rights during the journey to the winter pastures. Great attention was paid to protecting shepherds from bandits and hostile actions by local communities. The customs tax ('fida') was abolished in 1823, leaving certain privileges unchanged, including the right to graze along the customs routes (see above) and to stay for two days on the same land during transfers.

### ***The Dogana dei Paschi di Siena (The Customs of the Pastures of Siena)***

Preceded by the Dogana in the Roman countryside (1402), the ‘Dogana dei Paschi di Siena’ (Customs of the Pastures of Siena) was established in 1419 by the Republic of Siena (Imberciadori 1971; Dell’Omodarme 1988; Vanni and Cristoferi 2018). It was inherited by the Medici Grand Duchy and subsequently by the Lorraine Grand Duchy without the legal regime undergoing changes, and was abolished in 1778 as part of a series of measures aimed at the formation of a bourgeois type of property. It preceded the Customs of Puglia, created in 1447 and abolished in 1806 (Dell’Omodarme 1996).

The Tuscan plains of the Pisan, and above all of the Sienese Maremma, extending from Cecina to Capalbio, traditionally welcomed livestock flows coming mainly from the Tuscan side of the Apennines, including the Lunigiana, the Garfagnana, the Mugello, the Casentino, the Val Tiberina, but also from the Emilian and Romagnolo Apennines (Dell’Omodarme 1988: 949; Martinelli 2017). The Customs of the Pastures of Siena were based on the concept that in the territory within its borders the pasture (a public good, inasmuch as it was ‘natural’) belonged to the State, which administered it through the ‘Office of the Pastures’.

The pasture area, of a greater or lesser quality (see below), included the property of private individuals, bodies or communities. The regime was valid both for uncultivated land and for fallow land in the context of cereal cultivation, in the sense that farmers’ rights were interrupted in the time between the end of the harvesting operations and the subsequent sowing. With particular reference to sheep breeding, the relationship between the availability of pasture on the one hand and cereal growing with the relative biennial/triennial rotation on the other was always very close (Dell’Omodarme 1988: 964-966).

The Tuscan Customs, upon payment of a tax (‘fida’), guaranteed breeders the right to graze livestock on the customs’ territory, moving freely on the entire surface except in the so-called ‘bandite’ or reserved areas. These were a kind of enclave, exploited by local or by private individuals (individuals, public or ecclesiastical entities) who owned them and could rent them out (Dell’Omodarme 1988: 956) on the basis of private negotiation between breeders and public and non-public owners of the pastures.

The public pastures of the Customs, of poor quality also due to the excessive number of animals that were mostly watched over directly by their respective small owners, were intended above all for the poorest sections of the transhumant society. The private pastures called ‘bandite’ instead offered more valuable but also more expensive grass, appropriate for the interests of the medium and large breeders who used wage labour. Over time they eroded spaces on public pastures, inducing a process of concentration of the ovine heritage and social differentiation (Dell’Omodarme 1988).

### **Some considerations on the past and future of research on transhumant pastoralism**

Since the 1970s and 1980s, the study of transhumance, not only ancient, has experienced exponential growth in many territorial areas. After the important works of Grenier (1905) and Skydsgaard (1974; 1988), further studies, above all those of the great historian Emilio Gabba, brought back to the attention of scholars many problems related to transhumant breeding in ancient and post-ancient times.

In particular, the publication of the book *Strutture agrarie e allevamento transumante nell’Italia romana (III-I sec. a.C.)* (Gabba 1979), as well as other subsequent important works by Gabba (1985; 1988; 1990), effectively brought this subject back to the centre of the interest of both historians (of antiquity and beyond) and archaeologists. They triggered a series of stimulating seminars and conferences (note particularly those at the Ecole Française Rome 1979; L’Aquila, Sulmona, Foggia 1984; Spoleto 1985;

Bern 1986; 12th International Congress of Anthropological and Ethnological Sciences (ICAES), Zagabria 1988). At that time, the discussion between ancient historians and archaeologists was particularly intense and stimulated new methodological reflections and research. At the same time, archaeologists paid particular, renewed attention to the remains of pastoralism and the methodologies to be applied to identify the archaeological traces of pastoral practices and in particular of transhumant breeding (Maggi, Nisbet and Barker 1990).

The awareness that only thanks to the epigraphic and literary sources of the Late Republican and Imperial Age do we know about many aspects of transhumant breeding and its organization, was reiterated and quickly accepted, especially in the case of long-distance transhumance. One cannot over-emphasize the fact that due to the peculiarity of ancient pastoral activities, if there were no written texts, the phenomenon would be practically 'invisible' even in the central-Italic areas where the archaeological-topographical documentation is more substantial; we could only formulate hypotheses on the methods and traces of ancient transhumance (Pasquinucci 1990b). Identifying traces of pastoral mobility and of the paths along which the cattle were transferred is therefore a risky and delicate operation, if it is carried out without the support of unequivocal written, archaeological and archaeometric sources, but simply projecting back in time the known and documented practices of more recent times.

In these decades of intense attention by scholars, transhumant breeding has sometimes been used to explain economic and cultural phenomena and has often eclipsed interest in other forms of pastoralism, whose multiple facets, 'co-presences' with the transhumant breeding itself, and correlations with agriculture (in its various forms characteristic of the mountains, valleys and plains: Pasquinucci 1996; Lloyd 1991; Barker 1995) have not always been adequately assessed. Over the years, the discussion has sometimes overlooked, misunderstood or taken up the extensive, previously published research (at times without citing the source). Gaps must also be noticed between the interpretations of some historians, often characterized as theoretical intellectual exercises based on limited knowledge of pastoral practices, of anthropological aspects and even of the data provided by ancient sources, and those of archaeologists, archaeozoologists and ethnologists, concerned with individual territories within perspectives that include geography, geomorphology, settlement patterns, pastoral economies and practical aspects of breeding.

Historians have often insisted on discontinuity of transhumant breeding, focusing on the 'breakdown' that large-scale transhumant breeding would have suffered with the advent of the Middle Ages. More precisely, according to some scholars, in the early Middle Ages the conditions (wars and depopulation, breakdown of systematic economic relationships, loss of international markets for wool, etc.) were unlikely to favour large-scale, long-distance transhumance (Volpe 2010: 15-17). While, according to other scholars, there had been a grazing tax perhaps under the Normans (11th-12th century) and certainly under Frederick II (1194-1250) (Volpe 2010; cf. Russo 2010). Recently this debate between scholars of antiquity and medievalists has faded and the long-lasting nature of transhumant breeding and practice has been highlighted (Greenfield 1999a and b; cf. Arnold and Greenfield, 2006; Russo 2002; De Pascale and Di Matteo 2019).

At the beginning of the 1980s, at the height of these discussions, Graeme Barker perspicaciously pointed out how this field of study could only progress thanks to a careful integration of written sources and archaeological data acquired through surveys and excavations. Well aware of the difficulty of the dialogue between disciplinary fields and of the fact that in the past, social and economic historians of ancient Rome have been poorly served by most archaeological research', Barker highlighted the remarkable contribution of the most recent archaeological and topographical-archaeological, archaeozoological and palaeobotanical investigations to the knowledge of rural sites, production systems and ancient ways of consumption, particularly important in lesser known regional and sub-regional areas through the Roman treatises *de agri cultura* (Barker 1982).

Since then, the study of transhumance, in its various aspects, has spread to numerous geographical areas and has attracted the interest of many disciplines (e.g. Crawford 2005; Arnold and Greenfield 2006; Pasquinucci 2016a; Volpe 2010; Bourdin, Corbier and Russo 2016; Costello and Svensson 2018; De Neef *et al.* in press). In fact, an important contribution to the recent studies of transhumance (and especially that of the ancient and medieval periods) was and is being given by landscape archaeology and by specific palaeoenvironmental, bioarchaeological and archaeometric research, in particular archaeozoology and isotopic analyses. (See Pasquinucci 2016a and Pasquinucci 2016b for further detail and bibliographies and for a valid anthropological approach see De Neef *et al.* in press.)

For the contribution to the study of the mobility of humans and animals (bred or wild), among the most recent points of investigation, the isotopic and multi-isotopic analyses of dentine and bone collagen samples on the one hand, and of soils and pastures on the other hand, deserve particular attention: they offer new perspectives of knowledge on the use of seasonal pastures in more or less extensive territorial areas. The relevant publications are numerous, like the sessions and papers in recent international conferences. Among the most recent meetings, I will confine myself to citing the 20th Annual Meeting of the European Association of Archaeologists (Istanbul 2014), Session T045006: *Isotopic Investigation of Pastoral Production: Innovative Approaches to Patterns of Mobility, Economy and Exploitation*; LAC 2014 (3rd Landscape Archaeology Conference, Rome 2014), Session 2: *Inland and mountainous areas of the Italian Peninsula and population patterns from Protohistoric to Medieval periods*, with 44 papers, 42 of which were on subjects inherent to pastoral economics and breeding; 21st Annual Meeting of the European Association of Archaeologists (Glasgow 2015), Session AM6: *Casting a glance over the mountains: archaeological and biogeochemical approaches to the understanding of vertical mobility*. Among the publications, particular mention must be made of *Isotopic Investigations of Pastoralism in Prehistory* (Ventresca Miller and Makarewicz 2019) and *Historical Archaeologies of Transhumance across Europe* (Costello and Svensson 2018).

Other topics of great interest on which it seems to me one could profitably work include the following:

- the socio-economic arrangements (studying the agents and products of the transhumant breeding and their marketing, including for the military market),
- the type of sites and the demographic load characterizing the areas affected by the phenomenon in their geographical (mountain, valley floor, plain, coastal strip) and diachronic diversity,
- the location, extension and ownership of pastures, whether public or private.

Obviously, it will be through multidisciplinary approaches capable of integrating all the available methods and sources that research on pastoral mobility and transhumance in particular will continue to progress. These will take into account palaeogeographical and palaeoenvironmental studies, epigraphic, literary and documentary sources, political and socio-economic aspects (including the forms of ownership and possession of land and pastures, and the existence of 'frontiers'), and archaeological, archaeozoological and archaeometric data.

To conclude, transhumance generally persisted over many centuries (Figure 3.11). The determiners of its forms included the environment and the climate. Variations in scale and in routes and travel modes depended on factors such as pasture scale, grazing rights, peace or war, drove road conditions, economic changes, other anthropic and economic factors (historical-political and even religious situations). These could cause greater or smaller changes in the number of livestock and in the routes of seasonal transfers, even interrupting them for shorter or longer periods, perhaps to create new ones. This paper provides just a few glimpses of a vast subject, to stimulate further and ongoing discussion among scholars.

## References

- Arnold, E.R. and H. J. Greenfield 2006. *The Origins of Transhumant Pastoralism in Temperate South-eastern Europe. A zooarchaeological perspective from the central Balkans*, British Archaeological Reports International Series 1538. Oxford: Archaeopress.
- Baker, Fr. 1999. The ethnoarchaeology of transhumance in the southern Abruzzi of Central Italy- An interdisciplinary approach, in L. Bartosiewicz and H. J. Greenfield (eds) *Transhumant Pastoralism in Southern Europe. Recent Perspectives from Archaeology History and Ethnology*, Archaeolingua Series Minor 11, E. Jerem and W. Meid (eds): 99-110. Budapest: Archaeolingua Alapítvány.
- Barker, G. 1982. Review of J. M. Frayn, E. Gabba and M. Pasquinucci, J. Kolendo. *Journal of Roman Studies* 72:192-194.
- Barker, G. (ed.) 1995. *A Mediterranean Valley*, I-II, London-New York: Leicester University Press.
- Bourdin, S., M. Corbier and S. Russo S. (eds) 2016. *Allevamento Transumante e Agricoltura. Les Mélanges de l'École française de Rome - Antiquité (MEFRA)* 128-2.
- Burdese A. 1952. *Studi sull' 'ager publicus'*. Torino: Giappichelli.
- Costello, E. and E. Svensson (eds) 2018. *Historical Archaeologies of Transhumance across Europe*, European Association of Archaeologists. Themes in Contemporary Archaeology, 6. K. Kristiansen, E. Bánffy and P. Attema (eds). Abingdon and New York: Routledge.
- Crawford, M.H. 2005. *Transhumance in Italy: its History and its Historians*, in W.V. Harris and E. Lo Cascio (eds) *Noctes Campanae. Studi di storia antica ed archeologia dell'Italia preromana e romana in memoria di Martin W. Frederiksen*: 159-179. Naples: Luciano Editore.
- Dell'Omodarme, O. 1988. La transumanza in Toscana nei secoli XVII e XVIII. *Les Mélanges de l'École française de Rome (Moyen-Age, Temps modernes)* 100: 947-969.
- Dell'Omodarme, O. 1996. Le Dogane di Siena, di Roma e di Foggia. Un raffronto dei sistemi di 'governo' della transumanza in età moderna, *Ricerche storiche* 16, 2: 259-303.
- De Neef, W., A. Larocca and P. Attema in press. Archaeology meets ethnography: mobility in the foothills and uplands of the Pollino range (Calabria) during the Bronze Age and Late Modern period, in C. Colelli, A. Larocca, G. Mittica, F. Larocca (eds), forthcoming *Analecta Romana Instituti Danici Supplementum: Dal Pollino all'Orsomarso. Ricerche archeologiche tra Ionio e Tirreno*.
- De Pascale, F. and D. Di Matteo 2019. The transhumance perception: a macro-regional phenomenon in the Mediterranean basin. A comparison between verbal descriptions of the tradition in Calabria and Molise (Southern Italy). *International Journal of Anthropology* 34, 3-4:199-211.
- Gabba E., 1979. Sulle strutture agrarie dell'Italia romana fra III e I sec.a.C. in Gabba E. and M. Pasquinucci 1979:15-73.
- Gabba, E. 1985. *La transumanza nell'Italia romana. Evidenze e problemi. Qualche prospettiva per l'età altomedievale in L'uomo di fronte al mondo animale nell'alto medioevo*, *Atti Settimana Studi Centro Italiano Studio Alto Medioevo* 31, Spoleto 1983: 373-389. Spoleto: CISAM.

- Gabba, E. 1988. *La pastorizia nell'età tardoimperiale in Italia*, in C. R. Whittaker (ed.). *Pastoral economies in Classical Antiquity*: 134- 142. The Cambridge Philological Society, Suppl. 14: Cambridge: Cambridge Philological Society.
- Gabba, E. 1990. La transumanza nell'economia italico-romana, in *Giornate internazionali di Studio sulla transumanza*. Atti del Convegno L'Aquila Sulmona Campobasso Foggia 1984: 15-27. L'Aquila: Deputazione di Storia Patria (reprinted in E. Gabba 1994. *L'Italia romana*. Biblioteca di Athenaeum 25:155-165. Como: Edizioni New Press.
- Gabba, E. and M. Pasquinucci 1979. *Strutture agrarie e allevamento transumante nell'Italia romana (III-I sec. a.C.)*. Biblioteca di Studi Antichi, G. Arrighetti and E. Gabba (eds) 18. Pisa: Giardini Editori.
- Gargola, D.J. 1995. *Lands, Laws and Gods: Magistrates and Ceremony in the Regulation of Public Lands in Republican Rome*, Chapel Hill: University of North Carolina Press.
- Greenfield, H.J. 1999a. The advent of transhumant pastoralism in the temperate southeast Europe: a zooarchaeological perspective from the central Balkans, in L. Bartosiewicz and H. J. Greenfield (eds) *Transhumant pastoralism in Southern Europe. Recent Perspectives from Archaeology History and Ethnology*: 15-36. E. Jerem and W. Meid (eds) Archaeolingua Series Minor 11. Budapest: Archaeolingua Alapítvány.
- Greenfield, H.J. 1999b. Introduction, in L. Bartosiewicz and H. J. Greenfield (eds) *Transhumant pastoralism in Southern Europe. Recent Perspectives from Archaeology History and Ethnology*: 9-12. E. Jerem and W. Meid (eds). Archaeolingua Series Minor 11, Budapest: Archaeolingua Alapítvány.
- Grenier, M. A. 1905. La transhumance des troupeaux en Italie et son rôle dans l'histoire Romaine. *Mélanges de l'École française de Rome - Antiquité* 25: 293-328.
- Imberciadori, I. 1971. Il primo Statuto della Dogana dei Paschi maremmani in I. Imberciadori. *Per la storia della società rurale. Amiata e Maremma tra il IX e XX secolo*:107-140. Parma: La Nazionale Tipografia Editrice (reprinted in Z. Ciuffoletti and P. Nanni (eds), 2002. I. Imberciadori. Studi su Amiata e Maremma: 97-125. Firenze: Accademia dei Georgofili).
- Jensen, S. S. 1962. Silvanus and his cult. *Analecta Romana Istituti Danici* 2:11-42.
- Laffi, U. 1965. L'iscrizione di Sepino (CIL, IX, 2438) relativa ai contrasti fra le autorità municipali e i conductores delle greggi imperiali con l'intervento dei prefetti del pretorio. *Studi Classici e Orientali*14: 177-200. (reprinted in U. Laffi, *Studi di storia romana e di diritto*. Roma: Storia e Letteratura 2001).
- Letta, C. 1992. I santuari rurali nell'Italia centro-appenninica: valori religiosi e funzione aggregativa. *Mélanges de l'École française de Rome - Antiquité* 104.1: 109-124.
- Lloyd, J. 1991. Farming the Highlands: Samnium and Arcadia in the Hellenistic and Early Roman Imperial Periods in G. Barker J. Lloyd (eds) *Roman Landscapes. Archaeological Survey in the Mediterranean Region*. Archaeological Monographs of the British School at Rome 2: 180-193. London: British School in Rome.
- Lo Cascio, E. 2000. I greges oviarici dell'iscrizione di Sepino (CIL IX 2438) e la transumanza in età imperiale, in *Il Princeps e il suo impero. Studi di storia amministrativa e finanziaria romana*. Documenti e Studi 26: 151-161. Bari: Edipuglia.
- Maggi, R., R. Nisbet and G. Barker (eds) 1990. *Archeologia della pastorizia nell'Europa meridionale*, Rivista di Studi Liguri 56-57. Bordighera: Istituto di Studi Liguri.

- Maire Vigueur, J.-C. 1981. *Les Pâturages de l'Église et la douane du bétail dans la province du Patrimoine (XIV-XV siècles)*. Roma: Istituto di Studi Romani.
- Marino, J. A. 1988. *Pastoral Economics in the Kingdom of Naples. Johns Hopkins University studies in historical and political science*, 106th series, 1. Baltimore: Johns Hopkins University Press.
- Martinelli, A. (ed.) 2017. *Montagna e Maremma. Il paesaggio della transumanza in Toscana*, Pisa: Istos – Felici Editore.
- Mengarelli, C. 2010. Agro Romano: il sistema economico pastorale tra l'Antico ed il Medioevo. Alcune considerazioni in G. Volpe, A. Buglione and G. De Venuto (eds) *Vie degli animali, vie degli uomini. Transumanza e altri spostamenti di animali nell'Europa tardoantica e medievale*. Atti Secondo Seminario Internazionale di Studi "Gli animali come cultura materiale nel Medioevo" Foggia 2006: 129-140. Bari: Edipuglia.
- Pasquinucci, M. 1979. La transumanza nell'Italia romana, in E. Gabba and M. Pasquinucci 1979: 79-182.
- Pasquinucci, M. 1981. *La transumanza e il paesaggio: alcune mappe di tratturi e dei pascoli "fiscali" di Puglia*, in L. Nuti and R. Martinelli (eds). *Fonti per lo studio del paesaggio agrario. Atti III convegno di storia urbanistica. Lucca 1979*: 51-67 Lucca: Centro Internazionale per lo Studio delle Cerchie Urbane (CISCU).
- Pasquinucci, M. 1986. T. Pomponio Attico e l'allevamento transumante in Epiro. *Acta Archaeologica Lovanensia* 26: 145-157.
- Pasquinucci, M. 1990a. La transumanza e il paesaggio in *Giornate internazionali di studio sulla transumanza*. Atti Convegno L'Aquila Sulmona Campobasso Foggia 1984: 29-38. L'Aquila: Deputazione di Storia Patria.
- Pasquinucci, M. 1990b. Aspetti dell'allevamento transumante nell'Italia centro-meridionale fra l'età arcaica e il medioevo. Il caso della Sabina, in R. Maggi, R. Nisbet and G. Barker (eds) 1990. *Archeologia della pastorizia nell'Europa meridionale*, Rivista di Studi Liguri 56-57. Bordighera: Istituto di Studi Liguri: 165-177.
- Pasquinucci, M. 1996. Il Sannio pentro: territorio ed economia, in L. Del Tutto Palma (ed.) *La tavola di Agnone nel contesto italico*, Atti Convegno. Agnone 1994: 17-26. Firenze: Olschki.
- Pasquinucci, M. 2002. L' allevamento, in G. Forni and A. Marcone (eds) *Storia dell'agricoltura italiana I, I. L'età antica. L'Italia romana*: 157-224. Firenze: Polistampa.
- Pasquinucci, M. 2016a. Strutture agrarie e allevamento transumante: Emilio Gabba e l'attualità dei suoi studi, in C. Carsana and L. Troiani (eds) *I percorsi di un Historikos. In memoria di Emilio Gabba*. Atti Convegno Pavia 2014. Collana Athenaeum 58. Pavia: New Press.
- Pasquinucci, M. 2016b. Studiare la transumanza: fra dati acquisiti e prospettive di studio "isotopiche", in S. Russo and S. Bourdin (eds) *I tratturi fra tutela e valorizzazione, Atti del Convegno di Foggia 2014*: 19-24. Foggia: Claudio Grenzi Editore.
- Russo, S. 2002. *Tra Abruzzo e Puglia. La transumanza dopo la Dogana*. Milano: Franco Angeli.
- Russo, S. 2010. La transumanza tra geografia e istituzioni. Alcune note, in G. Volpe, A. Buglione and G. De Venuto (eds) *Vie degli animali, vie degli uomini. Transumanza e altri spostamenti di animali nell'Europa tardoantica e medievale*. Atti Secondo Seminario Internazionale di Studi "Gli animali come cultura materiale nel Medioevo" Foggia 2006: 83-84. Bari: Edipuglia.

- Santillo Frizell, B. 2004. Curing the flock. The use of healing waters in Roman pastoral economy, in *PECUS. Man and Animal in Antiquity*, Proceedings Conference Swedish Institute Rome 2002: 84-94. The Swedish Institute in Rome Projects and Seminars, 1. Rome: Swedish Institute in Rome.
- Skydsgaard, J. E. 1974. Transhumance in Ancient Italy. *Analecta Romana Instituti Danici* 7: 7-36.
- Skydsgaard, J. E. 1988. Transhumance in Ancient Greece. Cambridge Philological Society, Suppl., 14: 75-86.
- Tibiletti, G. 2007. *Studi di Storia Agraria Romana*, A. Baroni (ed). Trento: Trento Università degli Studi di Trento.
- Van Wonterghem, F. 1973. Le culte d'Hercule chez les Paeligni. Documents anciens et nouveaux. *L'Antiquité* 42-1: 36-48.
- Van Wonterghem, F. 1998. *Hercule et les troupeaux en Italie centrale : une nouvelle mise au point* in C. Bonnet, C. Jourdain-Annequin and V. Pirenne-Delforge, *Le Bestiaire d'Héraclès : 241-255*. Presses universitaires de Liège. [www.openedition.org/6540](http://www.openedition.org/6540)
- Vanni, E., Cristoferi D. 2018. The role of marginal Landscape for Understanding Transhumance in Southern Tuscany (twelfth-twentieth Century AD): a reverse perspective integrating ethnoarchaeological and historical approaches, in Costello, E and E. Svensson (eds) *Historical Archaeologies of Transhumance across Europe*, European Association of Archaeologists Themes in Contemporary Archaeology, 6: 197-218. K. Kristiansen, E. Bánffy and P. Attema (eds). Abingdon and New York: Routledge.
- Ventresca Miller, A.R. and C. Makarewicz C. A. (eds) 2019. *Isotopic Investigations of Pastoralism in Prehistory*, European Association of Archaeologists, Themes in contemporary archaeology 4, K. Kristiansen, E. Bánffy and C. Broodbank (eds). Abingdon and New York: Routledge.
- Volpe, G. 2010. Alcuni cenni sulla transumanza tra Tardoantico e Medioevo: archeologia, archeozoologia e storia, in G. Volpe, A. Buglione and G. De Venuto (eds) *Vie degli animali, vie degli uomini. Transumanza e altri spostamenti di animali nell'Europa tardoantica e medievale*. Atti Secondo Seminario Internazionale di Studi "Gli animali come cultura materiale nel Medioevo" Foggia 2006: 11- 17. Bari: Edipuglia.



## 4. The TraTTo project: paths and pastures from prehistory to modern times in Southern Tuscany: research approaches and activities

G. Pizziolo, M. De Silva, N. Volante, D. Cristoferi and A. Zagli

*The paper presents the interdisciplinary approach developed for the TraTTo project (acronym of Transhumance and Territory in Toscana) related to the study of transhumance's paths and pastures in Southern Tuscany in a long-term perspective, from prehistory to modern times. The project is carried on by a research group of the Department of History and Cultural Heritage of the University of Siena in collaboration with the École Française of Rome. The TraTTo project is dedicated to analysing features of Tuscan transhumance through a landscape archaeology perspective and using a strong GIS structure for analyses and data-gathering based on historical, archaeological and cartographic sources. In this paper we present some results of the activities, including field survey and archive researches.*

**Keywords:** *transhumance, longue durée, landscape archaeology, rural history, historical geography, archaeological markers, GIS, Southern Tuscany*

### **Introduction: the TraTTo project**

TraTTo (Transhumance and Territory in Tuscany) is the first project focusing on features of Tuscan transhumance such as paths and pasturages from prehistory to the modern age. It has been developed by geographers, landscape archaeologists, prehistorians, and medieval and early modern historians of the Department of History and Cultural Heritage (DSSBC) of the University of Siena, as part of a wider research framework funded by the École Française de Rome to study pastoralism practices in the long-term.

The aim of this project is to address in a diachronic perspective the transhumant practices in Tuscany by focusing on the reconstruction of paths and grazing land use within the Maremma area (Figure 4.1). Paths and pasturages represent two essential forms of material evidence of transhumance. The territory under study, called Maremma, is in Southern Tuscany; it was a traditional area of winter grazing of transhumant flocks between medieval and modern times (Cherubini 1981; Cristoferi 2019: 7-29; Zagli 2018) while in the previous phases, during prehistory and Antiquity, we have evidence of mobile pastoralism. This area is studied by the project through an interdisciplinary perspective integrating methods and sources from historical geography, landscape archaeology and rural history. The long time perspective allows us to verify the degree of continuity of the phenomenon and its variation during the centuries. This approach involved contributions from archaeological and historical studies. Such an approach is executed through a strong GIS structure to support wide data-gathering and multi-faceted analyses. In this way, TraTTo aims to integrate and to enrich the cross-disciplinary debate on transhumance as well as to test new methodologies to study mobile pastoralism in the long-term through a wider archaeological perspective.

In this regard, Tuscany does not differ from other case-studies regarding the ephemeral traces left on the ground by transhumant practices (Costello and Svensson 2018; Mayoral *et al.* 2021; for Tuscany: Vanni and Cristoferi 2018). As we know, structures and facilities related to pastoral life, by their very

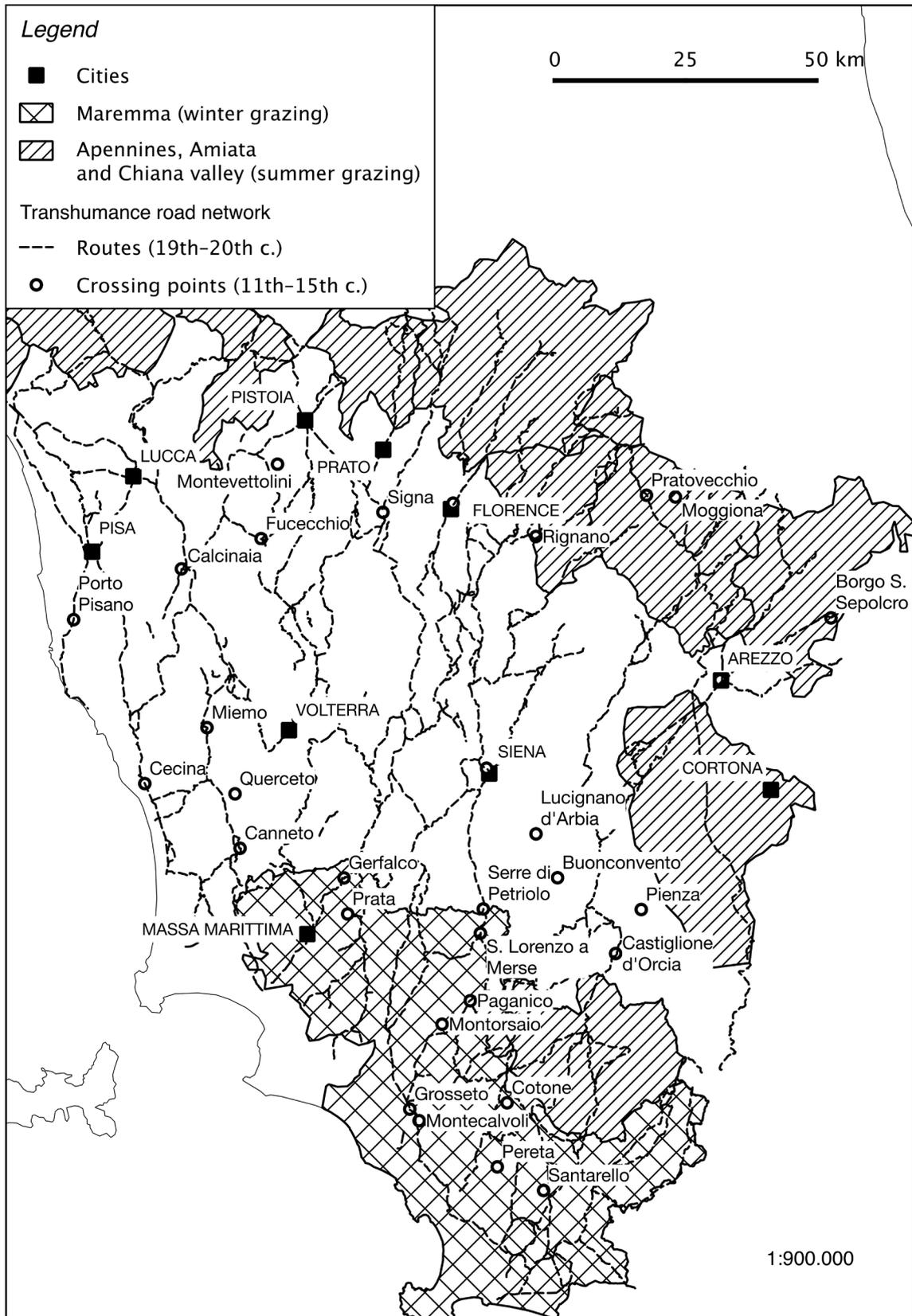


Figure 4.1: Historical transhumance in Tuscany: the Maremma area (at the far south) and the early modern transhumant path-network. (Source: Cristoferi 2021, 205)

nature, are almost always temporary. Even the tracks that represent one of the most tangible forms of evidence (Garcia Martín and Raverdy 1992: 361-372) are often recognizable only for short periods after their abandonment. Furthermore, transhumance sometimes shares paths and facilities (roads, rest places, bridges, fords, etc.) with other types of mobility, making it difficult to recognize its presence. Such issues, in Tuscany, seem even harder to address. In our study-region herds used mainly common trails, roads and paths, as for example the medieval *Via Francigena*, connecting the Northern Apennines and the southern coastal plains towards Rome (Cristoferi 2019: 23-29). Furthermore, in medieval and modern times Tuscan transhumance paths were generally 180-250 km long and offered several alternative routes, especially through the intensively cultivated central Tuscany. To sum up, historical transhumance in Tuscany was a more flexible and less heavy organization than other cases such as Spain or Southern Italy, for instance. There sheep-tracks (*cañadas*, *tratturi*) were created, protected and controlled by institutions such as the Mesta and the Dogana della Mena delle pecore (Braudel 1995: 85-101). Moreover, in Tuscany the debate about the continuity of use of these trails in a long time perspective is still unresolved. In some cases their use is suggested since the Etruscan Period (Barbieri 1964: 232-234; Dell'Omodarme 1996: 275; Marcaccini and Calzolari 2003: 11-15); however, it is not clear if, how, when and why this path network changed between prehistory and modern times (Gabba 1985: 373-389; Corbier 2006: 67-82). As a consequence, the Tuscan laboratory forcefully requires us to cross-reference different kinds of sources and information in order to study transhumance and to identify, when possible, its traces on the ground.

In this paper we aim to discuss the methodology developed to address these issues step by step for the case-study of Maremma. First we present an overview of the main historical sources available to study paths and pasturages, then the archaeological data; finally we describe the database structure and the linkage with GIS analyses. We conclude by presenting the integrated approach applied to field survey activities in the Parco Regionale della Maremma in 2016. This has been used as a test to assess the archaeological information analysed for the project. By discussing its results we can show new insights and potential drawbacks which keep open the debate on transhumance within landscape archaeology.

### **Historical sources and perspectives**

The sources available in the state archives of Tuscany, such as those of Florence, Siena and Grosseto, can provide a wide range of evidence regarding transhumance. Generally they refer to practices, paths and pasturages and may be sorted into two main groups according to their origin: private and public documents. Information from these sources are entered and analyzed in a chronological and spatial continuum (Figure 4.2).

The private documents often record precious information about the management of animals in terms of property, rent and economic value. However, this series of information is fragmentary and requires assimilation with others to identify the area of origin of animals and shepherds, the places of grazing, the area of their destination, the composition of the herds (species, quantities, age of animals). Sometimes one can also gather information that allows the establishment of patterns of fluxes, or the flows of flocks, related to the management of sheep. Archives belonging to religious institutions like monasteries and hospitals can describe the transhumance phenomenon with details about pastoralism practices as well as the complex system of management of flocks and herds, such as that of the Hospital S. Maria della Scala of Siena (Cristoferi 2019: 29-59). These institutions owned large sheep flocks and bovine herds as well as managed pasturages spanning from the Apennines to the Maremma coastal areas. As a consequence, it is possible to find in their archive documents precious information referring to a wider time range and also wider spatial reference. From religious archives we can understand better the practices, pathways, the areas of pasturages and rest areas, as well as their management, herding

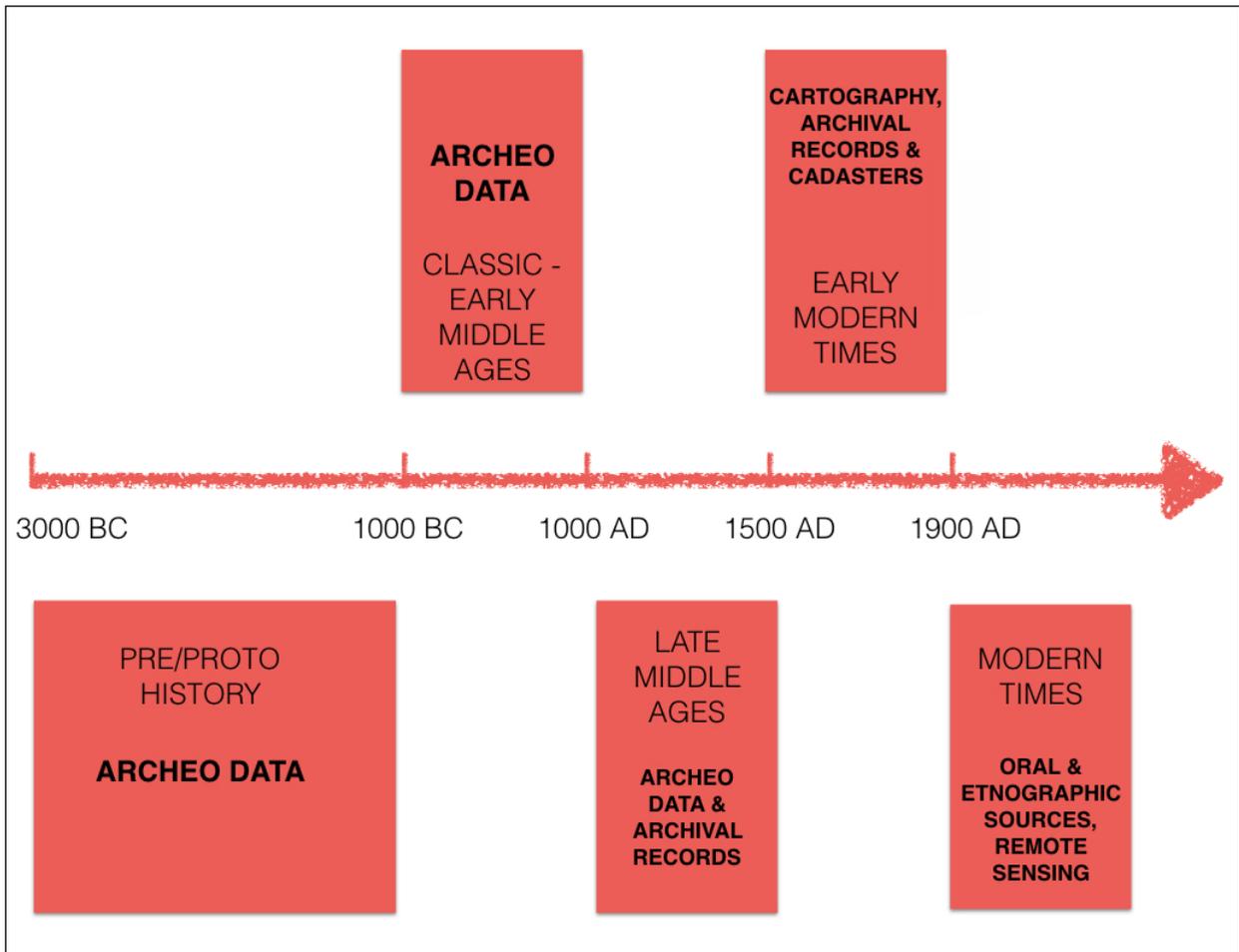


Figure 4.2: The historical and archaeological sources of the TraTTo project: a timeline.

techniques, values of animals and related economic systems. These archival records are generally more consistent for modern times while they become less traceable for previous historical phases. (For instance, see the State Archive of Florence, *Corporazioni Religiose soppresse*, record 260, for the abbey of S. Maria of Vallombrosa (1039-1808).)

