Birgit Maixner

Three Miniatures on Raw Material Exploitation and Long-Distance Trade in Central Norway During the Early Viking Age:

A Regional Study of the Viking Economy Based on Archaeological Evidence

Gunneria 84 / 2026

NTNU
Vitenskapsmuseet

Three Miniatures on Raw Material Exploitation and Long-Distance Trade in Central Norway During the Early Viking Age:

A Regional Study of the Viking Economy Based on Archaeological Evidence

Birgit Maixner

GUNNERIA 84, 2026

Gunneria is a periodical published by the NTNU University Museum at the Norwegian University of Science and Technology in Trondheim. The name Gunneria is in memory of Johan Ernst Gunnerus (1718-73), one of the founders of this institution.

Gunneria presents original work related to the museum's area of responsibility and academic areas, i.e. biology, archaeology and cultural history. All research papers are subjected to peer review.

Gunneria is published irregularly as an open access online journal (from issue 80) under a CC-BY 4.0 license and immediately available for anyone free of charge. There are no page charges for manuscripts accepted for publication.

Instructions to authors
http://www.ntnu.edu/museum/gunneria

Previous issues
http://www.ntnu.edu/museum/gunneria

ISSN: 1894-7859
ISBN: 978-82-8322-445-0

Trondheim 2026
Grafisk design: NTNU Grafisk senter
Trykt av: Skipnes Kommunikasjon AS

Legend to cover illustrations: Bead T2623 from Følstad, Inderøy Municipality, Trøndelag (top), photo Birgit Maixner, NTNU University Museum, CC-BY 4.0. Detail from the Mæle hoard T28628, Stjørdal Municipality, Trøndelag (right), photo Birgit Maixner, NTNU University Museum, CC-BY 4.0. Reindeer, photo Birgit Maixner (bottom).

Legend to back cover illustrations: Whalebone plaque T2150 from Åkvik, Dønna Municipality, Helgeland (top), photo: Ole Bjørn Pedersen, NTNU University Museum. CC-BY 4.0. Vang cemetery, Oppdal Municipality, Trøndelag (left), photo: Birgit Maixner. Katlberget soapstone quarry, Tilset, Oppdal Municipality, Trøndelag (right), photo: Birgit Maixner. Weight T27510 from Hol, Sunndal Municipality, Trøndelag (bottom), photo: Terje Masterud Hellan, NTNU University Museum. CC-BY 4.0.

INNHOLD

PREFACE

This study was developed as part of a one-year sabbatical for which I am indebted to the Norwegian University of Science and Technology (NTNU) and especially to my faculty, the NTNU University Museum. The study was originally conceived as a brief review article; however, it soon became evident that the subject was too extensive and complex to be adequately addressed within the confines of an article format. I am therefore grateful to the editors of Gunneria, Solveig Bakken, Bernt Rundberget and Torkild Bakken, for including this study as a monograph in the series. My special thanks go to Ole Risbøl, who, as editor of this volume, ensured a swift and well-managed publication process in his customary friendly and professional manner. I also thank two anonymous reviewers for undertaking the time-consuming evaluation of the manuscript and for providing valuable comments.

The theoretical and methodological chapters took shape largely during my stay at the Istanbul Department of the German Archaeological Institute as part of my sabbatical, inspired by the sun, warmth and the boundless cultural and historical impressions of this ancient city. I am deeply grateful to the Istanbul Department for their hospitality and the opportunity to use their library. Moreover, several of my colleagues at the Department of Archaeology and Cultural History deserve my gratitude for their support: Magnar Mojaren Gran for introducing me to GIS and assisting in refining the final distribution maps, James H. Barrett for his assessment of the gaming piece material from seven find complexes (Table 2), and Jenny Kalseth and Terje Masterud Hellan for their constant helpfulness in providing access to finds and collection data. Peder Gammeltoft, Norwegian Language Collections at the University of Bergen, and Tom Heldal, Geological Survey of Norway, have kindly provided me with shape-files on Viking Age place names and the extent of the Støren Nappe for my GIS, respectively.

Finally, I owe my heartfelt thanks to my husband Bjørn-Erik Grotheer and our two children for patiently accompanying me over the years on numerous excursions into the most archaeologically intriguing corners of the central Norwegian landscape.

ABSTRACT

Using Central Norway as a case study, this three-part archaeological investigation examines the exchange of goods in a rural region of the Scandinavian homelands during the Early Viking Age (c. 750–950 CE). It examines the complex interplay between raw material exploitation for long-distance trade and the importation of mass-produced luxury items.

Following an overview of the theoretical framework, the first part reviews current research and sources concerning the extraction of 'utmark' raw materials, for which Central Norway represents a potential area of exploitation. For at least two resources – dark schist whetstones and reindeer products – evidence of extensive surplus production is documented as early as the Early Viking Age.

The second part examines the geographical and chronological distribution of selected metalwork and bead types as representatives of mass-produced imported luxury goods. Findings indicate that such goods from southern Scandinavian trading centres were already widely available in Central Norway by the 8th century CE. Import volumes continued to rise throughout the 9th and 10th centuries, with connections to Sweden and Southern Scandinavia appearing equally significant.

The third part addresses the identification of potential areas of sites of transaction, of which a substantial number are postulated in Central Norway, primarily situated along the coast and at the mouths of major river valleys.

In the subsequent synthesis and discussion, the results of these three studies are compared. Contrary to substantivist models, this study argues for a more prominent role of the peasantry in the Early Viking Age economy of Central Norway – both as initiators of 'utmark' resource exploitation and as consumers. The widespread adoption of the weight economy and the high density of potential transaction sites are regarded as evidence of open trade.

Birgit Maixner, Department of Archaeology and Cultural History, NTNU University Museum, Norwegian University of Science and Technology
birgit.maixner@ntnu.no

1 INTRODUCTION

The archaeological investigation of Viking Age trade within the territory of present-day Norway has, in the past, primarily focused on individual aspects, specific sites, or particular export commodities. Examples include the Viking Age trading site of Kaupang on the Oslofjord, illuminated through a major research project (Skre 2007, 2008a, 2011a); the extraction of soapstone (Skjølsvold 1961); iron production in south-eastern Norway (Larsen 2009; Rundberget 2016; Tveiten & Loftsgarden 2017); reindeer hunting (Mikkelsen 1994); and, in recent years, seasonal Late Viking Age and medieval marketplaces in the mountainous zone between south-eastern and south-western Norway (Loftsgarden 2017). This approach is also reflected in the structure and content of the seminal publication on the subject that appeared only a few years ago, Viking Age Transformations: Trade, Craft and Resources in Western Scandinavia, edited by Zanette T. Glørstad and Kjetil Loftsgarden (Glørstad & Loftsgarden 2017a), which is organised into the thematic sections 'Trade and traders', 'Production and resources' and 'Sites of trade'.

Apart from a few small-scale studies (cf. Aannestad 2011; Glørstad & Wenn 2017), Norway has so far lacked archaeological investigations that aim for a holistic understanding of the interplay between local extraction of raw materials for trade and the import of foreign goods into individual regions during the Viking Age. Only a few scholars have addressed the question of how and by whom the exploitation of raw materials and the exchange of goods were organised (cf. Baug 2005; Baug 2022a; Baug 2022b; Loftsgarden 2017; Stene & Wangen 2017). Furthermore, the geographical focus of previous research has been on Southern Norway, whereas aspects of Viking Age resource exploitation and long-distance trade in Western, Central and Northern Norway have, overall, received considerably less attention.

A region that lends itself to an interlinked investigation of Viking Age resource exploitation and long-distance trade for several reasons is Central Norway. In the present study, Central Norway is defined according to the administrative district of the NTNU University Museum, which includes Helgeland, Trøndelag, Nordmøre and Romsdal (Figure 1). Geographically, the area is diverse; it comprises a long coastline characterised by numerous islands and small fjords, fjords extending far inland – of which the Trondheimsfjorden is the largest – long river valleys, extensive forest and marshland areas, and mountainous terrain.

The varied natural environment of Central Norway theoretically provided the conditions for exploiting a wide range of raw materials from the 'utmark' (for the choice and definition of the term, see further below in this chapter), which constituted common long-distance trade goods from the Scandinavian Peninsula during the Viking Age. Moreover, Central Norway was situated at the intersection

of the north-south sailing route along Norway's west coast – the norðvegr (cf. Skre 2018, 782) – and several long-distance trade routes extending eastwards across the Scandinavian Mountains (Kjølen) into the territory of present-day Sweden (cf. Serning 1966, 111–112; Holm 2015, 83; Ambrosiani 2021, 318–319).

Figure 1. Extent of the study area in Central Norway, corresponding to the administrative district of the NTNU University Museum.

The distinctive resource base of Central Norway, combined with its geographical position at the crossroads of north-south and west-east long-distance trade routes, makes the region an ideal case study for examining the interplay between export-oriented raw material exploitation and the importation of mass-produced goods, as well as their circulation at potential transaction sites. Nevertheless, Central Norway's role and contribution to Viking Age long-distance trade have so far been addressed only selectively, and a comprehensive synthesis and evaluation remain lacking.

The potential of small-scale analyses of archaeological finds from areas near known sources of raw materials to evaluate existing models of the nature and organisation of Viking Age trade has likewise not yet been fully realised. Only in recent years has it been demonstrated that a prominent long-distance trade item of the Viking Age – dark schist whetstones – originated in the core area of Central Norway.

From the 8th century CE onwards, these whetstones were quarried in the utmark area of Mostadmarka, approximately 11 km south of Stjørdal in the Trondheimsfjorden region, and traded from there to Jutland and the Baltic-coast regions (cf. Baug et al. 2019; Baug et al. 2024a). This fact renders the area surrounding the Mostadmarka quarries particularly relevant for investigations into trade-related issues. Moreover, a comprehensive study and evaluation of the extent to which, and at what times, Central Norway contributed to Viking Age long-distance trade – and with which other goods – remains lacking. Conversely, there are scarcely any studies addressing which long-distance trade goods produced elsewhere reached Central Norway during the Viking Age, when and from where they arrived, to what extent, and where they ultimately ended up (for individual object groups, cf. Eldorhagen 2001; Maixner 2021b).

The overarching objectives of this study are to achieve a deeper understanding of the organisation of surplus raw material exploitation and the exchange of goods at local and regional levels within a rural region in the northern part of the Viking homelands, and to situate this discussion within the context of current research and established models. A prerequisite for addressing these questions is to clarify the nature of raw material exploitation during the Viking Age, the importation of luxury goods, and the existence of possible trading centres in Central Norway. Which goods, from where, and at what times provide evidence of Central Norway's involvement in Viking Age long-distance trade, and how did their composition evolve over time? Conversely, what trends can be identified in the importation of goods from outside the region – when, where and to what extent do they appear, and can changes be observed over time? Where might transactions involving these long-distance trade goods have taken place, and from when are there indications of possible markets and trading sites in Central Norway?

This, in turn, gives rise to several sets of questions. How did the interplay between local raw material extraction and the importation of goods evolve, and can any spatial connection between them be identified? Is there evidence indicating whether the exploitation of raw materials was organised by local elites or initiated by the rural population? Did those responsible for the practical extraction of raw materials receive imported goods in return? Does the distribution pattern suggest whether goods were traded directly over long distances or through a series of intermediate exchanges? Finally, what was the nature of this exchange within the

tension between two contrasting models: trade administered and controlled by local or regional elites on the one hand, and a free-market economy characterised by private ownership of the means of production, free competition, flexible pricing, and freedom of trade and consumption on the other?

As both the title and format for this study, I have adopted the term 'miniatures', borrowed from classical music theory, where it denotes short musical sketches rather than full-scale compositions. Each of the three miniatures addresses one of the three thematic pillars of the present study: 'Surplus Exploitation of Utmark Resources', 'Imported Luxury Goods', and 'Sites of Transaction and Craft Production'. The miniatures provide an overview of the current state of research in these areas, in many cases supplemented by my own findings. In the concluding synthesis section, the results derived from the miniatures are brought together and discussed in terms of their contribution to answering the overarching research questions.

The period selected for this study is the first half of the Viking Age, c. 750–c.950 CE, hereinafter referred to as the Early Viking Age. Traditionally, the onset of the Viking Age has been associated with the first documented raids on the British Isles and thus placed around 800 CE (cf. Shetelig 1927). During the 1980s and 1990s, however, the relative and absolute chronological dating of the late pre-Viking and Viking periods was the subject of lively scholarly debate. Influenced by substantial material and chronological studies, as well as new absolute dating from Ribe, several scholars observed the emergence of Viking Age object types and art styles as early as the 8th century CE (Myhre 1993, 185–187). In recent years, discussion regarding the beginning of the Viking Age has played only a minor role, and the assumption of its commencement around 800 CE appears to have become consolidated (see, for example, Brink 2008, 4; Solberg 2012, 218; Glørstad & Loftsgarden 2017b, viii). Nevertheless, the high-resolution chronology of the 2017–2018 SJM 3 Posthustorvet excavations in Ribe (Sindbæk 2021; Sindbæk 2023c) has, in my view, renewed the relevance of this question – particularly if the strengthening of long-distance trade is regarded as a defining criterion of the Viking Age (cf. Skre 2017, 3). For instance, finds from Ribe indicate large-scale production and regular trade in whetstones from the central Norwegian quarries of the Mostadmarka area as early as the mid-8th century CE (cf. Baug et al. 2023, 112–113).

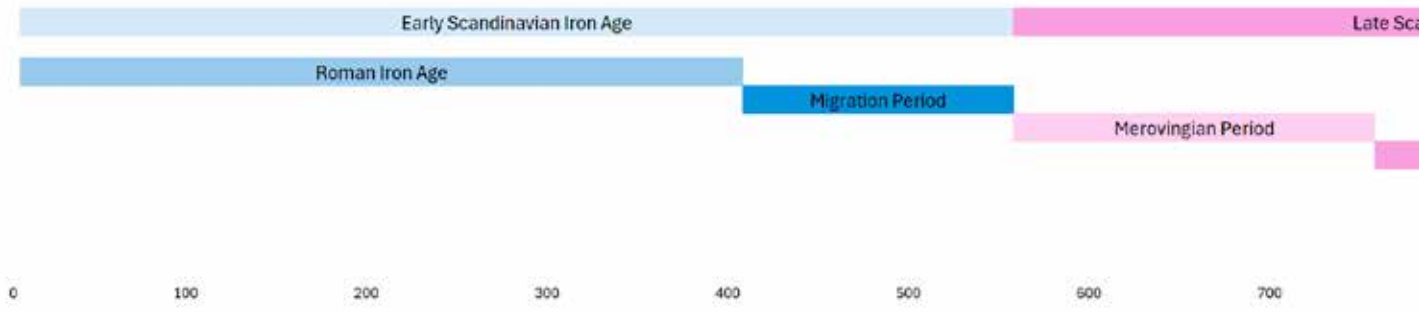
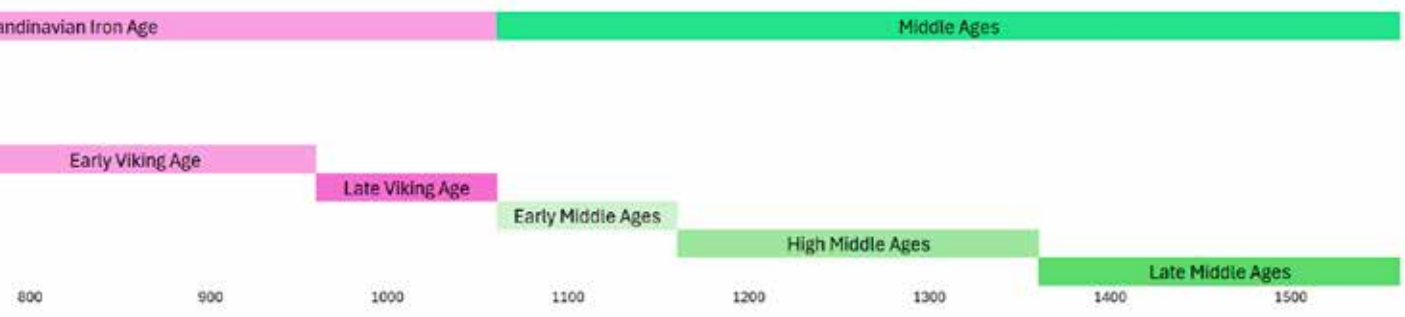


Figure 2. Chronology of Norwegian archaeological periods.

For this reason, it appears most appropriate, given the focus of this study, to place the beginning of the Viking Age at around c. 750 CE (Figure 2). The upper limit of the period under investigation is set at c. 950 CE, as this marks the onset of other developments, such as a second wave of urbanisation during which the cities of Oslo, Bergen and Trondheim were founded, alongside intensified exploitation of iron, millstones and reindeer antler (cf. Skre 2017, 10).

The Scandinavian concept of 'utmark', which encompasses natural environments such as moorlands, forests, coastal areas and mountains, has no direct equivalent in English (Øye 2005, 9) and is typically translated to 'outfield' or 'outland' in archaeological literature (cf. Andersson et al. 1998; Holm 2005; Indrelid et al. 2015; Glørstad & Loftsgarden 2017a; Baug 2022a; Risbøl et al. 2025). While in contemporary usage 'utmark' simply denotes an outlying field or area (Øye 2005, 9), in the Middle Ages and earlier it referred to a distinction between privately owned pasture and extensively used land (outfields) on the one hand, and outlands partly managed as commons on the other (Hennius 2020, 11). Owing to the lack of detailed knowledge about ownership structures and the legal and practical organisation of resource exploitation, the Norwegian term 'utmark' is retained in this study to avoid the associations implied by the English terms 'outfield' and 'outland'.



2 THEORY, MATERIALS AND METHODS

2.1 Theoretical framework

The present empirical study, grounded in the testimonies of material culture and in the geographical settlement archaeology, aligns with the endeavour to compose a synthesising cultural history of the past and to reconstruct it, thereby standing in the tradition of culture-historical archaeology that reaches back to the nineteenth century. Despite theoretical reorientations in the interpretation of archaeological material since the 1960s – namely the 'New Archaeology', processual and later post-processual archaeology – fundamental methods and principles of culture-historical archaeology, such as typology, chronology, stratigraphy, and the concept of the closed find, continue to shape the discipline and the manner in which archaeological sources are evaluated (cf. Eggers 1959; Binford 1962; Jankuhn 1977b; Fehring 1992; Renfrew & Bahn 1996; Olsen 1997; Eggert & Veit 1998; Hodder & Hutson 2003; Eggert & Samida 2013; Hedeager 2017, 99).

With regard to its theoretical standpoint and its interdisciplinary approach – combining sources and methods from archaeology, geology, natural history, geography, history and onomastics – the present study also situates itself within the tradition of the Annales School, founded by French historians. Jørn Sandnes (1997, 1981) has drawn attention to the parallels between this school and the Norwegian agrarian-historical tradition in local and regional historical research. Both research traditions share a holistic approach, which takes as its point of departure a broad spectrum of culture-historical sources and seeks to integrate these into a form of 'total history', a 'histoire à part entière' (cf. Carelli 2001, 13). Examples of economic studies within this tradition in the field of Scandinavian early medieval archaeology include works by Peter Carelli (2001), Frode Iversen (2008), and Kjetil Loftsgarden (2017).

An important position within post-processual and postmodern currents of thought is that objective truths – and thus historical representations – are impossible (cf. Olsen 1997, 61). Like every archaeological study, the present work is shaped by the time and context in which it was produced and – albeit to varying degrees –

by impulses from theoretical developments in archaeology over recent decades, which distinguish it from traditional culture-historical archaeological studies.

Although the significance of empirically measurable data and the source-critical stance of the positivist scientific ideal of processual archaeology undoubtedly constitute important pillars of this work, perspectives from post-processual archaeology – particularly actor-network theory (cf. Latour 1987; Latour 2005; Law 1999; Law 2009) – have proven highly fruitful for understanding the complex formation of archaeological source material and the resulting limitations of interpretative possibilities. The same applies to post-processual approaches which argue that human actions are not deterministically governed and do not inevitably result in universal structures, but rather depend to a high degree on the will and decisions of individual actors – human agency – who thereby shape those structures (cf. Olsen 1997, 62; Carelli 2001, 16).

2.1.1 Defining Trade

The topic of Viking Age trade is exceptionally broad, and its theoretical frameworks have been addressed in several comprehensive overviews over the past 25 years (cf. Steuer 1987a; Norseng 2000; Skre 2000; Sindbæk 2007; Helle 2009; Skre 2017). The term 'trade' has likewise been employed in a very broad sense, sometimes encompassing all forms of goods exchange – ranging from market transactions to gift-giving, redistribution, tribute, and even robbery – depending on the underlying conceptual approach (cf. Helle 2009, 582; Norseng 2000, 21–25; Frölund 2023, 158–159). In the present study, a narrower definition is adopted, focusing on commodity trade understood as the buying and selling of mass-produced, refined craft products on the one hand, and raw materials obtained from the utmark – both terrestrial and aquatic – on the other. A key methodological challenge lies in the fact that archaeological evidence alone rarely permits determination of whether an object reached its deposition site as merchandise, looted goods, a gift, or payment (cf. Helle 2000, 157).

2.1.2 Trade and Goods Exchange in Economic Models

Trade and the exchange of goods in the Viking Age have previously been interpreted by archaeologists, historians and economic anthropologists through various economic models (cf. Carelli 2001; Gustin 2004; Helle 2009). Influenced by the neoclassical theory developed in the latter half of the 19th century, early research into Scandinavian trading centres was dominated by the notion that Viking Age trade operated according to free-market principles and profit maximisation – implying that it already exhibited proto-capitalist characteristics (Gustin 2004, 26–27). For example, Holger Arbman (1937, 16; 1939, 52) characterises Birka in central Sweden as a powerful trading hub for the circulation of goods and as a focal point for the Baltic fur trade, where foreign merchants converged to purchase goods assembled from smaller trading centres.

From the 1970s onwards, Norwegian archaeology came under the influence of substantivism, a theoretical current developed by the circle around economic anthropologist Karl Polanyi. The central tenet of substantivism is that the economy in pre-capitalist societies was driven by values other than profit maximisation and

was interwoven with social mechanisms such as the pursuit and display of prestige and the formation and maintenance of social and political alliances (Polanyi 1957, 243–270; Helle 2009, 574–575). Two principles governing the distribution and circulation of commodities are fundamental to substantivism: reciprocity and redistribution. Reciprocity refers to the reciprocal, often ritualised exchange of goods of approximately equal value. A gift required a corresponding counter-gift; alternatively, it created an asymmetrical relationship of dependency, which could be rebalanced through personal support and services (Mauss 1969). Redistribution denotes a principle whereby goods were collected at a political centre under the authority of individuals at the top of a hierarchically structured social group and redistributed according to prescribed rules (Skre 2000, 167; Gustin 2004, 31).

Under the influence of substantivism, Viking Age research from the 1970s onwards downplayed the significance of market trade, placing greater emphasis on the social dimensions of exchange. This shift is reflected in the phrase 'trade and exchange', which conveys the idea that trade was only one among many motives for the transfer of material culture (Horne 2022, 118). As Knut Helle (2009, 577) has observed, substantivism has made it difficult to discuss prehistoric commodity exchange without highlighting gift exchange as a mechanism for securing sociopolitical alliances. Furthermore, the concept of a chieftaincy based on redistributive systems has become a central paradigm in Norwegian Viking Age research (see, for example, Hansen 1999, 81–89; Sigurðsson 1999, 48–51). Polanyi's notion of the 'port of trade' – a site controlled and protected by local rulers for administered long-distance trade (Polanyi 1957, 263) – has likewise been highly influential in shaping ideas about Viking Age trading centres in Northern Europe.

In parallel, and in dichotomous opposition to substantivism, neoclassical economic models continued to evolve, referred to since the 1960s as formalism. Formalism is characterised by the assumption of free-market trade and the pursuit of profit maximisation by individuals (Gustin 2004, 29). Several scholars advocating formalist principles in Viking Age trade have distanced themselves – directly or indirectly – from substantivist perspectives. For example, Johan Callmer (1995b, 68) argues that specialised craftsmen mass-producing bronze jewellery at Viking Age trading sites operated independently of local elites. Helle (2000, 164–166) contends that the motivation of itinerant Viking Age merchants, who undertook perilous and arduous trading journeys, can scarcely be explained other than as profit-driven. Loftsgarden (2017, 28–29) examines the logistical and social challenges posed by redistributive systems in connection with Late Viking Age and medieval marketplaces in southwest Norway, concluding that the extensive exchange of goods – such as iron, hides, antlers, craft products and food – was unlikely to have occurred through redistributive networks or gift exchange.

Olof Holm (2015; 2017) characterises Viking Age trade in the rural region of Jämtland, east of Central Norway, as what John Lie (1992) terms a 'market mode' of exchange: an intraregional, open trade characterised by broad popular participation in commodity exchange. Helle (2009, 587) interprets finds presented during the Kaupang project (Skre 2008a) – including coins, fragmented silver, ingots, balances, and weights associated with the weight economy – as tangible evidence for the existence of market trade in the Viking Age. Within Norwegian Viking Age research, Helle adopts one of the most explicit positions against the likelihood that gift exchange and redistribution, as central principles of the

substantivist economic model, played a significant role in the Viking Age economy (cf. Helle 2009, 586).

It was only within the framework of post-substantivism that it became possible to avoid the necessity of choosing between the formalism's sub-capitalist markets on the one hand, and substantivism's redistribution and reciprocity on the other (cf. Horne 2022, 126–128). An attempt to transcend the classical dichotomy between formalism and substantivism was advanced by Ingrid Gustin (2001). Drawing on the model developed by the American anthropologist Stephen Gudeman, which posits two interwoven economic spheres – a 'community sphere' and a 'market or trading sphere' – Gustin (2001, 309) advocates integrating diverse perspectives to allow for less stereotypical and more nuanced representations. Similarly, Dagfinn Skre (2008a, 10; 2008b, 335) underscores the limitations of substantivism in capturing the dynamics of prehistoric economies and instead proposes a post-substantivist approach, which accentuates the embeddedness of economic practices in the early Middle Ages (cf. Hodges 2012, 21–22).

One limitation of the theorisations outlined is that, with a few exceptions – such as the remains of the weight economy interpreted by Helle (2009, 587) as indicative of market exchange – they remain largely disconnected from the archaeological record. There is no comprehensive discussion of how material evidence should be presented within the framework of one model or the other; for instance, how the distribution of luxury goods according to redistributive principles might differ from distribution through free trade.

2.1.3 Classifying and Identifying Sites of Trade

The discourse on Viking Age trading sites in Scandinavia has historically been shaped by a succession of models and terminologies, beginning with Polanyi's (1957, 1963) concept of 'ports of trade' as a universal economic institution. These were understood as locations where agreements provided protection for trade, thereby enabling its occurrence, alongside the related notion of the 'emporium' as a meeting place for traders engaged in foreign commerce. Building on Polanyi's concept, Richard Hodges (1982) proposed a partially evolutionary model comprising different types of emporia, categorised as A, B and C. However, Hodges' model later proved inadequate for describing Scandinavian craft and trade sites, owing to the rediscovery of numerous trading locations, some of which exhibited markedly different characteristics. In particular, small and occasional rural markets were overlooked in the model, as they were not regarded as essential to the economy (cf. Hodges & Whitehouse 1983, 101). Skre (2008b, 337–338) therefore introduced a modified model (Figure 3), comprising four categories of sites with substantial evidence of trade and craft production: central-place markets, local markets, nodal markets, and towns. These categories are defined by three criteria: the nature of their activities (seasonal or permanent), the scope of their trade relations, and their location in relation to political units. Within this framework, towns are the only sites with extensive evidence of trade and craft production that were permanently settled, while towns and nodal markets are the sole categories engaged in long-distance trade.

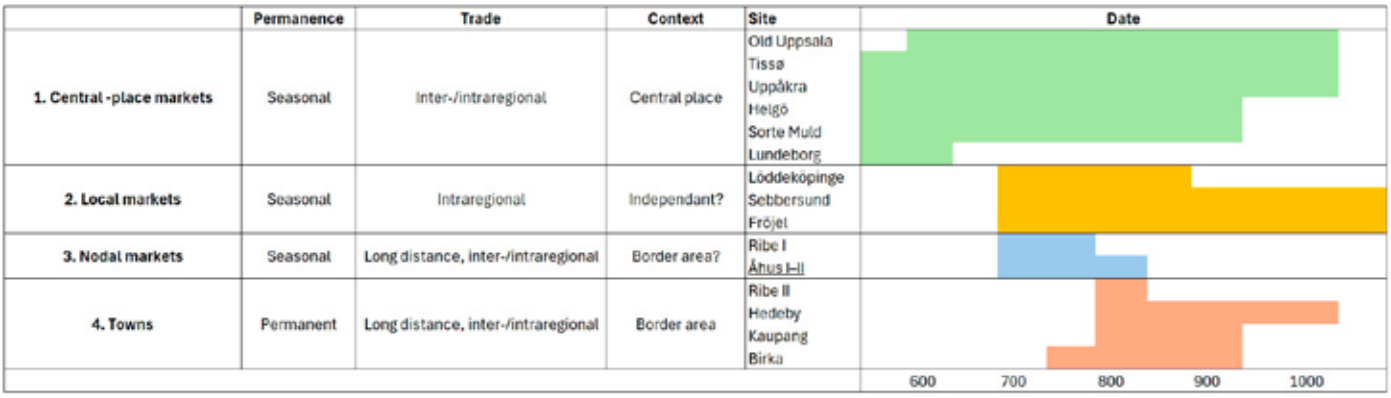


Figure 3. Skre's (2008b, 338) model of Scandinavian and Baltic sites with extensive evidence of trade and craft production.

Several direct and indirect criteria have been established for the practical identification of Viking Age trading sites based on archaeological evidence. First, traces of both trade and production should be present in the material record. Second, fragmented silver, balances and weights constitute a significant component of the finds (cf. Hedenstierna-Jonson 2022, 75). Third, concentrations of graves containing weighing equipment and imported goods are often located nearby; conversely, such concentrations can serve as indicators for identifying previously unknown Viking Age trading sites (cf. Larsen 1980; Larsen 1986; Stylegar 2009, 73; Skre 2017, 13–14). Regarding the placement of Viking Age trading sites, Søren M. Sindbæk has made particularly important contributions to the discussion. On the one hand, he observed that trading places were frequently situated at junctions and crossings between different transport zones, necessitating reloading between various means of conveyance (cf. Sindbæk 2005, 120–121). On the other hand, he argued that the location of Viking Age trading sites was determined more by topographical qualities relevant to long-distance trade than by their function as regional transshipment points (Sindbæk 2005, 121–122).

To date, only one site of craft and trade in Western Scandinavia has been classified as a town according to Skre's model (2008b): Kaupang, located near Larvik in the Oslofjorden region (cf. Skre 2007; Skre 2008a). Kaupang was founded during the first wave of urbanisation in Scandinavia, c. 700–810 CE, a period that also saw the establishment of Ribe and the Viking towns of Birka and Hedeby, as well as seasonal local markets such as Löddeköpinge near Øresund, Sebbersund on the Limfjord, and Heimdalsjordet near Sandefjord (Skre 2017, 12). The towns of Oslo, Trondheim and Bergen were only founded during a second wave of urbanisation, c. 950–1100 CE (Hansen 2017, 61).

Recent geophysical investigations at Utstein Kloster on the island of Klosterøy, Stavanger Municipality, have revealed indications of pit houses which, in combination with metal-detection finds, suggest the presence of a Viking Age trading site (Hillesland & Pedersen 2024), although its size, significance and precise dating remain unknown. A similar site, though located inland, has been known since 2009 at Bjørkum in Lærdal Municipality, Vestland County (Ramstad 2011). This site, which can likely be characterised as a small seasonal production and market centre dating primarily to the period 700–850 CE, occupies a strategic position along transport routes crossing the mountains and leading to the

Sognefjord. At least thirteen pit houses have been identified. Archaeological evidence indicates the manufacture of combs from reindeer antler, ironworking and textile processing (Loftsgarden 2017, 107–113; Loftsgarden et al. 2017, 240–245). The previously mentioned local market at Heimdalsjordet in the Oslofjord region, near Sandefjord and only 15 km northeast of Kaupang, was until recently considered the sole site of this type securely identified in Western Scandinavia (cf. Skre 2017, 13). Its archaeological material includes large quantities of fragmented silver, weights, craft-production debris, and structures interpreted as workshop plots (Bill & Rødsrud 2017).

The extensive corpus of metal finds uncovered in Norway over the past two decades – particularly in south-eastern Norway – through private metal detecting (cf. Axelsen & Fredriksen 2024), but scarcely analysed, may point to a dense network of comparable sites. In the Kaupang area alone, Manvik/Berg west of Stavern and Sem/Borgheim on Nøtterøy (cf. Maixner 2020b) are potential candidates for seasonal local markets, based on registrations in the Directorate for Cultural Heritage's database of monuments and sites: https://askeladden.ra.no/Askeladden/Pages/LoginPage.aspx?ReturnUrl=%2fAskeladden. The site at Nes, Larvik Municipality, in the Lågendalen river valley, notable for a small number of finds including fragmented Islamic coins, production waste and weights, may represent another minor trading and production centre in Kaupang's vicinity (Lie 2021). The example of the Sandtorg site in Harstad Municipality (cf. Krokmyrdal 2021), discovered only a few years ago and likely to be regarded as a small Viking Age marketplace, demonstrates that similar sites can be expected not only in Southern Norway but also in the north.

It is noteworthy that evidence from several sites in Southern Norway, beyond Kaupang (cf. Pedersen 2016) and Heimdalsjordet (cf. Bill & Rødsrud 2017), indicates specialised crafts employing imported raw materials, including lead models (cf. Maixner 2026) and patrices for the production of Viking Age metal jewellery, alongside hacksilver. Examples include Hundorp, Sør-Fron Municipality (C58517); Listad, Sør-Fron Municipality (C62978); Missingen, Råde Municipality (C59577:34; C59577:35); Jarlsberg Hovedgård, Tønsberg Municipality (C59921); and Huseby, Stange Municipality (three patrices, museum numbers pending). These sites, however, appear to have been particularly wealthy and politically significant farms (cf. Gundersen et al. 2023; Maixner 2015a; Maixner 2020b). A recently excavated non-ferrous metalworking workshop dating to the 8th and 9th centuries CE at Sømme on the Hafrsfjord, Sola Municipality, reinforces the impression that highly skilled craftsmen with access to specialised raw materials were employed – possibly on a seasonal basis – at central and strategically important farms (cf. Meling 2023).

Only in recent years – particularly as a result of Loftsgarden's research – have multifaceted, small-scale seasonal meeting and market places in the utmark and mountain regions of southwest Norway, situated at the transition between inland and coastal zones, come into focus (cf. Loftsgarden 2017; Loftsgarden et al. 2017; Loftsgarden 2019). As sites of interaction and exchange, these locations constituted one of the preconditions for inland specialisation in hunting, trapping and the surplus production of iron and tar (Loftsgarden et al. 2017, 233). However, apart from Bjørkum in Sogn, most of these sites do not appear to have developed into marketplaces until the 11th century CE (Loftsgarden 2017, 274).

2.1.4 Types of Traders

Compared with the phenomenon of goods exchange, merchants as actors have received little attention in the theoretical discourse of early medieval archaeology and have scarcely been integrated into current models. This may be partly attributable to the limited information available about this group in both historical and archaeological sources (cf. Mehler 2015, 360). Detlev Ellmers (1972, 16–29) provides an overview of references to merchants – primarily Frisian, Scandinavian, Frankish and Anglo-Saxon – in historical sources. From these descriptions, different types of merchants can be inferred. One such type operated from farms, undertaking occasional trading expeditions. This pattern is attested in the Scandinavian, Frisian and Anglo-Saxon regions. The northern Norwegian chieftain Ohthere, who recounts his trading voyage to Southern Scandinavia in the 9th century CE (cf. Lund 1983), exemplifies this type. The farm owner himself was not necessarily responsible for the practical execution of these journeys; they may have been undertaken by other members of his household.

Medieval historiography introduces another category: the professional merchant, although this type is less well documented in the sources. Some professional merchants appear to have been active only in local trade using small boats, whereas others are described as undertaking long, regular overseas voyages. In certain cases, professional traders organised themselves into sailing cooperatives (Ellmers 1972, 18). Icelandic saga literature from the 10th to 13th centuries CE also refers to professional traders, distinguishing three subgroups: 1) peddlers, who travelled from farm to farm during the summer offering goods on a small scale; 2) small merchants, engaged in intermediate trade between trading centres of varying hierarchies, and occasionally in barter between different regions; and 3) long-distance traders, who conducted overseas commerce (Ebel 1977, 4; Müller-Boysen 1990, 44).

The last two of these subgroups appear to correspond to the categories of professional traders described by Ellmers. In the written sources compiled by Ellmers (1972), traders who settled in trading centres emerge as an additional type. Chapter 20 of Rimbert's Vita Anskarii recounts the settlement of a group interpreted as a Frisian merchant family at the Swedish trading centre of Birka (cf. Rohwer 1937, 14–15, 57), while Skre (2011c) claims to identify evidence of a house inhabited by Frisians in the archaeological record of the southern Norwegian trading centre of Kaupang.

Disregarding the group of traders permanently based in trading centres, a concept of early medieval traders can be developed from historical sources, defined by several parameters: radius of activity (local, intraregional, interregional, or long-distance), occupational status (full-time or part-time), and social status (low, medium, or high). This model does not assume one-to-one relationships between these parameters. A peddler is characterised as a trader with a local and/or regional radius of activity and low social status, working either full-time or part-time. The regional trader operated within intraregional and/or interregional networks, practised this occupation full-time or part-time, and held medium or high social status. The long-distance trader engaged in interregional and/or long-distance trade, worked full-time or part-time, and possessed high social status. The model developed here provides a definitional framework for the subsequent discussion in this study. It aims, on the one hand, to reflect dynamic relationships

and, on the other, to allow for variants that remain poorly understood due to the limitations of the sources. For instance, the relationship between full-time long-distance traders and large landowners such as Ohthere – who may have undertaken interregional or long-distance trading voyages only occasionally – remains unclear. It is also uncertain whether all the trader types identified existed throughout the Early Viking Age, or whether certain variants, such as full-time long-distance traders, emerged only at a later stage.

Identifying traders in the archaeological record is challenging. The chamber graves of Birka, furnished with rich grave goods, have often been associated with foreign merchants in earlier scholarship (cf. Steuer 1987a, 119); however, isotope analyses conducted in recent years indicate that a selection of these graves belonged to locals (Price et al. 2018). Balances, weights and purses found in graves are likewise frequently linked to merchants, yet they may equally signify social status or suggest that the deceased had some involvement in trade (Gräslund 1980, 79–80).

2.1.5 Forms of Trade

A central question in the study of Viking Age trade – and prehistoric trade more broadly – is how it should be conceptualised: as direct long-distance exchange, as short-distance (local) trade conducted in several stages, or as a combination of both. Evaluating the distribution of imported objects can be misleading, as it is impossible to distinguish primary distribution resulting from direct long-distance trade from secondary distribution, which may produce an identical pattern (Stjernquist 1970, 106).

Essentially, three models are employed to describe possible forms of trade – whether long-distance or local: the down-the-line model, the central place model, and the network model. The down-the-line model posits that objects were passed randomly from hand to hand, enabling them to reach locations far from their place of production (Renfrew 1977, 77–79). This model has been criticised on the grounds that such a mode of transmission is impracticable in reality, given the very high number of links required to bridge long distances, which renders its success highly improbable. For the distance between the Rhineland and Sweden alone, Sindbæk (2007, 61) estimates that dozens, or even hundreds, of links would be necessary. In contrast, numerous archaeological finds demonstrate that objects in the Viking Age were transported not merely occasionally but regularly over long distances – for example, glass beads from present-day Iraq to Northern Norway (cf. Maixner in press), or whetstones from Central Norway to the southern Baltic Sea region (cf. Baug et al. 2024a). Consequently, the transfer must be envisaged as occurring through mechanisms other than simple neighbour-to-neighbour exchange.

Whereas the down-the-line model envisages links evenly distributed among equivalent nodes within a network, the central place model, developed by Walter Christaller in the 1930s, assumes that the distribution of goods is concentrated in a few locations within a network of unequal sites (Christaller 1968, 29). Christaller (1968, 30) also notes the phenomenon of the itinerant vendor, which operates outside this model and which he primarily associates with earlier periods, citing peddlers as an example. In contrast to Christaller's model, in which nodes appear static once consolidated, Sindbæk (2007) argues for a dynamic network in the

Early Viking Age of Southern Scandinavia, characterised by weak, vulnerable, and therefore transient ties. Drawing on an analysis of the places and individuals mentioned in Anskar's Vita and on the distribution of selected artefact types across numerous South Scandinavian sites – including major trading centres such as Ribe and Hedeby, smaller markets, elite residences and village sites – Sindbæk (2007, 70–71) concludes that long-distance communication occurred between an extremely limited number of large hubs and that these connections were maintained by the same small groups of individuals.

Sindbæk's network model can be aligned with the late 9th-century CE travel account of the apparently experienced northern Norwegian chieftain Ohthere, who describes a month-long trading voyage from Northern Norway to Hedeby (cf. Lund 1983). However, Ohthere's narrative also highlights the simplified nature of such models and their inherent limitations. Although his destination was Hedeby – indisputably one of the largest and best-known hubs in the Viking Age long-distance trade network of Northern Europe (cf. Maixner 2010) – the journey along the Norwegian coast and through Danish waters was far from direct. It lasted over a month and almost certainly involved numerous stops, taking place not in a deserted or lawless space but within a landscape of social and political interaction. Encounters with local populations and rulers along the route can be expected, who may have demanded a share of the profits in exchange for protection and passage, either in the form of currency equivalents or pre-emptive rights to certain goods, with corresponding implications for archaeological distribution patterns (cf. Baug et al. 2019, 69; Ögren et al. 2022, 181–183). The stock of goods originally acquired for the voyage likely diminished from market to market, as envisaged in Heiko Steuer's drip model (1987a); conversely, traders may have replenished their stock with locally sourced goods at these stops.

Ohthere's account also illustrates the relative nature of the terms long-distance trade and local trade. In comparison with neighbour-to-neighbour exchange, his voyage from Northern Norway to Hedeby undoubtedly qualifies as long-distance trade. However, when considered within the broader context of the early medieval long-distance trade network in which Scandinavians participated, it becomes evident that even this journey encompassed only a segment between two points within the larger system.

2.1.6 Dualism of Goods and Means of Payment

A fundamental challenge in addressing Viking Age trade through archaeological evidence lies in the potentially dual character of key object groups, functioning both as means of payment and as goods (cf. Skre 2011b, 73–74). Unlike continental Europe, where coinage had been practised since the 6th century CE, and Southern Scandinavia, where attempts to introduce local coin currencies began in Ribe and later in Hedeby from the 8th century CE onwards, a coin-based economy in the territory of present-day Norway only became established in the late 10th century CE (Skre 2017, 19). Carolingian denarii reached Central Norway only in exceptional cases (cf. Chapter 5.2.1), and sceattas associated with Frisian trade in the 8th century CE are not yet attested from this region.

The use of weighed silver as a means of payment is documented at Kaupang from the mid-9th century CE (Hårdh 2008, 114) and subsequently in Central Norway (cf.

Chapter 5.2.2). Prior to this, barter was practised exclusively and later continued in parallel with the weight- and coin-based economy (cf. Skre 2011b), whereby one commodity was exchanged for one or more others. Several indications suggest that certain commodities or raw materials – such as iron ingots, hides, or textiles – functioned as currency units (Hårdh 2008, 97). Conversely, coins appear to have been regarded as commodities like any other in Norway as late as the 17th century (Skre 2013, 77). Glass and semi-precious stone beads have also been regularly discussed as possible pre-monetary means of payment in the Viking Age economy (most recently summarised by Maixner 2021b, 183–184). Particularly in the Early Viking Age, before the introduction of the weight economy, various forms of portable wealth may have been more significant than previously assumed (Sindbæk 2011a, 50). Until the consolidation of hacksilver as a currency in the 10th century CE, primitive valuables in the form of complete silver objects evidently constituted the predominant measures of value in Scandinavia (cf. Hårdh 1978, 165).

In an economic system largely based on barter, it is difficult to draw a clear distinction between means of payment and goods. Throughout their object biographies, items could alternately serve as commodities or as means of payment. Consequently, goods may also have been employed as payment for services, without this being distinguishable from trade goods in the archaeological record. I have argued elsewhere that the conspicuous correlation between the distribution of Early Viking Age glass beads of the 'Blue Period' and the coast of Central and Northern Norway may partly reflect their use by itinerant traders to settle taxes and services, analogous to ethnographic parallels from modern-period Africa (Maixner 2021b, 184–185). If artefacts used in this manner subsequently became grave goods, their primary function – whether as means of payment for services or as trade goods acquired through payment or exchange – can no longer be determined.

2.2 Materials

2.2.1 Archaeological Evidence

The primary data for the present study comprise archaeological finds from the Late Scandinavian Iron Age and, in particular, the Early Viking Age in Central Norway. These are mainly curated by the NTNU University Museum, with a few items having been incorporated into the collections of the university museums in Bergen and Oslo long ago. The archaeological material is catalogued in the National database for archaeological finds of the Norwegian university museums, accessible via https://www.unimus.no/portal/. The letters preceding the inventory number indicate the collection to which a find belongs: T or N (NTNU University Museum, Trondheim), B (University Museum of Bergen, Bergen), and C (Museum of Cultural History, Oslo). Urban archaeological material from Trondheim is excluded from this study owing to its size, the complexity of its documentation and its sometimes limited accessibility, although it may include finds from Early Viking Age contexts (cf. Cadamarteri et al. 2020).

The archaeological material comprises grave goods, hoards, settlement finds and stray finds, the latter having increased significantly over the past 15 years as a result of private metal-detecting activity, which has yielded primarily non-ferrous metal objects. Most of the older finds were discovered by chance during earthworks and farming, and many of these are grave goods (cf. Sognnes 1988, 11). A number of grave finds stem from excavations conducted improperly and typically without documentation by laypersons interested in science prior to the introduction of the first Norwegian law on the protection of monuments in 1905. Among recent metal-detector finds are clearly ploughed-over grave goods, although some appear to derive from settlements and market or trading sites. The requirements for metadata quality vary according to the research question: for chronological analyses, it is essential that finds originate from closed contexts, whereas for spatial analyses, it suffices that the find spot is securely located.

The source value of archaeological material is determined by multiple factors, and its potential for knowledge production arises, not least, from the interaction between humans and things – a relationship often described using actor-network theory (cf. Latour 1987; Latour 2005; Law 1999; Law 2009). The aforementioned categories of finds – grave goods, hoards, settlement finds and stray finds – reflect different motivations for deposition and varying probabilities of discovery, all of which affect their representativeness. For instance, grave contents primarily mirror the burial customs prevailing at the time of deposition, but do not necessarily indicate the actual period during which an object type circulated. Moreover, the impact of recent factors and, not least, chance on the representativeness of the material should not be underestimated. A case in point is the series of study trips along the Trøndelag coast undertaken by Ingvald Undset between 1872 and 1875, funded by the Royal Norwegian Society of Sciences and Letters (cf. Undset 1873; Undset 1874; Undset 1874–77a; Undset 1874–77b; Blindheim 1994, 14). These expeditions yielded significant finds from these areas, without which our understanding of their prehistory would be markedly different. However, they also create artificial contrasts with regions insufficiently surveyed, such as the coastal stretches of Nordmøre and Helgeland.

The geographical distance from the University Museum in Trondheim – responsible for archaeological finds from Central Norway – and its predecessor, 'Det Kongelige Norske Videnskabers Selskab', founded in 1760, together with the varying networks of scientists and archaeologists associated with these institutions, are factors that have influenced the representativeness of the material. Additional recent factors include the involvement of local informants, the priorities and engagement of administrative authorities, and prevailing administrative practices, all of which affect the availability of empirical data. Modern land development, which prompts archaeological investigations and rescue excavations, is generally more intensive in today's densely populated areas than in peripheral regions, thereby contributing to an uneven distribution of finds. Furthermore, the differing economic conditions across regions of Central Norway may have shaped both the quantity and composition of the surviving archaeological material. Prior to the enactment of the first Norwegian Heritage Act in 1905, the plundering of prehistoric burial mounds and the sale of grave goods to jewellers and antique dealers – often recorded as 'buyers' in museum accession registers – appears to have been a widespread sideline. This practice likely resulted in a disproportionately high loss of potential archaeological finds, particularly in economically marginal areas. If we take the economically driven emigration to

America during the 19th century as an indicator, such losses were probably most pronounced in coastal districts.

Although the effects of various factors on the formation of the majority of Early Viking Age archaeological finds from Central Norway have yet to be systematically mapped and analysed, this has been addressed to some extent for the category of metal-detector finds (cf. Fredriksen 2023). A metal object recovered by a detectorist may originally have been lost unintentionally or derived from disturbed grave or settlement contexts. Its discovery and subsequent inclusion in a museum's scientific collection depend on several factors, such as the detectorist's knowledge and the policies of the relevant heritage management authorities. This is particularly true for production waste found outside stratifiable contexts in the form of droplets or lumps of molten metal, which lack diagnostic stylistic or typological features. Their recognition, reporting and accession require an understanding of the significance of production waste as archaeological source material (cf. Maixner 2015b, 206).

In this context, the representativeness of source material obtained through metal detecting depends on the prevailing legal framework and administrative practices, and, not least, on the areas in which private detectorists operate and the extent of their activity (cf. Maixner 2015b; Fredriksen 2023; Axelsen & Fredriksen 2024, 10–14).

2.2.2 Other Source Materials

Although archaeological sources form the core of this study, the chosen approach – encompassing multiple topics – necessitates a broad range of source material. In addition to archaeological finds, this includes place names, archaeological monuments, and surveys of geological deposits, natural habitats and animal species. Key resources comprise Oluf Rygh's 'Norske Gaardnavne' (1897–1924), the Directorate for Cultural Heritage's register of monuments and sites (Askeladden), the Geological Survey of Norway (NGU) bedrock maps and soapstone quarry documentation, the Norwegian Water Resources and Energy Directorate (NVE) glacier inventories, and the Norwegian Environment Agency's Naturbase maps, as well as references to modern resource exploitation in topographical-statistical descriptions (Helland 1898, 1907, 1909, 1911).

2.3 Methods

2.3.1 Typology and Chronology

A prerequisite for employing archaeological finds to address the research questions in this study is their typological identification and dating. Although the National database for archaeological finds of the Norwegian university museums contains nearly all known material from Central Norway, this does not guarantee that all data relevant to the present inquiry have been recorded fully or accurately. Moreover, the quality of the registered information varies between individual entries. Typological classifications and dates based on typology are often absent,

imprecise, or even erroneous. Consequently, the archaeological material selected for this study was subjected to a rigorous quality-assurance process, and the necessary determinations were carried out. For the purposes of typological analysis and chronological assessment, the following works were primarily consulted: Petersen (1919, 1928, 1951), Ørsnes (1966), Vinsrygg (1979), Ambrosiani (1996, 2021), Callmer (1997, 2020), Jørgensen & Nørgård Jørgensen (1997), Steuer (1997), Nørgård Jørgensen (1999), Rundkvist (2010), Androshchuk (2014), Røstad (2021), and Sindbæk (2023a, 2023b).

2.3.2 Distribution Maps

Distribution maps constitute a central methodological tool in this study. The occurrence of objects beyond their production areas provides a fundamental starting point for archaeological research on trade (Loftsgarden 2017, 39). The graphic representation of selected materials and sites through find points on geographical maps is a long-established instrument of archaeological inquiry, originally conceived as a form of 'prehistoric geography' (cf. Eggers 1950; Wickstead 2019, 52). The map functions both as a representation and as an analytical tool (Aldred & Lucas 2019, 23). Nevertheless, the use of distribution maps in archaeology entails significant methodological challenges, particularly concerning the representativeness of find locations and the modes of visualisation.

As early as the beginning of the 20th century, Vere Gordon Childe (1929, ix) observed that distribution maps could be misleading, as they do not reflect actual distributions but rather disparities between well-studied and virtually unstudied regions. In his comprehensive mapping of Roman imports in free Germania, Hans Jürgen Eggers (1951a; 1951b) addressed this challenge by providing a detailed textual account of the state of research and processing in individual sub-areas, as well as the region-specific factors influencing the tradition (cf. Eggers 1951a, 13–37). He further visualised the state of processing on separate maps (cf. Eggers 1951b, maps 1–2). Another constructive approach from the 1950s is found in Herbert Jankuhn's article 'Sechs Karten zum Handel des 10. Jahrhunderts im westlichen Ostseebecken', in which he evaluates the informational value of find distribution maps in relation to trade-historical questions and identifies the sources of error that must be considered. Jankuhn (1950, 9, 12, 15) demonstrates that a find group does not necessarily occur in high concentrations near its place of production; it may have been manufactured specifically for export. Uncritical use of distribution maps risks depicting regional customs more than the actual sales areas of commercial products. Jankuhn therefore establishes concordant conditions for the preservation of a find group within a given study area and time frame – illustrated by the custom of depositing women's jewellery as grave goods in the western Baltic region during the second half of the 10th century CE – as a key premise for assessing the informational value of a distribution map. While Jankuhn (1950) examines the influence of cultural-historical factors during the circulation period of a form on distribution patterns, Berta Stjernquist addresses factors affecting archaeological tradition and processing in several subsequent works (1967; 1970; 1985), also in relation to historical trade. Stjernquist (1970, 104; 1967, 14–15) identifies research intensity, preservation conditions, discovery circumstances and mapping methods as significant recent factors influencing the interpretive value of map images. One of Stjernquist's key observations is that white areas on a map do not indicate the absence of the product under

investigation, but merely that it has not been found there (Stjernquist 1970, 104–105). Another important insight is that distribution maps reflect only the pattern at the end points (Stjernquist 1985, 69), a consideration of particular relevance to trade, its forms and its routes. Furthermore, Stjernquist discusses factors that may have influenced the historical formation of distribution patterns, such as the economic capacity of a given area to acquire goods – something she regards as presupposing surplus production – as well as the willingness to accept goods from outside. Finally, she highlights the role of physical accessibility via communication arteries and transport routes, which could be impeded by conflicts, political circumstances, or natural barriers (Stjernquist 1970, 105).

One of the most recent contributions to this methodological discussion, continuing the tradition of the works mentioned above, is Frans Theuws' (2012a) reflections on the representation of the distribution of Merovingian objects, particularly those from graves. He advocates for the inclusion of supplementary information essential for interpretation – such as find contexts and the presence or absence of cemeteries – while also recognising the practical challenges inherent in implementing this approach.

The introduction of geographical information systems (GIS) into archaeology over the past 30 years, and the new possibilities they offer for data visualisation and analysis, have not altered the fundamental challenge: reliable distribution maps can only be achieved if they depict not merely find spots but also the factors that determine them. GIS has even been described as 'the Trojan Horse for the return of positivism' (cf. Green 2019, 284). Interestingly, in the theoretical debate on the challenges associated with distribution maps in the context of GIS, a paradigm shift can be observed – from focusing on factors influencing the occurrence of find spots to examining the impact that different modes of data representation exert on the interpretive value of distribution maps. This shift is exemplified by the anthology 'Re-mapping archaeology: Critical perspectives, alternative mappings' (Gillings et al. 2019), published only a few years ago.

The fundamental dilemma of archaeological distribution maps remains unresolved, despite the considerable time elapsed since the first methodological objections to their use and the sophisticated graphical representation techniques available today. In historical settlement geography – the tradition within which this study is situated – the visualisation of distributions through maps continues to play a major role, and the spatial distribution of selected object groups remains essential for addressing trade-related questions. Despite the challenges associated with the representativeness of distribution points, I consider the advantages of distribution maps as tools for analysis and visualisation to outweigh their limitations for the purposes of this study. By accounting for the factors that may have influenced their representativeness and contributed to the absence of finds (cf. Chapter 2.2.1), distribution maps are therefore accorded a key role in this research.

2.3.3 Retrogressive (Retrospective) Method

In certain cases, this study employs the retrogressive method, often referred to as the retrospective method in Norwegian research tradition. Developed by historians as 'la méthode régressive', this approach involves drawing inferences

from well-documented historical circumstances to illuminate earlier conditions that are less well known (Holmsen 1940). A fundamental prerequisite for valid analogies is proximity in time and space (cf. Loftsgarden 2017, 40). In Norwegian archaeological research, the retrogressive (retrospective) method has a long-standing tradition; however, criticism centres on the fact that its underlying assumption of continuity is not always warranted (cf. Gjerpe 2014, 59–61).

In this study, the retrogressive (retrospective) method is employed primarily to provide perspectives on how conditions may have been organised during the Viking Age in the absence of contemporaneous sources. Examples include modern data on the availability and exploitation of natural resources in Central Norway, as well as descriptions from the modern period concerning the organisation of resource use. The decisive factor for adopting the retrogressive (retrospective) method in this study is the assessment that its advantages outweigh its disadvantages, provided that its application is accompanied by a fundamentally critical stance towards assumptions of continuity.

3 MINIATURE I: SURPLUS EXPLOITATION OF UTMARK RESOURCES

The varied natural environment of Central Norway, with its diverse resource base, theoretically offered the potential to produce a wide range of raw materials sought after in Viking Age trade. However, no comprehensive scholarly attention has yet been devoted to whether, to what extent, when and with which goods the individual regions of Central Norway participated in Viking Age long-distance trade. With few exceptions, specific categories of goods have likewise not been systematically analysed. The aim of the first miniature is to address this gap in knowledge.

