

# I Is There a Future for the Past?

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## I.1 INTRODUCTION

The health of our planet and our species is jeopardised by a host of dangers to environmental, political, and social security brought on by a now-familiar litany: anthropogenic pollution, climate change, increasing inequity and conflict, and the global-scale loss of biodiversity. These circumstances require attention both locally, where global changes impact communities, and globally, where local practices influence global change. We humans are only part of a complex network of elements and relations that make up planet Earth. Within this enormous and essentially closed ecosystem, our lives are influenced by events, processes, and conditions that began long before the first humans and that will outlast humanity.

Now we have entered the Anthropocene, an era when human activity must be considered a major component (a ‘driver’) of global environmental change. The dynamic, nonlinear system in which we live is not in equilibrium and does not act in a predictable manner. If our own and other species are to continue to thrive, it is of utmost importance that we identify the conditions, ideas, and practices that nurture both the planet and the species that live on it. Our best laboratory for this is the past, where long-, medium-, and short-term variables can be identified and their roles evaluated. Perhaps the past is our only laboratory: experimentation requires time we no longer have. Thus the integration of our understanding of human history with that of the Earth system is a timely and urgent task.

Historical ecology traces the complex relationships between our species and Earth, examined over the long term. Its roots are in a variety of disciplines (e.g. anthropology, archaeology, ecology and

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palaeoecology, geography, landscape and heritage management, forest history). Practitioners take the term *ecology* to include humans as a component of all ecosystems, and the term *history* to include that of the Earth system as well as the social and physical past of our species.

Historical ecology is neither a discipline nor a theory. It is a research framework for merging many kinds of evidence (e.g. documents, archaeology, ethnography, ecology, and a broad array of environmental studies) to reach new understandings about the human-environment relationship. Research is stimulated by new questions, insights, and methods for combining and analysing different sources of information. Historical ecology is an emerging field of study that can facilitate interdisciplinarity and generate new understandings.

Historical ecology draws on a broad spectrum of theories, concepts, issues, and evidence from the biological and physical sciences, ecology, the social sciences and humanities, and from diverse communities of practice. Historical ecologists are not concerned with battles among various theories: rather, they take a holistic, practical, and dialectical perspective both on the study of change and on the practice of interdisciplinary research. This framework enables flexible, multiple, and inclusive narratives of human-environment relations over time in a particular geographic location (hence an emphasis on landscape). The goal of historical ecology is to use scholarly and other varieties of knowledge in concert, so that management decisions that will shape the human future on Earth can be effective and equitable.

### I.2 INTEGRATING KNOWLEDGES, EXPLORING CONCEPTS AND ISSUES

In Greek mythology Ariadne, daughter of King Minos, gave Theseus a red thread, which he unwound as he entered the sacred labyrinth of the Minotaur and thereby found his way through its complexities. We who grapple with the complexities of connecting the human and biophysical past – much less using our insights to chart the

future – can use a few red threads, concepts, and premises to guide our work. But while combining different kinds of knowledge about the world around us is an admirable goal in the abstract, many questions, issues, and concepts remain that must first be addressed to the satisfaction of collaborators.

Our work on this book has been sponsored by the Centre for Biodiversity (CBM), begun a quarter century ago as a joint venture between the Swedish University of Agricultural Sciences (SLU) and neighbouring Uppsala University. To meet the requirements of the Convention on Biological Diversity, the Swedish Parliament tasked CBM to create an innovative environmental management and policy structure for Sweden. CBM now works closely with government agencies, policy-makers, natural resource managers, local and indigenous communities, and other stakeholders in Sweden, Europe, and elsewhere in the world.

In keeping with CBM's mandate, the editors of this book (Crumley, Lennartsson, Westin) convened a three-day workshop in 2013 on historical ecology, one of the pillars of CBM practice. The participants are from Great Britain, Romania, Sweden, and the United States; about a third of us have ties to CBM. Participants were chosen for their experience with the historical ecology framework and their 'cross-training' through fieldwork and in areas of study beyond their own core training (see Figure 1.1). We are twenty-two historical ecologists who chose both the subject matter and the structure of this book, which we have written together.

Contributors to this book have wide-ranging research experience, which has been accrued all over the world. Many work in Europe, including Scandinavia (Greenland, Iceland, Norway, Sweden), Western Europe (France, Great Britain, Greece, Ireland, Italy, Scotland, Spain), and Eastern Europe (Romania, the Danube basin countries); many contributors work on issues related to the European Union. The African continent is well represented: Botswana, the Comores, Egypt, Kenya, Madagascar, Mozambique, Namibia, Somalia, South Africa, Tanzania, Zimbabwe, and the Sahel. Many contributors



FIGURE 1.1 Contributors' major fields of study.

have Western Hemisphere experience (Canada, the United States, the Rockies and the Great Lakes, Bolivia). South East Asia (Laos, the Maldives, Sri Lanka, Thailand), Australia, New Zealand, and Antarctica are also represented.