Public archival records can provide broader and more reliable information, although not always explicit or detailed on describing paths and pasturages. The statutes of the Maremma communities (13th-18th centuries) provide many references about the areas of collective and private pastures, the rules developed to protect these, and the tolling points of transhumant livestock (Cristoferi 2021: 11-20, 91-143; see in the State Archive of Siena, for example, the series *Statuti dello Stato* (Statutes of rural communities), records 3-140 (1288-c.1750) and *Capitoli* (Submissions of rural communities), records 2-163 (c.1000-1519)). This information should be cross-referenced with that coming from the legislation of the municipality of Siena (Cristoferi 2021: 11-20; see in the State Archive of Siena, for example, the series *Concistoro* (the Sienese government), records 2111-2143 (1295-1422), *Consiglio Generale* (the Sienese parliament), records 152-209 (1353-1422), *Statuti di Siena* (Statutes of Siena), records 20-47 (c.1300-1500)). This city-state, between the 14th-16th centuries, constituted the main political actor in Maremma. After 1353 the collective pastures were reorganized in the Dogana (monopoly) of the Paschi (pasturages) di Siena, a public institution dedicated to the management of the pastures for transhumant livestock in exchange for the payment of a series of tolls (Cristoferi 2021: 35-90). The early modern

balances of the Dogana dei Paschi, furthermore, provide a very detailed data series for the period 1600-1740, recording provenance, owners, number and composition of herds as well as tolling points of all the transhumant flocks paying the toll to the Dogana (Cristoferi and Visonà 2021; see in the State Archive of Siena, *Dogana dei Paschi, Bilanci* (Balances of the Dogana), records 410-578 (1466-1740)). In this way, it is possible to develop geo-spatial analyses of changes in these features within Tuscan transhumance (De Silva *et al.* 2020).

As we have seen, the period covered by the sources presented above starts from the 13th century. It is less easy to study earlier transhumance. Notwithstanding this, the TraTTo project aims to investigate this phenomenon from its very beginning. Our research strategy envisages gathering information from written documents as well as from cartography and from contemporary datasets including oral sources and ethnographic data. This kind of regressive analysis considers transhumance as a result of a continuous process and relies on the *Annales* approach developed by Fernand Braudel (1985). In this project we assume his interpretation of transhumance practices as a *longue durée* Mediterranean phenomenon. Indeed, Braudel affirms that 'it is impossible to do justice to this complex phenomenon by rigid classification. Transhumance implies all sorts of conditions, physical, human and historical. In the Mediterranean, in its simplest form, it is a vertical movement from the winter pastures of the plain to the summer pastures in the hills. It is a way of life combining the two levels, and, at the same time, a source of human migration' (Braudel 1985: 85-101). In this regard we decided to start from this definition and to use both archaeological and historical assumptions and data to study transhumance as well as other forms of sheep-breeding, pastoralism and flock mobility in the past. Such an approach is essential for a study covering prehistory, Antiquity and the High Middle Ages (Corbier 2006: 67-82).

### **Transhumance evidence in archaeological sources: problems and potentialities**

As noted, in the Mediterranean context we are dealing with different types of transhumance which may have left archaeological traces directly or indirectly connected to the mobility of herds. What are those archaeological markers that can be related to pastoral activities? Medieval and modern evidence analysed through the lens of ethnoarchaeological perspectives (Avanzini and Salvador 2014) may provide good hints but they are not always easily identifiable when considering more ancient periods. The identification of archaeological markers of transhumance has been debated on various occasions, but the landscape archaeology approaches have mainly referred to medieval and modern periods (Costello and Svensson 2018). Regarding Italian contexts, a series of problems and proposals have been developed since 1990 as pastoralism and transhumance have been discussed through different perspectives (Barker *et al.* 1990-1991; Barker *et al.* 1995). The contribution of archaeozoology is obviously fundamental and increasingly helpful (De Grossi Mazzorin 1995; 2001; 2004); however, faunal remains are not always preserved on site. In this sense, especially for pre-medieval times, we prefer to think about a more generic and flexible form of mobile pastoralism of animals or herds and we do not refer specifically to sheep management. We suggest that goats and cattle were probably also involved in the rural management system and mobile grazing. Which markers are useful to detect transhumance is still a matter of debate, as is agreement on the beginning of this phenomenon between prehistory and protohistory (see Carrer 2013 for the alpine context).

For the TraTTo project we addressed wide chronological and typological ranges; at a first stage the archaeological research was focused on the acquisition of published and legacy data. Stratigraphical information which can be related to breeding activities and mobility of herds was our primary data target. However, such evidence is quite rare and palaeoenvironmental data are seldom available in the brief publications or preliminary reports which often constitute the majority of our archaeological sources. As a preliminary stage we have analysed Superintendency Archives and bibliographical

references related to the Maremma area, looking for any records of information, features or artefacts, Neolithic to medieval, that may testify to mobile herding, through direct or indirect information, even such as that related to cults. The latter increases from the Iron Age onwards, with references to ritual activities which can be referred to cults dedicated to *Hercules*, *Diana e Selvans/Silvanus* and possibly related to transhumant practices (Cambi *et al.* 2015). We have also gathered data concerning sites, temporary structures or artefact scatters which can be related to pastoral activities. Single or isolated data can be hard to contextualise and attest as landscape archaeology proof of mobility.

Other activities related to pastoral economies are taken into account. Considering human-environment relationships, particular attention is dedicated to evidence related to salt production and salt circulation, as this product may have an archaeological connection with pastoralism and transhumance (Di Fraia 2010; Poesini 2012; Vanni and Cambi 2015). Movements of people and herds may accomplish different needs; salt is partly related to cheese production and in itself is an important resource exchanged among different human communities in the past. In other territories pastoral movement is associated with exchange of salt and other special goods or raw material (Montagnari Kokelj 2007). In this perspective other correlations, in particular for the earliest phases, can be suggested with the spread of early metallurgy in Europe and the Italian peninsula with a related increasing mobility of people (Barfield 2003). In particular, in coastal and inland areas of Tuscany it seems that pastoral economy and the spread of early metallurgy had a synergic relationship (Volante 2003). Moreover the identification of natural resources related to springs or thermal waters (to clean fleeces and to treat wounds or diseases in the flocks: Santillo Frizell 2004) as well as other facilities for the management of herding which may be related to archaeological evidence, have been incorporated into the GIS multi-sources approach.

### GIS framework and landscape analysis

In order to meet its multiple needs, the TraTTO research framework is based on a GIS structure which works as the principal container and organizer of our information. The project involves the acquisition, management and analysis of large amounts of geographical data from different types of sources and includes cartographic data, remote sensing images, and geo-located alphanumeric datasets. The historical and archaeological data – and the objects to which they refer – differ by type (archaeological evidence, historical information, palaeoenvironmental data, etc.), chronology (from prehistoric to modern) and geometry (spot evidence, linear paths, surfaces or areas). All this information needs to be organized in order to perform landscape analysis relating and overlaying different types of sources. In fact one of the great advantages of building up a GIS framework consists in the possibility of relating and integrating different types of data in a unique environment.

Data archives are organized using three main kinds of information layers: a) broad context (such as topography, thematic maps, aerial photographs); b) specific data (such as historical information, archaeological data, historical road and pathway networks, place-names, palaeoenvironmental data); c) a spatial (geo)database containing elaborations on transhumance topics and features: paths, places, and other attestations related to transhumance (Pizziolo *et al.* 2017). In other words, the geo-database organises information about heterogeneous and complex entities, including their ‘geometry’ (position, shape and topology) and the sources attesting to their existence. To create a general framework for the whole region of Tuscany, some basic informative layers have been acquired. In addition to the physical and topographic setting (altimetry, slope, hydrography, etc.) we have collected data regarding known paths, facilities and toponyms related to transhumance. With regard to these, the earlier study *I percorsi della transumanza in Toscana* (Marcaccini and Calzolari 2003), constitutes the fundamental reference work as it presents the most complete, accurate and detailed reconstruction of the modern transhumance system in Tuscany at a topographic scale.

The information collected comes from cartographic and historical analyses, ethnography and field recording of important traces related to the social memory of transhumance. The paths and roads brought into the GIS constitute a fundamental source that we use to assess continuity and characteristics of transhumance ways by working backwards from modern to ancient phases. As a consequence, in addition to the road layouts, we have acquired all the evidence related to structures, rest areas, hospitals, customs, crossing points and so on; moreover, information related to toponymy that may refer to transhumant activities has also been acquired. Particular attention was paid to the area of analysis for which we are undertaking topographic checks and field activities. In this way information layers regarding networks of paths and rest places are overlaid with other historical information as well as compared with the geographical background.

In order to perform landscape analysis, the GIS framework is organised in a complex way that allows us comparison of data derived from different kinds of sources. The system as a whole is made up of the set of databases that, structured in a shared environment, allow us to integrate and validate information, scales and sources, according to the research methods of historical geography (Rombai 2002) and the landscape approach.

Within a comparative analysis a great opportunity derives from the use of historical aerial photographs dating back to the 50s and 70s of the last century. The analysis of historical photographs provides important traces of past landscape features not visible anymore. These anomalies become evidence of settings of the past and are very useful in landscape archaeology investigations (De Silva and Pizziolo 2005). The richest and most interesting are the photos shot in 1954 by the GAI (Gruppo Aeronautico Italiano) flight which provide a portrait of the Tuscan territory before the boom of the 1960s (IGMI). They allow appreciation in rural areas of a context not yet transformed by the expansion of urban centres and the consequent creation of infrastructures (see, for example, the area around Grosseto). Moreover, in the hilly and mountainous areas land use reflected the traditional features of the Tuscan landscape. In particular, if the photographs are at an appropriate scale, it is possible to highlight the presence of a network of pathways and minor road segments which in some cases we could interpret as related to pedestrian or animal paths now in disuse or abandoned.

Another important historical source for a landscape archaeology investigation is historical cartography. The analysis of ancient maps, drawn with different aims and techniques mainly from the 14th century, offers complex new spatial information very important for the study of territorial settings of the past. Detailed research in the Historical Archives of Tuscany included study of the historical cadaster, particularly important for their historical value and richness of information content.

In Tuscany the Catasto Leopoldino (1817-1835) provides original data about territorial settings and land use with high accuracy (the maps and documents of the Catasto Leopoldino are kept in the State Archives of Tuscany. Open source WMS layer of the Catasto Leopoldino are available at: <https://www.regione.toscana.it/-/castore>). The historical cadastral maps are particularly relevant for the experiments made to georeference them (De Silva 2007; 2010; De Silva and Tarchi 2010) and it is possible to input the Leopoldino maps as a layer in our GIS, allowing us to investigate its significant details by exploiting the comparative potentialities of GIS overlay, as appears clearly below. The Catasto Leopoldino is on the one hand itself an historical source analyzed to highlight elements of toponymy, viability and land use attributable to nineteenth-century practices related to transhumance. In addition, this information is sometimes also referable to previous periods. The cadastre is in fact a unique source to investigate the memory of places and the pastoral mobile activities both in the short and long term. On the other hand, the Catasto Leopoldino allows us to check some historical information derived from archival analysis and from the study of archaeological evidence. We will see some examples of these great potentialities in the Maremma area. All the information and elements that emerged during the investigation and

considered relevant to the research themes have been acquired (together with their geographical acquisition) in an organic and synthetic form within the spatial database of transhumance routes and places.

The TraTTo GIS plays a fundamental role, as we will see better later, in the preliminary investigation and in the planning phases, in the documentation procedures of legacy and field data, and finally in the subsequent verification and analysis of the results.

### **Why Maremma?**

The importance of the Maremma area for studying the development of the transhumance phenomenon in Tuscany has been discussed, focusing especially on historical reasons. On the basis of this framework we would like to enhance some main issues related to our study area. We selected the Maremma area and in particular the province of Grosseto as a very challenging context to test problems and potentialities of transhumance investigations. Moreover, Maremma seems a convenient test area as concerns historical, geographical and ecological characteristics. We can analyse, in a unique context, a valuable quantity and quality of data from archival sources and from literature and also relate them to archaeological data derived by the investigations carried out by the research team and our Department.

This set of data will allow us to test, in a suitable context, some problems concerning the study of transhumance. The study will follow some basic research plans which can be synthesised in the following steps: a) Exploring the continuity of transhumance in a *longue durée* perspective; b) Checking the evolution of pastoralism (is it possible to individuate different forms of management of herds from mobile pastoralism to transhumance?); c) Mapping paths and pasturages in the long term (directions, strategies and factors of influence); d) Setting out how to perform interdisciplinary methods - quantitative, qualitative and regression analyses (Rombai 2002); e) Field activities; f) Field testing.

Starting from historical data we have pointed out that the transhumance phenomenon leaves very ephemeral traces on the ground since the related structures and pastoral facilities are almost always temporary. In other words we have to deal with ephemerality in an heterogeneous context composed of different kind of *invisible* data and features. This approach develops further questions when we are dealing with archaeological evidence.

### **Setting up the archaeological survey in Maremma district**

In order to assess the first phase of the TraTTo project once historical, archaeological and geographical data have been organised in the GIS framework we have selected some areas in the Maremma district that can preserve evidence of transhumance. The project aims to set up a methodological approach to analyze the transhumance phenomena. In particular through testing of the subset areas we would like to assess problems and potentialities of the field survey in order to apply the most effective procedures in the whole Maremma area. Our attention has been oriented toward the Maremma Regional Park (PRM) as a subset study area which satisfies several research criteria suitable for our aims. The Park is located in the southern part of Grosseto district and spans from the Ombrone River to the Uccellina Mountains, covering a variety of natural settings constituted by the Uccellina reliefs and foothills, and by the plain of Alberese. The protected zone comprises all types of ecosystems: from the sea to the pine forests, from the steep slope rocks and dunes down to the beach, from wilderness to cultivated fields. Since 1975 the PRM has been a high conservation context in terms of natural conditions and traditional activities and has preserved its territory from anthropogenic actions with a strong impact on the transformation of land use; this condition is particularly interesting for our aims. Moreover, the area has been investigated

by different teams of the University of Siena and of the Archaeological Superintendence for many years and several archaeological sites (prehistoric to medieval) related to settlement and productive activities have been investigated through field survey and excavations. Stratigraphical investigations revealed funerary, ritual and settlement activities and testified exploitation of natural resources and local raw materials from Palaeolithic to medieval times. Moreover, it is important to underline that the area is crossed by the Roman road Aurelia and by medieval tracks (Vaccaro 2007; Citter and Arnoldus-Huyzeveld 2011; Volante and Pizziolo 2013; Pizziolo and Volante 2015; Sebastiani *et al.* 2015).

Due to its morphological setting, the inner plain extending from Alberese to Talamone (Figure 4.3) constitutes a preferential corridor for the mobility network in northern and southern Maremma (coastal zones of southern Tuscany and northern Lazio). The area offers an easy way through the plain between the Uccellina Mountains and the interior hills. These characteristics were probably of interest also for transhumant activities which are testified until the last century. Historical sources referring to the recent past testify that the zone was dedicated to the exploitation of winter pastures (cattle, sheep and goats – evidence of these pastures is recorded in historical cartography till the 18th century but it is possible to identify resting places for herds only in detailed maps related to limited zones). This trend attests, also from an ecological point of view, the good conditions of the pastures of this area during the winter. These pasturages may have constituted an important attraction for the choices related to mobile pasture management.

Historical data show that the study area was a destination point of medieval and modern transhumance fluxes (Cristoferi 2019: 12, 23-29, 73-78). Indeed, the historical sources indicate that the Alberese area has been one of the terminal zones of the connections between the transhumance routes of Maremma and the interior areas of Tuscany (Marcaccini and Calzolari 2003: 138-151).

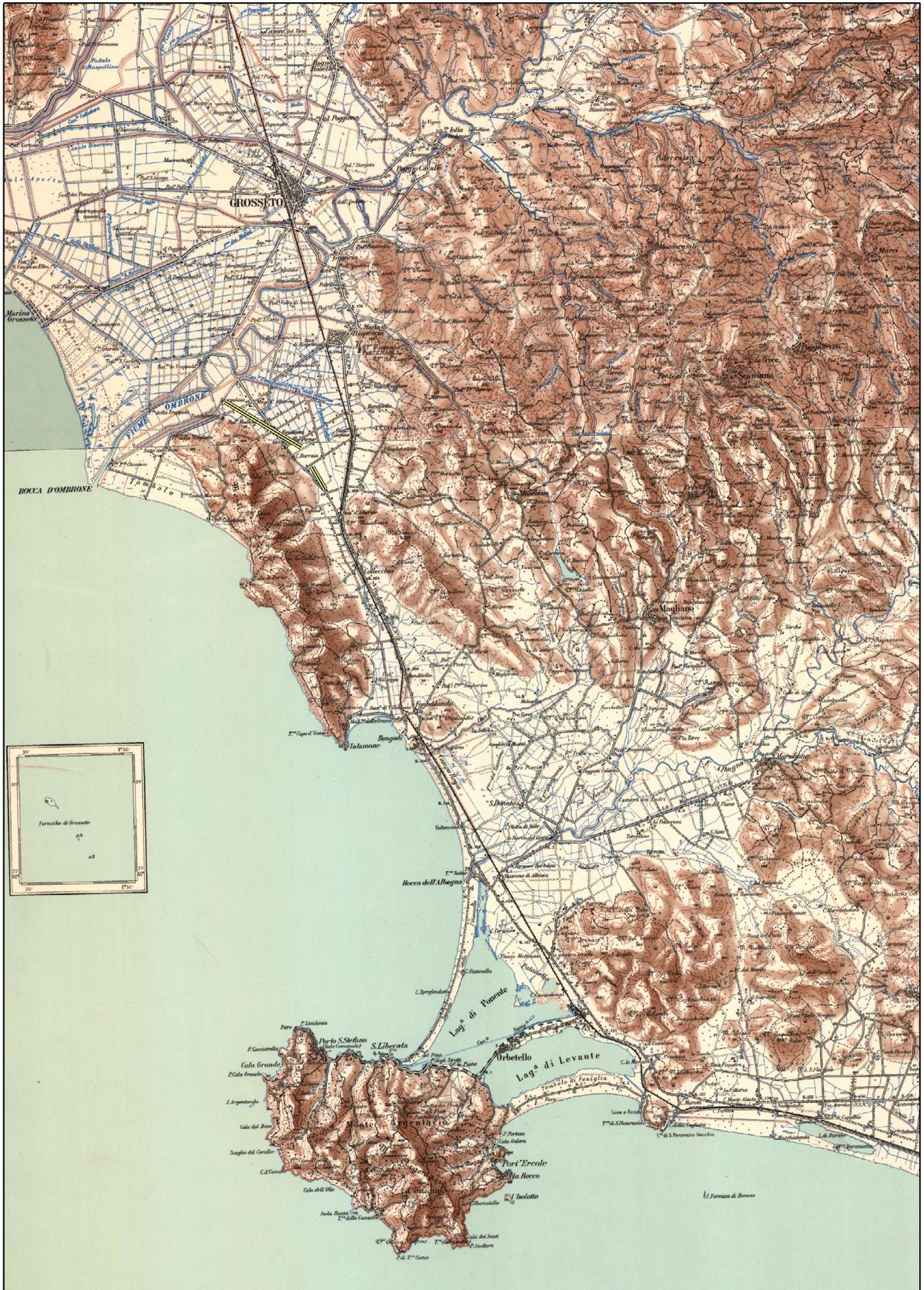
For all these reasons we have selected the PRM to test our methodological framework through field survey activities.

If transhumance testifies seasonal and repeated movements of animals and people connecting different ecological zones, then from a landscape perspective the schema of transhumance could be identified by a network of paths and tracks that connects nodes relative to temporary structures or rest places.

### **A field test for transhumance: problems and potentialities of archaeological investigations**

Once we have selected the study area, which are the best forms of evidence that we can expect? Pathways and temporary structures. However, the transhumance phenomenon may leave very ephemeral traces on the ground since the related structures and pastoral facilities are almost always temporary: temporary shelter, temporary fences, temporary places to rest or to undertake production activities. Seasonal activities may leave little evidence even if repeated through time. Moreover tracks or pathways are often recognisable only for short periods after their abandonment or are difficult to individuate because transhumance sometimes shares paths and facilities with other types of mobility. How can we detect such ephemeral traces? How can we relate them to transhumance activities? It seems that shepherds are almost *invisible* according to the very weak traces they may leave in the landscape (Mayoral *et al.* forthcoming). But what kind of field evidence can we find related to transhumance in the past? The test is oriented in setting up methodological issues that can be further assessed in other similar areas. The idea is to cross-refer different research criteria in order to improve the possibility of detecting these ephemeral traces.

The research is organised in two actions: a) Systematic field survey of areas which seem to have high potential derived by the analysis of archaeological data (investigation is oriented to individuate



artefact scatters or evidence of activities testified by structures or soil evidence); b) Field checking of contexts characterised by geomorphological features and place-names which may refer to pastoralism or transhumance. The integration of these actions will be further analysed through the GIS tools investigating possible interactions and continuity in the wide time perspective.

During October 2016 the first field survey (Pizziolo *et al.* 2017) focused on transhumance was carried out in Maremma Regional Park. Sample areas were chosen to assess the potentiality of the methods and criteria adopted, starting from the identification of Land Units which may have a high archaeological potential (Pizziolo and Volante 2015; Arnoldus-Huyzendveld *et al.* 2016) in terms of preserving transhumance evidence (Figure 4.4). The methodology adopted follows the basic principles of the landscape archaeology approach: we look for features that may represent, somehow, a continuity in the use of these land units dedicated to pastoral activities and management of herds in the near and remote past. We may find evidence of these practices through the analysis of place-names, historical sources and/or archaeological records referring to different periods: these features once input into the GIS need to be analysed to individuate possible relationships and convergences.

In practice the field survey activities were focused on different zones. Attention was paid to historical and archaeological information input in the GIS and in particular the ones related to road or track elements: areas related to modern sheep tracks (Marcaccini and Calzolari 2003); areas along the traces of the Roman road *Aurelia Vetus* and related structures (Poggesi and Pessina 2015). Investigations aimed at intercepting areas that had a direct relationship with elements of the historical road network, whether or not they were also attested as transhumance tracks. In addition to road networks we analysed



Figure 4.4: Field survey activities in Maremma Regional Park.

Figure 4.3 (opposite): Topographical map of the study area; the Uccellina Mountains are in the centre of the map, beside the sea with the low-lying land to their east being the passage between Alberese at their northern end and Talamone at their southern end.

topographical and environmental characteristics that could constitute elements of interest in the mobility and resting place strategies adopted for herding. We selected areas whose geomorphology could facilitate the grouping of livestock or provide shelter. The transhumance-related use of these areas was later assessed by reviewing place-names and historical information (De Silva 2007; 2010). The selection of peculiar topographical or morphological characteristics was also undertaken through the analysis and elaboration of the Digital Terrain Model. Unfortunately, through the field survey we have not found strong evidence of tracks used by livestock, or evidence of huts or temporary structures, neither of housing (*stabulatione*) nor herd activities. Maybe they are too ephemeral to be detected with traditional archaeological survey. In the field we mainly identified artefacts referable to the whole chronological period under examination but just scattered (off-site) and not concentrated in the form of 'sites'.

Nevertheless, among the finds we note the most significant presence of prehistoric lithic artefacts in particular relating to Holocene phases. The density of artefacts on the surface has allowed us to delimit areas of more or less intense activities or simple anthropic presence but it is not possible to individuate scatters related to specific actions or functions. The majority of finds are classified as off-site. But the debate on off-site interpretation is still open and it is hard to establish thresholds to define off-site features. Indeed we underline that the concept of off-site has changed also in relationship with field survey techniques (Foley 1981; Bintliff *et al.* 2000) and the target of the investigation. It is important to remember that field survey analysis may focus on the continuous nature of the data rather than individuating the data in preconceived sets of archeological elements.

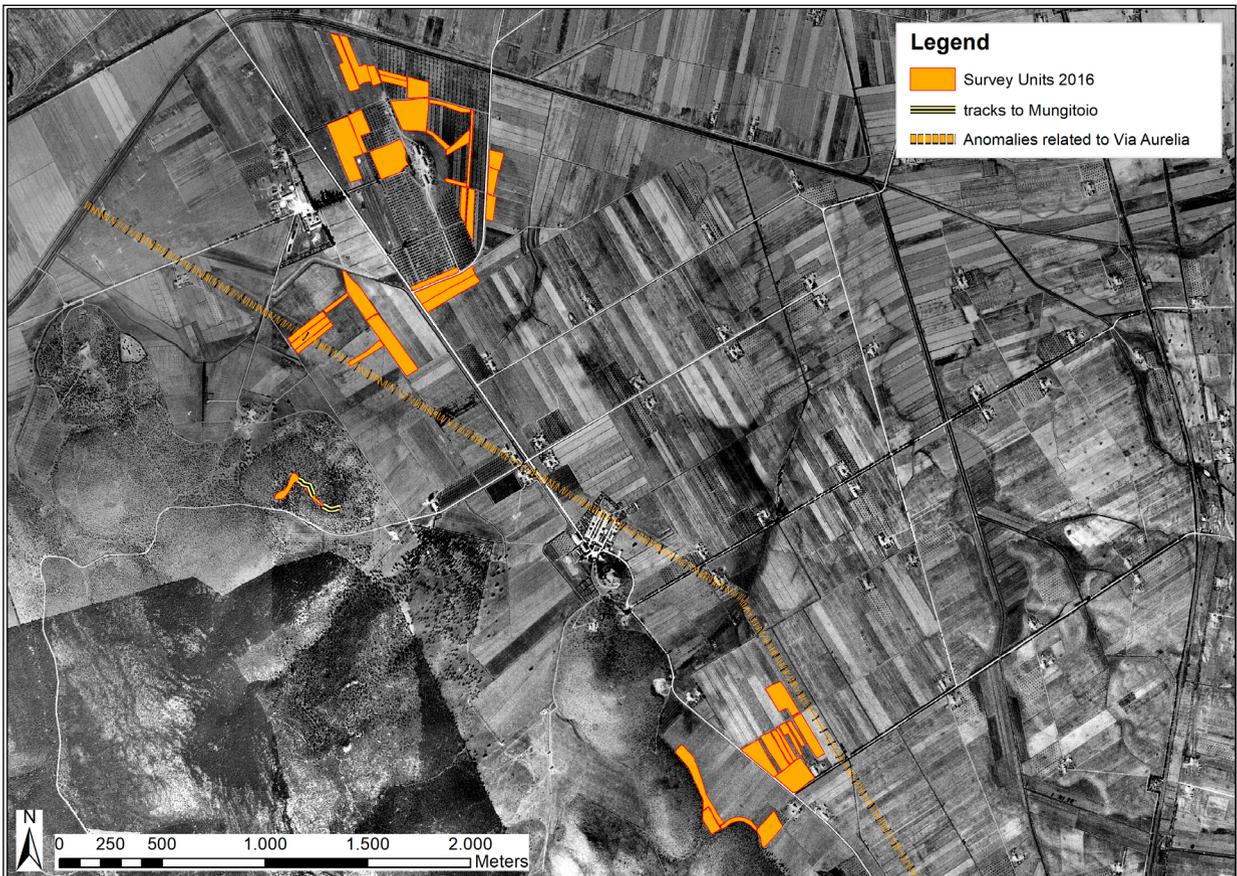
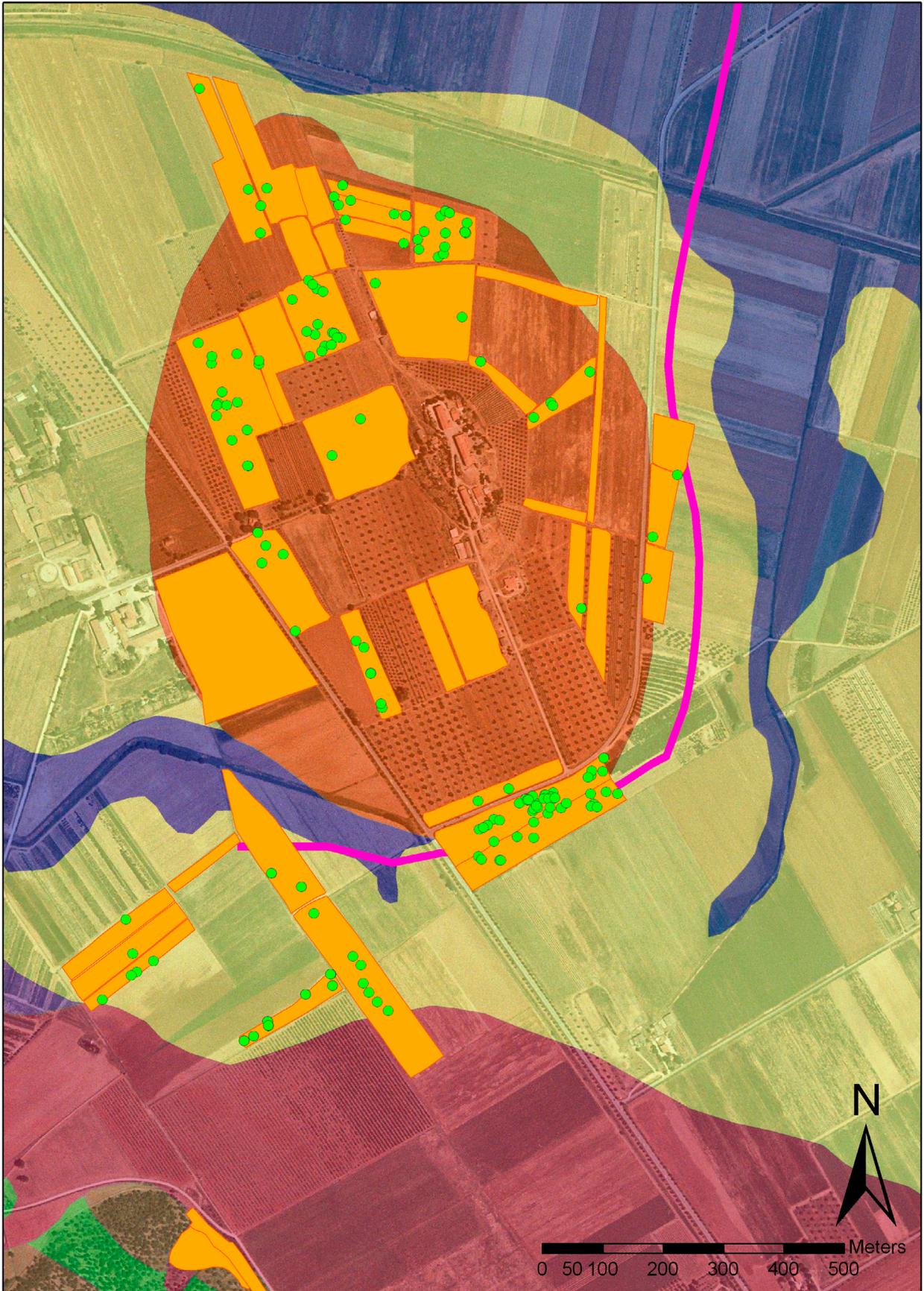


Figure 4.5: Maremma Regional Park, Alberese: survey units (orange polygons) overlaid on 1954 aerial photographs. The orange line underlines the Via Aurelia Roman road traces in the photo.

For our study area, in order to give some meaning to this off-site distribution we need to pay more attention to indirect information that assesses any kind of disturbances which have been imposed on the soil and its archaeological content. A good example of assessment of archaeological preservation in different land units comes from the analysis of the Roman road Aurelia, mainly testified by historical notices and by a neat cropmark clearly visible in the 1954 aerial photos (De Silva 2007; 2010). The archaeological record has been drawn also on the Leopoldino Cadastral maps and is marked as 'ruins of Ancient Aurelia road'. The GIS analysis compares maps and historical aerial photographs attesting for the Roman road a strong continuity of road traces in the landscape until 1954 (Figure 4.5).

We expected to find a lot of material evidence in a buffer area along the road but the field survey activities revealed only in those fields some prehistoric lithic finds, in particular obsidian artefacts. How is this absence of evidence possible? A fundamental hint comes from the detailed geological maps. Here we have to take strongly into account that the Alberese plain was affected by different wetland conditions. In particular, geomorphological studies and detailed soil maps indicate clearly which are the areas (mainly referred to as Pleistocene) that were not affected by reclamation activities or other infill of alluvial dynamics. This allows us to expect that these areas were 'walkable' and almost stable since the Neolithic (Pizziolo 2018) and not disturbed later by reclamation activities. These areas were also crossed by modern sheep tracks. In this case we would expect to find some evidence related to pastoral activities, but we found only the generic prehistoric artefact scatter (Figure 4.6). The absence of pottery fragments of any period could give us further suggestions. One is related to the probable use of perishable or organic raw materials employed to make tools, vessels, containers and other artefacts. Another is related to the difficulties of artefact preservation on the surface. We think that we have probably underestimated the effect of farming activities undertaken in the last decades on that soil: intense ploughing caused the emergence of lithic artefacts but may have affected the preservation of other artefacts or ecofacts. Most likely crop farming has washed out other archaeological evidence. This may have a stronger effect on the ones related to temporary activities which we suppose may leave weak traces in the soil. As a confirmation of this degradation process we can observe that in the present day aerial photos the marks of the Roman Aurelia road are strongly decreased. The field survey indicates that stones which paved the road were dispersed in the field or partially re-used. The analysis of data demonstrates that we need to carefully consider also the effect of recent land-use in the assessment of archaeological potential.

We also assessed areas identified for their geomorphological characteristics against place-names possibly related to the management of herding. The area of *Mungitoio* contains many elements of interest: it is a limited plateau that opens to the north near a small saddle (65 m.a.s.l.) at the northern end of the Uccellina Mountains (see Figure 4.5). Geographically the saddle connects the slopes of the Uccellina Mountains with the Alberese plain. The area is characterised by some large clearings while cattle grazing is still practiced in the historic olive grove that covers it. Moreover, small depressions on the plateau may have functioned for collecting animals for resting or for milking. The area is lapped by a track that today is recognisable discontinuously but which we can identify on old topographical maps. The place-name *Mungitoio* refers to the practice of milking animals. Other place-names referring to mobile pastoralism in the area of *Mungitoio* have been recorded in 18th-century maps and written sources, including those related to resting places for goats. The context seems very promising. Field survey at *Mungitoio* revealed evidence of all periods and in particular related to pre- and protohistoric artefacts. In this area a concentration of lithic finds and fragments of prehistoric pottery suggests a continuity of exploitation of the area. Also the presence of prehistoric pottery on the surface suggests that this land unit may have a high conservation potential. Further investigations may help to understand if all this evidence is related to pastoral activities or transhumance practice.



## Final remarks

A clear remark emerges from the analysis of the TraTTO field survey results: the integration of historical sources in the elaboration of archaeological data provides very good hints for the analysis of this kind of context. The *Mungitoio* case study assesses that our reverse approach may lead to interesting observations on possible continuity related to pastoral activities. In this case historical cartography is a very precious source which may provide details on land use and landscape features – both natural or anthropic – related to herding management and transhumance. To analyse the *Mungitoio* system some positive hints may be highlighted looking in detail at the relationship with the landscape context and the continuity processes undertaken in the area. Surely the *Mungitoio* evidence should be further elaborated, moving to a different analysis conducted not only on the surface. Apparently the ephemeral nature of transhumance is not detectable here using standard field survey activities. Moreover the continuity in landuse may have also caused some loss of the earliest herding evidence.

It is worth remembering that the debate on the identification of markers and archaeological features referable to the earliest forms of transhumance is still open and includes also the contribution of different analyses (Migliavacca *et al.* 2015; Gerling *et al.* 2017). We recall that Daniela Cocchi Genick (1990) indicated some variables and suggestions for setting up research for the investigation of early transhumance in Tuscany; among these we mention: the distribution analysis on diversified morphological areas and the identification of sites used frequently but for short periods. According to those suggestions we have possibly found areas with high archaeological potential. Another important assessment concerns the integration with geomorphology and soil maps. For example, in the case study of the plain area at Alberese the survey was concentrated in land units that from a pedological point of view were not affected by infrastructure or building disturbance that occurred in recent times. As we have already mentioned this was not enough, so now the variables for selecting areas with high archaeological potential should better assess crop farming as a possible negative effect on pastoralism evidence. The discovery on the surface of prehistoric artefacts in obsidian, jasper and flint referable to the Holocene confirms the hypothesis that these soils are stable and little disturbed, starting at least from the earliest Holocene but probably these characteristics are not enough to preserve ephemeral evidence.

