

UBAS



University of Bergen Archaeological Series

Soapstone in the North Quarries, Products and People 7000 BC – AD 1700

Gitte Hansen and Per Storemyr (eds)



UNIVERSITETET I BERGEN

9
2017

Soapstone in the North
Quarries, Products and People
7000 BC – AD 1700

UBAS

University of Bergen Archaeological Series



Soapstone in the North
Quarries, Products and People
7000 BC – AD 1700

Gitte Hansen and Per Storemyr (eds)



UNIVERSITY OF BERGEN

9
2017

UBAS – University of Bergen Archaeological Series 9

Copyright: Authors, 2017

University of Bergen
Bergen University Museum and
Department of Archaeology, History, Cultural Studies and Religion
P.O. Box 7800
NO-5020 Bergen
NORWAY

ISBN: 978-82-90273-90-8 UBAS 9

UBAS: ISSN 0809-6058

Editors of this book

Gitte Hansen

Per Storemyr

Editors of the series UBAS

Nils Anfinset

Randi Barndon

Knut Andreas Bergsvik

Søren Diinhoff

Lars L. Forsberg

Layout

Beate Helle, Bergen University Museum

Cover: Arkikon, www.arkikon.no

Print

07 Media as

Peter Møllers vei 8

Postboks 178 Økern

0509 Oslo

Paper: 100 g Arctic volume white

Typography: Adobe Garamond Pro and Myriad Pro

Preface

This book has been a long time in the making. It is an outcome of the five Norwegian University Museums' joint research programme *Forskning i Felleskap* (FIF, 2010–2015), supported by the Research Council of Norway. FIF kindly facilitated a number of workshops and meetings between archaeologists, geologists and craftspeople, all with a common interest in premodern soapstone quarrying and use. The result is the chapters of this book, which are based on studies carried out over the last two decades and, for the most part, are published scientifically for the first time. We very much thank the authors for participating in this venture. We also thank several colleagues – archaeologists, geoscientists and craftspeople – that assisted the editors in peer-reviewing the chapters: Irene Baug, Birgitta Berglund, Laura Bunse, Poul Baltzer Heide, Richard Jones, Tor Grenne, Torbjørn Løland, Therese Nettet, Astrid J. Nyland, Lars Pilø, Kevin Smith, Lars F. Stenvik, Frans Arne Stylegard and Stephen Wickler; we are very grateful for the job you have done. Not least, thanks go to Tromsø University Museum, NTNU University Museum (Trondheim) and the University Museum of Bergen for their economic support in publishing the book.

Bergen/Hyllestad, Spring 2017

Gitte Hansen

Per Storemyr

Contents

Preface	5
A Versatile Resource – The Procurement and Use of Soapstone in Norway and The North Atlantic Region <i>Gitte Hansen and Per Storemyr</i>	9
Soapstone Quarrying, a Stoneworker’s Approach <i>Eva Stavsøien</i>	29
Soapstone in Northern Norway: Archaeological and Geological Evidence, Quarry and Artifact Survey Results <i>Stephen Wickler, Ingvar Lindahl and Lars Petter Nilsson</i>	41
Multi-ethnic Involvement? Production and Use of Soapstone in Northern Norway <i>Laura Bunse</i>	59
Mesolithic Soapstone Line-sinkers in Western Norway: Chronology, Acquisition, Distribution, Function and Decoration <i>Knut Andreas Bergsvik</i>	73
The Sandbekkdalen Quarry, Kvikne: A Window into Early Iron Age Soapstone Exploitation in Norway <i>Tor Grenne, Bodil Østerås and Lars F. Stenvik</i>	93
Reconstructing a Medieval Underground Soapstone Quarry: Bakkaunet in Trondheim in an International Perspective <i>Per Storemyr and Tom Heldal</i>	107
Trade and Hierarchy: The Viking Age Soapstone Vessel Production and Trade of Agder, Norway <i>Torbjørn Preus Schou</i>	133

Slipsteinberget Soapstone Vessel Quarry. Home Production or Professional Craft?	153
<i>Bodil Østerås</i>	
Bakestones – Production and Trade in the Middle Ages	165
<i>Irene Baug</i>	
From Numeric Data to Cultural History – A Typological and Chronological Analysis of Soapstone Vessels from the Medieval Bryggen Wharf in Bergen, Norway	185
<i>Hilde Vangstad</i>	
The Soapstone of Norse Greenland	207
<i>Mogens Skaaning Høegsberg</i>	
From Homeland to Home; Using Soapstone to Map Migration and Settlement in the North Atlantic	225
<i>Amanda Forster and Richard Jones</i>	
Soapstone Vessels from Town and Country in Viking Age and Early Medieval Western Norway. A Study of Provenance	249
<i>Gitte Hansen, Øystein J. Jansen and Tom Heldal</i>	
From Soapstone Quarries to Churches: Control, Ownership and Transport Along the Helgeland Coast in North Norway	329
<i>Birgitta Berglund, Tom Heldal and Tor Grenne</i>	
The Building Stones from the Vanished Medieval Church at Onarheim, Tynes, Hordaland County in Western Norway: Provenancing Chlorite Schist and Soapstone	359
<i>Øystein J. Jansen and Tom Heldal</i>	
Cistercian Soapstone. Production and Delivery of Building Material from Lyse Abbey to Bergen in the 13th century	391
<i>Alf Tore Hommedal</i>	
List of Authors	405

Stephen Wickler, Ingvar Lindahl and
Lars Petter Nilsson



Soapstone in Northern Norway: Archaeological and Geological Evidence, Quarry and Artifact Survey Results

Archaeological research on the extraction, distribution and utilization of soapstone artifacts in northern Norway has been limited, but systematic geological documentation of soapstone exposures that includes quarry activity provides an opportunity to expand archaeological insights into soapstone provenance and extraction. This article brings together geological and archaeological evidence related to soapstone use in northern Norway to the north of Saltfjellet in Nordland in order to evaluate the current state of knowledge for this resource. The initial section provides a chronological overview of archaeological evidence for soapstone use and associated site contexts, including the distribution of artifact types in time and space. This is followed by a presentation of soapstone geology from a historical perspective focusing on quarry documentation. Quarry evidence is reviewed and results from recent collaborative geological and archaeological surveys presented within a framework of relevant research problems. The final section outlines potential avenues for future interdisciplinary soapstone research.

Introduction

The role of soapstone in northern Norway has received limited attention in the archaeological literature and the region has also played a marginal role in attempts to synthesize existing knowledge of this material at the national and international level. Although soapstone artifacts are plentiful in northern Norwegian archaeological sites from the late Iron Age up until the recent historical period, a regional synthesis is still lacking. As was the case with Norwegian soapstone research in general (Shetelig 1912), there was an early focus on the typology of soapstone vessels during the Iron Age linked to trade networks and chiefly control of circulation (see Risbøl 1994). Arne Skjølsvold (1961, 1969) was the first to emphasize the importance of quarry sites and artifact production during the Iron Age, although maintaining the traditional focus on vessels. Sigurd Grieg (1933) systematized the classification of medieval soapstone vessels based on formal attributes. More recent studies such as those by Siri M. Lossius (1977) and Hilde Vangstad (2003, this vol.) have provided an increasingly robust chronology from reliable archaeological site contexts for this period. Although soapstone research has led to an increased awareness and understanding of this resource since the Stone Age, the geographical focus remains on southern and western Norway. Broader studies that have included northern Norway are characterized by a lack of firsthand knowledge and superficial treatment of what

has been considered a peripheral region.

This article addresses the current geographical imbalance by providing a general status report for soapstone in northern Norway within the district administrated by Tromsø University Museum that extends from Saltfjellet in the Helgeland region of Nordland County northward through Troms and Finnmark counties to the Russian border. The initial section presents a general archaeological overview of soapstone finds from the Stone Age to the recent historic period and their sociocultural context. This is followed by an examination of soapstone resources and their exploitation over time in the region from geological and archaeological perspectives. Soapstone evidence is reviewed and challenges associated with quarry documentation are discussed. Results from recent collaborative geological and archaeological quarry surveys are presented and the final section raises topics for future soapstone research.

Archaeological soapstone evidence from northern Norway

In order to examine the distribution of soapstone artifacts and their cultural contexts, data from the portion of northern Norway within the administrative district of Tromsø University Museum that appear in the national database for archaeological finds (*gjenstandsbasen*) was utilized. This database is administered by MUSIT (museum IT), a collaborative initiative aimed at managing and disseminating digitized collections in the five University Museums of Norway. Although all archaeological finds held in the collections at Tromsø University Museum should be registered in the database, the quality and reliability of the information that is available varies to a considerable degree and cannot be accepted uncritically. However, it does provide coarse grained information that is deemed adequate for the broad overview presented here.

Early soapstone use (Stone Age to early Iron Age)

Although a variety of soapstone artifacts from the Stone Age has been documented in Norway, both the quantity and types of finds from northern Norway are limited (Figure 1). Of the 27 finds from fairly secure contexts in the national database, a majority are fishing line sinkers from the late Stone Age. There is also an atypical boat-shaped battle axe from the late Neolithic period (2800–2350 BC) found at Storsteines near Tromsø (Ts 1648) that may be associated with a grave (Valen 2007:129).

