

Contents

Acknowledgements	i
Nomenclature and glossary	ii
List of figures	v
List of tables	xvii
Chapter 1: Introduction: Islands and human impact	1
Overall aim and objectives	1
Rationale and overall importance of the research	1
The importance of an interconnected human-environment approach	2
The importance of a historical perspective	3
The importance of an island focus	3
Scales of research	4
Thesis structure and summary of research approach	6
Specific research questions and hypotheses	8
<i>Specific research questions applicable to the “fundamental issues” (at the scale of global islands)</i>	12
<i>Site-specific research questions applicable to the Faroe Islands</i>	12
<i>Research questions applicable to the wider context (at the scale of the North Atlantic islands)</i>	12
<i>Hypotheses</i>	13
<i>Chapter summary</i>	13
Chapter 2: Approaches to, and concepts of, human-environment research	15
Introduction	15
2.1 Approaches to human-environment research	15
Human-environment relations and theories	15
<i>The effect of nature on society and culture: environmental determinism</i>	15
<i>Nature as a limiting factor to human possibility: Malthus and Darwin</i>	17
<i>The effect of cultural history on society and culture: Possibilism</i>	18
<i>Cultural ecology</i>	19
<i>Historical ecology and temporal and spatial perspectives</i>	19
<i>A comparative approach</i>	21
Approaches to human-environment research in the North Atlantic	22
2.2. Concepts in human-environment research	22
Environmental change and thresholds	22
Responses to change	23

<i>Environmental responses: sensitivity and resilience</i>	23
<i>Human responses</i>	25
Adaptation	26
<i>The influence of information, perception, memory and decision making on adaptation</i>	28
Chapter summary	31
Chapter 3: Island contexts	33
Introduction	33
Island contexts as models for human impact and global change	33
Island ecosystems and biogeography	36
Colonisation of remote islands	38
Timing of colonisation	40
Human impacts and environmental change in remote islands	40
Population and resources on remote islands: cultural stress and collapse	42
Population and resources on remote islands: population regulation and sustainability?	46
Inherent sensitivity of island ecosystems	47
Climatic change on islands	48
Summary: a global model of island colonisation and human impact?	49
Chapter summary	50
Chapter 4: North Atlantic context: environmental trajectories and cultural change	51
Introduction	51
Background to North Atlantic research	51
4.1 North Atlantic climate systems	52
North Atlantic pre-colonisation climate trajectories	55
Climate trajectories over the period of settlement	57
Climate-people integration	58
Climate and landforms in the Faroe Islands	59
4.2. North Atlantic environmental context	61
The Faroe Islands	61
<i>Faroe Islands geography and environment</i>	61
<i>Faroe Islands biogeography</i>	64
Iceland	65
<i>Icelandic geography and environment</i>	65

<i>Icelandic biogeography</i>	66
4.3 North Atlantic (Faroe Islands) human context: Overview	68
4.4 North Atlantic human context: Colonisation	70
The Viking expansion	70
Pre-Norse colonisation of the Faroe Islands	71
Norse <i>landnám</i> in the Faroes	73
4.5 North Atlantic human context: Long-term settlement and adaptation	74
Norse “cultural capital”	74
Faroese “cultural capital” developments	76
Faroese settlement patterns in a North Atlantic context	77
Faroese farming systems in a North Atlantic context	79
Land and resource ownership in the Faroe Islands in a North Atlantic context	83
4.6 Human impacts and environmental change in the North Atlantic islands	83
Chapter summary	86
Chapter 5: Methodological framework and data collection	87
Introduction	87
Methodological framework	87
Field site selection	91
<i>Hov and Sandoy, the Faroe Islands</i>	91
<i>Eyjafjallahreppur, Iceland</i>	98
Spatial methods	98
<i>Landscape mapping</i>	99
<i>Archaeological survey</i>	102
<i>Settlement and landholding data</i>	103
Conceptual methods	107
<i>Interview process</i>	107
Temporal methods	109
<i>Stratigraphic sections</i>	109
<i>Radiocarbon chronology</i>	110
Chapter summary	112
Chapter 6: Data presentation	115
Introduction	115
6.1. Presentation of spatial data	115
Hov: landscape units and geomorphic features	115
<i>General summary of Hov geomorphology</i>	115