According to the project framework, during the phases of the building up of the GIS structure and the setting up of the agenda, we have been increasingly aware of the importance of an integrated approach for our research. In fact the field survey experience, even if it has not yet revealed peculiar pastoralism indications, suggests some methodological approaches which benefit from the integration of sources in search of transhumance evidence.

The archaeological survey may provide evidence of a variety of phases attesting a detailed continuity; however, the single analysis of artefacts may not provide enough information to understand the nature of this evidence, in particular when we are dealing with low impact actions or temporary occupation of places which leave ephemeral traces.

Place-names, historical references and ethnoarchaeological approaches may open new interpretations of the archaeological landscape, providing hints on the social stories of families and communities involved in this seasonal movement in a given territory and time. Furthermore, iconographic sources offer other important information on behaviours, structures, facilities and material cultures related to pastoral management, pastures and pathways (Cristoferi 2019: 35-47, 68-71). In some cases we can locate

---

Figure 4.6 (opposite): Maremma Regional Park, Alberese. Modern sheep track (pink line) and survey units (orange polygons) overlaid on 2010 aerial photographs. Green points relate to artefact distribution.



Figure 4.7: A shepherd and his herd exiting the city of Siena. Ambrogio Lorenzetti, *The Buon Governo frescoes: a detail*. Siena, the Public Palace, 1337-1339. (Source: [www.wikimedia.commons](http://www.wikimedia.commons))

this information in a given place; in other cases, even if the localisation of the features is difficult, the iconographic sources provide magnificent hints (Figure 4.7).

Our attempt to search for transhumance evidence highlights some problems but also some potentialities. We have assessed that for the TraTTo project a field survey planned *ad hoc* may help to select areas with high archaeological potential. The regressive method and the integration of different sources are fundamental components of the research structure and allow us to select the best areas with preservation opportunities of such ephemeral traces.

Other contexts are currently under investigation, such as caves and shelters that offer new hints in the framework of pastoral activities. Some of them have been occupied since prehistoric times, others are located on the cliffs towards the sea side and have been greatly disturbed by sea level changes or sand dune formation (Sarti 2014). Also in this case the reconstruction of landscape transformation is fundamental to investigating the archaeological potentialities of these contexts.

After learning from this first field survey test, work is in progress and new activities are focusing on the need to identify better archaeological markers of pastoral management and transhumance activities.

## Acknowledgements

The Tratto project 2015-2021 is funded by the Department of History and Cultural Heritage (DSSBC) of the University of Siena and by the École française de Rome - Programmes de recherche 2012-2016, 2017-21: *La transhumance en Italie centrale de la Protohistoire à nos jours*. Regarding the project goals and research activities see: <https://www.dssbc.unisi.it/it/ricerca/progetti-di-ricerca/progetto-tratto>. Regarding publications related to the project see: Cambi *et al.* 2015; Pizziolo *et al.* 2017. We are very grateful to Parco Regionale della Maremma for logistic support provided during field survey activities in the Park.

This paper has been conceived in a full collaboration among the authors. In particular, the structure of the paper has been edited by: GP, DC, MDS. Moreover, GP coordinated the field activities, DC worked on the historical issues, MDS on the geographical ones and on the GIS structure. GP and NV worked on the archeological data; GP focusing on the landscape archaeology approach and on the field survey analysis, NV on the analysis of artefacts. AZ is the scientist responsible for the TraTTO project.

## References

- Arnoldus-Huyzendveld, A., Citter C. and G. Pizziolo 2016, Predictivity-Postdictivity: A theoretical framework, in Campana, S., Scopigno, R., Carpentiero, G. and M. Cirillo (eds) 2016. *CAA2015, Keep the revolution going: Proceedings of the 43rd Annual Conference on Computer Applications and Quantitative Methods in Archaeology*: 593-598. Oxford: Oxbow.
- Avanzini, M. and I. Salvador (eds) 2014. *Antichi pastori- sopravvivenze, tradizione orale, storia, tracce nel paesaggio e archeologia*. Trento: MUSE-Museo delle Scienze.
- Barfield, L. H. 2003. L'Europa nel 3500 a.C.: una congiuntura fra diffusione e crisi ambientale? in A. Ferrari and P. Visentini (eds), *Il declino del mondo neolitico. Ricerche in Italia centro-settentrionale fra aspetti peninsulari, occidentali e nord-alpini, Proceedings of the meeting, Pordenone 2001*, 11-18.
- Barker, G., Maggi R. and R. Nisbet (eds) 1990-1991. *Archeologia della pastorizia nell'Europa meridionale. Rivista di Studi Liguri LVI-LVII*.
- Barker, G., Hodges, R. and G. Clark (eds) 1995. *A Mediterranean valley: landscape archaeology and annales history in the Biferno Valley*. Leicester: Leicester University Press.
- Bintliff, J., Kuna, M. and N. Venclova (eds) 2000. *The Future of Surface Artefact Survey in Europe*. Sheffield: Bloomsbury.
- Braudel, F. 1985. *La Méditerranée et le monde méditerranéen à l'époque de Philippe II*. Paris: Armand Colin.
- Cambi, F., Citter, C., Cristoferi, D., De Silva, M., Guarducci, A., Macchi, G., Pizziolo, G., Sarti, L., Vanni, E., Volante, N. and A. Zagli 2015. A cross-disciplinary approach to the study of transhumance as territorial identity factor in a long-term perspective: the TraTTO project - southern Tuscany paths and pastures from prehistory to the modern age. *Review of Historical Geography and Toponomastics* 19-20: 85-98.
- Carrer, F. 2013. Archeologia della pastorizia nelle Alpi: nuovi dati e vecchi dubbi. *Preistoria Alpina* 47: 49-56.
- Cherubini, G. 1981. Risorse, paesaggio ed utilizzazione agricola del territorio della Toscana sudoccidentale nei secc. XIV-XV, in *Civiltà ed economia agricola in Toscana nei secc. XIV-XV: problemi della vita delle campagne del tardo medioevo*: 91-115. Pistoia: Centro Italiano di Studi di Storia e d'Arte.
- Citter, C. and A. Arnoldus-Huyzendveld 2007. *Archeologia urbana a Grosseto. Origine e sviluppo di una città medievale nella "Toscana delle città deboli"*. Le ricerche 1997-2005. Firenze: Edizioni All'Insegna del Giglio.

Citter, C. and A. Arnoldus-Huyzendveld 2011. *Usa del suolo e sfruttamento delle risorse nella pianura grossetana nel Medioevo. Verso una storia del parcellario e del paesaggio agrario*. Roma: Artemide.

Cocchi Genik, D. 1990. La pratica della transumanza dal Neolitico all'età del Bronzo nella Toscana settentrionale: evidenze archeologiche. *Rivista di Studi Liguri* LVI: 73-80.

Corbier, M. 2006. *La transhumance dans le pays de la méditerranée antique*, in Laffont, P.-Y. (ed.), *Transhumance et estivage en Occident des origines aux enjeux actuels*: 67-82. Toulouse: Presses Universitaires du Mirail.

Costello E. and Svensson E. (eds) 2018. in *Historical Archaeologies of Transhumance across Europe*. London: Routledge.

Cristoferi, D. 2019. '...In passaggio, andando e tornando...': per un quadro delle transumanze in Toscana tra XII e XV secolo. *Rivista di Storia dell'Agricoltura* LIX: 3-82.

Cristoferi, D. 2021. *Il 'reame' di Siena: la costruzione della Dogana dei Paschi e la svolta del tardo Medioevo in Maremma (metà XIV-inizi XV sec.)*. Rome: Istituto Storico Italiano per il Medioevo.

Cristoferi, D. and Visonà, M., 2021. Les animaux de rente comme sources pour une histoire de la transhumance en Toscane (14e-18e siècles). *Traverse. Revue d'Histoire* 2:56-70.

De Grossi Mazzorin, J. 1995. Economia di allevamento in Italia centrale dalla media età del Bronzo alla fine dell'età del Ferro, in Christie, N. (ed.), *Settlement and Economy in Italy, 1500 BC-AD 1500. Papers of the Fifth Conference of Italian Archaeology*: 167-177. Oxford: Oxbow.

De Grossi Mazzorin, J. 2001. Archaeozoology and Habitation Models: from a subsistence to a productive economy in Central Italy, in Brandt, J. R. and L. Karlsson (eds), *From huts to houses. Transformations of Ancient Societies. Proceedings of an International Seminar organized by the Norwegian and Swedish Institutes in Rome, 21-24 September 1997*: 323-330. Uppsala: Astrom Editions.

De Grossi Mazzorin, J. 2004. Some considerations about the evolution of the animal exploitation in Central Italy from the Bronze Age to the Classical period, in Santillo Frizell, B. (ed.), *PECUS. Man and Animal in Antiquity. Proceedings of the conference at the Swedish institute in Rome*: 38-49. Roma: Swedish Institute in Rome.

De Silva, M. 2007. *La cartografia storica per l'archeologia del paesaggio in ambiente GIS. Il caso dell'area grossetana*. Unpublished PhD dissertation, University of Siena.

De Silva, M. 2010. Landscape of the Past: the Maremma Regional Park and the Grosseto Coastal Belt. Methodology and Technical Procedures, in Niccolucci F. and H. Hermon (eds), *Beyond the Artefact-Digital Interpretation of the Past - Proceedings of CAA 2004, Prato 13-17 April 2004*: 166-170. Budapest: Archaeolingua.

De Silva, M. and G. Tarchi 2010. I dati del Prospetto della Misura e della Stima del Catasto Leopoldino: prime considerazioni sugli assetti agrari e la rendita fondiaria nella Toscana dell'Ottocento, in Macchi Jánica, G. (ed.), *Geografie del popolamento. Casi di studio, metodi e teorie*: 321-330. Siena: Edizioni dell'Università.

De Silva, M., Cristoferi, D., Pizziolo, G., Visonà, M. and A. Zagli 2020. Transhumance space in historical transformations: processing textual and cartographic historical data of Grosseto district into a GIS framework, in *Time in Space. Geohistorical Applications, Methods and Theories in GIScience. Proceedings of the Conference (Pisa, 26-28 June 2019)*.

- Di Fraia, T. 2010. Aggiornamenti e riflessioni sul problema del sale nella preistoria e protostoria, in Negroni Catacchio, N. (ed.), *L'alba dell'Etruria. Fenomeni di continuità e trasformazione nei secoli XII-VIII a.C. Ricerche e scavi*: 597-607. Milano: Centro Studi di Preistoria e Archeologia.
- Foley, R.A. 1981. *Off-site archaeology: an alternative approach for the short-sited*, in Hodder, I., Isaac, G. and N. Hammond (eds), *Pattern of the Past: Essays in Honour of David Clarke*: 152-184. Cambridge: Cambridge University Press.
- Gabba, E. 1985. *La transumanza nell'Italia romana: evidenze e problemi, qualche prospettiva per l'età altomedievale*, in *L'Uomo di fronte al mondo animale nell'alto Medioevo*: 373-389. Spoleto: Centro di Studi sull'Alto Medioevo.
- Gerling C., Doppler T., Heyd V., Knipper C., Kuhn T., Lehmann M.F., Pike A., Schibler J. 2017. *High-Resolution Isotopic Evidence of Specialised Cattle Herding in the European Neolithic*, PLoS ONE 12(7), e0180164. <https://doi.org/10.1371/journal.pone.0180164>
- IGMI The aerial photos of the GAI flight are available at the IGMI (Italian Military Geographic Institute): [https://www.igmi.org/en/descrizione-prodotti/aerial-photography?set\\_language=en](https://www.igmi.org/en/descrizione-prodotti/aerial-photography?set_language=en). Open source WMS layer of the GAI flight are available at: <https://www.regione.toscana.it/-/geoscopio-wms>.
- Imberciadori, I. 2002. *Il primo Statuto della Dogana dei Paschi maremmani*, in Imberciadori, I., *Studi su Amiata e maremma*: 97-125. Firenze: Accademia dei Georgofili.
- Marcaccini, P. and L. Calzolari 2003. *I percorsi della transumanza in Toscana*. Firenze: Polistampa.
- Mariotti Lippi, M., Pisaneschi, L., Sarti, L., Lari, M. and J. Moggi-Cecchi 2017. Insights into the Copper-Bronze Age diet in Central Italy: plant microremains in dental calculus from Grotta dello Scoglietto (Southern Tuscany, Italy). *Journal of Archaeological Science: Reports* 15: 30-39.
- Mayoral, V., Grau, I. and J.P. Bellón (eds) 2021. *Arqueología y sociedad de los espacios agrarios : en busca de la gente invisible a través de la materialidad del paisaje*, *Anejos de Archivo Español de Arqueología*, 91, Consejo Superior de Investigaciones Científicas (CSIC).
- Migliavacca M., Boscarol C, Montagnari Kokelj M. 2015. How to identify pastoralism in prehistory? Some hints from recent studies in Veneto and Friuli Venezia Giulia, in Moscatelli U. And Stagno A.M. (eds), *Archeologia delle aree montane europee: metodi, problemi e casi di studio (Archaeology of Europe's mountain areas: methods, problems and case studies)*, *Il capitale culturale*, XII (2015): 597-620.
- Montagnari Kokelj E. 2007. Salt and the Trieste Karst (north-eastern Italy) in prehistory: some considerations, in D. Monah, G. Dumitroaia, O. Weller and J. Chapman (eds), *L'exploitation du sel à travers le temp*, *Bibliotheca Memoriae Antiquitatis* 17, Piatra Neamt, 161-189.
- Pizziolo G. 2018. *Uomo, terra e acque nella Toscana preistorica. Processi formativi, scenari e casi studio*. Firenze: Bandecchi & Vivaldi.
- Pizziolo, G., De Silva, M., Volante, N. and D. Cristoferi 2017. Transumanza e territorio in Toscana: percorsi e Pascoli dalla Protostoria all'Età contemporanea. La strutturazione del sistema informativo e le attività di ricognizione archeologica (2016). *Chronique des activités archéologiques de l'École française de Rome, Italie centrale* 2017: 1-28.
- Pizziolo, G. and N. Volante 2015. Landscape changes and site discovery potential: predictive criteria and field survey strategies for prehistoric contexts, in Pizziolo, G. and L. Sarti (eds), *Predicting Prehistory. Predictive models and field research methods for detecting prehistoric contexts*: 133-151. Firenze: Bandecchi & Vivaldi.

- Poesini, S. 2012. La produzione ceramica di Punta degli Stretti (Orbetello, GR): aggiornamento degli studi, in Negroni Catacchio, N. (ed.), *L'Etruria dal Paleolitico al Primo Ferro. Stato delle ricerche*: 553-566. Milano: Centro Studi di Preistoria e Archeologia.
- Poggesi, G. and A. Pessina 2015. Presentazioni, in Sebastiani, A., Chirico, E., Colombini, M. and M. Cygielman (eds), *Diana Umbronensis a Scoglietto. Santuario, Territorio e Cultura Materiale (200 a.C.-550 d.C.)*: IV. Oxford: Archeopress.
- Rombai, L. 2002. *Geografia storica dell'Italia. Ambienti, territori, paesaggi*. Milano: Mondadori.
- Santillo Frizell, B. 2004. Curing the flock: the use of healing waters in Roman pastoral economy, in Santillo Frizell, B. (ed.), *PECUS. Man and Animal in Antiquity. Proceedings of the conference at the Swedish institute in Rome*: 80-91. Rome: Swedish institute in Rome.
- Sarti, L. 2014. Grotta dello Scoglietto (Alberese, Grosseto): aggiornamento sulle nuove ricerche. *Atti Preistoria e Protostoria in Etruria* 11: 615-624.
- Sebastiani, A., Chirico, E., Colombini, M. and M. Cygielman (eds) 2015. *Diana Umbronensis a Scoglietto. Santuario, Territorio e Cultura Materiale (200 a.C.-550 d.C.)*. Oxford: Archeopress.
- Vaccaro, E. 2007. L'occupazione tardoantica delle grotte dello Scoglietto e di Spaccasasso nei monti dell'Uccellina (Gr), in Cavanna, C. (ed.), *La preistoria nelle grotte del parco naturale della Maremma. Atti del museo di storia naturale della Maremma, supplemento al n. 22*: 227-242. Grosseto: Museo di storia naturale della Maremma.
- Vanni, E. and F. Cambi 2015. *Sale e transumanza. Approvvigionamento e mobilità in Etruria costiera tra Bronzo Finale e Medioevo*, in Cambi, F., De Venuto, G. and R. Goffredo (eds), *I pascoli, i campi, il mare. Paesaggi d'altura e di pianura in Italia dall'Età del Bronzo al Medioevo*: 107-128. Bari: Edipuglia.
- Vanni, E. and D. Cristoferi 2018. The role of marginal landscape for understanding transhumance in Southern Tuscany (twelfth-twentieth century AD): a reverse perspective integrating ethnoarchaeological and historical approaches, in E. Costello and E. Svensson (eds), *Historical Archaeologies of Transhumance across Europe*: 197-218. London: Routledge.
- Volante, N. 2003. La produzione vascolare dell'insediamento di Neto-Via Verga a Sesto Fiorentino tra la fine del Neolitico e la prima Età dei metalli. *Rivista di Scienze Preistoriche* LIII: 375-504.
- Volante, N. and G. Pizziolo 2012. Grosseto. Alberese. Poggio di Spaccasasso, Sasso delle Donne. Fascia pedecollinare nord-occidentale dei Monti dell'Uccellina: campagne di scavo e survey 2012. *Notiziario della Soprintendenza per i Beni Archeologici della Toscana* 8: 550-552.
- Zagli, A. 2018. *Note sul controllo della viabilità e della mobilità nella Toscana meridionale in età moderna (secc. XVI-XVIII)*, in L. Antonielli (ed.), *La polizia nelle strade e nelle acque navigabili: dalla sicurezza alla regolazione del traffico*, 55-112. Soveria Mannelli: Rubbettino Editore.

## 5. Response diversity and the evolution of pastoral landscapes in the western Pyrenees

Ted L. Gragson, Michael R. Coughlan, and David S. Leigh

*We consider in this article the response diversity of Basque sheep herders in the western Pyrenees through the application of social network analysis. For at least the last 1000 years pastoralism in the western Pyrenees has been organized at the scale of a valley and operated through a social institution that regulates the collective use of communal grasslands above 800 m.a.s.l. (2600 ft) belonging to a territorial community. The social institution, and the inholding it is tied to spatially, anchor repeat circulation of sheep and activities within the pastoral landscape. Together they define the arena in which herder response diversity produces meaningful material patterns on the landscape and sustain production over time.*

**Key words:** Basque, western Pyrenees, mountain pastoralism, Response Diversity, Social Institutions

### Introduction

A human's response to the changing circumstances they face in the world is revealed by the choices they make (Bird 2015; Smith 2013). Why humans make choices has been extensively examined to understand whether choice is rationalized partially or exclusively on their costs and benefits measured in terms of fitness or another currency. Instead of focusing on the precursors of choice that define their reasons, we focus in this article on the consequences of choices that affect the evolution of communal pastoral landscapes in the territorial community of Soule in the western Pyrenees.

The governance of natural resources used by many individuals in common is an issue that is far from resolved despite the attention it has received since Aristotle observed that, '...what is common to many is taken least care of' (*Politics* Book II, Chapter 3). In the communal lands of Soule, there is documentary and physical evidence for the repeat circulation of sheep and activities for the last 1000 years (Gragson *et al.* 2020). This millennial history of pastoralism on common lands suggests that Aristotle's and other's claims about the care of common lands is too simplistic. Olson (1965) expressed the problem of collective use as one of balancing the contradictory forces of selfishness and cooperation among individuals united through the self-reflected cohesive force of an institution capable of mobilizing shared resources. In other words, individuals make choices while being embedded in a social context. To gain an appreciation of how such an institution operates we use social network analysis to reveal the interpersonal nature of human response diversity among herders in Soule.

Response diversity is defined in ecology as the range of reactions to environmental change among species that contribute to the same ecosystem function (Elmqvist *et al.* 2003). Response diversity plays a key role in ecosystem resilience, which is both the amount of disturbance a system can absorb and remain within the same state, as well as the ability of a system to reorganize itself and move to a new state. In both instances, ecosystem resilience underlies the sustained production of natural resources such as the repeat circulation of sheep and activities on communal lands in Soule for the last 1000 years. Humans arguably display far greater behavioral flexibility than most biological species; thus human response diversity within a given community may affect ecosystem function in ways equivalent to that of a multi-species community (Leslie and McCabe 2013). We evaluate the role of response diversity on system resilience in Soule through a visual representation of ties between individuals (i.e., a sociogram) paired with certain social network measures.

Synthesis of palaeoenvironmental and archaeological evidence from the western Pyrenees indicates initial appearance of agropastoral outposts on the piedmont and plains to the south of the ridgeline between 7700-6700 cal. BP (Fernández-Eraso *et al.* 2015). Colluvial sedimentary records from above 1000 m.a.s.l. (3280 ft) in the mountains near Larrau, where most of our research has been conducted, indicate an increase in fires and sedimentation rates attributable to conversion of mid-elevation forests to pastures c. 6000-5000 cal BP (Gragson *et al.* 2020; Leigh *et al.* 2016). While traditional mountain pastoralism in France relying on various common land use systems effectively ended c. 1960 AD, vestiges of these herding systems continue to operate in selected areas of the country such as Soule. We start by introducing a place-based context for herding in Soule and follow it with results of our preliminary social network analysis of herder response diversity and a discussion of how these results inform understanding of the consequences over time of herding on pastoral landscapes.

### Place-Based Context

Our research centers on the commune of Larrau (France) although our interest in the role of response diversity has required us to place Larrau within the Soule Valley and the western Pyrenees spanning the French-Spanish border (Figure 5.1). Soule is the smallest of the seven Basque Provinces centered on the Saison River in the French department of Pyrénées-Atlantiques that borders the autonomous community of Navarra in Spain. Larrau has a surface area of 12,680 ha (31,333 ac) and contains most of the high pasture or *estive* used by the 47 communes that presently comprise Soule as a territorial community. Individuals and institutions from both the north and south slopes of the western Pyrenees have freely used the *estive* in the Soule Valley since at least the High Middle Ages.

Geographically, the Soule Valley lies at the convergence of the Atlantic, Mediterranean and Alpine bioclimatic regions while Soule as a territorial community is part of Euskal Herria, the ‘Basque Country’ between the Adour (France) and the Ebro (Spain) rivers. Agropastoralism combining the growing of crops with the rearing of livestock dates in the western Pyrenees to the initial Neolithic expansion around the Mediterranean Basin c. 7500 cal BP (Alday *et al.* 2018; Fano *et al.* 2015; Fernández Mier and Quirós Castillo 2015; Montes *et al.* 2016). The long agropastoral history of this region has resulted in complex, co-evolved landscapes with mutually reinforcing changes in plant assemblages and grazing practices (Fernández-Giménez and Fillat Estaque 2012; Garcia-Gonzalez *et al.* 1990; Pérez-Díaz *et al.* 2018; Puigdefábregas and Fillat 1986).

Elevations in the commune of Larrau range from 300 to 2000 m.a.s.l. (1000-6500 ft). The climate is cool and humid with an average precipitation of 1600 mm (63 in) per year and average daytime temperature between 1.4°C (winter) and 13.3°C (summer) (35-56°F). Forests below 800 m.a.s.l. (2600 ft) are dominated by oak (*Quercus*) that transitions to beech (*Fagus*) and fir (*Abies*) between 800 and 1300 m.a.s.l. (2600 and 4250 ft). Alpine and subalpine grasslands (Poaceae) and heaths (Ericaceae) with patches of mixed pines (*Pinus*) dominate elevations above 1300 m.a.s.l. (4250 ft).

Soule as a territorial community is divided into a hierarchical set of socially and ecologically significant spatial units: valley, *commune* (a village and its territory), *quartier* (a residential neighborhood defined by household adjacency), *etxe* (a household-level production unit), and parcel (a discrete unit of land use). A valley is comprised of many communes, a commune is comprised of several quartiers, a quartier consists of a number of *etxe*, while the parcels associated with an *etxe* are distributed across an elevational gradient based on type of production. In practical terms, there are two types of landholding in Soule and the Basque region generally (Etchegoyhen 2012; Lefèbvre 1933; Nousy Saint-Saëns 1955): a) parish-community lands distributed among the *etxe* associated with a commune, and b) common lands belonging collectively to residents of all parish-communities within a valley.

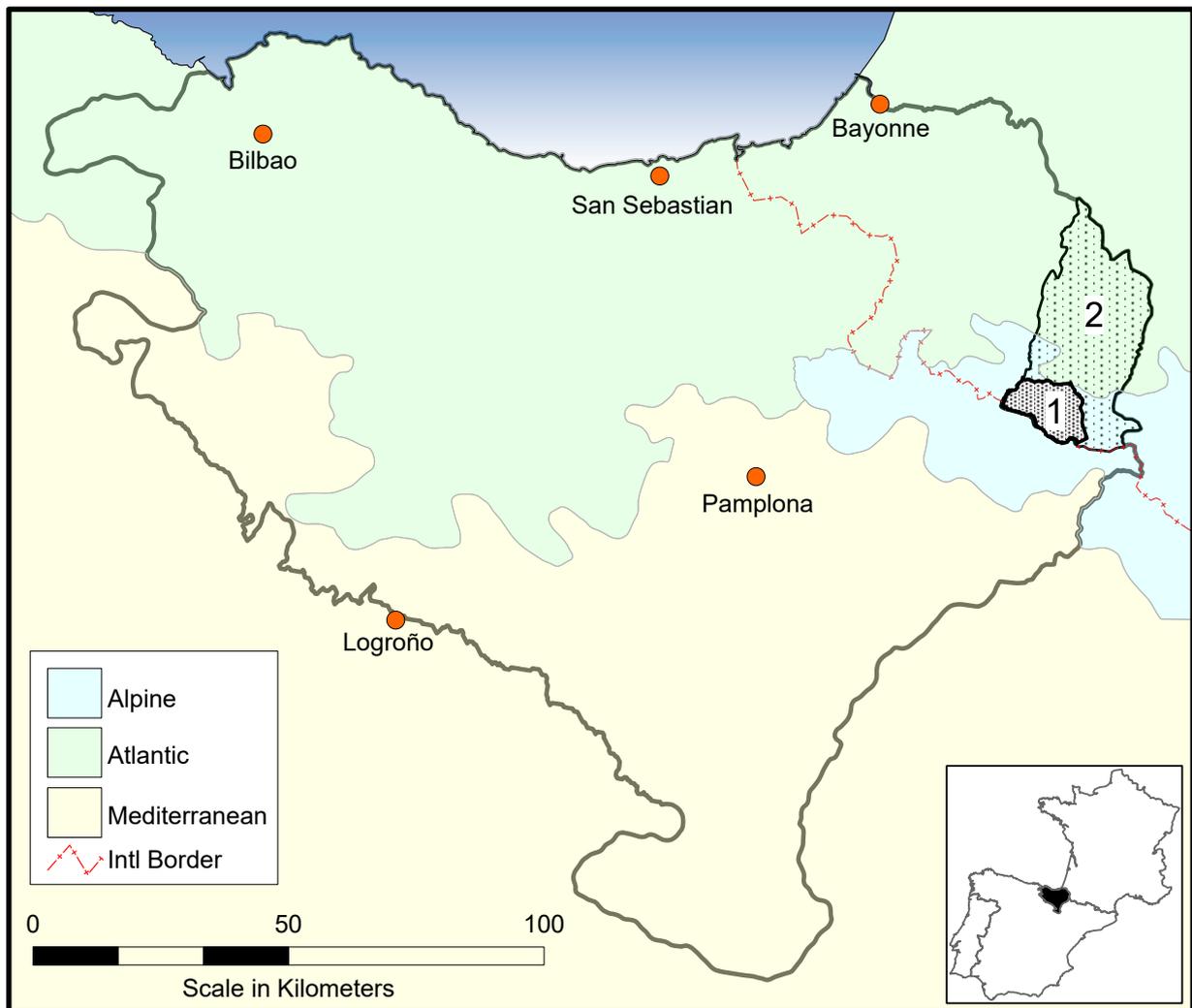


Figure 5.1. Location of Larrau (1) and the Soule Valley (2) relative to Euskal Herria (irregular gray outline) and the three primary biogeographic areas (Alpine, Atlantic and Mediterranean) in the western Pyrenees on the border between France and Spain.

Contemporary French communes represent a ‘territorial collective’, a legal entity endowed with certain rights and obligations vis-a-vis an area of land administered by a municipality (Duclos-Grisier, 2020). They originate from parish-communities officially suppressed by the National Convention of 31 October 1793. Despite the suppression, communes and parish-communities are indistinguishable across time in terms of settlement and the associated social, economic and political properties over the length of the Pyrenees (Motte and Vouloir, 2017). Since the fall of the Roman Empire, Soule has repeatedly changed political hands. Nevertheless, parish-communities/communes have been stable since at least AD 1377 when the first ‘census’ of the valley was conducted (Cierbide 1994) and at least five are known to have existed since the 11th century (Noussy Saint-Saëns 1955; Urrutibéhéty 1983).

The division of land and the management of pastures and livestock in Soule and the western Pyrenees are outlined in customary documents called *coutume* (French) or *fuego* (Spanish). A *coutume* is an oral, customary civil law of commoner use-rights (*jouissance*) to land on the estate of a feudal lord that began to be codified in textual form in areas south of the Loire River in France following the end of the Hundred Years’ War (Vivier 1998). François I (king of France 1515–1547) issued a patent letter dated 5 March 1520 ordering the compilation of the *Coutume de Soule* first published in October 1520 (Noussy Saint-Saëns

1955). The *Coutume de Soule* is one of the oldest such documents as well as one of the few that has not been lost to history, and its precepts are still invoked by contemporary herders in Soule. Circumstantial evidence suggests that *coutume* and *fuero* documents in the western Pyrenees either draw from or were influenced by older legal frameworks from 6th-8th century Visigothic code or possibly 1st century Roman code.

Historical and ethnographic evidence indicate the *etxe* (a house and its associated estate of land, livestock and infrastructure conceptually distinct from the family that resides in the house and manages the estate) was the principal locus of production and decision-making in Basque society (Arrizabalaga 1997; Coughlan and Gragson 2016; Gómez-Ibáñez 1975). As outlined in the *Coutume de Soule*, members of an *etxe* gain access to resources within the communal lands (*olhaltia*) above 800 m.a.s.l. (2600 ft) of a territorial community through the *kaiolar* system. Within the *olhaltia* are small (<0.25 ha, <0.5 ac), inholdings collectively owned by a small group of shepherds that typically contain a cabin, a pen for holding sheep at night and other features such as a milking shed. The collective owners of these inholdings belong to named grazing syndicates called *olha*. In short, the inholding is the physical expression of a social institution that organizes a group of individuals from several *etxe* to use communal lands owned by the territorial community. (The syndicate and its physical expression are conflated in the French term ‘*cayolar*’.) In Soule the *olha* refers specifically to a shepherding and cheese-making syndicate formed by a group of shepherds who amalgamate their individual flocks into a single flock during the summer months (May-September) and take turns herding and milking them (Etchegoyhen 2012; Ott 1993; Palu 1992).

The members of each named syndicate meet each year about March 25 (Catholic Feast of the Annunciation) to make decisions as a group about the maintenance required on the cabin, the corrals and the other infrastructure associated with the enterprise. They also reach agreement on dates for moving the common flock, the work rotation of herders during the production season, the number of cheese rounds they will produce, sell and gift, and other group arrangements (Etchegoyhen 2012; Noussy Saint-Saëns 1955; Ott 1993; Goyheneche 1973). The members meet a second time around 22 July (Day of Saint Madeline) at the end of the cheese-production season to divide up the expenses and profits among the members of the syndicate. The common flock is then moved to the higher elevation rangelands where they are managed by a small subset of the members of the syndicate until sometime in the fall (Goyheneche 1973; Richer 1998).

The entity presently responsible for managing communal lands of the territorial community of Soule is the Commission Syndicale du Pays de Soule created in 1838, although its regulatory role is subject to the primacy of the *kaiolar* system as just described. Ott and others (Etchegoyhen 2012; Lefèbvre 1933; Noussy Saint-Saëns 1955) describe in detail the historical precedents and legal principles of the *kaiolar* system, along with the roles and responsibilities of herders, and the economic and social imperatives of participation. The first reference to the use of the *kaiolar* system in Soule we have so far discovered dates to AD 1024. In our archaeological surveys of the communal land we have recorded numerous cabins and other features that we have radiometrically dated and connected to named *olha* through archival records that place them in the 13th century (Coughlan *et al.* n.d.). Several are still in operation at the present time under the same name and in the same location.

### **The Social Network of Herding**

Briefly summarized, a social network is a set of ties between persons in a group that can be thought of as ‘verbs’ (e.g., to love) linking a ‘subject’ (person 1) and an ‘object’ (person 2). If John ‘loves’ Mary, and Mary ‘loves’ John then they form a symmetrical dyad (i.e., the relation is mutual, thus bidirectional). A dyad is the fundamental analytical unit in a social network. The absence of a link between any two individuals in a social network is simply a lack of evidence rather than proof the individuals are not

linked in some way. For example, John ‘likes’ Sally although he does not ‘love’ her, thus there would not be a tie between John and Sally in a ‘love network.’ Semantics aside, the real point is that individuals make choices while being embedded in a social context. Most importantly, the two members of a dyad are not simply two independent persons, they share something in common referred to analytically as nonindependence. Conceptually, the two scores from the two members of a dyad are more similar to (or different from) one another than the two scores from two individuals who are not members of the same dyad.

We use social network analysis to examine how individual response diversity within the kaiolar system cascades through the structure of the territorial community of Soule. The process ultimately leads to cumulative consequences that would appear insignificant when viewed as the choices made by one herder at a time. This is possible because a social network rests on the relations between all members of a group (formally, a set of entities) rather than the intrinsic properties of the individuals who form the network.

The turmoil that followed the French Revolution gave rise to a significant corpus of documents in Soule relevant to the kaiolar system that capture information conventionally only available in oral tradition. The primary data consists of a comprehensive inventory of named inholdings within the communal lands/the *olhatia* within the boundaries of the commune of Larrau. This document dates to AD 1830 and we obtained it from the public departmental archives in Pau (France). The inventory identifies herders by name, village of residence, and lists the toponym (*lieu dit*) of the inholding within the communal lands for the syndicate(s) they were partners in, along with sheep shares they contributed to the syndicate(s). The commune of Larrau contains the largest portion of land collectively owned by the residents of Soule as a territorial community and used by herders throughout the valley through the kaiolar system.

We used the 1830 Napoleonic land records (*matrice cadastrale*) for the commune of Larrau to geographically locate each named inholding. We obtained additional information on toponyms from the Basque Onomastics Committee (Orpustan 2010) and on population for each parish-community in 1830 from *Des villages de Cassini aux communes d’aujourd’hui* (Motte and Vouloir 2017). Our analysis includes information on 37 syndicates, 212 herders, 320 shares and 33 villages, for which we used UCINET 6.628 (Borgatti *et al.* 2002) to obtain metrics and NetDraw 2.160 (Borgatti *et al.* 2002) for visualization.

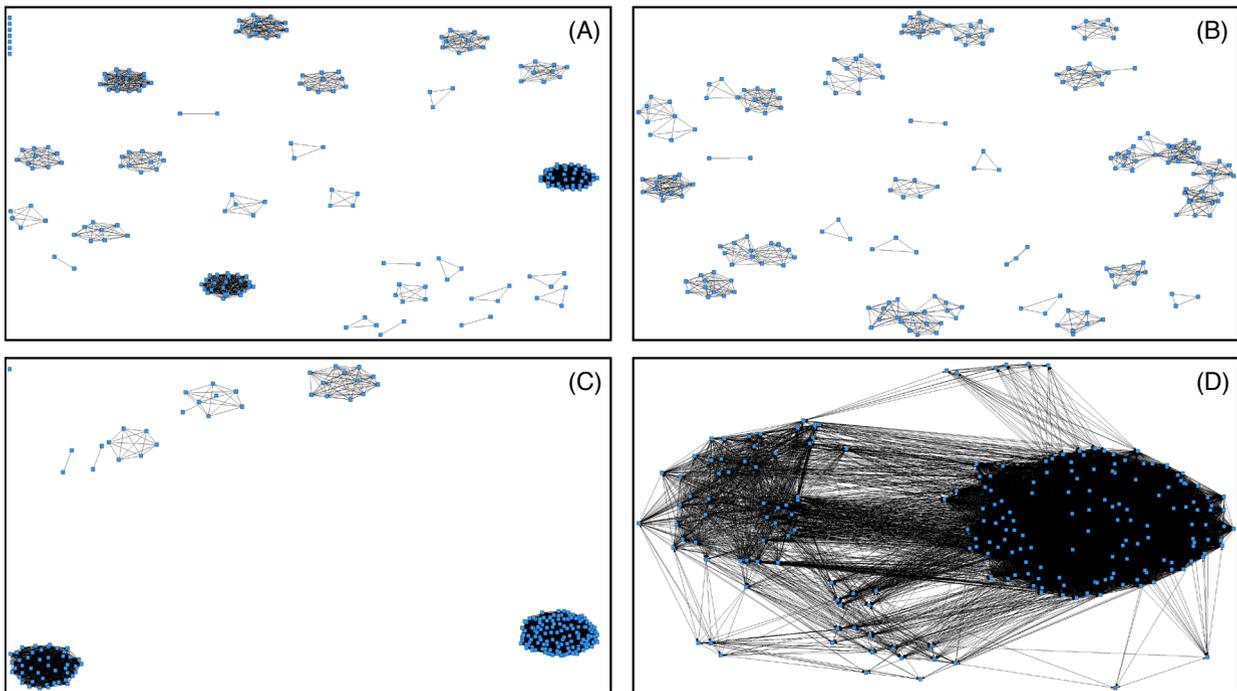
The kaiolar system in Soule is a persistent institution representing a multilevel socio-ecological network (Bodin and Tengö 2012) comprising three interlocking and interdependent subnetworks. These subnetworks are embedded within social, ecological and spatial dimensions of the herding governance complex in Soule. Each subnetwork consists of pairs of herders (Herder A, Herder A’) linked by one of three distinct relations that we represent using the following shorthand: HxH followed by a subscript for the relation.