Bronze Age soapstone artifacts are limited to bronze casting molds and thin-walled soapstone vessel sherds from Troms and Nordland counties. Bronzes or molds of Nordic Bronze Age type are present in 15 sites from southern Troms and further south. Twelve of the site localities have been interpreted as votive finds and two as graves (Arntzen 2013). Three sites with soapstone molds are within Tromsø Museum's district. The northernmost location is a settlement site at Sandvika near Tromsø where a soapstone celt mold and a thin-walled soapstone vessel sherd were found during test excavations in 1994. Additional sherds from the same soapstone vessel were recently excavated at Sandvika by Johan Arntzen (2015). The other soapstone molds are from Grøtavær on Grytøya Island in Troms (Munch 1966) and Kolvika on the island of Vestvågøy in Nordland. Two stray finds of soapstone bronze casting molds dating to the early Metal Age (second millennium BC) have been found at Jarfjord, Sør-Varanger, Finnmark. These are interpreted as depot finds from the textile ceramic period with similarities to bronzes from central Russia (Olsen 1994:125–126).

Soapstone used as a tempering agent is associated with northern Norwegian 'asbestos ceramics', a term applied to a number of pottery types used during the late Stone Age and early Metal Age. Two of the most important and widespread, yet geographically distinct, ceramic types are referred to as Risvik and Kjelmøy (Jørgensen and Olsen 1988). Risvik ceramics are commonly associated with agri-

cultural settlement and restricted to sites along the outer coast in Troms and Nordland. However, it should be emphasized that these typological categories are open to debate and mask a substantial degree of internal variation that has yet to be adequately investigated. Kjelmøy ceramics are the most abundant and geographically widespread asbestos pottery type and date to the Kjelmøy phase of the early Metal Age (900–0 BC). Although most common in Finnmark, they extend along the entire coast of northern Norway within Tromsø Museum's district. In contrast to Risvik ceramics, they are associated with non-agricultural settlement. A distinct subgroup of Kjelmøy ceramics, the so-called shell and mica tempered ceramics, only occur in a restricted area of Sør-Varanger in eastern

Figure 1. Distribution of soapstone artifacts by site type and chronological period in northern Norway.

Site type	Finnmark	Troms	Nordland	Total
Occupation site	141	172	1248	1561
Urban site	--	--	139	139
Farm mound	2	19	85	106
Grave site	2	20	62	84
Boathouse	1	--	1	2
Soapstone quarry	--	5	--	5
Other / unknown	109	327	909	1345
TOTAL	255	543	2444	3242
Chronological Period	Finnmark	Troms	Nordland	Total
Recent	100	35	48	183
Recent / Medieval	8	132	340	480
Medieval	21	178	939	1138
Medieval / Iron Age	--	33	273	306
Iron Age / late Iron Age	1	60	595	656
Early Iron Age	--	7	18	25
Bronze Age / early Metal Age	2	3	8	13
Stone Age	10	4	13	27
Unknown	113	91	210	414
TOTAL	255	543	2444	3242

Finnmark. At the sites of Kjøøy and Kjelmøy, they account for nearly two-thirds of the ceramic assemblages (Jørgensen & Olsen 1988:24) and always occur in the same stratigraphic contexts as asbestos tempered Kjelmøy ceramics. A small percentage of these ceramics are tempered with crushed soapstone and some sherds also have mica temper mixed with the soapstone. Sherd thickness ranges from 6–8 mm and a flat-bottomed vessel has been identified (Olsen 1984:37). Recent excavation of occupation sites from the late Iron Age to early Medieval period in Pasvik has also documented soapstone tempered Kjelmøy ceramics below the main cultural deposit (Hedman & Olsen 2009:11).

Lars Pilø (1989) revised Håkon Shetelig's 1912 chronology for early Iron Age soapstone vessels and confirmed that production began in the late Bronze Age (700–900 BC) and ceased at the end of the pre-Roman Iron Age at the close of the first millennium BC when soapstone vessels are replaced by ceramics. Pilø (1989:97–98) also notes a morphological similarity between his soapstone vessel type 2 and late asbestos tempered ceramics in northern Norway. Roger Jørgensen (2011) comments on the close similarity in form between the early thin-walled soapstone vessel type and asbestos tempered Risvik ceramics, which have been found at 36 sites between North Helgeland in Nordland and northern Troms. According to Jørgensen (2011:123), the association between soapstone vessels and Risvik ceramics indicates a cultural orientation to the south. Dag Magnus Andreassen (2002) suggests that the form of Risvik ceramics was transferred to thin-walled soapstone vessels as asbestos ceramics drop out and soapstone vessels emerge in the pre-Roman Iron Age.

Arntzen (2013) has documented the distribution of thin-walled soapstone vessels and asbestos ceramics in northern Norway from the late Bronze Age and pre-Roman Iron Age in relation to agricultural settlement. At present there are 20 sites with soapstone vessels, 40 sites with asbestos tempered ceramics, and eight sites where both ceramics and soapstone vessels occur. Nineteen settlement sites with soapstone vessels are found in Nordland and eight of these are within Tromsø Museum's district. The only thin-walled soapstone vessel evidence in Troms is from Sandvika. There is no evidence that thin-walled soapstone vessels continue after the pre-Roman Iron Age in northern Norway.

The Sandbekkdalen soapstone quarry site at Kvikne in Hedmark, central Norway is located in a remote mountainous area nearly 1000 m ASL, but it was of central importance in the early pre-Roman Iron Age with apparent abandonment by the end of the pre-Roman Iron Age (Skjølvoid 1969; Østerås 2004; Grenne et al. this vol.). Archaeological investigations since the late 1960s have confirmed large-scale vessel production at the quarry. At least two types of vessels were produced, a spherical vessel and a bowl form, and it is likely that vessels were finished or nearly finished at the quarry. The complete absence of early soapstone vessels from the central regions of southeastern Norway suggests that Kvikne supplied the population of Trøndelag north of Hedmark County (Pilø 1989:96). Considering the limited quantity of early thin-walled soapstone vessels in northern Norway, from 19 locations in Nordland and a single site in Troms, the possibility that finished vessels from Kvikne were also being exported northward should be considered. However, a recent geochemical provenance study of soapstone vessel sherds from four pre-Roman Iron Age to late Bronze Age archaeological site locations in Nordland County by NGU geologist Tor Grenne (pers. comm.; Grenne et al. this volume) confirms that the material did not originate from the Sandbekkdalen quarry. Preliminary results of a provenance study using X-ray fluorescence (XRF) elemental analysis suggest a common source for the sherd samples in the southern Helgeland region of Nordland. Soapstone sherds from three site locations; Bakkan av Bø in Vesterålen (Ts 13755.1), Øvreværet in Svolvær, Lofoten (Ts. 11297.8) and Våg in Gildeskål (Ts. 5990a) most closely resemble soapstone sources along the Helgeland coast (see Berglund 1999, 2015) while a sherd from Bøstanden on Engeløya in Steigen is most similar to the Bjørnå quarry site to the south of Mosjøen (Tor Grenne: pers. comm.).

There is no evidence for the production of soapstone vessels during the Roman Iron Age and Migration period in Norway, although objects such as spindle whorls and loom weights were being produced in northern Norway and elsewhere (Pilø 1989: 93). Soapstone was also used as a tempering agent in bucket-shaped pots during the later Roman Iron Age and Migration period (AD 350–575). A detailed analysis of Norwegian bucket-shaped pots by Asbjørn Engevik jr. (2008, 2010) confirms that a large majority of the vessels have either asbestos (45%) or finely crushed soapstone (33%) temper. A much lower number (6%) have a combination of the two temper types and asbestos is also known to occur as a natural component in clay sources from soapstone quarry sites (Engevik 2008). Engevik (2010:233–236) analyzed 1127 bucket-shaped vessels from throughout Norway, including Nordland (n=61) and Troms (n=19), revealing a markedly uneven temper distribution with asbestos dominant from Sogn and Fjordane and northward, while soapstone is most common from Hardangerfjord and southward in western Norway. The only published petrological microscopy analysis of bucket-shaped pots, reveals a high density of asbestos temper ranging from 65–80% (Kleppe & Simonsen 1983).

Soapstone chronology and site types

A review of soapstone finds with a known age (n=2828) from Tromsø Museum's district in the national artifact database (Gjenstandsbasen)(Figure 1) reveals a predominance of medieval material (over 40%) followed by the late Iron Age (23%) and post-Reformation/Recent period (6.5%). Only

2.2% of the dated finds predate the late Iron Age.

The distribution of artifacts by site type (Figure 1) indicates that occupation sites account for nearly all of the soapstone from known contexts (95%), including farm mounds (5.6%) and urban sites (7.4%). Farm mounds are a characteristic site type in northern Norway where they begin to appear in significant numbers towards the end of the late Iron Age. The quantity and size of these sites increase dramatically during the Medieval period with occupation continuing up until the recent historic period. The only site classified as 'urban' is the medieval settlement of Vágur in the Lofoten Islands. Site types of minor importance include boathouses and a single soapstone quarry in Troms (Talgrotholla) where unfinished artifacts were collected.

Soapstone artifact types

The distribution of soapstone artifact types in northern Norway from the national database is presented in Figure 2. All artifact types represented by more than 10 finds are listed individually in this table. As shown in Figure 1, only a small fraction of the finds predate the late Iron Age and most are from the Medieval period. A majority of the artifact types during this period exhibit only minor variations in form through time and are therefore treated collectively in the following discussion. Soapstone vessels are the dominant artifact category and account for 43% of all finds of known type. Most of this material consists of small sherds and very few complete or nearly complete vessels have been found. Specialized vessel types that can be distinguished from the general category of bowls or trough-shaped vessels used for cooking and as containers include vessels with a handle classified as ladles (2.5%) and lamps for marine mammal and fish oil (4.6%).

