

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 Nasset, 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



Mesolithic Soapstone Line-sinkers in Western Norway: Chronology, Acquisition, Distribution, Function and Decoration

Soapstone sinkers are commonly found at coastal Mesolithic sites in western Norway. The large majority of these sinkers weigh less than 10 g (small sinkers), and a few weigh between 150 and 200 g (large sinkers). They were used between c. 5900–4000 cal BC and have been found at residential sites along the entire coast of western Norway, from Romsdal in the north to Lista in the south. The main area of distribution is between the districts Nordfjord and Nordhordland. Large soapstone sinkers have only been found in Nordfjord. The sinkers were probably quarried by the users themselves in bedrock outcrops of soapstone, which are common in the main area of distribution. They are only found at sites situated in marine environments. The close match between the sizes of the small sinkers, the sizes of fishhooks and the main sizes of the fish caught strongly indicate that they were used as line sinkers for fishing with a rod or for trolling. A few of the sinkers are ornamented with notches or incised lines. These motifs are common among Palaeolithic and Mesolithic populations in a global perspective.

Introduction

The soft and workable qualities of soapstone have been noticed as early as in the Mesolithic Age in western Norway. During this period, the raw material was carved and formed into elegant objects, such as star-shaped shaft-hole-hatchets, mace-heads and small animal figures. The most common artefacts of soapstone were, however, sinkers, which were used amongst the coastal populations between c. 5900–4000 cal BC. The large majority of these sinkers weigh less than 10 g, with some of them containing ornaments.

Small Mesolithic soapstone sinkers were first recorded by the biologist Ole Nordgaard in his book on the development of fisheries in Norway (Nordgaard 1908). He called them ‘boys’ sinkers’, in the probable expectation that they were accompanied by large specimen. Eventually, larger sinkers turned up, but small sinkers have continued to dominate the assemblages. They were found for the first time in an archaeological context during the excavations at the site Korsen at Sunnmøre (Bjørn 1921). Later, sinkers of this type were retrieved regularly at Mesolithic sites at the coast of western Norway (Bøe 1934; Jansen 1972; Gustafson & Hofseth 1979; Bjørgo 1981; Ågotnes 1981; Kristoffersen 1990; Olsen 1992; Nærøy 1994; Kristoffersen & Warren 2001; Bergsvik 2002; Skjelstad 2011).

Tore Bjørgo (1981) was the first to explore their significance at any length, and since his

contribution, many have discussed their functions, chronological statuses and regional spread in chapters or paragraphs in articles, theses and reports (e.g. Olsen 1992; Warren 1994; Bergsvik 2002; Skjelstad 2003; Åstveit 2008a, d; Bang-Andersen 2009; Skjelstad 2011; Bjerck 2014; Nyland 2016). The current work is an attempt to provide a critical assessment of these contributions. The chronology, geographical distributions, provenance, functions and ornaments of the sinkers will be discussed and their significance for Mesolithic fisheries in western Norway will be explored.

Contexts, shapes and sizes

Soapstone sinkers are found in the cultural layers at residential sites, occasionally also as stray-finds. At some excavated Mesolithic sites, they occur in relatively large quantities, and in the below discussions, the findings at three such sites, *Flatøy* and *Kotedalen* in the district Nordhordland and *17 Havnen* in Nordfjord, will make up the core data (Figures 1 and 2). As many as 106 sinkers were found during the excavations at site complex Flatøy (site I, II, IX, XII, and XIII) (Bjørge 1981). At the site Kotedalen, 49 were found (Olsen 1992), and 43 soapstone sinkers turned up at the site 17 Havnen (Bergsvik 2002). In addition to these sites, data from two excavated rockshelters *Skipshelleren* (Bøe 1934) and *Olsteinhelleren* (Bergsvik et al. 2016) will be used in the discussions.

The sinkers are sometimes fragmented (20, 25 and 25% at the first three sites, respectively), but most of them are complete and in seemingly good condition (Figures 3–5). It is difficult to evaluate whether they were discarded or just lost at the sites, but they do not seem to be intentionally placed.

As is evident from these figures, it is a heterogenous group, but the majority has oval forms. Their lengths exceed their breadth, and they have varying cross-sections in terms of proportions (breadth/thickness). Most sinkers have furrows cut lengthwise on both sides along the sides with thinnest cross-sections. Some of the sinkers have a transverse furrow instead of, or in addition to, the one lengthwise. Some lack furrows and have only notches at the side for attachment of the line. The surfaces of the sinkers have been shaped in different ways. Some of them are only crudely formed and may not have been intentionally modified. Many of the sinkers are, however, smoothed on the surface, and quite a few are also oval-shaped, which has led to the fitting name ‘coffee-bean shaped sinkers’ of the smallest of these pieces (e.g. Figure 3, no. 1–3 and Figure 5, no. 1–2). The sizes vary mainly between c. 1.5 and 8 cm in length, and most of them weigh between c. 1

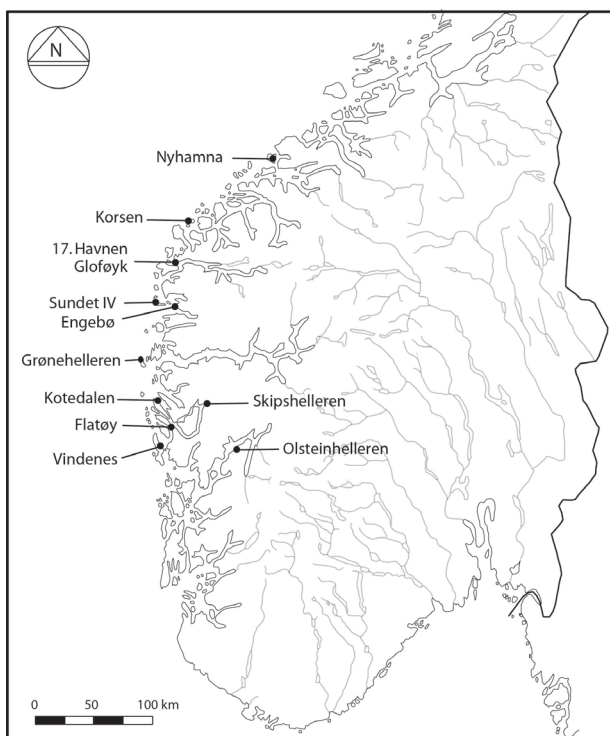


Figure 1. Southern and central Norway. Archaeological sites referred to in the text.

and 10 g. Hereafter, the sinkers in this weight-group are termed *small sinkers* (Bjørge 1981:110). According to the data on weights of the sinkers from Flatøy, Kotedalen and 17 Havnen, very few sinkers weigh between 10 and 50 g. This weight-group is termed *middle sized sinkers*. At 17 Havnen, there is a group of sinkers weighing more than 50 g (e.g. Figure 5, no. 10). This weight-group is hereafter termed *large sinkers*, with most sinkers weighing around 150–200 g. The largest Mesolithic soapstone sinker known weighs 1.096 g (Bang-Andersen 2009). Some of the smaller sinkers have notches on the sides, and these notches occur in varying numbers. A few sinkers also have incisions – often net-shaped or geometrical – which cover most of or all of the surfaces.

Chronology

Since the sinkers are mainly found at residential sites, they are dated on the basis of radiocarbon determinations from the contexts in which they are found or from chronologically determined (lead) artefacts found in these contexts. With regard to dating, it is necessary to distinguish between small/middle sized and large soapstone sinkers.

The oldest site-contexts (or ¹⁴C-dated layers at stratified sites) where small/middle sized sinkers occur are dated to around 5900 cal BC (Bjerck 1986; Olsen 1992:90) and the latest around 4500–4000 cal BC (Skjelstad 2003:91), which means that they were used for 1500 to 2000 years. According to chronological evaluations, they may have been particularly common around 5600–4700 cal BC (Olsen 1992:90, 91; Bergsvik 2002:290), however, this

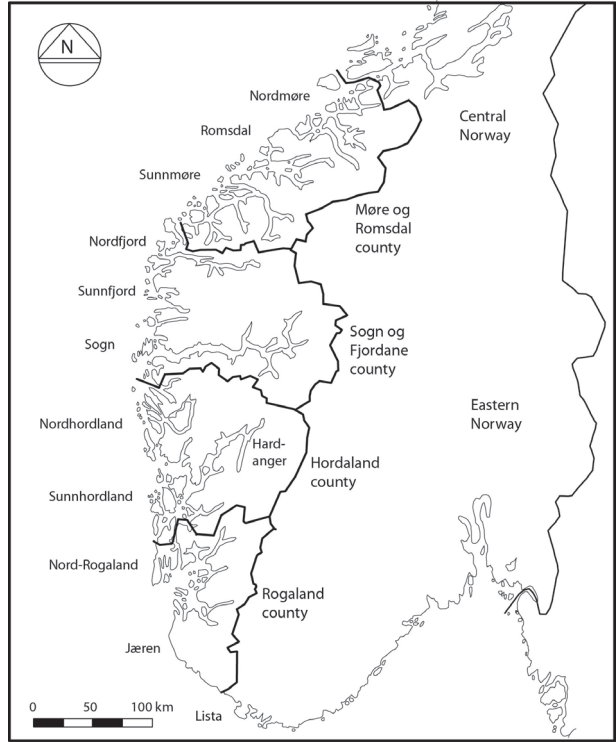


Figure 2. Counties in western Norway (names to the right) and districts (names to the left) referred to in the text.