Using an historical ecology analytic framework is never easy and problem-free; there are always difficulties, such as in merging data sets (such as quantitative and qualitative information), finding proxies for certain data (such as using parish records for population), and many others.

Before the workshop, the editors circulated some questions that are basic to research in historical ecology. While this book does not address all of the questions directly, we hope to have contributed to their discussion.

- How can research questions and approaches be combined to generate new knowledge?
  - How can mutually acceptable research questions be framed?
  - What information is missing from a research design? How can it be found?
  - How should one ask questions about data and sources of colleagues in other disciplines?

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- How can the historical ecology approach be adapted to specific questions, times, and places?
- How can historical ecology address multiple spatial scales (e.g. micro-to-macro economy, species-to-landscapes) and temporal scales (e.g. annual to long-term changes)?
- How to assess the added value of merged knowledge sources (e.g. scholarly, applied, ethical)?
- What areas of applied historical ecology are particularly fruitful or problematic?

The editors then asked participants to share a ‘puzzle’ – a problem or question they had or still have – of particular importance to that person’s research; these were circulated to the group. We listened to short presentations of each person’s puzzle. Workshop participants sorted the puzzles into themes, which focussed the discussion; we then constructed the structure of this volume.

We chose three themes under which we could offer multiple-authored chapters on problematic areas in the practice of historical ecology. *The long-term history of biocultural diversity* would address key issues in the study of linked human-environment relations, including how long-term studies can yield novel insights and what the future may hold for regions and communities. *Constructive approaches* would address the language and logic of troublesome concepts and take a pragmatic approach to collaboration and data integration. *Dialogues: communities of purpose* would explore some actual communities and their inhabitants, along with how historical ecology could be better situated in policy and governance, and the role of emotional and spiritual connections with the natural world. While this book’s structure has evolved, these key themes or ‘red threads’ have guided the chapters’ evolution in the hands of multiple authors.

The workshop only began our collaboration; there have been five more workshops for the entire group and many more intimate meetings of co-authors. Subsequent workshops (with participants attending in person or electronically) allowed discussion of chapter

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drafts between the chapters' authors and other members of the group; these meetings also revisited the structure of this volume and other business. This book's chapters are now grouped as *Challenges: Time and Memory* (Chapters 2 to 5), followed by *Approaches: Concepts and Methods* (Chapters 6 to 8), and *Moving Forward* (Chapters 9 and 10).

**Challenges** addresses some essential, but usually neglected issues related to time. Chapter 2, *Historical ecology and the longue durée*, introduces the study of time, integral to disciplines that lay claim to an understanding of society-environment dynamics. The authors review the history of perceptions of time in time-sensitive disciplines, then examine shortcomings of the traditional linear approach, and finally engage with the relatively new vision of time that has emerged with the study of complex systems. They do not abandon linear time, but instead advocate an increased awareness of the multiplicity of times and the exploration of their implications for learning from the past. Chapter 3, *Human and societal dimensions of past climate change*, introduces another central concept, the importance of understanding key human-environment interactions over time and space through the lens of climate and weather. Focussing on how the impact of climate change has been met, rather than on climate change itself, the chapter demonstrates the importance of multiple strategies, including social responses, for enhancing resilience in the face of climate change and other environmental impacts. Chapter 4, *Rural communities and traditional ecological knowledge*, explores the emergence, transformation, and disappearance of traditional ecological knowledge (TEK) in relation to the marking of time in agricultural rural communities. Examples of current and past TEK from Romania and Sweden are used to illustrate how TEK in one place can provide insight for historical ecology elsewhere, the implications of change and loss of TEK, and its current re-evaluation. Chapter 5, *Baselines and the shifting baseline syndrome – exploring frames of reference in nature conservation*, focuses on factors that shape the quite different goals of environmental management and environmental conservation policy, and on the role of human

cognition when setting baselines in nature conservation. Since baselines are socially constructed, norms and perceptions of the environment can change across generations, leading to the ‘shifting baseline syndrome’ (SBS). Baselines and SBS, developed primarily for use in the natural sciences, can benefit from memory research in the social sciences and from the broader scope of historical ecology.