Analysis of soapstone artifacts from securely dated archaeological contexts in northern Norway has been minimal. The most detailed analyses have involved soapstone from late Iron Age and medieval settlement at Borg in Lofoten. The Iron Age residential structures of Borg I and II produced 140 soapstone artifacts described in Johansen et al. (2003). The medieval residential structure at Borg III occupied from AD 1000–1300 produced 191 soapstone finds, including vessel sherds, loom weights, spindle whorls, and sinkers (Brodshaug 2005; Brodshaug & Solli 2006; Solli 2006). Vessel types distinguished in the soapstone assemblage included a larger group of type A and a few type B bowl shaped vessels using types defined by Lossius (1977:23). The largest group, however, consisted of crude vessels of coarse grained material suggesting local production (Brodshaug & Solli 2006:296), although no soapstone sources are known in Lofoten.

Apart from vessels, soapstone artifacts associated with textile production are the most widespread and numerous. This category includes spindle whorls (23.7%) and loom weights (7.6%), although loom weights are often difficult to distinguish from fishing net weights due to similarities in size and appearance. Both artifact types also include reworked vessel sherds.

Twenty soapstone forge-stones have been found in Tromsø Museum's district. They provide important supplemental evidence for the presence of smithies, only three of which have been excavated in northern Norway from the late Iron Age and Medieval period. Roger Jørgensen (2012) provides a comprehensive overview of forge-stone distribution in relation to blacksmith activity in northern Norway. The two main types of forge-stones, cylindrical and shield-shaped, served to increase the distance between the bellows and forge. Soapstone, which is heat-resistant and easily worked, is an excellent material for this purpose. Soapstone molds are limited in number (1.9%) but also an important artifact category associated with metalworking ranging from early Metal Age (n=2) and Bronze Age (n=3) bronze casting molds to more plentiful casting molds for a range of objects (buttons, ornaments, etc.) from the Medieval to Recent period (n=27).

Worked slabs of soapstone (*helle*) are a minor artifact category (1.3%) which may include

Figure 2. Soapstone artifact types from northern Norway.

Artifact type	Total
Vessel (<i>kar, gryte</i>)	980
Oil lamp (<i>kole</i>)	103
Ladle (<i>øse</i>)	57
Spindle whorl (<i>spinnenhjul</i>)	535
Loom weight (<i>vevlodd</i>)	172
Forge-stone (<i>avlstein</i>)	18
Mold (<i>støpeform</i>)	42
Slab (<i>helle</i>)	30
Fishing sinker (<i>fiskesøkke</i>)	135
Oval line sinker (<i>jarstein</i>)	101
Sickle-shaped sinker (<i>dorgesøkke</i>)	45
Net weight (<i>garnsøkke</i>)	17
Anchor stone (<i>senkestein</i>)	16
Minor artifact type / unknown	991
TOTAL	3242

building stone, grave markers, stove parts, bakestones (*baksteheller*) and other objects. Bakestones first appear in the Medieval period and although a significant number of these artifacts from northern Norway are classified as soapstone in the national database, this has not been confirmed by geological identification. A majority of bakestones were manufactured from chlorite-rich talc-bearing green schist (chlorite schist) for which known quarry sites are restricted to three locations; Øye in Sør-Trøndelag (Heldal & Storemyr 1997; Storemyr & Heldal 2002; Lundberg 2007; Storemyr et al. 2010), Rennesøy in Rogaland and Ølve-Hatlestrand in Sunnhordland, the latter representing the largest and most important location with production dating back to c. 1030–1100 (Baug 2015, this vol.). Bakestone quarries are also associated with extraction of medieval building stone (Baug 2015, this vol.; Jansen & Heldal this vol.). Although soapstone bakestones were fairly common in the twelfth century, they were replaced by those made from chlorite schist in the later medieval cultural

deposits at Bryggen in Bergen (Tengesdal 2010). The distribution of bakestones in northern Norway is concentrated along the coast and they are only found in interior areas to a minor degree (Baug 2015:38). No bakestone quarries have been identified in northern Norway and the potential source(s) of this material remain undocumented.

The collective category of fishing-related weights and sinkers accounts for a significant proportion of the soapstone artifacts in northern Norway (13.9%). Line sinkers make up most of this material with subcategories for large oval sinkers (*jarstein*) and smaller sickle-shaped sinkers (*dorgesøkke*) identified in the national database (see Helberg 1993; Olsen 2004). A category of heavy sinkers or possible anchor stones (*senkestein*) is also identified. Net weights are usually no more than a piece of soapstone with a perforation and therefore difficult to classify. As such they represent a residual category that can be difficult to distinguish from other artifact types.

In order to assess the degree to which unfinished soapstone artifacts occur and examine their distribution by site type, an overview of roughouts/blanks is presented. Of the 60 unfinished artifacts found in the national database, nearly all of those identifiable by type are either fishing line sinkers (n=14) or spindle whorls (n=15). Surprisingly few unfinished vessels have been identified (n=4). Nearly all unfinished artifacts identified by site type are from occupation sites, including a few from farm mounds. Artifact roughouts, including a bowl with handle, oil lamp and fishing line sinker, were collected from the soapstone quarry Talgrøtholla in Kvæfjord, Troms (Ts. 6554).

Soapstone geology in northern Norway

Soapstone is not a well-defined rock type in geological terminology, but rather a term used for a 'soft rock'. Different types of soapstone have also been mapped and exploited in the northernmost part of Norway. Today work is proceeding to more precisely define the geological parameters for rock

defined as soapstone. Soapstone will, however, still continue to be a term for 'soft rock' within the stone industry context.

Many different names have been used for this soft rock through the years (Helland 1893). The importance of soapstone up until modern times may be traced on topographic maps through place names such as *esje*, *gryte*, etc. Over the course of time and sometimes through the efforts of language consultants, names have been changed such as *esje-* to *hesje-* or *hes-* and *gryte-* to *grøt-*, and so forth. One example from the Sámi language is the transformation of *esje-* to *asse-* as in the case of Assebakte near Karasjok which translates to 'soapstone mountain'. The soapstone deposit found here may have been exploited by the Sámi, although a recent archaeological survey failed to document evidence of soapstone extraction (see Bunse this vol.). The study of map place names is often a good starting point in the search for potential soapstone deposits which often occur in the general vicinity.

Previous geological work

Amund Helland (1893) presented the first overview of soapstone in northern Norway, listing the use of soapstone from Stolpe in Misvær, Talgrøtholla in Kvæfjord, Nyeng (Talgrøtberget) in Sørreisa, and Voldstranden close to Alta (see also Sommerfeldt 1799). He also suggested the potential use of soapstone at Assebakte on the basis of the place name evidence. Helland's information on deposits in northern Norway is mainly based on evidence from Kraft (1835). Helland (1899, 1905, 1907) briefly mentions activity in stone quarries, including soapstone, in his extensive publication *Norges Land og Folk*.

More recently, the soapstone deposits of northern Norway have been studied for use as dimension stone and a source for talc. This work has led to new and important insights into the use of soapstone both historically and for potential future exploitation. Information on soapstone deposits has been provided in a number of geological reports. Most commonly, soapstone is an alteration product from ultramafic rocks. An overview of bodies in Norway of this type of rock for use in iron smelting; peridotite, dunite and serpentinite, is presented by Ingvar Lindahl et al. (2003). Karlsen and Nilsson (1999) provide an overview of talc deposits in Norway mostly related to talc carbonate rocks altered from ultramafics. Lindahl (2012) presents a comprehensive overview of dimension stone in Nordland, including soapstone. Lindahl and Nilsson (2002) and Nilsson and Lindahl (2005) have described the soapstone deposits of Troms County. Soapstone deposits in Finnmark have been mentioned by Reusch (1903) and studied by Lars Petter Nilsson during the most recent decades (Karlsen & Nilsson 1999). More detailed information is reported in the Geological Survey of Norway (NGU) national natural stone database (<http://geo.ngu.no/kart/mineralressurser>).

Soapstone deposits

Karlsen and Nilsson (1999) provide a classification of Norwegian soapstone deposits focusing on its potential for talc. In the northern part of Nordland and Troms and Finnmark counties, the soapstone deposits can be divided into two main groups. These are the deposits of the Precambrian rocks of Finnmark and the northern part of Troms, and the deposits within the Caledonian Mountain belt (see Figure 3).

During the past decade, unexpectedly large soapstone resources have been discovered in the Linnajavri area in Hamarøy Municipality close to the Swedish border in Nordland. Lindahl and Nilsson (2008) provide a review paper summarizing various aspects of this discovery and follow up work. The process where serpentinised ultramafic rocks, and in a few instances also mafic rocks, are transformed to soapstone may here be studied in even the smallest detail due to the exceptionally good outcrops of the deposits. The Linnajavri area was very remote until the development of hydroelectric

Figure 3. Precursor rocks and soapstone deposits.

Cal = Caledonian PC = Precambrian

Precursor rock type	Age	Type localities (see Figure 4)
Serpentinite from peridotite	Cal PC	Grunnes, Nyeng, Linnajavri area Tillermoen (Kleberberget)
Mg-rich volcanite (komatiite)	PC	Sør-Varanger: Straumdalen and Karasjok: Rievdjnesvadda
Gabbro, pyroxenite	Cal PC	Talgrøtberget, Stolpelia Gourbmet luobbal

power in the 1980s. There is no evidence for previous use of the soapstone although a few personal initials originating from World War II have been carved on a soapstone rock face situated just across the border in Sweden along an important refugee route through the area.