**Subnetwork 1 – village of residence:** The herders who come together to form a syndicate are not a random selection of individuals; they consist of individuals with prior ties of marriage, family, and residential proximity from within the boundaries of Soule as a territorial community (i.e., a closed network). We use village of residence (the administrative center of a parish community/commune) common to a pair of herders to proxy the social embeddedness of participants in the kaiolar system,  $HxH_{\text{village}}$ .

**Subnetwork 2 – syndicate membership:** Herders self-organize into named syndicates to which they contribute time, effort and capital to manage and maintain. Members of a named syndicate have use rights to sections of the common lands belonging to the territorial community. Sections of the common lands vary in quality for reasons of exposure, soils, rockiness, etc. that lead to differences in the size, productivity and ultimately success of particular syndicates. We use the membership of a pair of herders to the same syndicate to proxy place-based aspects of herding,  $HxH_{\text{cayolar}}$ .

**Subnetwork 3 – sheep share:** To join and participate in a named syndicate a herder must contribute a fraction or more of a defined share of milch ewes (termed a *txotx*) that is drawn from the estate of the *etxe* the herder belongs to. A share in 1830 was equal to between 45 and 60 milch ewes (plus a small, unspecified, number of rams and lambs). The shares from all herders belonging to a named syndicate were combined into a single flock that was managed collectively by the herders following an elaborate set of roles and responsibilities. We use similarity in share size of a pair of herders to proxy effort allocated to a syndicate,  $HxH_{shares}$ .

There are 33 components (i.e., villages) in  $HxH_{village}$ , 22 components (i.e., named syndicates) in  $HxH_{cayolar}$ , and 9 components (i.e., share size similarity) in  $HxH_{shares}$ . Each subnetwork has 212 nodes (i.e.,  $n = 212$  herders) who in the aggregate have the potential to form 22,366 unique dyad pairs. This is the result of the mathematical property  $[(n * (n-1))/2]$  applied to this social network. The three subnetworks combined form a single multiplex network that following the above shorthand we label  $HxH_{multiplex}$ . A wide variety of measures can be created from a social network depending on the level of analysis. These include measures relevant to individuals (e.g., centrality), dyads (e.g., reciprocity), triads (e.g., transitivity), subgroups (e.g., clique) or the entire network (e.g., density). It is also possible to simultaneously consider multiple levels of analysis using exponential random graph models (Robins *et al.* 2007). We limit our analysis to some fundamental descriptive social network measures (Figure 5.2) to frame our discussion of the consequences over time of herding on pastoral landscapes.



Variable	A) $HxH_{village}$	B) $HxH_{cayolar}$	C) $HxH_{shares}$	D) $HxH_{multiplex}$
Components	33	22	9	1
Density	0.075	0.040	0.455	0.507
Centralization	0.040	0.035	0.182	0.249
Degree – average	15.887	8.358	96.028	107.066
Degree – standard deviation	13.961	4.208	51.580	46.937
Eigenvector Centralization %	18.881	50.430	4.770	4.487

Figure 5.2. The social subnetworks and their combination into a multiplex network of the shepherds operating through the kaiolar social institution in the territorial community of Soule in 1830 and their associated metrics as discussed in text. The nodes in each sociogram (A-D) are arranged according to actual relations between herders as discussed in text distributed in analytical rather than geographical space.

Density is an index of cohesion within a social network expressed as a proportion of the number of possible ties that could form, or in this case the probability that a tie exists between any pair of randomly chosen herders. In 1830, the value ranges from a high of 45.5% for the similarity in share size among herders (i.e.,  $HxH_{\text{shares}}$ ) down to 4.0% for the place-based aspect of named syndicates (i.e.,  $HxH_{\text{cayolar}}$ ). The overall probability of a tie between any pair of randomly chosen herders for the multiplex network is 50.7%. In practical terms, there is a 50:50 chance overall that any two herders out of all 212 within the kaiolar system will be connected to each other. Density is best used comparatively in networks such as this one where all relations between pairs of herders are symmetrical, i.e., both herders in a pair reciprocate or share a given relation such as 'village of residence'.

We have selected two measures for comparison to density. First, eigenvector centrality measures how central each node is in proportion to the sum of centralities of the nodes it is adjacent to. A herder is only as central as the network to which he belongs. Village of residence (i.e.,  $HxH_{\text{village}}$ ) and syndicate membership (i.e.,  $HxH_{\text{cayolar}}$ ) are by definition isolated from each other so the eigenvector centrality for these two subnetworks indicates their dispersed nature (respectively 19% and 50%). However, the eigenvector centrality for the combined network (i.e.,  $HxH_{\text{multiplex}}$ ) at 4.5% indicates a highly centralized network. In practical terms, any herder selected at random can effectively reach any other herder in the network irrespective of village of residence or syndicate membership.

The second measure for comparison is degree centrality or the average number of ties that any one herder has to all other herders. Each herder can have a maximum of  $(k-1)$  connections, which equals the total number of herders minus 1 (i.e.,  $212 - 1 = 211$ ). If the tie is 'village of residence', then degree centrality is the number of herders who reside in the same village as a given herder who can thus offer direct opportunities to form a named syndicate. The average degree centrality shown in Figure 5.2 is the proportion of the total number of herders ( $n = 212$ ) per subnetwork in relation to each other. Thus, each herder on average shares the same village of residence (i.e.,  $HxH_{\text{village}}$ ) with 16 other herders in the network, and the average number of herders who belong to the same named syndicate (i.e.,  $HxH_{\text{cayolar}}$ ) is eight.

The average number of herders connected to each other through the kaiolar system at large ( $HxH_{\text{multiplex}}$ ) is 107.1. In other words, any herder selected at random from among the 212 herders in this social network is connected to more than half the total number of herders participating in the kaiolar system. That is a substantial degree of connectivity, given that these herders come from 33 different villages and are partners in 22 different syndicates. The standard deviation of degree centrality measures the variability in the number of ties for each herder within a given subnetwork. So, while the average membership in a named syndicate is eight, the membership size of syndicates varies between about four to over 12. One practical implication of degree centrality and its associated variability is that the response of herders at the extreme of the distribution will be more predictable than the response of those closer to the central tendency.

The centralization measure on Figure 5.2 is complementary to the density measure and refers to a different aspect of the overall compactness of a network. Density is a measure of the general level of cohesion in a network, whereas centralization describes the extent to which this cohesion is organized around particular points or, in this case, herders. This measure indicates that the three subnetworks ( $HxH_{\text{village}}$ ,  $HxH_{\text{cayolar}}$ , and  $HxH_{\text{shares}}$ ) as well as the overall network ( $HxH_{\text{multiplex}}$ ) lack a dominant organizing node. In practical terms, there is no 'central authority' determining where individual herders reside, who they form syndicates with, or the size of the share they contribute. In the parlance of social networks, each subnetwork and the network overall is socially emergent rather than autocratically directed. Despite the socially emergent nature of the kaiolar system it gives rise to a densely knit, tightly bound valley-wide network.

## Discussion

A relatively small percentage of the population throughout Soule as a territorial community participated in the kaiolar system in AD 1830. The population of Soule, inclusive of children, between 1830 and 1840 was 30,469 of which approximately 260 were herders (Motte and Vouloir 2017). Even though the kaiolar system is identified as unique to Soule, authors seldom provide any details on variability in the level of participation in the system. Some authors state there were 107 *cayolar* in Soule in AD 1504 (Noussy Saint-Saëns 1955) or more vaguely 150 in the 16th century that were reduced to 83 between AD 1860-64 (Etchegoyhen 2012). However, sources seldom qualify the actual membership of named syndicates and many fail to recognize that named syndicates typically control two and sometimes three inholdings within the *olhaltia* that they used progressively over the course of a summer. Since a named syndicate and its physical expression are conflated in the French term ‘*cayolar*’, the 107 *cayolar* reported to exist in AD 1504 could either represent 107 named syndicates or between 36 and 54 named syndicates using 107 inholdings at locations with unique toponyms.

At this point in our investigation we do not have a good understanding of how representative the 1830 results are relative to the millennium the kaiolar system was in use. However, the interlocking nature of the subnetworks in the kaiolar system combined with its social embeddedness in other aspects of the Soule territorial community provide support for certain claims. For example, Noussy Saint-Saëns (1955) suggested without offering evidence that the kaiolar system is the ‘mother cell’ from which other communal institutions in Soule derive, e.g., the *silviet*, a traditional valley-wide governance system. The sociogram and metrics for the whole network (i.e.,  $HxH_{\text{multiplex}}$ ) displayed in Figure 5.2 can be viewed as evidence in support of this claim.

We also do not know at this point the full nature of the relation between pastoralism and agriculture in Soule. There is no evidence to suggest that pastoralists and agriculturalists formed divergent or separate groups, rather an *etxe* included both pastoralism and agriculture in its annual production cycle. Because of the multi-generational and structural properties of *etxe*, the labor within an *etxe* was typically sufficient to simultaneously participate in both domains. At a minimum, this indicates that assumptions about the pastoral lifeway must be tempered by understanding response diversity among pastoralists who may also behave like agriculturalists. Pastoralism can also serve as a flexible or cyclical adaptation to a shifting political-economic landscape resulting from the rise and fall of states and empires (Honeychurch 2014). By AD 750 there is clear evidence for coexistence of divergent groups in Soule. There were two independent Cistercian religious enclaves originating respectively from Leyre (Spain) and Sauvelade (France), as well as various individuals embedded within the social structure of the territorial community of Soule who represented different noble houses associated with princes and monarchs from France, Spain and England.

Herder response diversity in Soule is no doubt influenced by differences in flock composition and labor availability. A herder brings experience and knowledge to the syndicate he belongs to, and this will lead him to respond in certain ways to the contingencies he encounters while participating in the activities of the syndicate. However, herders also represent the interests of the *etxe* they are members of that provide the share of milch ewes that help underwrite a given syndicate. As a consequence, each herder in a syndicate is likely to evaluate comparable risks and opportunities differently from their partners since the *etxe* they belong to could advocate an aggressive herding strategy while another could advocate minimizing risk exposure. The differences in share-size among partners in a single syndicate ranging from 14 to 300 milch ewes may thus represent an outcome of response diversity. A point to be made is that response diversity is a multi-level undertaking within and among individuals, households and villages, and the effects of response diversity at one level may act synergistically with or counter those at another level. Places in the landscape serve as the spatio-temporal context for pastoralism while herder response diversity is manifested as consequences for a pastoral landscape.

For example, the flow of sheep from/to places within the communal lands is indicative of the differential pressure and the cumulative effect sheep stocking rates can have over time on the pastoral landscape (Figure 5.3). Records from 1830 indicate there were 329 sheep shares associated with the 22 named syndicates in use that year. Each share equals 45 to 60 milch ewes indicating there were between 14,805 and 19,740 milch ewes grazing the communal lands located within the boundaries of the commune of Larrau during the three-month summer grazing period in 1830. This is a minimum number of sheep, however, since there are several named syndicates for which we do not have complete information on the number of shares. It is evident that the density of sheep as measured by the number of sheep shares tied to named syndicates at known locations within the communal land varies significantly. It bears noting that these communal lands are used exclusively for herding sheep during the summer and are not used for hay making or agriculture.

There are c. 4,709 ha (11,636 ac) of communal land above 800 m.a.s.l. (2600 ft) in the commune of Larrau, which allows us to estimate the minimum stocking rate as 3.1-4.2 ewes/ha (1.3-1.7 ewes/ac). This is on the low end for cool season permanent pasture, reported as 4.9-7.4 ewes/ha (2.0-3.0 ewes/ac) for a comparable mid-elevation, temperate mountain area (Umberger 2009). The *estive* in Larrau is not a permanent pasture and we do not currently have values for many factors known to affect forage quality and productivity, including forage types, soil type and fertility, climate, and the distribution of rocky outcrops. More importantly, rather than taking stocking rates as a spatial average it is important

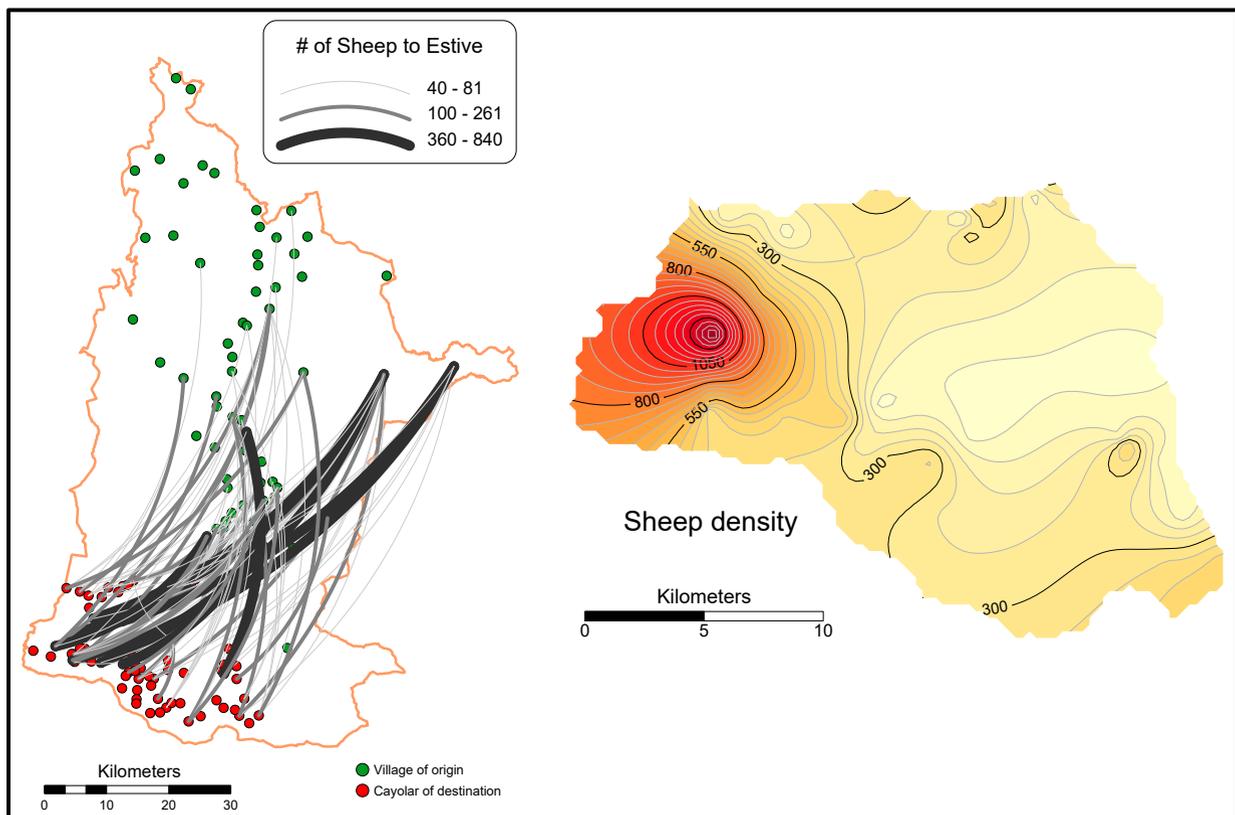


Figure 5.3: Left: flow of sheep from village of origin to inholdings collectively owned by a group of herders forming a named syndicate and operating within the communal lands (*estive*) above 800 m.a.s.l. (2600 ft) within the boundaries of the commune of Larrau. Village of origin is denoted in green while the destination inholding is in red; the width of the line indicates the number of sheep flowing between each origin-destination pair. Right: density of sheep as measured by the number of sheep in a common flock associated with a named syndicate located within the communal lands within the boundaries of the commune of Larrau.

to realize that the actual weight of pastoral activities is concentrated on places scattered across the pastoral landscape and serving as gateways to the grass exploited by sheep with the assistance of herders. The boundaries, scale and flow that define these places help structure pastoralism as an activity (Gragson *et al.* 2020). Boundaries delimit the space where activities occur, scale references the levels and associated rules-of-use (e.g., individual through valley) that guide system function, while flow speaks to the differential pressure and cumulative effect of herder response diversity over time.

## Conclusion

Pastoralism has deep roots in the western Pyrenees. Archaeological research in the region has tended to focus on initial animal domestication while history and ethnography have focused on norms, but there has been little attention given to actual livestock management strategies or the response



Figure 5.4: Looking east across the communal lands of Soule Valley at c. 1400 m (4500 ft) within the commune of Larrau near Pic de Bizkarze. The grazing sheep in a common flock are associated with the two contemporary cayolar cabins in the middle foreground and a third just off the image to the right. (The cabin on the left is associated with the sheep pen and milking shed to its right at a lower elevation.) The cabin, pen and shed adjacent to the stream at the center of the image is cayolar Ibarrandoua used by a grazing syndicate of the same name at this location since at least 1830. This intermountain valley contains numerous herding-related remains that include the foundations of cabins, holding and milking pens as well as water features. On the hill crest to the left lies the tumulus-cromlech site of Millagate that dates between 2730-2120 BP (Blot 1990; 1991). On the terrace behind and above cayolar Ibarrandoua lies the Ibarrandoua colluvial coring site (Leigh *et al.* 2015; Gragson *et al.* 2020) from which evidence was obtained indicating regular anthropogenic burning activity in this intermountain valley beginning c. 8000 BP with a peak c. 2280 BP followed by a 1000-year decline. The highest overall density of archaeological radiocarbon dates for anthropogenic burning occur after AD 1000.

diversity of herders. This is a common oversight for other world areas as well where pastoralism is important (Honeychurch and Makarewicz 2016). For at least the last 1000 years pastoralism in the western Pyrenees has been organized at the scale of a valley and operated through a social institution that regulates the collective use of communal grasslands above 800 m.a.s.l. (2600 ft) (Figure 5.4). Human response diversity, while largely invisible, is responsible for making pastoralism in the western Pyrenees a resilient and durable production system resulting in the three-way fit between humans, animals and environment characteristic of the pastoral lifeway.

### Acknowledgements

We are grateful to officials and residents of the commune of Larrau, France, who allowed us to work and live in their community as well as the logistical support provided by Dr. Pascal Palu and members of the Laboratoire ITEM, Université de Pau et du Pays de l'Adour. Financial support to undertake different aspects of the research reported in this article derived from awards received from the National Geographic Society (9573-14), the STAR Fellowship Assistance Agreement (FP917243), the Coweeta Long Term Ecological Research program funded by the National Science Foundation (DEB-0823293), a Partner University Fund award to the University of Georgia and the Université de Pau, the Chaire d'Attractivité IdEx Program at Université Toulouse (UMR 5608), and a 2017 UGA Center for Integrative Conservation Research (CICR) Faculty Research Grant.

### References

- Alday, A., R. Domingo, M. Sebastián, A. Soto, J. Aranbarri, P. González-Sampériz, M.M. Sampietro-Vattuone, P. Utrilla, L. Montes and J.L. Peña-Monné 2018. The silence of the layers: archaeological site visibility in the Pleistocene-Holocene transition at the Ebro Basin. *Quaternary Science Reviews* 184: 85-106.
- Arrizabalaga, M-P. 1997. The stem family in the French Basque country: Sare in the nineteenth century. *Journal of Family History* 22: 50-69.
- Bird, R.B. 2015. Disturbance, Complexity, Scale: new approaches to the study of human-environment interactions. *Annual Review of Anthropology* 44: 241-257.
- Blot, J. 1990. Le tumulus Millagate 4, compte rendu de fouille 1986. *Bulletin du Musée Basque* 128: 49-68.
- Blot, J. 1991. Le tumulus Millagate 5, compte rendu de fouille 1987. *Bulletin du Musée Basque* 132: 145-158.
- Bodin, Ö. and M. Tengö 2012. Disentangling intangible social-ecological systems. *Global Environmental Change* 22: 430-439.
- Borgatti, S.P., M.G. Everett and L.C. Freeman 2002. *UCINET for Windows: Software for Social Network Analysis*. Harvard, Massachusetts, USA: Analytic Tehnologies.
- Cierbide, R. 1994. *Le censier gothique de Soule*. St. Etienne de Baïgorry, France: Editions Izpegi.
- Coughlan, M.R. and T.L. Gragson 2016. An event history analysis of parcel extensification and household abandonment in Pays Basque, French Pyrenees, 1830-1958 AD. *Human Ecology* 44: 65-80.
- Coughlan, M.R., D.S. Leigh, T.L. Gragson and M. le Couédic n.d. Holocene anthropization of mid-elevation landscapes around Pic d'Orhy, Western Pyrenees, in A. Garcia (ed.), *Archaeology of Mountain Landscapes: Interdisciplinary research strategies of agro-pastoralism in upland regions*. New York: University of New York Press.

- Duclos-Grisier, A. 2020. *Vie Publique: Au coeur du débat public*. Paris: Direction information légale et administrative.
- Elmqvist, T., C. Folke, M. Nyström, G. Peterson, J. Bengtsson, B. Walker and J. Norberg 2003. Response diversity, ecosystem change, and resilience. *Frontiers in Ecology and the Environment* 1: 488-494.
- Etchegoyhen, P. 2012. *Mémoires souletines - Tome 2, Bergers et cayolars*. Donostia: Elkar Argitaletxea.
- Fano, M.Á., M. Cubas and R. Wood 2015. The first farmers in Cantabrian Spain: contribution of numerical chronology to understand an historical process. *Quaternary International* 364: 153-161.
- Fernández Mier, M. and J.A. Quirós Castillo 2015. El aprovechamiento de los espacios comunales en el noroeste de la Península Ibérica entre el período romano y el medieval. *Il Capitale Culturale* 12: 689-717.
- Fernández-Eraso, J., J.A. Mujika-Alustiza, L. Zapata-Peña, M-J. Iriarte-Chiapusso, A. Polo-Díaz, P. Castaños, A. Tarrío-Vinagre, S. Cardoso, J. Sesma-Sesma and J. García-Gazolaz 2015. Beginnings, settlement and consolidation of the production economy in the Basque region. *Quaternary International* 364: 162-171.
- Fernández-Giménez, M.E. and F. Fillat Estaque 2012. Pyrenean pastoralists' ecological knowledge: documentation and application to natural resource management and adaptation. *Human Ecology* 40: 287-300.
- García-González, R., R. Hidalgo and C. Montserrat 1990. Patterns of livestock use in time and space in the summer ranges of the western Pyrenees: a case study in the Aragon Valley. *Mountain Research and Development* 10: 241-255.
- Gómez-Ibáñez, D.A., 1975. *The Western Pyrenees: Differential Evolution of the French and Spanish Borderland*. Oxford: Clarendon Press.
- Goyheneche, E., 1973. *Instituciones administrativas del país vasco Frances en la edad media*. Madrid: Instituto Nacional de Estudios Jurídicos.
- Gragson, T.L., M.R. Coughlan and D.S. Leigh 2020. Contingency and agency in the mountain landscapes of the western Pyrenees: A place-based approach to the Long Anthropocene. *Sustainability* 12: 22.
- Honeychurch, W., 2014. Alternative complexities: the archaeology of pastoral nomadic states. *Journal of Archaeological Research* 22: 277-326.
- Honeychurch, W. and C.A. Makarewicz 2016. The archaeology of pastoral nomadism. *Annual Review of Anthropology* 45: 341-359.
- Lefèbvre, T., 1933. *Les modes de vie dans les Pyrénées Atlantiques Orientales*. Paris: Librairie Armand Colin.
- Leigh, D.S., T.L. Gragson and M.R. Coughlan 2015. Chronology and pedogenic effects of mid- to late-Holocene conversion of forests to pastures in the French western Pyrenees. *Zeitschrift für Geomorphologie* 59(2): 225-245.
- Leigh, D.S., T.L. Gragson and M.R. Coughlan 2016. Colluvial legacies of millennial landscape change on individual hillsides, place-based investigation in the western Pyrenees Mountains. *Quaternary International* 402: 61-71.
- Leslie, P., and J.T. McCabe 2013. Response diversity and resilience in social-ecological systems. *Current Anthropology* 54: 114-143.

- Montes, L., R. Domingo, P. González-Sampériz, M. Sebastián, J. Aranbarri, P. Castaños, L.M. García-Simón, M. Alcolea and R. Laborda 2016. Landscape, resources and people during the Mesolithic and Neolithic times in NE Iberia: the Arba de Biel Basin. *Quaternary International* 403: 133-150.
- Motte, C. and M-C Vouloir 2017. *Des villages de Cassini aux communes d'aujourd'hui*. Paris: Ecole des Hautes études en sciences sociales.
- Noussy Saint-Saëns, M., 1955. *Le país de Soule: Essai sur la coutume Basque*. Bordeaux: Clèdes & Fils, Bordeaux.
- Olson, M., 1965. *The Logic of Collective Action: Public goods and the theory of groups*. Cambridge: Harvard University Press.
- Orpustan, J.-B., 2010. *Nouvelle Toponymie Basque: Noms des pays, vallées, communes et hameaux historiques de Labourd, Basse-Navarre et Soule*. Bordeaux: PU Bordeaux.
- Ott, S., 1993. *The Circle of Mountains: A Basque shepherding community*. Reno: University of Nevada Press.
- Palu, P., 1992. Rapports entre organisation sociale et écosystème dans la société pastorale souletine. *Sociétés Contemporaines* 11: 239-264.
- Pérez-Díaz, S., J.A. López-Sáez, S. Núñez de la Fuente and M. Ruiz-Alonso, 2018. Early farmers, megalithic builders and the shaping of the cultural landscapes during the Holocene in Northern Iberian mountains. A palaeoenvironmental perspective. *Journal of Archaeological Science: Reports* 18: 463-474.
- Puigdefábregas, J. and F. Fillat 1986. Ecological adaptation of traditional land uses in the Spanish Pyrenees. *Mountain Research and Development* 6: 63-72.
- Richer, M., 1998. Le cayolar en Soule. *Azpilcueta* 13: 123-130.
- Robins, G., P. Pattison, Y. Kalish and D. Lusher 2007. An introduction to exponential random graph (p\*) models for social networks. *Social Networks* 29: 173-191.
- Smith, E.A., 2013. Agency and adaptation: new directions in evolutionary anthropology. *Annual Review of Anthropology* 42: 103-120.
- Umberger, S.H., 2009. Sheep grazing management. *Virginia Cooperative Extension*, 410-366: 1-6.
- Urrutibéhéty, C., 1983. *Casas hospitalisa. Diez siglos de historia en Ultrapuertos*. Pamplona: Institution Príncipe de Viana.
- Vivier, N., 1998. Propriété collective et identité communale. Les biens communaux en France 1750-1914. Paris : Publications de la Sorbonne.



## 6. Smart ways through the downs: cross-ridge dykes as markers of Late Bronze Age and Early Iron Age transhumance routes across the South Downs, Sussex, UK

David Lea, Judie English and Dick Tapper

*Cross-ridge dykes, a poorly dated and understood monument type on the South Downs, have been subjected to non-invasive field study. The total of accepted and possible dykes has been increased from 98 to approximately 192; each has been visited to assess its landscape position. No single purpose is suggested but a high proportion appear to act as guides defining 'permitted' routes – passages where, either by agreement or by imposition, one group of people could move through land under the control of a different group. A coastal plain develops west of Brighton becoming wider towards Chichester, and here the Downs are dissected by a number of dry valleys. Each valley crosses the northern scarp of the Downs, providing a less steep access to the Low Weald to the north. Use of the Low Weald for seasonal grazing by communities to its south, either on the coastal plain or the valley of the western Rother is well attested during the Late Saxon and Medieval period and it is suggested here that a similar practice was used in late prehistory. Settlement density on the coastal plain is particularly high during the Late Bronze Age and Early Iron Age and it seems likely that the bare chalk of the cross-ridge dykes acted as visible route markers particularly around the access points over the northern scarp.*

**Key words:** South Downs, Low Weald, stock movement, Bronze Age

### Background

For many decades it has been recognised that Middle and Late Saxon utilisation of the Low Weald of Kent, Surrey and Sussex involved seasonal movement of stock. Inhabitants from extra-Wealden settlements around its rim took advantage of lush grazing in summer and the annual bounty of mast and acorns in autumn but held their stock closer to home over winter. In Kent documentary survival allows these arrangements to be seen in detail (Everitt 1986); charters of AD 785 and 786 record a grant (or confirmation) to the extra-Wealden manor of Ickham of land on the fringe of Romney Marsh, swine pastures at Blean, Buckholt and Haradun, as well as three other un-named Wealden *dens* (Witney 1976: 43-44). In the absence of early documents, place-names and tenurial and ecclesiastical links provide a similar picture in Sussex (for example Chatwin and Gardiner 2005) and Surrey (for example Blair 1991: fig 5; Ellaby 2016).

The time has long passed when this form of husbandry was considered to have been undertaken by entrepreneurial herdsmen cutting their way through the wildwood; 'the rural resources of England were almost as fully exploited in the seventh century as they were in the eleventh' (Sawyer 1976: 2). However, earlier farming use, either from permanent or seasonally occupied settlements, in the Low Weald is less well attested.

Elsewhere in the country the possibility of transhumance as a means of seasonally exploiting resources away from the permanent settlement during the prehistoric period has largely been limited to use of upland grazing areas, particularly in the south-west (for example Jones and Quinnell 2011; Bender *et al.* 2007 on Bodmin Moor, and Fleming 2008: 128 on Dartmoor). The evidence for prehistoric transhumance is further discussed by Bowden elsewhere in this volume and by Oosthuizen (2013).

To return to the south-east, prehistoric and Romano-British exploitation of iron ore resources is well

known, as are the trans-Wealden Roman roads, but the network of smaller tracks necessary to link individual production sites with the major throughways and move the heavy product to market, some of which must pre-date the Roman industry are less well understood. The distribution of querns made of Lodsworth Stone, quarried near Midhurst (West Sussex), also indicates trade in heavy goods from a Low Wealden production site, possibly partially at least by water or around the rim of the clay areas. Between the Neolithic and Roman periods Lodsworth stone querns have been found: in the upper Thames valley at Gravelly Guy near Lechlade on the Gloucestershire / Oxfordshire boundary; at Barbury Castle hillfort and a further Iron Age site at Groundwell Farm, both near Swindon; in Hampshire at sites around Winchester and the Avon valley; and as far east as Anstiebury hillfort near Dorking (Surrey) (Shaffney and Rose 2011). Such a large distribution area indicates the widespread complex of routes to which the Low Weald had access.

One observation drawn from a study of the topographical position of early hillforts in Sussex (Hamilton and Manley 1997) recognised their peripheral position overlooking either the coastal plain or the Low Weald and the location and architecture of both Hascombe and Holmbury Middle Iron Age (MIA) hillforts in Surrey show a clear concern with overlooking, and being seen by, those in the Low Weald (Hooker and English 2016). Until recently evidence of prehistoric activity in the Low Weald is limited, partly at least because of the lack of large infrastructure projects and an unfortunate belief that there was little to be found. However, investigations in advance of housing developments at Broadbridge Heath, near Horsham (West Sussex) produced several Iron Age round houses (Margetts 2018) whilst those around Horley (Surrey) (Margetts in prep) have revealed Middle and Late Iron Age and Romano-British settlement and land divisions on a scale that indicates permanent, rather than seasonal occupation. Excavation at Wyphurst Road, Cranleigh (Surrey) yielded a MBA barrel urn filled with stones and Late Iron Age and early Roman ring ditches, probably indicating the presence of round houses (Hayman 2008).

Evidence of pre-MIA farming in the Low Weald is sparse. Work at Gatwick Airport uncovered a Late Bronze Age (LBA) ditched enclosure and a round house (Wells 2005). Here pollen analysis from the earliest contexts of a boundary ditch suggest it was dug in an area of open grassland, any woodland having already been cleared. The enclosure ditch had been dug in a similar environment but also produced cereal pollen – this may infer production close to the site though it could have derived from crop processing or domestic residues, but most of the palynological evidence indicated use as pasture. Wells suggests that the settlement at Gatwick was used on a seasonal basis with an emphasis on grazing. A site deep in the Low Weald at the Millennium Seed Bank, Wakehurst Place (West Sussex) has also produced evidence of LBA, possibly seasonal, activity (Stevens 1999).

A more general view of the potential density of prehistoric activity in the Low Weald is given by intense field walking over several decades around Outwood, east of Gatwick Airport in Surrey. An area of 1200 ha has yielded about 80 scatters of worked flint including no less than 34 barbed and tanged arrow heads, and 20 scatters of prehistoric pottery, the majority on first inspection dating to the LBA (Robin Tanner pers. comm.). Far from being *terra incognita*, by the LBA the Low Weald was well known and its potential fully understood – under pressure it was ‘ripe for further development’, with seasonal settlement the first stage.

Identification of seasonally occupied settlements is difficult, but do any other types of site add evidence to the suggestion of transhumant use of the Low Weald in late prehistory? The north – south trackways which link the North and South Downs and the coastal plains of Kent and western Sussex with the Weald can, in many cases, be shown to have linked Late Saxon and Medieval extra-Wealden parent settlements with their Wealden grazing areas – the *-denns* and *-falods* of Kent, Surrey and Sussex. Occasionally a much earlier genesis has been suggested on the basis of links between routes of probable

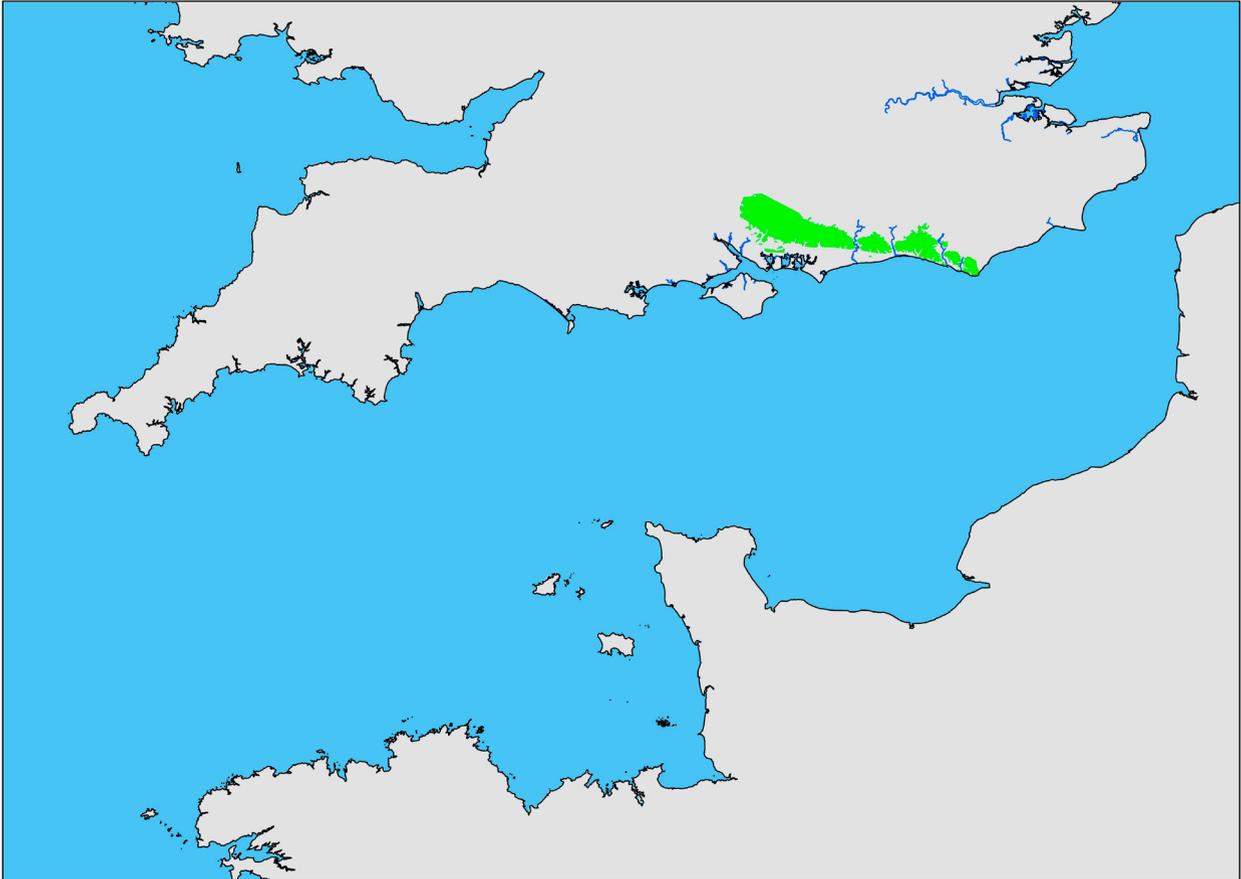


Figure 6.1: The location of the South Downs Cross-Ridge Dyke Project study area.

prehistoric origin on the downs and north – south trackways in the Low Weald (Bell 2020: 219-239), and work at North Park Farm Bletchingley has resulted in the suggestion that one of these tracks, Green Lane at Bletchingley, originated in the LBA (Marples and Poulton 2019: 179-180). Certainly the number of flint scatters and tool production sites suggests a network of routes and, probably, areas of land with known, if neither permanent nor physically defined, boundaries. Similarities have been drawn between Bronze Age and Anglo-Saxon use of strip fields (Oosthuizen 2013: 76) and evidence of dedicated areas of pasture (Oosthuizen 2013: 28) and Bronze Age transhumance is a further example. That is not to say that each of the myriad north – south routes into the Low Weald originated in prehistory; some were, and identification of these remains a subject for future research.