*Approaches* puts concepts and methods to work in the practice of historical ecology. Chapter 6, *Concepts for integrated research in historical ecology*, explores new frameworks for research developed through a reappraisal of influential concepts in landscape ecology and archaeology, such as adaptation, niche construction, domestication, and entanglement. Perspectives from different disciplines on those concepts are compared and blended, treating landscapes themselves as agents, entangled between human and non-human, biological and non-biological agents and processes. Based on examples from Africa and Europe, the authors argue that careful borrowing of concepts can lead to fruitful research in both landscape ecology and social history, and to new conceptual frames for collaboration. Chapter 7, *Diversity in ecological and social contexts*, addresses the variation in human societies (cultural diversity) and in ecosystems (biological diversity). Cultural and biological diversity show differences and similarities regarding how diversity is differently framed, formed, and maintained in natural and social sciences and in the humanities. New insights can be achieved by comparing and merging the perspectives; an example is the intersection between cultural and biological diversity, termed *biocultural diversity*. Based on four examples of land-use systems, the authors discuss how understanding the reasons for the formation or loss of biocultural diversity can help us interpret the past and plan for the future. Chapter 8, *How to operationalise collaborative research*, argues that, by definition, research in historical ecology requires an interdisciplinary theoretical framework, and in most cases a collaborative research approach as well. The conceptual and practical aspects of interdisciplinary collaboration and integration can be daunting, and most researchers are not trained to work in this way. The authors provide practical considerations and suggestions

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for collaborative interdisciplinary work, based on examples drawn from their research experiences in historical ecology.

**Moving Forward** addresses the role of historical ecology in fashioning an environmentally sound and socially supportive future. In Chapter 9, *Historical ecology in theory and practice: editors' reflections*, the editors consider ideas from the chapters, relationships among the chapters, and historical ecology in a wider context. Among the issues addressed are how historical ecology can be used in biodiversity and cultural heritage conservation and as a guide for sustainable resources use; how diverse approaches to time might be reconciled; and how the engaged agenda of historical ecology can find support among practitioners. Chapter 10, *Taking research into action in historical ecology*, suggests that study of the past can expose how the fabric of human societies and their environments is woven. The failure of international policy to make significant progress in slowing the drivers of climate change has necessitated a grass-roots response: broad networks are forming and integrative research is well under way. The emergent, collaborative, transdisciplinary, and trans-temporal research framework of historical ecology can provide an arena for addressing the critical issues facing humanity.

Of course issues have arisen that challenged participants to struggle to understand one another. One participant was uncomfortable with the word *system*, common in the environmental sciences, but problematic for some social scientists and humanists. The need to clarify the dynamic among bio-geo-physical and human actors led to many conversations about agency. Sometimes scholarly styles, reflecting variation in national, disciplinary, or linguistic traditions, required careful navigation. In particular, the divergent histories of relevant research and collaboration in Europe and North America prompted interesting and ultimately productive adjustments in terminology and perspective.

On balance, our interactions over more than four years have resulted in an increase in our individual collaborative strengths and our collective realisation of the enormous potential afforded by

working together. We have become more adept in anticipating areas where care must be taken and what approaches to disagreements work best. The collaboration chapter (Chapter 8) has suggestions for ways to resolve many common difficulties among researchers. Sometimes, though, absolute concordance among authors is neither desirable or possible; thus all collaborators are not involved in every chapter, and where there are differences in opinion it is reflected in the text of that particular chapter. Remarkably, the length of time this book has taken is comparable with non-collaborative multi-authored books.

Several themes have been added to those that guided us earlier. We have paid particular attention to issues of temporal scale; we have more clearly embraced the complex systems approach; and we have endeavoured to clarify the arguments for examining the past in the service of the future and to sharpen the tools to do so. We make no claims for having given comprehensive treatment of all the issues and concepts in historical ecology, nor have we attempted broad geographical coverage; we simply address questions that this particular group of scholars find central to their work and that others could apply to their own practice and policy.

In undertaking this collaborative endeavour, we hope to stimulate similar efforts that would take up the lengthy list of areas we have not addressed. A larger palette of issues and concepts can be found in the crowd-sourced article *Anthropological Contributions to Historical Ecology: 50 Questions, Infinite Prospects* (Armstrong et al. 2017), but even this effort does not complete a description of the research programme. Instead, we stress the incompleteness and flexibility of the historical ecology framework which, like the places we study, will continue to evolve.

#### REFERENCE

- Armstrong, C. G., Shoemaker, A. C., McKechnie, I., Ekblom, A., Szabó, P., Lane, P. J., et al. (2017). Anthropological contributions to historical ecology: 50 questions, infinite prospects. *PLoS ONE*, 12(2), e0171883. doi:10.1371/journal.pone.0171883.

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## PART I Challenges: Time and Memory