Soapstone quarry documentation

The Geological Survey of Norway (NGU) has systematically mapped many of the soapstone exposures in northern Norway and included information on quarry activity viewed in relation to the economic potential for modern quarrying, although historical use is also documented. The distribution of known soapstone deposits and quarry sites within Tromsø Museum’s district in northern Norway, based in large part on database information from NGU, is shown in the Figure 4 map. Soapstone sources without evidence of quarry activity are listed in Figure 5. Soapstone deposits where quarry activity has either been reported or confirmed are listed in Figure 6. Site data is based on information from geological and archaeological literature, local historical records and literature, and unpublished information that include personal observations. Quarry sites registered in the Norwegian National Cultural Heritage Database (Askeladden) are also indicated. The NGU natural stone database for northern Norway has been regularly updated and documentation of additional quarry sites is anticipated. These are likely to be locations near the coast where minor quarrying took place and earlier historic quarry activity most often undertaken in close proximity to settlements.

Although Helland (1893, 1899, 1905, 1907) collected information related to soapstone quarries in northern Norway during his many travels, the earliest archaeological quarry surveys were undertaken by Harald Egenæs Lund (Lund 1954, 1963, in Skjølsvold 1961:147). These included the Helgeland region of Nordland, Ofoten, and southern Troms (Harstad, Kvæfjord, Gratangen, Dyrøy, inner Senja, and Lenvik). The only soapstone quarry excavation in northern Norway prior to recent work by Laura Bunse (this vol.) was undertaken in 1985 at Remman in Tjøtta, southern Helgeland, Nordland (Berglund 1999). A trench excavated into a spoil heap up to 2.2 m thick produced a radiocarbon date of c. AD 1300 near the base and evidence of quarry use continued up until about 1600. The highest concentration of historic quarry sites in northern Norway occurs in this region and indirect evidence indicates quarry activity since the late Iron Age.

A majority of the quarry sites to the north of Helgeland are concentrated between Saltdal and Sørfold and in the Ofoten region of Nordland, and from Senja southward in southern Troms (see Figure 4 and Figure 6). Of the 12 quarry sites from Nordland within Tromsø Museum’s district, two may have been used in the later historic period, and two have potential for medieval or earlier use. Of the 14 quarry sites recorded in Troms, five recently surveyed locations may potentially have been in use prior to the Reformation. There is only one confirmed quarry site in Finnmark (Straumdalen,



Figure 4. Map of northern Norway with the distribution of soapstone sources and quarry sites. (Graphics: E. Høgtun, Tromsø University Museum).

Sør-Varanger), although there are historical references to potential quarries near Alta and Karasjok. Although lacking evidence for quarrying, human activity at the soapstone exposure on the island of Kjøøya in Sør-Varanger was documented by NGU in 2013. A series of inscriptions interpreted as ownership marks (*bumerker*) have been cut into the soapstone with at least three, and possibly up to five, different designs partially superimposed upon one another. The most distinctive design is a ‘knot’ or *valknute* with three arms and loops on the ends. It is possible that the inscriptions are associated with the Pomor trade carried out between northwest Russia and northern Norway from c. 1740 up until the Russian revolution in 1917.

Research problems related to soapstone production

Given the limited scope of archaeological research related to soapstone quarrying in northern Norway, there exists a broad range of research topics that await investigation. The following section provides a brief assessment of central problems to be addressed and their attendant challenges.

More recent quarrying often obscures earlier activity at quarry sites so that only the most recent phase is visible, although quarry locations may also have shifted over time thus preserving older

Figure 5. Soapstone sources without evidence of quarry activity located within the district administrated by Tromsø University Museum in northern Norway.

Location	Municipality	Source ¹
FINNMARK		
Hamnebuktfjellet	Sør-Varanger	NGU
Leirvåg	Sør-Varanger	NGU
Kjøøya	Sør-Varanger	NGU – Presence of multiple inscribed historic ownership marks (ID 173300)
Holmengrå	Sør-Varanger	Vigerust 1968
Guorbmet luobbal	Karasjok	NGU
Rivdnjesvadda	Karasjok	NGU
Kongelvika	Måsøy	NGU
Kjelvik	Nordkapp	NGU
TROMS		
Brokskard	Tromsø	NGU
Bukkskinnfjellet	Lenvik	NGU
Grøtsteinsberget	Lenvik	NGU
Baltsfjorden	Lenvik	Lindahl & Nilsson 2002
Gryllefjord	Torsken	Nilsson & Lindahl 2005
Finnhaugen	Salangen	NGU
Middagshaugen	Gratangen	NGU
Åmundvika	Gratangen	NGU
NORDLAND		
Klubbvik	Narvik	NGU
Filtind	Ballangen	NGU
Baugvatn øst	Tysfjord	NGU
Linnajavri (province)	Hamarøy	NGU, Lindahl & Nilsson 2008
Veiskidalen	Sørfold	NGU
Veiskilinsa	Sørfold	NGU
Hellarvik	Sørfold	NGU
Djuposen	Fauske	NGU
Skardhamran	Bodø	NGU
Ørfjellryggen	Saltedal	NGU

¹The National Natural Stone Database, NGU.

final finishing stages, can provide insights into the organization of production and how this changed over time. Who worked at the quarries – amateurs or specialists? Is there evidence for temporary occupation associated with more intensive quarry activity? Can we document the social structure of

evidence. Evidence from the earliest phases of use may lie deeply buried under accumulated waste material and modern quarry production can also severely impact and compromise evidence of earlier use. Widespread sampling of soapstone since the 19th century to evaluate its suitability by the restoration workshop for Nidaros Cathedral (NDR), established in 1869, has also impacted automatically protected quarry sites.

A fundamental research objective that remains poorly documented is the establishment of a chronological framework for soapstone production in both relative and absolute terms. This will require detailed archaeological documentation of quarry sites with potential for early use, including the excavation of spoil heaps. Excavation will be essential for tracing changes in quarrying characteristics and the documentation of production phases over time. Problems to be addressed include the degree to which activity was continuous or episodic/seasonal and to what degree it expanded or contracted over time. Detailed recording of evidence for the extraction of different types of objects (shape, size, removal technique, etc.) over time is also necessary. Previous quarry studies have focused on vessels and little data exists on attributes associated with the extraction of smaller objects such as sinkers, molds, loom weights, etc.

Documentation of production stages is another key aspect to understanding quarry activity. The degree to which objects were worked on site, from coarse roughouts and blanks to

Figure 6. Reported and documented soapstone quarry sites located within the district administrated by Tromsø University Museum in northern Norway.

Location	Municipality	National Heritage Database ID	Source	Age estimate ¹
FINNMARK				
Straumdalen	Sør-Varanger	27250 (Langfjorden)	Reusch 1903, Vigerust 1968, Helskog 1975, Nilsson field book 1994, Karlsen & Nilsson 2000	Pre-Reformation
Assebakte	Karasjok		Helland 1893	Pre-Reformation?
Voldstranden	Alta		Sommerfeldt 1799	Pre-Reformation?
TROMS				
Russelv	Lyngen		Nilsson & Lindahl 2005	Historic?
Kleberberget	Målselv		Nilsson & Lindahl 2005	Recent
Myrbakksetra	Målselv		Nilsson & Lindahl 2002, Lindahl 2013	Recent
Grunnes	Målselv		Nilsson & Lindahl 2002	Recent
Tårnvatn	Lenvik		Nilsson & Lindahl 2002	Recent
Kjerringvikskaret	Torsken		Brox 1965, Nilsson & Lindahl 2002	Recent
Nyeng	Sørreisa	28201 (Talgrøtberget)	Sandmo 1997, Lindahl 2013	Pre-Reformation
Rabbåsdalen	Sørreisa		Nilsson & Lindahl 2002, Lindahl 2013	Recent
Lille Vinje (Talgrøtberget)	Dyrøy		Helberg 1987, Knudsen 1990, Lindahl 2013	Pre-Reformation?
Steien	Bardu		NGU	Recent
Hesthølet	Bardu		NGU	Recent
Talgrøtholla	Kvæfjord	8814, 35633	Gunnerus 1761, Lund 1954, Alm 1986, Amundsen & Singstad 1999	Pre-Reformation?
Kanebogen	Harstad	74346	Jørgensen 2000	Historic/Pre-Reformation?
Lavik	Gratangen	173294	Lindahl 2013	Pre-Reformation?
NORDLAND				
Myre (Dverberg / Stallberget?)	Andøy		Lund 1963, Lindahl 2012	Recent
Osvoldalen	Sortland	67649 (Storkvantodalen)	NGU	Pre-Reformation?
Småtuva	Ballangen		Foslie 1942, Lund 1963	Recent
Raudvassdalen	Ballangen		Foslie 1942	Recent
Hesjetuva (Tennstrand)	Tysfjord		Lund 1963, Nilsson field book 2004	Historic?
Hesjeberghola	Sørfold		Lund 1963, Nilsson field book 2004	Recent
Hesjeelva	Bodø		Lindahl 2012	Historic?
Drusås, Klette, Høgset	Bodø		Lund 1963, Lindahl 2012	Recent
Stolpelia	Bodø	57153 (Stolpe)	Jørgensen 1986, NGU	Pre-Reformation
Hessihompvatnet	Saltådal		Holmsen 1932, Lindahl 2012	Recent
Esjeholman	Meløy	17607	J. S. Munch 1960	NB: 2013 survey recorded mafic to ultramafic rock but no soapstone is present.