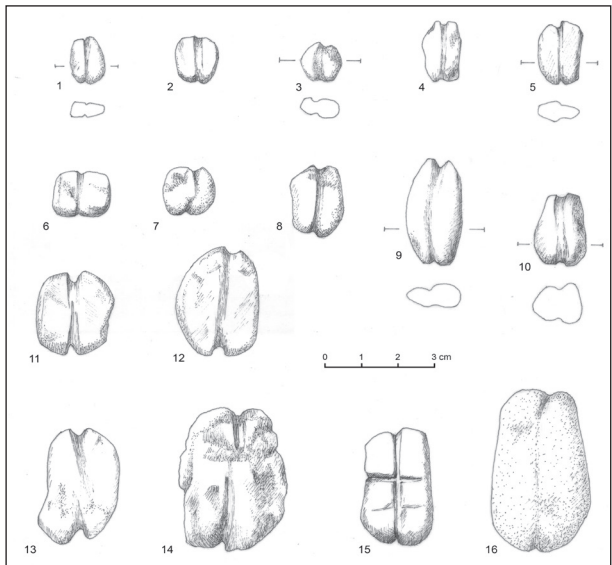


Figure 3. Small (1–11) and middle sized (12–16) soapstone sinkers from Flatøy XI (1–10) and Flatøy I (11–16). Based on Bjørge 1981, Figs 34 and 35. (Drawings: L. Gustafson).

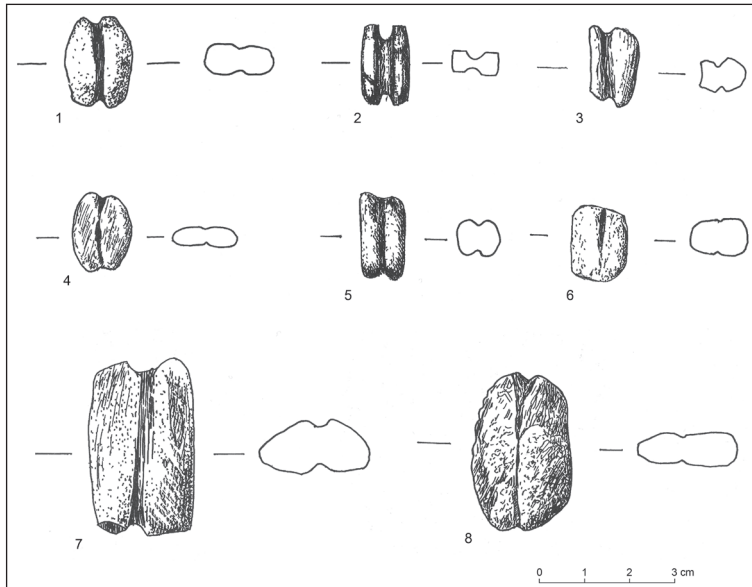


Figure 4. Small soapstone sinkers from Kotedalen. Based on Olsen 1992, Figs 64 and 65. (Drawings: E. Hoff, University Museum of Bergen).

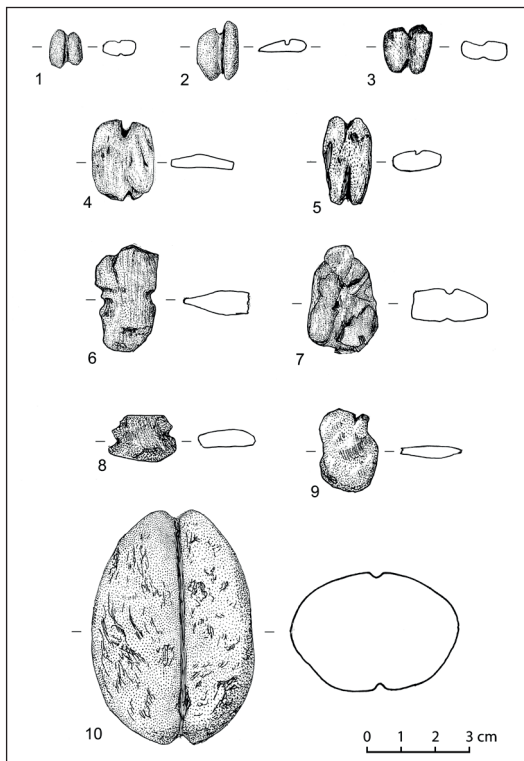


Figure 5. Soapstone sinkers from 17 Havnen. Small sinkers (1–9) and large sinker (10). Based on Bergsvik 2002, Figs 186, 188 and 190. (Drawings: E. Hoff, University Museum of Bergen).

needs to be confirmed by a broader set of data, a task which is beyond the scope of this contribution.

Concerning the large soapstone sinkers, there has been some insecurity in terms of dating. One problem is that large sinkers occur infrequently compared to the small specimen, which means that independently dated and reliable contexts are hard to find. Another problem is that most Mesolithic sites in western Norway have been reoccupied during the Neolithic, leading to possible stratigraphic disturbances. On the basis of the presence of large sinkers at the sites Sundet IV, Grønehelleren and Gloføyk in Sogn og Fjordane county, Bjørge suggests that large sinkers may be dated to the early or middle Neolithic (Bjørge 1981:82). However, these particular sites are problematic in different ways. In the case of Gloføyk, the sinkers were made of sandstone and gneiss, and are, therefore, not relevant for evaluating the use of soapstone for sinkers. In the two other cases, the sites had also Mesolithic material, which leaves the possibility open that the sinkers are stemming from that phase. Based on her

discussion of sinkers at Mesolithic sites in western Norway, Guro Skjelstad concludes that large sinkers cannot be securely related to the Mesolithic phases (Skjelstad 2003:92). A different view is taken here, mainly based on information from the excavations of the stratified site 17 Havnen in Nordfjord. Here, altogether six large soapstone sinkers were found (Bergsvik 2002:290, 291). According to the detailed stratigraphic correlation of the site, three large sinkers were found in layers securely related to the Mesolithic phases 2a/2c (dated to c. 5500–5000 cal BC) and one was insecurely related to these phases. One large sinker was found in the stratigraphic contact zone between the Mesolithic and the Neolithic layers (phase 3); the sixth sinker was from an insecure context. When considering that no large (or small) soapstone sinkers have until now been found in securely dated Neolithic contexts, it is argued here that the data from 17 Havnen provides sufficient evidence for suggesting that the large soapstone sinkers are late Mesolithic, although the basis for this conclusion is admittedly weaker than for the small and middle sized sinkers.

Regional distribution, acquisition and provenance

As a part of her work on regional distribution of lithic raw materials in Mesolithic western Norway, Skjelstad mapped the frequency of soapstone sinkers (and debris) at 35 middle and late Mesolithic sites along the west coast (Skjelstad 2003) (Figure 6). Her analysis showed that small and medium sized soapstone sinkers are most common at sites between Nordfjord in the north to Nordhordland in the south (Skjelstad 2003:93, 109). It appears that they concentrate at coastal sites in these regions, but they have also been found at fjord sites (Bøe 1934; Bergsvik et al. 2016). Soapstone sinkers are less frequent in Sunnhordland and occur only sporadically at sites in Rogaland and Lista (Ballin & Jensen 1995:138, 156, 192; Skjelstad 2003). Occasional sinkers are also found at sites at Sunnmøre (Skjelstad 2003). Recent investigations of Mesolithic sites even further to the north, at Nyhamna in Romsdal, have resulted in a few soapstone sinkers (Åstveit 2008d:401). However, the majority of the sinkers at the site-complex at Nyhamna were made of other raw materials, such as gneiss and sandstone. The non-soapstone sinkers from these sites are also generally large specimen (Åstveit 2008c:271, 2008a:107, 2008b:135). Such large non-soapstone Mesolithic sinkers are also found in eastern Norway, (e.g. Mikkelsen 1975:79; Ballin 1998). As is evident from the above, small and medium sized soapstone sinkers have a relatively wide distribution pattern within western Norway, while large sinkers of this raw material are mainly found at sites in Nordfjord.

It is important to consider how the Mesolithic sinkers have been acquired and distributed in this large region. In principle, there are two main ways in which soapstone may have been procured: by collection at beaches/river beds and by quarrying, both through direct access. In addition, acquisition may have happened by indirect access through exchange networks. We know that stone materials were acquired in all of these ways during the Mesolithic (e.g. Nyland 2015).