### **The South Downs cross-ridge dyke project (Figure 6.1)**

Cross-ridge dykes are bank and ditch complexes which cross ridges and spurs and are usually attributed to the LBA or Early Iron Age (EIA), although reliable dating evidence is sparse in the extreme. They are widespread on the chalk of southern and south-eastern England, on the Chilterns and the Cotswolds and in Yorkshire, and also occur in Wales and Scotland. This project has been using a range of techniques, including lidar, to assess their scale, topographical position, viewsheds and intervisibility. All examples on the South Downs have been visited and, where appropriate, measured, although many have been destroyed or damaged by ploughing and some remain visible only on aerial photographs. The fieldwork has been completed and a number of interim reports and papers have been published (Lea *et al.* 2016; 2017; 2018a; 2018b; 2018c; forthcoming; in prep. [a]; in prep. [b]).

The project has increased the number of known and potential cross dykes on the South Downs from 98 to over 190 and has led to the conclusion that the various dykes may have been constructed for different purposes and, indeed, individual examples may have changed in use over time. However, many appear to play a role in defining routes – although most are not large enough to prevent movement, anyone approaching or crossing one would have been aware of their transgression and many are sited such that they would have been visible from up to 12 km distance.

**The Routes**

One notable concentration of dykes is on the ridge and the eastward facing spurs where the eastern end of the South Downs overlooks the low-lying land between Folkington and Eastbourne, clearly inhibiting movement onto the higher ground from there and visible over a wide arc from the High Weald to the English Channel (Lea *et al.* 2018a). Equally striking is the large number crossing the main northern ridge of the downs, strongly suggesting that this should not be considered a late prehistoric long-distance route.

However, it is the potential routes along dry valleys, crossing the downs from north to south, which are of interest to the subject of this report. West of Brighton a coastal plain develops and the Upper and Lower Greensand and the clays of the Low Weald provide a wide vale of relatively low-lying land to the north of the downs; it is between these two ecozones that ‘permitted’ routes, marked by cross dykes, appear. These suggested routes are (Figure 6.2):

1. The dry valley between Brighton and Pyecombe now utilised by the A23
2. The dry valley between Findon and Washington now utilised by the A24
3. The dry valley running north from Tangmere to Duncton and now largely utilised by the A285
4. From Chichester, the Lavant valley and the dry valley south of Cocking, a route now utilised by the A286
5. The dry valleys running north from the Ems valley at Stoughton and the Lavant valley at East Lavant to the Low Weald at East Harting and Elstead

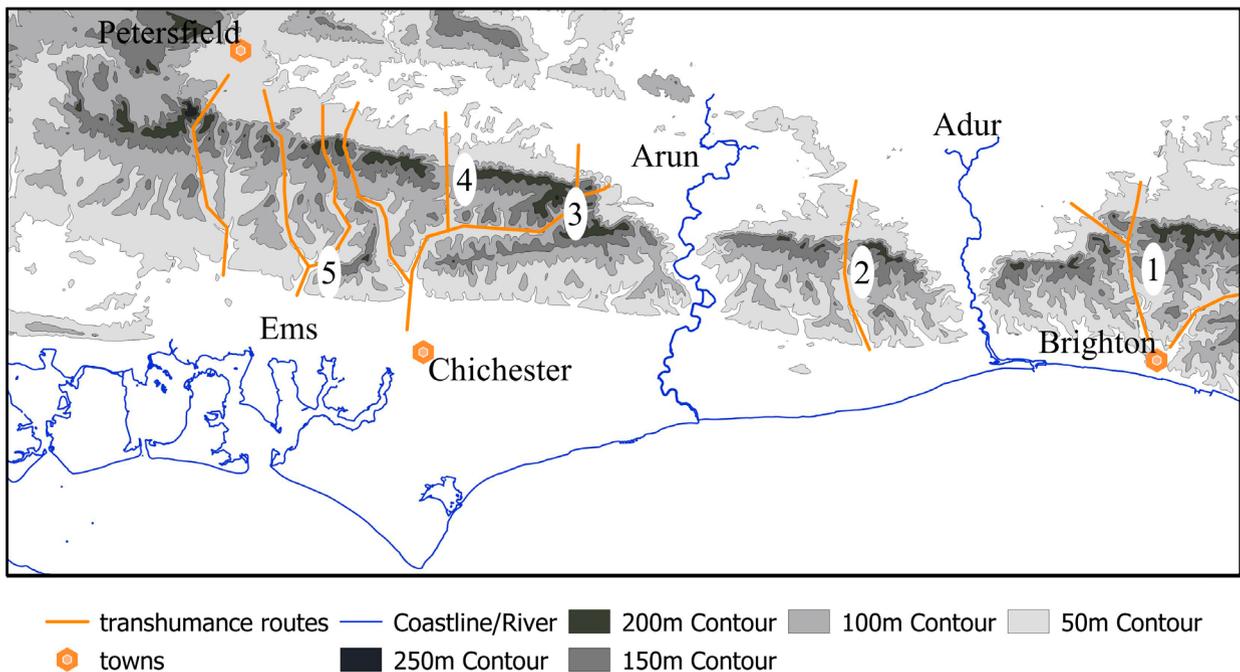


Figure 6.2: The location of possible north - south routes through the South Downs showing those discussed in the text.

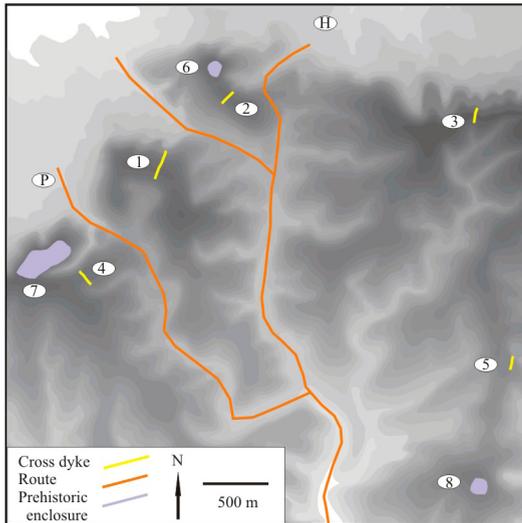
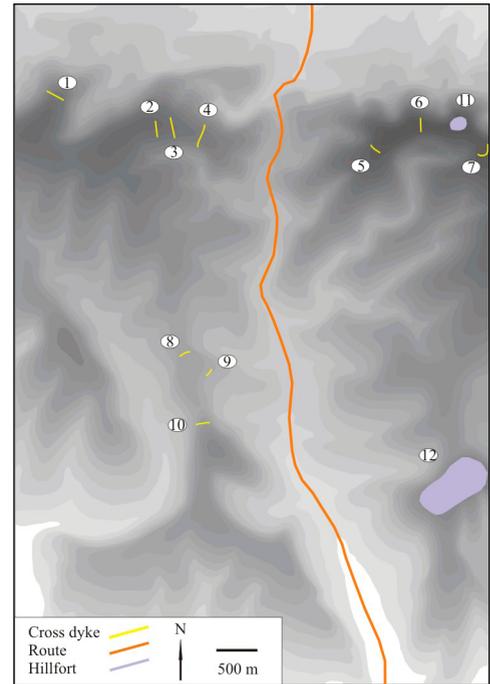


Figure 6.3: Topography of the A23 route showing cross dykes on Newtimber Hill (1), Wolstonbury Hill (2), Hone Bottom (3), Summerdown (4) and in Pudding Bag Wood (5), prehistoric enclosures Wolstonbury hillfort (6), the Devil's Dyke (7) and Hollingbury hillfort (8) and northern exits at Poynings (P) and Hassocks (H). Contours shown at 10 m intervals with land below 40 m OD remaining white.

Figure 6.4: Topography of the A24 route showing cross dykes on Sullington (1), Barnsfarm (2 & 3), Highden (4) and Chanctonbury (5-7) Hills, Muntham Court (8 & 9) and Church Hill (10), and the hillforts on Chanctonbury (11) and Cissbury (12) Hills. Contours are shown at 10 m intervals with land below 40 m OD remaining white.



Each of these suggested routes passes northwards from an area of coastal plain, along valleys with gentle gradients between the long spurs of the dip-slope of the chalk downs, climbing to relatively low points on the main ridge before probably taking zig-zag tracks down to the greensand and across this to the Low Weald.

### The A23 route

The easternmost of the routes considered here is now followed by the southern portion of the main London to Brighton road and reaches the south coast close to the point where the coastal plain is replaced by the white chalk cliffs of the South Downs.

There are three possible northern entrances to the dry valley, each flanked by easily identifiable high points (Figure 6.3). The western (Poynings) route passes between Devil's Dyke, with its poorly dated promontory fort, and Newtimber Hill where a large cross dyke has its northern end draped down the slope overlooking this route, and comprises two banks and three ditches, a complexity possibly intended to increase its visibility and therefore emphasise its importance. The central route passes between Newtimber and Wolstonbury Hills; on the east side is the poorly understood enclosure on Wolstonbury Hill, thought likely to be an early hillfort, although the bank with its internal ditch suggests an earlier date (Bedwin 1984). The cross dyke on the same hill would not have been visible from the valley to its west. The eastern route passes from Hassocks, with its known LBA settlement (Butler 2000), and to the east of Wolstonbury Hill and its now visible cross dyke. Once south of the main ridge the three routes join and travel southwards towards the now narrow coastal plain in the area of West Blatchington and Hangleton.

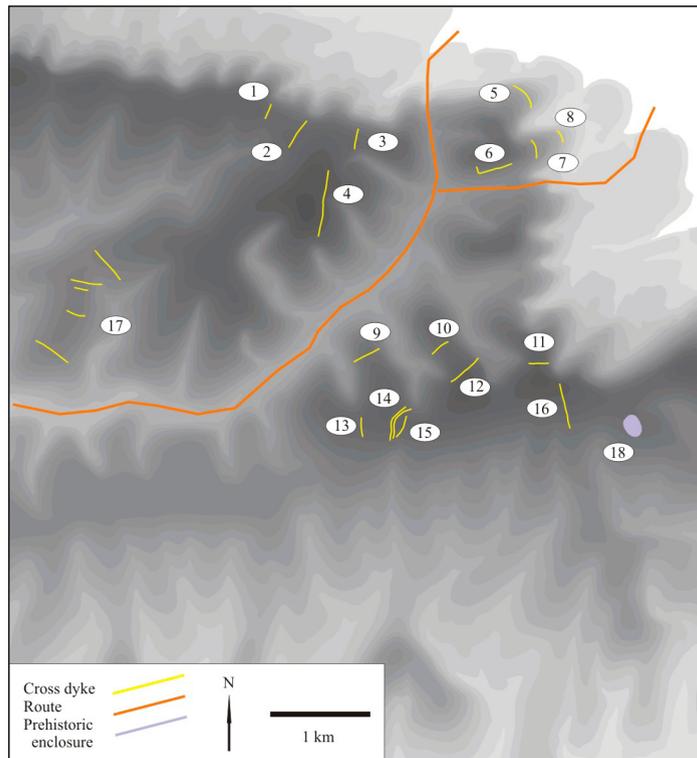


Figure 6.5: Topography of the A285 route showing cross dykes on East Lavington (1), Teglease (2), Woolavington (3), Littleton (4) Downs, Duncton Hanger (5), Barlavington Down (6), Barlavington Spur Upper (7) and Lower (8), Shepherds Copse (9), Littleton End (10), Lambs Hanger (11), Sutton Down (12), Stubbs Wood (13), Upwaltham Hill Double (14) and Single (15), Glattig Down (16) and High Down A - D (17), and the Neolithic enclosure at Barkhale (18). Contours are shown at 10 m intervals and land below 40 m OD remaining white.

### The A24 route

At its northern end the track would have crossed the ridge at a height of about 100 m OD, between high points on Barnsfarm Hill, 205 m OD, and Chanctonbury Hill, 238 m OD, and both these bear cross-ridge dykes (Figure 6.4). This point, which would have provided a relatively easy gradient, is clearly visible from both north and south as a notch in the horizon. No further cross-ridge dykes are likely to have been visible from the route, although Chanctonbury hillfort, poorly dated but probably from the EIA, would have been. The southern end of the route lies between the MBA enclosure and EIA hillfort on Highdown Hill and the MIA Cissbury hillfort.

Links between Late Saxon extra-Wealden estates and grazing areas utilising a similar route can be seen on place-name evidence between Goring and Goringlee, and Durrington and Drungewick (both south-east of Horsham), and on documentary evidence between Ferring and West Tarring on the coastal plain and their holdings at Fure and Marl Post, both near Billingshurst (Chatwin and Gardiner 2005).

### The A285 route

Definition of this route by skilful placing of cross-ridge dykes follows the majority of its length (Figure 6.5). Unlike the examples to east and west, there is no clear notch in the profile of the downs to indicate the location of the northern entrance, and a diagonal terrace similar to that bearing the modern road would have been necessary to ease the climb up the scarp slope. However, the way up lies between a number of more or less evenly spaced dykes crossing the main ridge to the west, and the recognisable

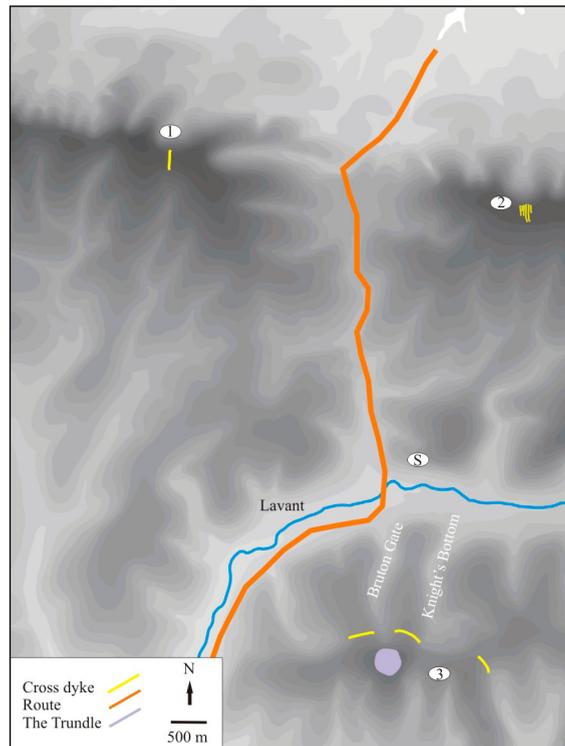


Figure 6.6: Topography of the A286 route showing cross dykes on Linch Ball (1), Heyshott Down West (2) and near The Trundle (3), and Singleton (S). Contours are shown at 10 m intervals with land below 40 m OD remaining white.

bulk of Duncton Down to the east. Approaching from the south, the valley passes between dykes on Littleton Down on the west and Barlavington Down to the east. Progress through the upper reaches of the valley would have been in sight of cross dykes on several of the spurs to the east, and the route would have ended on the coastal plain to the west of the Arun.

One site of particular interest here is that excavated at Oldlands Farm, Bognor (Margetts 2019). Here on the coastal plain excavation has located a settlement of roundhouses and four-post structures together with evidence of agricultural and crop processing activities, together with an embanked enclosure and a water hole with a log ladder dated to 1110-1000 cal BC, both interpreted as evidence for stock management. The author suggests that animals were moved into the Low Weald for seasonal grazing – just such a linkage is known from the same area during the Late Saxon period. *Hidhurst* (Idehurst in Kirdford), *Boganora* (probably Little Bognor Farm in Fittleworth) and *Palingaschittas* (Limbo Farm in Petworth), all in the West Sussex Low Weald, were grazing areas attached to Felpham, immediately east of Oldlands Farm (Mawer and Stenton 1929: 105, 117, 126) and in any period a route north to join and then follow the present A286 through the downs would serve to connect the two areas. A further linkage indicated by place-names is that between Graylingwell and the coast and Grainingfold Farm in the Low Weald south of Horsham (Chatwin and Gardiner 2005).

### **The A286 route**

Here a dry valley broaches the ridge at a height of 107 m OD, a considerably easier climb than that onto the ridge to the west where it achieves 248 m OD at Linch Ball or to the east on Heyshott Down at 228 m OD. Guidance into the valley from the north would have been given both by the notch in the profile of the downs and the presence of a cross-ridge dyke on Linch Down (Figure 6.6) and an extraordinary



Figure 6.7: Topography of the Ems and Lavant valleys routes showing cross dykes on West Harting Down (1), Tower Hill (2), Harting Down (3), Harting Beacon (4), Penn Hill (5), Linch Ball (6) and Heathy Brow Down (7), and prehistoric enclosures Harting Beacon (8), Goosehill Camp (9) and Bow Hill Camp (10). Contours are shown at 10 m intervals with land below 20 m OD remaining white.

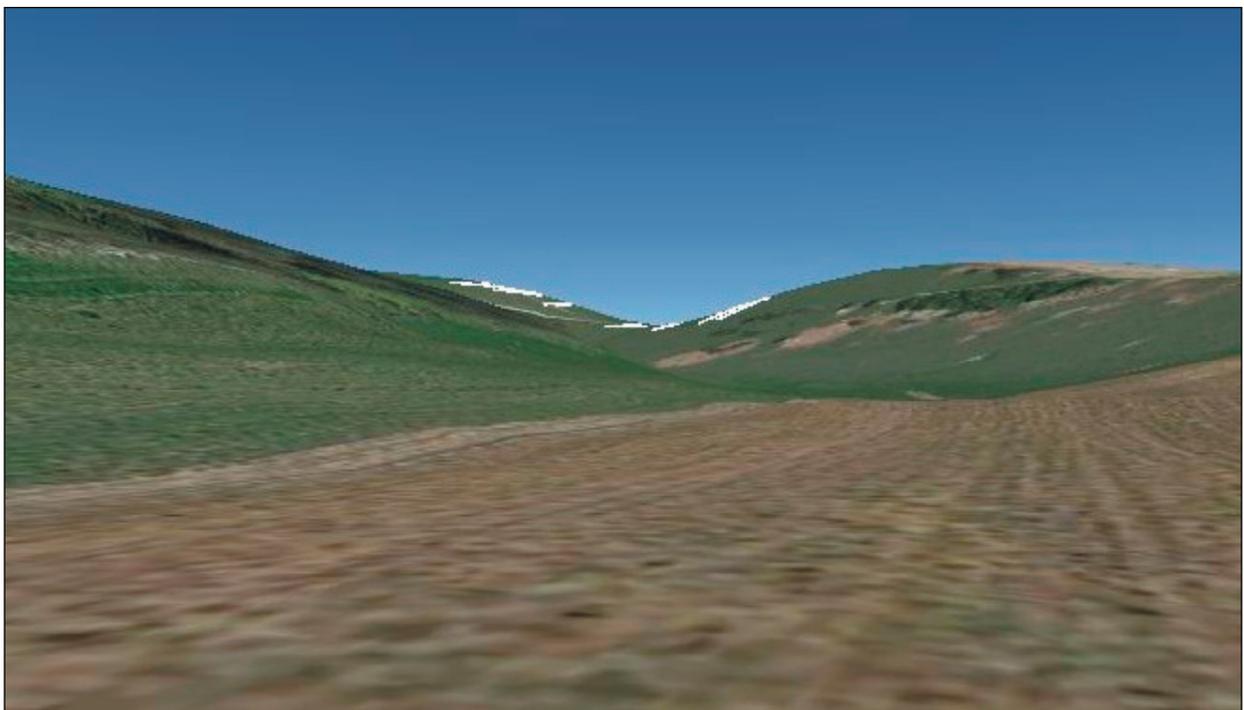


Figure 6.8: Ems and Lavant valleys route - approaching the main ridge from the south showing the cross dykes as white lines on Harting Beacon (left) and Penn Hill (right).

complex of six on Heyshott Down West as well as eight further examples on the ridge further east. Once into the narrow, main valley the route runs southwards until it meets the Lavant valley at Singleton. At this point use of any side valleys to the east would have been discouraged by cross-ridge dykes to the north of The Trundle, albeit only after travelling about 1.5 km up either Bruton Gate or Knight's Bottom. However, following the Lavant westwards and then southwards, at which point the cross dykes on the eastern flanks of Bow Hill would have been visible, leads to the coastal plain at East Lavant. There is an apparent cluster of settlements on the coastal plain around Chichester (although this may result from a bias introduced by finds during urban development), again requiring expansion of grazing rights.

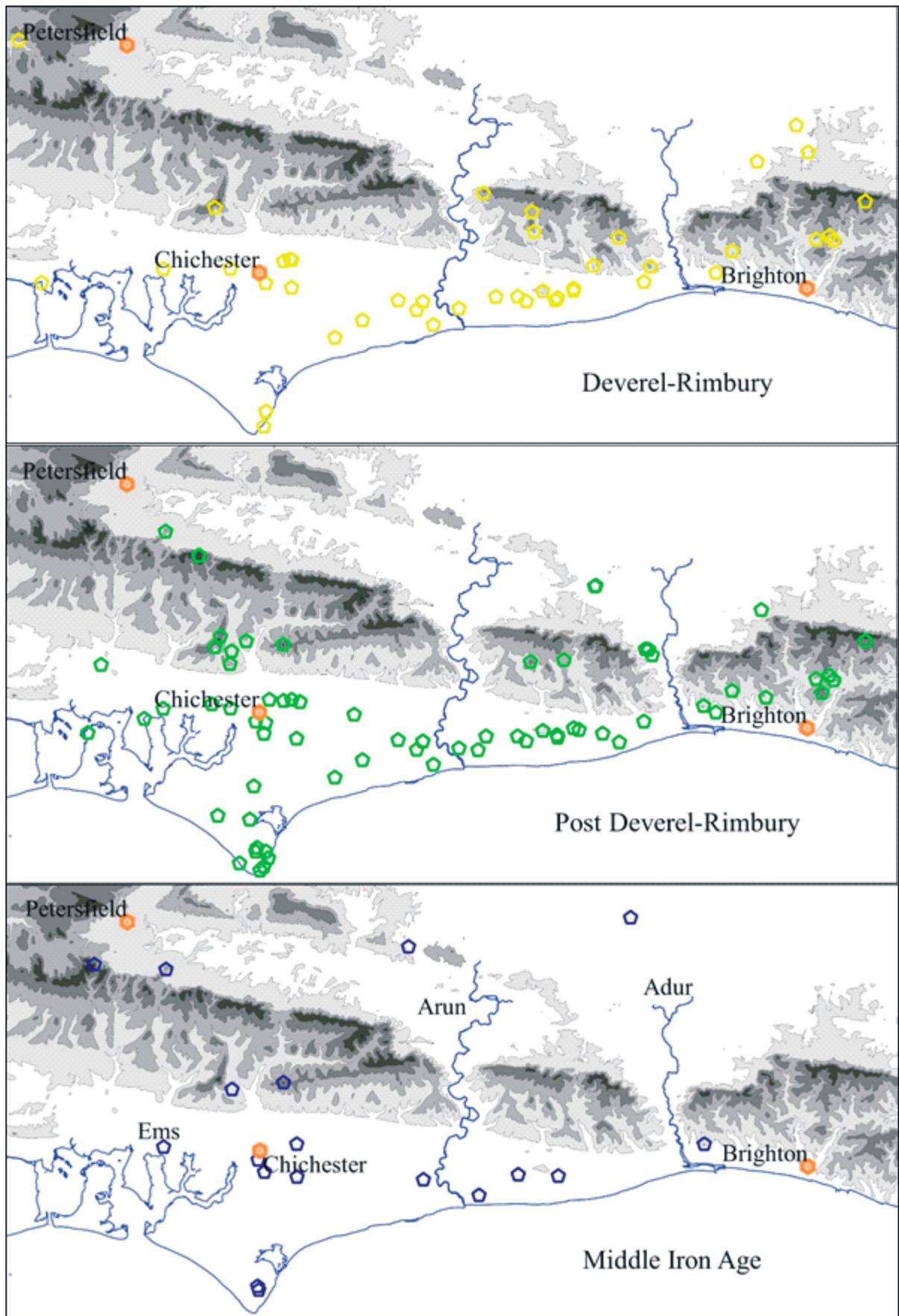
### ***The Ems and Lavant valleys***

The westernmost of the potential routes runs on either side of Bow Hill and continues north before dividing to pass through dry valleys, Compton Valley to the west, Whitcombe Bottom in the centre and Millpond Bottom to the east, before surmounting the main northern ridge and passing down the scarp slope into the valley of the Western Rother (Figure 6.7). The distinctive arc of Bow Hill itself is surrounded by a garland of cross dykes both running along the contours close to the summit and across the approaching spurs, ensuring that movement was limited to the valleys. Two of the three routes down the scarp slope have unusually dense flights of cross dykes discouraging any trespass onto the high northern ridge of the downs; the Whitcombe Bottom corridor passes between four dykes on Harting Down whilst that up Millpond Bottom travels between six to the west on the slope of Harting Beacon and four to the east on Penn Hill. Two of the latter curve around the western side of Penn Hill and would have been seen by anyone approaching from the south, one of those on Harting Down has a short extension running along the scarp slope which would have increased its visibility from the north (Figure 6.8). Conflicting interests in this area of downland may have underpinned the construction of Harting Beacon hillfort, possibly as early as the 9th century BC, on a prominence towering over both the routes described here (Bedwin 1979). The western route passes up the Compton valley between cross dykes on West Harting Down and Tower Hill. Settlement on the area of the West Sussex coastal plain immediately south of the southern entrances to this route and the 'A286 route' appears to have increased during the LBA, possibly resulting in a pressure to procure summer grazing rights away from the population centres with their arable fields, with a concomitant risk of antagonising those with existing, negotiated rights further north.

### **Discussion**

At the most general level, the purpose underlying construction of many, if not all, cross-ridge dykes on the South Downs, appears to be as way markers and guides – earthworks whose location and visibility act as an encouragement to travellers, either local or long distance, to keep to 'permitted' ways. The great majority are insufficient in scale to form physical barriers; in most cases, although there are exceptions, they act from a distance as both guide and deterrent. In terms of absolute dating only one example, unfortunately not related to possible transhumance tracks, offers a relatively firm date – large portions of a heavily decorated Sussex Deverel Rimbury 'globular bowl' of Ellison type 7 (Ellison 1980) found in what was probably the primary silt of the ditch of the cross dyke on Glatting Beacon and dated to 1500–1150 BC (Seager Thomas in prep.). Otherwise, wherever a stratigraphic relationship has been observed, cross dykes overlie the large, rectilinear field systems found over much of the downs and thought to date to the MBA. In general, a LBA or EIA date is assumed by most authors.

Lacking greater clarity it is difficult to assess the role of cross dykes within the socio-economic changes of the LBA / EIA transition. Recent work has suggested the need to examine these changes on a regional, or even sub-regional basis (Davies 2018).



However, there has long been a general belief that stock farming increased in importance over the period with land in Wessex and elsewhere being divided into areas by ‘ranch’ boundaries (Bowen 1978) patrolled by ‘Wessex cowboys’ (Cunliffe 2004), the scale of production being indicated by ‘midden’ sites like East Chisenbury (McOmish *et al.* 2010) and Potterne (Lawson 2000). A more nuanced interpretation compares the field systems of Wessex with the parallel reaves of Dartmoor, and the linear ditches (‘ranch’ boundaries) with contour and watershed reaves further west, the latter acting as territorial boundaries (Sharples 2010: 44-52). In this scenario cross-ridge and cross-spur dykes in Sussex and elsewhere were sufficient to define territories in a more dissected landscape. Clearly the lack of dating evidence for most of these earthworks makes inter-regional comparison precarious. On the South Downs it is clear the cross dykes do not define territories – they are concentrated on the main east – west ridge and the eastern end of the chalk overlooking Eastbourne and, apart from some notable high points like Butser and Bow Hills, they do not surround blocks of land. However, it is accepted that by expressing the right to influence movement away from ‘your’ land, territoriality is being indirectly implied.

Increased stock production, possibly as a signifier of wealth, in response to population increase or simply a dietary choice, would have necessitated grazing above what was available locally and hence seasonal movement into the Low Weald. It is worth considering here that the favoured meat consumed during LBA and EIA feasting evidenced from midden sites tended to be pork at Llan Maes and Potterne where woodland foddering has been identified (Madgwick *et al.* 2010) and Runnymede (Needham and Spence 1966), and beef at East Chisenbury, where despite a relatively small number of animals, an estimation of the meat derived exceeded that from sheep and pigs (McOmish *et al.* 2010: table 9) – both pigs and cattle are suited to wood pasture. At the western end of the Low Weald much of the Lower Greensand to the north of the downs had deteriorated to an acid podzol bearing heathland vegetation, and the seasonal movement could instead have been southwards. There is an apparent reduction in density of late prehistoric settlement on the coastal plain west of Chichester compared with farther east, and summer grazing on the low lying and increasingly marshy land on Thorney and Hayling Islands and the land to their north would have been available.

Development on the West Sussex coastal plain has resulted in the recovery of a large number of prehistoric settlement sites with ‘an unambiguous floruit in pottery use during the LBA’ (Seager Thomas 2016) (Figure 6.9). Whether this demonstrates an increase in population, a decrease in the time over which a particular site was used or a change in the way in which pottery vessels were used is unclear; it has been suggested (Seager Thomas 2008) that ceramic vessels became increasingly used in eating and drinking during the currency of the post-Deverel-Rimbury pottery tradition. But population density is likely to have fluctuated and an increasing population would inevitably have caused pressure on land. One mitigation strategy for which there is evidence is specialised usage of agriculturally marginal land – riverine grazing beside the Thames (Sidell *et al.* 2002) and on low lying areas like the Somerset Levels (Coles and Coles 1986) and the fens (Hall and Coles 1994) was accessed by constructing brushwood causeways. Heavier soils were brought into use, for example London (Lambert 2012) and Weald (Wells 2005) Clays, and transhumant grazing is likely to have developed as one of those specialisms.

The possibility that, on the Yorkshire Wolds, cross-ridge dykes, as opposed to the longer linear earthworks, acted as “‘route-way” markers ... and guided people or kept stock from straying into localised areas of cultivation’ has been suggested (Dent 2010). Movement of stock into the Low Weald either from the downs or, more particularly, from the coastal plain would inevitably have risked impinging on

---

Figure 6.9 opposite: Settlements on the coastal plain and downs between Hayling Island and Chichester producing Deverel Rimbury (c.1700 – 1150 cal BC), post-Deverel Rimbury (c. 1150 – 500 cal BC) or MIA (c.500 – 150 cal BC) pottery. Data derived from Seager Thomas 2008; 2016 and the relevant Historic Environment Records.

longstanding rights of those living on the downs and the greensand to the north. A network of tracks accessing every settlement and every field, as well as longer routes for trade and social interactions, must have developed and redeveloped over many centuries of negotiation and renegotiation, but movement of large numbers of stock would have required a further round of arbitration. It is not possible to say whether the downland dwellers, with their mixed farming economy, constructed the earthworks. Given the relatively dry nature of the chalk downland it would have been in the interest of local farmers to enable the rapid transit of stock with minimal need for water, and without passing through settlements. However, ease of passage would also have been of benefit to the pastoralists and construction a joint enterprise. Defining short routes, with opportunities to wander restricted, and marking those ‘permitted’ ways by constructing cross-ridge dykes over adjacent spurs and at pinch points, particularly the accepted routes over the main ridge, would reduce the chances of any conflict. Understanding of routes as a series of unfolding vistas, with tradition, oral retelling and experience allowing travel without the need for markers has been discussed for the early medieval period (Langlands 2019, 143-144) and a similar situation would have pertained earlier in prehistory. However, formalising of rights of way as suggested here as one of the purposes underlying the construction of cross dykes, altered relationships between different groups of people and between people and the land (Giles 2012, 40-65); marking those changes by the laborious construction of permanent earthworks emphasizes attachment and indicates a hardening of attitudes towards ‘others’.

Many dykes cross the main ridge, suggesting that its use as a long distance, east – west route was being discouraged; other dykes appear to have been intended to dissuade travellers from climbing up to the ridge from the river valleys by any other than ‘approved’ routes (Bradley 1971; Lea *et al.* forthcoming). Cross-ridge dykes, white chalk against the grass, and potentially visible from up to 12 km distant, evince a lack of trust in travellers, even if they were simply your neighbours moving their stock to distant pastures, and a society prepared to invest labour in clarifying arrangements between groups with differing interests. Although dating evidence is sparse, this combination of limitations to movement both through the downs from north to south and along the main, east – west, ridge over the LBA/EIA transition appears contemporary with other socio-economic and political changes including a probable increase in population and an increase in weaponry, development of a ‘raiding culture’, an increase in boundedness (Sharples 2010: 294-298) and construction of the first hillforts on the downs – all suggestive of stresses within society. Routes give access and that access was being controlled; this need not imply ownership in modern terms but can be seen as part of the development of fixed territories.

The exact location of seasonal pastures and the level of organisation of land within the Low Weald is open to question. Routes through the South Downs during prehistory have recently been discussed (Bell 2020: fig 10.6a); here such routes are considered to have utilised south-facing spurs rather than dry valleys although the A23 route described in this paper is included as a ‘natural route’. That the hollow ways running northwards from the greensand of the Rother valley, and generally considered to be of Late Saxon or Early Medieval date, had their origin in a much earlier period is also discussed (Bell 2020: fig 10.10a). Given the apparently ‘permanent’ nature of the MIA settlement at Wickhurst Green, Horsham (Margetts 2018) and around Horley (Surrey) (Margetts in prep.), it seems likely that seasonal usage would have pre-dated such use.

Moving stock into the Low Weald for seasonal grazing continued for several millennia, at least on an intermittent basis; indeed, modern farmers in East Sussex still hold detached areas of land on the Pevensy Levels and the South Downs used for seasonal grazing.

## Acknowledgements

Our gratitude is due to land owners and land agents in the area studied and rangers attached to the South Downs National Park for allowing and assisting access; to Historic Environment Record officers from West Sussex and Hampshire County Councils and Chichester and District Council for providing data; to the Environment Agency who supplied lidar images via the [www.geomatics-group.co.uk](http://www.geomatics-group.co.uk) web site, and similar images from the Secrets of the High Woods Project, and staff at the National Record of the Historic Environment, Historic England, Swindon, for aerial photographic images. The illustrations produced with QGIS contain OS data © Crown copyright and database right (2019).

## References

- Bedwin, O. 1979. Excavations at Harting Beacon, West Sussex; second season 1977. *Sussex Archaeological Collections* 117: 121-135.
- Bedwin, O. 1984. Aspects of Iron Age settlement in Sussex, in B. Cunliffe and D. Miles (eds) *Aspects of the Iron Age in Central Southern Britain*. Oxford: Oxford Committee for Archaeology, Monograph 2. 46-51.
- Bell, M. 2020. *Making One's Way in the World*. Oxford: Oxbow Books.
- Bender, B., S. Hamilton and C. Tilley. 2007. *Stone Worlds: narrative and reflexivity in landscape archaeology*. Walnut Creek: Left Coast Press.
- Blair, J. 1991. *Early Medieval Surrey: landholding, church and settlement*. Guildford: Alan Sutton Publishing and Surrey Archaeological Society.
- Bowen, H.C. 1978. 'Celtic' fields and 'ranch' boundaries in Wessex, in S. Limbrey and J.G.Evans (eds) *The Effect of Man on the Landscape: the Lowland Zone*: York: Council for British Archaeology Research Report 21. 115-122.
- Bradley, R. 1971. Stock raising and the origin of the hillfort on the South Downs. *Antiquaries Journal* 51: 8-29.
- Butler, C. 2000. *Saxon Settlement and Earlier Remains at Friar's Oak, Hassocks, West Sussex*. Oxford: British Archaeological Report British Series 295.
- Chatwin, D. and M. Gardiner. 2005. Rethinking the early medieval settlement of woodlands: evidence from the western Sussex Weald. *Landscape History* 27: 31-49.
- Coles, B. and J. Coles. 1986. *The Sweet Track to Glastonbury*. London: Thames & Hudson.
- Cunliffe, B. 2004. Wessex cowboys? *Oxford Journal of Archaeology* 23: 61-81.
- Davies, A. 2018. *Creating Society and Constructing the Past: social change in the Thames Valley from the Late Bronze Age to the Middle Iron Age*. Oxford: British Archaeological Report British Series 637.
- Dent, J.S. 2010. *The Iron Age in Eastern Yorkshire*. Oxford: British Archaeological Report British Series 508.
- Ellaby, R. 2016. Eridge and the Merstham dens in Horley. *Surrey Archaeological Collections* 99: 165-193.
- Ellison, A. 1980. The Bronze Age, in D.J. Freke (ed.) *The archaeology of Sussex pottery*. *Sussex Archaeological Collections* 118: 31-42.
- Everitt, A. 1986. *Continuity and Colonisation: the evolution of Kentish settlement*. Leicester: Leicester University Press.