¹Recent – past 200 years, Historic – more than 200 years, Pre-Reformation – prior to 1537

quarry activity, such as the degree of elite control vs. unrestricted access? To what degree was control of quarry access dependent upon the nature and scale of activity and products being produced (i.e. small utilitarian objects (sinkers, loom weights) vs. larger vessels)?

Quarry sites should be viewed as integral components of quarry landscapes and documentation of broader archaeological and environmental contexts for the use of quarry locations is essential. Relevant landscape elements include the importance of agriculture, infield vs. outfield resource exploitation, population distribution, and access to transport networks on land, by sea and along waterways. The potential influence of large farms or other power centers in controlling production is also a critical factor. Soapstone artifacts from archaeological sites in the vicinity of quarries and the presence of waste material or unfinished objects can reveal relationships between production and consumption potentially linked to exchange networks.

Soapstone production is also tied to production and exchange of other stone resources such as millstones (garnet mica schist) and whetstones (schist) that occur in the same site contexts during the late Iron Age and Medieval period. Misvær in Nordland is one area where artifacts representing each of these stone resources occur together in medieval residential sites (Munch 1967). An iron production site from the same period has also been recorded at Rognlivatnet in the hills above Misvær (Jørgensen 2011).

Results from recent soapstone quarry surveys

This section presents results of joint archaeological and geological surveys of soapstone quarry sites by Tromsø University Museum with NGU geologist Gurli B. Meyer carried out in 2011 and 2012. Preliminary results from surveys of two quarry sites in 2013, Stolpe and Straumdalen, by Stephen Wickler and doctoral research fellow Laura Bunse are also briefly mentioned (see Bunse this vol.). The overall results are presented and discussed in light of their potential for future research focusing on the excavation of spoil heaps and geochemical characterization.

Stolpe – Misvær, Nordland

The soapstone quarry at Stolpe/Stolpelia is one of the most promising sites for excavation. The site was briefly surveyed by Tromsø University Museum in the 1980s (Jørgensen 1986) and samples of waste material collected. Stolpelia is situated on a hillside at c. 270–275 m ASL in an outfield area about 300 m from an existing farmstead 4 km south of Misvær in Bodø Municipality, Nordland. The site covers an area of approximately 40 x 40 m with several contiguous quarrying areas and evidence for the removal of a variety of objects, including partially quarried bowl-shaped vessels and rectangular to oval-shaped depressions from blanks for smaller artifacts such as molds, fishing sinkers and loom weights.

A rectangular foundation built of soapstone blocks that is 9 x 4 m and up to 50 cm in height has been constructed on a soapstone exposure along the upper quarry margin. This structure is provisionally interpreted as an attempt to create a level surface for preparation of soapstone block samples by the restoration workshop for Nidaros Cathedral, although there is no written record of sample collection at this locality. Tool marks on some blocks suggest activity dating to the 19th century. The removal of soapstone slabs with closely spaced drill holes represents more recent sampling activity by NGU.

Overgrown mounds of accumulated waste material along the quarry margins may also cover earlier traces of quarrying. Earlier quarry activity along the lower southwestern and southern margins has been impacted by a modern locally based small scale quarry with an access road where soapstone

blocks were removed by blasting. Geological evidence indicates that the soapstone deposit, which occurs within a gabbro, can extend more than 200 m (Wennberg 1959). The material is fine-grained and of good quality with sampling by NGU undertaken through drilling in the 1980s (Karlsen & Nilsson 1999).

The area surrounding Stolpe has a well-documented mixture of Norse and Sami cultural influences during the historical period. Settlement reflecting the presence of both ethnic groups extending back at least to the twelfth century has been documented through the excavation of residential sites at Vestvatn in Misvær and Eiterjord in Beiarn (Munch 1967). Soapstone artifacts from these sites exhibit close similarities (e.g. small ladles with incised linear decoration on the handles) and quarrying at Stolpe is likely to reflect the multiethnic nature of settlement in the area.

Talgrøtholla – Kvæfjord, Troms

This quarry site is located in a steep sided bowl-shaped valley below the mountain peak Horntinden to the south of Hemmestad. The soapstone exposures occur at c. 630 m ASL in an area with frequent rockslides and vertical bedrock faces with loose blocks spread across the valley floor. Gunnerus (1761:273) was the first to mention the quarry and Lund (1954) visited the site but was unable to find any definite quarry locations. According to local residents, the quarry had been used historically for stove parts, sinkers, etc.

The site was surveyed by county archaeologists in 1990 (site ID 8814, Svestad & Hauglid 1990), who recorded soapstone exposures at two locations and the presence of waste material and roughouts that were collected and brought to Tromsø Museum. Subsequent surveys were undertaken by the Trondarnes District Museum in 1993 and Amundsen and Singstad (1999) who identified some traces of potential quarrying. No definite evidence of quarrying activity was seen or waste material identified during a survey by Tromsø Museum and NGU in 2012. Speculation that this quarry supplied stone for Trondenes Church appears unfounded on the basis of available survey results.

Talgrøtberget (Nyeng) – Sørreisa, Troms

As with Stolpe, this quarry is automatically protected and may have been in use by the late Iron Age. The soapstone source consists of a freestanding exposed bedrock outcrop largely covered by glacial overburden with an overhang area about 2.5 m deep and 3 m high. The quality of soapstone is highly variable including both coarse-grained material and dense, fine-grained veins (Lindahl 2013:6). The main quarry area is c. 80 x 30 m with traces of quarrying concentrated around the outer margins of the upper rock surface and along the vertical sides. A substantial area with earlier quarry evidence lies undisturbed below a layer of turf. Initials and other graffiti, both modern and historic, have been carved into the rock surface and removal of soapstone during World War II has damaged some earlier quarry evidence (Lindal 2013).

Traces of production vary in shape and size including larger vessels and numerous smaller rectangular depressions. Preparation of a parking area appears to have cut into a substantial spoil heap deposit, from which samples of soapstone waste were collected by NGU. The areal extent and depth of the spoil heap deposits at Talgrøtberget remain incompletely documented.

Kanebogen – Harstad, Troms

This quarry site is situated along the shoreline of a small embayment adjacent to a commercial campground to the south of Harstad previously surveyed by Tromsø University Museum (Jørgensen

2000). Quarrying evidence covers a roughly 10 x 10 m area extending from the high tide level up to 2 m ASL with object removal restricted to rectangular depressions up to 25 x 40 cm, although many are smaller. The quality of stone is highly variable and much of the source is not classified as soapstone. Given the low elevation of the site, quarrying activity is likely to have been relatively recent, although no written sources or oral traditions appear to refer to the site.

Straumdalen, Sør-Varanger, Finnmark

Although eight soapstone sources and three quarry sites have been reported in Finnmark, Straumdalen in Sør-Varanger is the only confirmed quarry site (Helskog 1975). This quarry area is located along a steep rocky slope with soapstone faces situated c. 10–20 m from the shoreline in a roughly south to north orientation that extend for a distance of 85 m. Three spatially distinct quarrying locations are separated from one another by distances of 10–20 m. The most extensive quarry face is about 20 m in length. There are also potentially substantial waste deposits associated with the quarry faces. A majority of the quarry evidence appears to represent removal of relatively small rectangular shaped roughouts that could be worked into smaller artifacts such as fishing sinkers.

The Straumdalen quarry is located within a core Sámi region in close proximity to settlements of central importance from the early Metal Age and Stone Age, including Kjelmøya which is 20 km to the north. Both soapstone objects and soapstone tempered ceramics occur at Kjelmøy and other early Metal Age sites in the area.

Potential for future soapstone research

Given the currently limited state of knowledge concerning soapstone production and use in northern Norway, there is a need to address fundamental research issues related to chronology, production strategies and organization, frameworks for exchange and trade, and sociocultural contexts, including multiethnic expressions of identity.

Excavation of spoil heaps associated with soapstone quarry sites should be a priority in order to establish a general chronological framework that will allow a broader range of issues to be addressed. Based on collective survey results, the most promising quarry sites in each of the three northernmost counties appear to be Stolpe in Misvær, Talgrøtberget in Sørreisa, and Straumdalen in Sør-Varanger, eastern Finnmark. Excavation should be planned and undertaken in close consultation with the aid of geological expertise, and preferably the direct participation of NGU in field investigations. This will also be of critical importance in selecting material for geochemical analysis to build up reference collections for geochemical characterization and sourcing of artifacts. The results of excavations recently undertaken at each of these quarry sites by Bunse (this vol.) will contribute to addressing the research questions raised here.

Attempts at geochemical characterization and sourcing of soapstone are limited in northern Norway but have the potential for producing worthwhile results given the recent advances in geological methods and characterization of soapstone sources. Geochemical analysis of soapstone temper has not yet been attempted and may have considerable potential for both Kjelmøy ceramics and bucket-shaped pots. The inter-regional movement of soapstone vessels during the pre-Roman Iron Age and late Bronze Age should also be explored through further geochemical analysis. Preliminary XRF results from NGU pointing to southern Helgeland as a potential source of thin-

walled soapstone vessels suggests that this region served as a production center for pre-Roman Iron Age vessels subsequently transported northward.