Concerning collection, ice-dropped flint and other raw materials were regularly collected at beaches during this period. This alternative is, however, problematic for soapstone. The main reason is that its softness makes it unlikely that it would have survived very long at beach deposits or as transported material during the Ice Age (personal communication with geologist Øystein J. Jansen). Quarrying from bedrock outcrops is more likely to have happened. During this period, it is well attested that quarrying of quartz crystal, quartz, chalcedony and basaltic rocks took place in this region (e.g. Olsen & Alsaker 1984; Nyland 2015). Some of these raw materials, such as quartz and quartz crystal, occur very frequently in the bedrock. Concerning the basalts diabase and greenstone, quarries have been identified and archaeological-geological provenance-studies have been successfully performed, which have connected adzes to specific quarries. These studies show

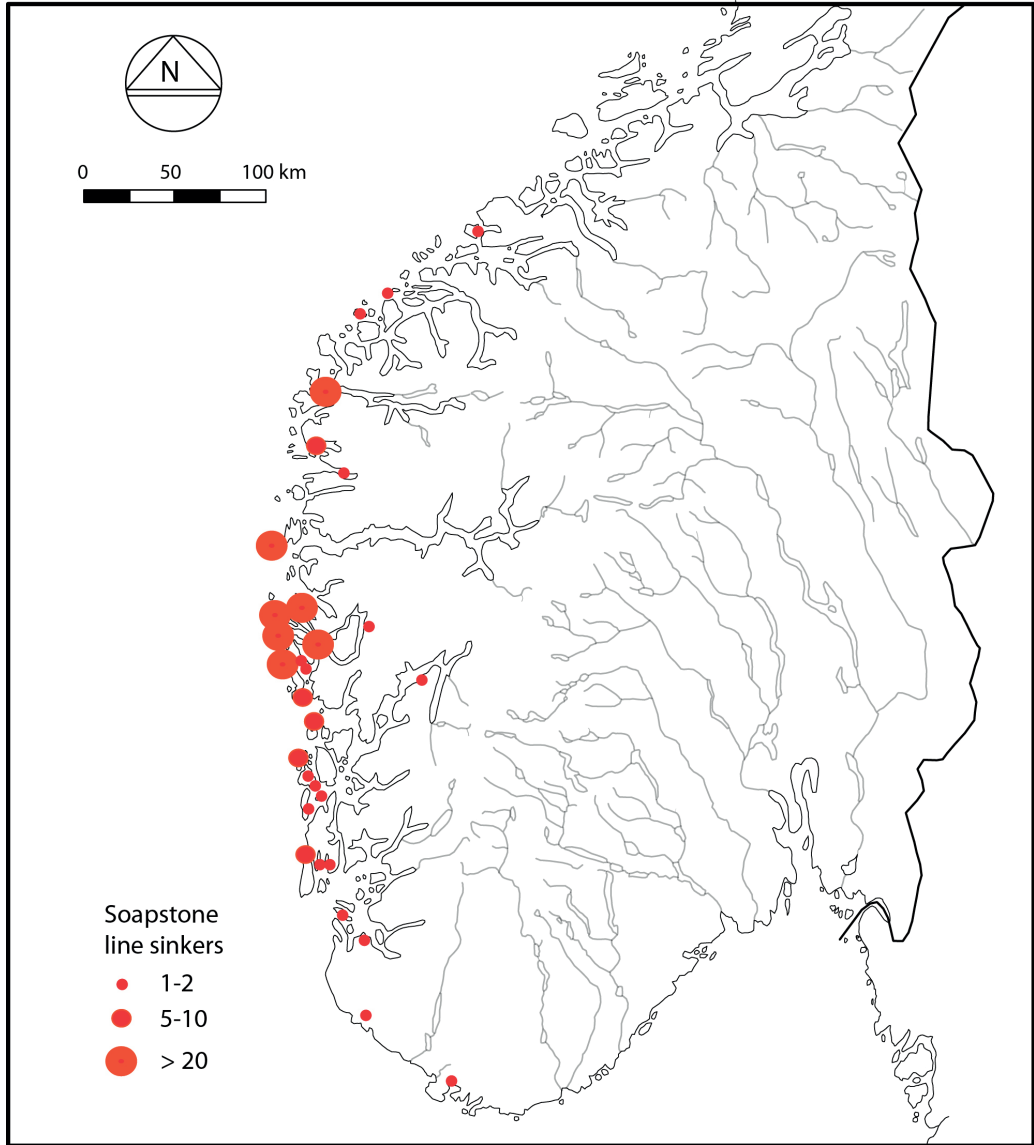


Figure 6. Distribution of Mesolithic soapstone line sinkers in southern Norway. The map is based on Skjelstad (2003: Fig. 29) and her analyses of data from 35 Mesolithic sites in western Norway (the counties Sunnmøre, Sogn og Fjordane, Hordaland and Rogaland). Sinkers from three other excavations have been added to Skjelstad's map: Farsund at Lista (Ballin & Jensen 1995), Nyhamna in Romsdal (Åstveit 2008d) and Herand, Hardanger (Bergsvik et al. 2016).

a marked concentration of adzes around the quarries, interpreted as the result of direct access, and also remarkably long-distance distributions, interpreted as the results of exchange relations (Olsen & Alsaker 1984; Bergsvik & Olsen 2003).

Until now, Mesolithic soapstone in western Norway has not been subject to provenance studies by means of geology, and quarries from this period have not yet been identified. Nevertheless, later soapstone quarries in Norway are relatively well mapped, and one may get a general idea of the type of acquisition by regarding the correlation of the distribution of these quarries with the distribution of soapstone at the residential sites. As shown in the map (Figure 7), soapstone quarries are numerous in Hordaland and Sogn og Fjordane counties. They occur much less frequently in Rogaland and are also rare at the coast of Møre og Romsdal. These quarries are arguably dated back to later ages (Iron Age and Medieval periods), but the frequency of quarries is nevertheless indicative of the frequency of soapstone outcrops in the bedrock. Thus, regarding the distribution patterns of outcrops and sinkers of soapstone (Figures 6 and 7), a reasonable suggestion might be that the marked concentration of sinkers at sites in Hordaland and Sogn og Fjordane counties is connected to the availability of soapstone in the bedrock of that particular region and that the fall-off is explained by a lack of such outcrops. This means that there was a relationship between the frequency of sinkers at the residential sites and the degree of availability in the local bedrock.

The question of provenance may be approached also from the residential sites. According to Skjelstad's study, quite a few soapstone flakes were identified at the sites Engebø in Naustdal, Sunnfjord, and the phases 2a and 2c at site 17 Havnen in Nordfjord (Skjelstad 2003). In addition to Skjelstad's sites, the site Gisøy I at Bømlo, Sunnhordland also yielded a fair amount of soapstone flakes from production of sinkers (Kristoffersen 1990:75). This indicates that outcrops were present nearby in these cases. As seen in Figure 7, quarries were surveyed in Sunnfjord and Sunnhordland, and several prehistoric soapstone vessel quarries are known from the area in the vicinity of 17 Havnen (Bergsvik 2002:65). But these three sites are exceptions. In the large majority of Skjelstad's sites – even in the main area of distribution of the sinkers – there is very little soapstone debris; in addition to the sinkers themselves, there are usually just 4–5 pieces of soapstone without traces of cutting or working in the analysed site assemblages.

In contrast, at the same Mesolithic residential sites, other tools such as projectile points and scrapers are usually accompanied by large amounts of debris of raw materials of quartz, quartzite or mylonite (Skjelstad 2003). These raw materials were probably collected or quarried by the users themselves in several different local outcrops (Nyland 2015).

A corollary of the above might therefore be that only a few soapstone outcrops were quarried during the Mesolithic, even if many such outcrops existed in western Norway. As was the case with adzes of diabase and greenstone during this period (cf. Olsen & Alsaker 1984), soapstone blanks may have been brought directly to the residential sites from the workshops close to the quarries or exchanged further as finished or nearly finished products from these workshops. This would leave very little soapstone debris at the sites, even if the objects as such were common. A question, however, is if the production of soapstone can be compared directly with that of flint or quartz. Even if soapstone production was occurring at the residential sites, there may be very little debris left to be identified by archaeologists. Until now, no experimental work has been performed on this topic, but based on ordinary practical insight, one could expect that a large portion of the soapstone roughouts or blanks brought to the sites could actually be transformed into smaller or larger sinkers, and that this would leave very little waste (some of the roughly formed sinkers at 17 Havnen are examples of this). Furthermore, sinker production was probably carried out by a sharp lithic flake or a blade, perhaps in combination with the use of a grinding stone. As a result, only powder and very small pieces of