Fleming, A. 2008. *The Dartmoor Reaves: investigating prehistoric land divisions*, 2nd edition, Oxford: Windgather Press.

Giles, M. 2012. *A Forged Glamour: landscape, identity and material culture in the Iron Age*. Oxford: Windgather Press.

Hall, D. and J. Coles. 1994. *Fenland Survey: an essay in landscape and persistence*. London: English Heritage.

Hamilton, S. and J. Manley. 1997. Points of view: prominent enclosures in 1st millennium BC Sussex. *Sussex Archaeological Collections* 135: 93-112.

Hayman, G. 2008. Excavations on a possible Roman villa and earlier activity at land off Wyphurst Road, Cranleigh. *Surrey Archaeological Collections* 94: 251-292.

Hooker, R. and J. English. 2016. Analytical surveys of Holmbury and Hascombe hillforts. *Surrey Archaeological Collections* 99: 111-118.

Jones, A.M. and H. Quinnell. 2011. Bosiliack: a later prehistoric settlement in West Penwith, Cornwall and its context. *Archaeological Journal* 168: 96-132.

Knight, M. and M. Brudenell. forthcoming. *Pattern and Process: landscape prehistories from Whittlesey Brick Pits, the King's Dyke and Bradley Fen excavations 1998 - 2004*. Cambridge: McDonald Institute Monographs.

Lambert, R. 2012. *Bronze Age and Roman Farming and Settlement at Christ's College School, Guildford, Woking*: SpoilHeap Occasional Paper 2.

Langlands, A. 2019 *The Ancient Ways of Wessex: travel and communications in an early medieval landscape*. Oxford: Windgather Press.

Lawson, A.J. 2000. *Potterne 1982-5: animal husbandry in later prehistoric Wiltshire*. Salisbury: Wessex Archaeological Report 17.

Lea, D., J. English and D. Tapper. 2016. *South Downs Cross-Ridge Dyke Project - Part I: East of the Cuckmere River*, privately circulated report.

Lea, D., J. English and D. Tapper. 2017. *South Downs Cross-Ridge Dyke Project: Part II/III: River Cuckmere to River Ouse*, privately published report.

Lea, D., J. English and D. Tapper. 2018a. Cross Dykes Project interim report I: the Cuckmere to Eastbourne. *Sussex Archaeological Collections* 156: 1-14.

Lea, D., J. English and D. Tapper. 2018b. *South Downs Cross-Ridge Dyke Project: Part IV: River Ouse to River Arun*, privately published report.

Lea, D., J. English and D. Tapper. 2018c. *South Downs Cross-Ridge Dyke Project: Part V: River Arun to River Adur*, privately published report.

Lea, D., J. English and D. Tapper, forthcoming. Cross Dykes Project interim report II/III: the Adur to the Cuckmere. *Sussex Archaeological Collections*.

Lea, D., J. English and D. Tapper, in prep. [a] Cross Dykes Project interim report IV: The Lavant / A286 gap to the Arun, submitted to *Sussex Archaeological Collections*.

Lea, D., J. English and D. Tapper, in prep. [b] South Downs Cross-Ridge Dyke Project: Part 5: M3 to the Lavant, submitted to *Sussex Archaeological Collections*.

- Madgwick, R., J. Mulville and R.E. Stevens. 2012. Diversity in foddering strategy and herd management in late Bronze Age Britain: an isotope investigation of pigs and other fauna from two midden sites. *Environmental Archaeology* 17: 126-140.
- Margetts, A. 2018. *Wealdbæra: excavations at Wickhurst Green, Broadbridge Heath and the landscape of the West Central Weald*, London: SpoilHeap Monograph Series 18
- Margetts, A. 2019. On the verge of Wessex? A prehistoric landscape at Oldlands Farm, Bognor Regis, West Sussex. *Sussex Archaeological Collections* 157: 47-81.
- Margetts, A. in prep. *Iron Age and Romano-British Archaeology at Horley, Surrey*. London: Spoilheap Monograph Series.
- Marples, N. and R. Poulton. 2019. *Prehistoric and early medieval landscapes at North Park Farm, Bletchingley, Surrey*. Woking: SpoilHeap Publications Monograph Series 21
- Mawer, A. and F.M. Stenton. 1929. *The Place-Names of Sussex*. English Place-Name Society 6. Cambridge: Cambridge University Press.
- McOmish, D., D. Field and G. Brown. 2010. The Bronze Age and Early Iron Age midden site at East Chisenbury, Wiltshire. *Wiltshire Archaeological and Natural History Magazine* 103: 35-101.
- Needham, S. and T. Spence. 1996. *Refuse and Disposal at Area 16 East Runnymede: Runnymede Bridge Research Excavations*, vol 2. London: British Museum.
- Oosthuizen, S. 2013 *Tradition and Transformation in Anglo-Saxon England: archaeology, common rights and landscape*, London: Bloomsbury Academic.
- Sawyer, P.H. (ed.) 1976. *Medieval Settlement: continuity and change*. London: Edward Arnold.
- Seager Thomas, M. 2008. From potsherds to people: Sussex prehistoric pottery. *Sussex Archaeological Collections* 146: 19-51.
- Seager Thomas, M. 2016. The West Sussex coastal plain: the Bronze and Earlier Iron Age pottery <https://www.researchgate.net/publication/273258648>
- Seager Thomas in prep., Pottery from Glatting Down, in D. Lea, J. English and D. Tapper. Cross Dykes Project interim report IV: The Lavant / A286 gap to the Arun, submitted to *Sussex Archaeological Collections*.
- Shaffrey, R. and F. Roe. 2011. The widening use of Lodsworth Stone: Neolithic to Romano-British quern distribution, in D. Williams and D. Peacock, (eds) *Bread for the People: the archaeology of mills and milling*: British Archaeological Report International Series 2274. 309-324.
- Sharples, N. 2010. *Social Relations in Later Prehistory: Wessex in the first millennium BC*. Oxford: Oxford University Press.
- Sidell, J., J. Cotton, L. Rayner and L. Wheeler. 2002. *The Prehistory and Topography of Southwark and Lambeth*. London: Museum of London Archaeological Society Monograph 14.
- Stevens, S. 1999 Archaeological work at the site of the Millennium Seed Bank, Wakehurst Place, Ardingley, West Sussex. *Sussex Archaeological Collections* 137: 183-187.
- Wells, N.A. 2005. Excavation of a Late Bronze Age enclosure site at Gatwick Airport, 2001. *Sussex Archaeological Collections* 143: 147-169.
- Witney, K.P. 1976. *The Jutish Forest: a study of the Weald of Kent from 450 to 1380 AD*. London: Athlone Press.



## 7. Extremes of British transhumance: Bronze Age and Inter-War; Dartmoor and Lewis

Pete Herring

*This paper considers the under-explored experiential aspect of transhumance through two people, one interpreted from archaeological evidence as being a young woman, the other known and named. The first lived around 3700 years ago and has recently been made visible by painstaking archaeological examination of an Early Bronze Age burial on Dartmoor; the other, Kenina Morrison, still living in Stornoway in the Outer Hebrides in 2014, made audible by a recorded structured conversation.*

**Key words:** *Experiential, empower, freedom, commons, Bronze Age, Dartmoor, Isle of Lewis, airigh*

While mindful of the need to place each transhumant in their economic and social context (see Introduction, this volume), it is also possible to explore commonality in their experience. Of course, there are few certain equivalences between women living in early twentieth century AD Lewis and early second millennium BC Dartmoor, and the evidence for each person's apparent or certain responses to their times on the moors is quite different.

Kenina Morrison's memories were detailed and vivid, and her feelings strongly expressed. But when trying to draw meaning from prehistoric remains, archaeologists apply critical conjecture to the finely recorded detail of the burial's artefacts and their placement, recognising that they were probably selected by the person's community or family rather than the person themselves. Nevertheless, the excavation report carefully considers possible attachments and motivations and while conclusions are inevitably open to challenge, they hold together in a coherent way.

Through the two accounts we see women exercise some personal freedom while being within societies that planned and controlled both their seasonal activities and the trajectory of their lives.

### **The Whitehorse Hill cist burial**

A young adult's cremated bones and high-quality, apparently high-status personal ornaments were found high on Dartmoor (an upland area in Devon, UK) in a cist (four-sided box with granite slab sides, floor and lid), inserted in a cut made into blanket-bog peat (Figure 7.1). They had remained waterlogged since the eighteenth and seventeenth centuries BC, enabling the rare survival of organic materials. The Cornwall Archaeological Unit excavated the cist in August 2011 when it was found to be vulnerable to the effects of the peat drying and shrinking (A.M. Jones 2016a).

The cist's capstone was left clear and marked the burial for some time, until a shallow soil developed over it (A.M. Jones 2016a: 16-24).

Andy Jones' studies of Bronze Age south west Britain have sharpened his interest in territoriality; he wonders if placing the cist and its burial on Whitehorse Hill enabled 'a group to establish a link with the land' (A.M. Jones 2016b). That possibility is strengthened by the cist's location at the very heart of Dartmoor's North Moor. It is at perhaps the most marginal place in south-west Britain, on a rounded plateau over six kilometres from the nearest sheltered lowland, remote from any surviving contemporary settlements, but possibly carefully selected to be at the symbolic centre of Devon,



Figure 7.1: The cist on Whitehorse Hill prior to removal and analysis of its contents. (© Cornwall Archaeological Unit)

roughly equidistant (less than two kilometres) from the spring-heads of five of Devon's principal rivers: the Torridge (via the Okement), the Taw, Teign, Dart, and Tamar (via the Tavy) running to the north, south-east and the south-west coasts. Their watersheds encapsulate the greatest part of Devon, the land from which later farming communities, in the medieval period, brought their animals to the Moor's summer grazing (Fox 2012).

On the cist's granite floor people carefully placed a neat matting of stems and leaves of purple moor grass (*Molinia caerulea*) (J. Jones 2016, 58). These, and some meadowsweet flowers (from which pollen survived; Fyfe and Perez 2016), were picked in late summer or early autumn. On them they laid a nettle and animal-skin band (Cameron, Harris *et al.* 2016), obscured when a bear pelt was placed over it, fur outwards (Cameron and Mould 2016). In the folded fur they secured the cremation (possibly within a small textile bag; Harris 2016), the pelt probably fixed closed by the copper alloy pin found here (Sheridan, Cameron and Quinnell 2016: 69-71).

The cremated bones came from a young 'gracile' person, aged between 15 and 25 years (Mays 2016: 43). The bones' condition means it is not certain that the person was female, but items similar to those they were buried with are normally found with females (Sheridan, Brunning *et al.* 2016: 127; A.M. Jones 2016a: 234).

Placed partly on the pelt was a beautifully made lidded lime-bast basket (Cartwright *et al.* 2016). It held items presumably associated with the person: a composite, multi-colour necklace with beads of tin, amber (probably North Sea coast), Kimmeridge shale (Dorset), and fired local clay (Sheridan *et al.* 2016: 88-116: Figure 7.2); an intricately woven band, interpreted as an armband or bracelet, made of strands of cow or aurochs hair with shiny tin studs spaced along it (Sheridan, Cameron *et al.* 2016: 75-87); two pairs of turned spindle-wood studs with grooves probably used as ornaments in body perforations (probably ears and cheeks) (Sheridan *et al.* 2016, 117-145); and a neat flint scraper (Lawson-Jones 2016: 146).

The creators of the cist probably did not live permanently nearby, but instead brought their animals, 'up to high pastures in the summer.... a much more transhumant pattern of occupation' (A.M. Jones 2016b; see also Fleming 2007; Herring 2008; Fox 2012). Palaeo-environmental evidence indicates that it was built when grasses and sedges encouraged by grazing were becoming locally dominant (Fyfe *et al.* 2016: 180). Selection and careful placement of purple moor grass, distinctive of the south-west's poorly-drained uplands, may have celebrated the plants associated with summer pasture, especially if their grazing season was similar to that of more recent times, when livestock were kept on the downs until October. (Looking forward to modern Lewis, *Molinia's* dry leaves, *flanach* in Hebridean Gaelic, also made up the fondly remembered bedding on which women lay in their summer shelters; below.)



Figure 7.2: Selection of the shale, clay, amber and tin beads found in the Whitehorse Hill cist arranged in a possible pattern that emphasises the tin and amber. (© Cornwall Archaeological Unit)

The armband or bracelet of cattle hairs studded with tin can be seen now as representing the history of early Dartmoor in a single object, tin and extensive grazings contributed to transformations of south-west Britain's economy and society (Penhallurick 1986: 115-118; Fleming 2007; Sheridan, Cameron *et al.* 2016: 87). Andy Jones suggests that the animal from whose tail the hairs came could have been known well by the bracelet's wearer (2016a: 231).

This apparently meaningful and possibly symbolic design of the bracelet strengthens Jones' supposition that all the choices and designs made visible by analysis of this carefully constructed and choreographed burial expressed the shared values and concerns of those who buried the person. They may have idealised or mythologised the biography of the deceased. Key to that suggestion is the dating of the cremation in an oak-wood fire (Hazell 2016: 45). This appears to have occurred some years before the bones were placed in the cist (Marshall *et al.* 2016), so the cremated person and what are presumed to be their personal ornaments seem to have been curated for a generation or more by the community, but the pelt and basket, at least, were probably new when used as the final containers of the body and ornaments. There is also evidence that the capstone was lifted and the objects taken out and inspected on at least one occasion after their original deposition (A.M. Jones 2016a: 208-244).

Placing the cremation within the pelt of a bear may have linked the person with any magical or symbolic



Figure 7.3 Replicas of the ornaments found in the Whitehorse Hill cist worn by a model. (© Dartmoor National Park Authority)

meaning such animals had (A.M. Jones 2016a: 228). It may also have associated them with the bravery required when encountering such fearsome wild animals either in or *en route* to the hills and so have represented the courage associated with transhumance's adventures. The necklace, bracelet (wrist or fore-arm), and studs, as well as being high status, appear to indicate beauty, and perhaps the self-confidence that can bring.

This suggested idealisation of the person may have contributed to creation or maintenance in the early Bronze Age of an archetype: the brave, responsible, young female transhumant caring for the community's valuable livestock when on south-west Britain's open commons. But the burial also seems personal, revealing some qualities of a particular young woman. Curation of her bones and body ornaments before their respectful deposition may have kept her close during extended grieving and the care taken in placing her and then revisiting her may also demonstrate the affection, love and admiration felt for her. It seems fitting then to conclude that such a beloved person may have been laid to rest in the place they were known to have loved the best. If a Bronze Age transhumant drew as much pride and pleasure from their work as later transhumants did, then such a place may well have been where they had felt freest and happiest: where the air of the higher Moor flew fastest (Figure 7.3).

### Experiencing transhumance

The fluctuating mosaic of acid grassland, scrubland and wood pasture on Bodmin Moor, Cornwall's largest upland, was, like that on Dartmoor, established from the early second millennium BC by seasonal grazing that has continued apparently unbroken, but with fluctuations in intensity, for the following four thousand years, to the present day. Up to 10,000 cattle or 100,000 sheep are needed to maintain open rough ground communities on the 200 square kilometres of Bodmin Moor, numbers that indicate the scale of summer grazing's contribution to east Cornwall's economies from the early Bronze Age to the early modern period (Herring 2012).

Occupants of settlements of prehistoric round houses with few or no fields on the higher parts of Bodmin Moor and Dartmoor probably practiced a pastoral economy, quite possibly transhumant and varying in intensity (Herring and Rose 2001: 28-29; Herring 2008; Newman 2016: 81).

Early medieval transhumance is indicated by Cornish place-names and archaeological remains. The *havos*, 'summer dwelling', complemented the home farming hamlet, the *hendre*, echoing the distributions of *havod* and *hendra* names of Welsh transhumance systems (Davies 1980). Origins of these names and the transhumance they indicate are at least as early as the early medieval period (Padel 1985: 127; 129).

On Bodmin Moor clustered ruins of small sub-rectangular buildings have been interpreted as transhumance huts (excavation and analysis are required). They are typically around 4 metres by 2 metres internally, with single entrances, and room for a single-person bed, an open fire and some storage (Herring 2012: Figure 7.4). Some groups are associated with single small enclosures, apparently pens, presumably shared by the occupants of several huts, and indicating cooperation and communalism. Numbers of huts probably followed those of the houses in the lowland hamlets, estimated from extents of lands to have typically contained between three and ten households (Herring 2016). This suggests that those in the uplands did not just herd the hamlet's dry cattle and sheep (those not being milked) around their summer pastures, which could have been done by a single person. Instead the activities of those lodged in upland huts presumably included drawing dairy products (and perhaps also wool and then cloth) from the household's livestock (Herring 2012).

The prehistoric round houses and early medieval huts on Bodmin Moor were in open rough ground running undivided from neighbouring pastures: a common. Users would have had both rights and responsibilities under the rules normally associated with such commons (Ostrom 1990; Oosthuizen



*Figure 7.4: A sub-rectangular hut attached to a prehistoric pasture boundary on Roughtor, Bodmin Moor, interpreted as an early medieval transhumance hut. Its entrance was at the far end of the lower wall, downslope from the person's feet.  
(Photo: Pete Herring)*

2013). On Bodmin Moor those appear to have been administered in the early medieval period and perhaps also in later prehistory by four units visible as the Hundreds of Trigg, Lesnewth and East and West Wivelshire. Three of these have surviving remains of drift pounds into which livestock that were either on the commons without rights or were exceeding a household's stint were distrained, after the checks made during drifts in which all animals were rounded up (Herring 1996).

Transhumance and its administration indicate that early medieval east Cornwall had a complex and stable society, with six layers distinguishable.

- 1 The individual transhumant.
- 2 Their household.
- 3 The co-operative group of households, the upland cluster of huts, and the lowland hamlet.
- 4 The community: several hamlets, sometimes termed a multiple estate, the entity that later became the tithing or parish.
- 5 The hundred, administering grazing on Bodmin Moor through the four sub-commons that it was divided into.
- 6 The 'kingdom' overseeing and legitimising the rules of the commons, possibly all of Cornwall, possibly east Cornwall.

In Cornwall transhumance ended some time before AD 1000. This was when field systems and farming practices were transformed as convertible husbandry regimes were developed, creating long rotations of cropping, haying and grazing through large fields, divided into strips by low banks. From then on, dairying was based on livestock retained in those fields not under the plough. Summer grazing of the uplands was then by dry livestock, for beef, lamb and mutton, requiring relatively minimal accompaniment by herders (Herring 2012); the same switch occurred on Dartmoor: what Harold Fox termed 'personal transhumance' undertaken mainly by 'maidens' was replaced by the 'impersonal transhumance' in which the fewer herders were men (Fox 2012: 158-190).

Discomfort, hardship and danger attend most transhumance systems. People take themselves and their valuable livestock to the limits of their viable land where their character and qualities are exposed and tested. Strength, resilience, cooperation and commitment are emphasised. The force for communalism derived from the risk-sharing between the hamlet's several transhumants is countered by the responsibility for the household's livestock shouldered by the individual transhumant. Transhumance can therefore reveal or reflect the economy, administrative structures, ways and beliefs of wider society by having its members examined by the demands of summer-time life at the margins, while still being at the heart of a farming community (Herring 2012; Costello 2018; 2020).

In north-west Europe, where more recent short-distance 'vertical' transhumance has usually been bound up with various forms of mixed farming, the task of taking the animals to the hills, caring for them there, and undertaking the routines of milking and butter and cheese making, usually fell to girls and unmarried young women, or to older women (Herring 1996: 39; 2012: 97-101; Fox 2012: 155-156; Costello 2018: 168) as it had in ancient classical societies (Grassl 1999). Removal of livestock enabled hay to be made and crops to be grown (largely by males) in the homeland farm and maximised the use of seasonally available rough grazing in hills, marshes and dunes.

There is rich north-western European material in which women recounted the feelings only experienced in their summers on the hills when they overcame dangers and fears and built experience, confidence and reputation. They strengthened friendships while respecting, creating and reproducing social relations, learning the accepted ways of doing and ways of being. Additionally, they encountered known and unknown people away from the security of the home farm, and also encountered the remains left by earlier people, the prehistoric monuments that told them that others had been there before.

Transhumance was central to the splitting of rural society's year into equal halves. The long summer from early May to late October was determined agriculturally by the time of hayning (removing livestock from grass to be cut for hay) and crop growing and then harvesting. Pastorally, or from the female point of view, Beltane/Mayday was when the livestock were taken up to the seasonally available rough grazing and Samhain/Hallowe'en was when they were brought back (Patterson 1994: 119; Herring 1996: 39; Costello 2018).

Girls learnt much of their expected roles as women when preparing to leave for the hills (including partings from families and sweethearts), when in the hills (being responsible for the wellbeing and productivity of the household's beasts and working on the stool, at the churn and at the spinning wheel; see Patterson 1994: 306-7), and when reassimilated into the community on their return.

Those youthful transhumance years, mixing responsibility with pleasure, were looked back upon fondly. Girls were learning their role in the world at the same time that their sexual awareness was developing (MacCulloch 1936: 214; Costello 2018). We have this from an elderly western Irish woman recalling her younger days in the hills: 'It was good to be alive! There was the joy, the fun, the pleasure, the singing and the music. The hills were alive' (S Ni Ghaurim 1937, cited in Ó Danachair 1983-4: 39).

Such is the dominant tone of published reminiscences of transhumance, but it should not blind us to the likelihood that some girls and women endured miserable times. It can never be known why one late nineteenth-century herdsman carved this onto a tree at Ore in Dalarna, Sweden: 'I wish I rather was dead than I was here' (Tunón and Bele 2019: 92).

### Transhumance on Barvas Moor, Isle of Lewis, Hebrides

Lewis was amongst the last places in the British Isles where transhumance was practiced, continuing until shortly after the Second World War (Fenton 1978: 49; Kupiec and Milek 2018: 76). Land use on Lewis's north-west coast is topographically constrained; a narrow and discontinuous coastal belt provides the only land where small-scale arable farming is possible (Fenton 1978: fig 9). This is backed by a 15 km wide stretch of poorly drained moorland, including Barvas Moor, dotted with lochs and hills and entirely unwooded. When the Vikings possessed and ruled Lewis (eighth to thirteenth century) oats and barley were grown beside the sea at Barvas and cattle and sheep were raised and eaten (Etheridge *et al.* 2014: 18-19). That these animals were probably also turned out onto the heathery Barvas Moor is indicated by at least 30 surviving place-names with the Scandinavian *seater* 'shieling' element on the island (Macdonald 1984).

'*Airidhean*' (plural of the Gaelic *airigh*, 'shieling') are shown in their hundreds, clustered in groups on the gently sloping and loch-strewn moors, often in more sheltered glens or beside lochs, on the Ordnance Survey 6-inch maps published in 1849-1852 (available on the National Library of Scotland website) and the OS Name Books record them as made of stone and turf. Many were then already shown roofless and labelled 'Ruins' as sheep began to replace cattle on the crofts (Fenton 1978: 48). Some *airidhean* were still in use in the early decades of the twentieth century, the rectangular stone and turf-walled structures, roughly 1.5 times long as broad, photographed in the 1960s by Ronald Miller (1967: plates V, VIII and X).

It was probably just such an *airigh* that was approached by Hugh Miller on another Hebridean island, Eigg, in 1847. 'An island girl of eighteen, more than merely good-looking, though much embrowned by the sun, had come to the door to see who the unwonted visitors might be....she set herself to prepare for us a rich bowl of mingled milk and cream...' (cited in Miller 1967: 196). Another early account, in the later eighteenth century, noted that 'The people look so glad and contented at going up' with their animals to the Speyside hills in the Spring (Grant 1854: 136). The 1884 Crofting Commission Report stated that, 'The people enjoy this life at the hill pasturage and many of the best lyric songs in their language are in praise of its loved summer shealings' (cited in Gaffney 1959: 21).

Excepting those Viking *seater* place-names, little is known of early Lewis transhumance (Kupiec and Milek 2018) though the late eighteenth and early nineteenth-century *airidhean* post-date the 'both', another type of transhumance hut, a wholly stone, corbelled-roofed circular structure (Macdonald 1984: 29; Fenton 1985: 72; illustrations at Fenton 1987: 28 and Dodgshon 2011b: fig 21.6). It may be presumed that those who inhabited the hamlets along Lewis's north-western shore in the later medieval and earlier post-medieval periods also practiced transhumance. Abandoned bundles of sinuous ridges of the small open fields organised under the runrig system survive in the gaps between the rigid strips of the nineteenth century crofts. To save their livestock from endangering their hay and crops they exploited in summer the 'shieling ground' beyond their carefully shared infields and outfields (see Dodgshon 2011a: 111). Bragar, Arnol and Barvas existed by 1654 when Joan Blaeu mapped Lewis (National Library of Scotland, EMW.X.015) although their hamlets then were harder by the sea than now (Fenton 1985: 80-81) and their inhabitants shared 'in common' the 'Moorish and Mossy Pasture' of Barvas Moor mapped by James Chapman in 1807-9 (Figure 7.5).

In the early twentieth century Lewis cattle went to the *airigh*, the name applying to the pasturing land as



Figure 7.5: Detail of James Chapman's 1807-9 survey of Lewis as reduced by William Johnson in 1821 (reproduced with the permission of the National Library of Scotland; see <https://maps.nls.uk/counties/hebrides.html>). North to the upper right. The map shows hamlets, including Arnol, tight to the sea, and the lines of the turf 'village dykes' that subdivided the winter's 'outran' and separated it from the summer pastures (Macdonald 1984, 29). The map describes those as 'Moorish and Mossy Pasture... occupied in common with the tenants Nether Barvas & Brue, Arnol, Nth and Sth Bragors and Melbost. The moor on the whole is good tho' in many places wet'. Note Lh Scaraval immediately below the slopes of the Hills of Barvas. It was to their airigh here that Kenina Morrison and others took their cattle in the 1920s and 1930s (see Figure 7.6)

well as the hut, once the 'croft work' and 'cutting of the peats' was complete. Known as the 'Glanadh a Bhaile, Cleansing the Village', this was usually 'in the first week of May or whenever the corn was ready to sprout' (Macdonald 1984: 29-30).

The moorland's heather and grasses apparently raised the fat content of the cows' milk and their time on the moors also 'got them fit to stand the winter scarcity of fodder' (Macdonald 1984). The cattle appreciated the benefits as in May, 'if the weather was good, the old cows began to get restless, and instead of returning homewards from the inbye pastures of an evening they led their followers to their summer quarters or gearraidhean from where they had to be fetched unwillingly, by irate herds'. The day of moving to the airigh was one of 'orderly chaos', and 'one of the happiest days in the crofters' calendar: a day full of hope: a day that reminded them of similar days in their youth... Shieling days were days of joy... [a] holiday time – not a time for regrets or despair' (Macdonald 1984: 30-31).

### Kenina Morrison, Arnol and Barvas Moors, Lewis

Kenina Morrison, born Kenina Macphail in January 1920, spent her childhood in Arnol hamlet and on the Barvas Moor, where the households summered their cattle until the late 1930s. Kenina's daughter Kathryn, an architectural historian who worked with me for Historic England, kindly agreed to put to her mother in July 2014 the questions I had always wanted to ask a transhumant, about socialising and feelings as well as agricultural and functional practicalities. After a period of 80 years, and a move from Arnol to Stornoway, on the sheltered eastern side of Lewis, Kenina retained vivid and detailed memories as well as more general recollections about freedom and responsibility.

Kenina first went to the *airigh* when, 'quite young, really. About eight, nine..., but from ten, or eleven onwards, my younger sister and I spent the summer on the *airigh*, when the school had closed at the end of June. Then we stayed there till about the 1st of August, and the freedom was unbelievable.'

The Macphails had just three or four cattle, 'Some people had five... but I don't think we ever had five.' Households' rights to grazing were confined by the levancy-couchancy principle to the number of animals their croft could support, as represented by the extent of its arable (Fenton 1978: 49). This 'souming' was then policed by the village officer or constable (Fenton 1987: 32; Dodgshon, 2011b: 545-546); the Macphail croft house's byre at Arnol had three stalls (Kathryn Morrison, pers. comm.) suggesting it held one share (equivalent of three cows) in the common grazing (Fenton 1978: 49).

'And during the day we had... to keep an eye on the cows and to see that they were OK. Sometimes they weren't; I do remember one of the cows getting caught in a sort of bog and I must have had a rope or something, to try and pull the poor creature out, and my father was aghast when I told him what we had done.'

Victor Gaffney drew from eighteenth-century accounts of Scottish sheilings when he noted girls 'capable of turning beasts', using 'cabers' to drive off cattle that had no business around their sheiling (1959, 31). Kenina recalled that they, 'had a calf for a good few months, a big fellow, and he was frightening. He'd come after us....'

Asked whether cattle were tethered for milking, Kenina said they put down 'some seaweed...., while they were milking them, so they were eating that', and whether they were tied up at night to stop them wandering off: 'Not at all. Never wandered far. They stayed there till you milked them in the morning. And [you] then headed them where you wanted them to go in the morning after milking. And that was it..., our routine.' 'We always had to keep an eye on [our own cattle]. To see that they were safe. I didn't like our cows mixing with neighbouring *airigh*'s cows. You only had your own cows coming to your *airigh*....' Everyone respected that territory of each *airigh*; the people were both individuals and part of a community sharing the common.

Sheep wandered freely through the summer pastures, cared for by others, including by an old man from Bragar (west of Arnol), one of the people they encountered on the hills. 'He was looking for the sheep..., but he had killed rabbits, and when he came needing a cup of tea to our *airigh* he put the rabbits outside..., and when he went away I think he forgot, and I remember the rabbits were still there... [and we] skinned them and ate them!' As in Eigg in the 1840s (above), trust and hospitality were expected by all parties, the rabbits exchanged for the tea and kindness provided by the girls, who in turn learnt Lewis's communal ways.

Kenina was asked about the *airigh*. 'Well, it was a very cosy little.... cottage. It was solidly built of stone, and turfed over roof...., and, oh, one feature that was completely different: there were doors on two sides. The sheltered side and where the wind was. The sheltered side, was left open, nothing to close

it, no door, just the opening, and the wind side was great big thick squares of turf, and they were built up and there wasn't a jaw of wind getting in. Very, very cosy and the fresh air coming in the other side, open.' This double-doored *airigh* appears to be the earlier form on Lewis; later *airidhean* had only one (Macdonald 1984: 30), suggesting that Kenina stayed in a relatively old building.

Flooring was of 'great big flat stones on top of the turf. Oh very, very beautifully done'. As for the roof, this was 'high enough for us to stand... [and was] wooden underneath and the heavy beam across, very secure, and then they could rest the flat slabs of turf on top of that.' The turf covering was renewed by her father each year, 'near the shieling... was all flat green grass, and that made lovely slabs, on top of the wood and then, heavier turf on top of that.' 'It was always waterproof.'

'That's the only time my father would go out' to the *airigh*, to renew the roof, and for 'cutting peats near the *airigh*'. The girls had to lift and stack the peats. There was 'a sort of chimney', described elsewhere as a smoke-hole (MacDonald 1984: 30) at one gable end, 'and you could have a great big blazing fire and on each side '*pallats*'(?), you know, for the pans and there was a '*polish*'(?), you know, a chain hanging down for the pot, over the fire... and, that was fine... and we had plenty pans. And there was a great big bench, and there were stools.' Kenina recalled that this 'was an open fire, [and] there was an iron pot that made excellent soup. I never got the like again, 'cos we didn't have these iron pots anywhere else.'

'The walls were so thick there were recesses.... flattened out of course and the basins of milk were put into these recesses, and left for a couple of days, and then the cream skimmed off and if you wanted the sour milk, which some people loved – I liked it – and my father liked it, mixed with fresh milk...'. 'And... there was always crowdie and cream, 'cos the milk was set into shallow basins, porcelains, basins, and the cream rose to the top and we had to leave that alone, till the older people... [skimmed]... the cream off it and put it in a special dish for butter.' Kathryn asked 'Did they make cheese or just crowdie?' 'Crowdie! Crowdie, crowdie, crowdie, was what. That's what we made with the sour milk you know, when we skimmed the cream off. We made crowdie with it and that was lovely!'

At the other end of the *airigh* was 'a box bed' with a mattress of sacking filled with 'a special grass that grew, it was a, *fianach*, *fianach*, that grew on the moor only... and the smell of that was gorgeous, and then of course you had your sheets on top of that.... but it was lovely lying on the bed, at any time. Cos you folded the blankets and the sheets and everything in the morning, when we got up... And then it was lovely after walking across the moor and climbing the hills, you could lie there and oh it was very restful.' The mattress was re-made each year, 'when we left, before we went home, all that was burnt.'

The 'box bed' was 'the standard type of bed in all blackhouses, usually a wooden frame against a wall, curtained to the front' (Kathryn Morrison, pers. comm.). The bedding of Lewis *airidhean* has been described as being layered, first with the dry turf saved from the previous year's roof, then heather, then rushes and reeds and then 'moorland grass, to form a springy comfortable mattress of which nobody could complain' (Macdonald 1984: 31). An account of mid-twentieth century transhumance by the McLeod family at Borve, a few miles east of Arnol, emphasises how 'very comfortable' the *fianach* made the bed (cited in Historic England 2018).

This fondly-remembered *fianach* forms an experiential link with the Whitehorse Hill cist: the soft and sweet-smelling grass that the Lewis girls loved to lie upon, is the same purple moor grass, *Molinia caerulea*, so carefully laid as a soft bed under the bear pelt in the Bronze Age grave. This realisation makes the choreography of the burial again seem intimately biographical.

'Near our *airigh* there was a hillock, black with blaeberreries, and every day we would see how many we could gather, the ripe ones, the black ones, the real black ones, not the green ones. But, we had fun, we had fun. And there was a loch of course; the *airigh* was beside a loch. Loch Scárabhat. Now why

they didn't give us a rod? Trout were jumping in the loch all the time. Why didn't they give us a rod or something, but they never did? They thought we were too young or too stupid. I don't know.'

'Sometimes we would climb the Beinn Bharabhais, the Barvas hills. Thought nothing of it, and there was a rock the side of the Beinn Bharabhais and we would be shouting and the echo was beautiful, as clear as a bell, whatever you said, was echoed back; and we thought this was great fun. And sometimes we'd go visiting people of our age at other *airighs* nearby. There was one beside us and there was just one boy that was there, and he was there all summer, egging us on to mischief. And there was Ròiseal. Katag was on Ròiseal. She was my age. She'd be visiting us and we'd be visiting her, quite a distance away, Ròiseal, it is a hill, a beautiful hill.'

Beinn Bharabhais (NB 3638 3874) is 280m, 918 feet high and is 1.5 km from Loch Scárabhat (NB 3561 4042; Figure 7.6). Ròiseal Mòr is c. 2km NW of Loch Scárabhat and nine ruined shielings are shown on its slopes on modern Ordnance Survey maps.

Kathryn asked how long it took to reach the *airigh*; the track to Loch Scárabhat from Arnol, over 9 kilometres long, negotiated lochs, marshes and rocky areas. 'An hour anyway, but once we were there that was us for the summer.... There was a good route, and it was always firm; always firm.' That firmness was relative to the softness of the generally boggy ground on the moors. Alice Starmore, recalling heading for twentieth-century Lewis *airidhean*, insisted that 'the first thing you did at the roadside was take off your shoes' They would remain off for the period and the first removal was a 'freedom ritual..., a casting off, not just of your shoes but of everyday routine, [as you became] completely absorbed in



Figure 7.6: Loch Scarabhat Mhòr, where Kenina Macphail's *airigh* stood, seen from Beinn Mholach, one of the Beinn Bharabhais hills that she occasionally climbed.

(© Richard Webb, under Creative Commons Licence, viewed 21 April 2021: [geograph.org.uk/p/1415709](http://geograph.org.uk/p/1415709))

the wonders of the moor'. A 1936 photograph of three Lewis women at the *airigh* shows each barefoot (Kupiec and Milek 2018: fig 6.3).

Kenina noted that some of the other Arnol *airidhean* 'were quite a distance from us', but when asked whether they could be built wherever they wanted, 'I don't think so, but that *airigh* that I first went to, and my heart is with it, at Loch Scárabhat. [It] was flooded when they built the dam [for a salmon fishing syndicate], so they had to give us compensation, 'cos it was our *airigh*. It was flooded and we couldn't use it and that's when we went to a different location nearer home, easier to go to.' The rough land was owned, and its owner accepted the established rights of the crofters to fixed portions of it for their *airidhean*.

Did she feel safe? 'Absolutely! You couldn't but feel safe there. And we always had Dolly Murdo in the *airigh* beside us. The boy, but he was always just up to mischief. Let's go and catch a sheep today, oh my goodness me, what we did!'