Despite the many challenges and unanswered questions regarding soapstone in northern Norway, ongoing research promises to provide a better understanding of the role played by soapstone through time and new insights into the complexities of this resource.

Acknowledgements

SW acknowledges the significant contribution of NGU geologist Gurli B. Meyer whose participation in the survey of soapstone quarries was an invaluable source of knowledge and inspiration. Our thanks to two anonymous reviewers and the editors for their helpful suggestions that improved the quality of the manuscript. Some of the themes in this article were presented by SW at a workshop in 2012 for the outfield resources group of the national research network *Forskning i fellesskap* held at the Norwegian Institute in Rome (Wickler 2015).

References

- Alm, T. 1986. Talgrøtholla. En klebersteinsforekomst i Kvæfjord. *Håløygminne* 17, 145–147.
- Amundsen, T. & Singstad, H. B. 1999. Registreringsrapport fra Talgrøtholla, Kvæfjord kommune, Troms. Unpublished field report. Tromsø Museum.
- Andreassen, D. M. 2002. Risvikkeramikk – En analyse av teknologisk stil på Nordkalotten i sein steinbrukende tid. Unpublished master thesis, University of Tromsø, Tromsø.
- Arntzen, J. E. 2013. The empirical basis for research on farming settlements in northern Norway 1200 BC – 0. In Mahler, D. L. (ed.) *The Border of Farming Shetland and Scandinavia. Northern Worlds: papers from the Symposium in Copenhagen, September 19–21, 2012*, 182–197. The National Museum of Denmark, Copenhagen.
- Arntzen, J. E. 2015. Sandvika in northern Norway: the northernmost ‘Bronze Age’ settlement in Scandinavia. *Fennoscandia Archaeologica* XXXII, 3–34.
- Baug, I. 2015. Stones for bread. Regional differences and changes in Scandinavian food traditions related to the use of quernstones, bakestones and soapstone vessels c. AD 800–1500. In Baug, I., Larsen, J. & Mygland, S. S. (ed.) *Nordic Middle Ages – Artefacts, Landscapes and Society. Essays in Honour of Ingvild Øye on her 70th Birthday*, 33–47. University of Bergen Archaeological Series (UBAS) 8.
- Berglund, B. 1999. Middelaldersk klebersteinsindustri på Helgelandskysten. *Ottar* 225 (2), 13–24. Tromsø.
- Berglund, B. 2015. Possibilities for a society analysis by means of soapstone – examples from Helgeland, northern Norway. In Berglund, B., Callanan, M., Kaland, S. & Stenvik, L. (eds) *Exploitation of Outfield Resources: Joint Research at the University Museums of Norway*, 129–140. Universitetsmuseet i Bergen Skrifter nr. 32, Bergen.
- Brodshaug, E. 2005. Det anonyme dagliglivet. Klebersteinsmaterialet fra de arkeologiske utgravningene av Borg III, Vestvågøy i Lofoten. Unpublished master thesis, University of Tromsø, Tromsø.
- Brodshaug, E. & Solli, B. 2006. Kleber, mat og rom på Borg i middelalderen. *Viking* LXIX, 289–306.
- Brox, O. 1965. *Bygdebok for Berg og Torsken, Bind II – Bygdehistoria*. Berg og Torsken kommuner.
- Engevik, A. 2008. *Bucket-Shaped Pots. Style, Chronology, and Regional Diversity in Norway in the Late Roman and Migration Periods*. BAR International Series 1816, Archaeopress, Oxford.
- Engevik, A. 2010. Technological style, regional diversity and identity. Asbestos regions and soapstone regions in Norway in the Late Roman and Migration Periods. In Barndon, R., Engevik, A. & Øye, I. (eds), *The Archaeology of Regional Technologies. Case studies from the Palaeolithic to the age of the Vikings*, 225–241. The Edwin Mellen Press, Lewiston.
- Foslie, S. 1942. Helleobotn og Linnajavrre. Geologisk beskrivelse til kartbladene. *NGU* 150, 119.
- Grieg, S. 1933. *Middelalderske byfund fra Bergen og Oslo*. Det Norske Videnskaps-Akademi, Oslo.
- Gunnerus, J. E. 1761. Adskillige Efterretninger, fornemmelig angaaende Mineraler i Nordland og Finmarken. *Det Trondhiemske Selskabs Skrifter, Første Deel*, 271–283, Copenhagen.

- Hedman, S.-D. & Olsen, B. 2009. Transition and order: a study of Sámi rectangular hearths in Pasvik, Arctic Norway. *Fennoscandia Archaeologica* XXVI, 3–22.
- Helberg, B. H. 1987. Rapport fra befaring av Lille Vinje, Gnr. 41, Dyrøy, Dyrøy kommune. Unpublished field report. Tromsø Museum.
- Helberg, B. H. 1993. Fiskeriteknologi som uttrykk for sosial tilhørighet. En studie av nordnorsk fiske i perioden 400–1700 e. Kr. Unpublished thesis (magisteravhandling) in archaeology, University of Tromsø.
- Heldal, T & Storemyr, P. 1997. Geologisk undersøkelse og arkeologisk registrering av de middelalderse brudene ved Øya, Klungen og Huseby i Sør-Trøndelag. *NGU-rapport nr. 97.149*.
- Helland, A. 1893. Tagskifere, heller og vekstene. *Norges geologiske undersøkelse* 10: 1–178.
- Helland, A. 1899. *Norges Land og folk. Topografisk-statistisk beskrivelse over Troms Amt*. (2 volumes.) Aschehoug, Kristiania.
- Helland, A. 1905. *Norges Land og folk. Topografisk-statistisk beskrivelse over Finnmark Amt*. (3 volumes.) Aschehoug, Kristiania.
- Helland, A. 1907. *Norges Land og folk. Topografisk-statistisk beskrivelse over Nordlands Amt* (4 volumes.) Aschehoug, Kristiania.
- Helskog, K. 1975. Befaring av klebersteinsbrudd ved Strømmen, Sør-Varanger kommune, Finnmark. Unpublished field report. Tromsø Museum.
- Holmsen, G. 1932. Rana. Beskrivelse til det geologiske generalkart 1:250 000. *NGU* 136, 107
- Johansen, O. S., Kristiansen, K. & Munch, G. S. 2003. Soapstone artefacts and whetstones. In Munch, G. S., Johansen, O. S. & Roesdahl, E. (eds), *Borg in Lofoten. A Chieftain's Farm in North Norway*, 141–158. Arkeologisk Skriftserie 1, Lofotr – vikingmuseet på Borg.
- Jørgensen, R. 1986. Rapport fra besøk i kleberbrudd på Stolpe. Unpublished field report. Tromsø Museum.
- Jørgensen, R. 2000. Rapport fra befaring av kleberbrudd i Kanebogen, Harstad kommune, Troms. Unpublished field report. Tromsø Museum.
- Jørgensen, R. 2011. Prehistoric iron production in North Norway. *Acta Archaeologica* 82, 97–128.
- Jørgensen, R. 2012. The social and material context of the Iron Age blacksmith in North Norway. *Acta Borealia* 29 (1), 1–34.
- Jørgensen, R. & Olsen, B. 1988. *Asbestkeramiske grupper i Nord-Norge 2100 f.Kr. – 100 e.Kr.* Tromsø Museum, kulturhistorie nr. 13. Tromsø Museum.
- Karlsen, T.A. & Nilsson, L. P. 1999. Talc deposits in Norway. *NGU report* 99.135, 146.
- Kleppe, E. J. & Simonsen, S. E. 1983. Bucket-shaped Pots – A West Norwegian ceramic form. Experiments with production methods. *AmS – Skrifter* 10. Archaeological Museum, Stavanger.
- Knudsen, O. 1990. Gård nr. 41, Lille Vinje. In *Gårds- og slekts historie for Dyrøy*, 300–302. Triton, Kårvikhamn.
- Kraft, J. E. 1835. Topographisk-Statistisk Beskrivelse over Kongeriget Norge. 6. Del, Grøndahl, 624.
- Lindahl, I. 2012. *Bygningsstein i Nordland. En oversikt over bygningsstein i Nordland, om bruken og om de forskjellige geologiske provinsene*. NGU, Trondheim.
- Lindahl, I. 2013. Om noen kleberstein- og kvernsteinlokaliteter i sørlige del av Troms fylke. *NGU report* 2013.013, 17.
- Lindahl, I., Furuhaug, L., Korneliussen, A. & Nilsson, L. P. 2003. Olivin- og serpentinitforekomster i Finnmark, Troms, Nordland og Nord-Trøndelag. Part 1–3. *NGU report* 2003.103.
- Lindahl, I. & Nilsson, L. P. 2002. En vurdering av klebersteinpotensialet i Troms fylke. *NGU report* 2002.077, 92 + maps.
- Lindahl, I. & Nilsson, L. P. 2008. Geology of the soapstone deposits of the Linnajavri area, Hamarøy, Nordland, north Norwegian Caledonides – Norway's largest reserves of soapstone. In Slagstad, T. (ed.) *Geology for Society*, 19–36. Geological Survey of Norway, Special Publication 11.
- Lossius, S. M. 1977. *Kleberkarmaterialet fra Borgund*. Arkeologiske avhandlinger fra Historisk Museum, Nr. 1, University of Bergen, Bergen.
- Lund, H. E. 1954. Klebersteinsforekomst: Talgaholet – høyt oppe under fjellet på S. Hemmestad, Kvæfjorden, Troms. Unpublished field report. Stavanger Museum, Stavanger.
- Lund H. E. 1963. Klebersteinsforekomster med nyere og gamle brudd. Kart Nord-Norge 1:1 000 000.
- Lundberg, N. 2007. Øye – en arkeologisk undersøkelse av et klorittskiferbrudd. Unpublished hovedfag thesis, NTNU, Trondheim.
- Munch, G. S. 1967. Funnene fra Eiterjord i Beiarn og Vestvatn i Misvær. *Viking* XXXI: 99–122.
- Munch, J. S. 1960. Antikvariske registreringer i Nord-Norge. Funn og fortidsminner i Meløy - Gnr. 2, Bnr.