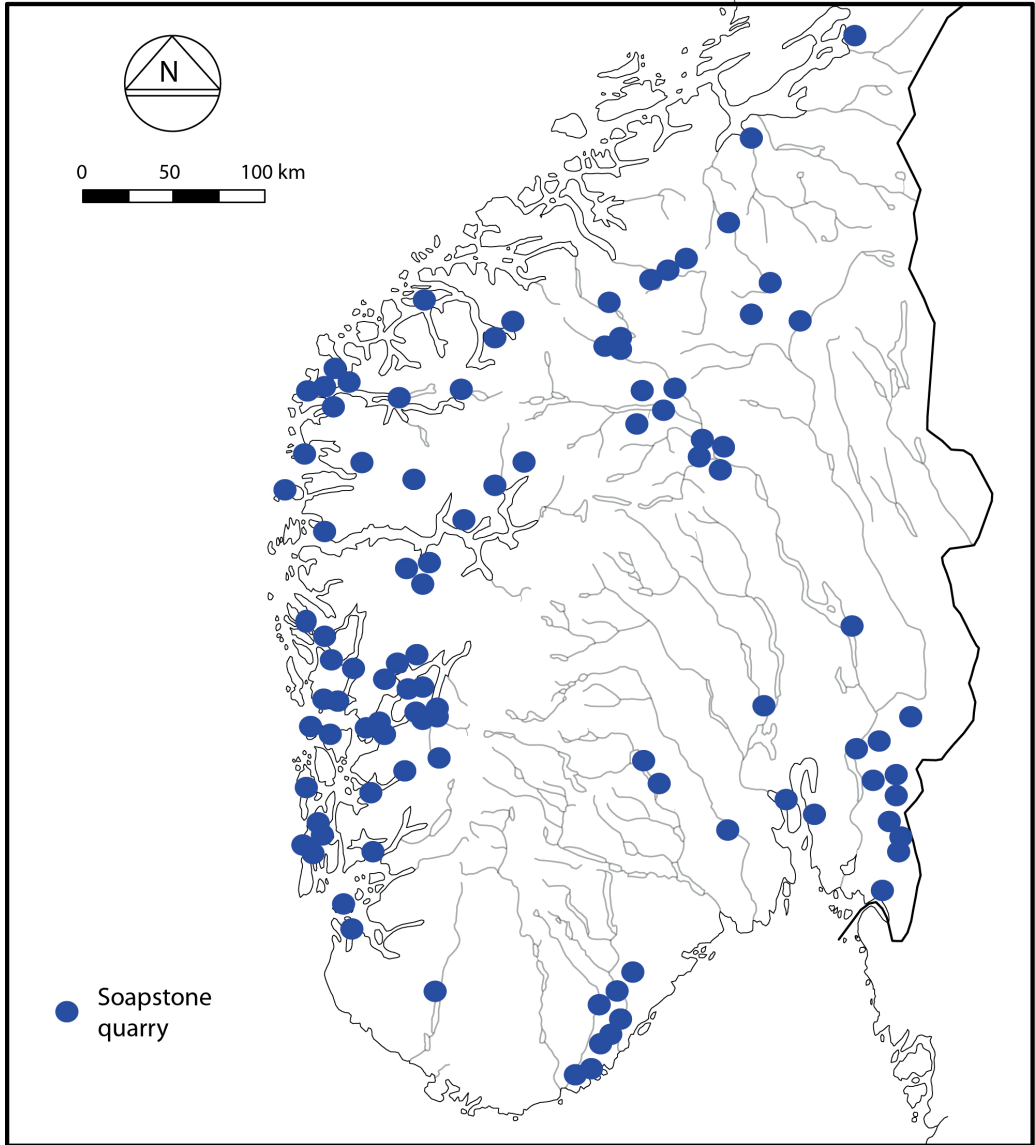


Figure 7. Distribution of prehistoric and early historic soapstone quarries in southern and central Norway. Based on results of advanced search on the entry 'kleberbrudd' in the database of protected heritage monuments in Norway, 'Askeladden': <https://askeladden.ra.no>. [accessed 1 December 2016].

soapstone would be left in the working place. Finally, small as well as larger pieces of soapstone with no furrows or notches are sometimes hard to distinguish from other 'natural' stones, which occur in large quantities at most Stone Age sites. A good portion of waste from the production of soapstone artefacts may, therefore, not have been recognised during fieldwork and was disposed of after sieving. Compared to other lithic waste material such as quartz, quartzite and mylonite, soapstone waste may therefore be somewhat underrepresented at Mesolithic residential sites.

Considering the above, it is likely that soapstone was quarried and acquired by means of direct access to the quarries by the users. This seems at least to be a likely alternative in the main distribution area of soapstone between Nordfjord and Sunnhordland, where the largest number of outcrops is located. To the north and south of these areas, other processes may have been at work: here, soapstone may also have been acquired through exchange networks.

Functions

There has been some disagreement about the functions of the sinkers. Some have suggested that they served as decoration and pendants (Bøe 1925; Bøe 1934; Bakka 1964:40; Åstveit 2008d:402). In support for this interpretation is the fact that several of them have ornaments. Many of the complete specimens are also elegantly shaped. Furthermore, during this period soapstone was also used for animal figures and shafthole hatchets, for which the 'practical' aspects are less evident (Bergsvik 2002:121; Skår 2003). This might mean that the raw material soapstone in itself was considered relevant for other tasks than just practical work. Against this interpretation one may argue that a good portion of the pieces are not elegant at all; some are coarsely made and others are scantily worked beyond a coarse furrow (e.g. Figure 5, no. 6–9), indicating that these artefacts primarily had practical areas of use. Another argument in favour of them being tools is that the artefacts have been found spread on the floor of the excavated sites in the same manner as lithic tools and refuse from the production of such tools. If they mainly served decorative ends, one would perhaps expect that they had been deposited differently than these artefacts, for example as intentionally placed deposits at the residential sites or in ritual contexts. Supporting the theory of the items being used as sinkers is that they only occur at residential sites at the coast. None are found at Mesolithic sites at the mountain plateaux, where one would expect that the need for decoration would be no less than in the lowland. As has been pointed out by Bjørge (1981:113), the coastal sites where sinkers are found are clearly oriented towards the marine environment, and the specific locations of the sites in areas favourable for fishing suggest that this was an important activity. A few sites with preserved bones from a large variety of fish-species confirm that this was the case (Jansen 1972; Hufthammer 1992; Senneset & Hufthammer 2002; Bergsvik et al. 2016). It seems therefore reasonable to interpret these artefacts mainly as sinkers used for fishing. This is not, however, in conflict with the fact that some of them have ornaments and that such ornaments have had symbolic significance.

A question is if the soapstone sinkers were net-sinkers or line-sinkers. Remains of nets have been found at several Mesolithic sites in Europe (e.g. Gramsch & Kloss 1989; Andersen 2013:217), and contacts towards these areas may suggest that net-fishing was known and practiced also in western Norway. Some of the large non-soapstone sinkers from the sites at Nyhamna have relatively broad furrows for attachment of a rope, and Leif Inge Åstveit argues that they may have been used as parts of nets or fish traps. He suggests that the large soapstone sinkers from 17 Havnen may have been used in the same fashion (Åstveit, 2008a:107). While this may be a likely interpretation, a problem is that, until now, no nets have been found in Norway, so this alternative cannot yet be substantiated.

Line fishing has been, on the other hand, positively identified. The most important evidence for

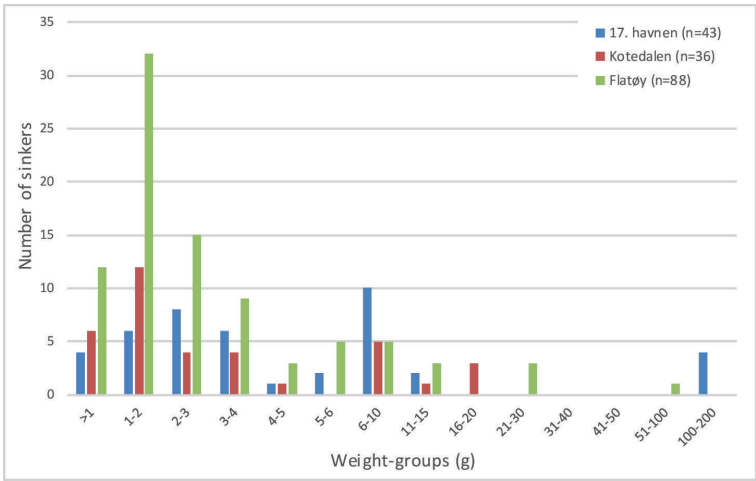


Figure 8. Weight-groups of soapstone line-sinkers from the sites 17 Havnen, Kotedalen, and Flatøy. Only complete specimens were weighed. Data from Flatøy and Kotedalen are from Bjørge (1981:110) and Olsen (1992:92). The sinkers from 17 Havnen were weighed for this work.



Figure 9. Soapstone line sinker (1) and fishhooks (2–17) from the rockshelter site Olsteinhellereen. (Photo: S. Skare, University Museum of Bergen).

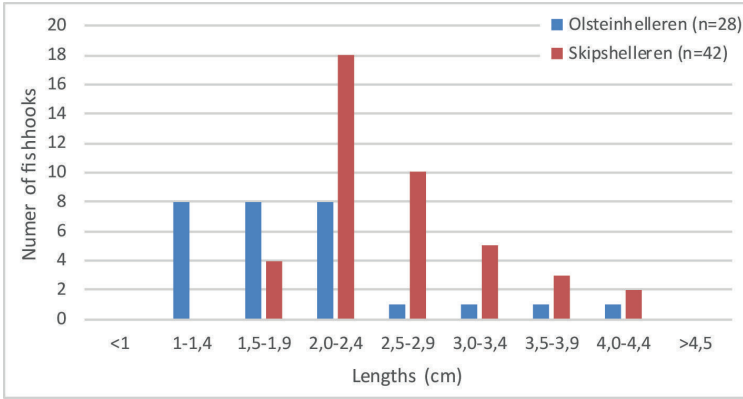


Figure 10. Lengths of bone fishhooks from the rockshelter sites Olsteinhelleren and Skipshelleren. Many of the hooks found at these two sites had been broken during production or use, often at the bottom of the bow. Only hooks where the stem was preserved from the tip to the bow were measured.