<i>Summary outline of specific geomorphic features</i>	119
<i>Box-type gullies</i>	119
<i>Small scale gullying</i>	119
<i>Inactive fan</i>	122
<i>Active fans and river systems</i>	122
Sandoy: extent of land degradation	129
<i>General summary of landscape-scaled degradation patterns</i>	129
6.2. Hov and Sandoy: sites of cultural activity	141
Extent of archaeological survey in Hov and on Sandoy	141
General description of archaeological monuments in the Faroese outfields	141
<i>Outfield structures relating to sheep and cattle</i>	141
<i>Structures relating to peat cutting activity</i>	155
<i>Drainage ditches</i>	155
<i>Cairns (varðar)</i>	159
Identification and description of archaeological “zones”	159
<i>Hov archaeological zones</i>	159
<i>Sandoy archaeological zones</i>	165
<i>Detailed mapping of torvlutir in central Sandoy</i>	167
Comparison between cultural zones and land cover classification mapping	167
6.3. Interview data	169
Combined summary of interview data	169
<i>Peat; methods of extraction, its geographical exploitation and ownership</i>	169
<i>Fowling; ownership, methods and geographical exploitation</i>	170
<i>The importance of the grind (pilot whale hunt)</i>	173
<i>Farming and sheep grazing</i>	173
<i>Settlement patterns, social structures and connections</i>	175
<i>The impact and significance of weather and climate</i>	176
6.4. Presentation of temporal data	176
Detailed descriptions of characteristic profiles	194
<i>Detailed description of example profile from Hov (KAM20)</i>	194
<i>Detailed description of example profile from Sandoy (KAM 61)</i>	194
Summary description of Holocene sediment sequences in Hov and Sandoy	195
Summary description of targeted transects in Hov and Sandoy	197
<i>Hov: Transect 1a and 1b (KAM 1-7, 16-18)</i>	197
<i>Hov: Transect 2a and 2b (KAM 8-9 and 30, 10-15)</i>	197

<i>Hov: Transect 3 (KAM 19-25)</i>	198
<i>Sandoy: Transect 1 (KAM 60-64)</i>	198
<i>Sandoy: Transect 2 (KAM 71-73)</i>	198
<i>Sandoy: Transect 3 (KAM 65-70)</i>	199
<i>Sandoy: High altitude profiles (KAM 83-86)</i>	199
Loss-on-ignition and radiocarbon dating	200
Review of original Icelandic data	200
Chapter summary	212
Chapter 7: Discussion: Historical human-environment interactions in the southern Faroe Islands	213
Introduction	213
7.1 Historical human-environment interactions in the southern Faroe Islands	213
7.2 The pre-colonisation landscape of the southern Faroe Islands	214
Long-term trajectories and thresholds: soil stratigraphic and landform evidence	214
Hypotheses regarding the timings and causes of thresholds	218
Environmental thresholds in late Holocene Faroes	220
<i>Evidence of environmental thresholds in surface landforms</i>	220
<i>Thresholds and spatial factors in relation to surface cover</i>	224
<i>Evidence of environmental thresholds in sediment stratigraphies</i>	227
Timing of thresholds and possible causal relationships	231
<i>Climatic, ecological and environmental changes coinciding with the timing of Phase 1 (c. 2900 – 2300 cal yr BP)</i>	235
<i>Climatic, ecological and environmental changes coinciding with the timing of Phases 2a and 2b (c. 1900 – 1300 cal yr BP)</i>	238
Conclusions: how did pre-colonisation landscape change affect settlement?	242
7.3 Human impact in the southern Faroe Islands	243
The impact and geomorphic significance of <i>landnám</i>	243
The geomorphic significance of post-<i>landnám</i> anthropogenic impact	245
<i>The significance of long-term grazing impacts</i>	246
<i>The significance of landscape impact related to resource exploitation</i>	250
Conclusions: how has human impact affected the Faroese landscape?	251
7.4. Why might human impact in the Faroes have been limited?	253
How geography, topography and settlement factors may have influenced environmental and cultural trajectories in the Faroe Islands	254
How specific resource exploitation strategies may have limited human	