21. Unpublished field report, Tromsø Museum, Tromsø.
- Munch, J. S. 1966. Et nytt bronsealderfunn fra Troms. *Viking* XXX, 61–76.
- Nilsson L. P. & Lindahl, I. 2005. Oppfølgende undersøkelser av utvalgte klebersteinsforekomster i Troms fylke. *NGU report 2005.084*, 35.
- Olsen, B. 1984. *Stabilitet og endring. Produksjon og samfunn i Varanger 800 f.Kr. – 1700 e.Kr.* Unpublished thesis (magisteravhandling) in archaeology, University of Tromsø, Tromsø.
- Olsen, B. 1994. *Bosetning og samfunn i Finnmarks forhistorie*. Universitetsforlaget, Oslo.
- Olsen, O. M. 2004. Medieval fishing tackle from Bergen. In Øye, I. (ed.) *Medieval Fishing Tackle from Bergen and Borgund*, 11–106. The Bryggen Papers Main Series, volume 5. Fagbokforlaget, Bergen.
- Pilø, L. 1989. Early soapstone vessels in Norway from the Late Bronze Age to the Early Roman Iron Age. *Acta Archaeologica* 60, 87–100.
- Reusch, H. 1903. Fra det indre af Finmarken. *NGU* 36, 66.
- Risbøl, O. 1994. Socialøkonomiske aspekter ved vikingetidens klæberstenshandel i Sydsandinavien. *LAG vol. 5*, 115–161.
- Sandmo, A.-K. 1997. “..opad til en klippe kalled Klübersteensbjerget”. Talgrøtberget og området rundt Straumen. *Fotefar mot nord*. Troms fylkeskommune.
- Shetelig, H. 1912. Kar av kleberstein fra jernalderen. In Brøgger, A. W. (ed.) *Oldtiden, tidsskrift for norsk forhistorie*, 49–73. A. W. Brøgers boktrykkeri, Stavanger.
- Skjølsvold, A. 1961. *Klebersteinsindustrien i vikingtiden*. Universitetsforlaget, Oslo.
- Skjølsvold, A. 1969. Et keltertids klebersteinsbrudd fra Kvikne. *Viking* XXXIII, 201–238.
- Solli, B. 2006. Kokegropen fra eldre jernalder og et langhus fra middelalderen på Borg i Lofoten. In Glørstad, H., Skar, B. & Skre, D. (eds) *Historien i forhistorien. Festskrift til Einar Østmo på 60-års dagen*, 281–297. Kulturhistorisk Museum Skrifter 4, Oslo.
- Sommerfeldt, O. H. 1799. Kort beskrivelse over Finmarken. Topographic journal.
- Storemyr, P. & Haldal, T. 2002. Soapstone production through Norwegian history: geology, properties, quarrying, and use. In Herrmann Jr., J. J., Hertz, N. & Newman, R. (eds) *Asmosia 5: Interdisciplinary Studies on Ancient Stone*, 359–369. Archetype Publications Ltd., London.
- Storemyr, P., Lundberg, N., Østerås, B. & Haldal, T. 2010. Arkeologien til Nidarosdomens middelaldersteinbrudd. In Bjørlykke, K., Ekroll, Ø. & Syrstad Gran, B. (eds) *Nidarosdomen – ny forskning på gammel kirke*, 238–267. Nidaros Domkirkes Restaureringsarbeiders forlag, Trondheim.
- Svestad, A. & Hauglid, M. 1990. Rapport fra befarung av kleberbrot ved Hemmestad, Kvæfjord k., Troms f., jnr. 71/90. Unpublished field report, Troms County Cultural Heritage Division.
- Tengesdal, S. S. 2010. Å steike! En kontekstuell materialanalyse av steikeheller funnet i et bygårdskompleks i middelalderens Bergen. Unpublished master thesis, University of Bergen, Bergen.
- Valen, C. R. 2007. Jordbruksimpulser i neolitikum og bronsealder i Nord-Norge? En revisjon av det arkeologiske gjenstandsmaterialet og de naturvitenskapelige undersøkelsene. Unpublished master thesis, University of Tromsø, Tromsø.
- Vangstad, H. 2003. Kleberkarene fra Bryggen i Bergen. En arkeologisk analyse av kleberkarene funnet på Bryggen i Bergen fra middelalder og etterreformatorisk tid. Unpublished master thesis, University of Bergen, Bergen.
- Vigerust, H. 1968. Noter om Varangerområdets geologi og natur. Kommentarer til “Varangerfunnene” I–IV og VI. In Simonsen, P. (ed) *Varanger-funnene VI. Analyseresultater og mindre rapporter*, 97–110. Universitetsforlaget, Tromsø and Oslo.
- Wennberg, J. 1959. Rapport om en befarung av klebersteinsforekomster i Skjerstad og Fauske herreder. *NGU Rapport BA 7462*.
- Wickler, S. 2015. Soapstone in northern Norway: research status, production evidence and quarry survey results. In Berglund, B., Callanan, M., Kaland, S. & Stenvik, L. (eds) *Exploitation of Outfield Resources: Joint Research at the University Museums of Norway*, 117–128. Universitetsmuseet i Bergen Skrifter nr. 32, Bergen.
- Østerås, B. 2004. Forvaltningsplan for klebersteinsbrotet i Sandbekkdalen på Kvikneskogen. Tynset kommune, Hedmark fylke. Hedmark fylkeskommune.

Internet sources

Askeladden: The Norwegian National Cultural Heritage Database: <https://askeladden.ra.no/Askeladden/Pages/LoginPage.aspx?ReturnUrl=%2faskeladden>
Gjenstandsbasen: The five Norwegian University Museums' Collection Database: <http://www.unimus.no/arkeologi/forskning/index.php>
The National Natural Stone Database, Geological Survey of Norway (NGU): <http://geo.ngu.no/kart/mineralressurser/>

List of Authors

Irene Baug

Department of Archaeology, History,
Cultural Studies and Religion,
University of Bergen (UIB),
5020 Bergen, Norway
Irene.Baug@uib.no

Irene Baug's (b. 1973) M.A. and Ph.D. were connected to quarries and large-scale production during the Viking Age and the Middle Ages in Western Norway. She is now a post-doctoral fellow at UIB. Her research includes production landscapes and artefacts studied within a societal context, where social, economic and socio-political relations are analysed. Baug's research also focuses on trade and exchange, and contacts and networks are analysed and discussed based on different types of sources – both archaeological and historical. Her research interests are furthermore connected to the use of artefacts in relation to food and food culture, where aspects such as identity and tradition gain focus.

Birgitta Berglund

Dept. of Archaeology and Cultural History,
University Museum,
Norwegian University of Science and
Technology (NTNU),
7491 Trondheim, Norway
birgitta.berglund@ntnu.no

Dr.philos. Birgitta Berglund (b. 1948) is a professor of archaeology at the NTNU University Museum. Her research interests are primarily north European coastal rural settlements, power relationship, identity and burial practices AD 0–1800, outfield resources as soapstone and the material culture of religion, including the Sámi.

Knut Andreas Bergsvik

Department of Cultural History
University Museum of Bergen
University of Bergen (UIB)
5020 Bergen, Norway
Knut.bergsvik@uib.no

Knut Andreas Bergsvik (b. 1961) is a professor of Stone Age archaeology at the University Museum of Bergen. His research interests and publications include the social and territorial organization of Stone Age hunter-gatherer/fisher groups, the transition to agriculture in Scandinavia and the human use of caves and rockshelters in a long-time perspective. He has conducted several excavation projects in western Norway.

Laura Bunse

Department of Cultural Sciences
Tromsø University Museum, UiT –
The Arctic University of Norway
P. Box 6050 Langnes
9037 Tromsø, Norway
laura.bunse@uit.no

Laura Bunse (b. 1985) has a M.A. degree, which includes archaeology, anthropology and Scandinavian studies from the University of Münster, Germany and the University of Tromsø, Norway (2010). She is currently a Ph.D. fellow in archaeology and studies the utilization of soapstone resources north of Saltfjellet in northern Norway, from prehistoric to early modern times. Her research interests include soapstone use and quarrying as well as Prehistoric horse remains and horse tack.

Amanda K. Forster

DigVentures
The Workshop
26 Newgate
Barnard Castle DL12 8NG, UK
manda@digventures.com

Amanda Forster (b. 1975) undertook her first degree in Archaeology and completed her Ph.D. research at the University of Bradford, UK. She completed her doctoral research on Shetland and the trade of steatite goods in the North Atlantic region during the Viking and early Medieval period, in 2004. Since then, Forster has worked in a number of roles in British archaeology, working as Senior Post Excavation Manager at Birmingham Archaeology and training students at the University of Birmingham, developing and delivering membership communications with the Chartered Institute for Archaeologists and, in her current position, as Programme Manager with DigVentures, a social enterprise specializing in digital and collaborative archaeology.