Kathryn asked whether when other people came out at the weekend, they had 'a bit of a ceilidh?' 'Oh you bet! Oh well they'd sing - everybody sang. And of course some played... If there were young men in some of the *airighs*, they had a melodeon.' And at the weekends: 'The young people all congregated there and had a ball, had a lovely time.' J. A. MacCulloch looked back at Skye shielings from 1905, recalling that 'the calm evening air among the lonely hills was filled with simple merriment, and echoed to the strains of sweet love-songs...' (MacCulloch 1936: 214).



Figure 7.7: Kenina Macphail (far left) and her three sisters in early summer (May or June) 1931, when she was eleven years old and already spending summers at the *airigh*.  
(Reproduced with kind permission of Kathryn Morrison)

The Lewis *airigh* season was short, due to the poor pasture (largely heather), and in early August, ‘well, the cows knew... it was time to go home, and they would head for it, and you had to be after them every day, keeping them from going too soon, ‘cos they wanted to get to the fresh green grass and have a rest on the croft and I remember one cow we had and she was determined to force the others to race for home and get them moving.’

Kathryn: ‘Did you enjoy being responsible for the cows?’ ‘Oh yes, definitely. Definitely, yes.’ And: ‘Do you look back on it with fondness?’ ‘I loved every minute of the summer we were out there. It was free. The freedom was unbelievable. We were out every day, in the fresh air, what else could you do? Here, there and everywhere, whether we were just climbing hills or climbing what we thought were mountains. Of course, they weren’t. But the Barvas Hills were high enough for us’ (Figure 7.7).

### Freedom and empowerment

The Arnol *airidhean* lay beyond the ‘Black Dykes’ (Macdonald 1984: 30), the stock-proof turf and dry-stone fences delineating the infields and outfields of the more intensively farmed land (see Figure 7.5). Passing through these lines to the shieling land took Kenina and all those other girls and women of Lewis to a world and season of excitement and freedom, as well as responsibilities. They cared for the household’s principal asset, its cattle, within a land that was at once open and wild and yet divided into tiny territories, each attached to a single household’s *airigh*, not marked out on the ground, but carefully guarded, familiar and intimately known: all its flora, fauna and folklore, as beautifully illustrated in a recent exploration of the eco-knowledge of Scandinavian transhumants (Tunón and Bele 2019).

Contact with the home farm was regular; butter, crowdie and milk were routinely collected and other young people came up to socialise, sing and play music, so those at the *airidhean* were kept within the society of the whole croft and hamlet. The men, who spent their summers back in the fields, partially framed the summertime activities by re-roofing the *airigh* and cutting its summer fuel, the peat. They were there too in another way, carried in the head, as the authority respected when Kenina impressed them on rescuing a cow from a bog, and resented when not allowed to fish for trout in the loch. Other people, like the shepherds, passed through and treated the girls as responsible members of society.

Are there commonalities between experiences of transhumants across space and time? Some that are well illustrated in the literature on transhumance revolve around driving herds and flocks, adhering to the customs and rules of the commons, managing the technicalities of animal husbandry and dairying, and sheltering in inhospitable places. But this paper concentrates on how women recalled the summer freedoms they experienced while also meeting their substantial responsibilities. These fitted them up to be confident and respected members of the household and hamlet, knowledgeable and aware of their value. See Costello 2018 for discussion, presented at the Newcastle session, of the implications for the development of European rural societies of exploring this tension between freedom and socialisation, a tension vividly revealed by examining the experiences and feelings of female transhumants.

### Acknowledgements

Thank you to Kenina and Kathryn Morrison for allowing us to listen in to their conversation. Kathryn kindly allowed publication of the photograph of Kenina and her sisters. Sadly, Kenina died while this volume was in preparation; I would like to dedicate this chapter to her memory, and to her daughter Kathryn, her interviewer, with grateful thanks. Andy Jones’ excellent account of the Whitehorse Hill cist allowed me to examine a second biography. I am also grateful to Andy for providing the first two figures, Lee Bray of the Dartmoor National Park Authority for the third, and Richard Webb for the sixth. The fifth is drawn from the National Library of Scotland website, with grateful thanks.

## References

- Cameron, E., S. Harris and Q. Mould 2016. The textile and animal-skin object, in Jones 2016a: 148-157.
- Cameron, E., and Q. Mould 2016. The animal pelt, in Jones, 2016a: 64-68.
- Cartwright, C., M. Cooper, S. Doyal, D. Eastop, L. Lemieux and R. Stungo 2016. The basketry container, in Jones 2016a: 72-74.
- Costello, E. 2018. Temporary freedoms? Ethnoarchaeology of female herders at seasonal sites in northern Europe. *World Archaeology* 50.1: 165-184.
- Costello, E. 2020. *Transhumance and the Making of Ireland's Uplands, 1550-1900*. Woodbridge: Boydell Press.
- Davies, E. 1980. Hafod, Hafoty and Lluest: their distribution, features and purpose. *Ceredigion* 9: 1-41.
- Dodgshon, R.A. 2011a. Highland touns before the Clearances, in A. Fenton and K. Veitch (eds) *Scottish Life and Society, Volume 2: Farming and the Land*: 111-132. Edinburgh: John Donald.
- Dodgshon, R.A. 2011b. Livestock Farming in the Highlands and Islands before and after the Clearances, in A. Fenton and K. Veitch (eds) *Scottish Life and Society, Volume 2: Farming and the Land*: 545-565. Edinburgh: John Donald.
- Etheridge, D., M. Hart, E. Heans-Glogowska and P. Kupiec 2014. Life on the Farm, in B. Shorn and J. Quinn (eds) *The Vikings in Lewis*: 18-22. Nottingham: Centre for the Study of the Viking Age.
- Fenton, A. 1978. *The Island Blackhouse*. Edinburgh: Her Majesty's Stationery Office.
- Fenton, A. 1985. Change and Conservatism in the Farm Village of Lewis, in A. Fenton, *The Shape of the Past 1, Essays in Scottish Ethnology*: 68-82. Edinburgh: John Donald.
- Fenton, A. 1987. *Country Life in Scotland*. Edinburgh: John Donald.
- Fleming, A. 2007. *The Dartmoor reaves; investigating prehistoric land divisions*, second edition. Oxford: Windgather.
- Fyfe, R.M., and M. Perez 2016. The pollen and non-pollen palynomorphs from the cist samples, in Jones 2016a: 60-63 Fyfe, R.M., J.J. Blackford, M. Hardiman, Z. Hazell, A. MacLeod, M. Perez and S. Littlewood 2016. The environment of the Whitehorse Hill cist, in Jones 2016a: 158-181.
- Gaffney, V. 1959. Summer Shealings. *Scot. Hist. Rev.* 38: 20-35.
- Grant, A. 1845. *Letters from the Mountains volume 2, Being the Correspondence with her friends between the years 1773 and 1803*. Whitefish, USA: Kessinger Publishing.
- Grassl, H. 1999. Women in ancient pastoralism, in L. Bartosiewicz and H. Greenfield (eds) *Transhumant pastoralism in southern Europe*: 63-68. Budapest: Archaeolingua.
- Harris, S. 2016. The charred textiles from the cremation deposit, in Jones, 2016a: 49-51.
- Hazell, Z. 2016. The wood charcoal, in Jones, 2016a: 44-48.
- Herring, P. 1996. Transhumance in medieval Cornwall, in H.S.A. Fox (ed.) *Seasonal Settlement*: 35-44. Leicester: University of Leicester.

- Herring, P. 2008. Commons, fields and communities in prehistoric Cornwall, in A. Chadwick (ed.), *Recent Approaches to the Archaeology of Land Allotment: 70-95*. Oxford: British Archaeological Reports (International Series), 1875.
- Herring, P. 2012. Shadows of Ghosts: Early Medieval Transhumants in Cornwall, in S. Turner and B. Silvester (eds), *Life in Medieval Landscapes; people and places in the Middle Ages: 89-105*. Oxford: Windgather.
- Herring, P. 2016. Medieval West Penwith, in P. Herring, N. Johnson, A.M. Jones, J.A. Nowakowski, A. Sharpe and A. Young *Archaeology and Landscape at the Land's End, Cornwall: 192-215*. Truro: Cornwall Archaeological Unit.
- Herring, P. and P. Rose 2001. *Bodmin Moor's archaeological heritage*. Truro: Cornwall Council.
- Historic England 2018. *Introduction to Heritage Assets, Shielings*. Swindon: Historic England.
- Jones, A.M. 2016a. *Preserved in the Peat; an extraordinary Bronze Age burial on Whitehorse Hill, Dartmoor, and its wider context*. Oxford: Oxbow.
- Jones, A.M., 2016b. The cist on Whitehorse Hill; inside an Early Bronze Age burial. *Current Archaeology* 322: 34-40.
- Jones, J. 2016. The matted plant material at the base of the cist, in Jones 2016a: 52-59.
- Kupiec, P. and K. Milek 2018. Ethno-geoarchaeological study of seasonal occupation, Bhiliscleitir, the Isle of Lewis, in E. Costello and E. Svensson (eds) *Historical Archaeologies of Transhumance across Europe: 76-92*. London: Routledge.
- Lawson-Jones, A. 2016. The flint, in Jones 2016a: 146-147.
- MacCulloch, J.A. 1936. *The Misty Isle of Skye*. Stirling: Eneas MacKay.
- Macdonald, D. 1984. Lewis Shielings. *Review of Scottish Culture* 1: 29-33.
- Marshall, P., C. Bronk Ramsey, N. Russell, F. Brock and P. Reimer 2016. Interpreting the chronology of the cist, in Jones, 2016a: 184-194.
- Mays, S. 2016. The human remains, in Jones 2016a: 42-43.
- Miller, R., 1967. Land use by summer sheilings. *Scottish Studies* 11: 193-221.
- Newman, P. 2016. *The Field Archaeology of Dartmoor* (first published 2011, English Heritage). Swindon: Historic England.
- Ó Danachair, C. 1983-4. Summer pasture in Ireland. *Folklife* 22: 36-41.
- Oosthuizen, S. 2013. *Tradition and Transformation in Anglo-Saxon England. Archaeology, Common Rights and Landscape*. London: Bloomsbury.
- Ostrom, E. 1990. *Governing the Commons: the evolution of institutions for collective action*. Cambridge: Cambridge University Press.
- Padel, O.J. 1985. *Cornish Place-Name Elements*. Nottingham: English Place-Names Society.
- Patterson, N. 2012. *Cattle Lords and Clansmen, the Social Structure of Early Ireland*. Notre Dame, Indiana, USA: University of Notre Dame Press.

Penhallurick, R.D. 1986. *Tin in Antiquity*. London: The Institute of Metals.

Sheridan, A., E. Cameron, C. Cartwright, M. Davis, J. Dunster, S. Harris, L. Hurcombe, J. Inglis, Q. Mould, C. Solazzo and H. Williams 2016. The composite braided armband or bracelet, in Jones, 2016a: 75-87.

Sheridan, A., E. Cameron and H. Quinnell 2016. The copper alloy pin, in Jones, 2016a: 69-71.

Sheridan, A., R. Brunning, V. Straker, G. Campbell, C. Cartwright, S. King and H. Quinnell 2016. The wooden studs, in Jones 2016a: 117-145.

Sheridan, A., M. Davis, J. Dunster, J. Inglis, H. Quinnell, H. Redvers-Jones, R. Taylor, L. Troalen, K. Verkooijen and H. Williams 2016. The composite necklace, in Jones 2016a: 88-116.

Tunón, H., and B. Bele 2019. *Fäbod and seter, Summer farms on the Scandinavian peninsula*. Uppsala: CBM Swedish Biodiversity Centre and Norwegian Institute of Bioeconomy Research.



## 8. Intangible cultural heritage of transhumance landscapes: their roles and values – examples from Norway, France and Spain

Bolette Bele, Véronique Karine Simon Nielsen, Almudena Orejas *and* José Antonio Ron Tejado

*Transhumance landscapes are sensitive semi-natural environments in upland European areas. Shaped through human activities from the earliest times, they provide habitat for many threatened species and produced a rich cultural heritage. They bear witness to the complex and mutually beneficial interplay between natural resources and human activities. Today, they are threatened by societal, economic and ecological factors. The purpose of this article is to identify the roles and intangible values of transhumance systems through the analysis of three studies, in Norway, France and Spain, and to raise awareness about the benefits of continuous traditional transhumance practices for the preservation of pastoral biodiversity and the mountain landscapes' character.*

**Keywords:** *Transhumance; Traditional Ecological Knowledge (TEK); farming practices; cultural landscapes; intangible heritage; pastoral biodiversity; semi-natural landscapes*

### Introduction

European summer grazing systems and practices – or transhumance – were developed by different cultures utilizing natural resources in mountainous and alpine areas (Reinton 1955; Szabó 1970; Fleming 1972; Biber 2010; Miller and Makarewicz 2017; García Llamas *et al.* 2019). Grazing, harvesting winter fodder and production of food, such as meat and dairy products, but also wool and skins, were the main purposes of traditional resource utilization. The long-term management of European transhumance landscapes results in a wide range of semi-natural nature types (biological cultural heritage) and both material (tangible heritage) and nonmaterial (intangible heritage) cultural benefits.

Semi-natural landscapes in mountain areas are among the most valued landscapes in terms of aesthetic beauty, the opportunity for leisure activities, and contemplation (Zoderer *et al.* 2016). Through human activities, they are associated with many historical cultural elements. They convey a range of emotions and social goods, such as people's sense of regional identity and cultural diversity (Liechti and Biber 2016). And they reveal a close relationship between traditional farming practices, cultural landscapes and biodiversity (Bunce *et al.* 2004).

Based on the seasonal movement of livestock between summer pastures and permanent farms/winter pastures, the practices attached to transhumance in Europe are still pursued in several European countries. Transhumant pastoralism remains a prevalent form of land use across Europe (Liechti and Biber 2016). However, the practices have been declining at different rates since the beginning of the twentieth century and the traditional land use system has been greatly simplified. In combination with economic constraints and agricultural intensification, mountain areas face challenges related to land abandonment and ageing populations. As a direct consequence, landscapes, biodiversity and cultural heritage connected to transhumant pastoralism are each threatened (Norderhaug *et al.* 1999; Rendu 2006). In this paper, we consider the reciprocity and interrelationship of landscape and heritage as a central framework in compliance with the Faro Convention (Council of Europe 2005), the European Landscape Convention (Council of Europe 2000) and European Joint Programming Initiative CHeriScape – Cultural Heritage in Landscape (Fairclough 2019; Fairclough *et al.* 2020). Our approach to heritage includes all aspects of the environment resulting from the interaction between people and

places through time. Landscape and heritage share similar theoretical positions and are understood as ‘people-centred rather than object-focused’ (Fairclough *et al.* 2014). The combination of heritage and landscape theories allows us to examine the role and values of all tangible and intangible aspects of cultural heritage in relation to landscape. By combining heritage and landscape, the transformed perception of heritage emphasizes its inclusivity and relationship to local communities, participative democracy and landscape planning and management (Olwig 2007; Jones and Stenseke 2011; Fairclough 2019; Fairclough *et al.* 2020). Consequently, monumental, singular or aesthetic values of heritage have given way to intangible cultural values, such as historic processes, Traditional Ecological Knowledge (TEK), craftsmanship, social practices, oral traditions and memory (UNESCO 2003; Smith 2006; Vecco 2010).

The main objective of this paper is to highlight and discuss the values of traditional transhumance activities and their role in the maintenance and preservation of intangible heritage in the alpine and mountainous landscapes of Europe. The interaction between tangible and intangible heritage values in relation with highly sensitive landscapes and ecosystems is addressed in a comparative study of three mountain areas in Norway, France and Spain. In these examples, we discuss the challenges connected to their evolution and future. An analysis of these marginal zones presents the risks they encounter and the role they can play in the maintenance of critical natural and cultural values.

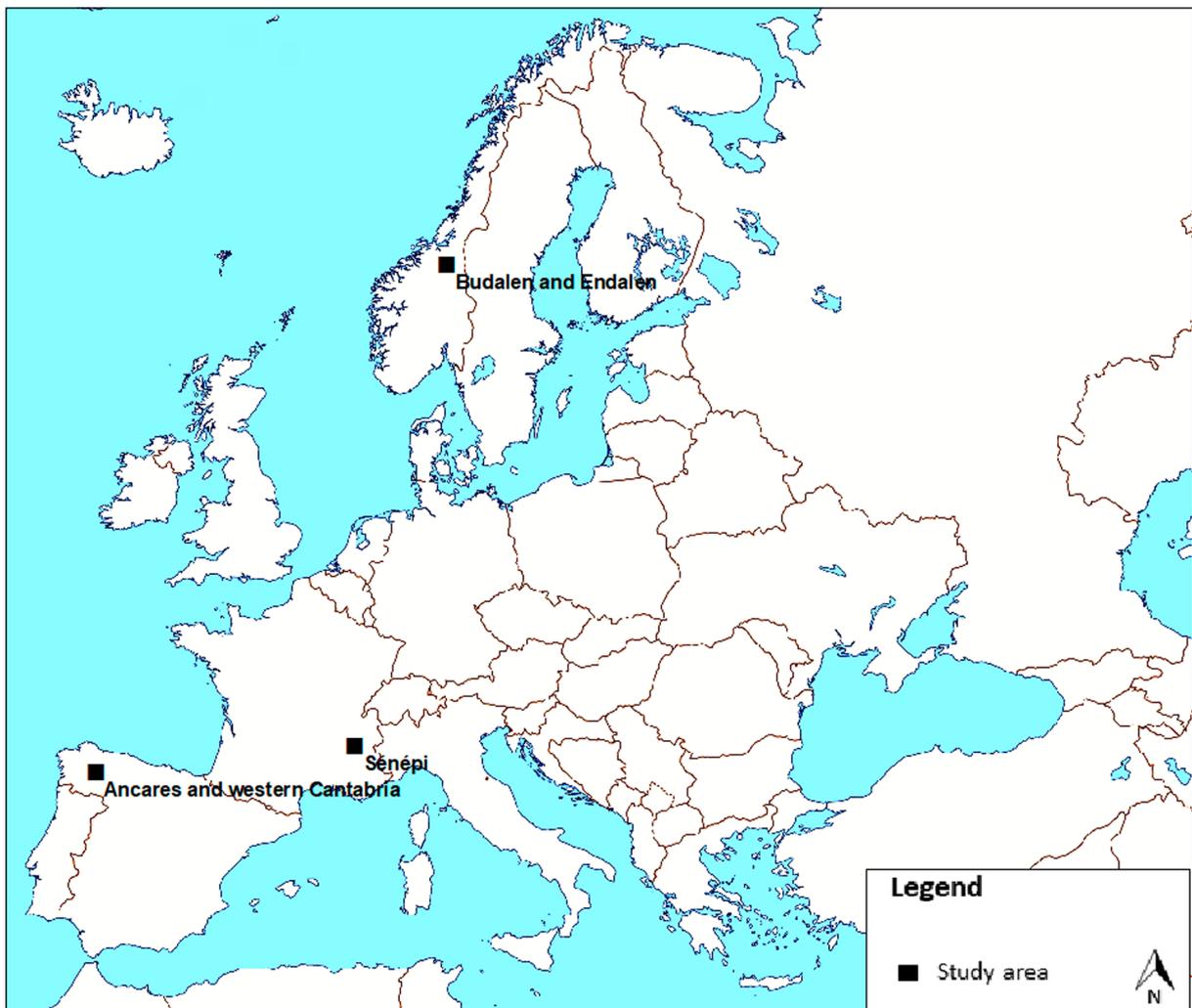


Figure 8.1: Map showing locations of study areas.

## Material and methods

Data have been collected during several projects focusing on traditional transhumance systems in Norway, France and Spain (Figure 8.1). These countries make ideal choices of analysis to study the nature of pastoralism heritage in Europe in terms of its overlapping and complementary tangible and intangible manifestations and its significance for remote mountain landscapes. They share similar histories of decline and threats such as abandonment, loss or desertification. They also show a range of similar practices within seasonal pastoralism, although they adopted different solutions for innovation and adaptation over time, and chose different approaches to changes, either climatic, social, economic or political.

### Study areas

Transhumance was very important in Norway, France and Spain until the 19th century, and they are among those many European countries where it is still a form of highland land use (Liechti and Biber 2016). However, the land use system, cultural heritage and biodiversity connected to these practices are currently threatened by social, cultural and environmental changes (Norderhaug *et al.* 1999; Rendu 2006; Dobremez *et al.* 2014; Liechti and Biber 2016). In Norway, there were around 70-100,000 summer farms in 1850, but only 900 still exist (Daugstad 2005; Stensgaard 2017). In France, transhumance and upland farming began to noticeably decline in the 20th century but have seen renewed governmental interest since the 1972 French pastoral law (Charbonnier 2012). In Spain, the number of farms practicing transhumance has decreased from the late 19th century and the decline of mobile pastoralism is obvious in every region (Manzano and Casas 2010).

The three areas' variable sizes and different altitudes illustrate geographical, climatic and cultural varieties in transhumance landscapes. The first area comprises the Budalen and Endalen summer farming valleys in Central Norway (altitude 600-900 m.a.s.l., longitude 10°41' E, latitude 62°43' N). The second area covers the mountain of Sénépi in Matheysine, northern French Alps (1200-1767 m.a.s.l., longitude 5°72' E, latitude 45° N'). The third area encompasses the Cantabrian Mountains and the Ancares region in north-west Spain (250-2000 m.a.s.l., longitude 74° W, latitude 42°92' N).

Because of local variables, and the interdisciplinary nature of the research team, the methodology adopted for the studies differs somewhat in each area. Main sources of empirical data are archival sources (i.e. ethnobotanical, ethnozoological, ethnological and historical archives), official websites (i.e. regional and national transhumance associations and European Union), semi-structured interviews, questionnaires, fieldwork and mapping. In the Norwegian study, the data is supplied by qualitative interviews with farmers and the National Park manager. In the French study, the empirical data rely primarily on historical records, field observations over several years, and personal communications with local professionals and researchers. In the Spanish study, the data come basically from field work and local informants, in addition to similar studies developed in neighbouring areas.

Through these three studies, the authors analyse the relationship between semi-natural landscapes, grazing practices and heritage values. The main time period being considered for each case study is between the 1850s and today. Characteristics connected both to natural and cultural factors, resources and challenges in the three studies are summarised in Tables 1-2. Complementary information is given in the descriptions below.

#### *Study 1. Budalen and Endalen summer farming valleys, Central Norway*

Utilization of outfield resources has a long history in the rural district Budalen in Trøndelag County,

Central Norway (Reinton 1955; Solem *et al.* 2011). As population size and demand for products from outside (e.g. charcoal, tar, dairy products) fluctuate, the activities have been constantly changing (Solem *et al.* 2011). Reindeer and elk trapping pitfall systems date back to the Early Roman Age (0-200 AD) and iron production in combination with grazing animals can be traced back to 200 BC-550 AD (Espelund and Stenvik 1993, Solem *et al.* 2011). Haymaking goes back to AD 1600 and summer farming started on a permanent basis about AD 1700 (Olsson *et al.* 1995; Solem *et al.* 2011, 2012). Summer farms located close to the permanent farm are also known from that time. The number of summer farms in the study area reached a peak in the 1850s (Reinton 1961), but the decline started before the 1940s (Reinton 1955; Sørmark 1971; Olsson *et al.* 1995). Some of the summer farms have, however, been in continuous use for milk production and today (2019) there are still 11 summer farms in use.

Several farms in Budalen and Endalen had a spring summer farm (*vårseter*) or an autumn summer farm (*høstseter*) located at short distances from the permanent farm (Reinton 1955; Sørmark 1971; Olsson *et al.* 1995). A second step in the movement system was to the mountain summer farm (*fjellseter*, *langseter*), which could be located as far as 50-60 km away (Reinton 1955). These mountain summer farms had a variety of buildings with different functions, like cowsheds, sheep cotes, hay barns, and buildings for cooking, preparation and storing of dairy products (Reinton 1955). Spring and/or autumn summer farms on the other hand were utilized only for a short period and had small and simple buildings and the milk was usually processed at the permanent farm (Reinton 1955).

Traditional ecological knowledge (TEK) connected to transhumance practices is still alive in the area and includes knowledge about preparing traditional dairy products, staged or stepwise and altitudinal movement systems, evaluation of pasture quality and fodder harvesting (from hay meadows and mires). Local herding practices are still well known but ended for sheep in the 1920s and for cows in the 1950-60s. Knowledge about traditional use of edible plants, medicinal plants, plants for dyeing, cleaning, etc. exists among some inhabitants in the local community and in archives and written sources (Ouren 1952; Høeg 1976). Purple gentian (*Gentiana purpurea*) was one of the most important medicine plants in Norway, and was harvested in large quantities and exported from this area (Høeg 1976). Both cultivated and wild plants were grown at the summer farms for different purposes. The ways of calling the cattle by singing and scaring off predators by using instruments are intangible cultural heritage connected to the transhumance system, but so too are the rhymes, myths, etc. that are associated with it, and the special ceremonies and traditional food associated with the times when summer farming activity started in early summer and when it ended at Michaelmas (29th September) (Solheim 1952; Reinton 1955). Today, some few farmers are selling local and traditional dairy products, such as sour cream, fresh cheese and curd directly from the summer farm and on different markets, e.g. at the World Heritage Site of Røros.

### *Study 2. Summer pasture of Sénépi, French Alps*

The high mountain pasture of Sénépi, in Isère department (in French, *alpage du Sénépi* or *Sénépy*; *Sénépi* is the local spelling) is currently the largest bovine summer pasture system in France (Nier *et al.* 2010), with an average of 900 head of cattle per year from 45 interregional farms, and a surface area of 1200 ha.

The transhumance system has a long tradition in the French Alps, but, until recently, it was threatened with disappearance. The general management practice of all French *alpages*, as well as the exploitation methods and the economy of mountain areas, started to change after World War II (Vinay 1976). Formerly based on a cohesive pastoral economy (Vinay 1976), it increasingly relied on a simpler social structure and a more specialized farming system (Duclos and Mallen 1998). General technological and societal development led to more fragmented land ownership (Berthier 1939). Increasing abandonment of the mountain pastures in Isère (Raffin 1995) was caused by socio-economic factors, poor agricultural subsidies and climatic changes (i.e. drought). The founding principles of the regional transhumance

system were greatly affected and manifested in overgrown pastures and changes in the natural vegetation (Vinay 1976). However, since the end of the 1970s, pastoralism has seen a sharp rise in interest in France, stimulated by the 1972 French pastoral law (Charbonnier 2012). This law operates on the basis of collective approaches within a flexible land management framework which takes into account the diversity of actors and practices, the plurality of uses in the same space, while relying on customs and traditions (Lorenzi 2013).

Through the maintenance of pastoral activities, the *alpage* of S n pi has managed to preserve a living natural and cultural heritage. It is today one of the richest mountain pastures in the French Alps in terms of flora, the traditional natural resources being the grass, medicinal and aromatic flowers, herbs and roots. Food traditions are significantly simplified, and the products are made in the lowlands nowadays, but herding traditions are kept alive: the high pasture *chalet* is used by an employed shepherd who spends the summer in the mountain with the cattle and organizes tourist tours. One local herd still climbs with their animals to the pastures on foot (20 to 30 km) from the neighbouring municipalities, although it is now more typical to drive the cattle half-way up the mountain by truck. An annual *alpage* festival is arranged to mark the end of the pastoral season. The regional language (called *Arpitan*), has made a comeback in the region as a label and a linguistic unifier for a broader area crossing three national borders (Kasstan 2017).

The *alpage* of S n pi is organised in a local pastoral association (*Groupement pastoral du S n pi*, since 1986) and a regional federation (*F d ration des Alpages de l'Is re*) to provide help with collective technical and sanitary coordination, government aid and European subsidies, and, more recently, to coordinate herd protection measures against wolves. The current form of management in S n pi includes a sustainable grazing system and a controlled tourist development, including broadcast media on transhumance practices and the landscape. Since the 1970s, the local veterinarian authorities also oversee the preventive vaccination of the cattle and the quality of food products. At the same time there are regional initiatives to provide training in pastoralism, through shepherding schools, to better anticipate and respond to current challenges, and to increase the overall awareness and appreciation of pastoralism (Liechti and Biber 2016).

### *Study 3. Transterminance in Ancares and the western Cantabrian mountains, North-western Spain*

Transhumance was a major activity in the Iberian Peninsula for centuries (see for example Gerbet 1991). In the Cantabrian Mountains, in Northern Spain, livestock farming has had a central role in the local mountain economy and has produced diverse types of grasslands and meadows. It was based on small or medium size herds (mainly cows and bulls), combining stabling facilities in the valleys and grazing activities in the mountains (Mart nez 2003;  lvarez Gonz lez 2013). Pastoralism is still alive in the area, and the presence of cattle is common, but transhumance practices disappeared during the second half of the 20th century when other agrarian practices took over (e.g. cereals, orchards, chestnut cultivation, and honey and wax production).

The end of transhumance was part of a complex and multi-layered process, which included dramatic reduction of agro-pastoral activities, lack of local environmental management, changes in transportation patterns, European Common Agricultural Policy regarding livestock, and socio-economic processes (e.g. demographic aging, depopulation, coal mine closures, the effects of the availability of better forage crops and fodder). The mountain areas' abandonment conveys, among other results, increasing risk of fires, loss of pastoral tangible and intangible cultural elements, and the abandonment of paths and traditional mountain passes.

Transterminance (transhumance at a smaller territorial scale) corresponds to the seasonal travel of

herds from the valleys to high summer pastures (called *brañas*) in the Cantabrian Mountains. It was also documented in the Pyrenees (Galop 1998; Gassiot *et al.* 2012). Diverse strategies coexisted until the 19th century, combined with agriculture and specialized transhumance activities. Abundant vestiges provide evidence of a complex organisation. Diverse morphologies and sizes of sites, paths, enclosures and crop plots are mainly related to the quality and seasonality of pasture lands, and to the ownership of cattle and land. The vestiges of *brañas* show an intense colonization of mountain landscapes, and adaptation to geographic and climatic conditions. The oldest anthropogenic proofs are the megalithic tumuli from the Neolithic period or Bronze Age. Prehistoric or ancient remains are rare (Gómez-Pantoja 2001; Blas-Cortina 2008), but palaeoenvironmental records show gradual deforestation and indicators of the presence of livestock (López-Merino *et al.* 2009). In medieval times, transterminance and transhumance, where monasteries and nobilities played a significant role, were well established (Fernández Mier *et al.* 2014; González and Fernández Mier 2016).

*Brañas* were seasonal settlements built to exploit grassland and, sometimes, grow cereals. Their morphology is closely connected to herding practice and land property. They were usually occupied between late spring and September. They consist of small drystone huts (*cabanas*, common property, 1300-1700 m.a.s.l.), shepherd huts (private, 1100-1300 m.a.s.l.), and dwellings with stables, haystacks, huts, chapels and warehouses (inhabited by the whole family, 700-1100 m.a.s.l.). There were also small huts for cattle, bridle and cart paths, allotments and enclosures, pastures, meadows, cultivated plots and irrigable mowing meadows. Seasonal activities, celebrated with collective meals and dance, were part of an intangible heritage that witnessed knowledge and mountain landscape management, linguistic particularities, typologies, etc. Transterminance was also essential in the circulation across mountains, between lowlands and highlands, and between valleys.

Today, the settlements are abandoned. The practices and local knowledge associated with them are almost forgotten. They only survive in the memory of the oldest local inhabitants or through specific research. The reactivation of transterminance practices in the Cantabrian Mountains does not seem realistic. Open and competitive markets require a global rethinking of extensive livestock, new forms of management, and recognition of the benefits of pastoralism, based on an integrated, territorial, time-depth perspective.

## Discussion

### *Interactions between tangible and intangible heritage in transhumance landscapes*

Transhumance landscapes are cultural landscapes. They bring closer the concepts of landscape, cultural heritage (tangible and intangible) and the natural environment, where landscape is a continuous process and a product of human actions in time and space (Fairclough and Møller 2008; Orejas *et al.* 2009; Fairclough *et al.* 2014). Transhumance activities were strongly connected to other forms of resource utilization in the mountains, such as hunting and fishing, and summer farms also played an important role for the first mountain tourists.

Tangible heritage includes all traces of human activities in our material surroundings (Ministry of Climate and Environment 1978); and intangible heritage is an expression of the living culture of peoples in constant re-creation (Lenzerini 2011). All cultural landscapes are thus the combined works of nature and of people (UNESCO 2012), and the result of successive and careful adaptations (Antrop 2005; Antrop and Van Eetvelde 2017). Transhumance landscapes emerge from the mutually beneficial interactions between a sensitive environment and a cultural group, often over thousands of years. Their preservation depends on community practice and their recognition as a living heritage in constant re-creation (Hafstein 2009; Lenzerini 2011; Osman *et al.* 2011) and not as a 'residue of static traditions' (Kenny 2009).

Table 1. Characteristics of transhumance activities in the three study areas.

	<i>Budalen and Endalen, Central Norway</i>	<i>Sénépi, Isère, French Alps</i>	<i>West Cantabrian mountains and Ancares, Spain</i>
<i>Name of the pastoral system (vertical transhumance)</i>	Seterbruk.	<i>Alpage</i> (long distance transhumance, with cattle coming from both transregional, regional and local farms).	Transterminance (short distance migration) <i>Brañas</i> and <i>alzadas</i> (pasturelands and sites in mountains or highlands).
<i>Summer pastures in studied areas</i>	Two mountain valleys, Budalen and Endalen in Trøndelag County.	Mountain of Sénépi (1200 ha).	Three municipalities (Candín in León, Ibias in Asturias and Navia de Suarna in Lugo).
<i>Altitude in metres above sea level</i>	Permanent farms: from 125 m and upwards. Mountain summer farms: 600-900 m.	1200-1769 m.	250-2000 m.
<i>Annual mean precipitation in mm</i>	500 – 800 mm.	≥ 1150 mm (precipitation deficit since the beginning of the 2000s).	800 – 1800 mm.
<i>Climate</i>	Transitional section, between weak oceanic and weak continental climate.	Temperate life zone: confluence of Continental and Alpine, with Mediterranean influences.	Transitional between Mediterranean and Oceanic. Mountainous climate in higher areas.
<i>Topography</i>	Sub-alpine, alpine.	Montane and subalpine.	Montane and mountainous valleys.
<i>Protected areas</i>	Landscape Conservation Areas, on the border of Forollhogna National Park.	-	Biosphere Reserve of Sierra de Ancares and Fuentes del Narcea, Degaña and Ibias Natural Park, Muniellos Biosphere Reserve.
<i>Transhumance practice traced back to</i>	Iron production in combination with grazing animals traced back to 200 BC-550 AD. Haymaking goes back to AD 1600, summer farming on permanent basis about AD 1700. Summer farms close to the farms known from AD 1700.	The Bronze Age, c. 2500 BC (archaeological and paleoenvironment research in the region).	Medieval times (confirmed in written documentation) but probably from Prehistoric and Ancient times (archaeological remains).
<i>Transhumance practice alive today</i>	Yes.	Yes.	No (until second half of 20th century).
<i>Length of transhumance season, traditionally</i>	From early June to last week in September (29th September, Michaelmas).	From the first week in June to early October.	From April or May to September or October.
<i>Type of livestock</i>	Dairy cows -the old breed Sided Trønder and Nordland until 1960s and the modern breed (Norwegian Red) since then, sheep, and earlier also goat.	Bovine (heifer for meat production).	Cattle (for milk production and slaughter), sheep and goats.
<i>Number of locations traditionally included in the agro-pastoral system (at the farm level)</i>	Two locations (permanent farm and mountain summer farm called <i>fjellseter</i> ), or three locations (permanent farm, spring/autumn summer farm, called <i>vårseter/høstseter</i> , and the mountain summer farm, <i>fjellseter</i> ).	Two locations: permanent farm in the lowlands and shepherd's summer cabin halfway up the mountain (called <i>chalet d'alpage</i> ).	Permanent farms in the villages and several mountain sites (called <i>brañas</i> and <i>alzadas</i> ) at different levels and of diverse features.
<i>Number of locations included in the system today (at the farm level)</i>	Two locations: permanent farm and mountain summer farm ( <i>fjellseter</i> ).	Two locations: permanent farm and shepherd's summer cabin ( <i>chalet d'alpage</i> ).	-
<i>Distances travelled during traditional seasonal movements in the landscape</i>	From few hundred meters (to the spring/autumn location) up to 50-60 km (mountain location).	Between 20 and 300 km depending on the provenance of the cattle (45 local, regional and interregional farms).	Between 15 and 30 km.

Table 2. Resources utilized in the three study areas.