impact on the environment	256
<i>The nature, methods and significance of fowling and egg collecting</i>	256
<i>The nature, methods and significance of the grind (pilot whale drive)</i>	260
Conclusions: why might human impact in the Faroes have been limited?	261
Chapter summary	261
Chapter 8: Discussion: The Faroe Islands and the wider North Atlantic context	262
Introduction	262
8.1 The importance of a wider spatial context	262
8.2 Summary of trajectories and thresholds in the Faroe Islands, Iceland and Greenland	263
8.3 Comparisons between the Faroe Islands and Iceland	266
Why are trajectories between the Faroes and Iceland different?	266
<i>Inherent physical and ecological differences between the Faroe Islands and Iceland</i>	268
<i>Differences in the utilisation of resources in the Faroe Islands and Iceland, and how these develop over time</i>	268
<i>Isolation, contact and disease in the Faroe Islands and Iceland</i>	269
Why might human impacts in the Faroes have been limited? Insights from Iceland	272
<i>An example from south Iceland: identifying the differences in environmental trajectories between the farms of Mörk and Dalur</i>	272
<i>An example of contrasting environmental trajectories between adjacent farms in the Mývatnsveit region, north Iceland</i>	276
8.4. Comparisons between the Faroe Islands and Greenland	281
Are there comparisons between the environments and subsistence practices and impacts in the Faroe Islands and Norse Greenland?	281
<i>Similarities between the scale of settlements and population in the Faroe Islands and Greenland</i>	281
<i>Similarities in the pre-settlement environments of the Faroe Islands and Greenland</i>	282
<i>A comparison of resource utilisation in the Faroe Islands and Greenland</i>	283
Why might trajectories in the Faroes and Greenland be different?	284
<i>Differing patterns of conflict and goals and aspirations between the Greenland and Faroese Norse</i>	284
<i>To what extent does climate matter with regards to differences in cultural and environmental trajectories in the North Atlantic?</i>	286

<i>When climate doesn't matter: a comparative example of cultural collapse from south east Polynesia</i>	287
8.5. Chapter conclusions	290
Comparison of approaches to adaptation on the North Atlantic Islands	290
Were outcomes on the Faroe Islands, Iceland and Greenland inevitable?	291
Chapter summary	293
Chapter 9: Conclusions: Under what circumstances do people put unsustainable demands on island environments?	294
Summary	294
Implications of site-specific research in the Faroe Islands	296
Implications of inter-island comparisons in the North Atlantic	297
Implications of the thesis for the fundamental issues of islands and human impact	300
Appendix A: Additional archaeological data	304
Sandoy archaeological structures and GPS coordinates	304
Appendix B: Interview data	310
Interview framework	310
Notes from interviews	313
Notes from interview with Gunnar Bjarnarsson (GB): 28/04/2006	313
Additional notes from second interview with GB: 04/05/06	318
Notes from interview with Joannes Johannessen (JJ): 02/05/06	318
Notes from interview with Johan Petur (JP): 01/05/06	323
Notes from interview with Petur Clementson (PC): 02/05/2006	326
Interview transcripts	328
Transcription of interview with Gunnar Bjarnarsson (GB): 28/04/2006	328
Transcription of interview with with Joannes Johannessen (JJ): 02/05/06	348
Appendix C: Icelandic stratigraphic and sediment accumulation rate data	364
Methodological summary	364
Appendix D: Papers arising from the thesis	375
References	376