3.1 Methodological Considerations

Proving that a product was exploited in a particular location and determining the scale of its production is challenging for several reasons. Firstly, trade goods made from perishable materials may be difficult to detect in the archaeological record, and their presence may conflict with written sources. For instance, the northern Norwegian chieftain Ohthere, during his visit to King Alfred's court around 890 CE, enumerates several trade goods of organic origin from the north – such as whale bone, feathers, and hides and furs from marten, bear, otter, reindeer and seal (Lund 1983, 22) – yet these are scarcely represented in the archaeological evidence. Secondly, conclusive proof of provenance is not always achievable with current analytical methods and the available reference material. Thirdly, the extraction of certain raw materials leaves only minimal or, in some cases, no traces in the production areas. This applies, for example, to fishing or the collection of feathers, but may also concern the quarrying of natural stone, where earlier traces of extraction are often obliterated by subsequent activity. Fourthly, even where apparently relevant traces of production exist, they cannot always be attributed with certainty to the Viking Age without reliable scientific or typological dating. This is particularly true for goods that continued to be produced in similar forms or at the same locations long after the Viking Age, such as whetstones or soapstone loom-weights. In such cases, evidence may be established through chemical fingerprinting – that is, demonstrating a material match between a product documented as a trade item from a securely dated context and material from the presumed production site. Finally, on the basis of existing traces of production, assessing the scale of output can be difficult. Where only minor traces are present, it may be impossible to determine whether production merely satisfied local demand or represented a deliberate surplus intended for trade.

Based on its resource base, Central Norway can be divided into two zones: the coastal area and the inland area, although certain raw materials, such as soapstone, occur in both. The region's long coastline, extending into Arctic waters and characterised by numerous fjords, islands and fishing grounds, provided access to abundant marine resources, including fish, marine mammals, and seabirds. Archaeological evidence for these products as trade goods is often lacking due to their perishable nature; however, recent analytical advances – particularly in DNA and isotope research – have opened new possibilities for determining the provenance of fish bones (cf. Barrett et al. 2008; Star et al. 2017). Nevertheless, direct evidence for the exploitation of marine resources in a specific area and period remains difficult to establish, given the limited physical traces such activities typically leave behind (Sognnes 2015, 206; Nilsen 2017, 233).

The terrestrial zone of Central Norway likewise offered favourable conditions for the extraction of several highly valued Viking Age trade goods. Physical traces of hunting or harvesting terrestrial resources are comparatively easier to detect than those of marine exploitation (Nilsen 2017, 232). Local mineral resources included both soapstone and whetstone. In addition, bog iron ore theoretically enabled iron extraction, extensive pine forests provided the raw material for tar production, and the game population in forests and mountains offered opportunities to obtain furs, skins, antlers and meat.

The following section provides a systematic review of the current state of research on individual raw materials from the utmark, whose extraction was potentially feasible in Central Norway, supplemented in some cases by my own investigations.

3.2 Raw Materials

3.2.1 Fish

Fish could be traded over long distances in a preserved state, traditionally achieved by air-drying on wooden frames without the addition of salt – a method that continued until modern times (Sæther 2005, 351). This process requires specific climatic conditions, which were primarily met in Northern Norway. A key question is whether such conditions for drying fish existed in Central Norway during the Viking Age. One of the few scholars to address this issue explicitly is Sæbjørg Walaker Nordeide (2019, 82), who argues against this possibility, suggesting instead that salt was used as a preservative in these areas. In her view, this reliance on salt may have motivated Viking raids on salt-producing regions at the mouth of the Loire in France as early as the 8th century CE.

However, the tithe for cod on the Fosen Peninsula amounted to more than 18 tonnes of dried fish in 1643 (Sæther 2005, 367). From more recent times, the practice of drying fish on wooden racks is documented at various locations along the coasts of Helgeland and Trøndelag, such as Husvær/Herøy (DigitaltMuseum VBH.F.2012-001-0084), Dønna (DigitaltMuseum DBF.00694), Husøya/Halten/Frøya (DigitaltMuseum BJBF.002905), and Sula (DigitaltMuseum BJBF.003289). It is important, however, to consider significant climatic fluctuations over the past two millennia, including warm periods during the Roman and Viking eras (c. 200–300 CE and 800–1300 CE), the intervening 'Dark Age Cold Period' (c. 300–800 CE), and the cooler phase of the so-called Little Ice Age (c. 1550–1700 CE) in early modern times (cf. Dybdahl 2016; Bajard et al. 2022).

Based on isotopic measurements of fish tissues, James Barrett et al. (2008) argue that dried cod may have been transported from Arctic Norway to Hedeby as early as the end of the first millennium CE – a thesis subsequently supported by ancient DNA analyses of fish bones from Hedeby (Star et al. 2017). However, the extent to which these archaeological finds represent regular trade or merely provisions for travel remains uncertain (cf. Nielssen 2016). Excavations on the small offshore island of Borgvær, near the north Norwegian chiefdom of Borg, uncovered fishing-related house structures dating from the Merovingian Period and particularly from the Early Viking Age. These are interpreted as evidence of an intensification of cod fishing at the onset of the Viking Age (Wickler 2016, 176, 190). Nevertheless, the findings provide no indication of whether this Viking Age fishing station served only local needs or was intended for surplus production aimed at trade.

Numerous small and barren islands situated offshore near the fishing grounds along the coast of Central Norway developed into fishing stations and hamlets during the Middle Ages and early modern period. On some of these islands, small house sites with associated boat landings of varying shapes and apparently different ages have been recorded. These features form part of a broader

phenomenon observable along the entire Norwegian coast and are associated with fishing or seal hunting (cf. Magnus 1974; Larsen 2014, 158). Investigations of house sites on the outer coast of Central Norway have so far been very limited; however, two Viking Age dates are available from Værøya/Allmenningsværet in Roan Municipality, Trøndelag (Sognnes 2009, 109–110; Sognnes 2015, 211). On Halmøya in Flatanger, a boat landing has been dated to the Late Scandinavian Iron Age based on its elevation above the high-tide line (Larsen 2014, 158). Nordeide (2019) interprets these findings as seasonal fishing stations organised by local chieftains or petty kings on the nearby mainland or islands, with the aim of producing a surplus of fish for trade. Nevertheless, extensive commercial trade in dried fish from Norway to Western Europe is not documented before the 11th or 12th century CE (Barrett et al. 2008, 852; Nielssen 2016).

3.2.2 Marine Mammals

Figure 4. Whalebone plaque T2150 from Åkvik, Dønna Municipality, Helgeland. Photo: Ole Bjørn Pedersen, NTNU University Museum.

Various species of marine mammals, particularly seals and whales, provided a range of important raw materials, including train oil for use as lamp fuel and as a waterproofing agent for clothing, skins for ropes and garments (Nilsen 2017), and bone as a working material. However, archaeological evidence for the production and trade of most of these products is difficult to obtain. In recent years, several studies of objects made from whalebone (Hennius et al. 2018; Hennius et al. 2022; van den Hurk et al. 2023) have demonstrated the widespread distribution of this raw material as a by-product of whaling activities during the Late Scandinavian Iron Age and Middle Ages, which were probably primarily aimed at the extraction and trade of oil and meat. Among Swedish gaming pieces dated to 550–1050 CE, whalebone constitutes a substantial proportion, indicating large-scale whale hunting in Scandinavia from the 6th century CE onwards. By contrast, the importance of stranded whales as a source of raw materials is considered minimal (Hennius et al. 2022, 1–4, 6–9).

In contrast to Northern Norway, where archaeological evidence includes numerous Viking Age slab-lined pits used for extracting oil from whale and seal blubber (Nilsen 2017), there is no direct evidence of whaling along the coast of Central Norway during this period. Of particular interest, however, is the distribution of plaques (Figure 4) and weaving battens crafted from whalebone. While these objects exhibit a predominantly northern Norwegian distribution (cf. Petersen 1951, 288–290, 329–332; Sjøvold 1974, 249–256), they are also frequently found in Helgeland and Trøndelag, appearing in graves dated to the late 8th and 9th centuries CE (Table 1).

Table 1. Late Scandinavian Iron Age graves containing whalebone plaques and/or whalebone weaving battens from Central Norway.

Inventory number	Artefact	County	Municipalty	Farm	Dating	Find category
T1340	Plaque	Trøndelag	Levanger	Eggen	Late Scandinavian Iron Age	Grave find
T17739	Plaque	Trøndelag	Ørland	Grande	8th century CE	Grave find
T20913	Plaque	Trøndelag	Steinkjer	Skei	c. 775 CE	Grave find
T21080	Plaque	Trøndelag	Levanger	Gjeite	800–850 CE	Grave find
T21520	Weaving batten	Trøndelag	Nærøysund	Ryum	End of 8th century CE	Grave find
B1042, B1043	Plaque, weaving batten	Nordland	Dønna	Hov	800–850 CE	Grave find
T28276	Weaving batten	Trøndelag	Heim	Skeiet	800–850 CE	Grave find
T17446	Weaving batten	Trøndelag	Ørland	Uthaug	800–950 CE	Grave find
T17980	Weaving batten	Trøndelag	Overhalla	Skogmo Store	Late Scandinavian Iron Age	Grave find
T8146	Weaving batten	Trøndelag	Overhalla	Melhus	c. 800 CE	Grave find
T16402	Weaving batten	Trøndelag	Ørland	Uthaug	850–900 CE	Grave find
T17310	Weaving batten	Nordland	Alstahaug	Tjøtta	Viking Age	Grave find
T17384	Weaving batten	Trøndelag	Ørland	Uthaug	850–900 CE	Grave find
T18170	Weaving batten	Nordland	Sømna	Husand	Late Scandinavian Iron Age	Grave find
T11912	Weaving batten	Trøndelag	Overhalla	Melhus	8th century CE	Grave find

While the size of weaving battens and plaques excludes the use of materials other than whalebone, the visual identification of tokens by material is more challenging. Nevertheless, at least four graves from Central Norway contain tokens whose material can most likely be identified as whalebone (Table 2).

Table 2. Late Scandinavian Iron Age graves containing gaming pieces, probably made of whalebone, from Central Norway.

Inventory number	Artefact	Material	County	Municipality	Farm	Dating	Find category
T13258	Gaming piece	Probably whalebone (one piece uncertain)	Trøndelag	Levanger	Gjeite	700–750 CE	Grave find
T6149	Gaming piece	Probably whalebone	Trøndelag	Frosta	Island	Merovingian Period	Grave find
T19183	Gaming piece	Maybe whalebone	Trøndelag	Levanger	Gjeite	Viking Age	Grave find
T20248	Gaming piece	Probably whalebone	Trøndelag	Steinkjer	Aunvold	850–900 CE	Grave find
T20362	Gaming piece	One piece possibly whalebone	Trøndelag	Steinkjer	Egge	950–1000 CE	Grave find

These graves are evenly distributed across the period 700–1000 CE, but all originate from the Trøndelag region.

3.2.3 Seabirds

One of the trade goods mentioned by Ohthere is 'fugela feðerum' (bird down or feathers) (Lund 1983, 22). Around 1900, numerous bird sites existed along the coast of Central Norway, as well as along the Trondheimsfjorden, where seabird eggs were collected and eider duck nesting sites were specially prepared to facilitate the efficient harvesting of down used to line the nests (Helland 1898, 135–136; Helland 1907, 777–787; Helland 1909, 550–553; Helland 1911, 653–654) (Figure 5).

However, it remains uncertain whether this tradition dates back to the Viking Age. Nevertheless, the right to harvest feathers, down and eggs from bird islands has been subject to taxation in Northern Norway since the Scandinavian Iron Age, and down was a common form of tax payment (Dove & Wickler 2016, 35). Eggs possess high nutritional value and can be preserved for several weeks when cooked. However, the extent to which seabird eggs were traded over long distances during the Viking Age is unknown.

The potential exploitation and trade of the valuable raw material, eider down, from the Helgeland Archipelago during the Viking Age has been examined in several studies by Birgitta Berglund (Berglund 2009; Berglund & Rosvold 2021). Written sources attest to specialised and profitable down production in Helgeland from the Middle Ages onwards, and medieval historiography also attributes this practice to the Viking Age, albeit with the necessary reservations regarding the reliability of such sources (Berglund 2009, 125–128). However, archaeological evidence for the trade in this raw material from Helgeland during the Viking Age remains absent. Several high-status Viking Age graves from Scandinavia contain feather-

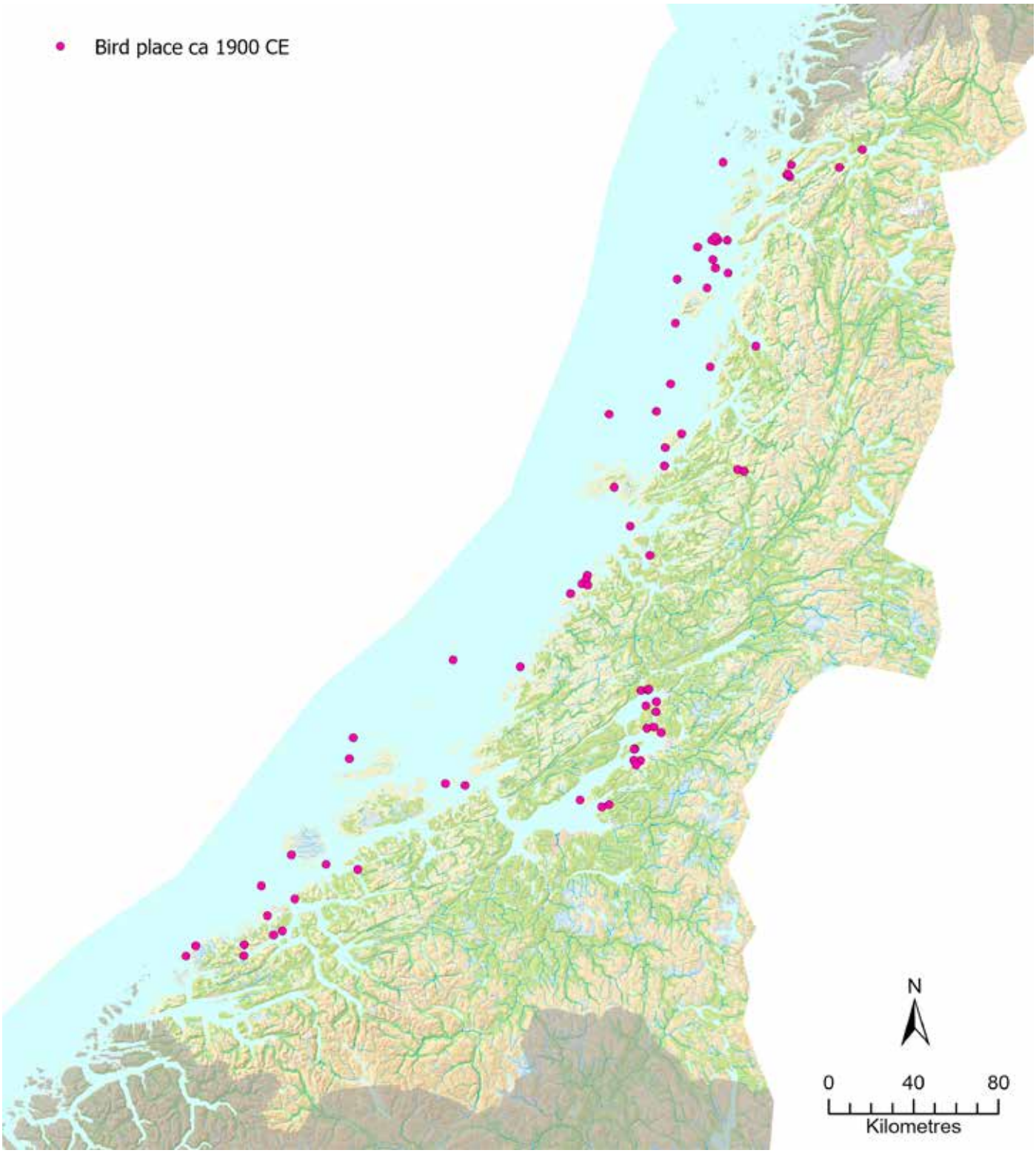


Figure 5. Bird places around 1900 within the study area, based on Helland (1898; 1907; 1909; 1911).

filled cushions and quilts (Berglund 2009, 128–129). However, apart from feathers recovered from a grave at Skei, Steinkjer Municipality (T20913; cf. Stenvik 2001), which may represent down feathers, there is currently no evidence that these originated from eider ducks or from Helgeland (Berglund 2009, 130). Moreover, feathers from graves dating to the Late Scandinavian Iron Age have scarcely been analysed to date (cf. Dove & Wickler 2016, 33).

In the few cases where identification has been undertaken, the padding fillings contained, contrary to common assumptions, no or only minimal amounts of eider down. One example is the feather material from the 7th-century CE pre-Viking Age high-status boat burials Valsgärde 7 and 8 in Central Sweden, which comprised feathers from various local and domestic birds and therefore clearly did not reach Valsgärde through long-distance trade (Berglund & Rosvold 2021, 12). Another case is a pillow filling from a small 10th-century CE boat grave in the Vesterålen islands of Northern Norway, described as mundane, which consisted primarily of downy feathers from gulls (Laridae), with minor inclusions of eider and cormorant feathers (Dove & Wickler 2016). The analyses available thus far are not sufficiently representative to permit firm conclusions regarding the potential significance of eider down as a long-distance trade commodity in the Viking Age. Nevertheless, they suggest that locally available bird feathers and down were of greatest importance during this period, at least for everyday purposes, without excluding the possibility that eider down was produced as an exclusive item for trade.

3.2.4 Reindeer

Archaeological evidence from various mountainous regions of Norway indicates that reindeer were hunted for their antlers, skins and meat using a range of active and passive techniques, including bows and arrows, pitfalls and trapping systems. Ice patches, in particular, provided favourable hunting grounds, as reindeer sought refuge there on hot days to avoid heat and insects, making them easy targets for hunters equipped with bows and arrows. The distribution of reindeer was confined to the circumpolar subarctic zone, encompassing the high mountain areas of the Scandinavian Peninsula (Ashby et al. 2015, 682).

Reindeer antler was a highly valued commodity in the Viking Age, serving as a raw material for the production of combs and gaming pieces. In Ribe, a few examples of finished combs made from reindeer antler were recovered during the 2017–2018 SJM 3 Posthustorvet excavations, appearing as early as phase F5 (c. 723/4–c. 730 CE), although these were likely brought as personal possessions (Qvistgaard & Sindbæk 2023, 286). From the 750s CE onwards, reindeer antler began to arrive sporadically in Ribe as raw material, and by c. 760 CE, it is even found among the waste from bone and antler processing (Qvistgaard & Sindbæk 2023, 286), indicating its status as an imported good, most probably originating from the Scandinavian Peninsula. This observation corresponds with the abundance of finds from the 8th to 10th centuries CE described by Lars Pilø et al. (2018, 7), based on material recovered from Innlandet County's ice patches, which can be linked to reindeer hunting.

In Central Norway today, wild reindeer inhabit the mountainous areas of southern Trøndelag and the inner parts of Nordmøre and Romsdal, in a region located south of the European route E70 and east of the European route E6. These areas

correspond to the wild reindeer administrative districts of Snøhetta, Reinheimen–Breheimen, Knutshø and Forollhogna. In prehistoric times, wild reindeer also occupied the Trollheimen mountain region (Callanan 2014, 138).

The presence of snow patches in the aforementioned mountain regions of Trøndelag and Nordmøre and Romsdal, and their partial melting during warm summers, creates ideal conditions for preserving archaeological evidence of reindeer hunting (Figure 6). While several ice patches in Innlandet County have been systematically surveyed in recent years as part of the Glacier Archaeology Programme, and their finds assessed in relation to Viking Age reindeer hunting and transport, among other aspects (Pilø & Finstad 2021; Pilø et al. 2018; Pilø et al. 2020; Pilø et al. 2022), little is known about the exploitation of reindeer in Central Norway during the Viking Age.

Figure 6. Hunting arrow T23403 from the Nordre Knutshøa ice patch, Oppdal Municipality, Trøndelag. Photo: Per E. Fredriksen, NTNU University Museum.

For southern Trøndelag, Oddmunn Farbregd's typological and chronological study of arrowheads from the Roman Iron Age to the late Middle Ages, based on material from the mountainous areas around Oppdal and conducted in the 1970s (Farbregd 1972), represents a foundational piece of research that has since become the principal reference work for dating iron arrowhead types, including those from the Viking Age, in inland Norway. At that time, Farbregd (1972, 108) assumed – consistent with the prevailing state of research – that hides were the most important product obtained from reindeer for long-distance trade. Reindeer antlers as a raw material for comb production and as a commodity in Viking Age long-distance trade were only recognised in subsequent years (cf. Ulbricht 1978; Ashby et al. 2015). In a later study, Farbregd (1983) focused on the evidential value of ice patch finds, arrow finds and pitfall traps in the Oppdal area for hunting history, among other aspects. However, this study contributes little to our understanding of reindeer hunting specifically during the Viking Age, partly because the period is not treated separately but only within the broader context of the Late Scandinavian Iron Age, 600–1000 CE.

Farbregd (1983, 35) draws attention to the substantial number of hunting arrows found in the Oppdal area, from which he infers hunting activity – particularly for reindeer – during the period c. 300–1700 CE. He interprets the presence of Merovingian and Viking Age graves containing hunting equipment in the region as evidence of hunting and trapping carried out by specialised hunters as a means of livelihood (Farbregd 1983, 38; Farbregd 1991, 9). Furthermore, the large number of Viking Age hunting arrows from the Oppdal area is seen as an indication of surplus production and the export of hunting products from the area (Farbregd et al. 1993, 80). A notable observation is the sharp decline in the number of medieval hunting arrows compared to those from the Viking Age, which Farbregd (1983,

38) attributes to the transition to pitfall traps as the preferred hunting method in the Middle Ages – a phenomenon corroborated by studies in other regions (cf. Mikkelsen 1994, 103).

In Nordmøre and Romsdal, numerous indications of reindeer exploitation are known from the mountainous regions on both sides of the Sunndalen valley and from the surroundings of the Romsdalen valley and Lake Eikesdalsvatnet, in the form of archery positions and trapping pits, although only a few of these have been dated (Dahle 2015; Sanden 2016; Vike et al. 2004). In general, dating reindeer traps is challenging, as organic material from their construction is rarely preserved in the pitfalls (Bergstøl 2015, 53), and such material typically reflects the final phase of use. Publications to date on reindeer hunting and trapping in the area are exclusively of a popular scientific nature, and there is almost no information on reindeer hunting specifically during the Viking Age. Only at the Grovåskaret snow patch in Molde Municipality is there evidence that so-called scaring sticks were employed in the Viking Age to guide reindeer in a particular direction (Callanan & Dahle 2016, 50).

The overall level of knowledge regarding Viking Age reindeer hunting in Central Norway and its significance for long-distance trade during the period remains limited. The occurrence of Viking Age hunting arrows in the Oppdal area, as noted in Farbregd's work (1972; 1983), confirms that reindeer were hunted there during this time. However, despite Farbregd's empirical approach, it is currently not possible to obtain a clear overview of the scale and specific locations of Viking Age reindeer hunting in the Oppdal area based on the existing literature. The 'Snow Patch Archaeological Research Cooperation (SPARC)' project, which ran from 2012 to 2017, did little to alter this situation. Although its core areas of investigation were in southern Trøndelag and Møre og Romsdal, it contributed few findings on Viking Age reindeer hunting in Central Norway, as its focus lay elsewhere (cf. Skar et al. 2022, 22–23). An evaluation of Viking Age reindeer hunting in Nordmøre and Romsdal based on the published literature is likewise currently not possible.

To assess the significance of Viking Age reindeer hunting in Central Norway, the occurrence of individually found Viking Age iron hunting arrows from the utmark of the municipalities of Rauma, Molde, Sunndal, Oppdal, Rennebu, Midtre Gauldal, Røros, and Holtålen was mapped for this study, drawing on the Norwegian University Museums' collection databases and the typology developed by Farbregd (1972) (Figure 7). The finds are approximately evenly divided between snow patch finds and stray finds from the mountains. Stray finds from known cemeteries or from the immediate vicinity of farmsteads have not been included, as these are very likely to originate from graves. In both southern Trøndelag and Møre og Romsdal, formalised cooperation has existed for several years between the regional cultural heritage administrative agencies and inspectors from the Norwegian Nature Inspectorate (SNO), who, during their mountain inspections, specifically look for potential cultural-historical finds melting out of snow patches and collect and report them (cf. Skar et al. 2022, 69, 81–82).

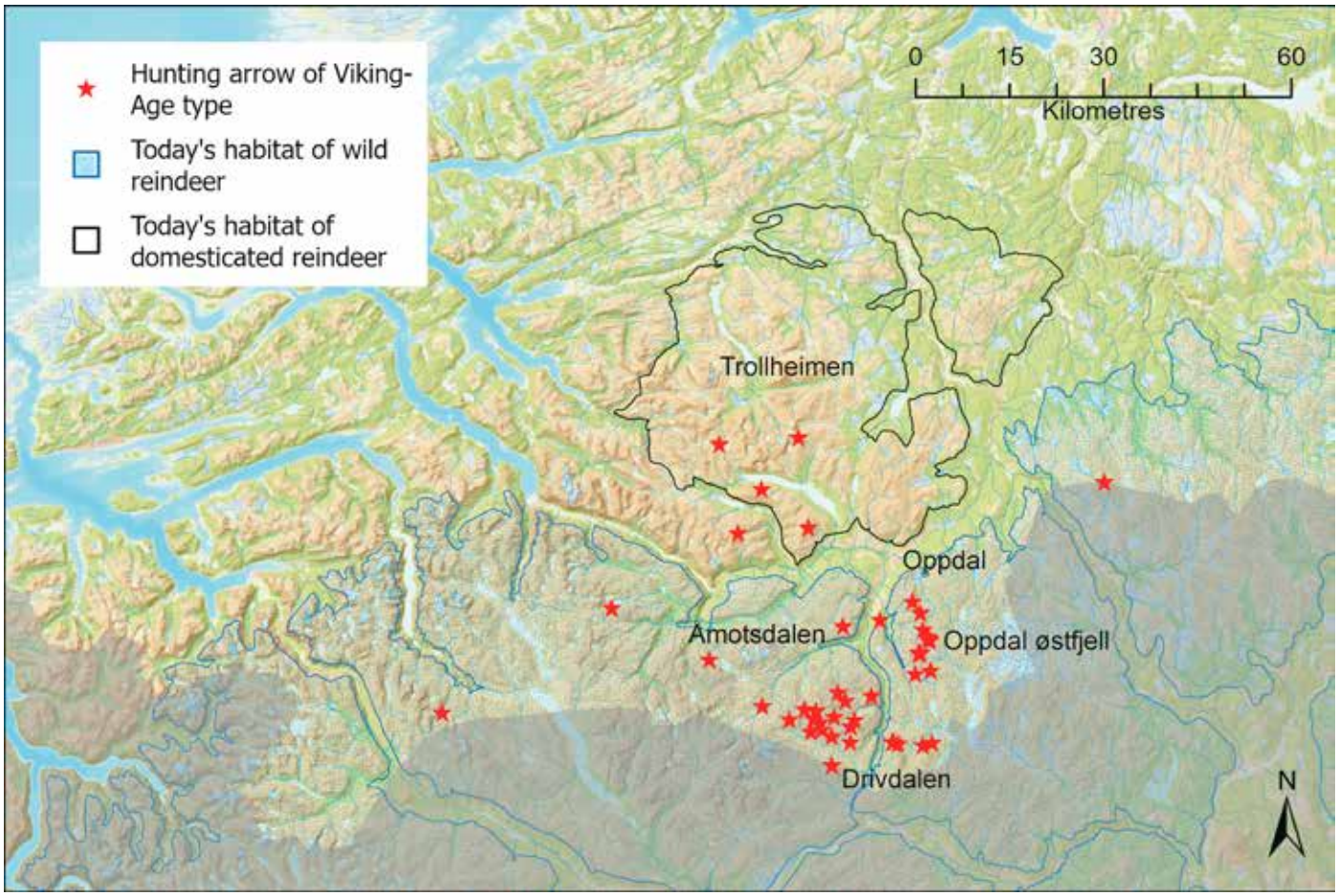


Figure 7. Distribution of stray finds of Viking Age hunting arrows in the municipalities of Rauma, Molde, Sunndal, Oppdal, Rennebu, Midtre Gauldal, Røros and Holtålen.

The distribution of Viking Age hunting arrows in Nordmøre and Romsdal and southern Trøndelag reveals three main centres, all situated in the Oppdal area. The first is the high mountain region known as Oppdal østfjell, located east of the Drivdalen valley, encompassing the mountains Sissihøa, Kringsollen, Brattfonnhøa and Lertjønnkollen in the north (Figure 8), and Knutshøa in the south. The second centre lies in the high mountain region between the Åmotsdalen and Drivdalen valleys, including the mountains Lyftingfonnkollen, Namnlauskollen, Storkinn, Raudhøa, Tythøa, Hesthåggahøa, as well as the Storbrean glacier and the Kaldvelldalen valley. The third is in the Trollheimen mountain region north of Oppdal, around Lake Gjevillvatnet. However, this latter area exhibits a much sparser distribution of finds compared to the first two. In contrast, only a few widely scattered Viking Age hunting arrow finds are known from the mountainous regions of Nordmøre and Romsdal, highlighting the concentrations observed south of Oppdal.

Figure 8. View from Mount Sissihøa towards the peaks of Kringsollen and Brattfonnhøa. Photo: Birgit Maixner.

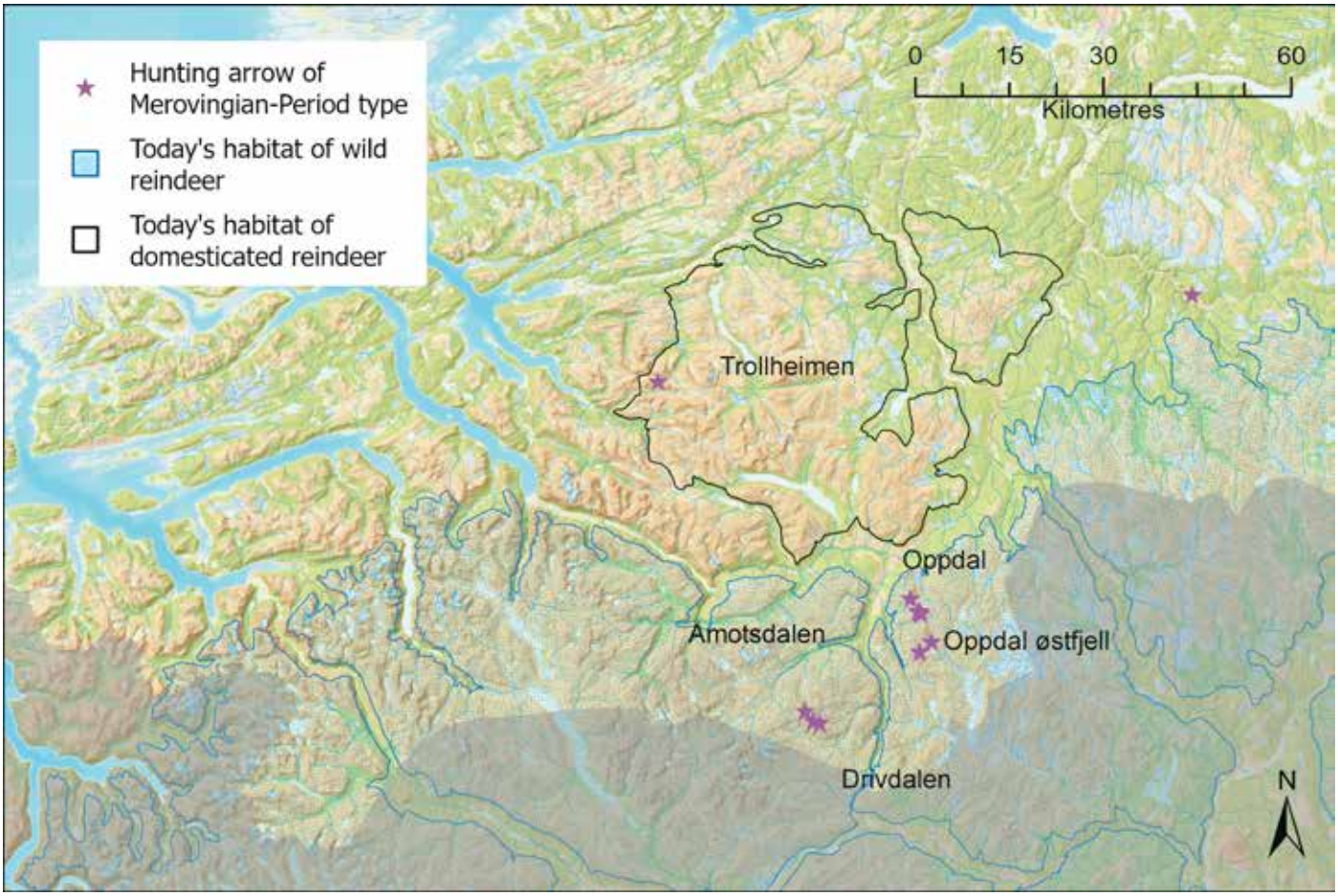


Figure 9. Distribution of stray finds of Merovingian Period hunting arrows in the municipalities of Rauma, Molde, Sunndal, Oppdal, Rennebu, Midtre Gauldal, Røros and Holtålen.

The number and density of Viking Age hunting arrows found in the mountain regions south of Oppdal is sufficiently high to be interpreted as evidence of extensive reindeer hunting in these areas. By contrast, only a few hunting arrows from the utmark of the investigated municipalities date to the Merovingian Period, almost all originating from the mountain areas south of Oppdal (Figure 9). Approximately half of these exhibit a rhombic form, dating to the 7th century CE (cf. Skjølsvold 1969a), while the remainder belong to the Rygh 541 type, which occurs in the 8th, but also in the 9th century CE (cf. Nørgård Jørgensen 1999, 136). The small number of Merovingian hunting arrows and their restricted geographical distribution, confined to the mountains south of Oppdal, suggests that the intensification of reindeer exploitation in Central Norway occurred only during the Viking Age.

3.2.5 Furs and Skins

According to contemporary Arabic and European written sources, furs were key and highly valuable trade goods during the Viking Age (Brandt et al. 2022). In an archaeological context, however, furs and skins have survived only in exceptional cases (Skre 2017, 4). In contrast to hunting arrows from the high mountain regions, individual finds of iron arrowheads from the forested areas of Central Norway are almost unknown owing to humus formation and the poor preservation conditions for iron, and would not provide reliable information as to whether they were used for hunting deer or classic fur-bearing animals of commercial importance. In Sweden, specific types of arrows with heads made of wood, antler or bone and featuring blunt points were employed to hunt valuable fur-bearing animals in order to prevent damage to the pelts (Zachrisson 1976). An example of such an arrow from Central Norway comes from a grave at Uthaug, Ørland Municipality (Figure 10). Arrows made of organic materials would also have been subject to extremely poor preservation conditions in wooded areas, apart from possible bog finds. Although the hunting of fur-bearing animals in Central Norway – unlike reindeer hunting in the high mountains – cannot be directly demonstrated for the Viking Age, remains of skins with hair have been recovered from a number of Viking Age contexts in Central Norway, mostly graves. These may have been obtained locally and could indirectly indicate the hunting of fur-bearing animals for long-distance trade (Table 3).

Figure 10. Arrowhead of bone or antler with traces of an iron coating, T22317:15, from a grave at Uthaug, Ørland Municipality, Trøndelag. Photo: Birgit Maixner.

Table 3. Viking Age find contexts containing skins with hair from Central Norway, based on data from the Norwegian University Museums' collection databases.

Inventory number	County	Find category	Municipality	Farm	Dating	Artefact	Suspected skin with hair type according to the Norwegian University Museums' collection databases
T1180–T1209	Trøndelag	Grave find	Overhalla	Vold	950–1000 CE	Skin with hair bag for storing scales; Skin with hair	Reindeer?, Beaver?
T16136	Trøndelag	Grave find	Stjørdal	Værnes Østre/ Værnes	850–900 CE	Skin with hair	
T20248	Trøndelag	Grave find	Steinkjer	Aunvold	850–900 CE	Scabbard, lined with skin with hair	
T20736	Trøndelag	Stray find	Skaun	Dalen	Viking Age	Scabbard, lined with skin with hair	
T9602	Trøndelag	Grave find	Stjørdal	Myr Vestre	800–850 CE	Skin with hair	
T26353	Trøndelag	Grave find	Skaun	Olstad	950–1000 CE	Scabbard, lined with skin with hair; Skin with hair purse	
T28011	Trøndelag	Grave find	Melhus	Foss Søndre	900–950 CE	Skin with hair	
T28276	Trøndelag	Grave find	Heim	Skeiet	800–850 CE	Skin with hair?	
T8035	Trøndelag	Grave find	Overhalla	Skogmo Store	770–840 CE	Skin with hair?	
T10649–10668	Trøndelag	Grave find	Namsos	Klingen	950–1000 CE	Skin with hair	
T1291	Trøndelag	Grave find	Overhalla	Bjørnes Nedre	Viking Age	Skin with hair	
T14431	Trøndelag	Grave find	Stjørdal	Moksnes Søndre	850–900 CE	Skin with hair	Beaver?
T15312	Trøndelag	Grave find	Stjørdal	Husby Vestre	800–850 CE	Skin with hair	Cattle?

Inventory number	County	Find category	Municipality	Farm	Dating	Artefact	Suspected skin with hair type according to the Norwegian University Museums' collection databases
T19811	Trøndelag	Stray find	Verdal	Valstad	950–1000 CE	Skin with hair	
T2094	Trøndelag	Grave find	Namsos	Buvarp	925–1000 CE	Scabbard, lined with skin with hair	
T27445	Trøndelag	Grave find	Trondheim	Haugen	900–975 CE	Skin with hair	
T28282	Trøndelag	Grave find	Heim	Skeiet	900–1000 CE	Skin with hair bag for storing scales; Skin with hair	
T2879	Trøndelag	Grave find	Stjørdal	Værnes	Viking Age	Scabbard, lined with skin with hair	
T6906	Trøndelag	Grave find	Levanger	Hynne	800–850 CE	Scabbard, lined with skin with hair	
T22916	Møre og Romsdal	Grave find	Vestnes	Vike Ytre	800–850 CE	Skin with hair	
T14406	Møre og Romsdal	Grave find	Rauma	Tomberg med Hole	900–950 CE	Skin with hair	
T8270	Møre og Romsdal	Grave find	Sunndal	Hoven	Viking Age	Skin with hair bag for storing scales	
T12199	Møre og Romsdal	Grave find	Aukra	Eikrem	Viking Age	Scabbard, lined with skin with hair	Seal?
T22926	Nordland	Grave find	Alstahaug	Horvnes	800–850 CE	Skin with hair?	

In only a few cases does the Norwegian University Museums' collection database provide information on the types of skins found in these contexts. Beaver, seal, reindeer and cattle are mentioned, but these identifications are largely conjectural, and the material has not yet been systematically analysed. In the database, the corresponding material is recorded as 'skinn' (skin) and/or 'pels' (fur), though it is doubtful that the choice of these terms reflects established definitions of fur based on hair density per unit area. The neutral term 'skin with hair' is therefore used in Table 3. In many instances, skins with hair have survived only as corrosion layers on metal objects, often in association with textiles, and without further investigation, their function remains unclear. In seven of the 24 listed Viking Age contexts from Central Norway, skins with hair were used as linings for sword scabbards; in three cases, as material for bags for storing balances (Figure 11); and in one case, as material for a purse.

Figure 11. Storage bag for balances T8270:3, made of skin with hair, from a grave at Hoven, Sunndal Municipality, Møre og Romsdal. Photo: Ole Bjørn Pedersen, NTNU University Museum.

My dating of the Viking Age contexts containing skins with hair from Central Norway, as listed in Table 3, indicates the use of this material throughout all phases of the Viking Age and across all regions of Central Norway, although Trøndelag is strongly predominant. However, the distribution of these contexts does not necessarily reflect local hunting grounds; it may instead result from intra-regional trade in these status objects and thus primarily signify power-political relationships. The comparatively frequent occurrence of skins with hair in Viking Age graves in Central Norway, despite their generally poor archaeological visibility, may nevertheless point to the significance of fur hunting in the region – provided that future analyses confirm that the majority of these skins with hair are indeed furs.

Overall, the extent and economic significance of fur hunting in Viking Age Central Norway cannot be established with certainty from archaeological sources. When the retrogressive (retrospective) method is applied, various topographical and statistical regional descriptions can provide an impression of the potential for fur hunting in Central Norway, on the assumption that no significant changes in stock composition have occurred since the Viking Age. Helland (1998, 1907, 1909, 1911) specifically records beavers, squirrels, martens, stoats, otters, several species of fox, lynxes, bears and wolves in Central Norway around 1900. A comparable range of fur-bearing wild animals is also recorded in the topographical and historical accounts of the 16th and early 17th centuries by Olaus Magnus (1976, 43–82) and Peder Claussøn Friis (1632, 122). However, these works cover the entire Nordic region and do not focus on specific areas such as Central Norway.

3.2.6 Iron

In Norwegian archaeology, iron production is frequently associated with the Viking Age (Stenvik 2015b, 88; Larsen 2009, 196). This is partly due to the abundance of iron objects recovered from numerous Viking Age graves in Norway (Petersen 1951, 71), and partly to the presumed high demand for iron for shipbuilding, weapons and tools during this period. It is also linked to the history of research, particularly the Viking and medieval datings of the iron extraction facilities at Møsvatnet, Telemark County, investigated by Martens (1988), which marked the beginning of Norwegian iron extraction studies. While extensive export-oriented iron production from bog ore is documented in Central Norway during the Early Scandinavian Iron Age (Stenvik 2015a), the focus in the Late Scandinavian Iron Age

appears to have shifted southwards, where large-scale iron production began in marginal areas of south-east Norway in the late 10th century CE and continued into the High Middle Ages (Tveiten & Loftsgarden 2017; Rundberget 2017).

Compared with the extensive iron production of the Early Scandinavian Iron Age and the large-scale production that began in the 10th century CE, there is little evidence of iron production between the 8th century CE and around 950 CE across Norway (Rundberget 2015). This pattern is confirmed by research conducted to date in Central Norway. One challenge is that published studies on iron extraction in Norway are based on a phase classification determined by furnace type, resulting in very broad phases spanning several centuries: 350 BCE–700 CE and 700–1300 CE (cf. Dahle & Eidshaug 2018). Consequently, Viking Age iron extraction in Trøndelag has so far been addressed in the literature only within the broader context of iron extraction during the Late Scandinavian Iron Age and the Middle Ages. As in Southern Norway, this begins abruptly in the 7th century CE with the introduction of a new iron extraction technology that differs from that employed in the Early Scandinavian Iron Age.

The new iron extraction technology was designed for comparatively modest production, and individual facilities could be operated by only a few workers. In contrast to the iron extraction of the Early Scandinavian Iron Age, which was relatively evenly distributed across a large area east of the Trondheimsfjorden, production in the Late Scandinavian Iron Age and the Middle Ages was concentrated primarily in the Orkdalen and Gauldalen river valleys south of the Trondheimsfjorden. This shift is explained by the connection to Trondheim, which developed into an urban centre around 1000 CE and served as a purchaser and market for iron (Stenvik 1997, 262; Stenvik 2005, 116; Stenvik 2014, 50; Stenvik 2015a, 224–225; Stenvik 2015b, 90). With an assumed average output of two tonnes per facility, iron production during this period exceeded the needs of a single farmstead (Stenvik 2014, 53). However, it remains unclear to what extent this depiction of iron production in the Late Scandinavian Iron Age and the Middle Ages in Central Norway is also representative of the Early Viking Age within this long timeframe. According to an overview of the chronological distribution of C14-dated iron production sites published by Lars Fredrik Stenvik (2015b, 88), only a few dates from the Early Viking Age are available.

The situation in Nordmøre and Romsdal is similar. The state of research on iron extraction in this region was summarised a few years ago by Kristoffer Dahle and Jo Sindre P. Eidshaug (Dahle & Eidshaug 2018). The number of known iron extraction sites in the area is small, at 40. The chronological distribution of the 23 dated sites indicates a relatively large proportion from the Merovingian Period, followed only by a resurgence at the transition from the Late Viking Age to the Middle Ages. Iron extraction sites from the Early Viking Age have not yet been identified in Nordmøre and Romsdal (Dahle & Eidshaug 2018, 36).

There are no publications addressing the status of iron extraction in Helgeland. Overall, however, evidence from Norway and Sweden indicates extensive iron production in the south, whereas iron extraction in the north is only very sparsely represented. Until 2019, only three iron extraction sites were known across Northern Norway, none of which date to the Viking Age (Jørgensen 2013; Jørgensen 2019).

This indicates that there is no evidence of extensive iron production in the Early Viking Age in Central Norway; it appears to have begun only at the very end of the Viking Age. This observation aligns with the phenomenon described by Larsen (2009, 197) for Norway as a whole. Various explanations have been proposed for this disparity between the presumed iron demand during the Viking Age and the lack of archaeological evidence. Poor detectability of iron extraction sites in the field, limited knowledge of localisation factors, and uncertainties associated with C14 dating and the age of sampled wood (Larsen 2009, 196–197) are considered possible reasons, leaving open the possibility of greater iron production in the Viking Age than is currently identifiable. Overall, however, the distribution of iron extraction sites in the Late Viking Age and the Middle Ages suggests regional specialisation, with a focus on the utmark of the valleys and mountainous areas of Southern Norway, in which Central Norway played no role (Tveiten & Loftsgarden 2017, 114).

3.2.7 Tar

Until modern times, tar was an essential substance for protecting and sealing wood, cordage and textiles, as well as for caulking ships (Risbøl et al. 2025). Tar was produced by heating wood in the absence of air; in Scandinavia, pine was the preferred material for this process (Hennius 2018, 1349). For Sweden, Andreas Hennius (2018) has demonstrated that the transition from small-scale household production in earlier centuries to large-scale tar manufacture in outland forests occurred in the 8th century CE, a development he associates with increased demand for tar driven by intensified maritime activity during the Viking Age. Although a single Roman Iron Age tar production pit is known from Averøy in Nordmøre (Risbøl et al. 2021), there is no reliable evidence that tar was produced in Central Norway during the Viking Age. While southern Trøndelag is characterised by intensive tar production in mire kilns from the 16th century to modern times, there is no definitive dating evidence to extend this production method back to the Viking Age (Risbøl & Stenvik 2022).

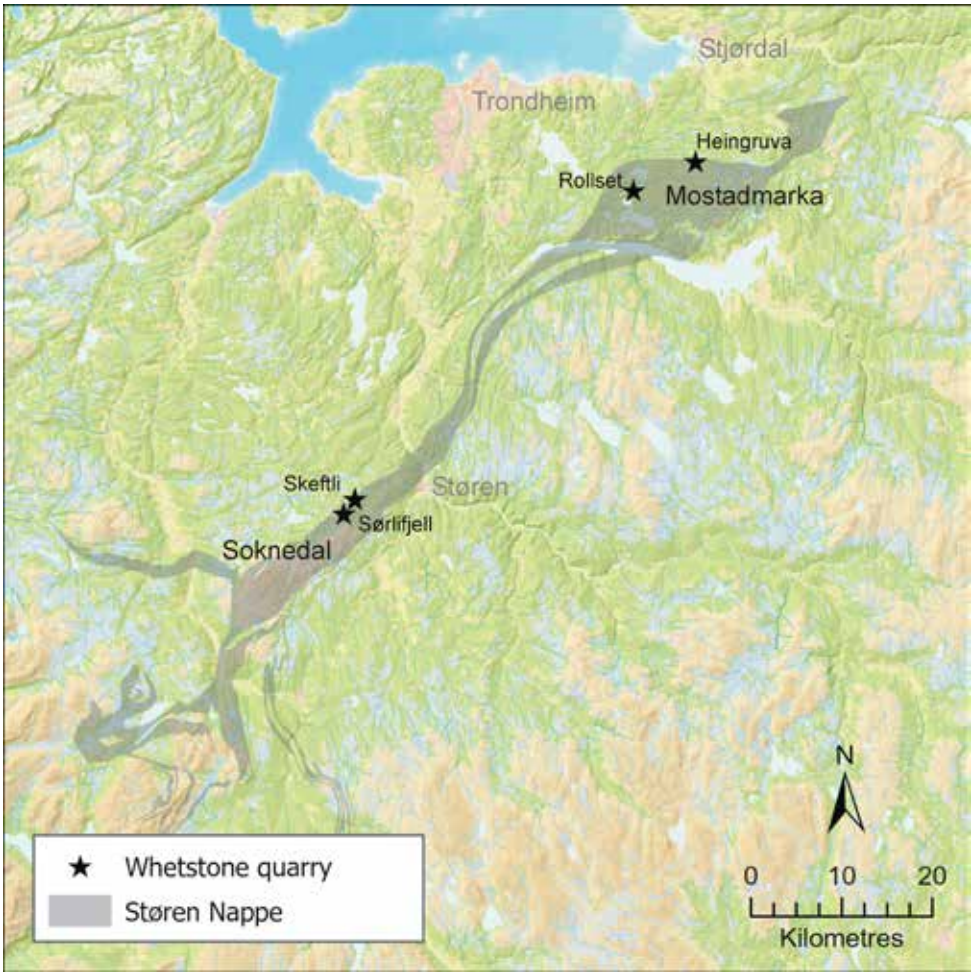
3.2.8 Whetstones

Whetstones were indispensable everyday tools for sharpening the blades of weapons and implements. Two distinct types of schist whetstones from present-day Norway were significant trade goods in Northern European long-distance exchange during the Viking Age. While it has been assumed since the 1970s that light-grey schist originated from quarries near Eidsborg, Telemark County, in Southern Norway (Baug 2022a, 211), the provenance of very fine-grained dark schist (Figure 12) remained uncertain for a long time, although D. D. B. Crosby and J. G. Mitchell (Crosby & Mitchell 1987, 496) had already highlighted deposits of Norwegian Caledonian phyllites in the Stjørdalen valley as a possible source for the Viking Age and medieval ‘Purple Phyllite’ hone stones.

Figure 12. Dark schist whetstone T16402:14 from a grave at Uthaug, Ørland Municipality, Trøndelag. Photo: Birgit Maixner, NTNU University Museum.

A few years ago, Irene Baug et al. (2019) demonstrated that very fine-grained schist whetstones originated from the Mostadmarka utmark area south of the Trondheimsfjorden in Central Norway. The Mostadmarka area lies within a geological unit known as the Støren Nappe, which also includes small quarries in the Soknedal area, located approximately 50 km south-southwest of Trondheim (Baug et al. 2019, 52) (Figure 13).

Figure 13. Location of the Støren Nappe geological unit and identified dark schist whetstone quarries.



In the Mostadmarka area, only two whetstone quarries have been identified to date: Heingruva (Figure 14) and Rollset, the former being the larger of the two. However, additional quarries concealed beneath vegetation are suspected in the area (Baug et al. 2019, 57).

Figure 14. Photo of the Heingruva dark schist whetstone quarry in the Mostadmarka utmark, Malvik Municipality, Trøndelag. Photo: Birgit Maixner.

The presence of dark schist whetstones in layers dated to 710–725 CE (Baug et al. 2019, 62) and 723/724–c.730 CE (Baug et al. 2023, 112) from the Viking Age town of Ribe in Jutland, present-day Denmark, suggests that quarrying in the Mostadmarka area began as early as the 8th century CE. From this time onwards, and up to around 1000 CE, their occurrence shows a wide and even distribution in graves across almost all of Central Norway, with the exception of Helgeland, where evidence for their presence in 10th-century CE graves is lacking (Baug et al. 2024b, 124). Between c.760 and c.790 CE, there is a marked increase in the number of Mostadmarka whetstones in Ribe, interpreted as the result of large-scale production aimed at broader markets and as evidence for regular overseas trade from the mid-8th century CE onwards (Baug et al. 2023, 113). From around 800 CE, the number of Mostadmarka whetstones in Ribe declines, while the number of light-grey schist whetstones from Eidsborg in Telemark rises, dominating the market from the 11th century CE (Baug 2022a, 217). A reverse trend is evident in the material from Birka in Central Sweden: Mostadmarka whetstones appear in Early Viking Age graves, but only from 900 CE onwards do they become strongly dominant (Baug et al. 2024b, 130). Together with the stable occurrence in graves in Central Norway until around 1000 CE, this suggests continuous operation of the Mostadmarka quarries throughout the Viking Age, albeit with a possible shift in the main direction of distribution from south-west to east.

3.2.9 Soapstone

Large quantities of soapstone artefacts uncovered during excavations at Hedeby (Resi 1979) have, since the 1970s, highlighted soapstone as a significant trade commodity of the Viking Age. From the early 9th century CE onwards, soapstone objects were distributed on a considerable scale from the Scandinavian Peninsula to Denmark, where they are found in numerous Viking Age settlements (Resi 1979; Risbøl 1994; Sindbæk 2005, 141–142). The only soapstone deposits in north-western mainland Europe occur on the Scandinavian Peninsula, primarily in Norway but also in south-western Sweden (Risbøl 1994, 121). Soapstone is a

metamorphic rock composed chiefly of chlorite and talc (Helland 1893, 89). Owing to its softness, ease of working, and high heat resistance, it was highly valued for the manufacture of various artefacts used in domestic and craft contexts (Baug 2011, 311).

In Norway, the use of soapstone has a long tradition, extending back to the Mesolithic and Bronze Age (Storemyr & Heldal 2002, 361–362; Hansen & Storemyr 2017, 10). For the Early Scandinavian Iron Age, extensive production of soapstone vessels has so far been documented only at a single quarry, Kvikne in Tynset Municipality (Skjølsvold 1969b), which is also located in Central Norway but outside the area considered in this study. In the subsequent centuries, soapstone appears to have been exploited in Norway only on a small scale for objects other than vessels. It was not until the Viking Age that large-scale production of vessels resumed in a greater number of quarries, largely displacing the earlier pottery tradition (Skjølsvold 1961, 14). In addition to vessels, items such as spinning wheels, loom-weights, sinkers, casting moulds and forge stones were produced. During the Middle Ages and into modern times, the manufacture of these artefacts continued, while soapstone was also employed in architecture, both as a building material and for decorative elements (Skjølsvold 1961, 41).

To date, around 200 ancient soapstone quarries are known from Norway, most of which are situated within Caledonian/Cambro-Silurian rock formations, with the largest concentrations occurring in the Hordaland region, in Central Norway, along the Helgeland coast, and in Northern Norway (Hansen & Storemyr 2017, 10, 14–15). Approximately half of these appear to have been vessel quarries (Baug 2011, 329). The nature of their utilisation seems to have varied. Arne Skjølsvold (1961, 100–103) distinguishes between modest local extraction of soapstone for private domestic use by individual consumers and mass production for trade by professional craftsmen.

Dating soapstone quarries that were exploited over long periods is generally challenging. Continuous extraction tends to remove traces of earlier activity on the rock face, while evidence of previous production – such as semi-finished products and tools – becomes buried under accumulating overburden (Wickler 2015, 122). The dating of soapstone artefacts is also problematic. In Scandinavian archaeology, the typology of soapstone vessels was studied at an early stage, and a chronology was established for certain forms (Shetelig 1912; Grieg 1933, 204–207; Skjølsvold 1961; Pilø 1990; Lossius 1977; Vangstad 2017). However, apart from burials, soapstone vessels often survive only as fragments, and individual shards are difficult to date typologically. Broken vessels were probably reused in many cases, as their fragments could be reworked into small objects such as spindle whorls, loom-weights and sinkers through secondary manufacture. These artefact types are generally difficult to date typologically, as their forms appear to have remained largely unchanged since the Viking Age (Baug 2011, 312).

While the dates from Hedeby are imprecise and only broadly indicate the presence of soapstone there in the 9th and 10th centuries CE (Resi 1979, 111), high-resolution dates from the 2017–2018 SJM 3 Posthustorvet excavations in Ribe reveal that soapstone imports began around 800 CE, initially for use as tools in metallurgical work. Soapstone vessels, by contrast, do not appear to have been introduced to Ribe until c.860 CE (Sindbæk & Barfod 2023, 91).

Soapstone deposits are known from several areas in Central Norway (Figure 15). My mapping of these deposits and quarries is based on data drawn from three sources: 1) the national stone database of the Geological Survey of Norway (NGU), 2) the Norwegian National Cultural Heritage Database (Askeladden), and 3) relevant literature, particularly the lists compiled by Helland (1893) and Skjølsvold (1961).

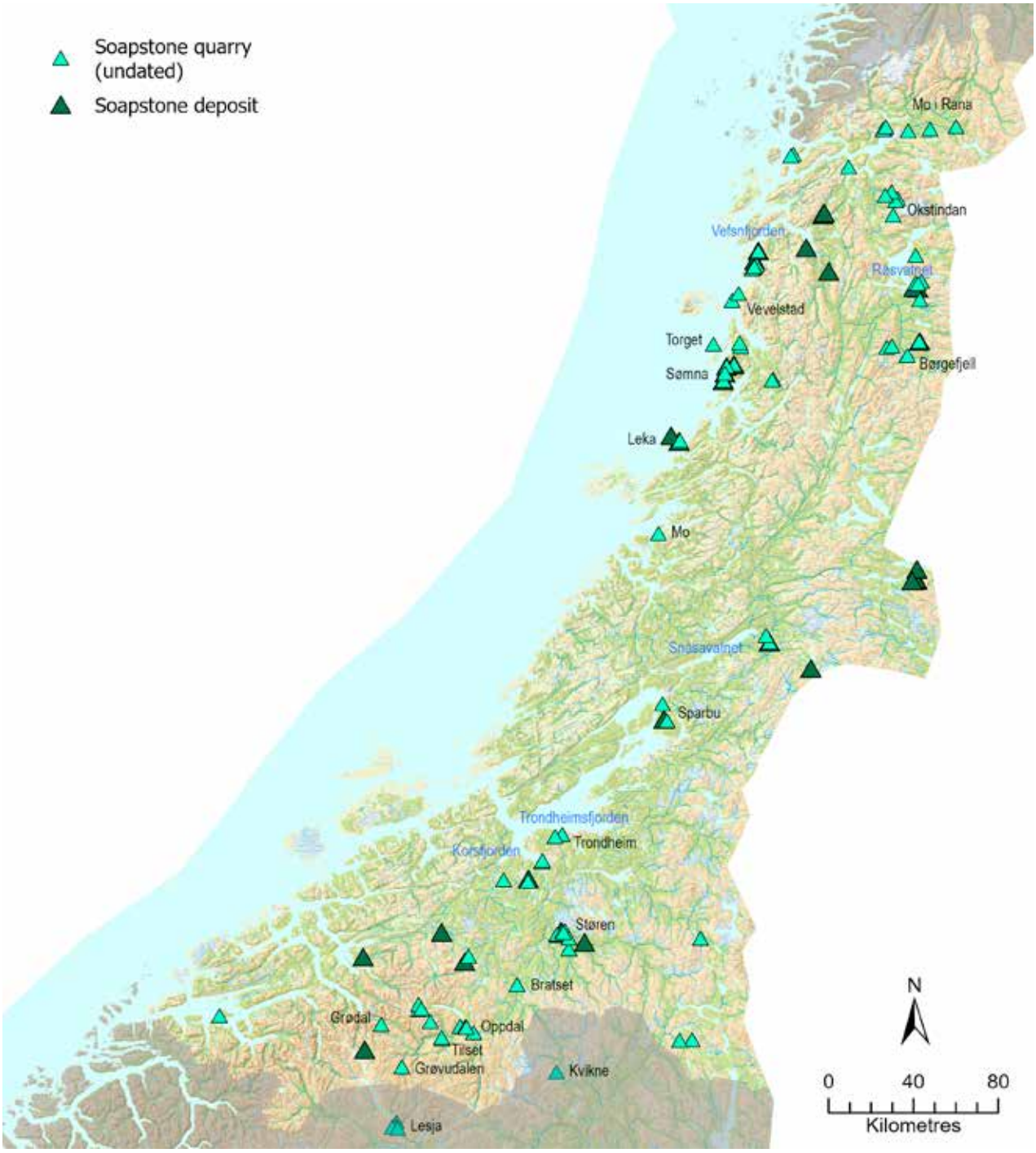


Figure 15. Distribution of documented soapstone deposits and undated soapstone quarries in Central Norway.

In Nordland and northern Trøndelag, soapstone occurs in a belt along the Helgeland coast, with concentrations around Mo i Rana, on the islands at the outlet of Vefsnfjorden, near Vevelstad, on the Sømna Peninsula, at Torget near Brønnøysund, and in small deposits on the island of Leka. Another belt of soapstone deposits extends further inland to the east, in the Okstindan–Røsvatnet–Børgefjell area. Most known soapstone deposits in Nordland do not appear to have been exploited until the Middle Ages, with the exception of quarries on Sømna and Torget near Brønnøysund, as well as quarries on the islands at the outlet of Vefsnfjorden and near Vevelstad, which provide evidence of prehistoric traditions (Skjølsvold 1961, 147).

Berglund (1995; 2015) has examined the soapstone deposits along the Helgeland coast in several studies. Berglund (2015, 132) asserts that several soapstone quarries at the outlet of Vefsnfjorden were utilised from the Viking Age onwards, albeit without providing further justification or specifying which quarries this claim concerns. Her assessment is presumably based on traces of the production of vessels and everyday utensils at these sites. A key problem, however, is that in many cases, the forms of these artefact groups from the Viking Age do not differ from those of the Middle Ages (or even the modern period), making typological dating generally impossible (cf. Baug 2011, 312). There is only one quarry in Helgeland for which exploitation in the Late Viking Age is securely attested: a quarry on the island of Esøya, Vevelstad Municipality, where a runic inscription on a rock face mentioning soapstone indicates use at least in the 11th century CE (Berglund 1995, 148).

In Trøndelag, soapstone occurs in several areas, with concentrations of known deposits east of Lake Snåsavatnet, in the Sparbu area south of Steinkjer, around Trondheim, in the hinterland south of Korsfjorden, in the Gauldalen river valley east of Støren, and along the River Driva and in the mountains east of Oppdal (Figure 15). Among the soapstone quarries in the Sparbu area are several that may date to the Viking Age. The best known of these is Slipesteinsberget, which exhibits extensive traces of vessel production and supplied building material for the surrounding medieval churches (Østerås 2017). The only absolute chronological dating so far points to the 13th century CE (Østerås 2017, 159), but production is thought to have begun in the Viking Age and possibly even earlier (Storemyr & Heldal 2002, 365; Storemyr 2015, 144). Just eight km north of Slipesteinsberget, at Lænn Farm, there is another soapstone quarry showing traces of vessel production (Storemyr 2015, 144–145).

Two soapstone quarries are known from the urban area of Trondheim: Steinberget (Schøning 1979, 193–194; Storemyr et al. 2010, 242) and Bakkaune/Gryta, the latter of which supplied building stone for Nidaros Cathedral and produced vessels as by-products in the Middle Ages (Storemyr et al. 2010, 249–252). The quarries south of Korsfjorden are primarily associated with the construction of the medieval churches of Gryting (Orkdal) (Leland 1993, 67), Skaun and Huseby (Storemyr 2003, 453), and Nidaros Cathedral (Storemyr et al. 2010, 242–248; Heldal 2015, 184), or with their restoration in the 19th century; some also exhibit traces of vessel production of unknown date (cf. Storemyr et al. 2010, 246–247). The soapstone quarries in the Gauldalen river valley east of Støren are likewise known primarily as sources of building material for Nidaros Cathedral (cf. Helland 1893, 146–147). By contrast, the Bratset soapstone quarry south of Berkåk shows traces of vessel production (Helland 1893, 142–143). The same applies to several of the known

soapstone deposits east of Oppdal, among which those near Tilset (Figure 16) display the clearest and most extensive evidence in the form of production traces and semi-finished products (Farbregd 1980b; Figure 17).

Figure 16. The Katlberget soapstone quarry, Tilset, Oppdal Municipality, Trøndelag. Photo: Birgit Maixner.

For Nordmøre and Romsdal, the databases consulted – the Directorate for Cultural Heritage's register of monuments and sites (Askeladden) and the Geological Survey of Norway's (NGU) map of bedrock and soapstone quarry documentation – have so far recorded only a few soapstone deposits. However, the registers compiled by Amund Helland (1893, 141) and Skjølsvold (1961, 145) indicate further potential. In contrast to the deposits described in Helgeland and Trøndelag, Nordmøre and Romsdal appear to contain only isolated occurrences. Two sites in valleys south of the Sunndalen valley, Grudal/Grødal and Grøvudalen, are reported to show traces of vessel production.

Figure 17. Semi-finished soapstone vessel T22839 found near the Tilset quarries, Oppdal Municipality, Trøndelag. Photo: Per E. Fredriksen, NTNU University Museum.

South of the study area, approximately eight km north of the village of Lesja, there are several soapstone quarries, three of which display traces of vessel production. These should be noted here, as they are situated at the inner end of the Romsdalen valley along the River Rauma, which flows to the fjord near Åndalsnes in Romsdal.

I have drawn attention elsewhere (Maixner 2021a, 190-191) to the possibility of identifying ancient soapstone quarries on the basis of place names in -gryt/-grøt. Although the Old Norse word grjót only refers to stone in general, it seems to have developed into a synonym for soapstone in particular, which is also evident from the fact that the word grøtsten has become an established term for soapstone in Norway (Helland 1893, 89). This is also related to the fact that the name for cooking pots, grýta, is obviously derived from cooking pots made of soapstone (Skjølsvold 1961, 5). Of the known soapstone quarries in Central Norway mentioned above, several have names in -gryt/-grøt: Grudal/Grødal near Sunndal in Nordmøre, Grytdal east of Støren, and Gråtnes/Grøtnes north-west of Mo i Rana. Other examples can be found in other parts of Norway, such as Grøtli (Kvikne), Grytenuten (Jelsa) and Gryteberget (Vik) (cf. Skjølsvold 1961, 137, 140, 144). On the Sømna Peninsula in Nordland, the farm name Grøttem is found surrounded by the well-known soapstone deposits (Figure 18).

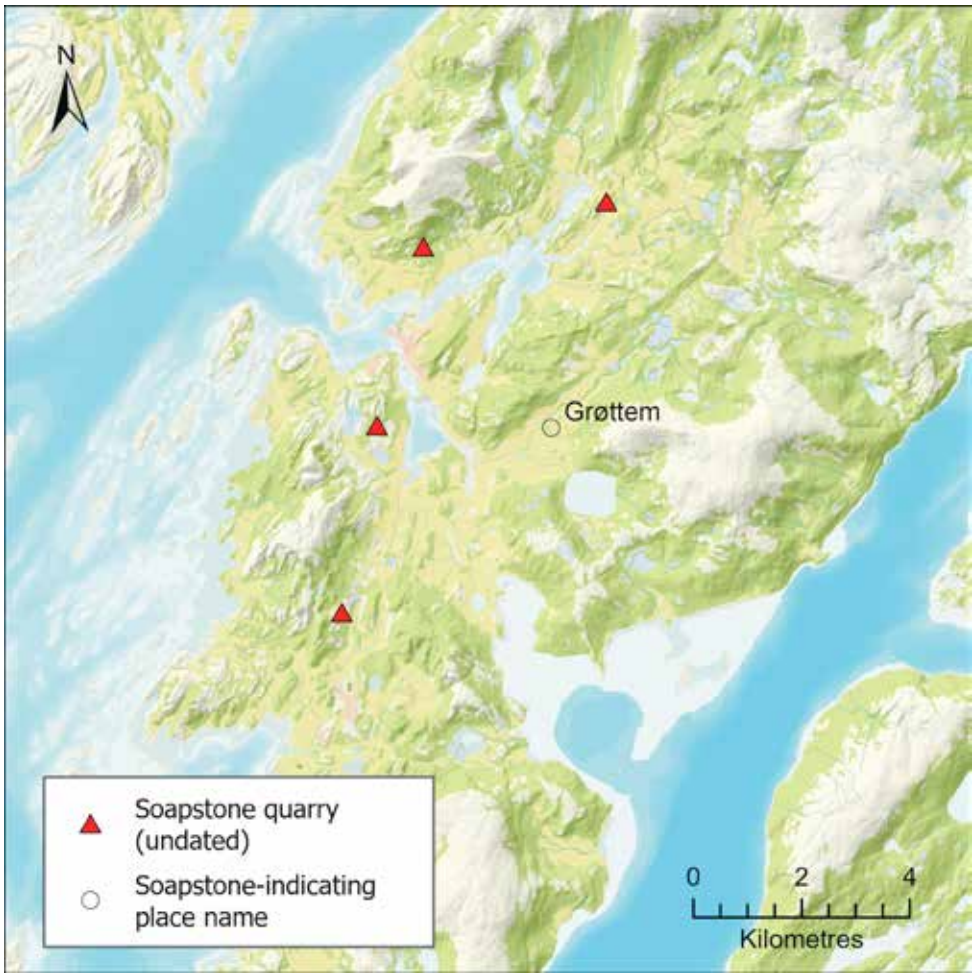


Figure 18. Location of documented soapstone quarries near Grøttem Farm, Sømna Municipality, Helgeland.

At Åndalsnes, at the entrance to the Romsdalen river valley, which provides the link to the soapstone quarries at Lesja mentioned above, the farm name Grytten appears, which is also the name of the former church site. Helland (1893, 147) refers to a soapstone deposit called 'Grøtaasen' near the village of Horg in the Gauldalen river valley in Trøndelag. The location of this quarry has not been identified, but there are numerous place names in the area beginning with -grøt, including the farm name Grøtan. The same farm name occurs with a similar cluster of -grøt place names in the vicinity of Kyrksæterøra, although no evidence of soapstone deposits has so far been found there (cf. Maixner & Hellan 2024, 94). The extraction or handling of natural stone may have been of crucial importance for the economy of these farms at a given time and thus influenced their naming. It should be noted that some of these farm names belong to place-name classes thought to have originated in the Early Scandinavian Iron Age (cf. Brink 1991, 66–67, 71; 2008, 58; Vikstrand 2013, 42), such as Grøttem in Sømna, which is a -heim name; Grytten near Åndalsnes, which combines grjót (stone) and -vin; and Grýting in the Orkdalen valley, which belongs to the group of -inge names.

Farm names in -gryt/-grøt also occur in areas where no soapstone deposits have yet been identified, such as the -heim name Grøtem on Lake Selbusjøen in Trøndelag – although other economically significant natural stone resources are found in the area, namely the aforementioned dark schist whetstone from the Mostadmarka region and the Selbu millstone, quarried since the Middle Ages (cf. Rolseth 1947). Both the place-name groups ending in -heim and -inge refer to qualities of topography or the natural environment (Albris 2015, 63), and thus, in the case of farm names in -gryt/-grøt, not necessarily to the presence of economically exploitable natural stone, but rather to stone as a prominent feature in some way. Similarly, not all place names in -gryt/-grøt necessarily indicate the presence of (soap)stone. Jørn Sandnes and Ola Stemshaug (Sandnes & Stemshaug 1997, 185) suggest that 'gryte' (pan) as a comparative name may simply have been used to describe topographical features resembling hollows or depressions. The local name of the pit-shaped soapstone quarry at Bakkaune in Trondheim, Gryta, is interpreted in this way (Storemyr et al. 2010, 249).

Despite these limitations, place names in -gryt/-grøt have the potential to indicate previously unknown soapstone quarries. In Nordland, the same applies to place names derived from 'esje', an old term for soapstone, as illustrated by the Esjeberget quarry on the island of Haltøya and the soapstone quarries on the island of Esjeholmen (cf. Berglund 2015, 135). Place names in -kle/-kly, such as Kleberberget (Oppdal), Kleberhytta and Klebereggen, can likewise assist in identifying soapstone deposits and quarries (cf. Maixner 2021a, 190–191).

Overall, apart from the Late Viking Age dating of the quarry on Esøya (Nordland), there is no direct evidence in the form of absolute dating from the quarries for soapstone extraction during the Viking Age. Evidence of vessel production on the quarry face is often taken as an indication of Viking Age activity, yet vessels were also produced from soapstone in the Middle Ages and later. The absence of direct evidence for Viking Age soapstone exploitation in Central Norway contrasts with the numerous soapstone deposits in the region, particularly along the Helgeland coast, in Sparbu, in the hinterland south of Korsfjorden, and in the Oppdal area. As early as 1961, Skjølsvold (1961, 126–128) analysed the occurrence of Viking Age soapstone vessels in Central Norway in relation to the known soapstone deposits and identified a discrepancy. However, as Heid G. Resi (1987, 95–98) later demonstrated, there is generally little correlation between the occurrence of soapstone vessels in graves and the location of known quarries.

At Kaupang, soapstone artefacts have been documented in the settlement area from around 805/810 CE, whereas they do not appear in the surrounding graves until a century later, in the 10th century CE (Baug 2011, 331). This demonstrates that the spatial and temporal occurrence of soapstone artefacts in graves does not necessarily reflect the availability of soapstone at the time of burial, nor its proximity to soapstone quarries. Nevertheless, the presence of soapstone artefacts in Viking Age graves indicates the availability of soapstone at the place of deposition at a given time, without, however, revealing whether these were the result of local production or trade. Table 4 lists and dates graves with soapstone artefacts from Central Norway, the circumstances of which allow them to be regarded as securely closed finds and which contain chronologically significant artefacts.

Table 4. Viking Age graves containing soapstone artefacts from Central Norway.

Inventory number	Artefact	County	Municipality	Farm	Dating
T13202	Vessel	Møre og Romsdal	Rauma	Voll	10th century CE
T15297	Vessel	Nordland	Dønna	Havsteinen	10th century CE
T11940	Vessel, sinker	Møre og Romsdal	Aukra	Småge	10th century CE
T14208	Vessel	Møre og Romsdal	Vestnes	Rekdal	c. 850–950 CE
T18196	Vessel	Nordland	Vevelstad	Forvik med Remmen	10th century CE
T9260-9279	Vessel	Møre og Romsdal	Tingvoll	Røttingsnes	c. 800–850 CE
T17446	Spindle whorl	Trøndelag	Ørland	Uthaug	800–950 CE
T21981	Spindle whorl	Trøndelag	Flatanger	Lauvsnes	c. 770–840 CE
T18819	Loom-weight	Trøndelag	Oppdal	Opdal Prestegård	8th century CE
T10096–T10100	Forge-stone	Møre og Romsdal	Rauma	Hen	c. 850–920 CE
T10613–T10627	Forge-stone	Møre og Romsdal	Rauma	Hovden Nedre	c. 850–900 CE

Of the eleven such graves, six contain vessels, two spindle whorls, two forge stones, and one loom-weights. More than half of these graves are located in Nordmøre og Romsdal, two in Nordland, and four in Trøndelag. Spindle-whorls and loom-weights made of soapstone appear in graves as early as the 8th century CE, as in grave T18819 in Oppdal (Figure 19), while forge stones occur around the middle of the 9th century CE. Soapstone vessels appear from the first half of the 9th century CE and are most common in the 10th century CE. Soapstone vessels were therefore already available in Central Norway in the first half of the 9th century CE, although this does not prove that they were quarried locally. The chronological sequence of the appearance of soapstone artefacts other than vessels, and of vessels themselves, in the graves of Central Norway corresponds to the sequence observed in Ribe (cf. Sindbæk & Barfod 2023, 91).

Figure 19. Two of the soapstone loom weights from grave T18819 at the Vang cemetery, Oppdal, Trøndelag. Foto: Birgit Maixner, NTNU University Museum.

3.3 Results

The systematic review of the literature and source material concerning individual raw materials from the utmark, for which the conditions for exploitation in Central Norway potentially existed, reveals, on the one hand, how challenging an assessment of export-oriented production of long-distance trade goods in Central Norway during the Early Viking Age is in light of current knowledge, and, on the other hand, how tenuous the basis of some previous evaluations appears to be. Examples include the assumed surplus production of fish in Viking Age Central Norway for export, which relies on only two reliable Viking Age dates from local fish stations (cf. Nordeide 2019), and the unsubstantiated assumption of Viking Age dating for several Helgeland soapstone quarries (cf. Berglund 2015, 132).

According to the current state of research, only the production of one commodity for long-distance trade in the Early Viking Age is known with certainty in Central Norway, namely dark schist whetstones. The Heingruva quarry in the Mostadmarka utmark area southwest of Stjørdal is considered the most likely extraction site according to current knowledge (cf. Baug et al. 2019), although other, as yet unidentified quarries in the Mostadmarka area are also possible. Furthermore, the very large number of Viking Age hunting arrows from the high mountains in the Oppdal area suggests that reindeer antler was also exploited specifically for export, although it has not yet been possible to differentiate this phenomenon chronologically within the Viking Age using typological methods alone.

The exploitation of marine mammals, particularly seals, along the coast of Central Norway is highly probable, although no direct evidence has yet been found, and exploitation may have varied between species. An indirect indication of whaling is provided by the frequent occurrence of large objects made from whale bone

in graves in Central Norway, especially in Trøndelag, although it cannot be ruled out that these derived from stranded animals or were obtained as luxury trade goods from Northern Norway, as is suspected for gaming pieces (cf. Hennius et al. 2018). Their presence in richly furnished graves located away from the coast, in the inner Trondheimsfjorden and along the River Namsen (cf. Table 1), suggests that they functioned primarily as social markers rather than as evidence of local exploitation.

The assessment of a possible surplus production of the other raw materials mentioned is challenging and relies largely on the retrogressive (retrospective) method. In all cases, favourable conditions for their extraction existed in Central Norway, and there is evidence of their exploitation in earlier and/or later periods, but not, or only to a very limited extent, during the Viking Age. It is therefore difficult to establish objective criteria for assessing the likelihood that they were exploited specifically for long-distance trade. With regard to furs, it can be argued that their trade value was so high that targeted exploitation as a lucrative luxury good is highly probable. The situation may have been similar for eider down, though probably not for the feathers and down of common seabirds, as these were locally available in many parts of Northern Europe. Fur, down and the whalebone artefacts mentioned above were also associated with high social status in Central Norway, so their presence in graves does not necessarily indicate local exploitation.

If fish could not be dried in the Viking Age climate of Central Norway, or could not be dried optimally in the open air, and if salt was required for preservation (cf. Nordeide 2019, 82), export-oriented production during this period appears unlikely. Overall, however, the nature and extent of any exploitation of maritime resources and furs can scarcely be determined from the available source material, owing to the limited archaeological evidence left behind by these activities and their products.

The material groups iron, tar and soapstone exhibit both similarities and differences. Iron does not appear to have been produced to any significant extent in Central Norway during the Early Viking Age. However, comprehensive evidence from other parts of the country is also lacking before the Late Viking Age (Larsen 2009, 197). There is currently no reliable evidence for the production of tar in the Viking Age in Central Norway or in Norway as a whole (Risbøl & Stenvik 2022; Risbøl et al. 2025). Likewise, there is little concrete evidence of soapstone extraction in Central Norway during the Viking Age. The situation differs, however, in that soapstone occurs in many places and was therefore readily available, and a large number of quarries with evidence of vessel production are recorded in Central Norway. These quarries could potentially date to the Viking Age, but may equally belong to later periods and need not necessarily have supplied more than local needs. Compared with iron extraction, the probability that soapstone was quarried for export in Central Norway in the Early Viking Age is nevertheless greater, given the combination of raw material deposits, vessel quarries, the occurrence of soapstone artefacts in graves, and place names indicating soapstone quarries.

Geographically, the distribution of resources and the potential production areas for trade goods exhibit some overlaps, but overall they are widely dispersed across the landscape (Figure 20).

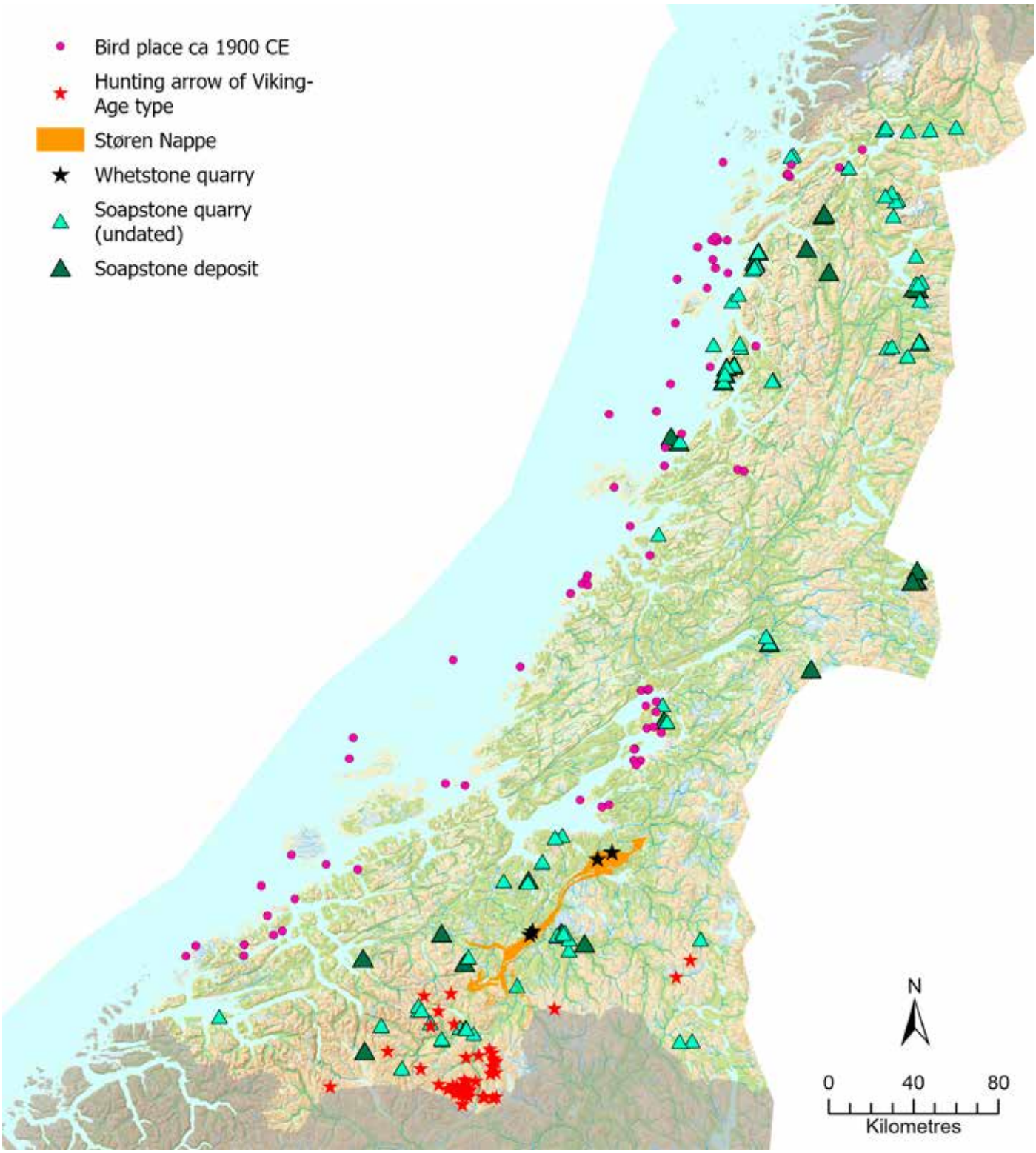


Figure 20. Spatial visualisation of resource availability for potential Early Viking Age exploitation of down, reindeer products, dark schist whetstone, and soapstone in Central Norway, based on diverse sources of varying quality.

The chronological tendencies in the presumed exploitation of different raw materials in Viking Age Central Norway are of particular interest, based on their occurrence in local graves and subject to the reservations outlined for this group of sources (cf. Chapter 2.2.1). According to this evidence, stable extraction of dark schist whetstones in the Mostadmarka area began in the early 8th century CE and continued until around 1000 CE (cf. Baug et al. 2024b). Various soapstone artefacts appear in central Norwegian burials in the 8th century CE, whereas vessels do not occur until the 9th century CE (Table 5). It is uncertain whether the soapstone artefacts in central Norwegian graves reflect trends in local soapstone production, but the sequence and timing of their appearance correspond to the pattern observed at Ribe (cf. Sindbæk & Barfod 2023, 91).

The presence of whalebone gaming pieces in central Norwegian graves of the Early Viking Age continues a tradition already established in the Merovingian Period (cf. Hennius et al. 2022). However, the appearance of large objects made of whalebone, such as plaques and weaving battens, as early as the 8th century CE may indicate targeted whaling from the beginning of the Viking Age. The extensive hunting of reindeer in the high mountains around Oppdal, inferred from the large number of arrowheads (Figure 7), likewise appears to be a phenomenon of the Viking Age, in contrast to the few arrowheads known from the Merovingian Period (Figure 9).

Table 5. Chronological occurrence of selected artefact groups in datable graves from Central Norway, 8th–10th century CE.

Commodity	**8th century CE**	**9th century CE**	**10th century CE**
Dark schist whetstones	x	x	x
Soapstone artefacts	x	x	x
Soapstone vessels		x	x
Whalebone plaques and weaving battens	x	x	
Whalebone gaming pieces	x	x	x

4 MINIATURE II: IMPORTED LUXURY GOODS

The craft production of the 6th and 7th centuries CE is often contrasted with that of the Viking Age, characterised on the one hand as artisanal unica production of luxury goods, carried out on commission, and on the other as the manufacture of everyday objects primarily intended for subsistence. It is commonly assumed that production for long-distance trade did not occur, or only to a limited extent (cf. Skre 2017, 4–5). However, the widespread distribution of certain types of luxury goods, such as barrel-shaped and cylindrical millefiori glass beads with single-colour caps, which appear in graves in Central and Southern Europe as well as Scandinavia, demonstrates that Norway regularly absorbed luxury goods from European long-distance trade as early as the Merovingian Period.

Nevertheless, it is undisputed that from around the mid-8th century CE onwards, the import of luxury goods reached new heights in both quantity and quality. Combined with the often considerable distances over which goods were transported from different directions, this constitutes a defining feature of the Viking Age. The raids on the British Isles from the late 8th century CE are regarded as synonymous with the Viking Age, and the numerous Insular artefacts found in Viking Age graves in Central Norway attest to close contacts with Britain and Ireland, particularly during the 9th century CE (cf. Heen-Pettersen 2014).

Even before the mid-8th century CE, various types of glass beads were produced for trade in the southern Scandinavian trading centres of Ribe and Åhus, and these beads were distributed throughout Scandinavia and along the southern coasts of the North Sea and Baltic Sea (Feveile et al. in prep.). From the late 8th century CE onwards, glass, carnelian and rock crystal beads from the Near and Far East reached Scandinavia in several waves (cf. Callmer 1997). Apparently in response to the first wave of Middle Eastern glass beads, craft production in Ribe changed its character, and for nearly a century, intensive serial production of bronze jewellery can be observed (cf. Sindbæk 2023d, 15). The mass production of metal jewellery also played an important role in other newly emerging Viking Age trading centres in Scandinavia – Hedeby, Birka and Kaupang – in the period that followed.

With few exceptions, Scandinavian metalwork from the Viking Age exhibits a uniform, supra-regional character. Several types of cast brooches – particularly oval brooches, but also trefoil brooches, round brooches, and pendants – occur in standardised forms and in large quantities across extensive areas within the Scandinavian sphere of influence. Overall, a substantial number of workshops can be assumed, not only in the major trading centres but also at smaller landing sites and marketplaces.

An important prerequisite for the professional mass production of various craft products at Viking Age trading centres was the availability of imported raw materials through long-distance trade: brass ingots from the Rhineland (Sindbæk 2005, 65; Pedersen 2016, 195); special heat-resistant kaolin clay, probably from Southern Scandinavia, for melting crucibles used in metal jewellery production (Pedersen 2016, 194); recycled Roman tesserae from the Middle Rhine region as a source of raw material for glass bead manufacture (Raja & Sindbæk 2018, 292–293); and amber from the southern North Sea and Baltic Sea coastal areas for amber working.

The aim of the second miniature is to examine where imported luxury goods can be traced in Central Norway, whether changes in their distribution patterns can be identified during the period from the transition between the Merovingian Period and the Viking Age to the end of the Early Viking Age, how the distribution of luxury goods relates to the expansion of Viking Age settlement, and whether the principal directions of luxury goods imports in the Early Viking Age can be identified, along with any changes in these.

4.1 Material Selection

Imported luxury goods include, above all, metal jewellery and beads made from various materials such as glass, amber, cornelian and rock crystal, as well as silk and brocade fabrics, and delicacies such as wine, spices and nuts (cf. Steuer 1987a, 121). However, their use as scientific source material presupposes, on the one hand, their traceability in the archaeological record – which can be difficult for goods made of organic material – and, on the other hand, reliable knowledge of their provenance in order to classify them as imports. For this reason, certain types of glass and semi-precious stone beads, as well as beads of amber and jet, have been selected as representatives of imported luxury goods for the present study, together with specific types of oval brooches from different periods as representatives of metal jewellery, which, according to the current state of research, are assumed to have been manufactured outside Central Norway.

Bronze casters and glass bead makers were also the first craftsmen in the Viking Age to develop serial production (Skre 2017, 5), thereby making large quantities of manufactured products available to a wide range of customers. For several of the selected types, there is evidence of production or occurrence in Ribe, among other places, which provides closely dated examples thanks to the high-resolution stratigraphic dating from Ribe.

Not all luxury goods that can be classified as imports are suitable as objects of investigation within the narrow definition of trade adopted for this study, namely 'commodity trade in the sense of buying and selling mass-produced refined craft products on the one hand, and raw materials obtained in the utmark on land and water on the other' (cf. Chapter 2.1.1). This applies particularly to two groups of imported finds that are often associated with trade or used to identify centrality: Carolingian swords and metalwork (excluding coins) on the one hand, and Insular metalwork on the other (cf. e.g. Blindheim 1978; Sognnes 1988).

Only five examples of Carolingian metalwork have been found in Central Norway, all concentrated in the Trondheimsfjorden area (Figure 21). They form a heterogeneous group in terms of material and function: two fittings of copper-alloy (T13006:c; T27742:32), a trefoil fitting of silver (T8526) reused as a pendant in a woman's grave, a fragment of a tongue-shaped silver fitting (T27203) evidently used as hacksilver, and a small round silver fitting (T27769:9) possibly also employed as currency.

Only a small number of swords from the Early Viking Age that can be identified with certainty as continental are known from Central Norway. Although the debate about continental originals and Scandinavian imitations is not yet settled, there is broad consensus that the early Carolingian types Mannheim, Special Type 1 and Special Type 2, as well as the 9th century CE Type K, are imports from the continent (cf. summary in Maixner 2014, 91–97). However, only the Mannheim and K types are represented by a single example each from Central Norway, the sword from Elvran (T18969) and the sword from Gravråk (T453), which, like the Carolingian metalwork mentioned above, are concentrated in the Trondheimsfjorden area (Figure 21). Sword blades bearing VLFBERTH or INGELRII type inlays are frequently described in the literature as Frankish imports; however, Stalsberg (2008, 105) interprets their very frequent occurrence on Norwegian swords as an indication that many of the inlays were applied locally rather than exclusively in professional

workshops within the Frankish Empire. Export bans on swords mentioned in the Carolingian capitularies have been taken as evidence of extensive exports of Carolingian swords (Lorange 1889, 45). However, as Fuglesang's (2000) critical review of the sources demonstrates, these texts are not particularly suitable for drawing conclusions about substantial arms exports to the north.

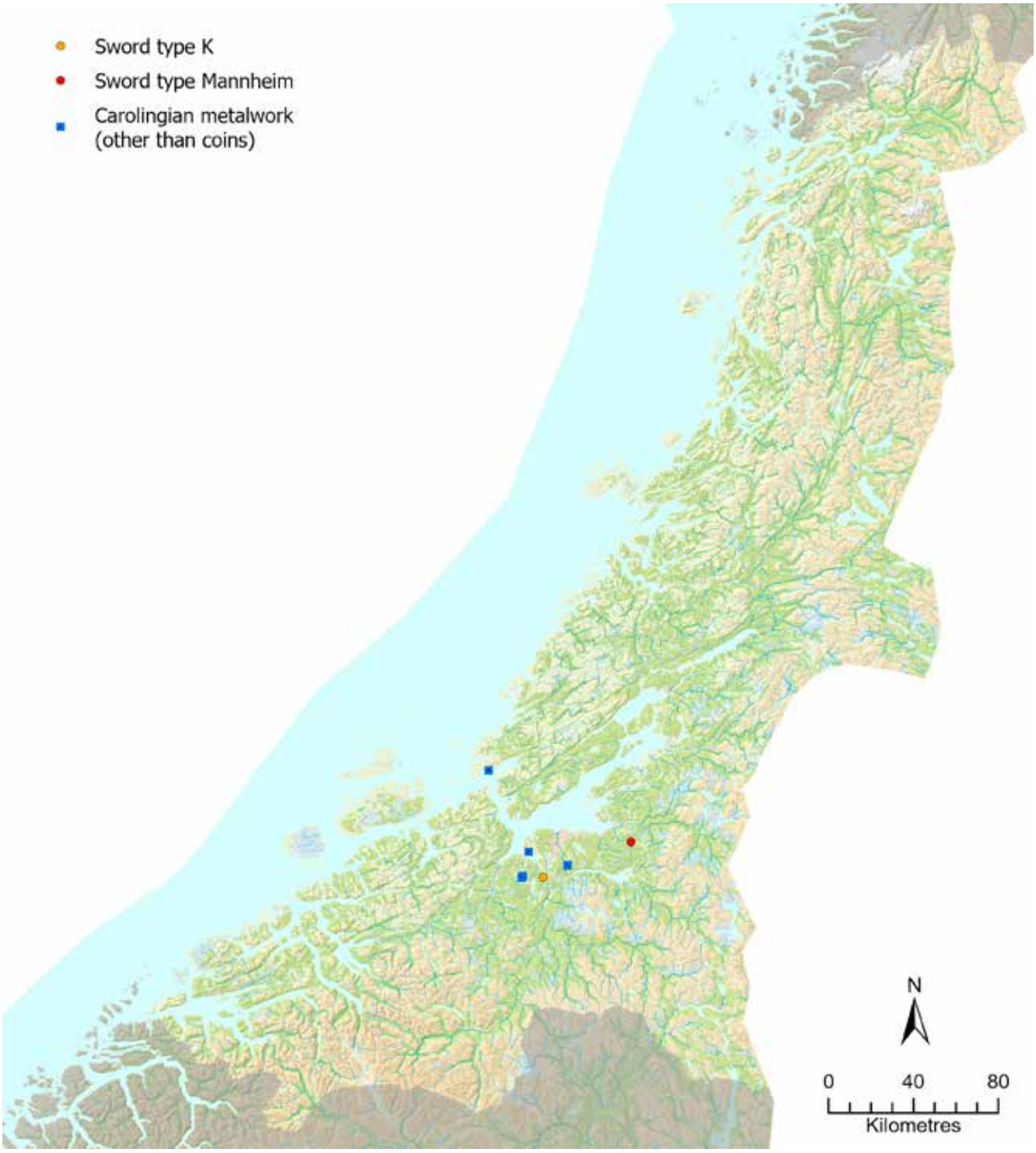


Figure 21. Distribution of Carolingian metalwork and selected types of Carolingian swords in Central Norway.

It is generally assumed that Carolingian metalwork (other than coins) reached Scandinavia primarily as loot or through diplomatic exchange (Lennartsson 1997/1998, 537, 539). For these reasons, and given their scarcity in Central Norway, Carolingian swords and metalwork should not be considered examples of imported luxury goods in this miniature.

The other group of imported objects that poses difficulties in relation to the definition of trade adopted for this study is Insular metalwork. A substantial quantity – more than 400 pieces – of Insular metalwork is known from Norway, whereas significantly smaller numbers, approximately 50 and 30 finds respectively, have been recorded in Denmark and Sweden (Heen Pettersen 2022, 172, 9). It is generally accepted that Insular metalwork should primarily be regarded as looted goods (Wamers 1985, 39–43), although certain categories of artefacts, such as horse harnesses or serving equipment in the form of vessels, ladles and drinking horns, may represent merchandise intended for export (Heen-Pettersen 2014). Nevertheless, the presence of Insular metalwork in graves at the trading settlements of Kaupang, Birka and Hedeby indicates that a secondary exchange of looted material clearly occurred (Blindheim 1978; Heen-Pettersen 2014). Insular metalwork therefore has the potential to inform the questions addressed in this study. With some reservations, Insular metalwork is thus included here, even though the majority of these artefacts do not conform to the definition of objects manufactured specifically for mass production and trade.

4.1.1 Beads

Various types of so-called Ribe beads from the 'Blue Period' (Näsman 2000, 43–44) are suitable for investigating contacts at the transition from the Merovingian Period to the Early Viking Age: Ribe-type beads with thread ornamentation, Ribe-type beads with reticella ornamentation, large Ribe-type beads with elaborate ribbon ornamentation, Ribe-type beads with square mosaic ornamentation in two rows, and Ribe-type beads with mosaic eye-flowers (Figure 22:a–e). Ribe-type beads from the 'Blue Period' are wound blue beads decorated with attached polychrome ribbons, monochrome canes, or twisted reticella cables, predominantly in red, white or yellow, or composed of mosaic rods in corresponding colours. Their manufacture is documented in Ribe, Jutland and partly in Åhus in Southern Sweden (Näsman 1978; Callmer 1984; Callmer 1990; Callmer and Henderson 1991; Jensen 1991, 37–39; Sode 2004; Sindbæk 2023a; Feveile et al. in prep.) (Table 6). The production of these bead types is dated by the stratigraphy of the 2017–2018 SJM 3 Posthustorvet excavations in Ribe to the narrow period of phases F6–F7 (c. 730–c. 750 CE) (Sindbæk 2023a, 249, 275; Sindbæk 2023b, 413). Somewhat younger are the so-called Wasp-type beads, cylindrical beads of different colours with applied bands of yellow canes (Figure 22:f), whose production is also attested in Ribe, where they date to phases F8–F9 (c. 750–c. 790 CE) of the 2017–2018 SJM 3 Posthustorvet excavations (Sindbæk 2023a, 249).

Table 6. Proven production sites of selected Ribe beads from the 'Blue Period' and Wasp-type beads; based on Sindbæk (2023a) and Callmer (1984).

Type	Ribe	Åhus
Ribe-type beads with thread-ornamentation	x	
Ribe-type beads with reticella ornamentation	x	
Large Ribe-type beads with elaborate ribbon ornamentation	x	
Ribe-type beads with square mosaic ornamentation in two rows	x	x
Ribe-type beads with mosaic eye-flowers	x	
Common wasp-type beads	x	
Non-standard wasp-type beads	x	

Another import from the southern North Sea and Baltic Sea region is amber, which occurs predominantly in the form of beads in the archaeological material from the Late Scandinavian Iron Age in Central Norway (Figure 22:o). Unlike many types of glass beads, however, amber beads cannot automatically be dated to the Viking Age on the basis of typology, and even less so to specific phases within it. Amber beads were frequently deposited in graves in Norway as early as the Late Roman Iron Age and Migration Period, but they were comparatively rare during the Merovingian Period. The use of amber experienced a resurgence in the Viking Age, and evidence of amber working has been identified at numerous Northern European trading centres, including Kaupang (Resi 2011a, 107–123).

Various scientific analyses conducted on selected amber from Viking Age trading centres have identified the material as Baltic amber (Resi 2011a, 108–109). It is therefore probable that the amber found in Viking Age contexts in Central Norway is likewise Baltic amber; in other words, it can be assumed to originate from the coastal areas of the Baltic, western Jutland, Northern Germany, the Netherlands or East Anglia. Owing to the long period of use of amber beads and their chronological insensitivity, which makes it impossible to date them out of context, only amber beads from find contexts datable to the Viking Age on the basis of associated artefacts were considered for this study.

Most of the other bead types selected for this study belong to the group of eastern trade beads. Three types were chosen as representatives of imported beads from the 9th century CE. One of these is the green- or blue-ground mosaic-eye beads (Callmer 1977: G050, H001, J001) (Figure 22:g–h), produced in the Middle East, probably in Iraq (Andrae 1975, 165; Callmer 1977, 99; Šmit et al. 2012; Maixner in press). Their production period is assumed to span from c. 780 (Callmer 1995a, 529) or 800 CE to the first third of the 9th century CE (Andrae 1975,156). Another type of Middle Eastern bead, dating to a similar period, comprises dark blue, green, black or dark brown beads with stratified eyes of white glass (Figure 22:i) (Andrae 1975, 131, 156; Steppuhn 1998, 55). A third type from the same chronological horizon consists of segmented metal-foil beads (Figure 22:j) (Andrae 1975, 131), constructed from two glass tubes inserted into each other with silver foil between them, fused together. Depending on whether the outer glass tube is amber-coloured, transparent or blue, the beads appear golden, silver or metallic blue (Sode & Feveile 2002, 7). In Ribe, segmented metal-foil beads occur in the 2017–2018 SJM 3 Posthustorvet excavations in phase 780–810 and continue into phase 860–880 CE (Sindbæk 2023a, 275).

Figure 22. Different types of beads. a Ribe-type bead with thread-ornamentation (T17739:f). b Ribe-type bead with reticella ornamentation (T12110:002). c Large Ribe-type bead with elaborate ribbon ornamentation (T2623:002). d Ribe-type bead with mosaic ornamentation in two rows (T8510:008). e Ribe-type bead with mosaic eye-flowers (T4086:004). f Wasp-type bead (T16433:019). g-h Mosaic-eye beads (T16093; T13191:001). i Bead with stratified eyes (T28279:003). j Segmented metal-foil bead (T22926:011). k Cornelian bead. l Eye bead (T18843). m String bead (T9598:1). n Jet bead (T13189:012). o Amber bead (T15808:006). Photo: Birgit Maixner, NTNU University Museum.

Two types of eastern trade beads can be regarded as representatives of imported beads from the 10th century CE. The first are cornelian beads (Figure 22:k), thought to have originated in India, Iran and the Caucasus. According to Callmer (1997), these appear in Scandinavian graves as early as the second quarter of the 9th century CE, but in Norway they are primarily a phenomenon of the 10th century CE (Resi 2011b, 145). The second type comprises dark purple eye beads with applied mosaic eyes and trailed wave-form decorations (Figure 22:l), which date to the middle and last third of the 10th century CE (Callmer 1997), although their exact area of origin has not yet been identified.

Two types of beads included in this study are believed to originate from the British Isles. The first type comprises the so-called string beads (Bead group Bj according to Callmer 1977). These are blue beads with blue and white reticella, some featuring protruding spiral horns in white or yellow, and occasionally decorated with yellow dots (Figure 22:m). The beads are assumed to be of Irish origin, although specimens are also known from Great Britain (Briggs et al. 1985:101). Stylistic similarities with a group of bracelets from the pre-Roman La Tène culture (cf. Larson 2019, 40–41) suggest, in my view, that they were produced within the Celtic tradition. In Scandinavia, string beads appear in the period 820–845 CE, but they can also be found in the first half of the 10th century CE (Callmer 1977, 86).

The second group of beads presumed to originate from the British Isles comprises jet beads (Figure 22:n). Although these first appeared in Norway during the Viking Age (cf. Resi 2011a, 107), they continued to be used throughout the Middle Ages. For this reason, only jet beads from Viking Age contexts were considered in this study. It is assumed that Viking Age jet originated from Yorkshire in the British Isles; however, the Spanish region of Galicia is also considered a possible source area (Resi 2005, 88). Shetelig (1946, 11–12) had already interpreted a group of small plastic animal figures made of jet as evidence of local Scandinavian processing of imported jet, an interpretation supported by finds of semi-finished products and raw materials in Kaupang (Resi 2011a, 125). This suggests that jet beads, like amber beads, were not necessarily imported in finished form.

For both groups of beads from the British Isles mentioned above, it is uncertain whether they can be regarded as mass-produced items manufactured specifically for trade in the same way as the southern Scandinavian and eastern glass bead types discussed earlier. In contrast to Insular metalwork, which was likely acquired largely through looting, the beads from the British Isles appear to have been traded goods.

The bead types selected for this study represent imported goods from various regions of origin and distinct chronological horizons. Some of these types comprise glass beads whose production can be attributed to specific southern Scandinavian nodal markets or towns, while others consist of various eastern trade beads that reached Northern Europe via routes through Eastern Europe and possibly Central Europe. Their appearance from the late 8th century CE onwards forms part of a broader phenomenon observable at other trading sites and in grave assemblages across the Baltic Sea region and Scandinavia (cf. Sindbæk 2023a, 274). Finally, jet beads and string beads indicate an influx of goods and/or raw materials from the British Isles – a development traditionally overshadowed in research by Viking raids in the same area and about which little is currently known.

4.1.2 Oval Brooches

The other group of jewellery objects selected as representatives of imported goods – cast oval brooches – differs from the bead types discussed above in that, according to current knowledge, it consists exclusively of Scandinavian products. Their production appears to have been primarily a phenomenon associated with Viking towns. Production waste from the manufacture of Viking Age oval brooches has been found in Ribe, Birka, Hedeby, Kaupang and Åhus in Scandinavia, as well as in Gnezdovo in Old Russia. However, only three fragments of moulds for oval brooches are known from Kaupang (Pedersen 2016, 99), and the design of none of these has yet been determined. It is therefore unclear which types of oval brooches were produced in Kaupang. Excavations in Ribe have yielded a small number of moulds for the production of 8th-century CE types N (hereafter referred to as creeping beast brooches) and TT brooches in contexts dated to 760–820 CE (Rundkvist 2010, 165).

According to current evidence, production remains for oval brooches of the so-called Berdal group – which emerged in the late 8th century CE and declined from c. 860 CE – dominate in Ribe, with moulds for the manufacture of types P11, P12, P13, P14, P15, P16 and P17 (Brinch Madsen 1984; Feveile 2002, 21; Sindbæk 2011b, 413; Sindbæk 2023b, 415). From phase F13 (860–880 CE) of the 2017–2018 SJM 3 Posthustorvet excavations, a mould fragment from Ribe provides evidence for the production of type P25 (Sindbæk 2023b, 415), which has its main distribution in Central and Northern Norway (Petersen 1928:26). In Birka, only the production of oval brooches primarily dating to the 9th century CE has been documented so far, namely types P25 (Ambrosiani 2021, 296), P27 (Ambrosiani 1992, 41; Ambrosiani 1994, 22), P37 (Ambrosiani 1992, 41; Ambrosiani 1994, 22) and P41 and P42 (Ambrosiani 1996, 29).

A similar spectrum is attested at Åhus, with evidence for the production of oval brooches of the Berdal group, specifically type P27 (Rundkvist 2010, 167) and type P37 (Callmer 2002, 138). In Hedeby, by contrast, apart from the production of the 8th-century CE type P15 (Paulsen 1933, 27; Jankuhn 1977a, 29, 37), there is mainly evidence for the manufacture of late 9th- and primarily 10th-century CE types: P47 (Jankuhn 1977a, 38), P48 (Jankuhn 1977a, 38), P51 (Jankuhn 1977a, 38) and P52 (author's own research, inventory number ALM M 99). The same applies to Gnezdovo in Old Russia, where the production of 10th-century CE types P51 and P52/P55 is documented (Enisova 2002, 338).

As only isolated workshop remains have apparently been recovered from several of these sites (cf. Ambrosiani 1994, 22), this pattern of finds cannot necessarily be interpreted as evidence of production centres that succeeded one another chronologically. Nevertheless, there is a tendency for the earliest Viking Age types of oval brooches – creeping beast brooches, TT brooches and Berdal brooches – to have been produced in Southern Scandinavia, where Berdal brooches also occur most frequently (Jansson 1985:25). Their rare occurrence in Sweden (Jansson 1998, 25) argues against Berdal brooches having been manufactured in Birka (Sindbæk 2011b, 416). By contrast, the production of oval brooches in the 9th and 10th centuries CE is primarily associated with the Viking towns of Birka, Hedeby and Gnezdovo according to current evidence (Table 7).

Table 7. Evidence for the production of various oval brooch types at Ribe, Åhus, Birka, Hedeby and Gnezdovo; based on Ambrosiani (1992, 1994, 1996, 2021), Brinch Madsen (1984), Callmer (2002), Feveile (2002), Jankuhn (1977a), Enisova (2002), Paulsen (1933), Rundkvist (2010), Sindbæk (2011b, 2023b), and the author's own investigations of material from Hedeby.

	Type	Ribe	Åhus	Birka	Hedeby	Gnezdovo
Oval brooch	Creaping beast	x				
Oval brooch	TT	x				
Oval brooch	P25	x		x		
Oval brooch	Berdal type	x	x			
Oval brooch	P27		x	x		
Oval brooch	P37		x	x		
Oval brooch	P41			x		
Oval brooch	P42			x		
Oval brooch	P51				x	x
Oval brooch	P52/55				x	x
Oval brooch	P47				x	
Oval brooch	P48–50				x	

In addition to the aforementioned types of oval brooches, other varieties are also attested with examples from Central Norway, such as types R643, P35, P40, and P57, for which the place of manufacture remains unknown. One of these, the thin-shelled type R643 (cf. Rundkvist 2010, 157), decorated with incised ornamentation and dated to the 8th and the first half of the 9th century CE, is particularly numerous in Norway, especially in Trøndelag (Petersen 1928, 7), making local production a possibility that cannot be excluded. For the purposes of the present study, therefore, only the following types of oval brooches were selected as representatives of metal jewellery among imported luxury goods: creeping-beast brooches, type TT, type P25, Berdal brooches, and types P27, P37, P42, P51, P52/55, and P48–50.

4.1.3 Insular Metalwork

The term Insular metalwork refers to various groups of metal artefacts originating from the British Isles. These primarily comprise reliquaries, drinking horns, copper-alloy vessels, inset lead weights, dress ornaments, and swords (cf. Heen Pettersen 2022, 170). In Trøndelag, Insular metalwork first appears in graves dating to around 800 CE and continues to occur in burials from the 10th century CE, although it is most frequently found in graves from the 9th century CE (Heen-Pettersen 2014).

While some Insular metalwork is undoubtedly ecclesiastical in nature, it is impossible to ascertain whether other pieces originated in a sacred or secular context (cf. Heen Pettersen 2022, 229–237). Nevertheless, the detailed Insular

background is not pertinent to the present study, as Insular metalwork and its distribution are considered solely in terms of their significance as potential secondary, and in some cases perhaps primary, trade goods.

4.2 Imported Luxury Goods Through the Lens of Distribution Maps

In the following section, the distribution of the types of beads and oval brooches selected as representatives of imported goods within the study area will be examined in both temporal and spatial terms. These types are categorised into three chronological groups according to their predominant occurrence in the 8th, 9th, or 10th century CE (Figure 23).

Figures 24–32 illustrate the spatial distribution of oval brooches and beads, respectively, as well as the combined distribution of both object groups for the 8th, 9th and 10th centuries CE. One of the practical challenges of visualisation within the Geographical Information System is that find locations tend to overlap when a high find density coincides with a broad zoom level, resulting in only the uppermost layers being visible. For this reason, the appendix includes separate maps for each of the individual types analysed.

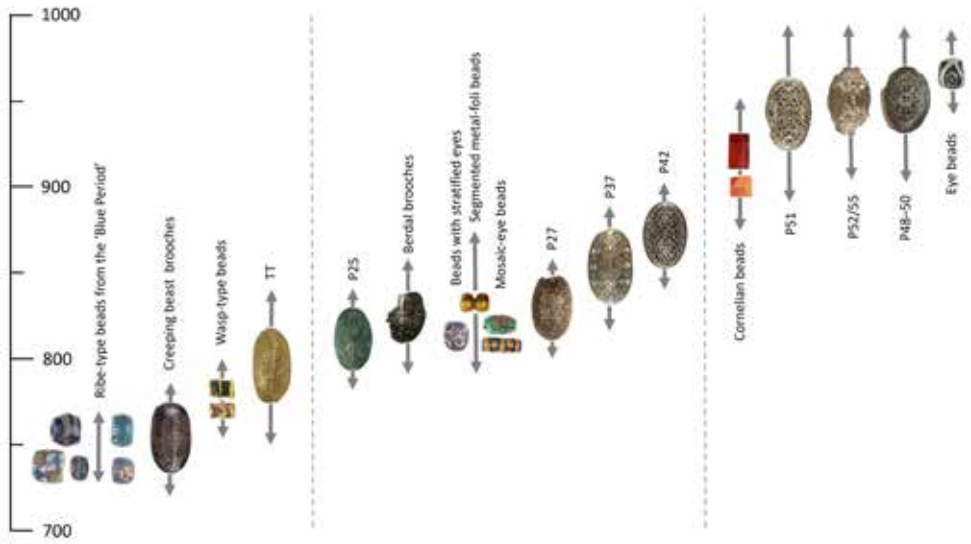


Figure 23. Chronology of bead and oval brooch types selected for the study; based on Petersen (1928), Ambrosiani (1996; 2021), Callmer (1997), Rundkvist (2010) and Sindbæk (2023a; 2023b).

4.2.1 Chronological and Spatial Development

The distributions of the bead and oval brooch types illustrated in figures 24–32, selected for this study as representatives of imported luxury goods, reveal the presence of imported serial products during the 8th to 10th centuries CE, particularly along the coast from Nordmøre to Helgeland, along the Trondheimsfjorden, and through the Sunndalen river valley to Oppdal. The axis across the Sunndalen valley to Oppdal is already evident in the 8th century CE (Figure 26). However, the distribution is considerably sparser in the 8th century (Figure 26) than in the 9th and 10th centuries CE (Figures 29, 32), a contrast that is especially pronounced in the oval brooches (Figures 24, 27, 30). This discrepancy may, however, be partly attributable to the selection of types analysed. For instance, the oval brooch type R643, which is particularly common in Norway and dates to the 8th and 9th centuries CE (cf. Rundkvist 2010, 157), was excluded from the study, as noted above, because its place of manufacture remains unknown.

Nevertheless, it is likely that the more extensive distribution patterns of the 9th and 10th centuries CE, in relation to oval brooches, reflect the transition from individually crafted brooches of the Merovingian Period to those produced in series around 800 CE (cf. Brinch Madsen 1984, 93), and subsequently to the mass-produced brooches of the 9th and 10th centuries CE (cf. Callmer 1995b, 65–67). At the very least, serial and mass production provided the conditions necessary for the widespread distribution of brooches. The distribution of the selected bead types indicates a relatively even spread during the 8th century CE (Figure 25), whereas in the 9th and 10th centuries CE, there is a marked concentration along the south-eastern shore of the Trondheimsfjorden (Figures 28, 31). It should be noted that the bead types selected from the 8th century CE represent products from southern Scandinavian workshops, while those from the 9th and 10th centuries CE comprise eastern trade beads.

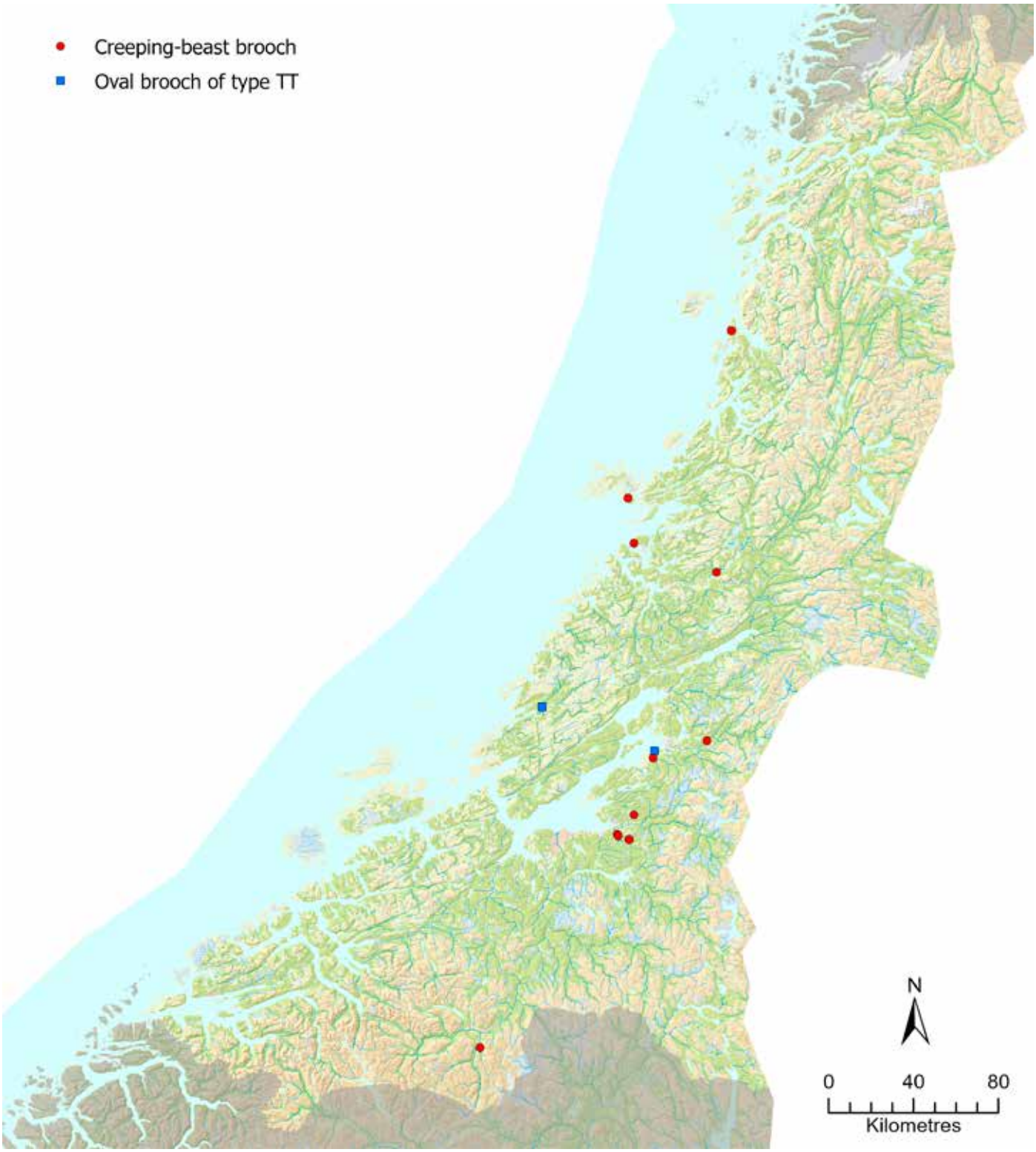


Figure 24. Distribution of selected types of imported 8th-century CE oval brooches in Central Norway.

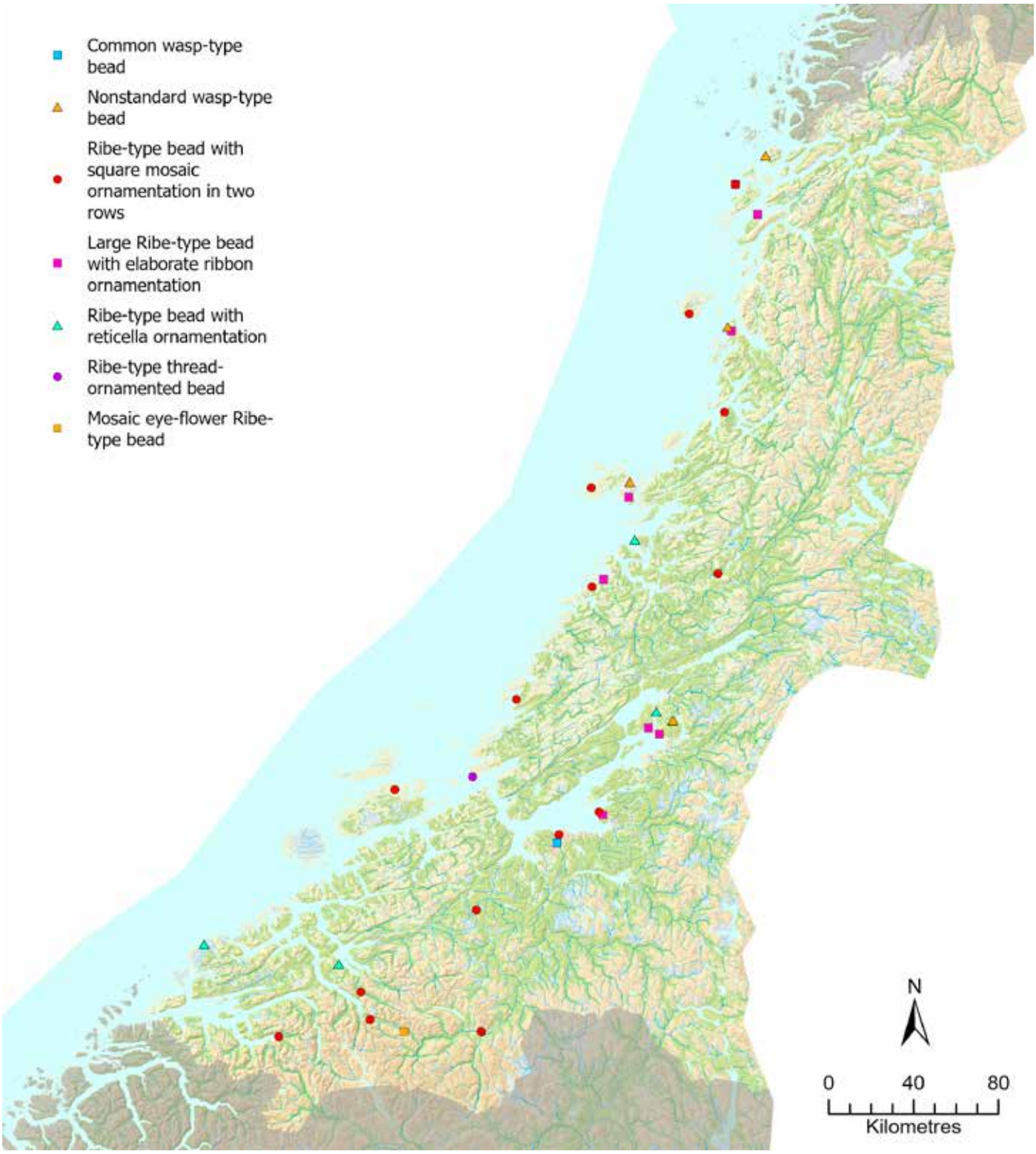


Figure 25. Distribution of selected types of imported 8th-century CE beads in Central Norway.

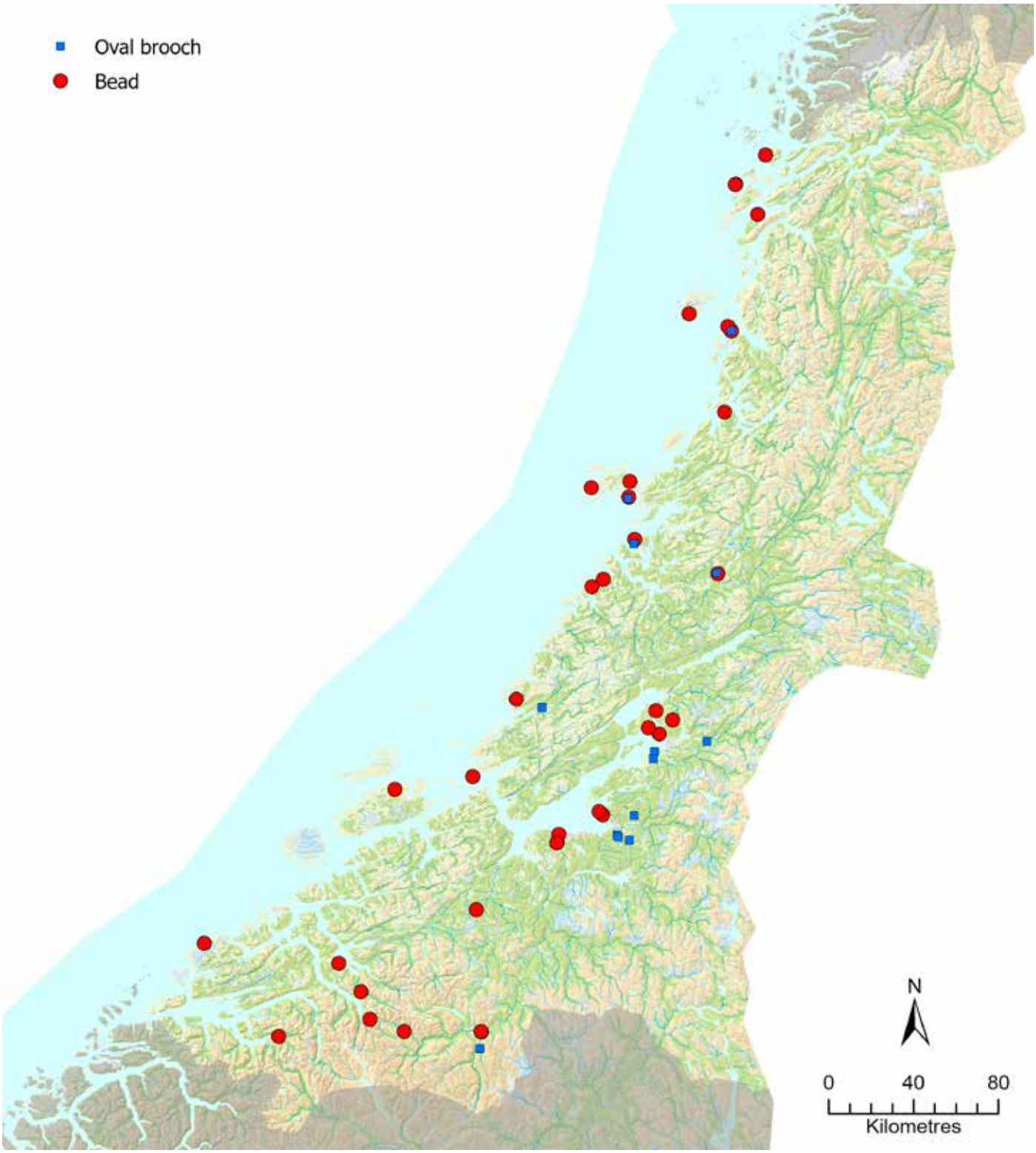


Figure 26. Distribution of selected types of imported 8th-century CE oval brooches and beads in Central Norway.

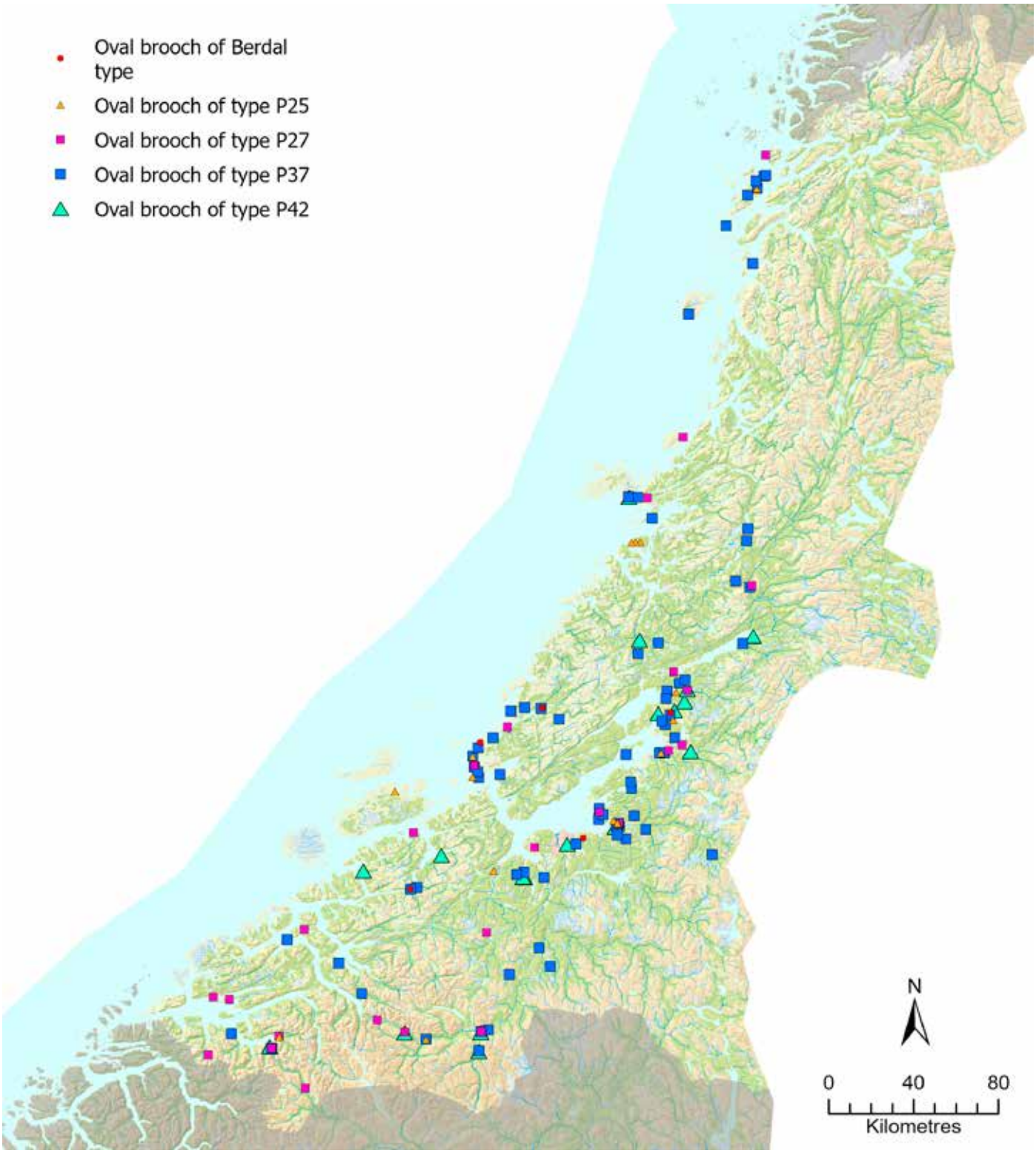


Figure 27. Distribution of selected types of imported 9th-century CE oval brooches in Central Norway.

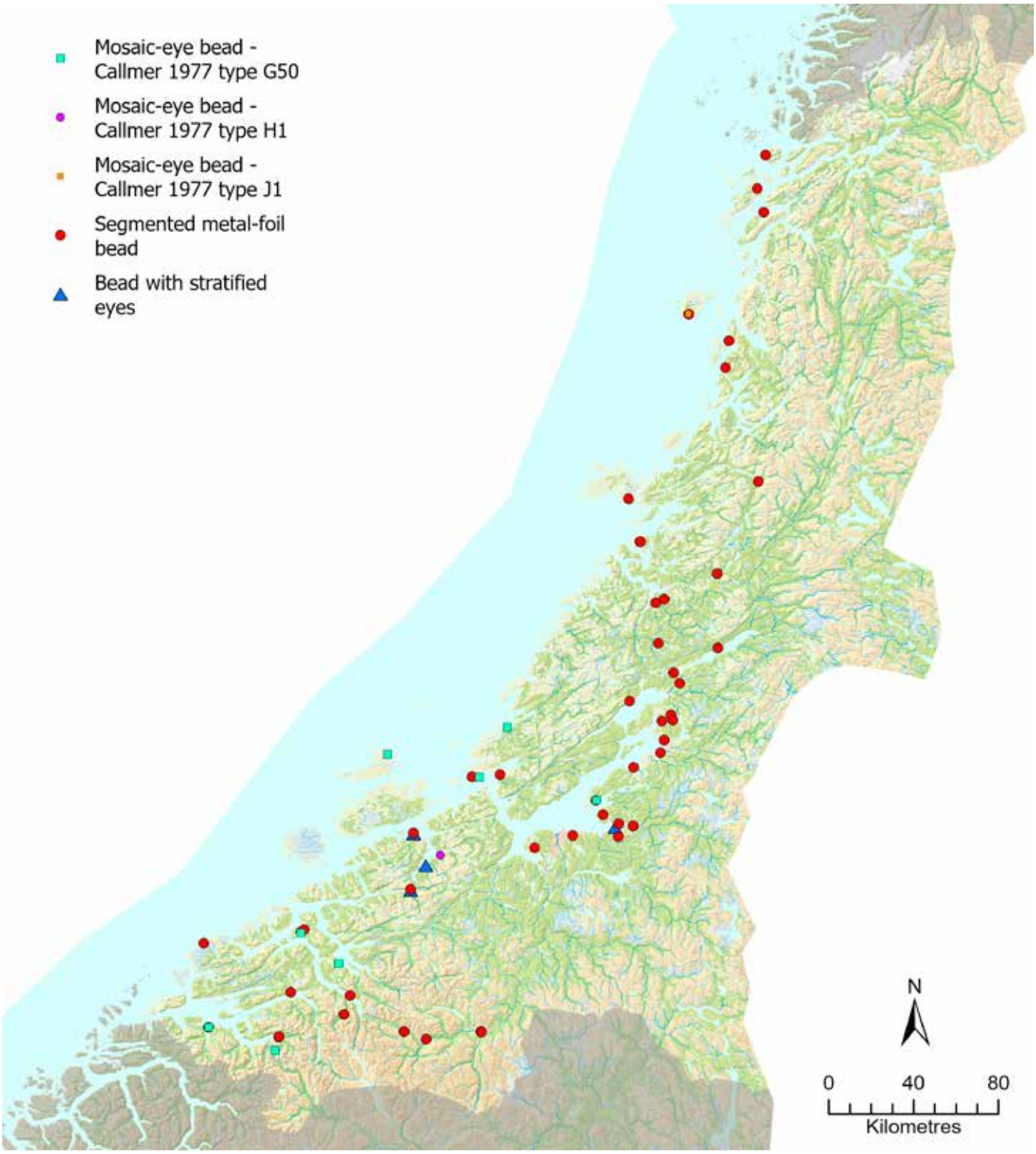


Figure 28. Distribution of selected types of imported 9th-century CE beads in Central Norway.

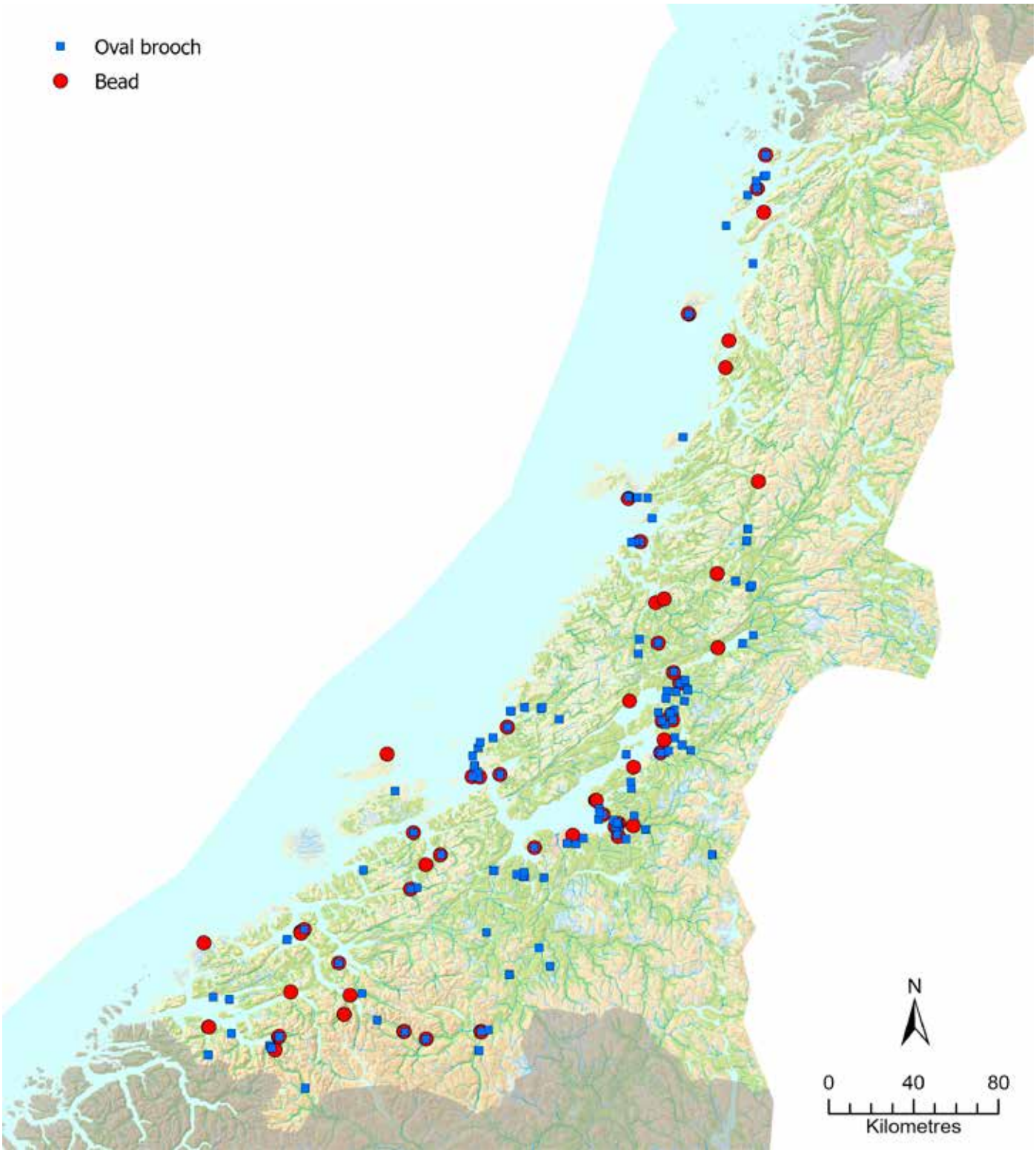


Figure 29. Distribution of selected types of imported 9th-century CE oval brooches and beads in Central Norway.

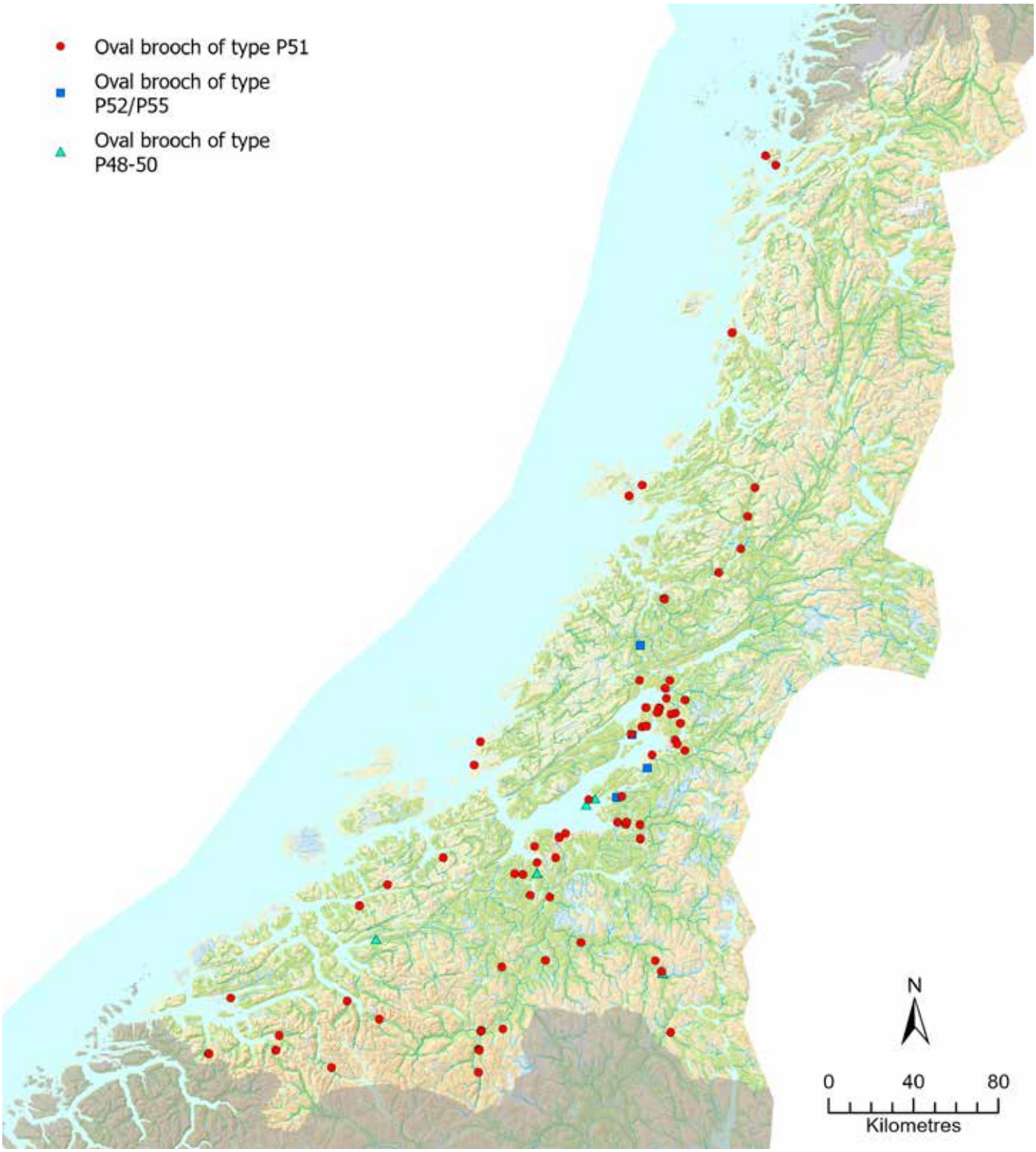


Figure 30. Distribution of selected types of imported 10th-century CE oval brooches in Central Norway.

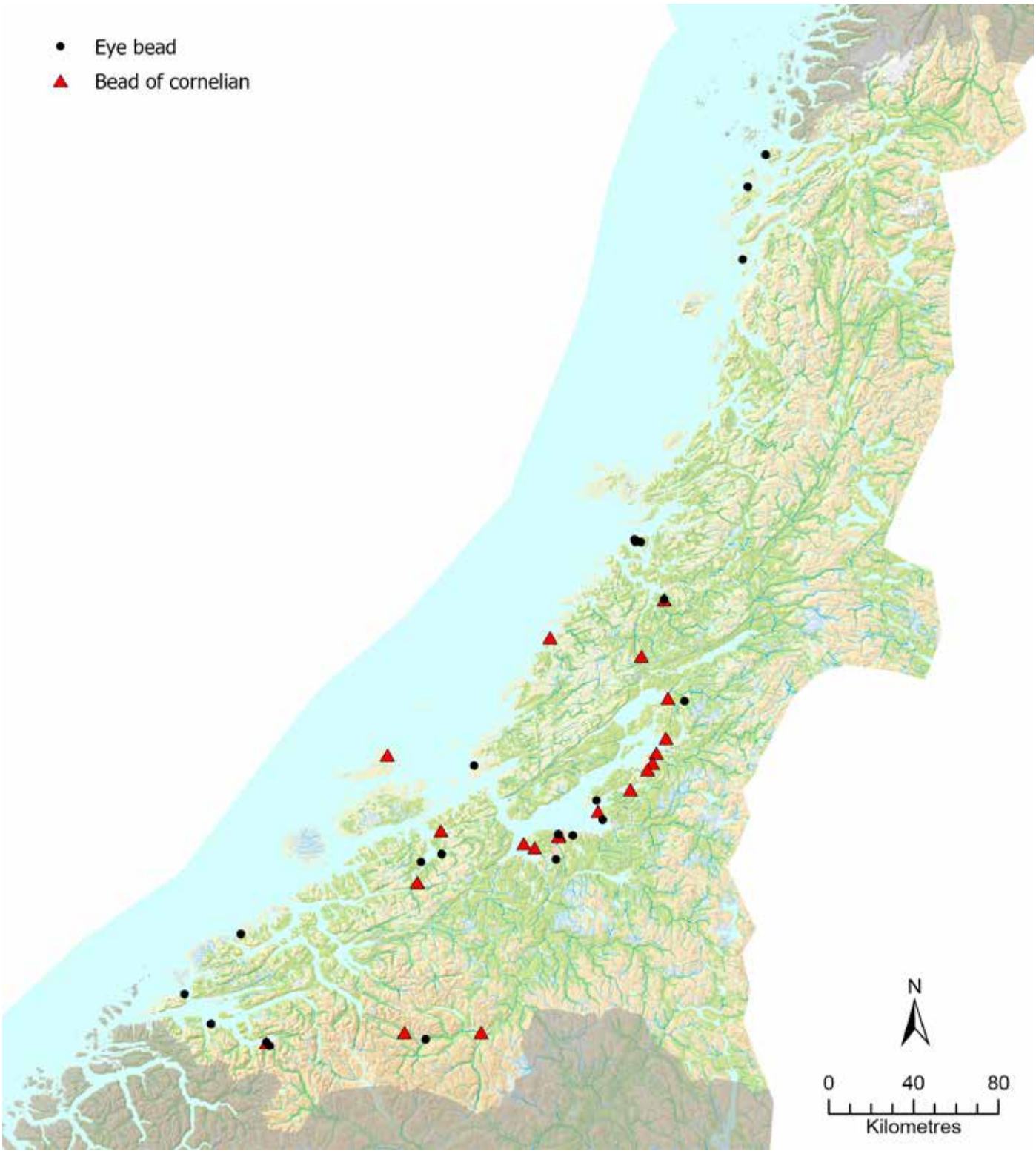


Figure 31. Distribution of selected types of imported 10th-century CE beads in Central Norway.

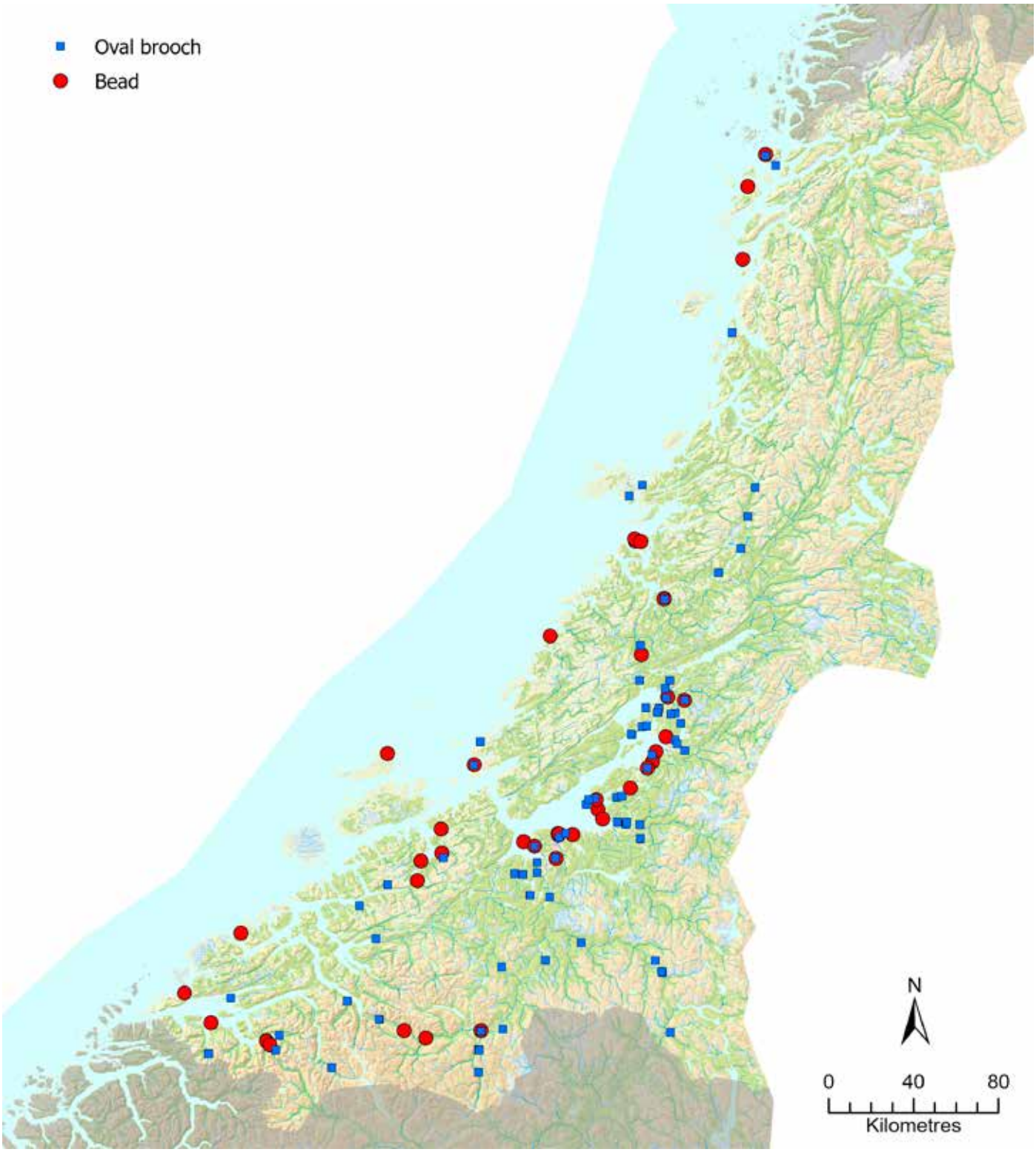


Figure 32. Distribution of selected types of imported 10th-century CE oval brooches and beads in Central Norway.

For the 8th century CE, the most pronounced differences between the distributions of the selected oval brooch and bead types can be observed. Whereas the oval brooches are primarily concentrated in the area surrounding the Trondheimsfjorden and the River Namsen (Figure 24), the selected bead types display a far more even distribution across the study area (Figure 25).

For both beads and oval brooches, a shift in the distribution pattern can be observed over the period under investigation. Whereas the distribution of the 8th-century CE types – apart from the Sunndalen–Oppdal axis – is largely associated with waterways, namely the coast and the Trondheimsfjorden, the distribution patterns of the 9th- and 10th-century CE types indicate the presence of imported luxury goods further inland.

4.2.2 Directions of Import

Central Norway's position at the intersection of east–west and north–south transport routes makes the region an excellent case study for examining the impact of different directions of goods inflow on the distribution of imported items. To what extent did craft products from Southern Scandinavia – particularly from the trading centres of Ribe and, later, Hedeby – reach Central Norway via the coastal sailing route? What role did the connections between Central Norway and Central Sweden across the Kjølen mountain range play in the exchange of goods, and can any shifts in the direction of trade contacts be identified over the period under investigation? Did imported luxury goods from the south primarily reach different areas of Central Norway than those arriving from the east? Furthermore, how does the distribution of artefacts of Insular origin – most of which were likely acquired primarily through looting – compare with that of imported goods from Southern Scandinavia and from the Near and Far East?

As explained in Chapter 2.3.2, the chosen method – namely the analysis of distribution maps – places certain limitations on the answers to these questions. Distribution maps reflect only the pattern of artefacts at their final locations (cf. Stjernquist 1985, 69) and do not provide direct information about the routes by which a find travelled from its place of production to its findspot. An additional challenge lies in the serial and even mass production characteristic of the Viking Age, which resulted in a material culture that appears uniform across large areas. Consequently, in very few cases is it possible to determine the precise provenance of craft products. For instance, several Scandinavian glass bead types characteristic of the earliest Viking Age were produced both in Ribe on the west coast of Jutland and in Åhus on the east coast of Southern Sweden, as well as apparently in other locations along the southern North Sea coast (cf. Chapter 4.1.1; Majchczack et al. 2020). Likewise, several types of oval brooches were demonstrably manufactured at various sites (cf. Table 7). My own investigations into one of the most common brooch types of the Viking Age after the oval brooches – the trefoil brooches – reveal extensive mechanical copying and suggest production in a large number of workshops (cf. Maixner 2005).

Despite these limitations, the types selected for this study as proxies for imported luxury goods include a sufficient number whose provenance can be narrowed down to specific regions, providing an adequate basis for investigating the influence of different directions of goods inflow on the distribution of imported

items in Central Norway. As outlined in Chapter 4.1, current research indicates correlations between certain time periods and primary manufacturing locations or regions for the production of oval brooches. The earliest Viking Age oval brooch types with known production sites appear to have originated in southern Scandinavian workshops, whereas evidence for 9th-century CE production is primarily associated with Birka, and the manufacture of 10th-century CE oval brooch types seems to be linked to Hedeby and Gnezdovo (cf. Table 7). For the glass bead types selected for this study, the approximate areas of origin are well established. One challenge, however, is that Middle Eastern beads may have reached Central Norway both via the north–south coastal route and from the east through central Sweden, and therefore cannot contribute to answering the questions addressed in this sub-chapter.

I have argued elsewhere, based on a comparison between production waste in the form of glass mosaic rods from Ribe and the corpus of 'Blue Period' millefiori beads known from Central and Northern Norway, that a large proportion of these beads were likely produced in workshops at Ribe (cf. Maixner 2021b). Only a few subtypes of these 'Blue Period' millefiori beads were selected for the present study. Similarly, the Wasp-type beads also appear to have originated from southern Scandinavian workshops (cf. Table 6). The production of several of the earliest types of oval brooches selected for this study – namely creeping-beast brooches and oval brooches of the TT and Berdal types – also points to the southern Scandinavian region, specifically Ribe and Åhus (cf. Chapter 4.1; Table 7).

The types selected for this study as representatives of luxury goods include several dating to the second half of the 8th century CE and the first half of the 9th century CE, presumably originating from Southern Scandinavia. Figure 33 illustrates the distribution of these types. This distribution suggests that craft products from southern Scandinavian workshops in the earliest part of the Viking Age evidently reached Central Norway in considerable numbers, where they were widely dispersed – not only along the coast, but also along the Trondheimsfjorden, the Sunndalen river valley leading to Oppdal, and other inland areas.

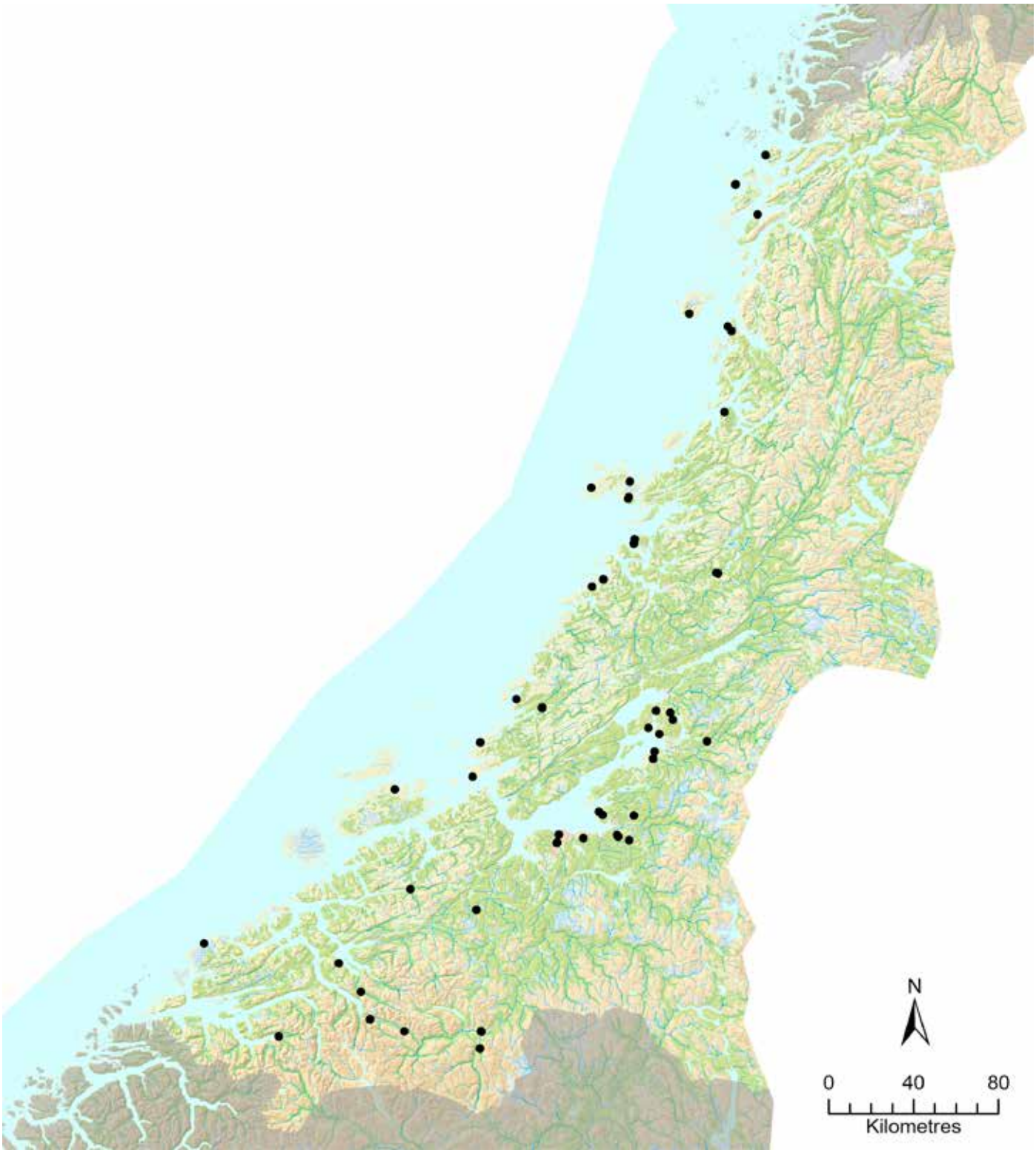


Figure 33. Distribution of 8th-century CE oval brooch and bead types selected for the study, whose production, according to current knowledge, indicates the southern Scandinavian region. The mapping summarises the distribution of the following types: Creeping-beast brooches, oval brooches of type TT and of Berdal type, common wasp-type beads, nonstandard wasp-type beads, Ribe-type beads with square mosaic ornamentation in two rows, large Ribe-type beads with elaborate ribbon ornamentation, Ribe-type beads with reticella ornamentation, Ribe-type thread-ornamented beads and mosaic eye-flower Ribe-type beads.

Although amber beads cannot be dated to specific phases within the Viking Age in the same way as the aforementioned bead and oval brooch types, they were probably imported from Southern Scandinavia. Interestingly, their distribution (Figure 34) largely coincides with that of these latter types.

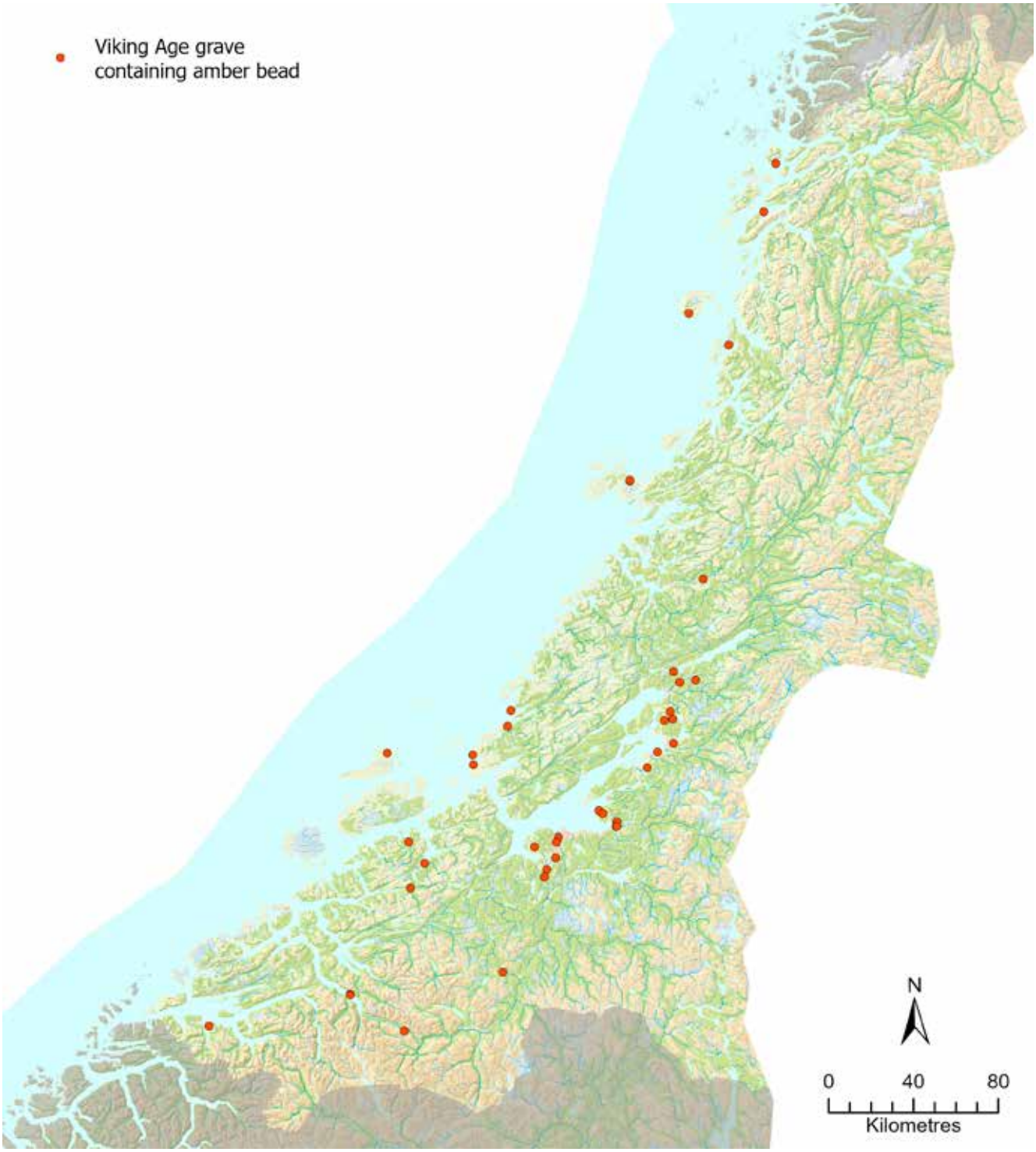


Figure 34. Distribution of amber beads in Viking Age graves in Central Norway.

Among the types selected for this study as representatives of luxury goods, those whose production has so far been demonstrated only in the area of present-day Sweden – namely Birka and Åhus – appear exclusively in the subsequent period, the 9th century CE (cf. Table 7; Figure 23). If types P37 and P42 are taken as representatives of imports from central Sweden in the 9th century CE (Figure 35), a tendency towards deeper penetration into the hinterland, as described in Chapter 4.2.1, becomes evident. Otherwise, apart from a stronger concentration in the area around the mouth of the Trondheimsfjorden, the distribution pattern does not differ fundamentally from that of the earliest Viking Age types for which a provenance in Southern Scandinavia can be assumed. A similar distribution pattern is observed for those oval brooch types of the 10th century CE whose only known Scandinavian production site is Hedeby – namely P51, P52/55, and P48–50 (Figure 36). The distribution of P51 along the Gauldalen river valley towards present-day Sweden (Figure 36) could, however, be interpreted as an indication of as yet unproven production of this type at Birka.

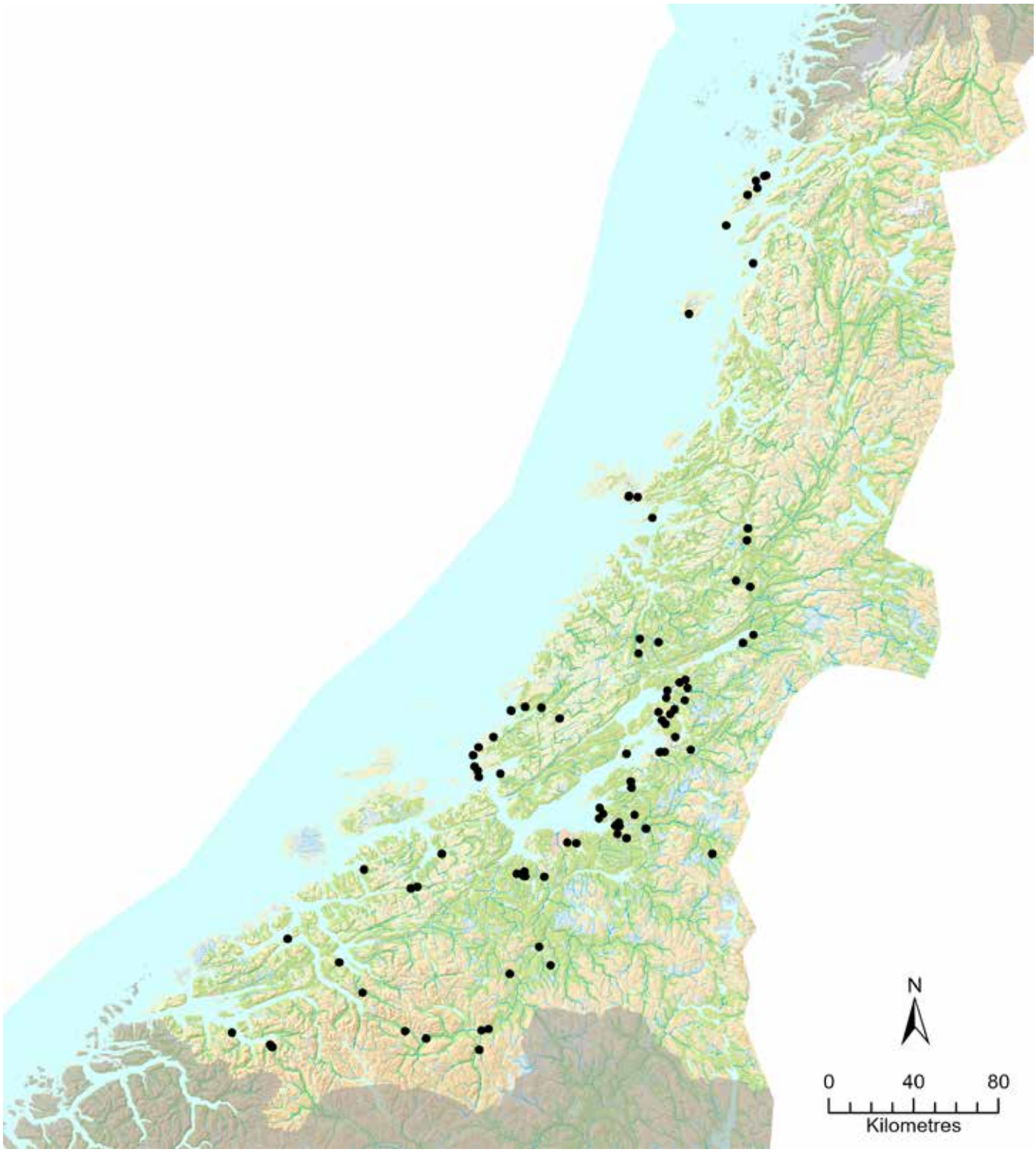


Figure 35. Distribution of 9th-century CE oval brooch types selected for the study, whose production, according to current knowledge, indicates the area of present-day Sweden. The mapping summarises the distribution of the following types: Oval brooches of types P37 and P42.

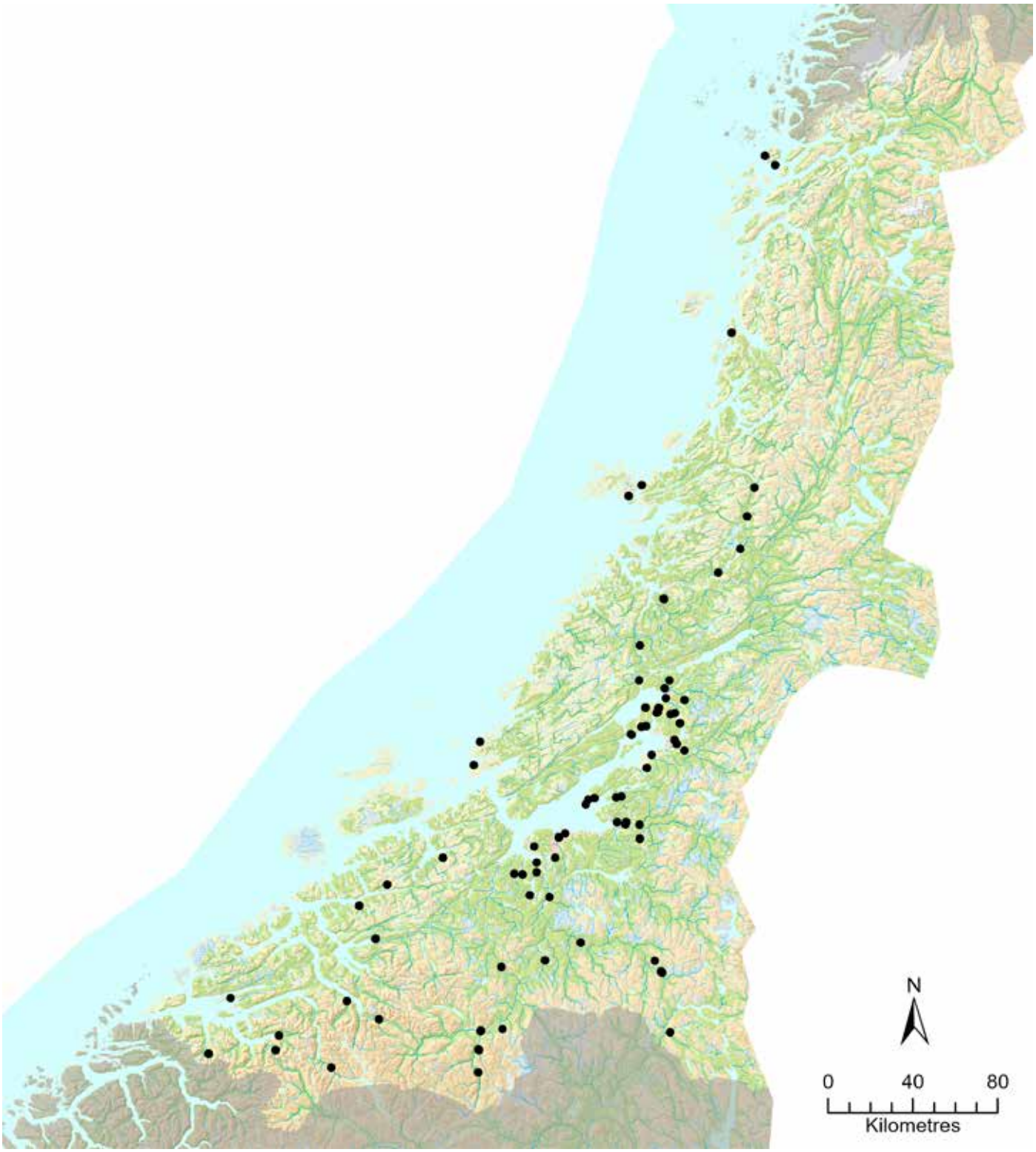


Figure 36. Distribution of 10th-century CE oval brooch types selected for the study, whose production, according to current knowledge, indicates Hedeby. The mapping summarises the distribution of the following types: Oval brooches of types P51, P52/55 and P48-50.

Similar distribution patterns are also shown by the selected types presumed to be of Insular origin, namely string beads and Insular metalwork, which, like amber beads, cannot be assigned to specific phases within the Viking Age (Figure 37). Their overall distribution does not differ significantly from that of the other selected types; however, variations can be observed between the individual groups of artefacts of Insular origin. The distribution of Insular metalwork shows a strong association with the Trondheimsfjorden, particularly its mouth, the Gauldalen river valley, the Stjørdalen river valley, and the inner part of the fjord, namely the Levanger/Steinkjer area. The Snåsavatnet lake region also stands out due to several finds. In addition, Insular metalwork is concentrated in the Oppdal and Sunndalen valley areas, in the Storfjorden region and in the Vikna area.

Insular metalwork thus exhibits a distribution similar to that of the selected bead and oval brooch types from the 9th century CE (cf. Figure 29), which aligns with Heen-Pettersen's (2014) observation that Insular artefacts provide evidence of close connections between Trøndelag and the British Isles during the 9th century CE. In contrast, string beads and jet beads – represented by far fewer examples than Insular metalwork – display a more pronounced coastal and fjord-bound distribution (Figure 37).

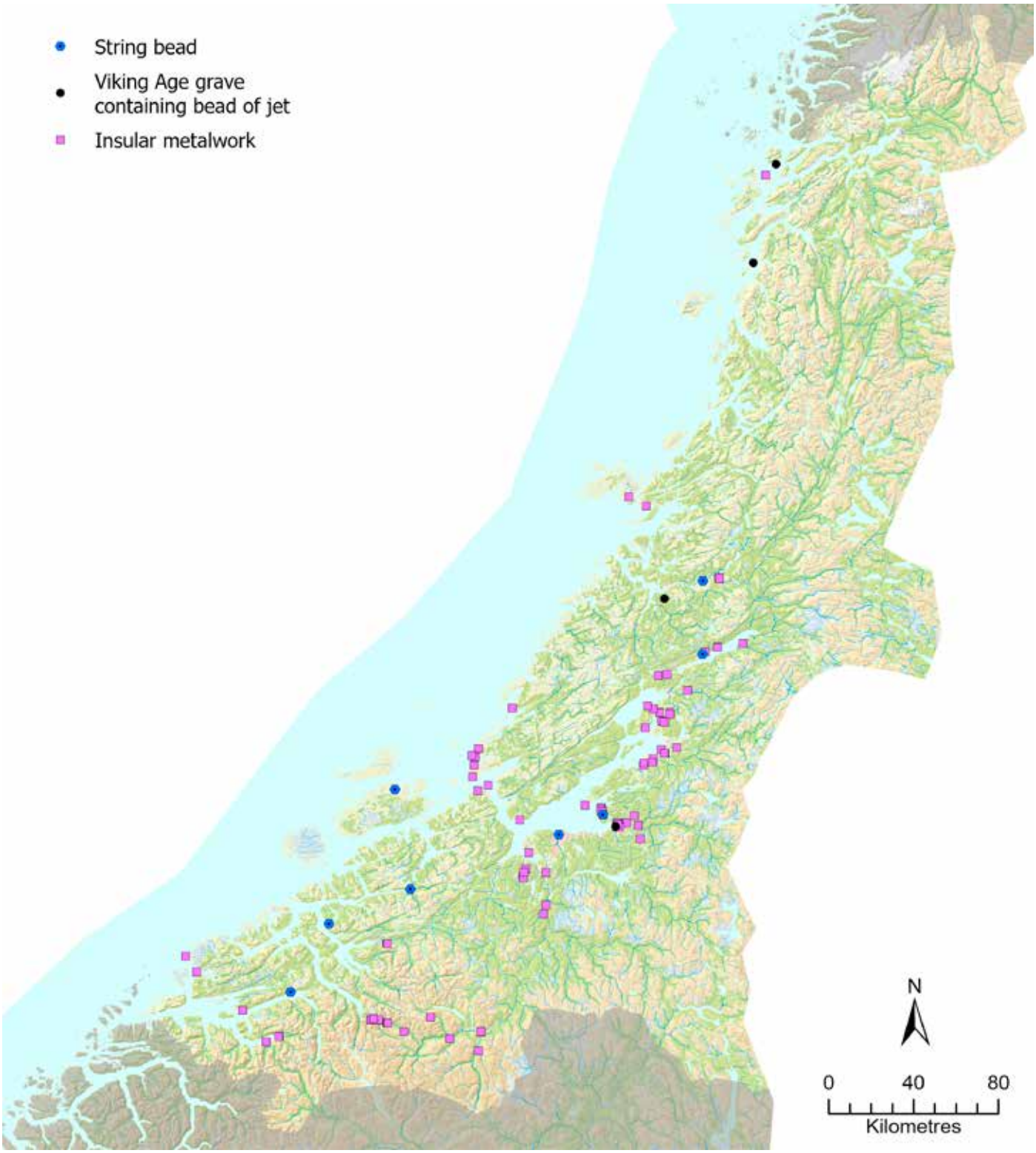


Figure 37. Distribution of Insular metalwork, string beads and beads of jet (from Viking Age graves) in Central Norway.

4.2.3 Relationship to Viking Age Settlement

A key question concerns how the distribution patterns of the imported luxury goods selected for this study relate to Viking Age settlement in the region more broadly. The distribution of Viking Age place names, such as those in -staðir, -býr/bær, or -land (cf. Gammeltoft 2023, 47–49), can provide an indication of the extent of such settlement. However, it should be noted that these place-name classes represent only new names coined during the Viking Age and do not reflect the entire settlement pattern, as sites named in earlier periods may have continued to be inhabited. In many cases, the earliest settled locations were those offering the most favourable conditions for agriculture.

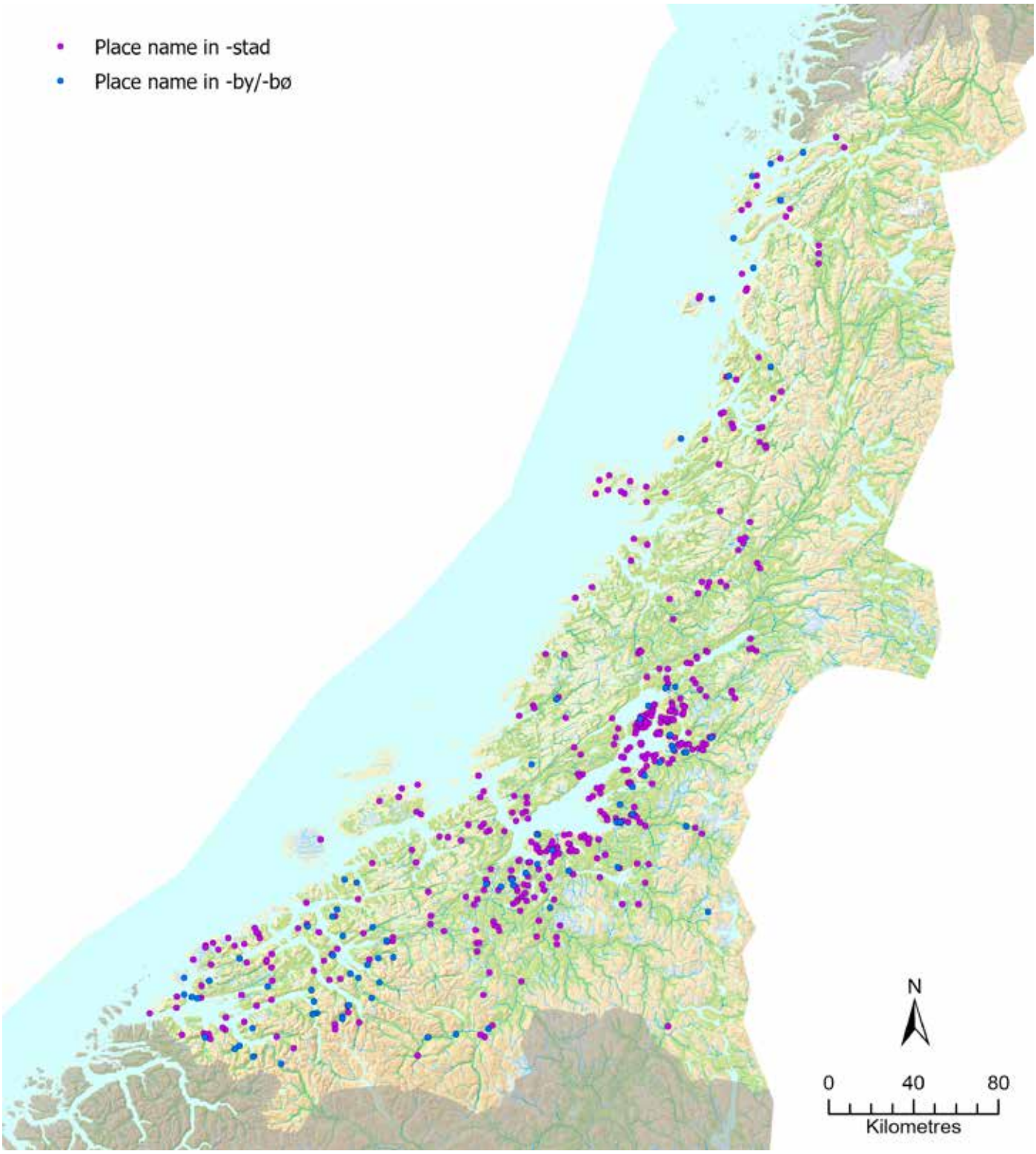


Figure 38. Distribution of place names in -stad and -by/-bø in Central Norway.

A comparison of the distribution of place names in -stad and -by/-bø (Figure 38) with the overall distribution of the bead and metalwork types selected as proxies for imported goods in Central Norway (Figure 39) reveals discrepancies in several areas: in Nordmøre, along the north-western shore of the Trondheimsfjorden, on the Vikna Archipelago, and across various fjord arms of Helgeland. In these areas, the object types chosen as representatives of imported luxury goods are completely absent or occur only rarely. The distribution of imported luxury goods therefore does not necessarily correspond to the Viking Age settlement indicated by the place names examined.

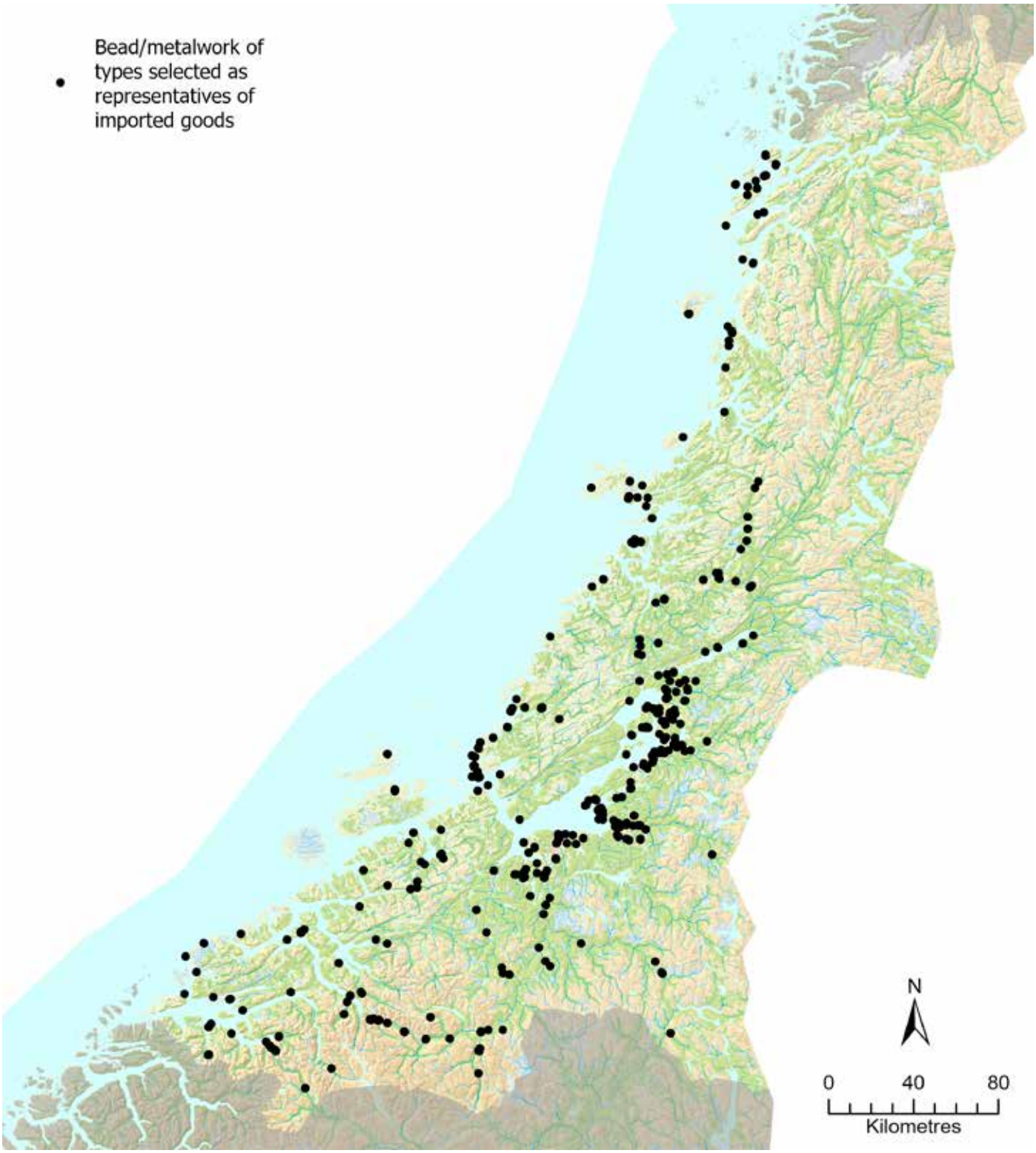


Figure 39. Overall distribution of 8th–10th-century CE oval brooch and bead types, and Insular metalwork selected for the study.

4.3 Results

The examination of bead types and oval brooches, chosen as representatives of imported luxury goods, demonstrates that such items were already widely available in Central Norway during the latter half of the 8th century CE, that is, in the earliest phase of the Viking Age. In the 9th century CE and the first half of the 10th century CE, however, the volume of imports appears to have increased markedly, accompanied by a deeper penetration into the hinterland. Although the selected types are distributed widely across Central Norway throughout all three periods under study – particularly along the coast, the Trondheimsfjorden and the Sunndalen river valley as far as the Oppdal area – they also occur with growing frequency in more remote inland locations during the 9th and 10th centuries CE. Nevertheless, a comparison between the overall distribution of the bead and metalwork types selected for this study as representatives of imported luxury goods and the distribution of Viking Age place names suggests that the conditions for acquiring imported goods were evidently not uniform across all inhabited areas.

Based on current knowledge of the production sites of mass-produced luxury goods and the distribution of selected types from different periods – manufactured either in Southern Scandinavia or Central Sweden – the import of such goods into Central Norway from the east via the Kjølen mountain range appears to have been as significant as that from Southern Scandinavia along the Norwegian coast. The finds indicate that imports from both production areas were extensive. According to the present state of research on the provenance of individual types of mass-produced glass beads and bronze jewellery, the principal direction of import seems to have shifted several times during the Early Viking Age: imports from Southern Scandinavia (Ribe, Åhus) dominated in the earliest phase, those from Central Sweden (Birka) in the 9th century CE, and once again from Southern Scandinavia (Hedeby) in the first half of the 10th century CE.

It should, however, be borne in mind that only a minority of the common Viking Age artefact types can be securely attributed to specific production sites; consequently, the material selected is not necessarily representative. Moreover, Scandinavian products constituted only a portion of the total number of Viking Age artefacts imported into Central Norway. Middle Eastern beads, for instance, may have reached Central Norway at different times and to varying extents via trading centres in both Southern and Eastern Scandinavia, without it being possible to determine their relative share of imports from these directions. It is therefore plausible that the outlined picture of shifting primary import routes to Central Norway throughout the Early Viking Age is strongly influenced both by the selection of types examined and by the inherently fragmentary archaeological record, which may change fundamentally with the discovery of new evidence at production and trading sites.

Overall, the similarity of the distribution patterns presented may suggest that local purchasing power exerted a stronger influence on the final destination of imported objects than the route – via the sea route from the south or overland from the east across the Kjølen mountains – by which these goods reached Central Norway. Interestingly, the types examined, which are presumed to be of Insular origin, exhibit the same overall distribution pattern as the other categories of

imported goods selected for this study. This observation can be interpreted in two ways.

On the one hand, this could mean that a large proportion of the Insular metalwork, after being brought to Central Norway as loot, was in fact integrated into local trade and therefore left a similar spatial imprint as primary trade goods. On the other hand, it is conceivable that the same farms or communities that possessed the purchasing power to acquire imported goods from Southern or Eastern Scandinavia or from the Near and Far East were also in an economic position to organise raids on the British Isles (cf. Heen-Pettersen 2014).

5 MINIATURE III: SITES OF TRANSACTION AND CRAFT PRODUCTION

The purpose of the third miniature is to examine whether specific markets or trading sites for the exchange of long-distance goods can be identified in Viking Age Central Norway, when such places may have emerged, and in which topographical transport contexts they are situated.

5.1 Background to the History of Research

In contrast to Southern Norway, no trading site from the Early Viking Age has yet been securely identified in Central Norway, and consequently this region also lacks archaeological excavation evidence that could with certainty be associated with this category. The source material for identifying and evaluating potential sites of transaction and craft production is therefore limited to stray finds, metal-detected artefacts, grave goods and hoards, with the resulting constraints on its dating potential and interpretative value. A systematic archaeological investigation of potential sites of transaction in Central Norway is still lacking. Against the backdrop of the well-known Viking Age trading centres of Hedeby, Birka and Kaupang – each situated on major fjord arms – the initial research focus was directed towards locating a large trading centre on the Trondheimsfjorden. Charlotte Blindheim (1978, 38) examined the distribution of Viking Age imported artefacts around the Trondheimsfjorden with this question in mind, but observed that the finds were dispersed across a broad area between Levanger and Steinkjer, without any discernible central hub. Nevertheless, she regarded it as most probable that a market centre would be situated on the inner Trondheimsfjorden, in the vicinity of Steinkjer or Levanger (Blindheim 1982, 15).

In the 1980s, Kalle Sognnes (1988) conducted a large-scale analysis of burial finds from the Late Scandinavian Iron Age, although restricted to Trøndelag. Based on the mapping of selected groups of grave goods, he proposed two 'centres' with trading functions in Trøndelag: one near Stjørdal and the other in the Levanger/Verdal/Sparbu area. Sognnes also suggested the existence of other, smaller potential 'centres' in Overhalla on the River Namsen, in Oppdal, and in the Ørland/Nes area (Sognnes 1988, 39). In a later study, Sognnes (1991, 260) refined his assessment, attributing the greatest degree of centrality to Sparbu within the Levanger/Verdal/Sparbu area.

Similar attempts to indirectly identify trading centres based on the distribution of weighing equipment, imported artefacts, or hoards have subsequently been undertaken by several scholars, albeit with partly divergent results. In contrast to Sognnes, Frans-Arne Stylegar (2009, 88) characterises Trøndelag as a 'productive region' in terms of trade and proposes an alternative interpretation, suggesting that trade may have occurred in a decentralised manner within various contexts associated with magnates. Geir Grønnesby and Ellen G. Ellingsen (Grønnesby & Ellingsen 2012), by contrast, adhere largely to Sognnes' interpretative framework in their examination of the distribution of weighing equipment and imported artefacts in the area between Stjørdal and Lake Snåsavatnet, with minor modifications, by positing trading sites near Stjørdal and Steinkjer, the latter being identified as a trading centre in written sources.

The position and function of Nidaros (Trondheim) remain subjects of considerable debate, owing to its mention in written sources and its subsequent development into the dominant medieval town and trading centre on the Trondheimsfjorden. Prior to the 10th century CE, however, the site appears to have been merely one among several central farms along the Trondheimsfjorden (cf. Cadamarteri et al. 2020; Maixner 2022a, 244). Axel Christophersen and Sæbjørg Walaker Nordeide (Christophersen & Nordeide 1994, 290) propose that, in the 10th century CE, the site functioned as a specialised stacking place for goods intended for international long-distance trade under the control of the Earls of Lade at the neighbouring

central farm Lade. These goods included iron and, as Christophersen (2020, 127–128) later adds, dark schist whetstones from the Mostadmarka area. The resulting question of where the Mostadmarka whetstones – exploited since the 8th century CE – were shipped from prior to the 10th century CE is not addressed. The assumption that the Mostadmarka whetstones were shipped via Lade – whose place name, Hlaðir, denotes a loading or storage site – and from there transported more or less directly by sea to markets in Southern Scandinavia had previously been advanced by Baug et al. (2019, 64; 2020, 52), thereby indirectly indicating a stacking site in the Trondheim area.

One of my contributions (Maixner 2020a) on aspects of Viking Age trade in the vicinity of the Trondheimsfjorden takes its starting point in Viking Age central farms, defined as the most wealthy and politically important farms in the area, which, according to medieval historical historiography and tax registers, were scattered in large numbers around the fjord. The private metal detecting of the last fifteen years has generated new source material, which on the one hand allows a reassessment of the trade-related activities, and on the other throws new perspectives on the networking and role of those central farms, which are not mentioned in the historical historiography as the main chieftain sites of the area. Based on the investigation of three central farms – Viggja (Skaun Municipality), Auran (Stjørdal Municipality) and Storfosna (Ørland Municipality) – and on the distribution of Viking Age precious metal hoards, graves containing means of payment, as well as Viking Age hacksilver in the Trondheimsfjorden area, I argue a) for a decentralised structure with several closely spaced places of exchange of varying range, and b) that everyday transactions with weighed silver as a means of payment took place in the beach areas of a large number of farms along the Trondheimsfjorden, and not only in the vicinity of the largest farms or at a few market or trading sites.

However, the notion that everyday transactions involving silver were widespread and occurred in the vicinity of numerous farmsteads does not preclude the existence of larger and more significant sites of exchange. Following the recent discovery of a hoard of hacksilver near Stjørdal, I argue in another paper (Maixner 2023), on the basis of trade-related archaeological finds and the topographical context, for the presence of a seasonal Viking Age trading or market site situated on a plain within a former river meander east of Stjørdal, thereby reinforcing the idea of a major trading place near Stjørdal previously advanced by Sognnes (1988).

For the coastal section south of the Trondheimsfjorden, Axel Christophersen (1991, 165–166), based on the 14C dates of the local mole, referred to King Øystein's Harbour in Agdenes, at the mouth of the Trondheimsfjorden, as a possible trading site, at least during the 10th century CE. In a recent contribution (Maixner 2026), I have taken up this idea and, drawing on recent metal-detector finds associated with craft and trade, together with an assessment of all 14C dates previously known from the mole, argued for a function of King Øystein's Harbour as a production and trading centre during the second half of the 9th century and the 10th century CE.

Recently, Hellan and I (Maixner & Hellan 2024) have postulated the existence of a Viking Age trading site in the vicinity of Hemnfjorden, the precise location of which has yet to be identified. Our assumption is based on a striking concentration of imported beads in the area, the late 10th-century CE hacksilver hoard from Vitsö/

Kyrksæterøra (cf. Skaare 1976, 163–164), stray finds of Viking Age coins, a grave containing means of payment (Skeiet grave 16, T28282), and the island name Bjørkøya, attested in Hemnfjorden/Bjørkøyfjorden.

In contrast to Trøndelag, and particularly the area surrounding the Trondheimsfjorden, potential sites of exchange in other parts of Central Norway have thus far received little systematic attention in archaeological research. This is especially true for Helgeland, the power structures of which have been examined in several studies by Birgitta Wik/Berglund (cf. Wik 1985; Berglund 1995). Wik/Berglund does not explicitly address the question of Viking Age trading centres in Helgeland but appears to assume, in line with substantivist concepts, that trade occurred within local centres of power (cf. Wik 1985, 236).

In Nordmøre and Romsdal, an active metal-detecting community has, in recent years, uncovered numerous metal finds in the Leikvin area of the Sunndalen river valley. Kristoffer Dahle et al. (2019) have addressed these discoveries, albeit primarily from a heritage management perspective. Finds indicative of trade and production reveal several concentrations only 1–2 km apart, the largest of which is located in the vicinity of the Torske Farm (Dahle et al. 2019, 91–93). However, the authors interpret these concentrations broadly as evidence of activity and trade, without offering specific interpretations of individual clusters as trading centres.

The presentation of the current state of research on Viking Age trading centres and marketplaces in Central Norway reveals considerable regional variation in both research focus and the utilisation of source material. The relatively new source category of metal-detector finds has thus far been analysed only selectively and not yet in a systematic, region-wide manner. The proximity of the administrative museum based in Trondheim may partly explain why the area around the Trondheimsfjorden has attracted greater scholarly attention than more peripheral regions. Similarly, the genre of metal-detector finds, which provides a new and central source material for trade-related questions, is influenced by the locations where detectorists live and operate (cf. Chapter 2.2.1). The phenomenon of a decentralised trade structure that I have previously emphasised (Maixner 2020a) is therefore not necessarily unique to the Trondheimsfjorden area but has conceivably only been demonstrated there so far due to the high number of detectorists active in the region.

It has proven challenging that the identification of possible central Norwegian sites of exchange has, in many cases, relied on the material remains of the weight economy – namely hacksilver, weights, hacksilver hoards, and graves containing weighing equipment – without considering that the trading activities documented in this way generally date no earlier than the late 9th century CE. Another aspect largely disregarded in previous attempts to identify central Norwegian trading sites of the Early Viking Age is the evidence for specialised crafts. According to the current state of research, the proposed sites therefore appear predominantly limited to trading activities and thus differ from the growing number of eastern Norwegian sites of combined trade and production (cf. Chapter 2.1.3).

Attempts to relate the known Central Norwegian sites associated with trade in goods to terminologies and models developed elsewhere have thus far been largely absent. The sole exception is the proposal by Grønnesby & Ellingsen (2012, 44) to classify the trading site they posit at Steinkjer as a ‘nodal market’

or even a 'town' according to Skre's model (cf. Figure 3); however, this is done without addressing the missing aspect of specialised crafts. A general challenge in evaluating the central Norwegian sites with evidence of trade is that the documented indicators of trading activity are, in all cases, modest and, owing to various factors, never representative. For instance, modern overbuilding, as in the case of Steinkjer, may have obliterated all direct traces of a possible former trading centre, whereas intensive metal prospecting, as in the case of Viggja, may theoretically have resulted in an over-representation of material compared to other sites – two examples among many.

Overall, the review of the current state of research highlights the absence of a systematic evaluation of possible Viking Age sites of exchange and craft production in Central Norway, as well as the lack of an overarching consideration of these sites and their localisation factors – particularly in light of the considerable variation in the natural environment of Central Norway and the differing transport-geographical conditions. Finally, the overview underscores the need for a re-evaluation based on current source material, which has been significantly augmented in recent years through metal-detector finds.

5.2 Identifying Sites of Transaction and Production in Central Norway

In the following, an attempt is made to identify locations or areas in Central Norway where possible sites of exchange and production may be assumed, based on archaeological evidence. The distribution of three categories of material will be examined: firstly, single finds of hacksilver and weighing equipment, which can provide direct evidence of trading activities; secondly, grave finds containing weighing equipment and/or means of payment, which may indirectly indicate neighbouring trading sites; and thirdly, raw materials and production waste associated with specialised crafts. The analysis then considers whether the localisation of these sites or areas, as inferred from the distribution of the selected material, follows recognisable patterns. The chosen approach does not differ methodologically from earlier, similar attempts (cf. Blindheim 1978; Sognnes 1988; Stylegar 2009; Grønnesby & Ellingsen 2012). However, it incorporates a broader spectrum of object groups indicative of trade and production, takes as its point of departure the current source material – including detector finds from recent years – and, for the first time, encompasses the entire region of Central Norway.

5.2.1 Finds Directly Indicative of Trade

Single finds of fragmented silver – such as cut coins, ingots and other silver objects – as well as weighing equipment in the form of balances and weights have the potential to directly identify sites of exchange. Small-scale movements through secondary processes, such as the transfer of municipal waste to surrounding agricultural land (cf. Christiansen 2017, 63), cannot be ruled out. In contrast to deliberately deposited grave goods, the selected material can be regarded as objects lost or discarded due to a lack of perceived value. The majority of this material has been recovered through private metal detecting, and its

representativeness is therefore potentially influenced by a range of factors (cf. Chapter 2.2.1).

Several groups of Viking coins of different dates and origins are attested from Central Norway (Table 8). However, the analysis of the distribution of single finds of Viking coins within the study area will be restricted to Frankish deniers, Islamic coins (dirhams), and Byzantine coins, as the English, German and Swedish pennies belong primarily to the 10th and, in particular, the 11th century CE, and therefore tend to post-date the period selected for this study.

Table 8. Number of individually found Viking Age coins from different groups from Central Norway; as of January 2026.

Category of coins	Frankish deniers	Islamic coins	Byzanthine coins	German pennies	English pennies	Swedish pennies
Total number	2	70	1	23	8	2

Sceattas from the 8th century CE, associated with Frisian trade, have not yet been recorded in Central Norway. Only two finds of Frankish deniers from the first half of the 9th century CE are known from the region: one from Ranheim near Trondheim (T26101:816) and the other from Velvang near Stjørdal (T28261) (Figure 40; Figure 41:a). Their poor state of preservation does not allow determination of whether they were used as hacksilver. Byzantine coins are even rarer, with only a single stray find documented within the study area – a 10th-century CE miliaresion from Veie near Skogn (T27165). However, since the secondary suspension device of this find suggests its use as a piece of jewellery and thus its origin from a ploughed-out grave, it has not been included in the distribution map.

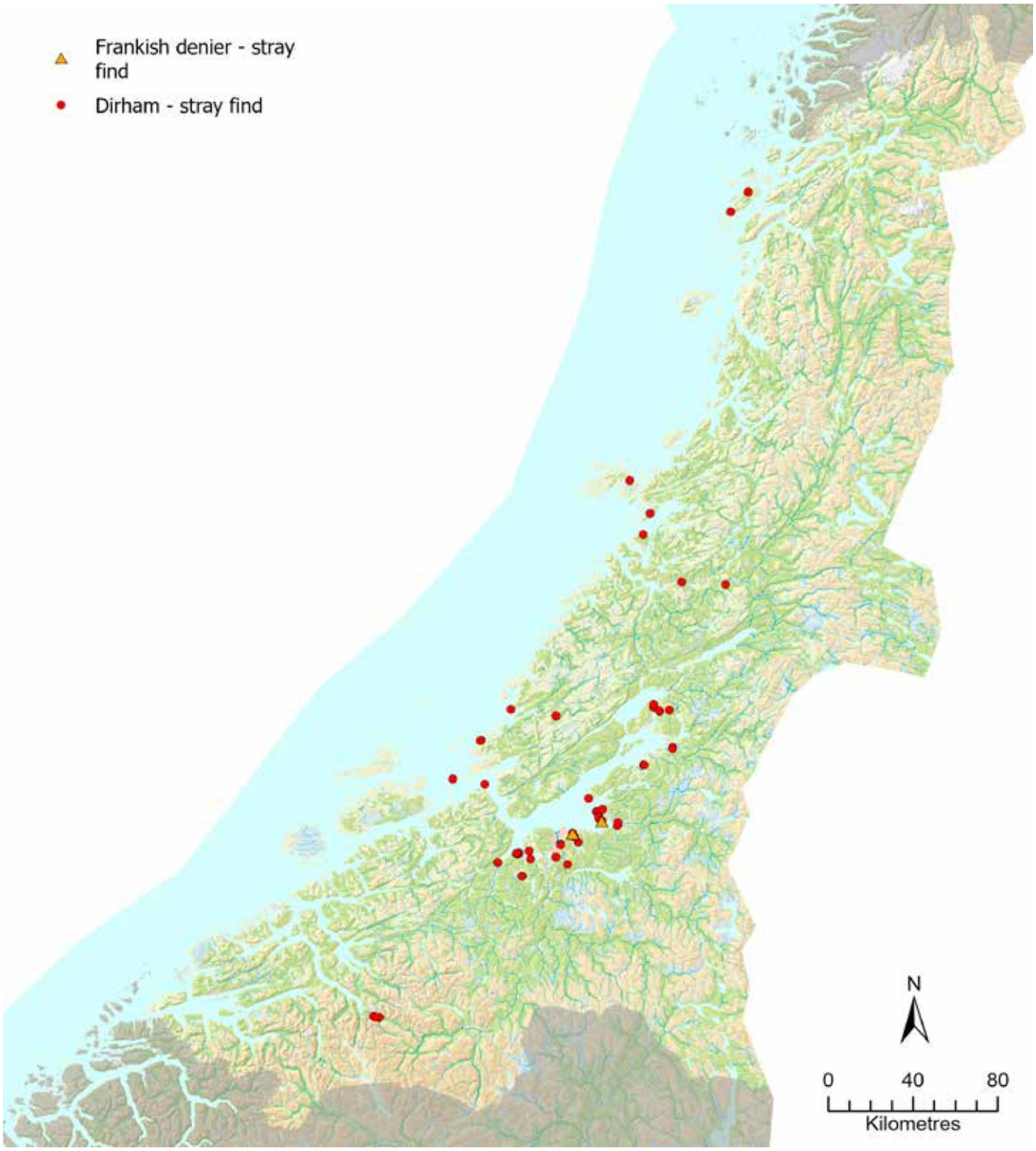


Figure 40. Distribution of Islamic coins (dirhams) and Frankish deniers found as stray finds in Central Norway; status as of September 2025.

Among the single finds of Viking Age coins, Islamic silver coins (Figure 41:b–c) constitute by far the largest group, with 70 specimens (Table 8). Their distribution is densest to the south-east of the Trondheimsfjorden and at the mouth of the Sunndalen river valley (Figure 40). The two largest concentrations are at Viggja (13 specimens) and Auran/Velvangen (9 specimens) on the Trondheimsfjorden. For comparison, 42 dirhams have been recovered from the aforementioned local market at Heimdalsjordet on the Oslofjorden (cf. Bill & Rødsrud 2017, 223).

Five Islamic coins are concentrated in a field at the Venn Farm in the hinterland of Viggja, and four in the vicinity of Løykja in the Sunndalen river valley. The remaining dirhams are predominantly scattered. No stray finds of dirhams are known from Nordmøre and Romsdal outside the Sunndalen river valley. North of the Trondheimsfjorden, only two focal points can be identified: along the River Namsen and its extension towards the Vikna Archipelago, and on the island of Dønna in Helgeland. Overall, only very few Islamic coins are known from areas north and south of the Trondheimsfjorden and from the coastal zone in general.

Figure 41. Types of Early Viking Age coins selected for this study. a Frankish denier (T28261). b-c Dirhams (T28379; T28536). Photo: Terje Masterud Hellan, NTNU University Museum.

The distribution of single finds of hacksilver, with its concentration south-east of the Trondheimsfjorden and in the area of its estuary, partly mirrors the distribution of individually found Islamic coins (Figure 42). However, only a few finds have so far been recorded outside this area: two from the Løykja locality in the Sunndalen river valley, one from the island of Dønna in Helgeland, and two from the Bones Farm in the Gauldalen river valley.

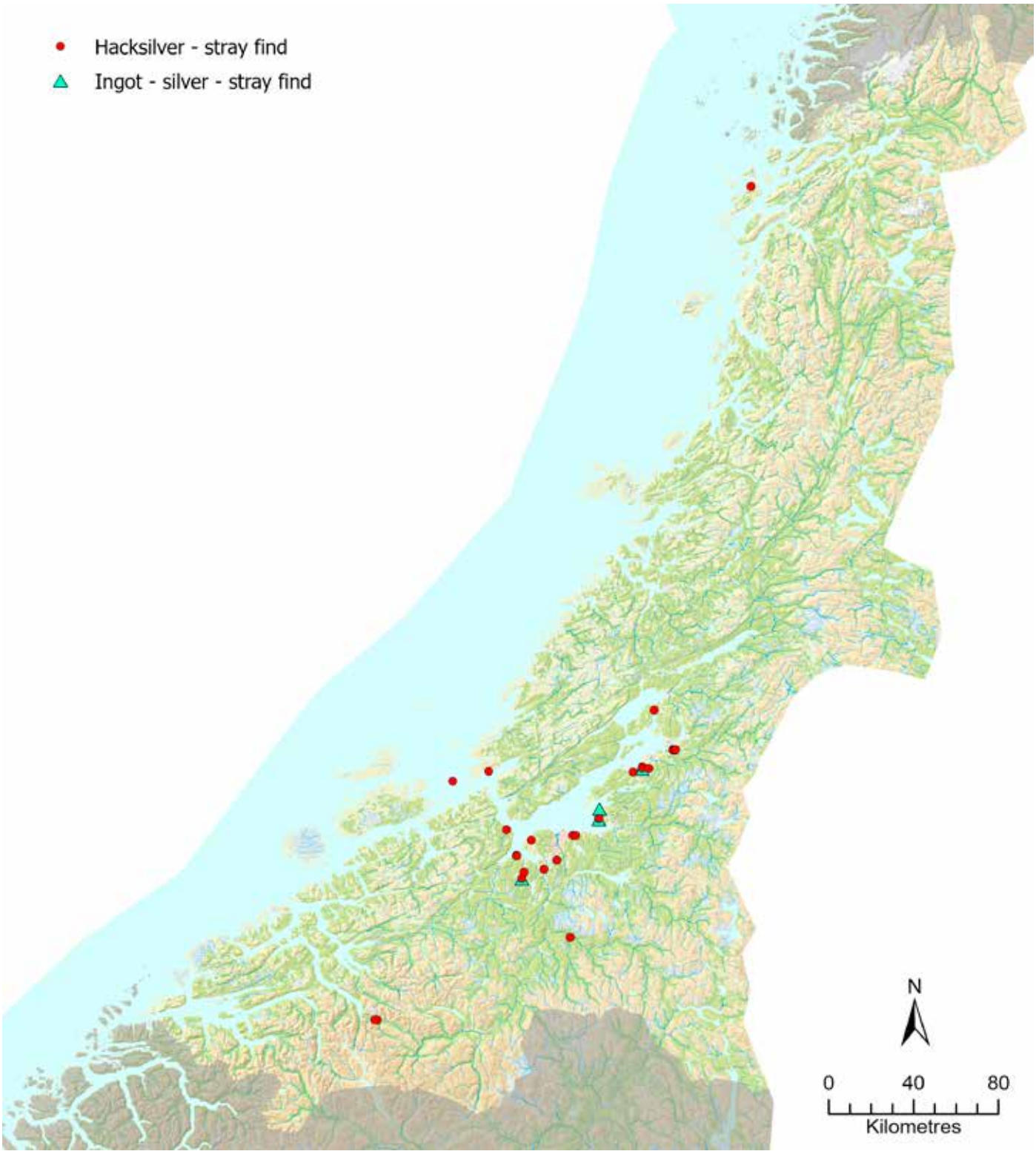


Figure 42. Distribution of hacksilver and silver ingots of presumably Viking Age date found as stray finds in Central Norway; as of September 2025.

Silver ingots may represent both hacksilver and raw material for non-ferrous metalworking. Four single finds of silver ingots are known from Central Norway, all originating from the area south-east of the Trondheimsfjorden (Figure 42). Only one ingot (T27737) is intact; two (T27665, T27977) are chipped at least at one end, and the fourth (T29091) exhibits signs of having been tested.

Single finds of weights from plough layers are known in large numbers and exhibit a wide variety of forms within the study area. However, owing to the longevity of several types, many cannot be securely dated to the Viking Age (cf. Pedersen 2008, 131–132; Bill & Rødsrud 2017, 220–222). Lead weights in Norway, for instance, occur in graves from the 6th century CE and remained in use until the 14th century. Cylindrical copper-alloy weights likewise display an extended period of use, from the Roman Iron Age to beyond the Viking Age (Pedersen 2008, 132). Moreover, not all weights were necessarily associated with the weight economy; in Birka and Ribe, lead weights were frequently linked to bronze casting (Gustin 2004, 21; Pedersen 2008, 166). For the present study, I therefore restrict consideration to three types of weights:

Firstly, lead weights with preserved Insular mounts, dated to the late 9th and 10th centuries CE (Heen-Pettersen 2021) (Figure 43:a).

Secondly, cubo-octahedral copper-alloy weights, which were in use in Birka from c. 860/870 CE (Gustin 2004, 314) (Figure 43:b).

Thirdly, oblate spheroid weights. Such weights, made of iron and copper-alloy (Figure 43:c), appear in the Baltic region from c. 870/880 CE (Steuer 1987b, 460; Steuer 1997, 12). The production of oblate spheroidal lead weights (Figure 43:d), known from Kaupang, Birka and Uppåkra, among other places, seems to have been inspired by these (Pedersen 2008, 137). At Birka, the manufacture of oblate spheroid weights from iron and copper-alloy, and from copper-alloy alone, is documented (Gustin 1997, 171). Oblate spheroid copper-alloy weights (Figure 43:e) may therefore be Viking Age, but generally tend to appear only in the final decades of the 10th century CE and are absent, for example, among settlement finds from Kaupang (Pedersen 2008, 132). In Central Norway, oblate spheroid copper-alloy weights are not attested in Viking Age graves, in contrast to those made of iron and copper-alloy. Massive oblate spheroid copper-alloy weights are therefore included in this study only with reservations.

Figure 43. Selected weight types. a Weight with preserved Insular mount (T27510). b Cubo-octahedral weight of copper-alloy (T18754). c Oblate spheroid weight of iron and copper-alloy. d Oblate spheroid weight of lead. e Oblate spheroid weight of copper-alloy. Foto: Terje Masterud Hellan (a, c-e), Birgit Maixner (b), NTNU University Museum.

The quantitative distribution of these weight types varies considerably (Table 9). To date, only a single find of a cubo-octahedral copper-alloy weight is known from the study area (T28075), and four single finds of lead weights with Insular mounts (T3213, T27510, T28144 and T27510). Eight specimens of oblate spheroid weights made of copper-alloy and iron have been recorded, whereas massive weights cast from copper-alloy are far more numerous, with 20 specimens.

Table 9. Number of individually found weights of selected types from Central Norway.

Type of weight	**Lead weights with Insular mounts**	**Cubo-octahedral weights of copper-alloy**	**Oblate spheroid weights of copper-alloy and iron**	**Oblate spheroid weights of lead**	**Oblate spheroid weights of copper-alloy**
Total numer	4	1	8	12	20

The distribution of these weights also exhibits a clear concentration south-east of the Trondheimsfjorden and in the Sunndalen river valley (Figure 44). It is primarily the oblate spheroid copper-alloy weights, which may tend to be dated somewhat later, that extend the distribution area through individual finds along the coast and at the mouth of the Trondheimsfjorden, thereby indicating sites of transactional activity.

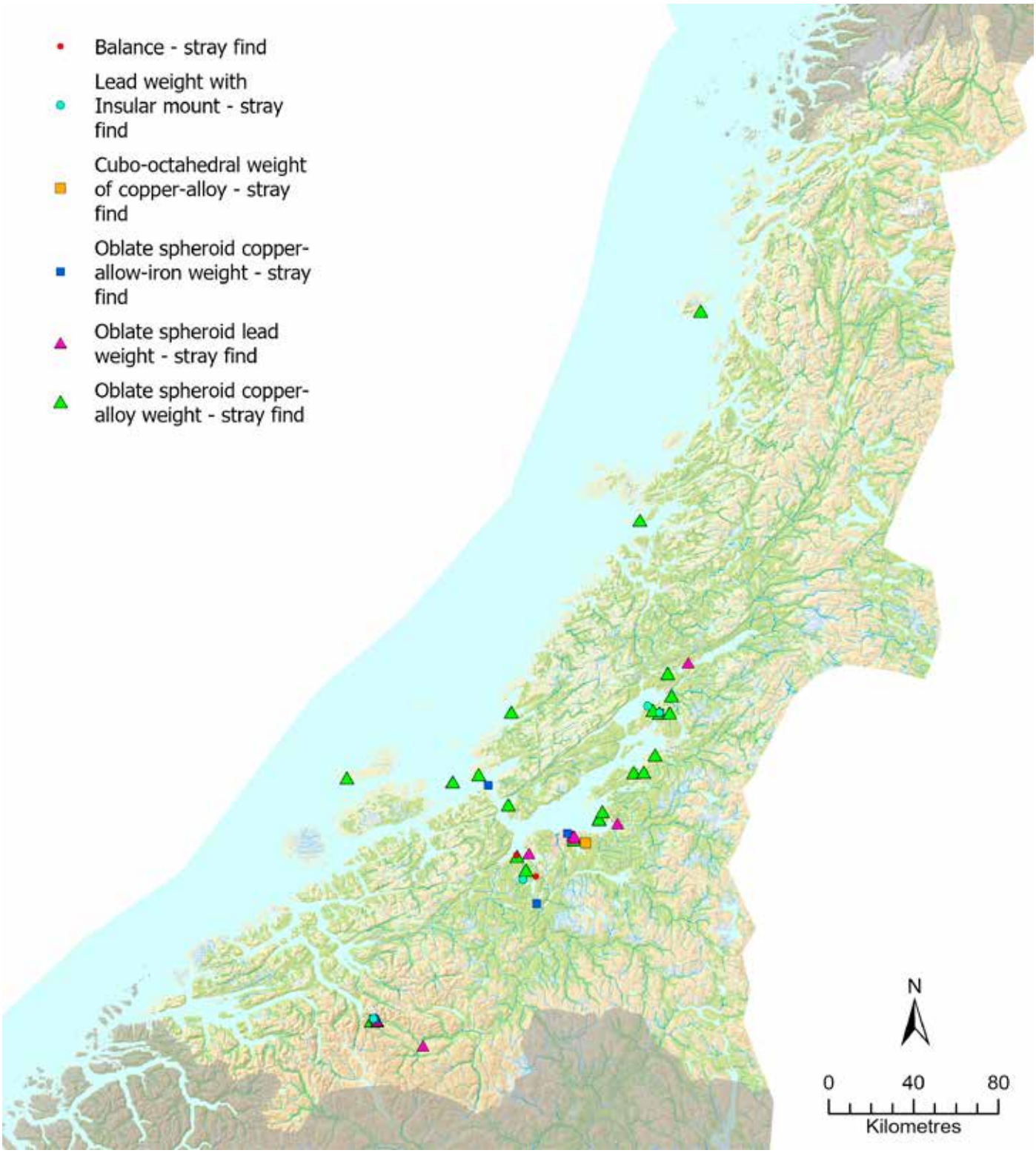


Figure 44. Distribution of balances and weights of presumably Viking Age date found as stray finds in Central Norway; as of September 2025.

In contrast to the numerous weights, only two Viking Age balances from Central Norway – presumably dating to the Viking Age – originate from contexts other than graves; both finds, T28005 and T212, derive from the area south of the Korsfjorden, a branch of the Trondheimsfjorden on which the Viggja site is situated. The scarcity of isolated finds of balances may be attributable to the fact that, owing to their size and value, balances were less susceptible to accidental loss and were consequently handled with greater care. The fact that more than a quarter of the central Norwegian graves containing balances also include casings made of fur or copper-alloy (Table 10) (Figures 11, 45) underscores the meticulous care taken to preserve their accuracy.

Figure 45. Balance case T265 from Storborg Nedre, Levanger Municipality, Trøndelag. Photo: Birgit Maixner, NTNU University Museum.

As none of the isolated finds of balances is complete, their dating remains uncertain. The first of the finds mentioned is a balance pan from Viggja, T28005. Its three-point suspension and lack of decoration may suggest that the balance belongs to type 1 according to Steuer, which can be dated to the 9th and early 10th centuries CE (cf. Steuer 1987b, 462; Steuer 1997, 21–22). However, undecorated balance pans with three-point suspension continued to occur in the Middle Ages (Steuer 1997, 29–33). The second of these finds, T212, comprises the beam and fork of a folding balance with circular eye decoration (type 4 according to Steuer) from the 10th century CE, discovered at Vigdal, Skaun Municipality; this is an old find for which no further details are available, and its origin from a grave cannot therefore be ruled out. In the Norwegian University Museums' collection databases, two additional objects are registered as balances from the Late Scandinavian Iron Age. However, one of these, T7364 from Bjørnes, Overhalla Municipality, is not a balance beam but rather a dress accessory. The other object, T13312 from Sund, Sømna Municipality, is indeed a balance, but it belongs to type 7 according to Steuer (1997) and thus dates to the 11th to 13th centuries CE.

5.2.2 Finds Indirectly Indicative of Trade

Graves containing weighing equipment are often regarded as a possible indirect indicator of nearby Viking Age trading centres (cf. Larsen 1980; Larsen 1986; Stylegar 2009, 73; Skre 2017, 13–14). However, in contrast to their spatial significance, their value for chronological analysis must be approached with caution, as grave furnishings are shaped by burial practices and do not necessarily reflect contemporaneous realities (cf. Chapter 2.2.1). At both Birka and Kaupang, the deposition of weights in graves begins considerably later than their use within the settlement (Pedersen 2008, 133, 136).

Table 10 presents a compilation and, where possible, the dating of Viking Age graves from Central Norway containing balances, weights and/or means of payment. Fifteen graves include balances, in five instances combined with weights. Six graves contain only weights, four graves only means of payment, and four graves feature combinations of weights and means of payment. Only one grave contains a cubo-octahedral copper-alloy weight; this type of weight is therefore considerably rarer in Central Norway – both in graves and among stray finds – than, for example, at the local market at Heimdalsjordet in Eastern Norway, where 44 such weights are known (cf. Bill & Rødsrud 2017, 218). Lead weights with preserved Insular mounts are likewise rare in central Norwegian graves.

Half of the graves that contain weights but no balances include lead weights. Silver coins predominate among the means of payment, in two instances combined with hacksilver. In one grave, T26353 from Olstad in Skaun Municipality, semi-precious stones of carnelian and quartz were found together with Islamic silver coins and hacksilver in a leather bag. In this case, the semi-precious stones may have functioned as weights, similar to what has been suggested for certain beads – some without perforations – from graves in Birka (cf. Kyhlberg 1980, 225–227).

Table 10. Viking Age graves with balances, weights and/or means of payment from Central Norway.

Inventory number	**Findspot (county, municipality, farm)**	**Balance**			**Weight**								**Hacksilver**			**Dating**
		Balance	Type of balance	Case	Weight	Oblate sphe-roid copper-alloy/ iron weight	Cubo-octahedral copper-alloy weight	Lead weight with Insular mount	Lead weight	Other type of weigth	Semi-precious stone	Means of payment	Silver coin	Hack-silver	
T453–T457	Trøndelag, Melhus, Gravraak	x	Steuer 1997 type 2												900–950 CE
T1758–T1761	Trøndelag, Trondheim, Haugen	x	not identifiable												
T1042–T1048	Trøndelag, Ørland, Tønnøl	x	Steuer 1997 type 4	x	x				1	1					900–1000 CE
T14431	Trøndelag, Stjørdal, Moksnes	x	Steuer 1997 type 3												850–900 CE
T19010	Trøndelag, Verdal, Haug	x	special type												950–1000 CE
T22798	Trøndelag, Steinkjer, Lø	x	Steuer 1997 type 2												900–950 CE
T20362	Trøndelag, Steinkjer, Egge	x	not identifiable		x	1				1					950–1000 CE
T1289–T1296	Trøndelag, Overhalla, Bjørnes	x	Steuer 1997 type 4		x				1						
T1180–T1209	Trøndelag, Overhalla, Vold	x	Steuer 1997 type 3	x	x	1									950–1000 CE
C1740–C1742	Trøndelag, Nærøysund, Ryum	x	not identifiable												

Inventory number	Findspot (county, municipality, farm)	Balance			Weight							Hacksilver			Dating
		Balance	Type of balance	Case	Weight	Oblate sphe-roid copper-alloy/ iron weight	Cubo-octahedral copper-alloy weight	Lead weight with Insular mount	Lead weight	Other type of weigth	Semi-precious stone	Means of payment	Silver coin	Hack-silver	
T15297	Nordland, Dønna, Havstein	x	Steuer 1997 type 4												900–975 CE
T18198	Møre og Romsdal, Rauma, Setnes	x	Steuer 1997 type 2		x			2							900–950 CE
T14045	Møre og Romsdal, Rauma, Ora	x	Steuer 1997 type 4												900–950 CE
T8270	Møre og Romsdal, Sunndal, Hoven	x	Steuer 1997 type 4	x											
T263–T280	Trøndelag, Levanger, Storborg	x	Steuer 1997 type 3	x											900–950 CE
T18754	Trøndelag, Oppdal, Opdal Prestegård				x	2	1								850–900 CE
T15260	Trøndelag, Melhus, Vollan				x	2									900–1000 CE
T6918–T6926	Trøndelag, Levanger, Hynne				x					1					
T26353	Trøndelag, Skaun, Olstad				x	1					10	x	2	1	950–1000 CE

Inventory number	Findspot (county, municipality, farm)	Balance: Balance	Balance: Type of balance	Balance: Case	Weight: Weight	Weight: Oblate sphe-roid copper-alloy/ iron weight	Weight: Cubo-octahedral copper-alloy weight	Weight: Lead weight with Insular mount	Weight: Lead weight	Weight: Other type of weigth	Weight: Semi-precious stone	Hacksilver: Means of payment	Hacksilver: Silver coin	Hacksilver: Hack-silver	Dating
T27991	Trøndelag, Melhus, Melhus				x				1						
T28282	Trøndelag, Heim, Skeiet				x				1			x	42	3	900–1000 CE
T22650	Trøndelag, Levanger, Storborg				x				1						
T25133:48–91	Trøndelag, Trondheim, Torgård				x				2			x	1		950–1000 CE
T25133:103–355	Trøndelag, Trondheim, Torgård				x				1			x	1		
T28674	Trøndelag, Røros, Saksgården				x	1									
T11173–T11177	Trøndelag, Namsos, Klingen											x	1		
T17764	Trøndelag, Namsos, Bjørgan											x	2		900–950 CE
Skaare 1976 no. 149	Trøndelag, Stjørdal, Mæle											x	?		
T1670–1672	Trøndelag, Trondheim, Haugen											x		1	

With two exceptions, the central Norwegian graves containing balances, weights and/or means of payment – provided that the grave goods they contain can be dated typologically – belong to the 10th century CE (Table 10). The exceptions are, on the one hand, the boat grave T14431 from Moksnes near Stjørdal, and, on the other hand, grave Haug 17 (T18754) from the large cemetery at Vang near Oppdal, which, in addition to two oblate spheroid weights of copper-alloy and iron and a cubo-octahedral weight of copper-alloy, contained a Merovingian-period arrowhead and a comb (Type 1 according to Callmer 2020) dating to the 8th century CE. The arrowhead and comb are therefore significantly older than the weights, which belong to types that were only in use from around 860/870 CE and 870/880 CE (cf. Gustin 2004, 314). According to the excavator, however, the grave had been robbed and disturbed, making it possible that the artefacts derive from different contexts. If this is not the case, and the comb and arrowhead merely represent very old objects at the time of deposition, the grave – dated by the weights to the second half of the 9th century CE – could be among the earliest graves referencing the weight economy in Central Norway. In Birka, weights appear in graves around the middle of the 9th century CE (Kyhlberg 1980, 223), whereas in Kaupang, they occur only in the 10th century CE (Pedersen 2008, 133). An earlier dating of graves with lead weights, as Unn Pedersen (2008, 135–136) has established for south-eastern Norway, and a corresponding transition from the preferred use of lead weights to copper-alloy weights towards the end of the 9th century CE, cannot be demonstrated in Central Norway on the basis of the datable graves.

Compared with the distribution of isolated finds of Islamic coins, hacksilver, weights and balances, the occurrence of Viking Age graves containing balances, weights and/or means of payment in Central Norway exhibits a broader and more even spatial pattern (Figure 46). While the area south-east of the Trondheimsfjorden, the region around Dønna, and the Sunndalen river valley again stand out, there are also notable concentrations at the mouth of the River Rauma and near Skogmo (Overhalla Municipality) on the River Namsen.

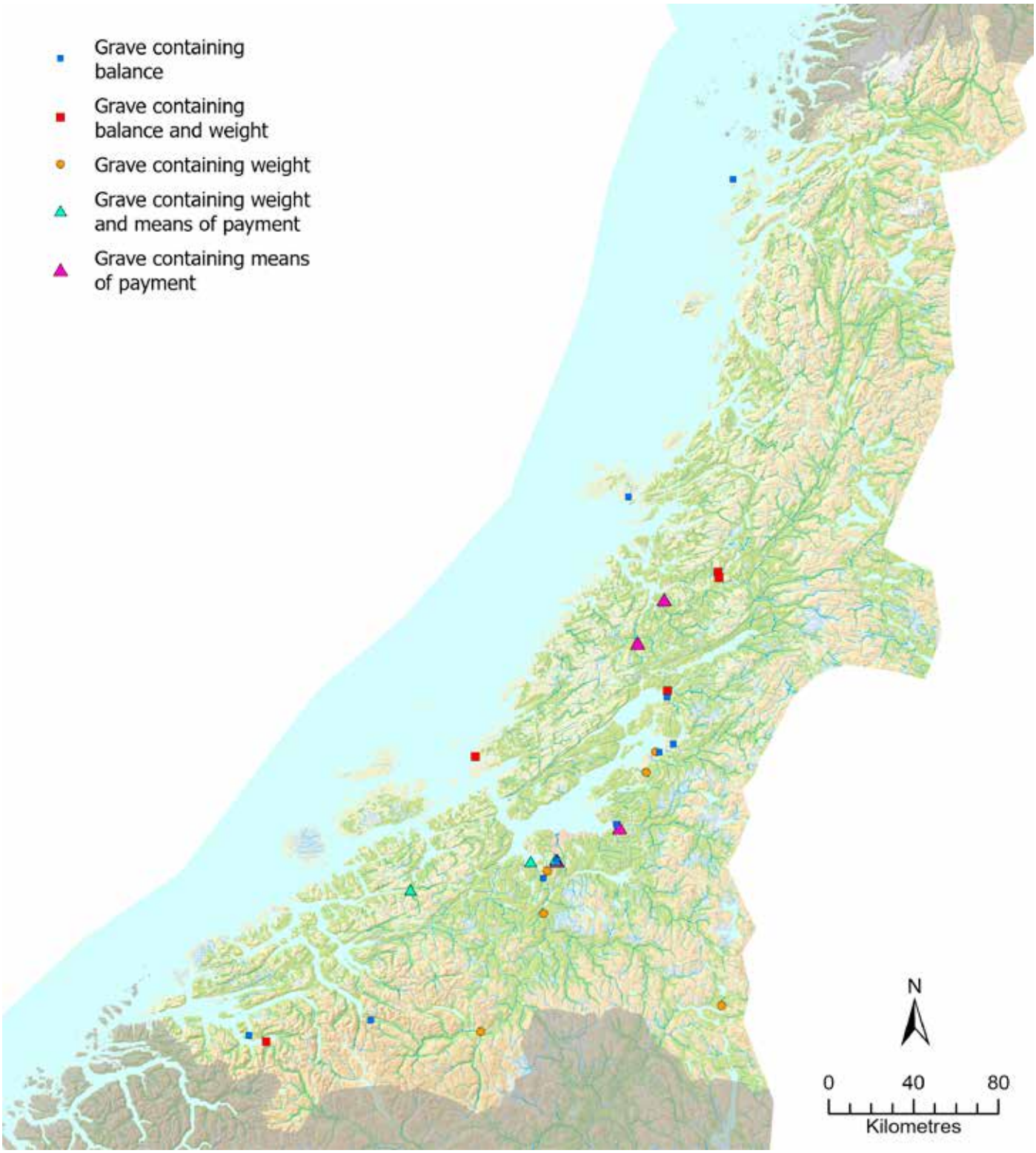


Figure 46. Distribution of Viking Age graves with balances, weights and means of payment in Central Norway.

Figure 47. Reconstruction of boat grave T14331 from Moksnes Søndre, Stjørdal Municipality, Trøndelag. Illustration: Birgit Maixner.

Among the graves with balances presented here, a group of largely standardised boat graves stands out, characterised by an assemblage typically comprising weapons, a balance, in most cases a whetstone, and often additional objects: T22798 (Lø, Steinkjer Municipality), T14431 (Moksnes, Stjørdal Municipality) (Figure 47), T15297 (Havsteinen, Dønna Municipality), T1042–T1048 (Tønnøl, Ørland Municipality), T19010 (Haug, Verdal Municipality), T20362 (Egge, Steinkjer Municipality), and T1289–T1296 (Bjørnes Nedre, Overhalla Municipality).

Most of these graves are located in Trøndelag, with a concentration in the Trondheimsfjorden area; however, such a grave is also known from the small island of Havstein, Dønna Municipaliy, on the Helgeland coast. The grave at Moksnes Søndre (T14431; Figure 47), Stjørdal Municipality, appears to be the earliest of these in Central Norway, dating to 850–900 CE, while the others date to the 10th century CE, some even to the Late Viking Age.

5.2.3 Finds Indicative of Specialised Craftsmanship

The production of various types of luxury goods in different materials is characteristic of the major Viking Age trading centres and is reflected in sometimes extensive production debris found in the archaeological record. Not only non-ferrous metalworking but also the processing of amber and the production of glass beads has been documented at Kaupang (cf. Gaut 2011; Resi 2011a; Pedersen 2016). While evidence for amber working and glass bead manufacture from Central Norway has so far been entirely lacking, the growing private metal-detecting activity of recent years has produced new source material which, with due caution, may provide indications of non-ferrous metalworking and thus possible Viking Age production sites. The finds fall into the categories of tools, raw materials and production residues.

The group of tools is so far the least represented. One example is a mould, T14782 (Figure 48), made of a hard type of stone, found at Letvik on the island of Jøa at the mouth of the River Namsen (Figure 51). This mould could have been used to cast metal ingots with a rectangular cross-section. However, its dating to the Viking Age is uncertain. Although silver ingots with a rectangular cross-section are known, among other places, from Kaupang, Viking Age moulds for metal ingots were generally made of soapstone (Hårdh 2008, 103–104). Moreover, similar moulds for metal ingots were also in use during the Middle Ages, as numerous finds from medieval Trondheim demonstrate.

Figure 48. Casting mould T14782 from Letvik, Namsos Municipality, Trøndelag. Photo: Ole Bjørn Pedersen, NTNU University Museum.

Figure 49. Lead model T29429 from King Øystein's Harbour in Agdenes, Orkland Municipality, Trøndelag. Photo: Birgit Maixner.

In contrast to this casting mould of uncertain date, a fragment of a lead model from King Øystein's Harbour in Agdenes (Orkland Municipality), at the mouth of the Trondheimsfjorden, recently recovered by private metal detectors, constitutes a key find for the questions addressed in this study. The decoration on this lead model (T29429; Figure 49) can be identified as animal ornamentation in the Borre style, as seen on the arms of trefoil brooches of type Z 2.1 (according to Maixner 2005). Trefoil brooches of this type occur in assemblages associated with oval brooches of types P51 and P42 (Maixner 2005, 314–315), suggesting a date in the second half of the 9th century and the 10th century CE. The find can be interpreted as direct evidence of local production of Viking Age metal jewellery. It is the first find of its kind from Central Norway. Comparable finds are known from the excavations at Kaupang (cf. Pedersen 2016), and in recent years additional examples of lead models have occasionally come to light as metal-detecting finds from various sites in south-eastern Norway (cf. Chapter 2.1.3).

Figure 50. Sylindrical lead weight T27916 from Husby Østre, Stjørdal Municipality, Trøndelag. Photo: Terje Masterud Hellan, NTNU University Museum.

One group of artefacts that may provide indirect evidence for metalworking consists of lead weights. While oblate spheroid and cubo-octahedral copper-alloy weights appear to have been used primarily for economic transactions, lead weights in Birka and Ribe occur in the context of metal-casting workshops as tools for determining the correct alloy (cf. Gustin 2004, 21; Pedersen 2008, 166). Despite the aforementioned longevity of lead weights, the distribution of single finds of cylindrical weights (Figure 50) is analysed here as a potential indicator of production sites. Their distribution (Figure 51) reveals concentrations south-east of the Trondheimsfjorden, on the island of Storfosna in its estuary, and in the Sunndalen river valley. Elsewhere, only a few isolated finds are recorded, none of them from Helgeland.

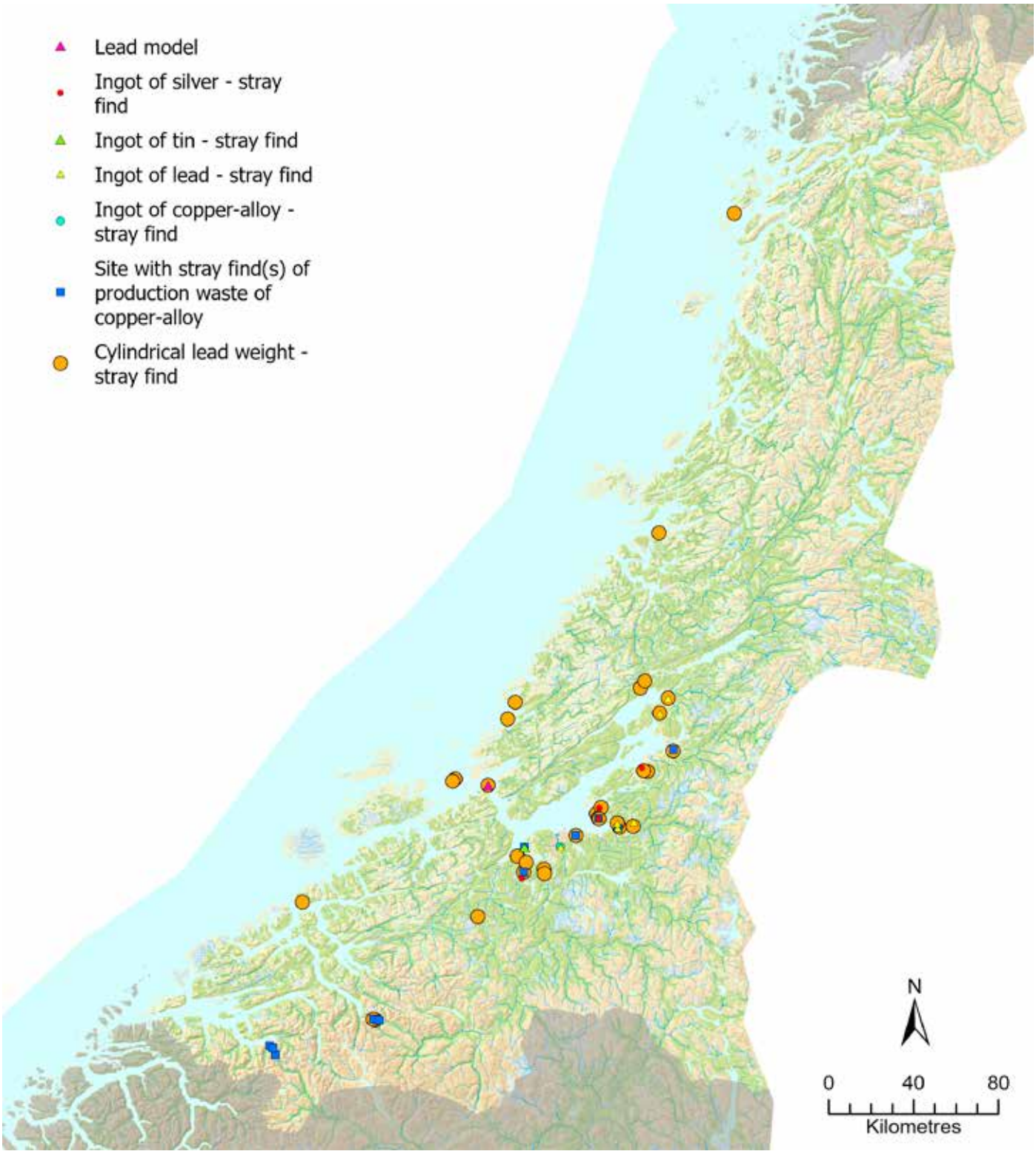


Figure 51. Distribution of selected object groups providing information on specialised crafts.

The distribution of finds of raw materials in the form of ingots of silver, copper-alloy, lead and tin can also contribute to the identification of production sites (Figure 51), although silver ingots could have been used as readily in metalworking as in the weight economy. Of the four single finds of silver ingots mentioned, three are fragmented pieces, while only one, T27737 (Figure 52) from Auran, is complete. While the silver ingots so far found individually in Central Norway appear to be standardised in terms of their cross-sections and surface treatment, and the Viking Age hoards provide a dated reference material, the dating of single finds of ingots made from other materials is associated with greater uncertainty. Viking Age lead ingots in particular appear to be less standardised and occur in a wide variety of shapes (cf. Pedersen 2016, 148). In the Norwegian University Museums' collection databases, seven metal-detector finds from Central Norway are registered as lead ingots, one as a tin/lead ingot, and one as a copper-alloy ingot. None of these ingots can be dated with certainty to the Viking Age, but their distribution south-east of the Trondheimsfjorden and at its mouth reflects a recurring pattern at sites that also feature finds directly or indirectly associated with the weight economy.

Figure 52. Silver ingot T27737 from Auran Indre, Stjørdal Municipality, Trøndelag. Photo: Terje Masterud Hellan, NTNU University Museum.

The dating problems discussed for raw materials apply even more strongly to production waste found outside stratifiable contexts in the form of drops or lumps of molten metal, as these lack any diagnostic stylistic or typological characteristics. Moreover, the circumstances of their formation and their representativeness as scholarly source material are significantly influenced by various factors (cf. Chapter 2.2.1). Figure 51 maps sites with single finds of copper-alloy production waste, all of which originate from metal detecting. These sites are located along the south-eastern shore of the Trondheimsfjorden and at the mouths of the Romsdalen and Sunndalen river valleys.

5.3 Results

The distribution of the groups of artefacts selected as indicators for identifying Viking Age sites of transaction and production in Central Norway reveals extensive similarities and forms several clusters (Figure 53). The clustering that emerges from the systematic mapping of finds linked to the weight economy of the 9th and 10th centuries CE in Central Norway (indicated on the map Figure 53 by red and blue symbols) and the resulting identification of areas rather than individual sites of transaction and production is a phenomenon that Pedersen (2008, 134) has likewise observed for south-eastern Norway, based on graves containing weighting equipment.

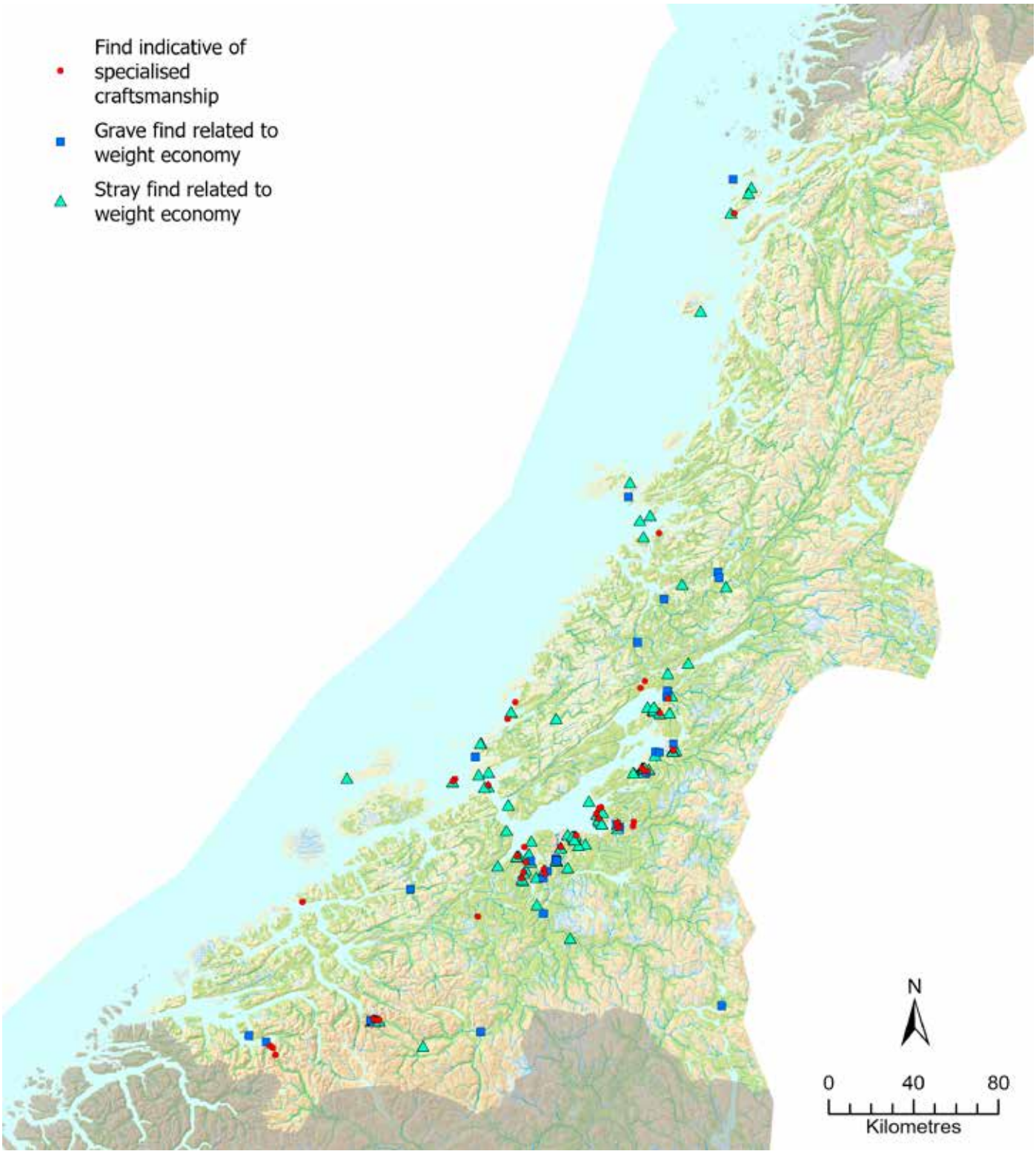


Figure 53. Distribution of object groups selected as indicators for identifying Viking Age sites of transaction and production.

Metal-detecting finds and grave finds constitute the primary sources of the material analysed. Although the occurrence of these source groups varies considerably and is influenced by different factors, the distribution of graves containing balances, weights and means of payment (Figure 46) tends to correspond closely with the distribution of the equivalent find groups recovered through metal detecting (Figure 54). This may suggest that the overall representativeness of the metal-detecting finds is greater than might be assumed on the basis of the various factors influencing their occurrence (cf. Chapter 2.2.1).

The distribution of finds indicative of craft activity essentially mirrors that of finds associated with trade. However, most craft-related finds cannot be dated with certainty to the Early Viking Age, and current sources therefore do not confirm that craft activities had a significant impact on the presumed sites of transaction in Central Norway during this period. The lead model (T29429) from King Øystein's Harbour in Agdenes, however, provides the first reliable evidence for the production of Viking Age bronze jewellery at a potential harbour and trading site in Central Norway (cf. Maixner 2026). Nevertheless, the importance of craftsmanship at sites of transaction other than towns should not automatically be assumed to be high (for similar observations regarding Carolingian trade sites, cf. Theuws 2012b, 31–33).

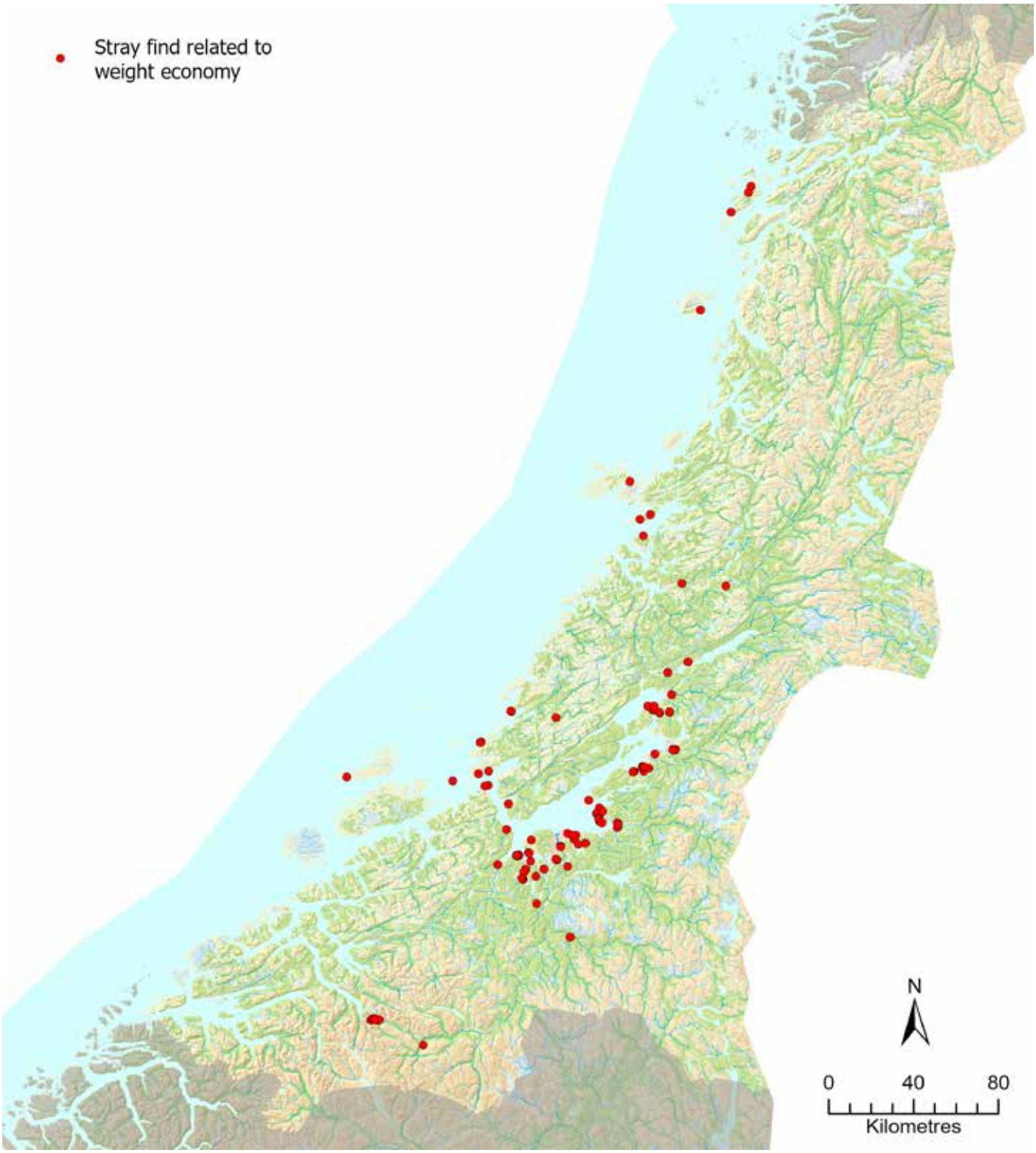


Figure 54. Distribution of Early Viking Age coins, hacksilver, silver ingots, balances and selected weight types found as stray finds in Central Norway; status as of February 2024.

One methodological issue is that the identification of sites of transaction and production in this study – apart from the lead model from King Øystein's Harbour and a few indicators of production that cannot be dated with certainty – relies solely on indicators associated with the phenomenon of the weight economy. Consequently, a) it remains uncertain whether production occurred at all of these sites in addition to trade, and b) no sites of transaction have been identified that were demonstrably operational prior to the introduction of the weight economy. In Kaupang, and probably also in Birka, the use of silver commenced in the early 9th century CE (Skre 2017, 19), but becomes visible only later in the grave finds there (Pedersen 2008, 133).

Whether hacksilver was also employed as a means of payment in Central Norway during the early 9th century CE remains an open question, as long as no evidence from securely dated settlement layers is available. In my view, the earliest indication that a weight economy was practised in Central Norway is provided by the boat grave T14431 from Moksnes near Stjørdal, dating to the second half of the 9th century CE; the hoard find from Mæle (T28628; Figure 55) from the same area, dating to around 900 CE (cf. Maixner 2023); and the grave Haug 17 (T18754) from the Vang cemetery near Oppdal, likewise dating to the second half of the 9th century CE. The material selected for this study – namely single finds of hacksilver, balances and weights, together with corresponding grave finds – thus offers direct evidence for sites of transaction only from the 10th century CE, or at the earliest from the latter half of the 9th century CE. The question of whether Central Norway already possessed its own sites for transactions in the period 750–850 CE, and where such sites might have been located, cannot be answered on this basis.

Figure 55. Silver hoard T28628 from Mæle, Stjørdal Municipality, Trøndelag. Foto: Birgit Maixner, NTNU University Museum.

However, based on the distribution of the archaeological material examined here, sites of transaction and production dating to the 9th and 10th centuries CE can be inferred in the following areas (Figure 56): at the mouth of the Romsdalen river valley near Åndalsnes–Devoll; at the mouth of the Sunndalen river valley in the Hoven–Hol–Vinnavoll–Løykja–Torske area; at the mouth of the Trondheimsfjorden

in the Agdenes–Storfosna–Ørlandet–Nes area; at the mouth of the Åfjorden in the Lauvøya–Tårnes area; in the Skogmo area by the River Namsen; in the Jøa–Salsnes area at the mouth of the River Namsen; in the Rørvik–Ryum–Nærøy area; in the Dønna area; in the Steinkjer–Mære area; in the Levanger–Verdal area; in the Skogn area; in the Stjørdal–Auran–Skatval area; in the Ranheim area; in the Torgården–Melhus area; and in the Viggja–Skaun area. This distribution shows a partial overlap with areas previously proposed as Viking Age trading centres (cf. Chapter 5.1). The landscapes around Dønna, Ryum–Rørvik–Nærøy, Jøa–Salsnes at the mouth of the River Namsen, the mouth of the Åfjorden, Skogn, Ranheim, Torgården–Melhus, and the mouth of the Romsdalen river valley near Åndalsnes–Devoll emerge as new potential areas from this analysis. The selected material does not provide clear confirmation of a possible site of trade and production in the Hemnfjorden area, as proposed by myself and Terje M. Hellan (cf. Maixner & Hellan 2024). This is due to the fact that its postulation is based, among other factors, on imported finds as well as coin and hoard finds from the late 10th and 11th centuries CE, which were not included in this study. By contrast, the Oppdal area has so far stood out only in one of the selected indicators – grave T18754 with weights from the 9th century CE – and there is currently no evidence of clustering across multiple indicators. The suggestion that the Oppdal area could have functioned as a site of transaction and production is therefore speculative at present.

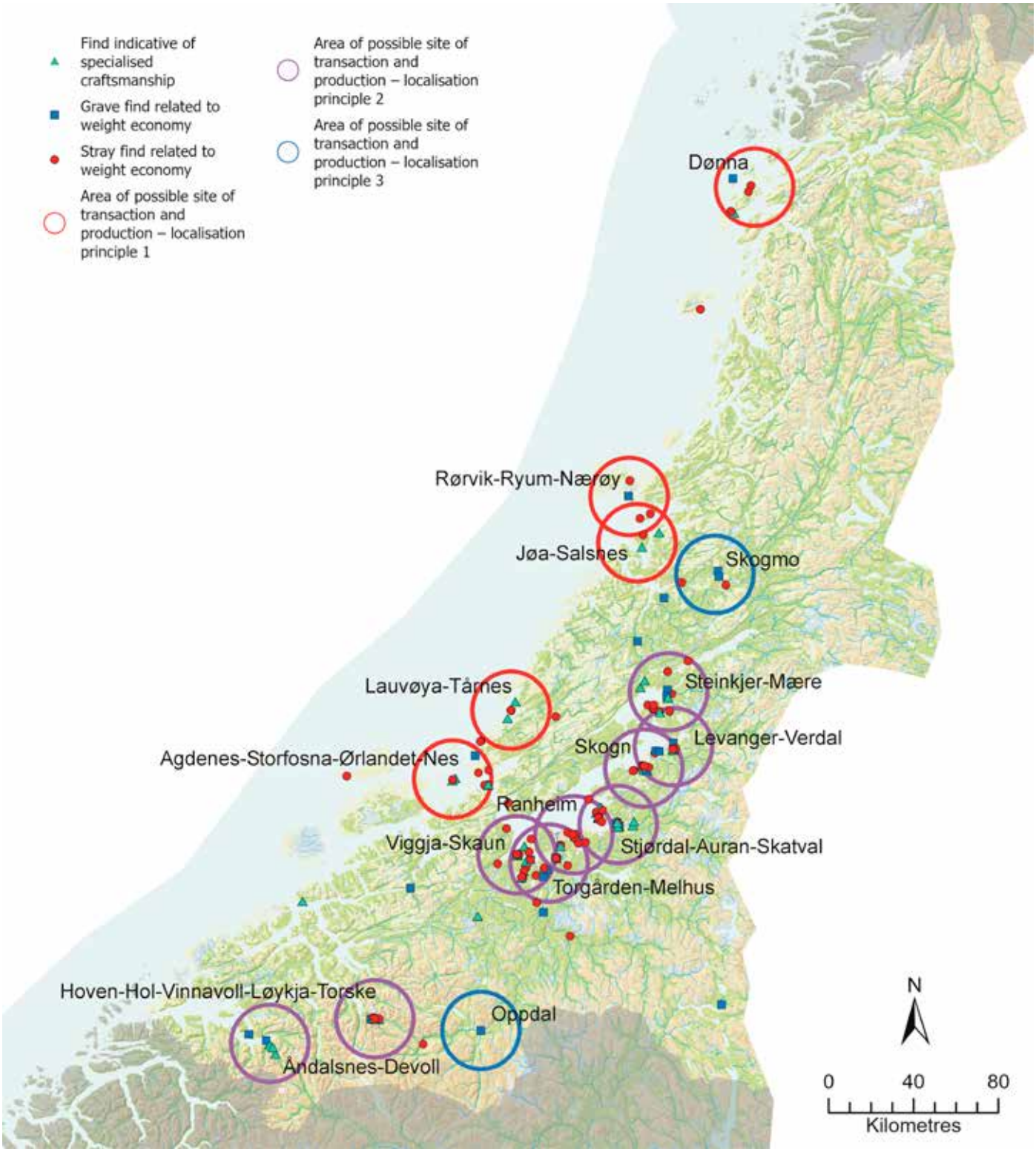


Figure 56. Distribution of object groups selected as indicators for identifying Viking Age sites of transaction and production, and areas of possible sites of transaction and production derived from them.

For most of the clusters, a location in a strategically significant transport-geographical setting can be identified (Figure 56): 1) on the coast at the mouths of fjords (e.g., Storfosna, Agdenes, Jøa, Dønna) (localisation principle 1), and 2) within fjords at the mouths of major river valleys or waterways (e.g., Stjørdal, Sunndal, Åndalsnes, Skogmo) (localisation principle 2). The classification of Skogmo on the River Namsen within the latter group is, however, uncertain. Today, this locality lies approximately 25 km inland from the river mouth, but due to post-glacial land uplift, the river mouth may originally have been situated in this area, as suggested by Farbregd (1986, 8). Alternatively, the location of Skogmo could be described according to a third principle of localisation, namely as being situated inland at the intersection of land and/or waterways, the course of which is clearly indicated by the distribution of the proxies for imported goods selected for this study (cf. Figure 39). Should further indicators of trade and production emerge from the Oppdal locality in the future, this third principle would most appropriately apply to that site.

Given the considerable lack of documented Viking Age trading sites in Norway, the scope for comparing the proposed localisation principles with those of sites outside Central Norway is limited. Locations at the mouths of fjords provided direct access to coastal trade and long-distance maritime routes and can be compared with the position of Kaupang, as well as with the Viking Age trading centres at Fjære in Grimstad (Larsen 1986) and at Utstein Kloster north of Stavanger (Hillesland & Pedersen 2024, 67). Localisations within fjords at the mouths of major river valleys or waterways offered favourable conditions for the exchange of goods between inland and coastal areas, following the model of early medieval small-scale seasonal meeting and market places, as identified by Loftsgarden (2017, 2019) for the mountain regions of south-western Norway. Finally, localisations according to the third principle – at inland transport hubs – find a parallel in the trading place assumed for Valle in Agder County (cf. Larsen 1980, 147). Such sites may have functioned as local or regional collection and distribution centres for utmark resources.

Several clusters of trade and production indicators located southeast of the Trondheimsfjorden cannot be directly assigned to any of the localisation principles identified. In contrast to the geographically distinct clusters, their interpretation is challenging due to their high density. This applies to the areas of Viggja–Skaun, Ranheim, Stjørdal–Auran–Skatval, Skogn, and Steinkjer–Mære. It is difficult to determine whether these concentrations merely represent spillover zones of neighbouring, larger sites of transaction and production at the major estuaries, whether they constitute independent sites of transaction and production of a certain scale, or simply central farms with associated trading activities. In any case, they appear to reflect the fact that in these areas the weight economy had become firmly established and transactions involving weighed silver as a means of payment were regularly practised.

The distribution of clusters of indicators for trade and production in relation to two of the highlighted preferred localisation principles – namely, at the mouths of major fjords and at the mouths of large rivers leading into these fjords – shows that, in most cases, the clusters in Central Norway indeed occur where these natural geographic conditions are present. With the exception of the coasts of Romsdal and Nordmøre, the clusters display a regular pattern along the coastline in areas where large fjords open into the sea. Following this principle, clusters

of indicators for trade and production might also be anticipated in the vicinity of Kristiansund and at the mouth of the Romsdalsfjorden.

In the case of Kristiansund – whose original name, Fosna, refers to the island's concealed harbour (cf. Sandnes & Stemshaug 1997, 156, 266) and thus parallels the names and topographical conditions of two other islands characterised by indicators of trade and production, namely Storfosna and Jøa with the place name Fosnes (cf. Maixner 2020a, 294; Maixner 2022b, 188) – it is likely that subsequent overbuilding has hindered the identification of a Viking Age site of transaction and production at this location. Based solely on geographical localisation principles, and disregarding the resource base, sites of transaction and production could also be postulated in other regions – for example, at Tjøtta at the mouth of the Vefsnfjorden (localisation principle 1), Terråk in Helgeland (localisation principle 2), or at the mouth of the Surnadalen river valley in Nordmøre (localisation principle 2).

6 SYNTHESIS

The three pillars of this study are the examination of the possible exploitation of raw materials for trade, the import of luxury goods, illustrated through selected types of metalwork and beads, and the identification of potential sites of transaction and production in Viking Age Central Norway. As outlined in the individual sections, the archaeological source material provides, for various reasons, only an incomplete and in some cases even distorted picture. Despite these limitations, an attempt will be made to synthesise the results of these investigations, to relate them to one another, and to discuss what they can contribute to answering the questions posed at the outset.

6.1 Interactions Between Local Raw Material Exploitation and Imported Luxury Goods

One of the key questions of this study concerns the interplay between the local exploitation of utmark resources and the import of luxury goods. If the dark schist whetstone quarries in the Mostadmarka area near Stjørdal had been producing a surplus of a commodity significant for both international and regional trade since the 8th century CE (cf. Baug et al. 2023, 112–113; Baug et al. 2024b), one might expect that visible trade contacts – and the resulting profit in the opposite direction – would be reflected in the form of imported goods evident in the archaeological record of the area. Such an assumption presupposes a direct link between the extraction of a surplus of raw materials in demand and the subsequent acquisition of imported goods. However, it should be emphasised that possible spatial correlations between known resource exploitation and concentrations of imported goods need not be causal. Thus, other utmark resources that are archaeologically invisible but more valuable – such as furs, agricultural products like grain, butter or wool, services or taxes – may have played a more significant role in acquiring imported goods than precisely those utmark raw materials for which archaeological evidence of exploitation exists. Furthermore, imported goods may have changed ownership and location after their initial arrival in Central Norway. For instance, an imported item exchanged for a long-distance trade good such as whetstone may later have been used – perhaps even in a different locality – to obtain regional foodstuffs such as seabird eggs, thereby creating a misleading impression at its final destination that the area in question had been directly engaged in long-distance trade involving local resources, in this example seabird eggs.

As demonstrated in Miniature I, among the raw materials suitable for analysing possible Early Viking Age exploitation in Central Norway, only two can be archaeologically verified with certainty: dark schist whetstones from the Mostadmarka area and reindeer products. By contrast, the local extraction of soapstone remains uncertain despite substantial deposits and supporting evidence in place names, while the harvesting of down and eggs from bird colonies is purely speculative owing to the retrogressive (retrospective) method employed. The highly lucrative fur trade is almost impossible to substantiate archaeologically, although the presence of skins with hair in numerous Viking Age graves in Central Norway – if these are indeed furs – may indicate the significance and scale of fur hunting in the region. Regarding the Mostadmarka whetstones (Figure 13), which were regularly quarried from the early 8th century CE onwards, one of the few concentrations of imported goods in Central Norway during this period can be observed in the vicinity of the quarries as early as the 8th century CE (Figure 26). Clear concentrations are also evident in the subsequent two centuries (Figures 29, 32), although it should be noted that imported goods generally increased in both volume and distribution during the 9th and 10th centuries CE.

Similarly, the Oppdal area and its connection to the coast through the Sunndalen river valley are characterised by a correlation between exploited raw materials and a concentration of imported finds. A large number of Viking Age hunting arrows in the high mountains around Oppdal attest to reindeer hunting there; in addition, numerous soapstone quarries are found within this area and along the Sunndalen river valley (Figure 20). The presence of loom-weights made of soapstone in the aforementioned grave T18819 (Figure 19) in the Vang cemetery may indicate local exploitation of soapstone as early as the 8th century CE. The Oppdal area and the route through the Sunndalen river valley stand out clearly through imported finds throughout the entire period under investigation, from the 8th to the 10th century CE.

The comparison between the distribution of undated soapstone quarries (Figure 20) and that of the selected imported goods reveals further interesting patterns beyond the Oppdal area and the Sunndalen river valley. From the 9th century CE onwards – i.e., the period during which the use of soapstone vessels is documented in graves in Central Norway and in settlement layers at Ribe (cf. Chapter 3.2.9) – an increased occurrence of the object types investigated as representatives of imported goods can be observed in the area of the Gauldalen river valley and the hinterland of the Korsfjorden, where numerous soapstone deposits and undated soapstone quarries have been identified (Figures 29, 32). The same applies to the Sparbu area near Mære, south of Steinkjer on the Trondheimsfjorden, although this area has been characterised by a particular abundance of imported finds since the Roman Iron Age (cf. Stenvik 2001; Hedeager & Forseth 2015). For Sømna and the adjacent Helgeland coast to the north, there is also a certain correspondence between the occurrence of the investigated types of imported finds and the presence of undated soapstone quarries, although the relationship to a possible exploitation of marine resources remains entirely unclear, particularly along the coast. In contrast, the undated soapstone quarries in the Helgeland inland have no equivalent in the local occurrence of the imported goods studied or in the distribution of the selected Viking Age place names (cf. Figures 38, 39), making their exploitation during the Viking Age unlikely.

While whetstone, soapstone and reindeer products have generally been confirmed as Viking Age long-distance trade goods, the significance of seabird products – such as eggs and down – remains unclear, and the areas of their possible Viking Age exploitation in Central Norway, which have only been explored using retrogressive (retrospective) methods, are speculative (Figure 20). Their comparison with the distribution of object types selected as representatives of imported goods (Figure 39) yields an ambiguous picture. Although seabird products could account for the occurrence of imported goods along the northern coast of Central Norway, such goods are largely absent from the southern coast despite a comparable resource situation. However, the uneven archaeological record along the coast – resulting from Undset's study trips in Trøndelag, as noted in Chapter 2.2.1 – may offer an explanation. From today's perspective, the presence of numerous bird colonies in the area of the inner Trondheimsfjorden, particularly in the areas of present-day Levanger and Mære, provides a surprising insight, expanding the possible range of economically significant resources exploited there by introducing a dimension previously overlooked in research.

One area that clearly stands out in the 9th century CE due to a concentration of selected proxies for imported goods (Figure 29), without an immediate explanation based on the known resource base, is the coastal section north of the mouth of the Trondheimsfjorden (Agdenes–Storfosna–Ørlandet–Nes). If agricultural surplus production or the exploitation of marine resources is not assumed as the cause, a possible explanation would be the geographically favourable position of the area at the intersection of long-distance trade routes running north–south and west–east, combined with advantageous harbour and transshipment points, such as Agdenes and Storfosna. Imported goods transshipped at these locations or collected as taxes could have reached the nearby hinterland, thereby accounting for the observed concentration. Thanks to the lead model for trefoil brooches (T29429; Figure 49), King Øystein's Harbour at Agdenes itself even emerges as a production site for bronze jewellery decorated with Scandinavian animal ornamentation from the late 9th and 10th centuries CE.

When evaluating a possible connection between the exploitation of raw materials and imported goods, it is also essential to consider the general extent of Viking Age settlement, insofar as this can be determined. A comparison of all types of metalwork and beads selected in this study as representatives of imported goods (Figure 39) with the distribution of Viking Age place names in -stad and -by/-bø (Figure 38) reveals that the overall trend is broadly similar. However, local deviations indicate that the distribution of imported goods does not fundamentally mirror settlement patterns, suggesting that access to imported goods was primarily dependent on other factors. For instance, the dense concentration of imported goods in the area at the mouth of the Trondheimsfjorden described above has no equivalent in the density of Viking Age place names there. Nevertheless, as noted in Chapter 4.2.2, it must also be borne in mind that Viking Age place names only record names newly introduced during that period, whereas the wealthiest farms in the most favourable agricultural areas were often established in earlier periods and may therefore bear names belonging to older place-name classes not considered here, or individual names (cf. Sandnes & Stemshaug 1997, 32–37).

Conversely, the place names mentioned indicate dense Viking Age settlement in some areas without a significant number of imported finds of the types investigated being known from there – for example, at several fjords in Helgeland (Bindalsfjorden/Tosen, Velfjorden, Vefsnfjorden, and Ranfjorden) or along the coast of Nordmøre. The distribution pattern of the selected imported goods in the coastal area of Nordmøre, which contrasts both with the presumed availability of resources there and with the settlement pattern, serves as a clear example of the challenges outlined in Chapter 2.3.2 – namely, that a distribution map can only be adequately interpreted if the factors underlying the presence and possible absence of find spots are understood.

6.2 Relationship Between Potential Sites of Transaction and Production and Local Raw Material Exploitation and Imported Finds

How do the possible locations of trading places or markets, derived from direct and indirect trade indicators, relate to the areas of possible Early Viking Age raw material exploitation or imported goods? In some cases, there are clear correspondences (Figure 57), as in Stjørdal–Auran–Skatval, Ranheim, and Torgården–Melhus (Mostadmarka whetstones); Viggja–Skaun (soapstone); Steinkjer–Mære (soapstone, seabird products); and Oppdal (soapstone, reindeer products). In other cases, no immediate geographical connection is evident, as in the mouth of the Romsdalen river valley near present-day Åndalsnes–Devoll, the Skogmo area on the River Namsen, and the Agdenes–Storfosna–Ørlandet–Nes area. The reasons for this may vary. In the case of Skogmo on the River Namsen, one might assume that fur hunting – although poorly attested archaeologically – formed the central resource base. The suspected trading or transshipment site at Åndalsnes–Devoll at the mouth of the Romsdalen river valley may illustrate that Viking Age transshipment sites were not necessarily located within or adjacent to raw material extraction areas, but rather in strategic positions relative to them. The soapstone deposits mentioned in Chapter 3.2.9, located near Lesja outside the study area, together with reindeer hunting products from the Dovrefjell mountains, may have formed the basis for a trading centre at Åndalsnes–Devoll and for the local wealth expressed, for example, by the Setnes grave find (T18198; cf. Marstrander 1962).

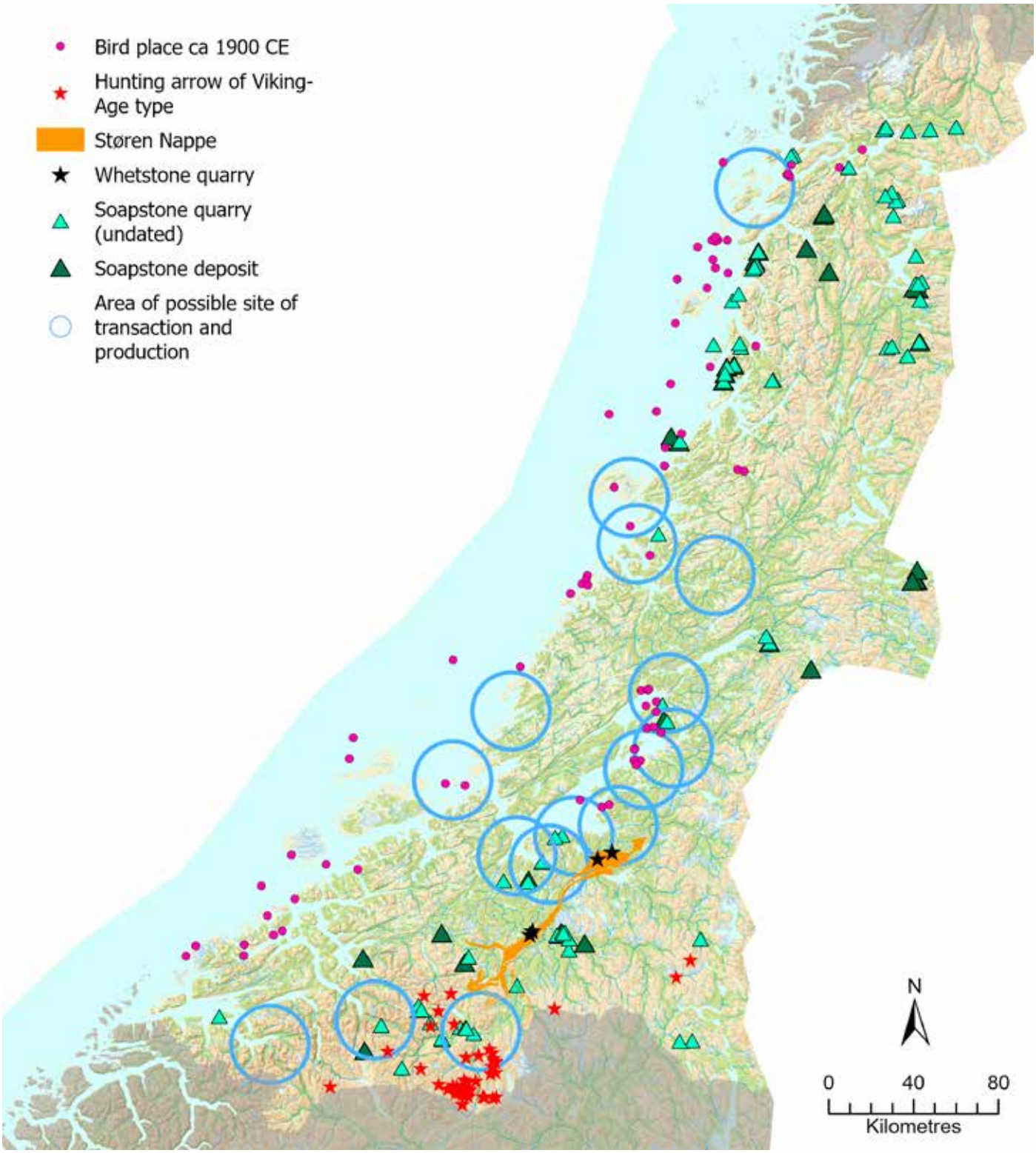


Figure 57. Relationship between areas of possible sites of transaction and production and the resource availability for potential Early Viking Age exploitation of down, reindeer products, dark schist whetstone, and soapstone in Central Norway.

In contrast, the comparison of the distribution of metalwork and beads – selected as proxies for imported goods – with the potential locations of sites of transaction and production, identified on the basis of direct and indirect trade indicators, reveals considerable correspondences. Specifically, the imported finds tend to cluster in the vicinity of these potential sites of transaction and production (Figure 58).

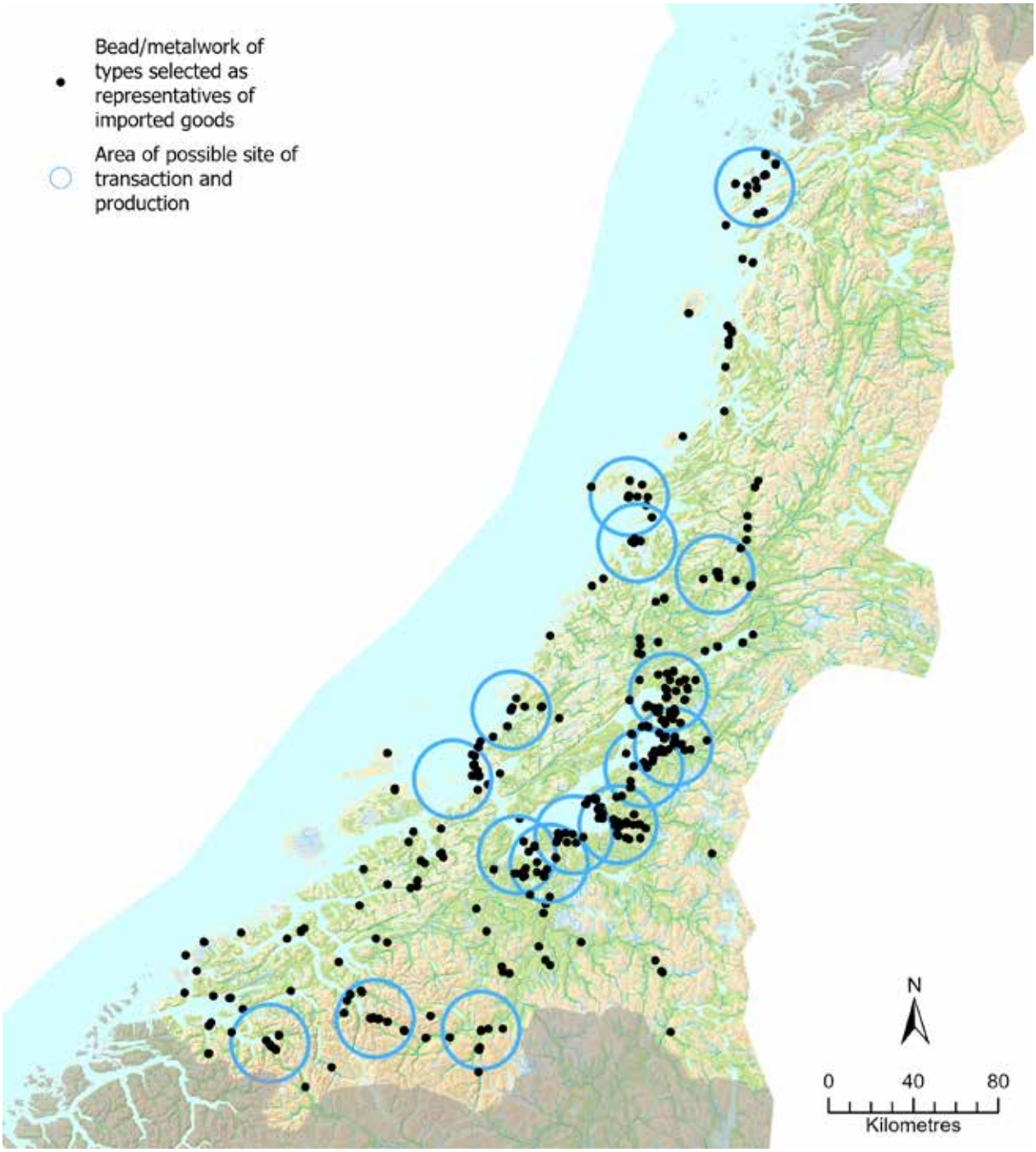


Figure 58. Relationship between the distribution of oval brooch and bead types, and Insular metalwork used as proxies for imported goods, and areas of potential sites of transaction and production identified through direct and indirect trade indicators.

It should, however, be borne in mind that the indicators primarily selected – those linked to the weight economy – mainly point to sites of transaction of the late 9th and 10th centuries CE, and it remains unclear whether and where comparable sites of the 8th and early 9th centuries CE were located. Nevertheless, a comparison of the distribution of oval brooch types and beads, chosen as proxies for imported goods from the 8th century and the first half of the 9th century CE, with the potential locations of transaction and production sites identified on the basis of direct and indirect trade indicators, reveals a similar correspondence even in this early phase of the Viking Age (Figure 59). This correspondence suggests that sites of transaction were already present in these areas prior to the establishment of the weight economy.

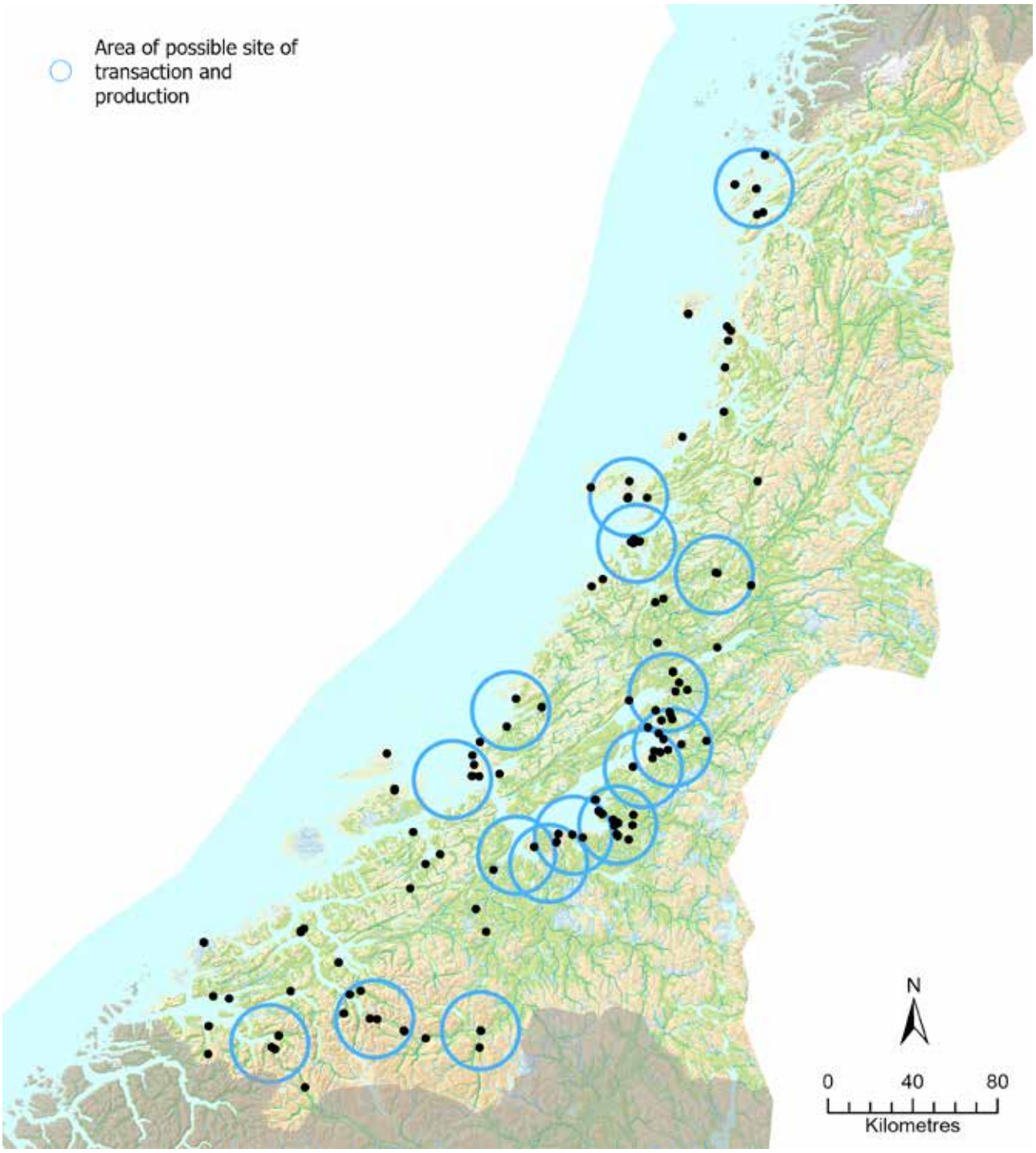


Figure 59. Relationship between the distribution of metalwork and beads used as proxies for imported goods dating to the 8th century CE and the first half of the 9th century CE, and areas of possible sites of transaction and production identified through direct and indirect trade indicators. The mapping summarises the distribution of the following types: Creeping-beast brooches, oval brooches of type TT, Berdal type, type P25 and type P27, common wasp-type beads, nonstandard wasp-type beads, Ribe-type beads with square mosaic ornamentation in two rows, large Ribe-type beads with elaborate ribbon ornamentation, Ribe-type beads with reticella ornamentation, Ribe-type thread-ornamented beads, mosaic eye-flower Ribe-type beads, mosaic-eye beads of types G50, H1 and J1, segmented metal-foil beads and beads with stratified eyes.

As noted in Chapter 2.1.3, the concentration of imported finds in the vicinity of Viking Age trading sites is a well-documented phenomenon. The find pattern of the selected imported goods from Central Norway therefore supports the localisation of potential transaction sites proposed in this study on the basis of other archaeological source groups (Figure 58). A particular case is the area around Hemnfjorden, where a marked concentration of imported finds occurs. Hellan and I have interpreted this elsewhere (Maixner & Hellan 2024) as indicative of the presence of an as yet unlocalised trading or market place, based partly on additional indicators. However, using the method applied in this study to identify possible trading centres, there are insufficient indicators to postulate one in the Hemnfjorden area. This serves as a clear example of the variations in results arising from different parameter selections.

A comparison of the extent of Viking Age settlement indicated by the place names in -stad and -by/-bø with the locations of areas for postulated trading centres (Figure 60) reveals both similarities and discrepancies. In the areas south-east of the Trondheimsfjorden, as well as in the Ryum–Rørvik–Nærøy and Dønna regions, the assumed areas for sites of transaction coincide with a dense settlement pattern suggested by these place names. Conversely, along the southern coastal section of Central Norway, these do not correspond, and the sites of transaction postulated in the estuaries of the Romsdalen and Sunndalen river valleys are situated only in the outer zones of regions characterised by concentrations of Viking Age place names. This suggests that the choice of location for sites of transaction was not primarily dictated by high population density, but rather by locational factors such as a strategically advantageous position for transport in relation to areas of raw material exploitation. This assumption complements and aligns with Sindbæk's postulate (2005, 121–122) that the placement of Viking Age trading centres was determined less by their function as regional goods-handling sites than by topographical qualities relevant to long-distance trade.

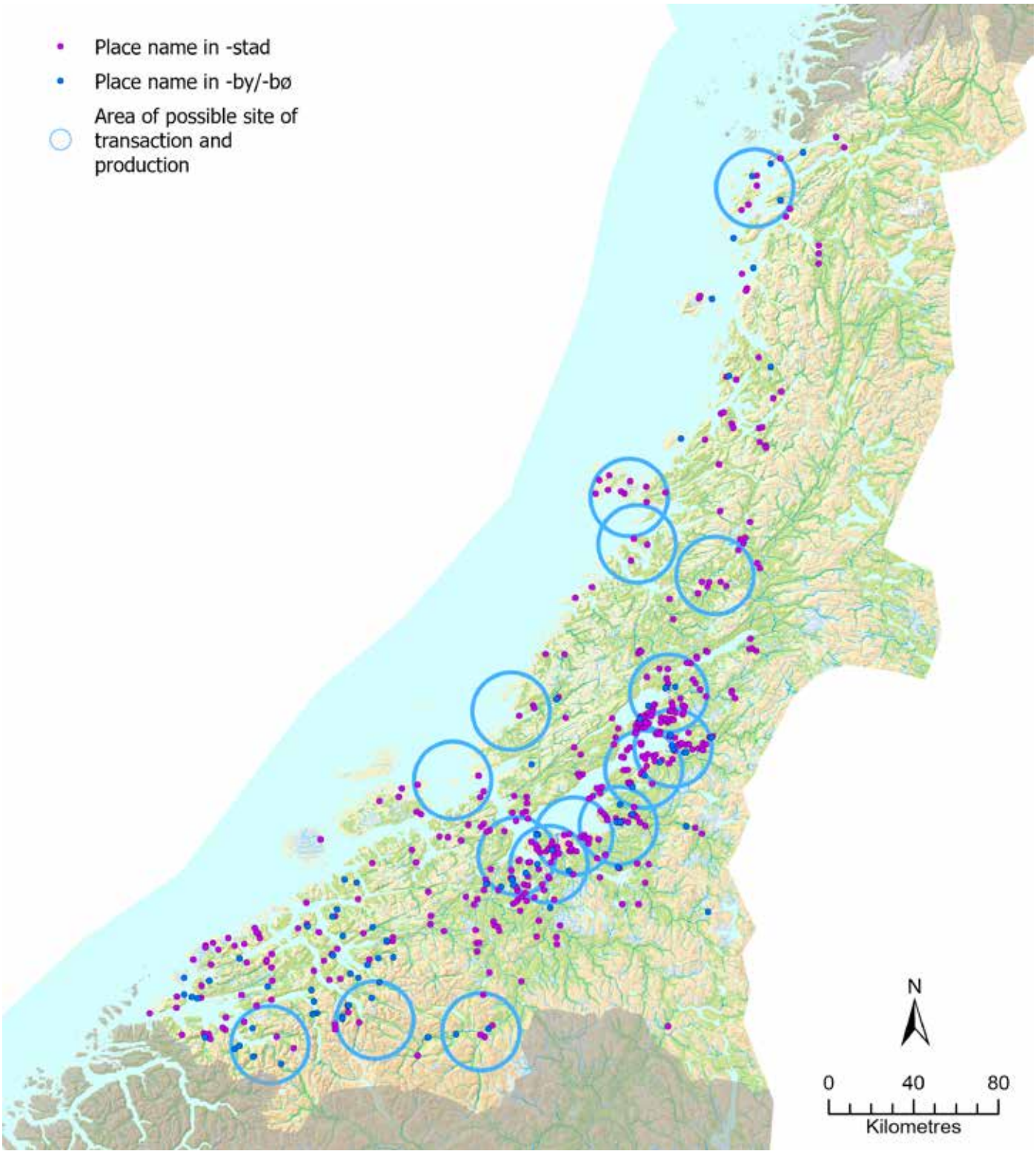


Figure 60. Relationship between place names in -stad and -by/-bø and possible sites of transaction and production identified through direct and indirect trade indicators.

7 DISCUSSION

At the outset, various models commonly used to describe Viking Age trade were presented. Traditionally, with a few exceptions (cf. above all Helle 2009; Loftsgarden 2017), the notion that the elite played a key role in administering the exploitation of raw materials and the redistribution of goods has been strongly emphasised in Norwegian archaeology, whereas free-market trade aimed at maximising profits is considered almost non-existent (cf. Chapter 2.1.2). Drawing on the material examined in this study and the partial results obtained, the objective is to discuss how the exploitation of raw materials may have been organised, who held the rights to the means of production, and who benefited from the surplus production of utmark resources.

The focus on two areas of Central Norway – the Oppdal region and the surroundings of the Mostadmarka utmark – provides an appropriate starting point. Both areas are characterised by evidence of markets or trading sites, the earliest indications of the use of a weight economy, and, not least, the most reliable evidence of Early Viking Age resource exploitation for long-distance trade: in the Mostadmarka area, the extraction of dark schist whetstones; in the Oppdal area, the hunting of reindeer and possibly the extraction of soapstone (Figure 20). Furthermore, the indications of the spread of the weight economy and the location of potential sites of transaction and production (Figure 56) offer a suitable basis for discussing whether trade was controlled by local elites or conducted freely, as well as what evidence exists in Central Norway for the interplay between long-distance trade, local trade and the various sites of transaction.

7.1 Exploitation of Raw Materials in the Utmark – Organised by Local Elites or Neighbouring Farms?

7.1.1 Case Study: Oppdal and Sunndalen

As outlined in chapters 3.2.4 and 3.2.9, numerous Viking Age hunting arrow finds have been recorded in the high mountains surrounding Oppdal, and several soapstone quarries – although undated – are also located west of Oppdal (Figure 61).

In the Oppdal area, Viking Age burials are concentrated in three Scandinavian Iron Age cemeteries: Vang (with at least 900 burial mounds) (Figure 62), Rise (at least 27 burial mounds), and Strand (at least 10 burial mounds) (numbers from the Directorate for Cultural Heritage's register of monuments and sites), in addition to unregistered flat graves. Burial in larger cemeteries is rather unusual in Viking Age Norway, where the typical pattern consists of small cemeteries situated on individual farms (Farbregd et al. 1993, 67).

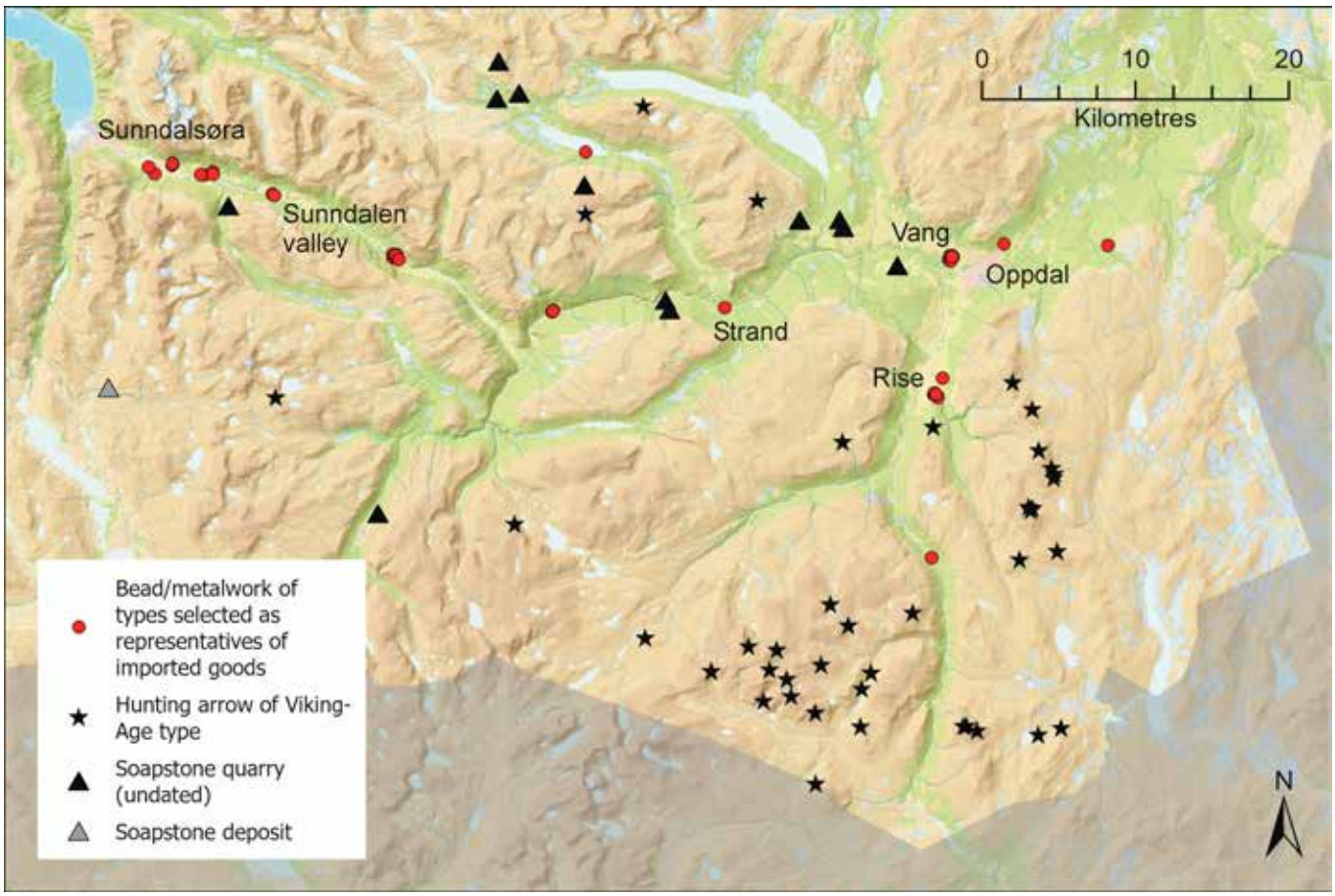


Figure 61. Distribution of Viking Age hunting arrows, soapstone deposits and quarries, Insular metalwork and types of Viking Age beads and oval brooches used as representatives of imported luxury goods in the Oppdal area, Trøndelag.

Figure 62. Part of the large cemetery at Vang, Oppdal Municipality, Trøndelag. Photo: Birgit Maixner.

Farbregd et al. (1993, 80) interpret the Vang cemetery as a local peculiarity and as an expression of local equality and 'peasant democracy'. However, they do not consider the fact that many sites with large cemeteries can be associated with prominent trading centres. For instance, more than 400 graves have been documented at the Kaupang trading centre, although the total number is estimated at a minimum of 700 (Stylegar 2007, 77). As Loftsgarden (2019, 16) has observed, several of Norway's large cemeteries are situated at important gateways to mountain passes. With at least 900 burial mounds, the Vang cemetery near Oppdal is the largest in Norway and among the largest in Northern Europe. By comparison, the number of Viking Age graves at the trading centre of Birka in Central Sweden is estimated at 1100 (Gräslund 1980, 1), although the latest remote sensing studies suggest figures as high as 4500–5000 (Price et al. 2018, 22).

The sites classified as B-emporia according to Hodges' (1982) model – such as Birka, Hedeby and Kaupang (designated as towns in Skre's (2008b) model (Figure 3)) – generally feature large cemeteries, in contrast to seasonal marketplaces (Stylegar 2009, 90). From this perspective, the Vang area may be considered to have had greater significance as a hub of long-distance trade than can currently be demonstrated by the remaining archaeological material. To date, only a very small number of graves from the Vang cemetery have been archaeologically excavated, mostly during the 1960s (cf. Farbregd 1980a; Farbregd et al. 1993). Nevertheless, these few graves yielded a rich assemblage of finds (cf. Farbregd et al. 1993). The Vang cemetery was widely known among the local population for its wealth of grave goods, and systematic plundering has been documented, particularly during the 19th century (Farbregd 1980a, 4). The cemetery at Rise, nine kilometres to

the south, is considerably smaller but is likewise associated with numerous grave goods. The same applies to the Strand cemetery on the banks of the River Driva. The few graves examined from these three cemeteries contain many of the object types analysed in this study as representatives of imported artefacts (Table 11; Figure 61).

Table 11. Occurrence of the types of metalwork and beads examined in this study as representatives of imported luxury goods in the cemeteries of Vang, Rise and Strand, Oppdal Municipality, Trøndelag.

	Bead	**Bead**	**Oval brooch**	**Oval brooch**	**Oval brooch**	**Bead**	**Oval brooch**	**Insular metalwork**
	Square mosaic ornamentation in two rows	Segmented metal-foil	P27	P37	P 42	Cornelian	P51	
Vang								
C1444							x	
T734		x						
T751		x						
T3315					x			
T3316							x	
T3341								x
T18755	x		x					
T18758	x			x				
T21291						x		x
T21339								x
T22457							x	
Rise								
C646–647							x	x
C1443				x				
C3667							x	
T415							x	
T9254					x			
T18123							x	
Strand								
T15003								x

The wealth of grave goods in the cemeteries of Vang and Rise can be interpreted as an expression of the prosperity generated through the exploitation of local resources and the transport routes across the mountains (cf. Loftsgarden 2019, 16). Depending on the interpretative model applied, the emergence of such wealth in a large number of graves in the Oppdal area can be explained in different ways. According to substantivist concepts, these goods would have resulted from reciprocity and redistribution by local ruler(s) in return for services and loyalty (cf. Chapter 2.1.2). However, it is also possible – and, in my view, more plausible – to regard them as the outcome of a free and broad involvement of the local population in resource exploitation according to market economy principles.
The cemetery at Rise lies directly on the ascent to the mountain region known as Oppdal østfjell, encompassing the mountains Sissihøa, Kringsollen, Brattfonnhøa and Leirtjønnkollen, from whose ice patches numerous Viking Age hunting arrows have been recovered, indicating intensive reindeer hunting in the area (Figure 63).

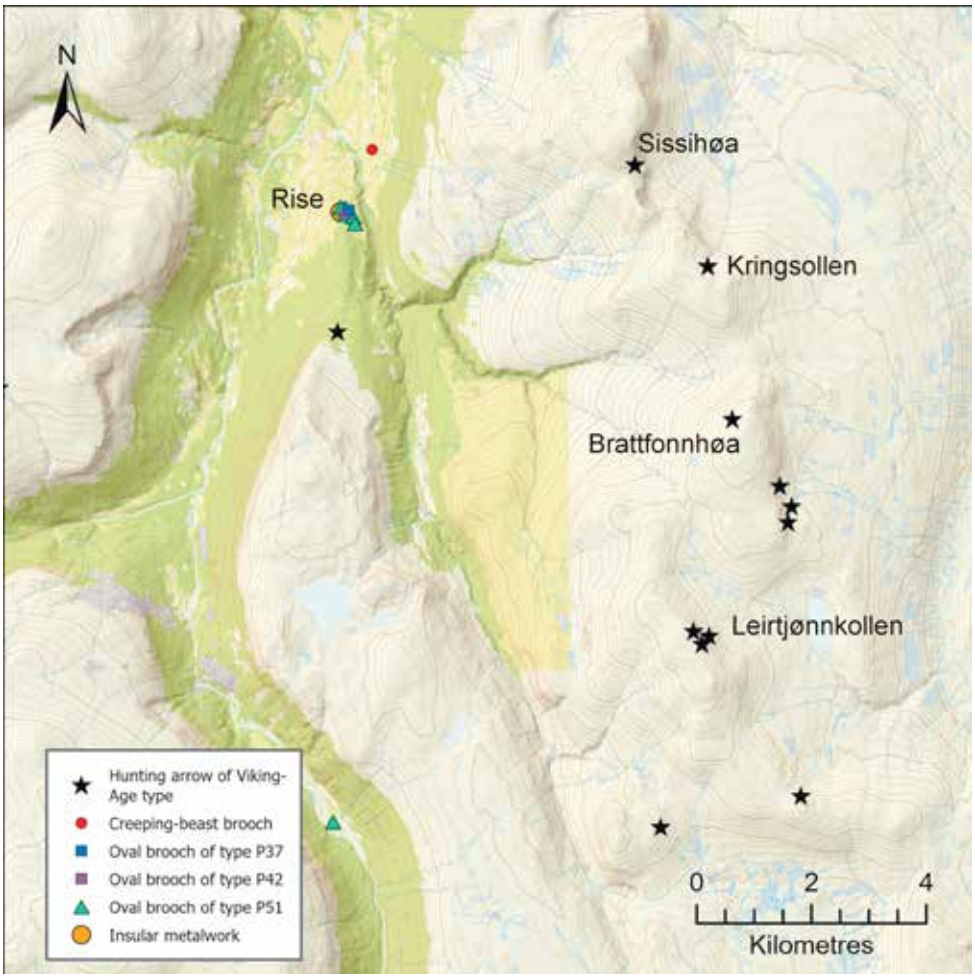


Figure 63. Distribution of Viking Age hunting arrows and selected types of Viking Age beads and metalwork used as representatives of imported luxury goods in the vicinity of the Rise cemetery, Oppdal Municipality, Trøndelag.

Consequently, the wealth and access to imported artefacts evident in the Rise cemetery could be interpreted as the result of surplus production from reindeer hunting by individual local communities. Assuming the existence of a market or trading place in the Oppdal area – as suggested by the enormous size of the Vang cemetery and the presence of weights in grave Haug 17 (T18754) – this would have provided a venue where reindeer hunters could have exchanged their hunting products, either directly or indirectly, for imported goods. Under this assumption, the high proportion of imported goods from the 8th and 9th centuries CE in the few graves examined in these cemeteries (Table 11), including a significant share of Insular metalwork, may indicate that open trade was already established at the beginning of the Early Viking Age. The distribution of imported artefacts along the Sunndalen river valley leading from Oppdal to the coast (Figure 61), as described in Chapter 4.2.1, could be interpreted in the same way. The abundance of sought-after resources – such as soapstone and reindeer – in the surrounding mountains may have been exploited by the inhabitants of individual farms in the Sunndalen river valley and exchanged for imported goods at a trading centre or alternating marketplaces presumed in the Hoven–Hol–Vinnavoll–Løykja–Torske area.

However, the influence of the trade route between the Oppdal area and the coast, which passed directly through the Sunndalen river valley, should not be underestimated. As Mathias Bäck (1997, 146–148) has demonstrated using the example of Viking Age Central Sweden, a connection can be observed between the distribution of oval brooches and the transport routes leading to iron extraction areas. Bäck interprets this distribution pattern as the result of down-the-line trade, i.e., trade conducted through several intermediaries (cf. Chapter 2.1.5). Although I do not consider such a form of trade likely in this context, given the relatively short length of the Sunndalen valley (approximately 60 km), there are several ways in which the effects of the trade route could have been reflected in the material culture – for instance, through stops by regional traders, perhaps in connection with overnight stays, or through the involvement of local inhabitants in transport, who may have acquired imported goods as payment for these services. If the Oppdal/Vang area did indeed possess its own market or trading centre, the fact that the Sunndalen river valley constituted the most important link from there to the coast opens up entirely different possibilities for the accessibility of imported goods in this valley compared to others. The same applies to its proximity to one or several suspected alternating transshipment centres at the mouth of the Sunndalen valley.

7.1.2 Case Study: Mostadmarka

The Stjørdal area is characterised by one of the largest concentrations of archaeological finds selected in this study as representative of imported goods (Figure 39). Apart from fur hunting – which is plausible given the natural geography, though not archaeologically attested – the area is notable primarily for one internationally significant Viking Age trade item: dark schist whetstones, which, according to current research, may have been sourced from Heingruva or neighbouring quarries in the Mostadmarka utmark area. As outlined in Chapter 5.1, Baug et al. (2019), Christophersen (2020) and Baug (2022a, 219) have argued that the dark schist whetstones from the Mostadmarka area were shipped from Lade near Trondheim. I propose a different approach and aim to explore the implications for understanding the organisation of Viking Age resource extraction

and regional trade if, instead, alternative shipping sites in the vicinity of the Støren Nappe are considered for this particular trade item.

It is known that the Selbu millstones quarried in the same area in modern times were transported on horse-drawn sledges during frosty nights towards the end of winter from their production sites in the utmark approximately 18 kilometres east of Lake Selbusjøen, first to the individual farms involved in the quarrying process for finishing, and then to the large markets in Røros or Trondheim (Rolseth 1947, 83). In the 19th century, the routes to Trondheim led either in winter through forests and bogs and across the frozen lakes Selbusjøen, Drakstsjø and Jonsvannet, or in summer by boat across Lake Selbusjøen and then by cart to Trondheim (Rolseth 1947, 128). While in the case of the Selbu millstones the destination was predetermined by the locations of the large markets – Røros and Trondheim – the circumstances may have been different in the Viking Age. If a large consignment of whetstones was to be transported to the Trondheimsfjorden by the easiest route, a path from quarries in the Rollset area via Lake Jonsvatnet to Ranheim would have been a favourable option. Whetstones from the Heingruva quarry and potential other quarries at the eastern end of the Støren Nappe however, could probably have been transported most conveniently through various valleys and small lakes to the Leksdalen valley and from there to the mouth of the Stjørdalen river valley. In both cases, the transport of large quantities of stones was probably easiest in winter, when the bogs and lakes were frozen and covered with snow.

The extraction of Mostadmarka whetstones also raises the fundamental question of who administered the process and who profited from the proceeds of sale: a local ruler, or members of the local population – such as farm communities – acting on their own initiative and for their own benefit. This issue is inextricably linked to the concept of ownership. Resource exploitation and landscape management in wooded and mountainous areas are topics that Kathrine Stene and Vivian Wangen (2017) have recently addressed in relation to Norway during the Viking Age. They emphasise the importance of surplus production for local communities as a means of acquiring goods that rural societies could not produce themselves – whether essential items or goods serving as social or cultural markers. They argue that there is evidence for the existence of the concept of commons (Norwegian: allmenning) already in the Viking Age, manifested in demarcated areas outside defined farm territories where resources could be exploited through joint local initiatives, albeit subject to regulation (Stene & Wangen 2017, 177–181).

However, based on current knowledge, the concept of ownership and the function and form of manorial systems appear to have changed significantly from the Viking Age to the High Middle Ages (Baug 2015, 120). References to ownership, known only from medieval sources, therefore provide no reliable information about Viking Age conditions. As the example of the modern Selbu millstones demonstrates, work organisation and ownership could change rapidly and fundamentally. Until the mid-19th century, individual quarries were owned by the farms that had discovered and operated them; however, from the 1850s onwards, millstone production acquired industrial characteristics, and the rights to numerous quarries were purchased by a small number of traders (Rolseth 1947, 69, 134). The applicability of the retrogressive (retrospective) method is thus highly limited, even within a small-scale region.

Although knowledge of Viking Age ownership structures of the whetstone quarries in the Mostadmarka area is lacking, I would argue that the distribution of the object types examined as proxies for imported goods may indicate that exploitation in the Early Viking Age was undertaken by individual local farms, which also profited from the surplus production. In other words, ownership or rights to the means of production, combined with freedom of trade, suggest the presence of key features of a free-market economy. In my view, an important indication of this is the dense concentration of imported finds along the Leksdalen valley to the north-east of the known quarries (Figure 64). Two unusual archaeological finds from the area of today's Elvran Farm in the Leksdalen river valley may further support this assumption and be interpreted as reflecting the economic significance, role in long-distance trade, and period of exploitation of the Mostadmarka whetstones.

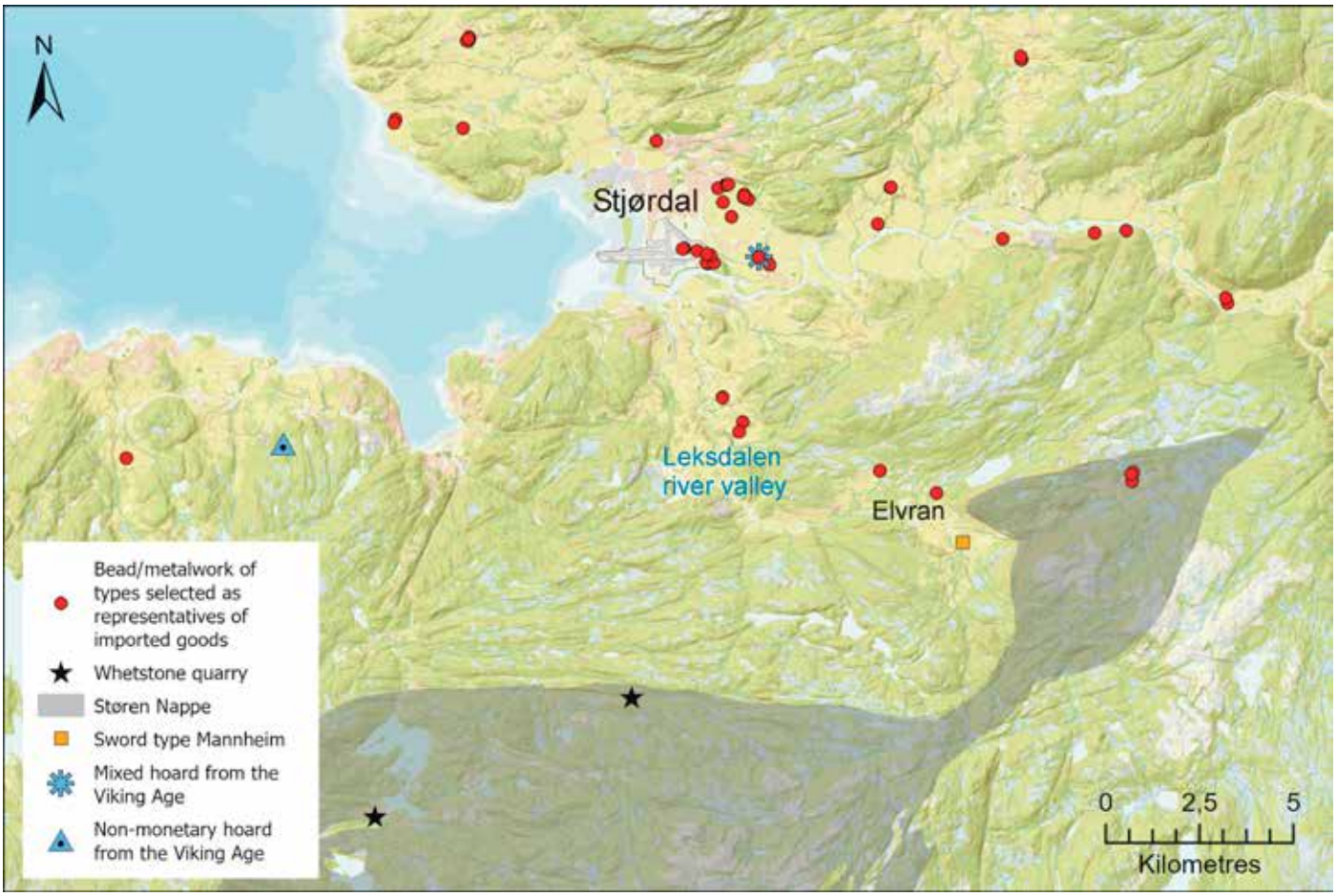


Figure 64. Distribution of selected types of Viking Age beads, oval brooches, Insular metalwork and Viking Age hoards in the vicinity of the Mostadmarka utmark area, Trøndelag.

One of these finds is a splendid Carolingian sword (Mannheim type) dating from the mid to late 8th century CE (T18969; Müller-Wille 1982, 126) (Figure 21), the presence of which is difficult to explain at this site, which otherwise appears to have been less central. The other is a decorated horse-harness component (C1613)

from the 10th century CE, which has parallels in numerous finds from Sweden, including Birka grave Bj 750 (cf. Maixner 2004, 81, 163/164) (Figure 65), and which illustrates winter sledge transport.

Future investigations should determine the extent to which evidence of quarries may exist in the immediate vicinity of Elvran, which lies on the border of the Støren Nappe (cf. Figure 64).

Figure 65. Horse collar C1613 from Elvran, Stjørdal Municipality, Trøndelag. Photo: Kirsten Helgeland, Museum of Cultural History, University of Oslo.

If one assumes that in the areas bordering the Støren Nappe there were independent farm owners free to search for whetstone deposits in the utmark and exploit them for sale or exchange, it could be expected that such surplus production would also have influenced the economy in the areas to the north and west of the Støren Nappe. This might even help to explain the 2.5 kg 10th-century CE ornament hoard of gold and silver jewellery from Vulu (cf. Grieg 1929, 254–256) in the municipality of Malvik (Figures 66, 67), for which convincing explanations for its presence in this specific area are otherwise lacking.

Figure 66. Hoard from Vulu, Malvik Municipality, Trøndelag. a KHM C2919–C2928. Photo: Museum of Cultural History, University of Oslo, unknown photographer. b T299. Foto: NTNU University Museum, unknown photographer.

Among the areas identified in Miniature III as possible locations of sites of transaction and production in the 9th and 10th centuries CE, three lie within practical reach of the Mostadmarka utmark: the Stjørdal–Auran–Skatval area, the Ranheim area, and the Torgården–Melhus area (Figure 67). It is likely that the turnover of dark schist whetstones from the Mostadmarka area played a role at all three sites, albeit to varying degrees. The whetstones themselves may have constituted the very precondition for the establishment of a site of trade believed to have existed in the area of present-day Ranheim.

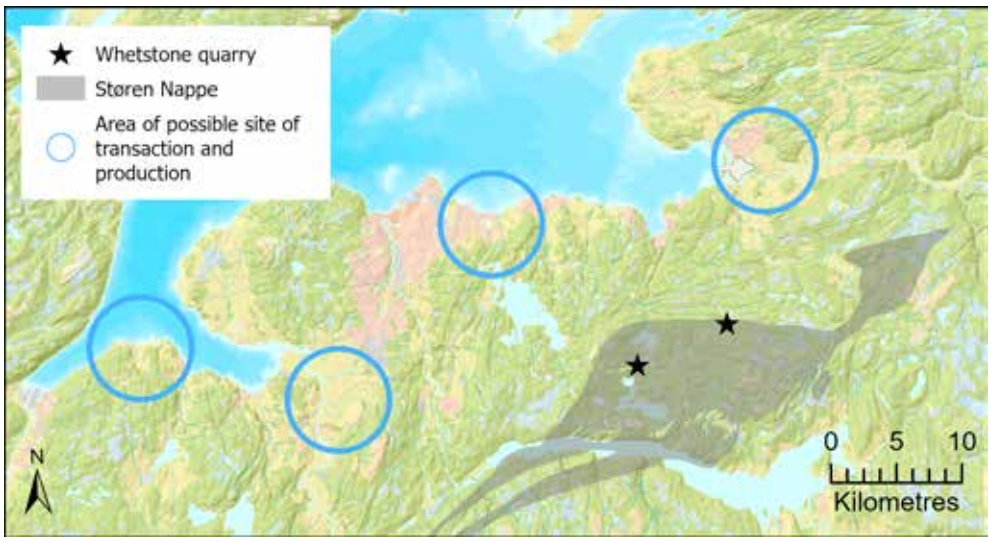


Figure 67. Relationship between possible sites of transaction and production identified through direct and indirect trade indicators, and the position of the geological unit Støren Nappe with its known whetstone quarries, Trøndelag.

The dark schist whetstones from the Støren Nappe were likely of considerable significance for a market or trading centre presumed to have been located near present-day Stjørdal, which also offered access to the trade route towards present-day Sweden as well as a maritime connection to the coast. I have argued elsewhere that a sandy plain situated at a ford within a former loop of the River Stjørdalselva, near today's Moksnes Farm, may have served as the site of a seasonal marketplace (cf. Maixner 2023). As a key trade commodity, the dark schist whetstones could have contributed decisively to the development of various phenomena observed in this area, such as the earliest evidence for the introduction of a weight economy in Central Norway, as indicated by the dating of the hoard from Mæle T28628 (Figure 55) and the boat grave T14431 from Moksnes (Figure 47) (cf. Chapter 5.3), graves containing balances and means of payment, as well as the conspicuous concentrations of Early Viking Age coins, hacksilver, imported finds, and Insular metalwork in the Stjørdal–Auran–Skatval area (Figure 68).

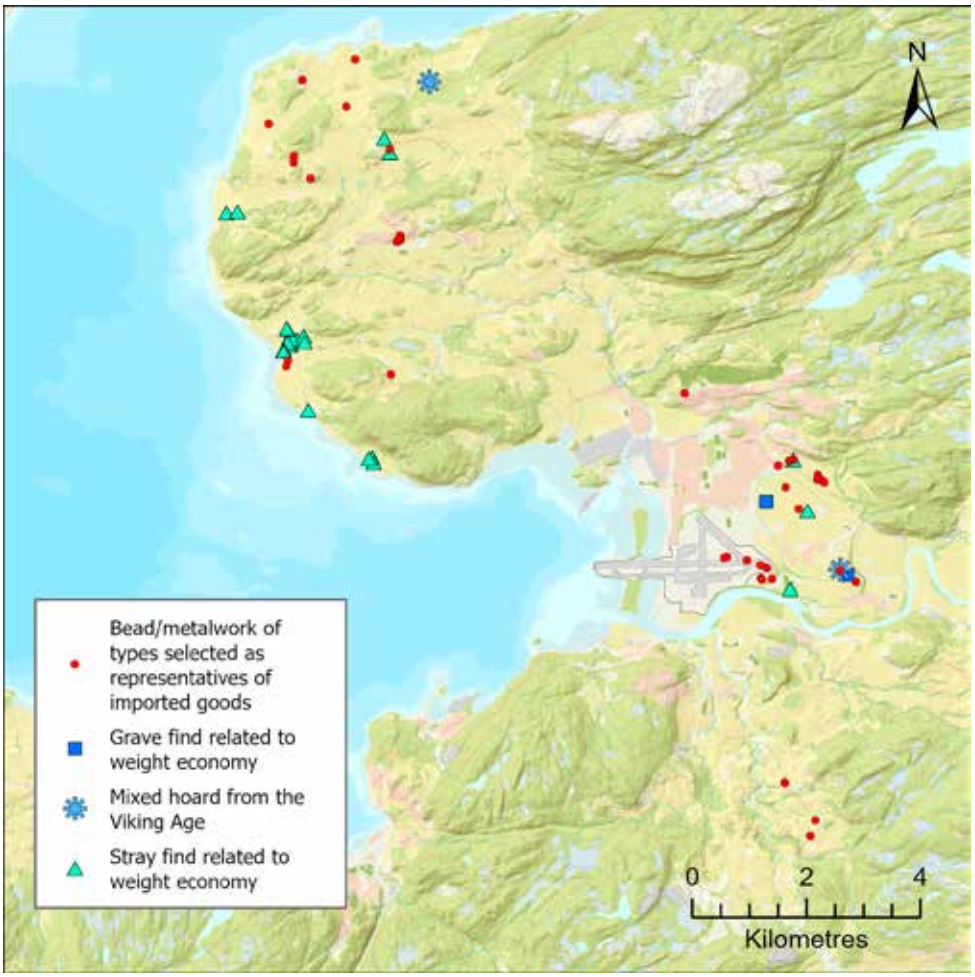


Figure 68. Distribution of selected types of Viking Age beads, oval brooches, Insular metalwork, mixed Viking Age hoards, graves containing balances and means of payment, and individually found Early Viking Age coins, hacksilver and silver ingots in the Stjørdal–Auran–Skatval area, Trøndelag.

Based solely on the distribution maps of the object types examined in this study, the question of whether the find locations of imported goods represent the result of reciprocity, redistribution, or free trade cannot be resolved with certainty. Proponents of substantivist theories could argue just as convincingly that the distribution of imported goods resulted from reciprocity and redistribution as I can argue, in line with the formalist tradition, that they are the outcome of free-market trade and represent surplus generated through production and invested in imported goods. The intensified penetration of 10th-century CE imported goods into remote areas, as described in Chapter 4.2.1, which appears to reflect intensified exploitation of raw materials, can, in my view, be regarded as further evidence that the extraction of a surplus of utmark products was an integrated part of estate management. Moreover, it suggests that behind the raw material extraction stood independent actors from local communities, motivated by the anticipated profit – part of which was probably converted into essential products and part into social and cultural markers.

7.2 Exchange of Goods – Redistribution and Reciprocity or Free Market Economy?

What conclusions can be drawn from the archaeological material for the Early Viking Age in Central Norway regarding the nature of goods exchange? Was it controlled by elites, conducted according to the principles of a free-market economy, or something in between? The increasing use of metal detectors by private individuals in Central Norway over the past 15 years has created new opportunities to assess the extent to which silver was used as currency and to identify concentrations of direct trade indicators that are not discernible in traditional archaeological source material. In this study, the archaeological material from Central Norway associated with the weight economy of the Early Viking Age – including detector finds from recent years – has been presented and analysed for the first time.

One result is that the weight economy was practised across large parts of the populated areas of Central Norway by the 10th century CE at the latest – evidently also for everyday transactions – and not merely at a few sites, but at a substantial number of central farms. This finding contrasts with earlier assessments, which assumed that in the rural areas of Northern and Western Norway, far from Kaupang, hacksilver was scarcely in use even in the 10th century CE (cf. Skre 2008c, 354; Hårdh 2008, 99; Skre 2011b, 85), yet it aligns with the picture emerging from Sweden in recent studies (cf. Holm 2015; Holm 2017; Moesgaard 2023; Rundkvist 2024). It can be expected that further detector activity in the future will generally increase the density of the finds distribution in Central Norway and will also encompass those Viking Age settlement areas that have so far hardly, or not at all, been searched by detectorists – areas that likely appear as blank spaces on the distribution maps for this reason.

The present study also represents the first attempt to examine the distribution of a large group of jewellery items manufactured outside Central Norway specifically for trade through serial or even mass production (cf. Miniature II). As early as the 8th century CE, imported, mass-produced luxury goods reached Central Norway on a considerable scale; however, for the 9th and 10th centuries CE, the distribution patterns reveal an even broader spread and deeper penetration into the hinterland. In my view, this indicates that access to these products was not limited to elites but extended to a substantial proportion of the population. Peasants thus emerge as a significant and sizeable consumer group, and the importance of their demand for goods imported from afar as a driving force behind the surplus production of utmark resources should not be underestimated.

In my view, the widespread dissemination of the weight economy, combined with the extensive distribution of imported goods during the 9th and 10th centuries CE – even in remote areas – stands in contrast to earlier substantivist models and should be interpreted primarily as the outcome of free trade and consumer autonomy. This development likely involved a considerable number of agents and

transaction sites and thus constitutes further evidence of an open economy from at least the second half of the Early Viking Age.

Assessing the situation prior to the establishment of the weight economy is more challenging. As outlined in Chapter 2.1.6, the dual nature of goods as commodities and as means of payment, together with the transitional possibilities between these spheres throughout an object's biography, complicates efforts to determine the character of the economy and the potential sites of transaction in the first half of the Early Viking Age. I have argued elsewhere (Maixner 2021b, 183–185), using the example of glass beads produced in Southern Scandinavia during the so-called 'Blue Period' in the 8th century CE, and following the tradition of a number of scholars, for the use of these glass beads as a value equivalent and thus as a means of payment. In contrast to hacksilver, which was typically fragmented during transactions to achieve the desired weight, it is not evident from glass beads or jewellery made of materials other than silver whether they served as a means of payment at the beginning of their object biography.

The archaeological material offers no direct evidence regarding which types of traders – peddlers, regional traders, or long-distance traders (cf. Chapter 2.1.4) – were active in Central Norway, nor to what extent the long-distance trade goods found at the presumed sites resulted from trading expeditions undertaken by local landlords or from visits by foreign merchants. As previously noted, there is no evidence for the presence of Frisian traders in Central Norway; however, it is conceivable that any foreign traders primarily originated from Central and Northern Norway, with kinship ties and personal networks likely influencing which sites were frequented. It is further possible that the boat graves discussed in Chapter 5.2.2, containing balances and largely standardised equipment from the late 9th and 10th centuries CE, represent the collective identity of a group of professional long-distance traders rather than simply wealthy landowners engaged in commerce. This interpretation could be supported by the grave (T15297) on the small island of Havstein in Helgeland, which may mark the burial of a trader who died during a trading voyage.

I regard the large number of possible trading and market places in Central Norway suggested in Chapter 5.3 as further evidence of open trade and of numerous agents participating in exchange. Comparable to Theuws' (2012a, 186) assumptions for the Merovingian Period in the Netherlands, such a model implies that members of different social strata could actively engage in trade. Commerce following the Ohthere model – where local chieftains collected tributes at their courts and subsequently transported them to distant markets for sale – would not necessitate such a high number of transactional sites nor such extensive use of silver as a medium of payment, which is beginning to appear in central Norse finds. As outlined in Chapter 2.1.3, only a handful of confirmed or possible trading sites have been identified across Norway. It may therefore seem bold to propose such a large number of transactional sites in Central Norway alone, as this study does. However, there is a lack of comparable systematic studies for other regions of Norway that analyse the substantial detector finds of recent years in conjunction with older material to identify potential production sites. Furthermore, the individual sites proposed for Central Norway likely varied in size and significance, and may have functioned only as seasonal markets, even if the surrounding settlement was permanent. From historical times, it is known that the location of a marketplace within a given area could change over the years

(cf. Loftsgarden 2017, 168). In my view, however, the considerable number of transaction sites proposed for Central Norway suggests an open form of trade characterised by broad participation across the population.

When referring to a free market economy, this should be understood within the framework of the Viking Age social model (cf. Solberg 2012, 259–272). Not every individual was necessarily free to exploit raw materials or engage in trade at will; however, it appears that individual farm communities possessed a considerable degree of autonomy, enabling them to utilise surplus utmark resources and, conversely, to consume goods mass-produced elsewhere. For each farm community, the decision regarding the proportion of the overall economy to allocate to the exploitation of surplus resources for trade was likely a matter of individual judgement, given the labour required. Loftsgarden (2017, 238) cites medieval written sources that regarded trading voyages as a threat to agriculture, as they diverted labour away from farming. Similarly, depending on the season in which the exploitation of utmark resources occurred, this could conflict with other farm management activities.

Conversely, the extraction of utmark resources may have provided farms with poor agricultural conditions an opportunity to obtain basic foodstuffs and other essential goods that they could not produce in sufficient quantities themselves. Reference should again be made to the Selbu millstone extraction and possible analogies from the modern period, which describe the bartering of Selbu millstones for grain from present-day Innlandet County at the Røros market as vital for the population of Selbu (Rolset 1947, 119–120). In contrast to this interpretation, Baug (2005, 106–107) argues that Viking and medieval quarrying of millstones from Hyllestad in Western Norway was initiated and controlled by the social, economic and political elite. Ownership may have depended on whether a source of raw materials was confined to a very limited area that was easy to control, as in the case of Hyllestad, or whether opportunities for extracting a particular raw material were widely dispersed across the landscape, as with iron extraction and reindeer hunting, and perhaps even with the dark schist whetstones from the Støren Nappe. It is therefore conceivable that resources obtained locally by peasants from surrounding farms in the utmark, such as whetstones, reindeer products and soapstone products, were exchanged for food at regional markets before entering long-distance trade. The issue that secondarily exchanged raw materials can create a distorted picture when assuming a direct spatial connection between the extraction of utmark resources and the import of luxury goods has already been noted in Chapter 6.1.

7.3 Direct and Indirect Exchange and the Role of Sites of Transaction

Chapters 2.1.5 and 2.1.3 presented various established models that describe how long-distance trade may have occurred – either as direct or indirect trade – and where it may have taken place. According to the down-the-line model, goods pass through numerous, random hands before reaching their destination. In contrast, Christaller's (1968) hierarchical central place model identifies only a few prominent sites suitable as transshipment points for long-distance trade products.

The network model developed by Sindbæk (2007) for the Early Viking Age in Scandinavia likewise describes only a small number of major hubs within the entire network, between which long-distance communications occurred.

For a long time, Kaupang was regarded as the only known trading centre of the Viking Age in Norway and, according to Skre's (2008b) model (Figure 3), as a Viking town. However, this picture has been complicated by the discovery of the site at Heimdalsjordet, located only 15 km from Kaupang, whose assemblage likewise reflects extensive long-distance trade connections (cf. Bill & Rødsrud 2017). According to Skre (2017, 12), Heimdalsjordet represents a seasonal local market; however, as Jan Bill and Christian Løchsen Rødsrud (Bill & Rødsrud 2017, 227) note, it does not readily fit into the model developed by Hodges (1982) and modified by Skre (2008b) (Figure 3) for classifying Viking Age trading sites. To address the issue of the close proximity of the two sites, Bill & Rødsrud (2017, 227) suggest that they may have participated in different long-distance trade networks: Kaupang in a continental and western network, and Heimdalsjordet in an eastern one.

Kaupang and Heimdalsjordet demonstrate that the established models are insufficient to explain all the newly identified sites of transaction and craft production emerging in Norway. As noted in Chapter 2.1.3, evidence from recent metal detector finds indicates further comparable sites along the western shore of the Oslofjorden, two of which – Nes (Lie 2021) and Manvik/Berg – are situated only 20 km and 12 km respectively from Kaupang in different directions. The issue highlighted at Heimdalsjordet is therefore likely only the tip of an iceberg, one that will require Norwegian archaeology in the coming years to develop new models for describing Viking Age trade and the relationships between individual sites of transaction and craft production.

In Chapter 5.3, I argued for the existence of a large number of areas with sites of transaction in Central Norway (Figure 56). It should be emphasised, however, that none of these areas exhibits evidence of trade and craft production anywhere near as extensive as that found at the major Viking Age trading centres. For instance, the number of Islamic silver coins from Hedeby is given as 75 and from Kaupang as 92 (Kilger 2008, 200–201), while Uppåkra has yielded more than 220 Islamic coins, approximately 100 pieces of hacksilver, and over 130 Viking Age weights (Hårdh 2010). By comparison, only 13 Islamic silver coins are known from Viggja, the central Norwegian site with the highest number of individual Islamic silver coins discovered.

Even if it should not be overlooked that Hedeby, Kaupang and Uppåkra – unlike the Central Norwegian sites – have been the subject of long and intensive archaeological investigations, the presumed sites of transaction in Central Norway appear to be small in scale. The large number of apparently rather small, presumed sites of transaction in Central Norway could be explained by a low degree of social stratification within the local society. While Kaupang is discussed as a foundation of Danish royal power (cf. Skre 2007, 467), the Early Viking Age society of Central Norway seems to have been less stratified, characterised by a large number of central farms (cf. Maixner 2020a), but without a small, dominant elite group – similar to what is assumed for Jämtland in Sweden (cf. Holm 2015, 102).

As shown in Chapter 5.3, the outer row of areas with presumed sites of transaction in Central Norway is located on the coast, the middle row at fjord mouths, and the third – so far represented only by the sites assumed at Skogmo and Oppdal – at important inland transport hubs. There appear to have been differences between these sites in terms of size, significance and the scope of their trade relations, although their generally poor and varied state of investigation does not currently permit any conclusions beyond conjecture. In my view, the three rows and the overall high number of clusters indicated by trading-centre indexing finds may suggest that local raw materials were traded in several stages, passing through multiple hands and transactions before entering long-distance trade at centres with long-distance or intra-regional connections.

Conversely, it is likely that imported goods from long-distance trade reached remote areas of Central Norway through several transactions, which may have occurred both at actual marketplaces and in less formal settings via itinerant traders (cf. Ellmers 1972, 174–176). Assuming dynamic trade at numerous locations, a down-the-line model – not between neighbours but between different categories of traders – thus appears the most plausible for trade within Central Norway and would support the previously expressed assumption of a free market economy. The widespread distribution of finds associated with the weight economy, as shown in chapters 5.2.1 and 5.2.2, also suggests that trade occurred in a small-scale and less organised format at far more sites, including rural ones, than previously assumed; similar views have been expressed by Sindbæk (2013, 72) and Loftsgarden (2017, 27). In this context, it is important to note that only around 800 inhabitants lived in the Viking town of Kaupang (cf. Pedersen 2017, 126), i.e., a negligible proportion of the population. Most people in what is now Norway lived at rural sites during the Viking Age, and it is within this context that the bulk of goods exchange and consumption must be considered.

The three identified rows of sites of transaction and possibly craft production within the study area may suggest that the coastal sites were better positioned to act as hubs for long-distance trade than those located further inland – at least with regard to trade with Southern Scandinavia and Western Europe – and that goods may have moved gradually in a west–east direction, or vice versa, between the individual rows. However, I do not consider this likely as a general principle, even though it may have occurred in individual cases. Depending on the locally available raw materials and the specific transport-geographical context – particularly regarding crossings into the area of present-day Sweden, as in the case of Stjørdal – a site of transaction located in the middle or inner row may also have functioned as a hub for long-distance communication, just as this need not have been true for every site situated on the coast.

It is likely that the same location accommodated both local and long-distance trade, and that individual sites may have fulfilled different functions in different directions and for different groups. Using the example of the Mostadmarka whetstones and the presumed trading or market site at the mouth of the River Stjørdalselva, a market at Stjørdal would have functioned as a local marketplace for farm owners from the Mostadmarka area, who sold or exchanged whetstones extracted from the surrounding utmark. The same applies to itinerant traders who purchased whetstones there for local distribution. For long-distance merchants acquiring Mostadmarka whetstones with the intention of transporting them to Southern Denmark, across the Scandinavian mountains to Central Sweden, or

even to Slavic regions for onward sale, the market at Stjørdal would have served as a hub for interregional or even long-distance trade.

For regional traders, conversely, who bought whetstones at the market in order to resell them at a transshipment point in the coastal zone, for example on Storfosna or at Agdenes, from where they could either reach buyers in neighbouring regions or enter the long-distance trade, for example to Southern Scandinavia, the market at Stjørdal would have intraregional significance. The studies of recent years on the Mostadmarka whetstones, which prove their occurrence in Ribe, Birka, the Slavic areas, as well as in Central Norway (cf. Baug et al. 2019, Baug et al. 2024a, Baug et al. 2024b), in my view demonstrate that the scenarios outlined are realistic. However, the example also shows the inadequacy of Skre's (2008b) model (Figure 3) for the sites of transaction in Central Norway, and likely also in other regions of Western Scandinavia, since, according to the model, it is only towns and nodal markets that combine long-distance, inter- and intraregional trade. According to the model, however, the trading and productive activity of the known nodal markets had already ceased around 850 CE, while towns have the criterion of being permanently populated and, as the representatives of this genre, Ribe II, Hedeby, Kaupang and Birka show (Skre 2008b, 338), are the exception rather than the rule. Central-place markets and local markets, which in terms of their size and level of activity likely best match the possible central Norwegian sites of transaction, however, do not participate in long-distance trade according to the model. The list of representatives for central-place markets (Old Uppsala, Tissø, Uppåkra, Helgö, Sorte Muld, Lundeborg) also indicates a much more aristocratic category of sites than the central Norwegian sites of transaction that appear in the context of central farms.

The network model developed by Sindbæk (2007) for the Early Viking Age in Southern Scandinavia, which shows only a small number of widely scattered important nodes, is not applicable to the phenomena observed in Central Norway. One possible reason for the limited applicability of this model, as well as Skre's (2008b) model, may be that the local exploitation of raw materials for long-distance trade, a key factor for trade on the Scandinavian Peninsula, appears not to have played a role in the southern Scandinavian trading centres. The southern Scandinavian trading centres are best characterised as transit points through which goods and raw materials flowed and were partially transformed. Apart from a few exceptions, such as the amber originating from the coasts of the North Sea and especially the Baltic Sea (cf. Resi 2011a, 108–109), the goods handled and partly processed there originated from distant regions.

In order to function as prominent nodes within the international long-distance trade network, it was crucial that these hubs were repeatedly frequented by long-distance traders; otherwise, the diversity of goods that ensured their continued attractiveness as trading places – and provided the basis for the craftsmen working there – would not have accumulated. In contrast, many, if not all, of the central Norwegian sites have as a central feature the supply of raw materials obtained in their surroundings, which constituted significant products and thus essential components of Viking Age long-distance trade. Although it is assumed that Viking Age trading ships carried mixed cargoes (Skre 2017, 4), the decision as to which site or sites of transactions an interregional or intraregional trader visited was likely dependent not solely on the importance of personal networks but also upon knowledge of the local supply of raw materials, which might vary in composition

and quality between different sites. This would explain, for instance, the high density of assumed sites of transaction along the Trondheimsfjorden.

Overall, the combination of local exploitation of raw materials, low social stratification and broad involvement of the local population in trading activities suggests that the numerous and apparently rather small sites of trade within a rural region such as Central Norway possessed a different character from the model-defining Viking Age sites of transaction and production in other parts of Scandinavia.

8 CONCLUSION

Starting from a comprehensive and varied archaeological assemblage of finds and its typological classification and dating, the study adopts a holistic perspective to examine key aspects of the Viking economy in Central Norway, a rural region of the Scandinavian homelands that was crucial for long-distance trade during the Early Viking Age (c.750–c.950 CE). Among other contributions, the study provides, for the first time, a consolidated overview and analysis of metal detector finds from the region in recent years that are associated with the weight economy of the Early Viking Age. The aim of the study was to address the apparently straightforward question of the interplay between local exploitation of raw materials for trade and the import of mass-produced luxury goods in Early Viking Age Central Norway, alongside questions concerning the location of possible sites of transaction and how the exploitation of raw materials and trade might have been organised. A key analytical tool, mode of presentation, and object of discussion throughout the study are distribution maps, the critical examination of which serves as a recurring theme running through the work.

With few exceptions (cf. especially Helle 2009; Loftsgarden 2017), Norwegian Viking Age research over the past decades has been dominated by the notion that local or regional elites administered and controlled the exploitation of raw materials and trade, and that the redistribution of goods occurred through reciprocity and redistribution (cf. Chapter 2.1.2). In contrast to such substantivist models, this study argues – based on the relationship between documented and presumed raw material exploitation, the distribution of imported finds, the large number of assumed sites of transaction, and above all the widespread use of hacksilver as a means of payment since the late 9th century CE – that Early Viking Age trade in Central Norway was dominated by principles of a free market economy and by individual pursuit of profit maximisation, thus bearing the hallmarks of formalist concepts. The broad accessibility of mass-produced luxury goods for personal consumption, particularly from the 9th century CE onwards, can be interpreted as a consequence of such a system. The demand for luxury goods may, in turn, have constituted a significant incentive for the exploitation of surplus raw materials in the utmark, an activity that appears to have been organised and executed by a considerable number of local farms. Supporting this assumption, in my view, is the accumulation of mass-produced luxury goods in the vicinity of demonstrably exploited raw material sources, such as the dark schist whetstone quarries in the Mostadmarka area or the reindeer populations in the high mountains of the Oppdal area. This does not mean that I completely rule out the transfer of goods within the context of social relations and cultural frameworks, but in contrast to substantivist approaches, I argue for a stronger influence of market economy principles for the reasons mentioned above.

Based on the archaeological evidence for the exploitation of whetstones, reindeer and marine mammals, the picture that emerges for Central Norway is one of a marked increase in the extraction of non-agrarian resources in outlying terrestrial and aquatic areas at the onset of the Viking Age. This observation aligns with the phenomenon of sudden export-oriented resource exploitation during this period, which has also been documented for other parts of the Scandinavian Peninsula (cf. Hennius 2018, 1358; Baug 2022a, 209). Baug (2022a, 217–218) has argued that the overall rather unprofitable natural-geographical conditions for farming in the area of present-day Norway were a decisive and triggering factor behind the Viking Age exploitation of natural resources in order to generate surpluses and wealth. Hennius (2018, 1358) interprets the large-scale tar production that began immediately prior to the Viking Age in the forested outlands of present-day Sweden in connection with the intensified maritime focus of Scandinavian society and the introduction of the sail, which required substantial quantities of tar for protecting timber and impregnating sails.

However, it has not yet been satisfactorily explained why such an extensive exploitation of woodlands and mountainous areas in Scandinavia – comparable to what had already occurred during the Early Scandinavian Iron Age in the context of iron production and soapstone quarrying (cf. Stenvik 2015a; Skjølsvold 1969b) – re-emerged only in the 8th century CE, and not in the preceding centuries. In contrast to Baug's (2022a) view that unprofitable conditions for agriculture acted as a trigger for surplus production, Loftsgarden and Axel Mjærum (2025, 154–155) have recently argued that population growth – stimulated by a more favourable climate and improvements in agricultural efficiency during the Viking Age – may have led to increased demand for utmark resources and, consequently, higher prices for these products, thereby driving their intensified exploitation.

What is certain, however, is that the economic boom in Viking Age Scandinavia was not an isolated phenomenon. In the Near East, under the Abbasids, trade also flourished from the 8th century CE onwards, expanding as far as distant India and East Africa (Hodges & Whitehouse 1983, 143–149). The Abbasid Caliphate further developed trade relations in a north-westerly direction to secure access to sought-after goods from Northern Europe (Wiechmann 2001; Sode 2004, 95; Callmer 2022, 246). The significance of these connections for the Viking Age economy is demonstrated by the exceptionally large number of Islamic coins – minted from silver sourced in Central Asian mines – found in Scandinavia (cf. Brather 1997; Wiechmann 2001). Moreover, in the southern North Sea coastal region, a resettlement by the Frisians occurred from the mid-7th century CE (Majchczack et al. 2020, 90), and from the 8th century CE onwards, the Frisians emerged as prominent agents of trade in north-western Europe (cf. Lebecq 1992; Callmer 1998).

As Baug et al. have recently argued, the export of natural resources extensively exploited on the Scandinavian Peninsula from the 8th century CE – such as the Mostadmarka whetstones – could rely on established trade routes that had existed since the 3rd century CE. The trading sites that emerged along these routes during the 8th century and around 800 CE, such as Ribe, Birka, Hedeby and Kaupang, likely contributed to an increase in production and trade volumes (Baug et al. 2024b, 135–137). It is tempting to regard the Viking Age trading sites and early urban centres as catalysts which, on the one hand, stimulated the exploitation of natural resources through their demand for raw materials, and, on the other,

accelerated the production of sought-after luxury goods to meet a growing private demand for consumption, thereby simultaneously creating incentives for the extraction of raw materials.

Although the Early Viking Age in Western Scandinavia as a whole is characterised by an exploitation of natural resources in the utmark that exceeded local needs (cf. Baug 2022, 218), there were likely differences in scale both between individual raw material groups and at the local level. Contrary to expectations based on the significant role of iron production in Trøndelag during the Early Scandinavian Iron Age, there is no evidence of substantial iron production in Central Norway during the Early Viking Age. This absence can be interpreted as an indication of regional specialisation, in which iron production mainly took place in Southern Norway. It should be borne in mind, however, that Early Viking Age iron production facilities are notoriously difficult to identify in other parts of Norway and may therefore be underrepresented in Central Norway. By contrast, the exploitation of dark schist whetstones from the Mostadmarka area for both regional and supra-regional markets is well documented from as early as the early 8th century CE. There is substantial evidence of Viking Age reindeer hunting in the form of iron arrowheads from the high mountains around Oppdal, although it has not yet been possible to date these finds precisely within the Viking Age. The presence of large whalebone objects in graves in Central Norway as early as the late 8th century CE may also point to the targeted exploitation of marine resources, although further research is required. The possible exploitation of soapstone remains highly uncertain. Numerous soapstone deposits and undated vessel quarries in Central Norway, combined with the occurrence of small soapstone artefacts in graves in the region from the 8th century CE onwards and of soapstone vessels from the first half of the 9th century CE – which correlate with the chronological sequence of such artefacts in Ribe – could constitute indirect evidence for previously unnoticed Early Viking Age soapstone extraction in Central Norway.

However, the extraction of soapstone in particular highlights the challenge of distinguishing between extraction for domestic consumption and surplus production for regional needs or for export. The lack of reliable data on the scale of extraction, combined with the chosen cartographic representation – which does not differentiate between suspected and confirmed production or between varying volumes of raw material extraction – also entails the risk of a distorted portrayal. The extensive exploitation of dark schist whetstones in the Mostadmarka area, which was significant for long-distance trade, is represented by only two dots on the map, whereas other resources, such as soapstone deposits, which were possibly of merely local importance or perhaps not yet exploited in Central Norway during the Viking Age, appear disproportionately dominant (cf. Figure 20).

An important prerequisite for understanding the interplay of different forms of resource exploitation is the assumption that Viking Age trading ships carried heterogeneous cargoes (cf. Skre 2017, 4). Whetstones, as well as larger soapstone objects, could serve a dual purpose as both trade goods and ship ballast, thereby facilitating transport and reducing costs. When cargoes were mixed, the volume of individual types of goods on a trading voyage was limited. This is likely to have made trading voyages less sensitive to fluctuations in demand and to have reduced overall economic risk. At the same time, this assumption also has implications for the extent of production traces at extraction sites. Baug et al. (2019, 64) estimate that several hundred Mostadmarka whetstones were brought

to the marketplace in Ribe each year. In addition, there was trade within Norway and eastwards to the area of present-day Sweden and the Baltic Sea region (Baug et al. 2024a; Baug et al. 2024b). Whetstone production in Mostadmarka thus appears to have been extensive, while also representing the sole source of supply for this sought-after commodity. In contrast, resources available in many locations, such as soapstone, may have been exploited more evenly and therefore less intensively in individual quarries.

Central Norway's rich resource landscape, with its diverse possibilities and the fact that some resources – such as iron and tar – were apparently not exploited for export in the Early Viking Age, despite favourable conditions, raises fundamental questions about the motives and priorities that determined the surplus exploitation of utmark resources and who made these decisions. For instance, was the exploitation of whetstones prioritised over iron extraction where both were feasible? In the Gråfjell area in south-eastern Norway, it can be observed that the pitfall trap system fell out of use around 1000 CE when iron production began there (Stene & Wangen 2017, 167). Conversely, the example of inner Telemark in the Late Viking Age demonstrates the simultaneous extensive exploitation of Eidsborg whetstones and large-scale iron production in the same area (Baug 2022b; Loftsgarden & Loftsgarden 2022). How much labour could – and would – be diverted from other sectors, particularly agriculture, to enable surplus exploitation of utmark products for export? Where were the limits to the profitability of such exploitation? What role did strategic considerations play in determining production scale? Overproduction, with the consequent fall in prices, was a key problem in the extraction of Selbu millstones in modern times (cf. Rolseth 1947, 190) and may also have been relevant in the Viking Age.

The mapping of proven and potential raw material exploitation (Figure 20) also highlights another key issue: those raw materials whose exploitation is most clearly attested in the archaeological record – such as dark schist whetstone, reindeer products and possibly soapstone – were not necessarily those with the greatest practical or economic significance for manufacturers, traders and buyers (cf. Helle 2000, 157; Skre 2017, 4). By contrast, the exploitation of furs and down, which were likely highly profitable as luxury products, is scarcely visible archaeologically; areas of their possible exploitation can only be inferred indirectly from natural conditions and through the retrogressive/retrospective method. Nevertheless, their economic importance and the demand for fur and down should not be underestimated (cf. Sindbæk 2005, 220–226), as suggested by their comparatively frequent occurrence in Early Viking Age burials in Central Norway – a topic that warrants future analysis.

In line with the extensive exploitation of non-agricultural resources in the utmark observed from the 8th century CE onwards, craft products from southern Scandinavian workshops – probably including Ribe – already appear in significant numbers in Central Norway at the transition between the Merovingian Period and the Viking Age, where they are widely distributed, particularly along the coast and the Trondheimsfjorden. The route via the Sunndalen river valley to Oppdal is also attested as early as the 8th century CE. During the 9th and 10th centuries CE, imported luxury goods increasingly occur in peripheral locations. This development can be interpreted as evidence of an intensifying exploitation of utmark resources and the resulting surplus production, which enabled a large number of farmsteads to acquire imported goods. A key challenge for the present

study, however, lies in the limited knowledge of the Scandinavian production sites of many common types of Viking Age jewellery, which constrains both the number and the representativeness of the types selected for analysis.

In this way, the oldest types selected as representatives of luxury goods appear as southern Scandinavian products, those from the 9th century CE as originating primarily from the area of present-day Sweden, and for some of the most recently analysed types, evidence of manufacture exists only for Hedeby. This creates the impression of shifting directions in the influx of imported luxury goods to Central Norway over time; however, this is likely attributable more to the state of research and the selection of types analysed than to any historical reality. If the temporal dimension described above is disregarded, the similarity in the distribution patterns of imported luxury goods in Central Norway – presumably originating from different regions – can be interpreted to suggest that the influx of such goods from the east via the Kjølen mountain range was as significant as that from Southern Scandinavia along the Norwegian coast. Some potential transhipment points, particularly the site of transaction at Stjørdal, may even have served a dual function as a hub for both north–south and eastern routes. Conversely, the distribution patterns seem to indicate that the direction from which luxury goods reached Central Norway played no role in subsequent intra-regional distribution; rather, the objects ultimately ended up where corresponding purchasing power was available. The distribution of Insular metalwork, traditionally regarded primarily as looted goods, mirrors that of other types of imported goods examined in this study and clusters around most of the sites of transaction postulated on the basis of other indicators. This may suggest that Insular metalwork functioned to a greater extent as a secondary commodity after its transfer to Central Norway than previously assumed.

Based on the analysis of the distribution of established archaeological indicators for identifying trading sites, I argue for a substantial number of possible areas of transaction in Central Norway, primarily situated along the coast and at the mouths of major river valleys. In comparison with sites in other regions that have so far dominated discussions of Viking Age trading centres – some of which are characterised by extensive evidence of trade and craft production – the central Norwegian sites appear relatively small in scale, although some, such as the market or trading centre suspected at Stjørdal, may have been larger and more significant than others.

However, the aspect of production cannot yet be demonstrated with the same certainty as that of transaction for the sites identified for the Early Viking Age. A key methodological challenge is that identification relies primarily on finds associated with the weight economy, thereby limiting recognition to sites of transaction from the late 9th and 10th centuries CE. Nevertheless, the frequent concentration of imported luxury goods from the 8th and 9th centuries CE in the vicinity of these postulated sites may indicate that they already functioned as transaction points during the initial phase of the Early Viking Age. A comparison with selected groups of Viking Age place names further suggests that the choice of location for such sites was determined more by transport-related topographical factors than by population density.

Based on the current archaeological evidence, it is not possible to determine the size and significance of the presumed sites of transaction. In many cases, however,

it is plausible that they emerged in the vicinity of central farms and served functions for long-distance trade as well as for regional and local exchange. These sites are therefore difficult to reconcile with established models of trading and production centres, such as that proposed by Skre (2008b), particularly in view of their large number, apparently small scale and level of activity, and, in some cases, high density. One possible explanation for the fact that the central Norwegian sites of transaction followed different patterns and partly fulfilled other functions may lie precisely in their location within a rural production region, where the sale of locally obtained utmark products constituted one of their most important characteristics.

Although this study argues that there were already numerous formal transaction sites of varying sizes in Central Norway during the Early Viking Age – both along the coast, at fjord termini, and occasionally inland – Central Norway can still be characterised as a predominantly rural society, where the process of urbanisation began only in the late 10th century CE, much later than in Southern Scandinavia. A permanently populated town such as Kaupang, with its estimated 800 inhabitants (cf. Pedersen 2017, 126), is not yet attested for Early Viking Age Central Norway. Further research is required to better assess the role and function of Vang, located inland near Oppdal, whose extensive cemetery finds its closest parallels in the large cemeteries of the Viking Age trading centres of Birka and Kaupang and could therefore indicate an important marketplace in its vicinity. Against the predominantly rural backdrop of Viking Age Central Norway, the widespread use of hacksilver – apparently employed for everyday transactions from the end of the 9th century CE – is particularly noteworthy and challenges earlier assessments of the minor importance of hacksilver as a means of payment outside major markets (cf. Skre 2011b, 85).

The numerous and widely dispersed graves containing balances, weights and means of payment in Central Norway suggest that a considerable number of individuals were engaged in the buying and selling of goods. This observation accords with the findings of Holm (2015; 2017) concerning the neighbouring region of Jämtland in Sweden to the east. Collectively, these indications point towards a dynamic and relatively unrestricted trade, characterised by small-scale and loosely organised transactions. Nevertheless, the practice of payment by weighed silver was evidently not prevalent throughout the entirety of Central Norway (cf. Figure 53); rather, it was concentrated in areas that also emerge as potential market or trading centres, as evidenced by the accumulation of imported artefacts.

Certain results of this study – such as the concentration of luxury goods employed as proxies for imported items in the Mostadmarka area, recognised as an exploitation zone for dark schist whetstones, and in the Oppdal area, presumed to be a source of reindeer products and possibly soapstone – may be interpreted to suggest that even modest local farms benefited from surplus production generated in the utmark. This surplus appears to have enabled them to acquire luxury goods. From this, one might infer a model of independent farm owners with rights to the utmark, for whom the exploitation of its resources constituted an integral component of farming practice. Nonetheless, the study also demonstrates that these relationships were evidently more complex than a straightforward correlation between the extraction of raw materials for export and the acquisition of luxury goods.

Intra-regional trade appears to have constituted a significant component of economic activity, involving, on the one hand, agricultural products such as grain, butter, wool, meat and flax – items that are scarcely, if at all, detectable archaeologically (cf. Dahle & Hill 2024) – and, on the other hand, products derived from the utmark. The extensive distribution of Mostadmarka whetstones across Central Norway (cf. Baug et al. 2024b) attests to a substantial intra-regional trade in these goods, complementing their documented long-distance exchange (cf. Baug et al. 2019). These three categories – agricultural products, utmark products for regional trade, and utmark products for long-distance trade – function as immeasurable variables, their movements largely untraceable within a complex system of goods exchange. For instance, utmark products sought in long-distance trade, or at least some of them, may initially have been exchanged regionally by producers in areas with marginal agricultural conditions for essential agricultural commodities from farms situated in more favourable environments. The latter may, in turn, have utilised these exchanges to acquire imported luxury goods. Such luxury items would then be only partially, if at all, archaeologically visible within the producer communities of utmark products, but would appear wholly or partly on farms primarily engaged in agricultural production for local trade and participating in both regional and long-distance exchange. If these latter farms employed some of the imported luxury goods they obtained to purchase other regional products, the resulting archaeological record could misleadingly suggest that the area in question was directly involved in long-distance trade with the goods it produced. These various plausible scenarios underscore the interpretative challenges posed by the spatial distribution of the archaeological evidence under consideration, as well as the constraints inherent in the selection of source material.

Nevertheless, they offer explanatory models for areas characterised by concentrations of imported goods, where no evidence of local utmark resource exploitation can currently be documented. A notable example is the agriculturally favourable region east of the Trondheimsfjorden. The concept of surplus exploitation of raw materials, driven by the local population's pursuit of profit and facilitated by free-market trade, is therefore not incompatible with the notion that local elites on central farms organised and conducted the actual long-distance trade in utmark products. Indeed, the conditions for undertaking trading expeditions were likely most advantageous on farms that combined favourable agricultural circumstances with a strategically advantageous location in terms of transport geography.

Likely candidates for such central farms are primarily those described in medieval historiography as the principal Viking Age chieftains' seats, identified as church sites in the Middle Ages, or distinguished by exceptionally high levels of medieval land rents (cf. Maixner 2020a, 291–293). In contrast to Kaupang, where archaeological evidence indicates the presence of Frisian merchants (cf. Skre 2011c, 430–432), no comparable evidence exists for Central Norway. This impression is reinforced by the scarcity of Carolingian coin finds and the complete absence of sceattas, lending further support to the assumption that long-distance trade journeys in the Early Viking Age were organised by local elites. The group of professional long-distance traders mentioned in written sources may have been recruited from this milieu, with which the boat graves containing balances and largely standardised equipment observed in Central Norway, among other locations, could plausibly be associated.

Within the region, however, a considerably larger number of actors appear to have been involved in trade. The substantial number of presumed transaction sites of varying sizes – identified on the basis of the direct and indirect indicators examined in Miniature III and arranged in several rows between the inland and the coast (cf. Figure 58) – suggests that transactions passed through multiple hands within Central Norway. Moreover, transactions may have occurred in informal contexts; notably, the transport of small quantities of trade goods by itinerant peddlers to even remote areas is conceivable (cf. Christaller 1968, 30). Furthermore, the fact that imported luxury goods were exchanged not only for raw materials but also for services, or may have been employed in the payment of taxes (cf. Maixner 2021b, 183), underscores the complexity of the economic structure and, consequently, the limitations of inferring direct exchange relationships from the spatial distribution of the types analysed as proxies for luxury goods.

In contrast to the substantivist concepts that dominated Norwegian archaeology for several decades – according to which the extraction of raw materials and the import of luxury goods were concentrated in the hands of the social elite – the material evidence from the rural region analysed in this study may be interpreted as reflecting a complex and varied economic structure. Within this structure, small and occasional rural markets played an essential role; trade was conducted by numerous and diverse actors; and the peasantry, both as producers of raw materials for exchange and as consumers of long-distance trade products, held a significance that should not be underestimated. Against this background, it seems reasonable to regard regional production of goods and demand for consumer items within rural contexts as the backbone, and indeed a principal cause and driving force, of Viking Age long-distance trade.

9 REFERENCES

Aannestad, H.L. 2011. Alle veier fører til Kaupang? Om vareutveksling og ferdsel langs Numedalslågen i vikingtid. – Viking 74: 119–136.

Albris, S.L. 2015. Place names and settlement development around an aristocratic residence. Thoughts from an on-going study of the hinterland of Tissø. – Pp. 56–72 in: Eriksen, M.H., Pedersen, U., Rundberget, B., Axelsen, I. & Berg, H.L. (eds.). Viking Worlds. Things, Spaces and Movement. Oxbow Books, Oxford/Philadelphia.

Aldred, O. & Lucas, G. 2019. The map as assemblage. Landscape archaeology and mapwork. – Pp. 19–36 in: Gillings, M., Hacigüzeller, P. & Lock, G.R. (eds.). Re-mapping archaeology: Critical perspectives, alternative mappings. Routledge, Taylor & Francis Group, London/New York.

Ambrosiani, B. 1992. Gjutformar i Birka – en sensation. – Pp. 34–41 in: Ambrosiani, B. & Erikson, B.G. (eds.). Birka Vikingastaden 2. Wiken, Stockholm.

Ambrosiani, B. 1994. 1993 – långt men inte ända fram. – Pp. 7–31 in: Ambrosiani, B. & Erikson, B.G. (eds.). Birka Vikingastaden 4. Sveriges Radios förlag, Stockholm.

Ambrosiani, B. 1996. De två sista grävningsåren 1994–95. – Pp. 7–43 in: Ambrosiani, B. & Erikson, B.G. (eds.). Birka Vikingastaden 5. Sveriges Radios förlag, Stockholm.

Ambrosiani, B. 2021. Excavations in the Black Earth 1990–1995. Stratigraphy Vol. 2. Part Three: The later part of the Birka Period. Part Four: The Finds. Birka Studies 10. – The Birka Project, Riksantikvarieämbetet, Stockholm.

Andersson, H., Ersgård, L. & Svensson, E. (eds.) 1998. Outland Use in Preindustrial Europe. Lund Studies in Medieval Archaeology 20. – Institute of Archaeology. Lund University, Lund.

Andrae, R. 1975. Mosaikaugenperlen. Untersuchungen zur Verbreitung und Datierung karolingerzeitlicher Millefioriglasperlen in Europa. – Acta praehistorica et archaeologica 4 (1973): 101–98.

Androshchuk, F. 2014. Viking Swords. Swords and social Aspects of Weaponry in Viking Age Societies. The Swedish History Museum Studies 23. – Historiska museet, Stockholm.

Arbman, H. 1937. Schweden und das karolingische Reich. Studien zu den Handelsverbindungen des 9. Jahrhunderts. – Bokförlags aktiebolaget Thule, Stockholm.

Arbman, H. 1939. Birka. Sveriges äldsta handelsstad. Från forntid och medletid 1. – Bokförlags aktiebolaget Thule, Stockholm.

Ashby, S.P., Coutu, A.N. & Sindbæk, S.M. 2015. Urban Networks and Arctic Outlands: Craft Specialists and Reindeer Antler in Viking Towns. – European Journal of Archaeology 18(4): 679–704.

Axelsen, I. & Fredriksen, C. 2024. Organically Grown Archaeological Databases and their 'Messiness': Hobby Metal Detecting in Norway. – European Journal of Archaeology 2024: 1–19.

Bajard, M., Ballo, E., Høeg, H.I, Bakke, J., Støren, E., Loftsgarden, K., Iversen, F., Hagopian, W., Jahren, A.H., Svensen, H.H. & Krüger, K. 2022. Climate adaptation of pre-Viking societies. – Quaternary Science Reviews 278, 107374. doi.org/10.1016/j.quascirev.2022.107374.

Barrett, J., Johnstone, C., Harland, J., Van Neer, W., Ervynck, A., Makowiecki, D., Heinrich, D., Hufthammer, A.K., Enghoff, I.B., Amundsen, C., Schou Christiansen, J., Jones, A.K.G., Locker, A., Hamilton-Dyer, S., Jonsson, L., Lõugas, L., Roberts, C. & Richards, M. 2008. Detecting the medieval cod trade: a new method and first results. – Journal of Archaeological Science 35: 850–861.

Baug, I. 2005. Who owned the products? Production and exchange of quernstones, Hyllestad in Sogn, Western Norway. – Pp. 99–108 in: Holm, I., Innselset, S. & Øye, I. (eds.). 'Utmark': The Outfield as Industry and Ideology in the Iron Age and the Middle Ages. University of Bergen Archaeological Series International 1. University of Bergen, Bergen.

Baug, I. 2011. Soapstone finds. – Pp. 311–337 in: Skre, D. (ed.). Things from the Town. Artefacts and Inhabitants in Viking-age Kaupang. Kaupang Excavation Project Publication Series 3. Norske Oldfunn 24. Aarhus University Press & the Kaupang Excavation Project, University of Oslo.

Baug, I. 2015. Quarrying in Western Norway. An archaeological study of production and distribution in the Viking period and Middle Ages. – Archaeopress, Oxford.

Baug, I. 2022a. Outland exploitation and long-distance trade AD 700–1200 – seen in the light of whetstone production and distribution. – Pp. 209–227 in: Mooney, D.E., Guðmundsdóttir, L., Dahl, B., Roberts, H. & Ramstad, M. (eds.). Expanding Horizons. Settlement Patterns and Outfield Land Use in the Norse North Atlantic. UBAS – University of Bergen Archaeological Series 13. University of Bergen, Bergen.

Baug, I. 2022b. Brynesteinsproduksjonen i Eidsborg – frå steinbrot til marknad. – Pp. 11–38 in: Loftsgarden, K. & Rorgemoen, D. (eds.). Eidsborgbryne. Utmarksressurs og handelsvare i vikingtid og mellomalder. Museumsforlaget, Trondheim.

Baug, I., Skre, D., Heldal., T. & Jansen, Ø.J. 2019. The Beginning of the Viking Age in the West. – Journal of Maritime Archaeology 14: 43–80.

Baug, I., Heldal., T., Jansen, Ø.J. & Skre, D. 2020. Brynesteiner i Ribe – fra fjerne utmarksområder til sentrale markeder. – By, marsk og geest 32: 44–59.

Baug, I., Skre, D., Sørlie-Røhr, T. & Heldal, T. 2023. Whetstones and touchstones. – Pp. 103–114 in: Sindbæk, S.M. (ed.). Northern Emporium. Vol. 2. The networks of Viking-age Ribe. Ribe Studier 3. Jutland Archaeological Society Publications 123. Jutland Archaeological Society, Højbjerg.

Baug, I., Filipowiak, W., Jansen, Ø.J. & Røhr, T.S. 2024a. Norse Whetstones in Slavic Areas – Indicators of Long-Distance Networks During the Viking Age and the Middle Ages. – Medieval Archaeology 68(1): 48–71. doi:10.1080/00766097.2024.2347751.

Baug, I., Skre, D., Røhr, T.S., Heldal, T., Maixner, B. & Ljungkvist, J. 2024b. Viking Age economies. The significance of industrial commodity production. Germania 102: 115–145.

Berglund, B. 1995. Tjøtta-riket. En arkeologisk undersøkelse av maktforhold og sentrumsdannelser på Helgelandskysten fra Kr.f. til 1700 e.Kr. – Fakultet for arkeologi og kulturhistorie/AVH, Universitetet i Trondheim, Trondheim.

Berglund, B. 2009. Fugela Feđerum in Archaeological Perspective – Eider Down as a Trade Commodity in Prehistoric Northern Europe. – Acta Borealia 26(2): 119–135.

Berglund, B. 2015. Possibilities for a society analysis by means of soapstone – examples from Helgeland, Northern Norway. – Pp. 129–140 in: Indrelid, S., Hjelle, K.L. & Stene, K. (eds.). Exploitation of outfield resources – Joint Research at the University Museums of Norway. Universitetsmuseet i Bergen Skrifter 32. University Museum of Bergen, Bergen.

Berglund, B. & Rosvold, J. 2021. Microscopic identification of feathers from 7th century boat burials at Valsgärde in Central Sweden: Specialized long-distance feather trade or local bird use? – Journal of Archaeological Science: Reports 36 (2021) 102828. doi:10.1016/j.jasrep.2021.102828.

Bergstøl, J. 2015. Trapping pits for reindeer – a discussion on construction and dating. – Pp. 49–54 in: Indrelid, S., Hjelle, K.L. & Stene, K. (eds.). Exploitation of outfield resources – Joint Research at the University Museums of Norway. Universitetsmuseet i Bergen Skrifter 32. University Museum of Bergen, Bergen.

Bill, J. & Rødsrud, C.L. 2017. Heimdalsjordet. Trade, production and communication. – Pp. 212–231 in: Glørstad, Z.T. & Loftsgarden, K. (eds.). Viking-Age Transformations. Trade, Craft and Resources in Western Scandinavia. Routledge, Abingdon/New York.

Binford, C. 1962. Archaeology as anthropology. – American antiquity 28: 217–225.

Blindheim, C. 1978. Vikinger – pirater eller handelsmenn? Noen refleksjoner over importsakmaterialet fra markedsplassen på Kaupang. – Det Norske Videnskaps-Akademis årbok 1977: 15–40.

Blindheim, C. 1982. Commerce and trade in Viking Age Norway. – Norwegian Archaeological Review 15: 8–18.

Blindheim, C. 1994. Min morfar, dr. Ingvald Undset. Mennesket og forskeren. Brevene forteller. – Viking 57: 9–24.

Brandt, L.Ø., Taurozzi, A.J., Mackie, M., Sinding, M.-H.S., Vieira, F.G., Schmidt, A.L., Rimstad, C., Collins, M.J. & Mannering, U. 2022. Palaeoproteomics identifies beaver fur in Danish high-status Viking Age burials – direct evidence of fur trade. – PLoS ONE 17(7): e0270040. doi:10.1371/journal.pone.0270040.

Brather, S. 1997. Frühmittelalterliche Dirham-Schatzfunde in Europa. Probleme ihrer wirtschaftsgeschichtlichen Interpretation aus archäologischer Perspektive. – Zeitschrift für Archäologie des Mittelalters 23/24, 1995/96 (1997): 73–153.

Briggs, C.S., Guido, M., & Walsh, A. 1985. A Neglected Viking Burial with Beads from Kilmainham, Dublin, Discovered in 1847. – Medieval Archaeology 29(1): 94–108.

Brinch Madsen, H. 1984. Metal-casting. Techniques, Production and Workshops. – Pp. 15–189 in: Bencard, M. (ed.). Ribe Excavations 1970–76, vol. 2. Sydjysk Universitetsforlag. Esbjerg.

Brink, S. 1991. Iakttakelser rörende namnen på –hem i Sverige. – Pp. 66–80 in: Gulbrand, A., Kruken, K. & Salvesen, H. (eds.). Heiderskrift til Nils Hallan på 65-årsdagen 13. desember 1991. Novus Forlag, Oslo.

Brink, S. 2008. Who were the Vikings? – Pp. 4–7 in: Brink, S. & Price, N. (eds.). The Viking World. Routledge, New York.

Bäck, M. 1997. No island is a Society. Regional and Interregional Interaction in Central Sweden during the Viking Age. – Pp. 129–161 in: Andersson, H., Carelli, P. & Ersgård, L. (eds.). Visions of the Past. Trends and Traditions in Swedish Medieval Archaeology. Lund Studies in Medieval Archaeology 19 = Riksantik varieämbetet arkeologiska undersökningar skrifter 24. Central Board of National Antiquities, Stockholm.

Cadamarteri, J.P., McLees, C., Petersén, A. & Reed, I. 2020. Nidarneset før Nidaros. Trondheims landskaps- og bosetningshistorie i perioden 500 f.Kr – 1000 e.Kr. – Primitive tider 20: 51–73.

Callanan, M. 2014. Out of the Ice. Glacial Archaeology in central Norway. – Thesis for the degree of Philosophiae Doctor. Norwegian University of Science and Technology. Faculty of Humanities. Department of Historical Studies. NTNU – Trondheim, Trondheim.

Callanan, M. & Dahle, K. 2016. Gravåskaret – ny kunnskap om fortidens fangstfolk kommer for dagen. – Spor 2016(2): 48–51.

Callmer, J. 1977. Trade Beads and Bead Trade in Scandinavia ca. 800–1000 a.d. Acta archaeologica Lundensia, series in 4°, 11. – Habelt, Bonn.

Callmer, J. 1984. Recent Work at Åhus: Problems and Observations. – Offa 41: 63–75.

Callmer, J. 1990. Vendeltida glasmästare på handelsplatsen i Åhus. – Populär arkeologi 8: 20–22.

Callmer, J. 1995a. The Influx of Oriental Beads into Europe during the 8th Century a.d. – Pp. 49–54 in: Rasmussen, M., Lund Hansen, U. & Näsman, U. (eds.). Glass Beads: Cultural History, Technology, Experiment and Analogy; Proceedings of the Nordic Glass Beads Seminar 16.–18. October 1992 at the Historical-Archaeological Experimental Centre in Lejre, Denmark, Studies in Technology and Culture, 2. Historical-Archaeological Experimental Centre, Lejre.

Callmer, J. 1995b. Hantverksproduktion, samhällsförändringar och bebyggelse. Iakttagelser från östra Sydskandinavien ca. 600-1100 e. Kr. – Pp. 39–72 in: Resi, H.G. (ed.). Produksjon og samfunn. Om erhverv, spesialisering og bosetning i Norden i 1. årtusen e.Kr. Beretning fra 2. nordiske jernaldersymposium på Granavolden Gjæstgiveri 7. –10. mai 1992. Varia 30. Universitetes Oldsaksamling, Oslo.

Callmer, J. 1997. Beads and bead production in Scandinavia and the Baltic Region c. AD 600–1100: a general outline. – Pp. 197–202 in: von Freeden, U. & Wieczorek, A. (eds.). Perlen. Archäologie, Techniken, Analysen. Akten des internationalen Perlensymposiums in Mannheim vom 11. bis 14. November 1994. Kolloquien zur Vor- und Frühgeschichte 1. Verlag Dr. Rudolf Habelt, Bonn.

Callmer, J. 1998. Archaeological Sources for the Presence of Frisian Agents of Trade in Northern Europe ca. AD 700–900. – Pp. 469–481 in: Wesse, A. (ed.). Studien zur Archäologie des Ostseeraumes. Von der Eisenzeit zum Mittelalter. Festschrift für Michael Müller-Wille. Wachholtz Verlag Neumünster, Neumünster.

Callmer, J. 2002. North-European trading centres and the Early Medieval craftsman. Craftsmen at Åhus, north-eastern Scania, Sweden ca. AD 750–850. – Pp. 125–157 in: Hårdh, B. & Larsson, L. (eds.). Central Places in the Migration and Merovingian Periods. Papers from the 52nd Sachensymposium, Lund, August 2001. Uppåkrastudier 6. Acta Archaeologica Lundensia Ser. in 8º no. 39. Almqvist & Wiksell International, Lund.

Callmer, J. 2020. Combmaking in southern and eastern Scandinavia and the Baltic region (c. AD 700–900). – Pp. 133–164 in: Ashby, S.P. & Sindbæk, S.M. (eds.). Crafts and Social Networks in Viking Towns. Oxbow, Oxford.

Callmer, J. 2022. After the Big Waves. Oriental Millefiori Beads in Eastern and Northern Europe in the Late 10th and 11th Century. – Pp. 246–258 in: Stolyarova, E.K. (ed.). A Lifelong Search. To the 90th Anniversary of Yuliya Leonidovna Shchapova. Proceedings of the Faculty of History of the Moscow State University 214. Ser. 2. Historical Researches 145. Lomonosov Moscow State University, Faculty of History, Moscow.

Callmer, J. & Henderson, J. 1991. Glassworking at Åhus, S. Sweden (Eighth Century AD). – Laborativ arkeologi 5: 143–54.

Carelli, P. 2001. En kapitalistisk anda. Kulturella förändringar i 1100-talets Danmark. Lund Studies in Medieval Archaeology 26. – Almqvist & Wiksell, Stockholm.

Childe, V.G. 1929. The Danube in Prehistory. – Clarendon Press, Oxford.

Christaller, W. 1968 [1933]. Die zentralen Orte in Süddeutschland. Eine ökonomisch-geographische Untersuchung über die Gesetzmäßigkeit der Verbreitung und Entwicklung der Siedlungen mit städtischen Funktionen. – Wissenschaftliche Buchgesellschaft, Darmstadt.

Christiansen, T.T. 2017. The Productive Limfjord Region in Perspective. A Study of Metal Detecting Sites and Socioeconomic Development in Denmark, AD 400–1150. – School of Culture and Society, Aarhus University, Århus.

Christophersen, A. 1991. Ports and trade in Norway during the transition to historical time. – Pp. 159–170 in: Crumlin-Pedersen, O. (ed.). Aspects of Maritime Scandinavia AD 200-1200. Proceedings of the Nordic Seminar on Maritime Aspects of Archaeology, Roskilde, 13th-15th March, 1989. The Viking Ship Museum, Roskilde.

Christophersen, A. 2020. Under Trondheim. Fortellinger fra bygrunnen. DKNVS Skrifter 2020(3). – Museumsforlaget, Trondheim.

Christophersen, A. & Nordeide, S.W. 1994. Kaupangen ved Nidelva. Riksantikvarens skrifter 7. – Riksantikvaren, Trondheim.

Crosby D.D.B. & Mitchell J.G. 1987. A survey of British Metamorphic Hone Stones of the 9th to 15th Centuries AD in the Light of Potassium-Argon and Natural Remanent Magnetization Studies. – Journal of Archaeological Sciences 14: 483–506.

Dahle, K. 2015. Frosne funn i fonn og fjell – Mot ny kunnskap om forhistoriske fangstfolk. Romsdalsmuseet Molde Årbok 2015: 114–139.

Dahle, K. & Eidshaug, J.S.P. 2018. Mot en ny fase for jernvinna i Møre og Romsdal? Nye perspektiver på organisering og teknologi. – Primitive tider 20: 25–46.

Dahle, K., Vemmestad, C.F. & Stavik, J. 2019. Metallsøkerfunn som grunnlag for kunnskap og vern. En case-studie fra Sunndal – et knutepunkt i jernalder og middelalder. – Primitive tider 21: 81–100.

Dahle, C. & Hill, D. 2024. Smjǫr – fra buðdeigja til byjar-monnum. Urbanisering og utmarksekspansjon i vikingtid og middelalder. – Pp. 150–166 in: Dahle, K., Nytun, A., Langnes, M. & Rundberget, B. (eds.). Kjøpstaden på Veøya. Middelalderbyen som forsvant. VITARK 12. Museumsforlaget, Trondheim.

Dove, C.J. & Wickler, S. 2016. Identification of Bird Species Used to Make a Viking Age Feather Pillow. – ARCTIC 69(1): 29–36.

Dybdahl, A. 2016. Klima, uår og kriser i Norge gjennom de siste 1000 år. – Cappelen Damm Akademisk, Oslo.

Ebel, E. 1977. Kaufmann und Handel auf Island zur Sagazeit. – Hansische Geschichtsblätter 95: 1–26.

Eggers, H.J. 1950. Die vergleichende geographisch-kartographische Methode in der Urgeschichtsforschung. – Archaeologica Geographica 1(1): 1–3.

Eggers, H.J. 1951a. Der römische Import im Freien Germanien. Text. Atlas der Urgeschichte 1. – J. J. Augustin, Glückstadt.

Eggers, H.J. 1951b. Der römische Import im Freien Germanien. Tafeln und Karten. Atlas der Urgeschichte 1. – J. J. Augustin, Glückstadt.

Eggers, H.J. 1959. Einführung in die Vorgeschichte. – R. Piper & Co Verlag, München.

Eggert, M.K.H. & Veit, U. (eds.) 1998. Theorien in der Archäologie: Zur englischsprachigen Diskussion. Tübinger Archäologische Taschenbücher 1. – Waxmann, Münster/New York/München/Berlin.

Eggert, M.K.H. & Samida, S. 2013. Ur- und frühgeschichtliche Archäologie. 2., überarbeitete und aktualisierte Auflage. – A. Francke Verlag, Tübingen/Basel.

Eldorhagen, M. 2001. Ovale spenner i Nord-Norge og Trøndelag – stil og symbolisme i sosial sammenheng. – Universitetet i Tromsø, Tromsø.

Ellmers, D. 1972. Frühmittelalterliche Handelsschiffahrt in Mittel- und Nordeuropa. Offa-Bücher 28. – Karl Wachholtz Verlag, Neumünster.

Enisova, N. 2002. Casting moulds from the upper Dniepr region (10–11th centuries AD). – Pp. 335–342 in: Jerem, E. & Biró, K.T. (eds.). Archaeometry 98. Proceedings of the 31st Symposium Budapest, April 26 – May 3 1998. BAR International Series 1043 (II). Archaeopress, Oxford.

Farbregd, O. 1972. Pilefunn frå Oppdalsfjella. DKNVS Miscellanea 5. – Det Kgl. Norske Videnskabers Selskab Museet, Trondheim.

Farbregd, O. 1980a. Gravfeltet på Vang. – Bøgda vår 1980: 4–14.

Farbregd, O. 1980b. Steinindustri frå oldtida i Oppdal. – Trondhjems Turistforening Årbok 1980: 65–67.

Farbregd, O. 1983. Snøfonner, pilefunn og dyregraver. – DKNVS Museet Rapport A 1983: 7–46.

Farbregd, O. 1986. Elveosar – gamle sentra på vandring. – SPOR 1986(2): 6–12.

Farbregd, O. 1991. Gamle jaktpiler i snøfonner. Bom i jakta – arkeologisk fulltreff. – SPOR 1991(2): 4–10.

Farbregd, O., Hufthammer, A.K., Kirpitsnikov, A. & Bourke, C. 1993. Vikingtids funn på Vang. – Bøgda vår 1993: 67–90.

Fehring, G.P. 1992. Einführung in die Archäologie des Mittelalters. – Wissenschaftliche Buchgesellschaft, Darmstadt.

Feveile, C. 2002. Støbning af ovale skålspænder i Ribe – type- og teknikvariation. – Pp. 17–26 in: Henriksen, M.B. (ed.). Metalhåndværk og håndværkspladser fra yngre germansk jernalder, vikingetid og tidlig middelalder. Skrifter fra Odense Bys Museer 9. Odense Bys Museer, Odense.

Feveile, C., Hilberg, V., Jöns, H., Maixner, B., Majchczack, B.S., Qvistgaard, S.S., Rundkvist, M., Sindbæk, S.M. & Ulriksen, J. in prep. The network of Ribe's products: a pilot mapping.

Fredriksen, C. 2023. «Funnet med metallsøker i dyrket mark»: En relasjonell studie av norsk praksis overfor privat metallsøking og pløyelagsfunn som vitenskapelig kildemateriale. Doctoral theses at NTNU 2023:117. – NTNU, Trondheim.

Friis, P.C. 1632. Norriges oc Omliggende Øers sandfærdige Bescriffuelse. Indholdendis huis vært er at vide, baade om Landsens oc Indbyggernis Leilighed oc vilkor, saa vel i fordum tid, som nu i vore Dage. – Hos Melchior Martzan paa Jochim Moltken Bogførers bekostning, Kiøbenhaffn.

Frölund, P. 2023. Old Uppsala, Eastern Sweden: Framing an Iron Age tributary society. – Pp. 157–170 in: Ødegaard, M. & Ystgaard, I. (eds.). Complexity and Dynamics. Settlement and landscape from the Bronze Age to the Renaissance in the Nordic Countries (1700 BC–AD 1600). Sidestone Press, Leiden.

Fuglesang, S.H. 2000. Skriftlige kilder for karolingisk våpeneksport til Skandinavia? – Collegium Medievale 13: 177–184.

Gammeltoft, P. 2023. Place names types and their distribution – what do they signify? – Pp. 39–53 in: Albris S.L. (ed.). Placing Place Names in Norwegian Archaeology. Current Discussions and future Perspectives. UBAS 14. The University of Bergen, Bergen.

Gaut, B. 2011. Vessel Glass and Evidence of Glassworking. – Pp. 169–279 in: Skre, D. (ed.). Things from the Town. Artefacts and Inhabitants in Viking-age Kaupang. Kaupang Excavation Project Publication Series 3. Norske Oldfunn 24. Aarhus University Press & the Kaupang Excavation Project, University of Oslo.

Gillings, M., Hacigüzeller, P. & Lock, G.R. (eds.) 2019. Re-mapping archaeology: Critical perspectives, alternative mappings. – Routledge, Taylor & Francis Group, London/New York.

Gjerpe, L.E. 2014. Kontinuitet i jernalderens bosetning. Et utdatert postulat arvet fra 1814-generasjonen? – Viking 77: 55–78.

Glørstad, Z.T. & Loftsgarden, K. (eds.) 2017a. Viking-Age Transformations. Trade, Craft and Resources in Western Scandinavia. – Routledge, Abingdon/New York.

Glørstad & Loftsgarden 2017b. Preface and acknowledgments. – Pp. vii–ix in: Glørstad, Z.T. & Loftsgarden, K. (eds.). Viking-Age Transformations. Trade, Craft and Resources in Western Scandinavia. Routledge, Abingdon/New York.

Glørstad, Z.T. & Wenn, C.C. 2017. A view from the valley. Langeid in Setesdal, South Norway – A Viking-Age trade station along a mercantile highway. – Pp. 191–211 in: Glørstad, Z.T. & Loftsgarden, K. (eds.). Viking-Age Transformations. Trade, Craft and Resources in Western Scandinavia. Routledge, Abingdon/New York.

Gräslund, A.-S. 1980. The burial customs. A study of the graves on Björkö. Birka Untersuchungen und Studien IV. – Almqvist & Wiksell International, Stockholm.

Green, C. 2019. Cartography and quantum theory. In defence of distribution mapping. – Pp. 281–299 in: Gillings, M., Hacigüzeller, P., & Lock, G.R. (eds.). Re-mapping archaeology: Critical perspectives, alternative mappings. Routledge, Taylor & Francis Group, London/New York.

Grieg, S. 1929. Vikingetidens skattefund. Universitetets Oldsaksamlings Skrifter 2. – Oslo.

Grieg, S. 1933. Middelalderske byfund fra Bergen og Oslo. – Det norske Videnskaps-akademi, Oslo.

Grønnesby, G. & Ellingsen, E.G. 2012. Kaupangen på Steinkjer. – Pp. 31–46 in: Grønnesby, G. (ed.). Graver i veien: Arkeologiske undersøkelser E6 Steinkjer. Vitark 8. Akademia forlag, Trondheim.

Gundersen, I.M., Stamnes, A.A., Aasen, H., Kiersnowski, K., McLoughlin, A., Cannell R. & Dørum, S.S. 2023. Hvorfor Hundorp? Nytt lys på gudbrandsættens maktsenter. – Viking 87: 147–180.

Gustin, I. 1997. Islam, Merchants, or King? Who was behind the Manufacture of Viking Age Weights? – Pp. 163–77 in: Andersson, H., Carelli, P. & Ersgård, L. (eds.). Visions of the Past. Trends and Traditions in Swedish Medieval Archaeology. Lund Studies in Medieval Archaeology 19. Riksantikvarieämbetet Arkeologiska undersökningar Skrifter 24. Central Board of National Antiquities, Stockholm.

Gustin, I. 2001. ”... och här strömnade den köplystna befolkningen samman”? Om 1900-talets synsätt på handel och varuutbytte i Birka. – Pp. 301–310 in: Andrén, A, Ersgård, L. & Wienberg, J. (eds). Från stad till land. En medeltidsarkeologisk resa tillägnad Hans Andersson. Lund Studies in Medieval Archaeology 29. Almqvist & Wiksell International, Stockholm.

Gustin, I. 2004. Mellan gåva och marknad. Handel, tillit och materiell kultur under vikingatid. Lund Studies in Medieval Archaeology 34. – Almqvist & Wiksell International, Stockholm.

Hansen, G. 2017. Domestic and exotic materials in early medieval Norwegian towns: an archaeological perspective on production, procurement and consumption. – Pp. 59–94 in: Glørstad, Z.T. & Loftsgarden, K. (eds.). Viking-Age Transformations. Trade, Craft and Resources in Western Scandinavia. Routledge, Abingdon/New York.

Hansen, G. & Storemyr, P. 2017. A Versatile Resource – The Procurement and Use of Soapstone in Norway and the North Atlantic Region. – Pp. 9–28 in: Hansen, G. & Storemyr, P. (eds.). Soapstone in the North. Quarries, Products and People 7000 BC – AD 1700. UBAS 9. The University of Bergen, Bergen.

Hansen, L.I. 1999. Politiske og religiøse sentra i Nord-Norge. Sentrumsfunksjoner i en flerkulturell kontekst. – Pp. 71–108 in: Drobin, U. (ed.). Religion och samhälle i det förkristna Norden: ett symposium. Odense Universitetsforlag, Odense.

Hedeager, L. 2017. Arkeologi kort fortalt. – Pax Forlag A/S, Oslo.

Hedeager, L. & Forseth, L. (eds.) 2015. Dalemfunnet. Norske oldfunn 30. – Kulturhistorisk musem, Universitetet i Oslo, Oslo.

Hedenstierna-Jonson, C. 2022. Internationell handel, tidiga städer och nätverksriken. – Situnde Dei 2022: 74–77.

Heen-Pettersen, A.M. 2014. Insular artefacts from Viking-Age burials from mid-Norway. A review of contact between Trøndelag and Britain and Ireland. – Internet Archaeology, 38. http://dx.doi.org/10.11141/ia.38.2.

Heen-Pettersen, A.M. 2021. Evidence of Viking trade and 'Danelaw' connections? Inset lead weights from Norway and the western Viking World. – Internet Archaeology 56. https://doi.org/10.11141/ia.56.10.

Heen Pettersen, A.M. 2022. *Farin vestir* and back: Social and Itinerary Perspectives on Insular objects in Viking-Age Norway. Doctoral theses at NTNU 2022:214. – NTNU, Trondheim.

Heldal, T. 2015. Perspectives on the characterization of ancient soapstone quarries. – Pp. 175–187 in: Indrelid, S., Hjelle, K.L. & Stene, K. (eds.). Exploitation of outfield resources – Joint Research at the University Museums of Norway. Universitetsmuseet i Bergen Skrifter 32. University Museum of Bergen, Bergen.

Helland, A. 1893. Tagskifere, heller og vekstene. Norges geologiske undersøgelse 10. – H. Aschehoug & Co., Kristiania.

Helland, A. 1898. Topografisk-Statistisk Beskrivelse over Søndre Trondhjems Amt. Norges Land og Folk topografisk-statistisk beskrevet XVI (1). – Olaf Norlis forlag, Kristiania.

Helland, A. 1907. Topografisk-Statistisk Beskrivelse over Nordlands Amt. Norges Land og Folk topografisk-statistisk beskrevet XVIII (1). – H. Aschehoug & CO. (W. Nygaard), Kristiania.

Helland, A. 1909. Topografisk-Statistisk Beskrivelse over Nordre Trondhjems Amt. Norges Land og Folk topografisk-statistisk beskrevet XVII (1). – H. Aschehoug & CO. (W. Nygaard), Kristiania.

Helland, A. 1911. Topografisk-Statistisk Beskrivelse over Romsdals Amt. Norges Land og Folk topografisk-statistisk beskrevet XV (1). – H. Aschehoug & CO. (W. Nygaard), Kristiania.

Helle, K. 2000. Handelens veier. – Pp. 157–177 in: Lund, N. (ed.). Viking og hvidekrist. Et internationalt symposium på Nationalmuseet om Norden og Europa i den sene vikingetid og tidligste middelalder. C.A. Reitzels Forlag, København.

Helle, K. 2009. Den primitivistiske vendingen i norsk historisk middelalderforskning. – Historisk tidsskrift 88: 571–609.

Hennius, A. 2018. Viking Age tar production and outland exploitation. – Antiquity, 92 365 (2018): 1349–1361. doi:10.15184/aqy.2018.22.

Hennius, A. 2022. Outland exploitation and the emergence of seasonal settlements. Bebyggelsehistorisk tidskrift, 79 (2022): 8–24.

Hennius, A., Gustavsson, R., Ljungkvist, J. & Spindler, L. 2018. Whalebone Gaming Pieces: Aspects of Marine Mammal Exploitation in Vendel and Viking Age Scandinavia. – European Journal of Archaeology 21(4): 612–631.

Hennius, A., Ljungkvist, J., Ashby, S.P., Hagan, R., Presslee, S., Christensen, T., Gustavsson, R., Peets, J. & Maldre, L. 2022. Late Iron Age Whaling in Scandinavia. – Journal of Maritime Archaeology (2023) 18: 1–22.

Hillesland, K. & Pedersen, M.G. 2014. Georadarundersøkelse: Utstein Gard og Utstein Kloster (ID87030). Mosterøyveien, Klosterøy, gnr. 254, bnr. 1 & 25. Stavanger Kommune, Rogaland. Oppdragsrapport 2024/01. – Arkeologisk museum, Universitetet i Stavanger, Stavanger.

Hodder, I. & Hutson, S. 2003. Reading the past. Current approaches to interpretation in archaeology. Third edition. – Cambridge University Press, Cambridge/New York/Melbourne/Madrid/Cape Town/Singapore/São Paulo.

Hodges, R. 1982. Dark age economics. The origins of towns and trade A.D. 600–1000. – St. Martin's Press, New York.

Hodges, R. 2012. Dark age economics. A new audit. – Bloomsbury, London/New York.

Hodges, R. & Whitehouse, D. 1983. Mohammed, Charlemagne & the origins of Europe. Archaeology and the Pirenne thesis. – Duckworth, London.

Holm, I., Innselset, S. & Øye, I. (eds.) 2005. 'Utmark': The Outfield as Industry and Ideology in the Iron Age and the Middle Ages. University of Bergen Archaeological Series International 1. – University of Bergen, Bergen.

Holm, O. 2015. Trading in Viking-Period Scandinavia – A Business Only for a Few? The Jämtland Case. – Viking and Medieval Scandinavia 11: 79–126.

Holm, O. 2017. The Use of Silver as a Medium of Exchange in Jämtland, c. 875–1050. – Pp. 42–58 in: Glørstad, Z.T. & Loftsgarden, K. (eds.). Viking-Age Transformations. Trade, Craft and Resources in Western Scandinavia. Routledge, Abingdon/New York.

Holmsen, A. 1940. Nye metoder innen en særskilt gren av norsk historieforskning. – Historisk Tidsskrift 32: 27–45.

Horne, T. 2022. A Viking Market Kingdom in Ireland and Britain. Trade Networks and the Importation of a Southern Scandinavian Silver Bullion Economy. – Routledge, London/New York.

Hårdh, B. 1978. Trade and money in Scandinavia in the Viking Age. – Meddelanden från Lunds universitets historiska museum 1977–1978: 157–171.

Hårdh, B. 2008. Hacksilver and ingots. – Pp. 95–118 in: Skre, D. (ed.). Means of Exchange. Dealing with Silver in the Viking Age. Kaupang Excavation Project Publication Series 2. Norske Oldfunn 23. Aaarhus University Press & The Kaupang Excavation Project, University of Oslo.

Hårdh, B. 2010. Viking Age Uppåkra. – Pp. 247–316 in: Hårdh, B. (ed.). Från romartida skalpeller till senvikingatida urnesspännen. Nya materialstudier från Uppåkra. ACTA ARCHAEOLOGICA LUNDENSIA SERIES IN 8°, No. 61. UPPÅKRASTUDIER 11. Kristianstads Boktryckeri AB, Kristianstad.

Indrelid, S., Hjelle, K.L. & Stene, K. (eds.) 2015. Exploitation of outfield resources – Joint Research at the University Museums of Norway. Universitetsmuseet i Bergen Skrifter 32. – University Museum of Bergen, Bergen.

Iversen, F. 2008. Eiendom, makt og statsdannelse. Kongsgårder og gods i Hordaland i yngre jernalder og middelalder. UBAS Nordisk 6. – Universitetet i Bergen, Bergen.

Jankuhn, H. 1950. Sechs Karten zum Handel des 10. Jahrhunderts im westlichen Ostseebecken. – Archaeologica geographica 1: 8–16.

Jankuhn, H. 1977a. Das Bronzegiesserhandwerk in Haithabu. – Pp. 27–40 in: Gerevich, L. & Salamon, A. (eds.). La formation et le développement des métiers au Moyen Age (Ve – XIVe siècles). Colloque international organisé par le Comité des recherches sur les origines des villes tenu à Budapest, 25–27 octobre 1973. Akadémiai Kiadó, Budapest.

Jankuhn, H. 1977b. Einführung in die Siedlungsarchäologie. – Walter de Gruyter, Berlin/New York.

Jansson, I. 1985. Ovala spännbucklor. En studie av vikingatida standardsmycken med utgångspunkt från Björkö-fynden. Aun 7. – Uppsala University Institute of North European Archaeology, Uppsala.

Jensen, S. 1991. Ribe zur Wikingerzeit. – Den antikvariske Samling, Ribe.

Jørgensen, L. & Nørgård Jørgensen, A. 1997. Nørre Sandegård vest. A Cementery from the 6th–8th Centuries on Bornholm. Nordiske Fortidsminder Serie B 14. – Det kongelige nordiske oldskriftselskab, København.

Jørgensen, R. 2013. Forhistorisk jernproduksjon i Nord-Norge – Få, enkeltstående eksperimenter eller toppen av et isfjell? – Pp. 73–82 in: Rundberget, B., Larsen,

J.-H. & Borse Haraldsen, H.T. (eds.). Ovnstypologi og ovnskronologi i den nordiske jernvinna. Jernvinna i Oppland. Symposium på Kittilbu, 16.–18. juni 2009. Portal forlag, Kristiansand.

Jørgensen, R. 2019. A needle in the haystack – an infield survey for iron production sites. – Pp. 57–69 in: Stamnes, A.A., Risbøl, O. & Stenvik, L.F. (eds.). Investigating early iron production by modern remote sensing technologies. Transactions of The Royal Norwegian Society of Sciences and Letters 2019(2). DKNVS, Trondheim.

Kilger, C. 2008. Kaupang from Afar: Aspects of the Interpretation of Dirham Finds in Northern and Eastern Europe between the Late 8th and Early 10th Centuries. – Pp. 199–252 in: Skre, D. (ed.). Means of Exchange. Dealing with Silver in the Viking Age. Kaupang Excavation Project Publication Series 2. Norske Oldfunn 23. Aaarhus University Press & The Kaupang Excavation Project, University of Oslo.

Krokmyrdal, T.-K. 2021. Sandtorg. En vareutvekslingsplass gjennom 1100 år. – Primitive tider 23: 7–26.

Kyhlberg, O. 1980. Vikt och värde. Arkeologiska studier i värdemätning, betalingsmedel och metrologi under yngre järnålder. I Helgö. II Birka. Stockholm Studies in Archaeology 1. – Akademilitteratur, Stockholm.

Larsen, J.H. 1980. Vikingtids handelsplass i Valle, Setesdal. – Pp. 143–148 in: Johansen, Ø., Marstrander, L., Mikkelsen, E. & Rolfsen, P. (eds.). Festskrift til Sverre Marstrander på 70-årsdagen. Universitetets Oldsaksamlings skrifter. Ny rekke, vol. 3. Universitetets Oldsaksamling, Oslo.

Larsen, J.H. 1986. En mulig handelsplass i Grimstadområdet i vikingtiden. – Universitetets Oldsaksamling Årbok 1984/1985: 111–120.

Larsen, J.H. 2009. Jernvinneundersøkelser. Faglig program. Bind 2. Varia 78. – Kulturhistorisk museum, Fornminneseksjonen, Universitetet i Oslo, Oslo.

Larsen, M.F. 2014. Kystsamfunnet i jernalderen. – Pp. 118–161 in: Kolle, N. (ed.). Fangstmenn, fiskerbønder og værfolk. Norges fiskeri- og kysthistorie 1. Fagbok forlaget, Bergen.

Larson, K.A. 2019. Ancient and Islamic Glass. Selections from the Corning Museum of Glass. – The Corning Museum of Glass, Corning, New Zork.

Latour, B. 1987. Science in action. How to follow scientists and engineers through society. – Harvard University Press, Milton Keynes.

Latour, B. 2005. Reassembling the Social. An Introduction to Actor-Network-Theory. – Oxford University Press, Oxford.

Law, J. 1999. After ANT: complexity, naming and topology. – Pp. 1–14 in: Law, J. & Hassard, J. (eds.). Actor Network Theory and after. Blackwell Publishers, Oxford.

Law, J. 2009. Actor-Network Theory and material semiotics. – Pp. 141–158 in: Turner, B. (ed.). The New Blackwell Companion to Social Theory. Wiley-Blackwell, Newark.

Lebecq, S. 1992. The Frisian trade in the Dark Ages; a Frisian or a Frankish/Frisian trade? – Pp. 7–15 in: Carmiggelt, A. (ed.). Teksten van lezingen gehouden tijdens het symposium "Handel, handelsplaatsen en handelswaar vanaf de Vroege Middeleeuwen in de Lage Landen" te Rotterdam van 2 t/m 3 november 1990. Bureau Oudheidkundig Onderzoek van Gemeentewerken Rotterdam, Rotterdam.

Leland, E. 1993. Orkdalskjerka på Grøtte i 900 år. – Pp. 8–85 in: Orkdal menighetsråd (ed.). Orkdalskyrkja på Grøtte i 900 år. Fagerli Offset AS, Svorkmo.

Lennartsson, M. 1997/1998. Karolingische Metallarbeiten mit Pflanzenornamentik. – Offa 54/55: 431–619.

Lie, J. 1992. The Concept of Mode of Exchange. – American Sociological Review 57(4): 508–523.

Lie, R.O. 2021. En liten handels-/produksjonsplass på Nes i Lågendalen. Vikingtidens indre handelsruter. Vestfoldminne: 89–104.

Loftsgarden, K. 2017. Marknadsplassar omkring Hardangervidda – ein arkeologisk og historisk analyse av innlandets økonomi og nettverk i vikingtid og mellomalder. – Doctoral thesis in archaeology, University of Bergen, Bergen.

Loftsgarden, K. 2019. Ferd og frakt over fjell og vidde. – Primitive tider 21: 7–23.

Loftsgarden, K., Ramstad, M. & Stylegar, F.-A. 2017. The skeid and other assemblies in the Norwegian "Mountain Land". – Pp. 232–249 in: Glørstad, Z.T. & Loftsgarden, K. (eds.). Viking-Age Transformations. Trade, Craft and Resources in Western Scandinavia. Routledge, Abingdon/New York.

Loftsgarden, K. & Loftsgarden, O. 2022. Jernvinnebygdene Rauland og Møsstrond. – Pp. 89–114 in: Loftsgarden, K. & Rorgemoen, D. (eds.). Eidsborgbryne. Utmarksressurs og handelsvare i vikingtid og mellomalder. Museumsforlaget, Trondheim.

Loftsgarden, K. & Mjærum, A. 2025. Utmarksriket. Telemark i perioden 400–1400. – Dreyers Forlag, Oslo.

Lorange, A.L. 1889. Den yngre jernalders sværd. Et bidrag til vikingetidens historie og teknologi. – Bergens Museum, Bergen.

Lossius, S.M. 1977. Kleberkarmaterialet fra Borgund. Arkeologiske avhandlinger 1. – Universitetet i Bergen, Historisk museum, Bergen.

Lund, N. 1983. Ottar og Wulfstan. To rejsebeskrivelser fra vikingetiden. Oversat og kommenteret af Niels Lund med bidrag af Ole Crumlin Pedersen, Peter Sawyer og Christine F. Fell. – Vikingeskibshallen i Roskilde, Roskilde.

Magnus, B. 1974. Fisker eller bonde? Undersøkelser av hustufter på ytterkysten. – Viking 38: 68–108.

Magnus, O. 1976. Historia om de nordiska folken 4. – Gidlunds, Stockholm.

Maixner, B. 2004. Die tierstilverzierten Metallarbeiten der Wikingerzeit aus Birka unter besonderer Berücksichtigung des Borrestils. – Pp. 9–203 in: Müller-Wille, M. (ed.). Zwischen Tier und Kreuz. Untersuchungen zur wikingerzeitlichen Ornamentik im Ostseeraum. Beiträge von Birgit Maixner, Sunhild Kleingärtner u. Florian Westphal. Studien zur Siedlungsgeschichte und Archäologie der Ostseegebiete Band 4. Wachholtz Verlag, Neumünster.

Maixner, B. 2005. Die gegossenen kleeblattförmigen Fibeln der Wikingerzeit aus Skandinavien. Universitätsforschungen zur prähistorischen Archäologie Band 116. – In Kommission bei Dr. Rudolf Habelt GmbH, Bonn.

Maixner, B. 2010. Haithabu – Fernhandelszentrum zwischen den Welten. Begleitband zur Ausstellung im Wikinger Museum Haithabu. – Archäologisches Landesmuseum in der Stiftung Schleswig-Holsteinische Landesmuseen Schloss Gottorf, Schleswig.

Maixner, B. 2014. Die Begegnung mit dem Süden: Fränkische Rangzeichen und ihre Rezeption im wikingerzeitlichen Skandinavien. – Pp. 85–132 in: Hofmann, K.P., Kamp, H. & Wemhoff, M. (eds.). Die Wikinger und das Fränkische Reich. Identitäten zwischen Konfrontation und Annäherung. MittelalterStudien des Instituts zur interdisziplinären Erforschung des Mittelalters und seines Nachwirkens, Paderborn, 29. Wilhem Fink, Paderborn.

Maixner, B. 2015a. Missingen/Åkeberg i Østfold – en storgård fra jernalderen med tilknyttet håndverkssenter. – Fornvännen 110(1): 27–42.

Maixner, B. 2015b. Én lov – ulik forvaltningspolitikk. Om norsk forvaltningspraksis rundt privat metallsøking i pløyejord og dens konsekvenser. – Fornvännen 110(3): 201–213.

Maixner, B. 2020a. Connected by water, no matter how far. Viking Age central farms at the Trondheimsfjorden, Norway, as gateways between waterscapes and landscapes. – Archäologische Informationen 43: 289–308.

Maixner, B. 2020b. *Sæheimr: Just a Settlement by the Sea? