Per Persson, Felix Riede, Birgitte Skar, Heidi M. Breivik & Leif Jonsson (eds.). *Ecology of Early Settlement in Northern Europe: Conditions for Subsistence and Survival*. 2018. 490 pages, numerous colour and b&w illustrations. Sheffield: Equinox; 9781781795156 hardback £135.

Kjel Knutsson, Helena Knutsson, Jan Apel & Håkon Glørstad (eds.). *Technology of Early Settlement in Northern Europe: Transmission of Knowledge and Culture*. 2018. 330 pages, numerous colour and b&w illustrations. Sheffield: Equinox; 9781781795163 hardback £100.

Hans Peter Blankholm (ed.). *Early Economy and Settlement in Northern Europe: Pioneering, Resource Use, Coping with Change*. 2018. 418 pages, numerous colour and b&w illustrations. Sheffield: Equinox; 9781781795170 hardback £125.

This three-volume publication presents an up-to-date overview on the human colonisation of Northern Europe at the Pleistocene-Holocene transition in Scandinavia, the Eastern Baltic and Great Britain. Volume One, *Ecology of Early Settlement in Northern Europe*, is a collection of 17 articles, including an introduction focussing on subsistence strategies and technologies, ecology and resource availability and demography in relation to different ecological niches. It is structured according to three geographical regions, the Skagerrak-Kattegat, the Baltic Region and the North Sea/Norwegian Sea, whilst its temporal focus is Late Glacial and Postglacial archaeology, *ca*. 11000-5000 cal BC. These regions are particularly interesting given the long research history, which goes back as far as the 19th century (see Gron and Rowley-Conwy 2018) and the numerous environmental changes that have taken place throughout the Holocene; the presence of ice until *ca*. 7500 cal BC, isostatic rebound alongside sea-level rise, and the formation of the Baltic Sea (Chapter 1), all of which have contributed to the preservation of outstanding archaeology.

Section One commences with a contribution by Jonsson (Chapter 2) that examines resource availability. The reader is initially provided with essential background information regarding the environmental setting before a synthesis of the available animals. Jonsson critiques the re-analysis of Huseby Klev by Boethius (see Chapter 5) in which the differences in the faunal assemblages from the “three distinct chronological phases” (p. 30) are explained by differences in “deposition, preservation and excavation” (p. 33). In Chapter 3, Schmitt argues that Central Bohuslän was a “hub” for the colonisation of Western Scandinavia, which promoted travel. Cziesla (Chapter 4) argues for seal hunting within the riverine systems of Northern Europe during the Final Palaeolithic. By collating published data on large barbed points (i.e. harpoons) alongside the so-called Lyngby axes, and cataloguing artistic occurrences of seals and their remains, a compelling case for “Seal-hunting on the North European Plain” (p. 78) is put forward. Boethius (Chapter 5) re-examines the faunal assemblage from Huseby Klev - one of the oldest and best-preserved assemblages in Northern Europe - to investigate the subsistence strategies of the pioneer settlers. Analysis of this assemblage reveals a temporal change from marine-mammal hunting to fishing over the course of occupation, which was argued to have been the result of a marine-mammal population collapse linked to overexploitation. The NISP data is a very useful contribution to the wider scientific community. Mansrud and Persson (Chapter 6) evaluate faunal remains, bone implements and settlement patterns to assess the colonisation of the Northern and Eastern Skagerrak. They demonstrate that “a broad spectrum of resources” (p. 154) were exploited during the Early Mesolithic, shifting to fishing and marine mammal hunting in the early Middle Mesolithic and fishing during the later Middle Mesolithic. In Chapter 7, Mjærum combines faunal, lithic and structural data from 21 recently excavated sites, showing that elk hunting was undertaken from the Middle Mesolithic to the Middle Ages in the Røytjønna area of Norway. Utilising a dataset of 101 radiocarbon measurements on calcined remains, Persson (Chapter 8) corroborates the previously published model of inland settlement development established by Boaz (1999), though he extends the temporal range to include the Early Mesolithic.