	<i>Budalen and Endalen, Central Norway</i>	<i>Sénépi, Isère, French Alps</i>	<i>West Cantabrian mountains and Ancares, Spain</i>
<i>Resources utilized in the mountain landscape</i>	Forest and alpine pastures, mown mires and meadows, pollarding and coppicing, lichen harvesting, fuel wood, timber, iron production, burning charcoal, collecting edible, medicinal and aromatic plants (e.g., <i>Angelica archangelica ssp. archangelica</i> , <i>Gentiana purpurea</i> , <i>Valeriana spp.</i> ), plants for milk processing (e.g., <i>Pinguicula vulgaris</i> , <i>Drosera spp.</i> ) and for cleaning (e.g., <i>Equisetum hyemale</i> , <i>Juniperus communis</i> ).	Alpine pastures (calcareous grassland), medicinal and aromatic plants, flowers, roots (e.g., <i>Gentiana lutea</i> , <i>Artemisia genipi</i> ).	Mountain pastures (grassland), cereal cultivation (rye), timber, medicinal plants, charcoal.
<i>Food production in former times (50-100 years ago)</i>	Sour cream, brown whey cheese, butter, thickened fermented milk, a local variant of curds, semi-soft white cheese, soft whey cheese, fresh cheese.	Dairy products (e.g., <i>tomme</i> and <i>sérac</i> cheeses, milk, cream), meat, local alcohol and liqueur wine (herbal and plant based, e.g., <i>génépi</i> ).	Milk and derivate products (butter, cheese), meat, cereal, honey, chestnuts
<i>Food production today</i>	Sour cream, a local variant of curds, meat.	Meat (market), spirits (private use).	Meat, honey, spirits, incipient wine production.
<i>Intangible cultural heritage values and traditional knowledge values</i>	Herding and seasonal movement systems (alive until 1950-60), signs indicating pasture quality, traditional use of plants, local place names, local terms connected to transhumance practices, ceremonies, rhymes.	Herding and seasonal movement system (with a shepherd), high altitude pasture landscape, permanent grassland, richness and diversity of endemic species, traditional seasonal celebrations, local know-how, regional language.	Herding systems, pasture landscapes and cattle tracks ( <i>cañadas</i> ), seasonal sites with specific architecture ( <i>brañas</i> ), mountain paths, forms of land property (private or communal) and exploitation systems.
<i>Markets for food products today</i>	Direct sale from the summer farm, the local museum, different markets.	Indirect sale on the general market (butcher's shops, grocery stores, and supermarkets).	Mainly local.

Intangible aspects (practices, customs, traditions, knowledge, etc.) are an essential component in the making of transhumance landscapes that build on narrative-based and practice-based forms of knowledge. It is transmitted through social learning and orally, and, as such, usually exists intellectually within a social group (Smith 2006; Antrop and Van Eetvelde 2017). Oral memories tend to be fragile and can be lost in the lapse of one generation (Pethes 2019). The same applies to place names that tell about the story of former land use and ownership (Tunón and Bele 2019) and are usually complex and stratified. Upland landscapes, animals and local plants are actively used as symbolic representations (Rüdissler, Schirpke and Tappeiner 2019) and in medicinal or gastronomic preparations (e.g. *génépi* liqueur in France; see also Pardo-de-Santayana and Macia 2015). They foster a strong sense of cultural identity and aesthetic values. The same sense of belonging resonates in the practice of regional language (Kasstan 2017) which tells the story of historical and geographical relationships between cultures and nations (e.g. cultural exchange and historical routes between France, Switzerland and Italy).

The three studies presented here highlight the role of transhumance practices in shaping cultural landscapes and supporting a living socio-ecological system, which includes values attached to natural heritage, artefacts and intangible aspects. The herding system has proved essential for the preservation of the habitats of species of flora and fauna (European Union 2010) and the management of semi-natural sites. As places and symbolic landscapes, pastoral landscapes generate additional values for society in terms of wellbeing and health (e.g. historical roads converted for hiking or visits to the summer

farm in both Norwegian and French studies). Mountains make a key contribution as health and aesthetic resources (Gatrell 2013; Knez and Eliasson 2017), that can act as stimuli for the maintenance of intangible values. Transhumance practices show that mountains are not peripheral landscapes, but that they are fully incorporated in broader social and economic frames. They are active assets in the mental construction of territorial entities, and in social exchanges and connections.

### ***Transhumance practices and preservation of intangible heritage***

Although transhumance practices are still a living tradition in several European countries, almost all traditional grazing systems in Europe are now in danger of disappearing (Emanuelsson 2009; Liechti and Biber 2016). The preservation of pastoral values is a challenge in regions where transhumance practices have ended. When activities decline values tend to disappear quickly and the material traces remain the only references to reconstruct practices. The transmission of practices is thus crucial and depends on the involvement of local communities who hold the traditional knowledge (Feary *et al.* 2015).

Daugstad *et al.* (2014) show that structural changes in agricultural policies in Norway and Spain since the year 2000 have resulted in increased flock sizes to adapt to falling meat prices and increased costs. Simultaneously, fodder production is concentrated in the most fertile and easily accessible fields. This situation has an adverse impact on alpine and mountainous landscapes, biodiversity and cultural heritage values (Emanuelsson 2009; Liechti and Biber 2016). As our three studies demonstrate, the transhumance system is fragile and threatened.

The consequences of interrupted land use practices on landscape and heritage values are both direct and indirect. The Spanish study (Cantabrian Mountains), which illustrates the disappearance of transhumance, demonstrates that practice disruptions cause irreversible sociocultural and ecological damage to the highland pastures. The Norwegian (Budalen-Endalen) and French studies (Sénépi) each illustrate a still dynamic landscape and a living expression of past and present-day phenomena. Even so, the number of summer farms in use is more than halved during the last decades in Budalen-Endalen. Abandonment, overgrowth and decay are the first visual impact. Because of socio-economic changes, part-time or full-time jobs alongside farm work have become quite common in Norway to keep the economy going and create good conditions for preserving the traditions (Tunón and Bele 2019).

Protecting local products is a way of maintaining shared knowledge and practices in the society (Bérard and Marchenay 2006). Incidentally, the European Union proposes that farming continues to develop and modernize based on a local production and 'agri-food sector' to keep marginal areas economically viable (European Union 2006). Often local food production is positioned as a core element of regional rural development (O'Neill 2014), as is also the situation for our three studies. Indeed, revisited traditional food production and innovation initiatives are of utmost importance to keep intangible cultural heritage alive in our three pastoral landscapes. *Seter* practices in Budalen-Endalen are still an integrated part of the agricultural system in providing fodder and milk. Milk production based on species from rich mountain pastures certainly brings unique qualities to milk (Bele *et al.* 2017). In Sénépi, traditional dairy production came to a complete halt, mainly because of high maintenance costs, reduced personnel, production quotas and health regulations, while meat production is still quite important. In the Cantabrian Mountains, meat, honey and alcohol distillation are still a living part of the tradition. Jiménez-Beltrán *et al.* (2016) conclude that the potential of local gastronomy, as a tourist product, involves strengthening local economies and a close relationship between local agriculture and tourism.

Overall, traditional ecological knowledge (TEK) declines in many parts of the world, due to complex driving forces such as transition to market economies, loss of access to traditional resources due to

nature conservation programs, land use changes, industrialization and globalization (Gómez-Baggethun *et al.* 2010). Transhumance-related TEK would remain only if the activities survive (Oteros-Rozas *et al.* 2013) and if the communities are involved in their valorisation (Roussel 2005). Indeed, awareness and respect for the traditions and values that make the authenticity of the locality is paramount for their survival. Some *seter* in Budalen-Endalen have been in continuous use for several hundred years, which seems of crucial importance for the maintenance of the accumulated TEK of the community (i.e. agricultural and pastoral knowledge and skills, local varieties and breeds, medicinal practices, etc.). Today, the Norwegian Summer Farming Association (*Norsk Seterkultur*) have preservation of intangible heritage at the top of their agenda. In Sénépi, schooling and media coverage of the highland pasture activities and the environment are encouraged to maintain TEK and social customs.

Gómez-Baggethun *et al.* (2010) reveal an underlying potential in protected areas for protecting remaining bodies of TEK in developed country settings. Today, parts of the Cantabrian Mountains have status as a Biosphere Reserve and Natural Park, and both mountain valleys in Budalen-Endalen are Landscape Conservation Areas. Strict protection in cultural landscapes can however disrupt transmission of TEK if local resource users and related practices are excluded from ecosystem management (Gómez-Baggethun *et al.* 2010), and farmers often see landscape protection regulations as reflecting a lack of trust in their ability to manage the landscape sustainably (Fjellstad *et al.* 2009). In our study areas, the management authorities seem to have become more aware of the values of intangible heritage in recent years, but a lot of knowledge has already been lost.

### **Challenges connected to the evolution and future of intangible heritage in transhumance landscapes**

In our three studies transhumance practices still exist, but with a simplified structure and at a much smaller scale than in former times; yet still, the preservation of this kind of farming practice based on mobility and flexibility of use represents an adaptive strategy and a useful approach to overcoming the growing challenges posed by accelerated environmental change (Oteros-Rozas *et al.* 2013). Practices and activities in this type of seasonal movement were however strongly regulated both through legislation and by common rules in the local community (e.g. Reinton 1961; Nier *et al.* 2010; Lorenzi 2013). Today it challenges a rather more static and dominant agrarian system and shows that there are alternative approaches and educational values in mobility, with established rules for a sustainable use and management of natural resources and communitarian organisation (see e.g. Nier *et al.* 2010 about 'pastoral code'; Lorenzi 2013 about 'common good'; Lutz *et al.* 2017 about 'new forms of cooperation'; Muños Ulecia *et al.*, 2020 about 'evolution').

Regarding alpine landscapes, the European Union adopted a general strategy where economic, cultural, social and environmental dimensions are seen as being interdependent (European Union 2006). There seems, however, to be a need for a stronger involvement of regional actors and an increase in the flexibility given to farmers in managing mountain grasslands (Darnhofer *et al.* 2017). In the Cantabrian Mountains, complementary strategies were essential for fine-tuning new sustainable and productive uses to achieve the protection of natural and cultural values; this entails integrated territorial planning and the involvement of local populations in local preservation projects. In France, all summer pastures benefit from state and European aid to support traditional activities and management in pastoral areas. In Sénépi, complementary actions have also been taken at local and regional level to maintain the cultural traditions relating to *alpage* production (Rebreyend 2017). Likewise, in Norway, farmers get subsidies to keep the practice alive. But, generally, current pasture and summer farming payments from the state are considered by local authorities and NGOs to be insufficient to stop or reverse the decline of pastoralism.

Traditional ecological knowledge (TEK) about natural resources is an important part of people's capacity to manage and conserve their environment (Pilgrim *et al.* 2008). But, since the primary holders of TEK in developed countries are elders and intergenerational transmission is limited, it is expected that TEK will continue to decline (Pilgrim *et al.* 2008). Concerning the Norwegian case, the economic situation for small-scale farmers is difficult and makes the younger generation less likely to carry extensive land use traditions forward (Tunón *et al.* 2013). There is an urgent need for better insights on how TEK can be transmitted and renewed across generations (Oteros-Rozas *et al.* 2013). At the same time, local tradition bearers are getting scarcer in the area, experience-based knowledge disappears, and abandonment and encroachment changes the mountain landscape rapidly. Gómez-Baggethun *et al.* (2010) argue that environmental policy will probably soon be one of the few ways to protect remaining TEK pools in industrialized countries. Nonetheless, there is often a general lack of knowledge about these dimensions, and resistance from those who shape cultural heritage policy and land-use planning policy to understanding them. Intangible cultural heritage values could however be a resource for local innovation in rural landscapes. Further documentation of existing TEK, along with a revitalization and adaptation of knowledge from archives and written sources, and the appropriate methods for management purposes, could therefore be valuable for future management and ecological resilience (Huntington 1998; Berkes *et al.* 2000; Usher 2000).

Sectoral management of natural and cultural heritage by different governmental institutions is one of the challenges in Norwegian cultural landscapes (Hjelle 1998). It is also a big hindrance in Northern Spain. As shown from Budalen-Endalen, management authorities have given lower priority to preserving intangible cultural heritage and efforts still seem to be rarely focused on management and planning strategies. In France, upland priorities regarding natural environment and intangible heritage of the mountains stimulated new insights and innovative practices for management and preservation at local level. But for the people who are directly involved with agro-pastoral activities (farmers, herders, NGOs, etc.), there is a constant struggle to get subsidies and to address the importance of maintaining activities in upland areas. Likewise, it is a struggle to make the public, the politicians and the tourists aware of the benefits – and the challenges – of transhumance activities for the environment, local economy, and heritage. At a very local scale, the landscapes in the Northern Spanish Mountains could be reactivated, thanks to the growing interests in ecological and zero-miles products. In addition, these landscapes shaped by transhumance, and today relict or fossilised, could become part of a mixed heritage, where nature and culture meet. But the implementation of incentive policies is paramount for success.

## Conclusions

The three studies from Norway, France and Spain highlight the relevance of transhumance practices in preserving landscapes, biodiversity and intangible cultural heritage. A general lack of knowledge, land abandonment, and to a degree, resistance to an understanding of transhumance practices, roles and values, threatens the survival of pastoral landscapes. Approaches to the management of transhumance landscapes should include all aspects of the natural environment resulting from the interaction between people and places through time, and all aspects of heritage – tangible and intangible – and their dynamic relation to landscape and places. Adequate management and preservation of mountain and upland landscapes require procedures based on the recognition and maintenance of transhumance systems and practices. It supports a focus on local communities and society to be able to capture a holistic understanding. Transhumance's intangible values could be a resource for local innovation and represent an adaptive strategy that can meet accelerated environmental challenges in the future.

## Acknowledgements

This study was funded by a pilot call of the European Joint Programming Initiative on ‘Cultural Heritage – A Challenge for Europe (Project Reference: AH/L503976/1) and The Research Council of Norway (Project Number: 237096). It is also supported by the Spanish IVGA Project - developed within LOKI (PID2019-104297GB-100) and NyNo (CSIC PIE 202010E147). We want to acknowledge our colleagues in the Cherscape team (JPICH - Cultural Heritage in Landscape, landscape-focused network project funded over three years, 2014-2016) and Ingrid Sarlöv-Herlin, SLU (Swedish University of Agricultural Sciences), for interesting discussions and insightful comments on the manuscript. We would like to thank the farmers in Budalen and the National Park Manager of Forollhogna for participating in interviews and focus groups. As well, we would like to thank Pierre Henry Simon, PhD veterinary medicine and applied ecology, and Renée Vinay Simon, PhD botany and applied ecology, for their invaluable contribution to documentation material and discussions about French Alps transhumance.

## References

- Álvarez González, D. 2013. Traditional pastoralism in the Asturian Mountains: an ethnoarchaeological view on mobility and settlement patterns, in F. Luigi, A.A. Stoppiello and S. Biagetti (eds) *Ethnoarchaeology: Current Research and field Methods. Conference Proceedings, Rome, Italy: 202-208* Oxford: British Archaeological Reports.
- Antrop, M. 2005. Why landscapes of the past are important for the future. *Landscape and Urban Planning* 70(1–2): 21–34. doi: 10.1016/j.landurbplan.2003.10.002.
- Antrop, M. and V. Van Eetvelde 2017. The holistic nature of landscape – landscape as an integrating concept, in M. Antrop and V. Van Eetvelde (eds) *Landscape Perspectives: The Holistic Nature of Landscape*: 1–9. Dordrecht: Springer Netherlands (Landscape Series). doi: 10.1007/978-94-024-1183-6\_1.
- Bele, B., H. Sickel and A. Norderhaug 2017. Tourism and terroir products from mountain summer farming landscapes. *Journal of Gastronomy and Tourism* 2: 233–245.
- Bérard, L. and P. Marchenay 2006. Local products and geographical indications: taking account of local knowledge and biodiversity. *International Social Science Journal* 58: 109–116. doi: 10.1111/j.1468-2451.2006.00592.x.
- Berkes, F., J. Colding and C. Folke 2000. Rediscovery of Traditional Ecological Knowledge as adaptive management. *Ecological Applications* 10(5): 1251–1262. doi: 10.2307/2641280.
- Berthier, P. 1939. *Le Plateau Matheysin - Historique du Canton de La Mure avec les Mœurs et Coutumes de ses habitants. La Société des Enfants du Canton de la Mure*. Grenoble: Grands Établissements de l'imprimerie Générale. Available at: <https://mejumpmormmiborh.firebaseio.com/2843732751.pdf>.
- Biber, J.-P. 2010. Transhumance in France. *Pastoralism* 1: 91–98.
- Blas-Cortina, M.Á. de. 2008. La Prehistoria reciente: el brumoso inicio de las sociedades neolíticas en Asturias, in J.R. Muñoz (ed.) *La Prehistoria en Asturias: un legado artístico único en el mundo*: 489–566. Oviedo: Editorial Prensa Asturiana. Available at: <http://digibuo.uniovi.es/dspace/handle/10651/27703> (Accessed: 27 February 2018).
- Bunce, R.G.H., M. Pérez-Soba, R.H.G. Jongman, S.A. Gómez, F. Herzog and I. Austad 2004. *Transhumance and Biodiversity in European Mountains*. Wageningen: ALTERNAT Wageningen UR (IALE publication series nr 1). Available at: <http://www.landscape-ecology.org>.

Charbonnier, Q. 2012. *1972 : la loi pastorale française*. Avignon: Cardère éditeur. Available at: <https://cardere.fr/pastoralisme/31-la-loi-pastorale-francaise-9782914053655.html>

Council of Europe 2000. *European Landscape Convention*. Florence: European Treaty Series 176. Available at: <https://rm.coe.int/en/1680080621>.

Council of Europe 2005. *Convention on the Value of Cultural Heritage for Society (Faro Convention), Culture and Cultural Heritage*. Faro: European Treaty Series 199. Available at: <https://www.coe.int/en/web/culture-and-heritage/faro-convention> (Accessed: 23 January 2020).

Darnhofer, I., M. Schermer, M. Steinbacher, M. Gabillet and K. Daugstad 2017. Preserving permanent mountain grasslands in Western Europe: Why were promising approaches not implemented more widely? *Land Use Policy* 68: 306–315. doi: 10.1016/j.landusepol.2017.08.005.

Daugstad, K. 2005. The location pattern of summer farms (seters) in Norway: determinants, changes and contemporary management challenges, in *Paper for the ESF EARTH Programme Team 3 meeting: 1-7*. Menorca, Spain.

Daugstad, K., M. Fernández-Mier and L. Peña-Chocarro 2014. Landscapes of transhumance in Norway and Spain: farmers' practices, perceptions, and value orientations. *Norsk Geografisk Tidsskrift - Norwegian Journal of Geography* 68(4): 248–258. doi: 10.1080/00291951.2014.927395.

Dobremez, L., B. Nettier, J.-P. Legeard, B. Caraguel, L. Garde, S. Vieux, S. Lavorel and M. Della-Vedova 2014. Sentinel Alpine Pastures: an original programme for a new form of shared governance to face the climate challenge. *Revue de géographie alpine* 102–2: 1–11. doi: 10.4000/rga.2455.

Emanuelsson, U. 2009. *The rural landscapes of Europe: how man has shaped European nature*. Stockholm, Sweden: Forskningsrådet Formas.

Espelund, A. and L. Stenvik 1993. Ironmaking during the Roman Age in Mid-Norway: the bloomery site Storbekken I in Budalen. An archaeo-metallurgical study, in A. Espelund (ed.) *Bloomery ironmaking during 2000 years. Vol III*: 123–147. Trondheim, Norway: NTH Press.

European Union 2006. *Opinion of the European Economic and Social Committee on the future outlook for agriculture in areas with specific natural handicaps (upland, island and outermost areas)*. Available at: [http://mountainlex.alpconv.org/images/documents/EU/ESC\\_futur\\_outlook\\_agriculture\\_2.pdf](http://mountainlex.alpconv.org/images/documents/EU/ESC_futur_outlook_agriculture_2.pdf).

European Union 2010. *Rural diversity. EU Rural Review*, 3. Available at: <https://enrd.ec.europa.eu/sites/enrd/files/fms/pdf/3E3F4C22-0331-99A3-AD5F-C25FF369EF68.pdf>.

Fairclough, G. 2019. Landscape and heritage: ideas from Europe for culturally based solutions in rural environments. *Journal of Environmental Planning and Management*, 62(7): 1149–1165. doi: 10.1080/09640568.2018.1476026.

Fairclough, G. and P.G. Møller (eds) 2008. *Landscape as Heritage. The Management and Protection of Landscape in Europe, a summary by the COST A27 project 'LANDMARKS'*. Berne: University of Berne, Geographica Bernensia Series G 79.

Fairclough, G., B. Pedroli and N. Dabaut 2014. Seeing heritage through the lens of landscape – new approaches in landscape archaeology based on the fusion of heritage and landscape, in G.L.M. Burgers, S.J. Kluiving and R.A.E. Hermans (eds) *Multi-, inter- and transdisciplinary research in Landscape Archaeology*:

*Proceedings of the 3rd International Landscape Archaeology Conference in Rome, Italy: 1–9.* Amsterdam: University Library, Vrije Universiteit Amsterdam. Available at: <http://lac2014proceedings.nl/>.

Fairclough, G., H. Baas, B. Bele, N. Dabaut, K.A. Hovstad, G. Jerpasen, K. Larsen, M. Lascaris, A. Orejas, B. Pedroli, E. Raap, G. Reher, V.K. Simon, S. Turner, V. Van Eetvelde and A. Van Caenegem 2020. The CHeriScape project, 2014–2016: key messages from CHeriScape – cultural solutions for cultural problems. *Journal of European Landscapes* 1: 31–36. doi: 10.5117/JEL.2020.1.47037

Feary, S., S. Brown, D. Marshall and I. Lilley 2015. Earth's cultural heritage, in G.L. Worboys, M. Lockwood, A. Kothari, S. Feary and I. Pulsford (eds) *Protected Area Governance and Management*. 81–116. Canberra: ANU Press. Available at: <https://press.anu.edu.au/publications/protected-area-governance-and-management>.

Fernández-Mier, M., P. López-Gómez and D. González-Álvarez 2014. Prácticas ganaderas en la Cordillera Cantábrica. Aproximación multidisciplinar al estudio de las áreas de pasto en la Edad Media. *Debates de Arqueología Medieval* 3: 167–219.

Fjellstad, W., K. Mittenzwei, W. Dramstad and E. Øvren 2009. Landscape protection as a tool for managing agricultural landscapes in Norway, *Environmental Science & Policy* 12(8): 1144–1152. doi: 10.1016/j.envsci.2009.01.009.

Fleming, A. 1972. The genesis of pastoralism in European prehistory. *World Archaeology* 4(2): 179–191.

Galop, D. 1998. *La forêt, l'homme et le troupeau dans les Pyrénées: 6000 ans d'histoire de l'environnement entre Garonne et Méditerranée: contribution palynologique*. Toulouse: Editions Méridiennes.

García Llamas, P., I.R. Geijzendorffer, A.P. García-Nieto, L. Calvo, S. Suárez-Seoane and W. Cramer 2019. Impact of land cover change on ecosystem service supply in mountain systems: a case study in the Cantabrian Mountains (NW of Spain) *Regional Environmental Change* 19(2): 529–542. Available at: <https://buleria.unileon.es/handle/10612/8927> (Accessed: 23 January 2020).

Gassiot, E., D. Rodríguez-Antón, F. Burjachs, F. Antolín and A. Ballesteros 2012. Poblamiento, explotación y entorno natural de los estadios alpinos y subalpinos del Pirineo central durante la primera mitad del Holoceno. *Cuaternario y Geomorfología* 26: 29–45.

Gatrell, A.C. 2013. Therapeutic mobilities: walking and 'steps' to wellbeing and health. *Health & Place* 22: 98–106. doi: 10.1016/j.healthplace.2013.04.002.

Gerbet, M.C. 1991. *L'élevage sous les rois catholiques dans le royaume de Castille*. Madrid: Casa de Velásquez.

Gómez-Baggethun, E., S. Mingorría, V. Reyes-García, L. Calvet and C. Montes 2010. Traditional ecological knowledge trends in the transition to a market economy: empirical study in the Doñana natural areas. *Conservation Biology: The Journal of the Society for Conservation Biology*, 24(3): 721–729. doi: 10.1111/j.1523-1739.2009.01401.x.

Gómez-Pantoja, J. 2001. Pastio agrestis. Pastoralismo en Hispania romana, in J. Gómez-Pantoja (ed.) *Los rebaños de Gerión. Pastores y trashumancia en Iberia antigua y medieval: 177–213*. Madrid: Casa de Velásquez.

González, P. and M. Fernández Mier 2016. Medieval north-west Spain: what can agrarian archaeology tell us about living rural landscapes? in *Agrarian technology in the medieval landscape, Ruralia* 10: 291–308. Turnhout: Brepols. doi: 10.1484/M.RURALIA-EB.5.110473.

- Hafstein, V.T.R. 2009. Intangible heritage as a list: from masterpieces to representation, in L. Smith and N. Akagawa (eds) *Intangible heritage*: 93–111. London and New-York: Routledge.
- Hjelle, K.L. 1998. Herb pollen representation in surface moss samples from mown meadows and pastures in western Norway. *Vegetation History and Archaeobotany* 7: 79–96.
- Høeg, O.A. 1976. *Planter og tradisjon. Floraen i levende tale og tradisjon i Norge 1925 - 1973*. Oslo: Universitetsforlaget.
- Huntington, H.P. 1998. Observations on the utility of the semi-directive interview for documenting Traditional Ecological Knowledge. *Arctic* 51(3): 237–242.
- Jiménez-Beltrán, F.J., T. López-Guzmán and F. González Santa Cruz 2016. Analysis of the relationship between tourism and food culture. *Sustainability*, 8(5) 418: 1–11. doi: 10.3390/su8050418.
- Jones, M. and M. Stenseke 2011. The issue of public participation in the European Landscape Convention, in M. Jones and M. Stenseke (eds) *The European Landscape Convention*: 1–23. Dordrecht: Springer (Landscape Series). doi: 10.1007/978-90-481-9932-7\_1.
- Kasstan, J. 2017. New speakers: challenges and opportunities for variationist sociolinguistics. *Language and Linguistics Compass* 11.8. p. e12249. doi: 10.1111/lnc3.12249.
- Kenny, M.L. 2009. Deeply rooted in the present – making heritage in Brazilian quilombos, in L. Smith and N. Akagawa (eds) *Intangible heritage*: 151–168. London and New-York: Routledge.
- Knez, I. and I. Eliasson 2017. Relationships between personal and collective place identity and well-being in mountain communities. *Frontiers in Psychology*, 8.466: 1–12. doi: 10.3389/fpsyg.2017.00079.
- Lenzerini, F. 2011. Intangible Cultural Heritage: The living culture of peoples. *European Journal of International Law* 22(1): 101–120. doi: 10.1093/ejil/chr006.
- Liechti, K. and J.-P. Biber 2016. Pastoralism in Europe: characteristics and challenges of highland-lowland transhumance. *Revue Scientifique Et Technique (International Office of Epizootics)* 35(2): 561–575. doi: 10.20506/rst.35.2.2541.
- Lorenzi, F. 2013. Gestion foncière de type ‘bien commun’ en montagne. Bilan de la loi pastorale, *Pour* 4(220): 127–134. Available at: <https://www.cairn.info/revue-pour-2013-4-page-127.htm>
- López-Merino, L., J.A. López-Sáez, F. Alba-Sánchez, S. Pérez-Díaz and J.S. Carrón 2009. 2000 years of pastoralism and fire shaping high-altitude vegetation of Sierra de Gredos in central Spain. *Review of Palaeobotany and Palynology* 158(1–2): 42–51.
- Lutz, J., B. Smetschka and N. Grima 2017. Farmer cooperation as a means for creating local food systems - potentials and challenges. *Sustainability*, 9 (6) 925: 1–16. doi: 10.3390/su9060925.
- Manzano, P. and R. Casas 2010. Past, present and future of Trashumancia in Spain: nomadism in a developed country. *Pastoralism* 1: 72–90. doi: 10.3362/2041-7136.2010.005.
- Martínez, A.G. 2003. La trashumancia en Asturias, in P. F. Novoa and L. V. Elias (eds) *Un camino de ida y vuelta: la trashumancia en España*: 95–108. Barcelona: Lunwerg. Available at: <https://dialnet.unirioja.es/servlet/articulo?codigo=935698> (Accessed: 28 February 2018).

- Miller, A.R.V. and C.A. Makarewicz 2017. *Isotopic Investigations of Pastoralism in Prehistory*. London: Routledge.
- Ministry of Climate and Environment, Norway 1978. *Act of 9 June 1978, No. 50 Concerning the cultural heritage*. Available at: <https://www.regjeringen.no/no/dokumenter/kulturminneloven/id173106/> (Accessed: 3 February 2020).
- Muños Ulecia, E., A. Bernués, I. Casasús, A.M. Olaizola, S. Lobón and D. Martin-Collado 2020. Drivers of change in mountain agriculture: a thirty-year analysis of trajectories of evolution of cattle farming systems in the Spanish Pyrenees. *Agricultural Systems* 186. doi: 10.1016/j.agsy.2020.102983.
- Nier, J., S. Turc and B. Caraguel 2010. Évolution des prises de poids des génisses en alpage. Le cas du Sénépy, Isère, France, in *Pastoralisme du Monde, Plaidoyer pour un code pastoral : pastoralismes et aléas climatiques*: 16-18. Isère, France: Neuvièmes Rencontres Internationales du Pastoralisme.
- Norderhaug, A., I. Austad, L. Hauge, and M. Kvamme (eds) 1999. *Skjøtselsboka for kulturlandskap og gamle norske kulturmarker*. Oslo: Landbruksforlaget.
- Olsson, E.G.A., G. Austrheim, B. Bele and E. Grøntvedt 1995. *Seterlandskapet i Budalen og Endalen, Midtre-Gauldal, Midt-Norge. Kulturhistoriske og økologiske forhold i fjellets kulturlandskap*. Trondheim, Norway: Fylkesmannen i Sør-Trøndelag, Miljøvernavdelingen.
- Olwig, K.R. 2007. The practice of landscape ‘Conventions’ and the just landscape: the case of the European landscape convention. *Landscape Research*, 32(5): 579–594. doi: 10.1080/01426390701552738.
- O’Neill, K. 2014. Localized food systems – what role does place play? *Journal Regional Studies, Regional Science* 1(1): 82–87. doi: <http://dx.doi.org/10.1080/21681376.2014.904596>.
- Orejas, A., D. Mattingly and M. Clavel-Lévêque (eds) 2009. *From present to past through landscape*. Madrid: CSIC.
- Osman, M.M. and A. Abu Bakar 2011. Significance of community involvement in safeguarding intangible cultural heritage, in M. M. Osman, I. Mansor, A.M. Zainora and A.S. Azila (eds) *The built environment: selected writings*: 29-37. Kuala Lumpur: IIUM Press. ISBN 9789674180454.
- Oteros-Rozas, E., R. Ontillera-Sánchez, P. Sanosa, E. Gómez-Baggethun, V. Reyes-García and J.A. González 2013. Traditional ecological knowledge among transhumant pastoralists in Mediterranean Spain. *Ecology and Society*, 18(3). doi: 10.5751/ES-05597-180333.
- Ouren, T. 1952. *Floraen i Budalen herred i Sør-Trøndelag*. Trondheim, Norway: Det Kgl norske videnskabers selskabs skrifter, 1.
- Pardo-de-Santayana, M. and M.J. Macia 2015. Biodiversity. The benefits of traditional knowledge. *Nature*, 518: 487–488.
- Pethes, N. 2019. *Cultural memory studies: an introduction*. Cambridge: Cambridge Scholars Publishing. Available at: [https://scholar.google.no/scholar?q=Pethes,+Nicolas+\(2019\)+Cultural+memory+studies:+a+n+introduction.+Cambridge+Scholars+Publishing&hl=no&as\\_sdt=0&as\\_vis=1&oi=scholart](https://scholar.google.no/scholar?q=Pethes,+Nicolas+(2019)+Cultural+memory+studies:+a+n+introduction.+Cambridge+Scholars+Publishing&hl=no&as_sdt=0&as_vis=1&oi=scholart) (Accessed: 31 January 2020).
- Pilgrim, S.E., L.C. Cullen, D.J. Smith and J. Pretty 2008. Ecological knowledge is lost in wealthier communities and countries. *Environmental Science & Technology* 42(4): 1004–1009. doi: 10.1021/es070837v.

- Raffin, Y. 1995. Organisation actuelle de la transhumance dans l'Isère, aperçu sur la transhumance hivernale et présentation du festival du film 'Pastoralisme et Grands Espaces'. *Ethnozootecnie*, 55: 51–54.
- Rebreyend, D. 2017. Editorial. *L'écho des alpages de l'Isère*, 10. *Les Adrets: Équipe technique de la FAI*.
- Reinton, L. 1955. *Sæterbruket i Noreg I. Sætertypar og driftsformer*. Oslo, Norway: Instituttet for sammenlignende kulturforskning, H. Aschehoug & Co. (Sæterbruket i Noreg, I).
- Reinton, L. 1961. *Sæterbruket i Noreg III*. Oslo, Norway: Institutt for sammenlignende kulturforskning, H. Aschehoug & Co. (Sæterbruket i Noreg, Serie B: Skrifter XLVII).
- Rendu, C. 2006. Transhumance: prélude à l'histoire d'un mot voyageur, in P.Y. Laffont (ed.) *Transhumance et estivage en Occident des origines aux enjeux*: 7–29. Toulouse: Presses Universitaires du Mirail. Available at: <https://halshs.archives-ouvertes.fr/halshs-00814353/document>.
- Roussel, B. 2005. Local knowledge and biodiversity conservation: increase the representation of communities. *Mouvements* 41(4): 82–88.
- Rüdissler, J., U. Schirpke and U. Tappeiner 2019. Symbolic entities in the European Alps: perception and use of a cultural ecosystem service. *Ecosystem Services* 39. 100980. doi: 10.1016/j.ecoser.2019.100980.
- Smith, L. 2006. *Uses of Heritage*. London: Routledge.
- Solem, T., L. Stenvik, T.A. Mikkelsen, K. Hassel, D.-I. Øien, E.I. Aune, P. Sjøgren, M. Daverdin, M.O. Kyrkjeeide and G. Austrheim 2011. *Natur- og kulturminner i Budalen landskapsvernområde. Arkeologiske, historiske, vegetasjonshistoriske og økologiske undersøkelser i DYLAN-prosjektet*: 1–102. Trondheim: NTNU, Vitenskapsmuseet Report 5.
- Solem, T., E.I. Aune, M. Daverdin, K. Hassel, P. Sjøgren, L. Stenvik, A.M. Tretvik, D.-I. Øien and G. Austrheim 2012. Long-term land-use and landscape dynamics in Budalen, central Norway. *International Journal of Biodiversity Science, Ecosystem Services and Management* 8(4): 360–371. doi: 10.1080/21513732.2012.723639.
- Solheim, S. 1952. *Norsk sætertradisjon*. Oslo: Aschehoug (Instituttet for sammenlignende kulturforskning 47, Serie B). Available at: [https://urn.nb.no/URN:NBN:no-nb\\_digibok\\_2010102605044](https://urn.nb.no/URN:NBN:no-nb_digibok_2010102605044) (Accessed: 31 January 2020).
- Sørmark, J. 1971. *Gard og grendeliv i Budalen. Gard og gren*. Trondheim, Norway: Globus-Forlaget A/S. Available at: [https://books.google.no/books/about/Gard\\_og\\_grendeliv\\_i\\_Budalen\\_Gard\\_og\\_gren.html?id=ST0GMwEACAAJ&redir\\_esc=y](https://books.google.no/books/about/Gard_og_grendeliv_i_Budalen_Gard_og_gren.html?id=ST0GMwEACAAJ&redir_esc=y).
- Stensgaard, K. 2017. *Hvordan står det til på setra? Registrering av setermiljøer i perioden 2009–2015*. Ås: NIBIO, Norsk Institutt for Bioøkonomi, Report 3(88).
- Szabó, M. 1970. *Herdar och husdjur: en etnologisk studie över Skandnaviens och Mellaneuropas beteskultur och vallningsorganisation*. Lund: Nordiska museet.
- Tunón, H., W.A. Linkowski, B. Bele, M. Kvarnström, A. Norderhaug and J. Wissman 2013. Views of landscape. Reflections on the governance of Scandinavian transhumance. *Baltic worlds* VI: 53–60.
- Tunón, H. and B. Bele 2019. *Fäbod and seter. Summer farming on the Scandinavian peninsula*. Uppsala, Sweden: Swedish Biodiversity Centre CBM (Swedish University of Agricultural Sciences, SLU), Norwegian Institute of Bioeconomy, NIBIO (CBM skriftserie, 112).

UNESCO 2003. *Convention for the safeguarding of the intangible cultural heritage*. Paris: UNESCO. Available at: <http://unesdoc.unesco.org/images/0013/001325/132540e.pdf>.

UNESCO 2012. *The Operational Guidelines for the Implementation of the World Heritage Convention*. Paris: UNESCO World Heritage Centre. Available at: <https://whc.unesco.org/en/guidelines/> (Accessed: 3 February 2020).

Usher, P.J. 2000. Traditional ecological knowledge in environmental assessment and management. *Arctic* 53.2: 183–193.

Vecco, M. 2010. A definition of cultural heritage: from the tangible to the intangible. *Journal of Cultural Heritage* 11(3): 321–324. doi: 10.1016/j.culher.2010.01.006.

Vinay, R. 1976. Recherches sur les incidences écologiques de l'exode rural en montagne: zone de Belledonne, Oisans, Arvan. *Documents de cartographie écologique*, 18:77–87.

Zoderer, B. M., E. Tasser, K.-H. Erb, P.S. Lupo-Stanghellini and U. Tappeiner 2016. Identifying and mapping the tourists' perception of cultural ecosystem services: a case study from an Alpine region. *Land Use Policy* 56: 251–261. doi: 10.1016/j.landusepol.2016.05.004.



*Figure 9.1: Chewing the cud: cattle enjoying, and perhaps also contemplating, transhumance in Les Paturages de la Balme, near Contamines-Monjoie, department of Haute-Savoie, France. (Photograph: Pete Herring)*