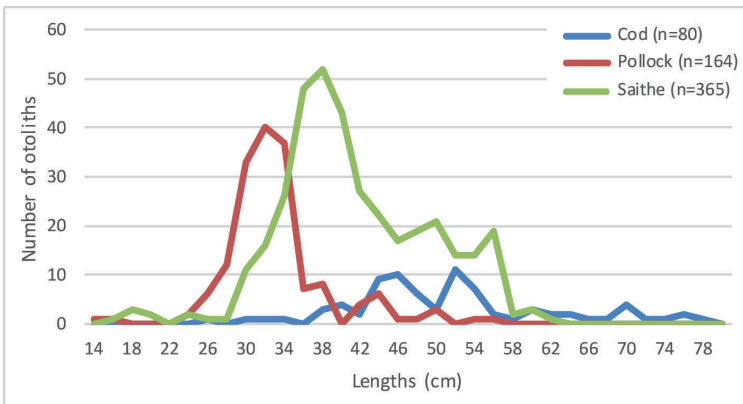


Figure 11. Lengths of the fish species cod (*Gadus morhua*), pollock (*Pollachius pollachius*) and saithe (*Pollachius virens*) based on measurements of otoliths from the site Olsteinhelleren. (Data extracted from Ritchie et al. 2016).

this is the large number of bone fishhooks found at the residential sites with preservation conditions for bone material (Brøgger 1908; Bøe 1934; Lund 1951; Jansen 1972; Olsen 1992; Bergsvik et al. 2016). These fishhooks were attached to a line and they would need a weight to bring them down in the water. Bjørge has argued that the small sinkers found at the Flatøy sites were used for this purpose. The argument is based on weights of the 106 Flatøy sinkers, which correspond fairly well with the lower weight-classes of small modern sinkers made from lead (2.18 g, 3.66 g and 7.20 g), which are today used for fishing with a rod or for trolling (Bjørge 1981:111). It can be argued that this modern parallel is not entirely relevant, because the degree of updrift of modern nylon lines may be different from that of the Mesolithic lines. This may be the case with iron hooks compared to hooks of bone, and these two factors might influence the overall weight situation. It nevertheless shows that small sinkers are important fishing devices even today. For comparative purposes, weighing has also been performed on the assemblages from the sites Kotedalen (Olsen 1992:92; Warren 1994:178) and 17 Havnen. Sinkers show a marked co-variation with those from Flatøy. Common for the three sites is that the large majority of sinkers weigh between 0.5 and 10 g and that there is a marked concentration of sinkers weighing around 2–3 g. In the case of 17 Havnen, there is also a concentration around 7–8 g, and at that site there is, as already mentioned, also a group of large sinkers weighing around 150–200 g (Figure 8).

If the sinkers were really used with a hook and a line, one would expect that these dominating weight-classes were reflected in similar concentrations in the size-groups of the fishhooks as well as

of the fish itself. For the purpose of this work, measurements were performed of the (unburned) Mesolithic bone fishhooks from two different rockshelter-sites in the Hordaland County: Skipshelleren (Bøe 1934) and Olsteinhelleren (Bergsvik et al. 2016). The measurements show that at both sites, the lengths of the hooks (measured from the point of the stem to the bottom of the bow of the hooks) vary between 1.5 and 4.5 cm (Figures 9 and 10). The hooks from Olsteinhelleren are slightly smaller than the ones from Skipshelleren, however, most of the hooks, from both sites, are less than 3 cm long. At both sites, small soapstone sinkers were retrieved. Admittedly, Skipshelleren and Olsteinhelleren are short-term fjord sites and might not reflect the size variation of hooks that one could expect at the larger coastal open-air sites such as Kotedalen, the Flatøy sites, and 17 Havnen. A problem is that only one of these sites, Kotedalen, has a fair amount of fishhooks. Due to burning, they cannot be measured with the same precision as hooks from the shelter-sites above. However, even considering a larger degree of fragmentation, they clearly fit into the same pattern as the rockshelter sites (see Olsen 1992:162, Fig. 90). This probably means that the small hooks dominate the assemblages at large coastal sites as well as at the fjord sites. Concerning the sizes of the fish, Anne Karin Hufthammer (1992:50) argues that the Mesolithic assemblages from Kotedalen are dominated by young specimen of saithe (*Pollachius virens*). This fish was also the most common catch at the site Olsteinhelleren in the Hardanger Fjord (Ritchie et al. 2016). Here, measurements of otoliths of saithe show lengths varying between 16 and 62 cm. The majority of the saithe caught at this site, however, were between 34 and 42 cm long. These are small sizes of saithe (2–3 years old), which measure up to 120 cm at the maximum. Similar measurements of otoliths from other gadids at the site, cod (*Gadus morhua*) and pollock (*Pollachius pollachius*), mainly confirm this result (Figure 11). A fair amount of labrids were also found. These are also small and they move close to the shore. It may be added that the one soapstone sinker found at the site Olsteinhelleren weighed 1.2 g (Figure 9). On the basis of these data, it seems evident that the main weight groups of the sinkers correspond well with the sizes of the bone fishhooks and the sizes of the main fish species that were consumed at the sites. The close correspondence between the three classes of data strongly indicates that the main function of the soapstone sinkers was to be attached to a line together with bone fishhooks.

An implication of this result is that fishing in western Norway during the late Mesolithic period was dominated by fishing in shallow waters. The main targets were relatively small specimen which could be caught with a line from a boat close to the shore or with a rod from the shore itself. This is in line with the observations made on Mesolithic fisheries in a wider European context (Pickard & Bonsall 2004). Occasionally, however, fishers moved their boats to deeper waters (but not necessarily off the coast), which would demand heavier tools. This is indicated by the presence of bones of a few deep-water species at the sites. At Olsteinhelleren, a bone of a sturgeon (*Acipenser* sp.) was found, in addition to ling (*Molva molva*), haddock (*Melanogrammus aeglefinus*) and tusk (*Brosme brosme*). Ling, haddock, tusk and redfish (*Sebastes marinus*) have also been identified in the Mesolithic faunal assemblages at Kotedalen. In terms of percentage, however, these species make up no more than c. 0.2% of the total amount of bones (NISP) identified to species levels at Olsteinhelleren (Bergsvik et al. 2016:23) and less than 0.1% at Kotedalen (Hufthammer 1992:50). As Hufthammer points out, this means that even if they preferred to fish in shallow waters, they also possessed the technology for deep-water fishing. This seems to be confirmed by the tool-kits which were uncovered at the sites; the occasional large bone-hooks and large soapstone sinkers were probably parts of a repertoire for deep-water line fishing.

Regional adjustments and differences

It is likely that the abundance of 2–3-year-old saithe, cod and pollock to a large degree determined how fishing was practiced. Because of a high expected return rate of these species, a significant share of the fishing technology, such as sinkers, lines, hooks and boats, was probably designed for and targeted towards maximising the catches of this group of fish. This pattern was probably relevant for the entire coast of western Norway. Nevertheless, there were clearly regional differences, even within the main distribution area of the small soapstone sinkers.

As pointed out above, the site 17 Havnen in Nordfjord has a large share of small line-sinkers similar to the sites further south. Bone fishhooks were not preserved at the site, but the few fish bone fragments identified at this site were of gadids (Senneset & Hufthammer 2002:328), which corresponds with the faunal data from Olsteinhelleren and Kotedalen. However, one difference compared to the sites in Hordaland is that large soapstone sinkers make up a fair share (around 14% of the total) at 17 Havnen. In line with the above reasoning, this could indicate that deep-water fishing accounted for a somewhat larger portion of the procurement strategies than at further south at the coast. This may have been related to differences in the local topography. The coastal topography in the outer part of Nordfjord is characterised by large islands, steep cliffs, relatively exposed coastlines and broad as well as deep stretches of water. Here, it may have been necessary to apply a broader variety of techniques, including deep-water kits with large sinkers. In contrast, the topography in Nordhordland is characterised by smaller, low-lying islands along channels and sounds in shallow and protected waters. In this region, it may have been sufficient to use smaller fishing gear in order to secure a reasonable return.

The assemblages in both Nordfjord and Nordhordland may thus be explained as part of the same basic system of procurement and technology for fishing, a result which in accordance with other types of data indicating extensive contact networks within a northern ‘social territory’ in Mesolithic western Norway (Olsen & Alsaker 1984; Skjelstad 2003). This means that the variations in sinker-use between the two districts are not expressions of cultural differences, but rather results of local adjustments to different circumstances offered by the natural topography.

Why, then, was there such a marked fall-off in the use of soapstone sinkers to the north towards Møre og Romsdal and to the south in Rogaland? And what about the total lack of soapstone line-sinkers at Mesolithic sites in eastern and central Norway? The communities along these coastlines seem to have relied on fishing as heavily as the groups in western Norway (Bjerck 2007, 2008). Being such a practical and convenient raw material, why did they not use soapstone for sinkers? This is particularly odd along the southernmost coast of Norway, where there were many outcrops of soapstone (Figure 7). For Møre og Romsdal and Rogaland, the explanation may be a general absence of soapstone in the local bedrock. This means that, unless people in these latter regions had direct access to the soapstone quarries or participated in exchange networks for soapstone, they had to find other solutions. Other data clearly indicate that long-distance networks covered these particular regions; stone adzes of diabase from a quarry in Sunnfjord are abundant in Møre og Romsdal and greenstone adzes quarried in Sunnhordland are frequent in Rogaland (Olsen & Alsaker 1984). However, considering the low number of soapstone sinkers present at residential sites in Rogaland and Møre og Romsdal sinkers were not particularly common goods in these networks. The reasons for this may be that soapstone sinkers did not possess the same symbolic value as the adzes, and perhaps also that the soapstone as a raw material for sinkers – unlike the diabase and greenstone for the adzes – was easily replaced by other rocks and other raw materials.

As can be seen at some of the Nyhamna sites in Møre and Romsdal, some naturally rounded stones of sandstone and gneiss were modified (grooves were made for the line) and used already during

the latter part of the middle Mesolithic (Åstveit 2008a). There are certainly also aspects speaking in favour of using ordinary beach pebbles for sinkers, even in areas where soapstone is present in the local bedrock, such as in parts of northern and eastern Norway. The advantage with pebbles was that they did not need to be quarried; they could be found in large quantities at every beach along the coast in all kinds of sizes and forms. In many cases, there was also no need for modification; a line could easily be tied to hold on a stone with a fitting natural shape (e.g. Rønne 1989). Stones could also be wrapped in bark and connected to wooden rings. Such wheel-shaped (net) sinkers have been found in inland lakes in Norway and are dated to the late Iron Age and early Middle Age (Wammer 2016). However, unless the preservation conditions are good for unburned wooden material (which they almost never are) such sinkers with unmodified stones are not easily identified during excavations of Stone Age sites in Norway and are actually very likely to have been discarded by archaeologists.

The alternative of pebbles as sinkers is relevant also for the early and middle Neolithic in western Norway. In these later periods, fishing also represented a major element of the economy, and line-fishing was also common (Hufthammer 1992; Olsen 1992). However, the use of soapstone sinkers (or any tool of soapstone) came to an end during the transition to the Neolithic in western Norway. If sinkers were used during the Neolithic, they were made from other raw materials.

There may be many different reasons why people did not use soapstone for sinkers outside western Norway during the late Mesolithic. However, the fact remains that no such sinkers are found; the use of sinkers is a characteristic feature of the hunter-fisher groups in the west. Alongside a series of other traits (Bjerck 2008:101–102), this feature distinguishes them culturally from contemporary populations in central and eastern Norway, and should probably be seen as part of the development of regional groups in Scandinavia during this period.

Ornaments

Several of the sinkers also have notches on the sides, most often on both sides, and in varying numbers on each side (Figures 12 and 13). At a few specimens, the notches even continue as incised lines into the surface of the sinkers (Figure 12, no. 3 and 8), and in a few instances, these lines continue all the way to the more marked lengthwise furrow (Figure 12, no. 1). Microscopic studies indicate that the notches were ground by using a grinding stone or cut by using a blade or a flake of quartz, mylonite, or flint.

The other ornamental attribute is the presence of incised lines on the surface, either in the form of parallel lines or a net-pattern (Figures 14 and 15) (e.g. Jansen 1972:29; Bjørge 1981:78; Ågotnes 1981:38; Olsen 1992:99; Nyland 2016:22). A rare type of surface decoration are parallel zig-zag lines with small perforations/holes between the lines (Åstveit 2008d:401) and at the large sinker found at Jæren, elaborate geometrical patterns occur, one of which is interpreted as a flatfish (Bang-Andersen 2009). The surface ornaments appear at notched sinkers as well as sinkers without notches. Similar to the notches, these thin lines were most likely made with a sharp stone tool.

None of the above ornamental attributes are common. Concerning notches, the following is noted at the three sites: Flatøy: 10/106, Kotedalen: 2/49, and 17 Havnen: 3/43, which means that between 4 and 9% of the sinkers have notches in the main distribution area. An even smaller share of the sinkers (2–3%) have incised lines (Flatøy: 4/106, Kotedalen: 1/49). None of the sinkers from 17 Havnen in Nordfjord had surface incisions.

Notches and incised lines thus seem to have different patterns of regional distribution. Skjelstad (2003:92) observes that while the notched sinkers are found at sites between Nordfjord and Sunnhordland, incised lines/nets have an even more narrow distribution in Sogn and Nordhordland.

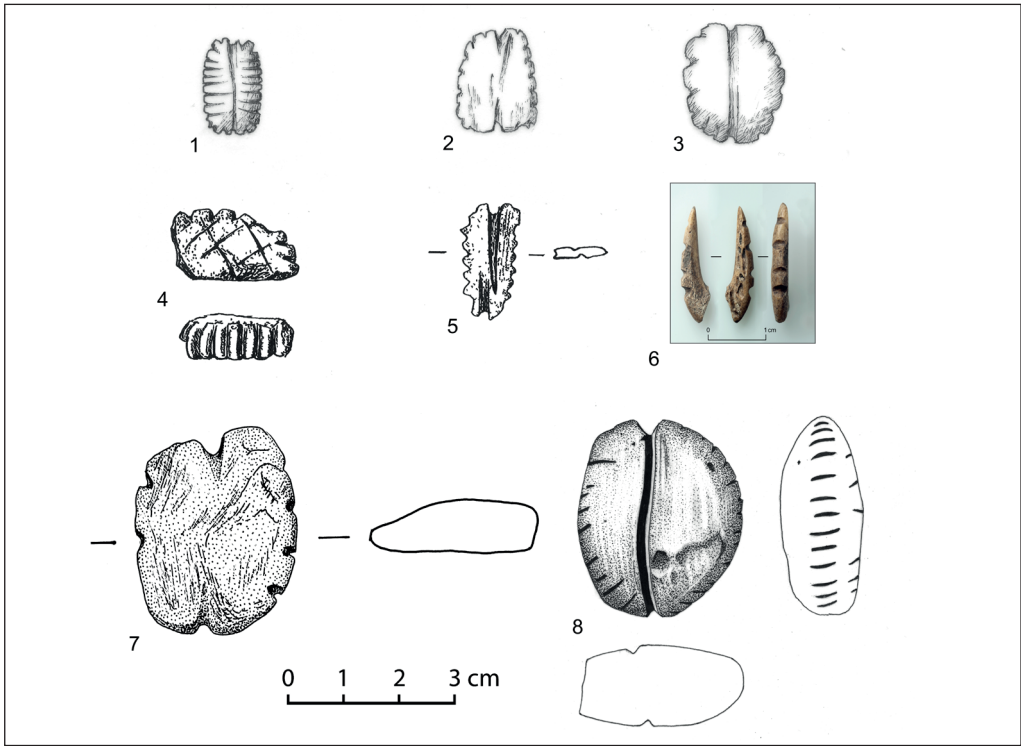


Figure 12. Soapstone sinkers with notches from the sites Flatøy XII (1, 2), Flatøy II (3), Kotedalen (4, 5), 17 Havnen (7) and Vindenes 101 (8). The fishhook with notches (6) is from the site Olsteinhellereen. Based on Bjørge (1981, Figs 34 and 36), Olsen (1992, Fig. 64), Bergsvik (2002, Fig. 188) and Ågotnes (1981, Fig. 14). Drawings by L. Gustafsson, E. Hoff, & L. Tangedal. (Photo: S. Skare, University Museum of Bergen).

The sinker with zig-zag lines and dots is, on the other hand, found in Romsdal, albeit only on one single specimen.

Notches are also found on other Mesolithic artefact-types from this region, for example on pendants/flutterers (Lund 1951:pl. IX, 12) or on stone shaft-hole-hatchets (Skår 2003:67pp).

There is an interesting parallel between the bone fishhooks and the line-sinkers, since these two artefact-types were used together and they both have notches. The fishhooks have notches along the external side of the stem (e.g. Brøgger 1908; Bøe 1934; Lund 1951; Olsen 1992), and their numbers vary between one and eight (e.g. Figure 9), and they are found on 50–70% of the hooks. Microscopic examinations show that these notches have been ground with a thin grinding stone (Bergsvik & David 2015). It is somewhat uncertain whether there is a symbolic connection between this ornamental element at the two different artefact-types and whether they actually were ornaments. In the case of the fishhooks, the notches may have served for attaching the line, although it seems odd that there sometimes were as many as eight notches covering the entire stem of the hook. This indicates that their significance extended beyond the practical. For the sinkers, the notches hardly served practical purposes, considering that all of the sinkers with notches also have furrows which seem to have been made solely for attaching a line to the sinker.

Incised lines are also found at other artefact-types. An interesting parallel in Mesolithic western Norway is an awl made from a split limb bone of a large ungulate from the site Skipshelleren (Figure



Figure 13. Soapstone sinker with notches from the site Flatøy XII. (Photo: S. Skare, University Museum of Bergen).

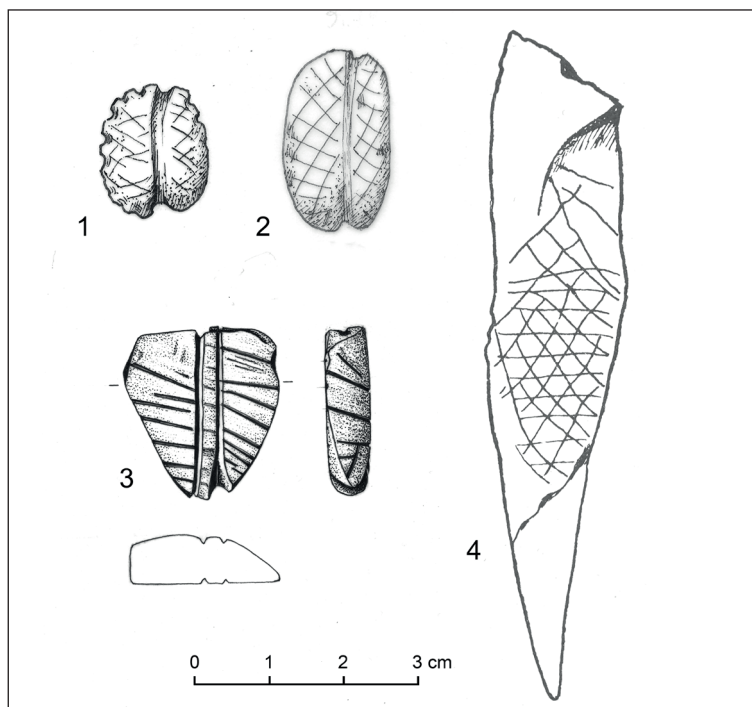


Figure 14. Soapstone sinkers with incised lines and nets at the surface from the sites Flatøy II (1, 2) and Vindenes 101 (3). The bone awl with net ornaments (4) is from the site Skipshelleren. Based on Bjørge (1981, Fig. 34), Ågotnes (1981, Fig. 14), and Bøe (1934, plate VII). (Drawings: L. Gustafson & L. Tangedal).