Tor Grenne

Geological Survey of Norway (NGU)
P. Box 6915 Sluppen,
7491 Trondheim, Norway
tor.grenne@ngu.no

Tor Grenne (b. 1951) obtained his Dr.techn. in 1990 at The Norwegian Institute of Technology (NTH) in Trondheim. He works as a geologist at NGU. His research interests include ore geology, bedrock mapping and litho geochemistry, regional paleotectonic reconstructions, origin of chemical sedimentary rocks, early earth paleoceanography and early life, and mapping of soapstone and millstone quarries with provenance studies of associated artefacts.

Gitte Hansen

Department of Cultural History
University Museum of Bergen
University of Bergen (UIB)
5020 Bergen, Norway
gitte.hansen@uib.no

Gitte Hansen (b. 1961) obtained her Cand.mag. in Medieval Archaeology and Geography from Aarhus University in Denmark and wrote her Dr.art. dissertation on the emergence of Bergen as a town (UIB 2004). She holds the position as associate professor in medieval archaeology at the University Museum of Bergen. Her main research interest is early and high medieval producers and consumers of everyday household products and personal accessories. These actors are studied through a point of departure in artefacts made of domestic and exotic low-cost raw materials.

Tom Heldal

Geological Survey of Norway (NGU)
P. Box 6915 Sluppen,
7491 Trondheim, Norway
tom.heldal@ngu.no

Tom Heldal (b. 1961) works as Division Director at the Geological Survey of Norway. He is a geologist and has carried out research in the field of natural stone resources and historical use. He was the coordinator of an EU research project on the subject: QuarryScape (the conservation of ancient stone quarry landscapes in the Eastern Mediterranean) 2005–2009.

Alf Tore Hommedal

Department of Cultural History
University Museum of Bergen
University of Bergen (UIB)
5020 Bergen, Norway
alf.tore.Hommedal@uib.no

Alf Tore Hommedal (b. 1956) has a Mag.art. in Archaeology (UIB 1986). He holds the position of associate professor of medieval archaeology at the University Museum of Bergen, UIB. He has published on various subjects, mostly related to the Middle Ages, mainly concerning the archaeology of such buildings as churches and monastic sites in Medieval Norway.

Mogens Skaaning Høegsberg

Moesgård Museum
Moesgård Allé
8270 Højbjerg, Denmark
mho@moesgardmuseum.dk

Mogens Skaaning Høegsberg (b. 1976) has a Ph.D. in Medieval and Renaissance Archaeology from Aarhus University in Denmark (2009) and is now an archaeologist at Moesgård Museum. His M.A. thesis was on the Greenland Norse bishop's seat Garðar, and his Ph.D. focused on the cultural identity of the Greenland Norse. The latter included an analysis of several thousand artefacts from Norse Greenland, including many soapstone artefacts.

Øystein J. Jansen

Department of Natural History
University Museum of Bergen
University of Bergen (UIB)
5020 Bergen, Norway
oystein.jansen@uib.no

Øystein James Jansen (b. 1946) has a Cand.real. degree in geology (UIB 1976). He has teaching and research experience at UiB and has also done extensive outreach activities, including TV-programmes, lectures and excursions. He published *Steinbyen Bergen* with Tom Heldal in 2000, a book about the history of the stones of the town of Bergen. His research interest the last 20 years has mainly focused on interdisciplinary geo-archaeological studies, particularly on provenance studies of different rocks (for different use) from building stones to vessels, millstones and whetstones.

Richard Jones

Archaeology
Gregory Building
School of Humanities
University of Glasgow
Glasgow G12 8QQ, UK
richard.jones@glasgow.ac.uk

Richard Jones (b. 1947), until recently, was Senior Lecturer in Archaeological Science at Glasgow University. After leaving Greece in 1992, where he was the first director of the Fitch Laboratory at the British School of Archaeology at Athens for many years, he came to Glasgow and expanded his work on the science-based analysis of materials and artefacts for information on origin and technology from a Mediterranean (Greek and Italian) perspective to one devoted more to northern Europe. A product of the latter has been his rewarding involvement (with many collaborators) on mainly Viking period soapstone.

Ingvar Lindahl

Geological Survey of Norway (NGU)
P. Box 6915 Sluppen,
7491 Trondheim, Norway
E-mail: ingvar.lindahl@ngu.no

Ingvar Lindahl (b. 1943) has a Siv.ing. degree and Dok.ing. degree from the Norwegian Institute of Technology (NTH) in Trondheim. He has worked on various ore types, industrial minerals, dimension stone as well as bedrock mapping through the decades. Lindahl finished his professional career at the NGU with the book *Bygningsstein i Nordland* (2012), a review on the use of dimension stone from Nordland County.

Lars Petter Nilsson

Geological Survey of Norway (NGU)
P. Box 6915 Sluppen,
7491 Trondheim, Norway
lars.nilsson@ngu.no

Lars Petter Nilsson (b. 1951) has a Siv.ing. degree in ore geology (chromium ore). He has worked on ore deposits, industrial minerals, dimension stone as well as bedrock mapping for nearly 38 years at NGU. He has devoted much time to talc/soapstone exploration through the years, culminating in his discovery with Ingvar Lindahl of the large Linnajavri talc/soapstone deposits in 2000.

Torbjørn Preus Schou

UNITAR
Reichweins gate 5
0254 Oslo, Norway
topresch@gmail.com

Torbjørn Preus Schou (b. 1980) wrote his M.A. thesis on the soapstone trade of Agder, southern Norway, during the Viking Age (University of Bergen 2007). He also worked on the Palmyrena project in Syria (www.org.uib.no/palmyrena), where he did his Ph.D. dissertation on mobile pastoralist groups in the Near Eastern Bronze Age (2015). Associated with this, Schou conducted extensive satellite surveys of Syria and analysed climatic and environmental developments in the region. His main research interests are remote sensing surveys, landscape archaeology, networks in antiquity and environmental studies. He currently works for UNITAR, analysing the effects of war on cultural heritage sites in Syria.

Eva Stavsoien

Nidaros Domkirkes Restaureringsarbeider (NDR)
Bispegata 11
7012 Trondheim, Norway
es937@kirken.no

Eva Stavsoien (b. 1961) is a restoration technician with 30 years of work experience from The Restoration Workshop of Nidaros Cathedral in Trondheim, Norway. She has a craft's certificate in stonework, as stonemason/-carver, and her main field of work is making copies to replace damaged stones at the Nidaros Cathedral. In 2012, she earned a B.A. of Technical Building Conservation and Traditional Craftsmanship at the Sør-Trøndelag University College (HiST), and she later completed a M.A. degree in Cultural Heritage at the Norwegian University of Science and Technology (NTNU) in Trondheim.

Lars F. Stenvik

Dept. of Archaeology and Cultural History,
University Museum,
Norwegian University of Science and
Technology (NTNU),
7491 Trondheim, Norway
lars.stenvik@ntnu.no

Lars F. Stenvik (b. 1950) is a professor of archaeology at the NTNU University Museum. He has studied the exploitation of outfield resources in the Iron Age and the Medieval period. Iron production in these periods has been especially studied as both technological and social expressions.

Per Storemyr

Archaeology & Conservation Services,
6957 Hyllestad, Norway
per.storemyr@hotmail.com

Per Storemyr (b. 1963) is a geo-archaeologist with a Ph.D. in the stones of Nidaros Cathedral in Trondheim (1998). He has worked on ancient quarries, stone buildings and rock art in Norway, Egypt and continental Europe, and especially in Switzerland. Managing his own company, 'Archaeology and Conservation Services', he also holds a position as Associate Professor at the Museum Foundation in Sogn and Fjordane County, Norway and its department 'Norwegian Millstone Centre'.

Hilde Vangstad

Norwegian Maritime Museum
P. Box 720 Skøyen
0214 Oslo, Norway
hilde.vangstad@marmuseum.no

Hilde Vangstad (b. 1966) wrote her M.A. thesis about soapstone vessels from medieval Bryggen in Bergen (University of Bergen 2003). She works as a researcher at the Norwegian Maritime Museum in Oslo. For the last decennia, she has worked primarily with urban harbour archaeology, and her main research focus is material culture of the Medieval and early modern period.

Stephen Wickler

Department of Cultural Sciences
Tromsø University Museum, UiT –
The Arctic University of Norway
P. Box 6050 Langnes
9037 Tromsø, Norway
stephen.wickler@uit.no

Stephen Wickler (b. 1958) has his M.A. and Ph.D. in anthropology from the University of Hawai at Manoa, USA. He is a maritime archaeologist and has worked as a researcher at the Tromsø University Museum in Norway since 1997. His research interests include the provenance, distribution and utilization of stone resources, focusing on the Iron Age and Medieval periods in Arctic Norway.

Bodil Østerås

Stiklestad Nasjonale Kultursenter
Department Egge Museum
Fylkesmannsgården
Eggevegen 40
7715 Steinkjer, Norway
bodil.oesteraas@snk.no

Bodil Østerås (b. 1974) wrote her M.A. thesis on the Sparbu soapstone quarry in the community of Steinkjer, Nord-Trøndelag (2002). She is the leader of Egge Museum in Steinkjer, Norway. She has been involved in several excavations of soapstone quarries in Trøndelag, Norway. Her research interests include quarries of soapstone and marble as well as cultural relics in the landscape.