Section Two begins with a contribution by Hallgren (Chapter 9) on a lithic assemblage recovered from Kanaljorden in Central Sweden; the site is renowned for the disarticulated human crania that were found on stakes, recently featuring in this journal (Gummesson *et al*. 2018). Pettersson and Wikell (Chapter 10) provide a summary of a number of seal-hunting stations, located on islands. Interestingly, the excavations revealed so-called “blubber concrete”, interpreted as the remnants of a hearth and perhaps the earliest evidence “of heating with animal oil” (p. 255) in the world. In Chapter 11, Apel and Storå apply a behavioural ecology approach to predict the subsistence strategies of the first peoples of the island of Gotland. Boethius (Chapter 12) reconsiders the importance of aquatic resource exploitation during the Early Mesolithic of Southern Scandinavia. Using the site of Norje Sunnansund as a case study, he argues that over 48 tonnes of fish were caught and processed, enough to support around 100 adults for up to three years. Nilsson *et al*. (Chapter 13) outline the recent investigations undertaken in the Haväng area of South-eastern Sweden, which have yielded the earliest stationary fishing structures in the region.

Moving north and west, Section Three starts with a contribution by Svendsen (Chapter 14) highlighting the importance of aquatic resource exploitation, in particular seal and reindeer. Rosvold and Breivik (Chapter 15) report on the analysis of a large adult male bearded seal (*Erignathus barbatus*) that was discovered in the Trondheim Fjord area nearly a century ago. Despite not being anthropogenic, it is the only Postglacial example in Northern Europe, and thus adds a further species to the available resource spectrum. Bringing Volume One to a close, Wicks and Mithen (Chapter 17) describe Fiskary Bay, one of the earliest Mesolithic sites in Western Scotland, dating to *ca*. 9200-8200 cal BC where excavations yielded important organic remains that are generally scarce in an Early Mesolithic context in the UK.

Volume One is extremely well written, and a much sought after publication for anyone studying Early Mesolithic subsistence strategies, both for the new research presented and the thought provoking debates. For the most part the figures are produced to an extremely high standard but it is a shame that some are not of a higher resolution, especially given the volume’s cost. The inclusion of radiocarbon measurements in several contributions is extremely beneficial for anyone wanting to re-analyse the data in the future. Unfortunately however, some of the contributions lack comparison with the wider European literature, whereas the inclusion of ethnographic analogous and experimental archaeology would equally improve the volume. Having said that, the volume makes a lot of literature accessible for the wider community through translation, particularly Norwegian and Swedish, which is highly effective.

Volume Two, *Technology of Early Settlement in Northern Europe,* is a collection of 10 articles on technology, communication and the diffusion of knowledge and culture. It deals with the same spatial and temporal range as Volume One. Apel *et al*. (Chapter 1) start with an overview of the volume and how it came to fruition. Their contribution (and thus the volume) is structured according to three main themes; the theoretical focus, on cultural persistence and evolution, is outlined, followed by a synthesis of the cultural-historical data. Finally, technological analysis is related to the study of society. This overview assists the reader tremendously (especially one who is not a lithic specialist).

In Chapter 2, Manninen *et al*. propose a model for the Postglacial colonisation of Eastern Fennoscandia, utilising available radiocarbon measurements from the earliest habitation sites and consider environmental, artefactual and natural resources. Grużdź (Chapter 3) summarises previous research on the refitting of lithics, and presents the methods of blade production. In order to understand blade production between the Younger Dryas and Preboreal, Berg-Hansen (Chapter 4) discusses the results from dynamic-technological and attribute analysis, chaîne opératoire analysis and refitting from 20 open-air occupation sites. Damlien *et al.* (Chapter 5) utilise radiocarbon results to explore the diffusion of prepared-platform pressure blade technology, and conclude that there were probably several routes of colonisation. Adamczyk (Chapter 6) discusses the results of recent research on lithic technology and raw material economy. Based on the analysis of three assemblages, alongside experiments, it is demonstrated that at least two microblade methods were present in the Wolin Island region of North Western Poland. In Chapter 8, Eymundsson *et al*. explore the production of axes from the Early to Late Mesolithic in the Oslo Fjord region, including an overview of axe morphology and useful site-specific examples. In the penultimate contribution, David and Kjällquist (Chapter 9) describe the recent analysis of worked bone pieces from the site of Norje Sunnansund. Finally, Guinard (Chapter 10) demonstrates that pressure blade technology diffused along the waterways of Eastern Sweden into Southwestern Scania and Denmark.

Whilst some new research is presented, I feel that this volume is somewhat confused and rather descriptive. Several contributions do not draw out the implications of the analyses undertaken. Unfortunately the time ranges are inconsistently expressed throughout, with both cal BP and cal BC reported. However, the editors should be given credit for bringing the collection of articles together. The English language on the whole is excellent, though some of the figures are poor.

Volume Three, *Early Economy and Settlement in Northern Europe*, is a collection of 13 articles examining the economy and settlement of Early Postglacial pioneers. The volume poses the following questions in Chapter 1: Why, from where and how did Early Postglacial pioneers come into Northern Scandinavia? How did a maritime economy emerge? How did these peoples cope with abrupt climatic events? The volume is loosely structured geographically, from north to south, and deals with Early to Middle Mesolithic archaeology, *ca.* 9500-6000 cal BC. Geographically it primarily focuses on Norway, which is particularly interesting given the range of ecological settings from temperate regions in the south to subarctic and arctic areas in the north.

Kleppe (Chapter 2) provides a regional overview. Despite a research and/or preservation bias on Norway-Finnmark, the disparity of radiocarbon results, and emphasis on coastal localities, he argues that colonisation took place over a period of *ca*. 500 years from *ca*. 9550-9050 cal BC before a western migration period. In Chapter 3, Gjerde and Skandfer present new research on the Tønsnes Peninsula in Northern Norway, which has revealed the presence of five house-pits dating to the Middle Mesolithic. Based on their size and construction it is suggested that the site(s) were occupied during the winter, and, given their location at the promontory of the Grøtsundet sound, could have promoted the transfer of knowledge and resources. Blankholm (Chapter 4) discusses the use of the Grosseto Predictive Modelling Method alongside field survey to aid in the detection of sites along the Varanger Peninsula coastline. These methods led to the discovery of 54 new sites in six days. Östlund (Chapter 5) provides an overview of pioneer settlement in Northern Sweden. Due to the presence of the Fennoscandian Ice Sheet, the migration of peoples into this area took longer. Focussing on the three oldest sites in Sweden, Aareavaara, Kangos and Dumpokjauratj, he shows that colonisers came from both the south and east. Rankama and Kankaanpää (Chapter 6) discuss the importance of the site of Sujula in Finnish Lapland. Based on a typological analysis of the lithics, they show that the technology has its roots in Northwestern Russia and the Baltic regions. Fretheim *et al*. (Chapter 8) outline the discovery of an Early Mesolithic dwelling at the site of Mohalsen 2012-II. The site is located on the island of Vega in Norland County, and dated to *ca*. 8300 cal BC. Comparison with previously published data demonstrates that the structure at Mohalsen 2012-II represents “a form of task group station rather than an ordinary Early Mesolithic family campsite”, and “was probably intended for repeated occupation, making it at least semi-permanent” (p. 223) - an interpretation that has recently been demonstrated elsewhere, for instance Star Carr in the United Kingdom (Taylor *et al*. 2018). Åstveit (Chapter 9) provides a regional overview of the Early Mesolithic (a period of over 1000 years). Focussing on Western Norway, it is demonstrated that the area was “characterised by dynamic environmental changes” (p. 231). In Chapter 10, Bang-Andersen synthesises five decades of research in Southwestern Norway to show that a westward migration of peoples from the Bohuslän coast of Sweden took place between *ca*. 9960 and 9270 cal BC. Sigrid Alræk Dugstad (Chapter 11) presents the results from recent excavations on the island of Hundvåg, which recovered five sites within an area of *ca*. 1500 m2. The distribution of artefacts suggests a complex social organisation existed during the Early Mesolithic. Damlien and Solheim (Chapter 12) provide a regional synthesis of the Early to Middle Mesolithic in Eastern Norway, based on recent excavations in the region. Drawing Volume Three to a close, Nyland (Chapter 13) summarises a recently investigated site, Pauler 2, in South-eastern Norway. Here, three flint scatters associated with hearths were discovered yielding a total of *ca*. 3700 artefacts.

Volume Three is extremely well written and edited. The inclusion of radiocarbon results in eight contributions is extremely useful for the wider scientific community. For the most part, the figures are to a very high standard, although some of the output files from OxCal were pixelated. Again there was some inconsistency in the use of radiocarbon measurements in which both cal BP and BC were reported. That being said, Blankholm has done a tremendous job bringing these diverse and interesting articles together, all of which for the most part present new data.

**References**

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