Figure 15. Soapstone sinkers with net ornaments from the sites Flatøy XII (above) and Grønehelleren (below). (Photo: S. Skare, University Museum of Bergen).

14, 4). As is the case with notches, this decorative pattern is also found at shaft-hole-hatchets – many made of soapstone – in this region (Skår 2003). However, even if the above patterns were common ornamental features amongst the western populations, these groups were not the only ones that used them, and they were far from the first. Instead, the patterns are widespread traits. Surface incisions are present on a recently published Mesolithic sandstone pendant from eastern Norway (Schülke & Hegdal 2015), and incisions as well as notches occur on a variety of stone/antler/bone artefacts from Mesolithic northern Europe (e.g. Nash 1998; Płonka 2003). Furthermore, the element of incised lines is present on several different Stone Age assemblages throughout the world, for example on artefacts belonging to the Clovis culture in North America (Lemke et al. 2015) and on ochres from middle Stone Age layers in the Blombos cave in South Africa. It is thus one of the earliest examples we have for human symbols (Henshilwood et al. 2009).

This is not the place for discussions of the symbolic significance of the notches and the incised lines on the Mesolithic soapstone artefacts in western Norway. However, on a general level, since the ornaments turn up independently in so many different hunter-gatherer cultures, they should probably be seen as products of common human cognitive structures and as results of the basic need that many humans have for expressing themselves symbolically on material objects. And it is easy to understand why soapstone was chosen for making these particular ornaments. Soapstone possesses some immediate and attractive qualities, such as softness, ‘fat’ consistency and sometimes plain surfaces. For a Mesolithic man or woman with a stone knife it would surely have been tempting to shape it, to cut it and to decorate it with notches and patterns.

Conclusions

This paper is an attempt to present an overview of the soapstone line sinkers in Mesolithic western Norway in a comparative perspective, and to discuss their role for fishing in this period. Although the artifact-type is well-known and has received much scholarly attention through the years, it has, until now, not been fully treated on its own terms. The above discussions have dealt with five different aspects of the sinkers: chronology, acquisition and provenance, function, regional differences and ornaments. A distinction was made between small sinkers (1–10 g) middle sized sinkers (10–50 g) and large sinkers (50–200 g). It appears that sinkers of all these weight-groups were used during the late Mesolithic in western Norway, between 5900 and 4000 cal BC. However, while large sinkers are mainly present at residential sites in Nordfjord, the main distribution area of the small and middle sized sinkers is between Nordfjord and Nordhordland. In this area, there are numerous bedrock outcrops of soapstone, and it is argued that the raw material was quarried from these outcrops by means of direct access. Soapstone sinkers are only minimally present at sites to the south and north of the main distribution area, which corresponds fairly well with the lower number of outcrops in these regions. Concerning the functions of the sinkers, a comparative analysis was made between measurements of the weights of the sinkers, the lengths of the bone fishhooks and the sizes of the otoliths of the most important fish species caught (gadids). The corresponding results of these measurements strongly indicate that the sinkers were line-sinkers. A similar function may also be the case for the large sinkers, although for them, other functions may have been relevant. A small percentage of the sinkers have ornaments, either as notches along the sides or as incised parallel lines or rhombic patterns on the surfaces.

Acknowledgements

I would like to thank Astrid Nyland for valuable comments on a previous version of the article and Per Viggo Bergsvik for help with the illustrations.

References

- Andersen, S. H. 2013. *Tybrind Vig. Submerged Mesolithic settlements in Denmark*. Jutland Archaeological Society, Århus.
- Bakka, E. 1964. Steinaldergranskingar i Nordhordland 1960–63. *Frå Fjon til Fusa. Årbok for Nord- og Midthordland Sogelag* 1964, 9–42.
- Ballin, T. B. 1998. *Oslofjordsforbindelsen. Arkeologiske undersøgelser ved Drøbaksundet*. Varia 48. Universitetets Oldsaksamling, Oslo.
- Ballin, T. B. & Jensen, O. L. 1995. *Farsundprosjektet – steinalderboplader* på Lista. Varia 29. Universitetets Oldsaksamling, Oslo.
- Bang-Andersen, S. 2009. Evig eies kun det tapte – med alle sine hemmeligheter. Refleksjoner rundt en gjenstand av klebestein funnet ved Håelva på Jæren. In Nitter, M., & Pedersen, E. S. (eds) *Tverfaglige perspektiver*. AmS-Varia 49, 75–86. Arkeologisk museum, Universitetet i Stavanger, Stavanger.
- Bergsvik, K. A. 2002. *Arkeologiske undersøkelser ved Skatestraumen. Bind 1*. Arkeologiske rapporter og avhandlinger 7. Bergen Museum, University of Bergen. Bergen.
- Bergsvik, K. A. & David, É. 2015. Crafting bone tools in Mesolithic Norway, a regional eastern-related knowhow. *European Journal of Archaeology*, 18 (2), 190–221.
- Bergsvik, K. A., Hufthammer, A. K. & Ritchie, K. 2016. The emergence of sedentism in Mesolithic Western Norway: a case-study from the rockshelters of Sævarhelleren and Olsteinhelleren by the Hardanger fjord. In Bjerck, H. B., Breivik, H. M., Fretheim, S. E., Piana, E. L., Skar, B., Tivoli, A. M. & Zangrando, A. F. J. (eds) *Marine Ventures – Archaeological Perspectives on Human-Sea Relations*, 15–33. Equinox, Sheffield.
- Bergsvik, K. A. & Olsen, A. B. 2003. Traffic in Stone Adzes in Mesolithic Western Norway. In Larsson, L.,

- Kindgren, H., Knutsson, K., Loeffler, D. & Åkerlund, A. (ed.) *Mesolithic on the move*, 395–404. Oxbow Books, Oxford.
- Bjerck, H. B. 1986. The Fosna-Nøstvedt problem. A consideration of archaeological units and chronozones in the south Norwegian Mesolithic period. *Norwegian Archaeological Review*, 19 (2), 103–21.
- Bjerck, H. B. 2007. Mesolithic coastal settlements and shell middens (?) in Norway. In Milner, N., Craig, O. E. & Bailey, G. N. (eds) *Shell Middens in Atlantic Europe*, 5–30. Oxbow Books, Oxford.
- Bjerck, H. B. 2008. Norwegian Mesolithic Trends. A review. In Bailey, G.N. & Spikins, P (eds) *Mesolithic Europe*. 60–106. Cambridge University Press, New York.
- Bjerck, H. B. 2014. Tidlige fangstsamfunn i stein- og bronsealder. In Kolle, N. (ed.) *Norges fiskeri- og kysthistorie. Bind 1*, 45–117. Fagbokforlaget, Bergen.
- Bjørge, T. 1981. Flatøy. Et eksempel på steinalderens kronologi og livbergingsmåte i Nordhordland. Unpublished mag. art. thesis, University of Bergen, Bergen.
- Björn, A. 1921. *Træk av Søndmørs steinalder*. Bergens Museums Årbok 1919–20. Historisk-antikvarisk række nr. 4. Bergens Museum, Bergen.
- Bøe, J. 1925. *Bergens Museums tilvekst av oldsaker 1924*. Bergens Museums Aarbok 1924–25. Bergens Museum, Bergen.
- Bøe, J. 1934. *Boplassen i Skiphelleren på Straume i Nordhordland*. Bergens Museums Skrifter nr. 17. A.S. John Griegs Boktrykkeri, Bergen.
- Brøgger, A. W. 1908. *Vistefundet, en ældre steinalders kjøkkenmødding fra Jæderen*. Stavanger Museum, Stavanger.
- Gramsch, B. & Kloss, K. 1989. Excavations near Friesack: an early Mesolithic marshland site in the northern plain in central Europe. In: Bonsall, C. (ed.) *The Mesolithic in Europe. Proceedings of the 3rd international symposium*, 313–324. John Donald, Edinburgh.
- Gustafson, L. & Hofseth, E. H. 1979. Steinalderfangstfolk ved Haglesundet. *Arkeo*, 1979 (1), 15–22.
- Henshilwood, C. S., d'Errico, F. & Watts, I. 2009. Engraved ochres from the Middle Stone Age levels at Blombos cave, South Africa. *Journal of Human Evolution*, 57 (1), 27–47.
- Hufthammer, A. K. 1992. De osteologiske undersøkelserne fra Kotedalen. In Hjelle, K. L., Hufthammer, A. K., Kaland, P. E., Olsen, A. B. & Soltvedt, E. C. (eds) *Kotedalen – en boplass gjennom 5000 år. Bind 2. Naturvitenskapelige undersøkelser*, 9–64. Historical museum, University of Bergen, Bergen.
- Jansen, K. 1972. Grønehelleren, en kystboplass. Unpublished mag. art. thesis, University of Bergen, Bergen.
- Kristoffersen, K. & Warren, E. J. 2001. *Kulturminner i trekant-traséen. De arkeologiske undersøkelserne i forbindelse med utbygging av Trekantsambandet i kommunene Bømlo, Sveio og Stord i Sunnhordland*. Arkeologiske rapporter og avhandlinger 6. Bergen Museum, University of Bergen, Bergen.
- Kristoffersen, S. 1990. *FV 018 Austvik – Brandasund 1988–1990*. Arkeologiske rapporter 13. Historical museum, University of Bergen, Bergen
- Lemke, A. K., Wernecke, D. C. & Collins, M. B. 2015. Early art in North America: Clovis and later Paleoindian incised artifacts from the Gault Site, Texas (41BL323). *American Antiquity*, 80 (1), 113–33.
- Lund, H. E. 1951. *Fangstboplassen i Vistehulen*. Stavanger Museum, Stavanger.
- Mikkelsen, E. 1975. *Frebergsvik: Et Mesolittisk boplassområde ved Oslofjorden*. Universitetets Oldsaksamlings Skrifter, Ny rekke nr. 1. Universitetets Oldsaksamling, Oslo.
- Nash, G. 1998. *Exchange, Status and Mobility: Mesolithic Portable Art of Southern Scandinavia*. BAR International Series 710. Archaeopress, Oxford
- Nordgaard, O. 1908. *Træk av fiskeriets utvikling i Norge*. Det Kongelige Norske Videnskabers Selskab, Trondhjem.
- Nyland, A. 2015. Humans in motion and places of essence. Variations in rock procurement practices in the Stone, Bronze and Iron Age in Southern Norway. Unpublished Ph.D. thesis, University of Oslo, Oslo.
- Nyland, A. 2016. Steinbruk i forhistorien og middelalderen. In Berg, B. I. (ed.) *Bergverk i Norge. Kulturminner og historie*, 15–32. Fagbokforlaget, Bergen.
- Nærøy, A. J. 1994. *Troll-prosjektet. Arkeologiske undersøkelser på Kollsnes, Øygarden k., Hordaland, 1989–1992*. Arkeologiske rapporter 19. Historical museum, University of Bergen, Bergen.
- Olsen, A. B. 1992. *Kotedalen – en boplass gjennom 5000 år. Bind 1: Fangstbosetning og tidlig jordbruk i vestnorske steinalder: Nye funn og nye perspektiver*. Historical museum, University of Bergen, Bergen.
- Olsen, A. B. & Alsaker, S. 1984. Greenstone and diabase utilization in the stone age of Western Norway: Technological and socio-cultural aspects of axe and adze production and distribution. *Norwegian Archaeological Review* 17 (2), 71–103.

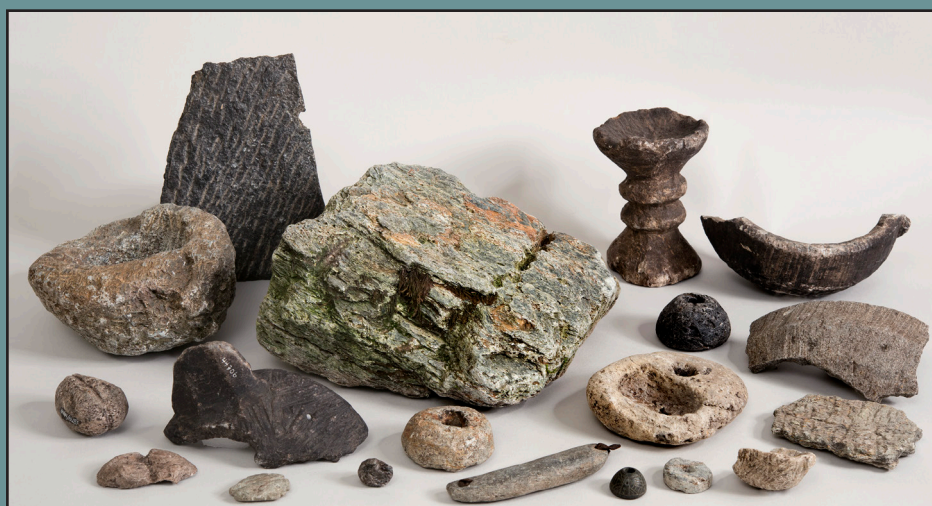
- Pickard, C. & Bonsall, C. 2004. Deep-sea fishing in the European Mesolithic: fact or fantasy? *European Journal of Archaeology* 7(3), 273–90.
- Plonka, T. 2003. *The portable art of Mesolithic Europe*. Wydawnictwo Uniwersytetu Wrocławskiego, Wrocław.
- Ritchie, K., Hufthammer, A. K. & Bergsvik, K. A. 2016. Fjord Fishing in Mesolithic Western Norway. *Environmental Archaeology: The journal of Human Palaeoecology*, 21(4), 309–316.
- Rønne, P. 1989. Sænkesten. *Skalk* 1989 (6), 21–24.
- Schülke, A. & Hegdal, H. 2015. Et unikt mesolitisk anheng fra Brunstad i Vestfold. *Viking*, LXVIII, 27–46.
- Senneset, K. & Hufthammer, A. K. 2002. Beinmaterialet fra boplassene ved Skatestraumen. In Bergsvik, K. A. (ed.). *Arkeologiske undersøkelser ved Skatestraumen. Bind 1*. Arkeologiske avhandlinger og rapporter fra Universitetet i Bergen 7, 325–331. Bergen Museum, University of Bergen, Bergen.
- Skjelstad, G. 2003. Regionalitet i vestnorsk mesolitikum. Råstoffbruk og sosiale grenser på Vestlandskysten i mellom- og senmesolitikum. Unpublished cand. philol. thesis, University of Bergen, Bergen.
- Skjelstad, G. 2011. Steinalderboplasser på Fosenhalvøya. AmS Varia 52. Arkeological museum, University of Stavanger, Stavanger.
- Skår, Ø. 2003. Rituell kommunikasjon i seinmesolitikum. Unpublished cand. philol. thesis, University of Bergen, Bergen.
- Wammer, E. U. 2016. Fjellfiske i grenselandet mellom fangstmark og jordbruksbygd i yngre jernalder og middelalder. In Mjærum, A. & Wammer, E. U. (eds) *Fjellfiske i fortiden*. Årtusener med svømmende rikdom, 183–205. Portal, Kristiansand.
- Warren, J. E. 1994. Coastal sedentism during the Atlantic period in Nordhordland, Western Norway? The middle and late Mesolithic components at Kotedalen. Unpublished master thesis, Memorial University of Newfoundland.
- Ågotnes, A. 1981. Bosetningsmønster og livbergingsform i steinalderen i Vindenesområdet. *Frå Fjon til Fusa. Årbok for Nord og Midthordland sogelag* 1981, 7–63.
- Åstveit, L. I. 2008a. Lokalitet 29 Fredly – Mellomesolitisk kulturlagslokalitet med bruksfaser fra MN-BA. In Bjerck, H. B., Åstveit, L. I., Meling, T., Gundersen, J., Jørgensen, G. & Normann, S. (eds) *NTNU Vitenskapsmuseets undersøkelser. Ormen Lange Nyhamna*, 93–118. Tapir akademisk forlag, Trondheim.
- Åstveit, L. I. 2008b. Lokalitet 30 Fredly – Boplass med mesolitiske tufter og dyrkningsaktivitet i neolitikum/bronsealder. In Bjerck, H. B., Åstveit, L. I., Meling, T., Gundersen, J., Jørgensen, G. & Normann, S. (eds) *NTNU Vitenskapsmuseets undersøkelser. Ormen Lange Nyhamna*, 119–168. Tapir akademisk forlag, Trondheim.
- Åstveit, L. I. 2008c. Lokalitet 50 Søndre Stegahaugen. In Bjerck, H. B., Åstveit, L. I., Meling, T., Gundersen, J., Jørgensen, G. & Normann, S. (eds) *NTNU Vitenskapsmuseets undersøkelser. Ormen Lange Nyhamna*, 267–284. Tapir akademisk forlag, Trondheim.
- Åstveit, L. I. 2008d. Lokalitet 68 Søndre Stegahaugen. In Bjerck, H. B., Åstveit, L. I., Meling, T., Gundersen, J., Jørgensen, G. & Normann, S. (eds) *NTNU Vitenskapsmuseets undersøkelser. Ormen Lange Nyhamna*, 393–421. Tapir akademisk forlag, Trondheim.

Internet sources

Askeladden: The Norwegian National Cultural Heritage Database: <https://askeladden.ra.no/Askeladden/Pages/LoginPage.aspx?ReturnUrl=%2faskeladden>

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

Soapstone is a remarkable rock. While it is soft and very workable, it is also durable and heat-resistant, and with a high heat-storage capacity. These properties have been recognised and valued around the world since prehistoric times, and soapstone has been used for a multitude of purposes, ranging from everyday household utensils to prestigious monuments and buildings. This book addresses soapstone use in Norway and the North Atlantic region, including Greenland. Although the majority of the papers deal with the Iron Age and Middle Ages, the book spans the Mesolithic to the early modern era. It deals with themes related to quarries, products and associated people and institutions in a broad context. Recent years have seen a revival of basic archaeological and geological research into the procurement and use of stone resources. With its authors drawn from the fields of archaeology, geosciences and traditional crafts, the anthology reflects cross-disciplinary work born of this revival.



ISBN: 978-82-90273-90-8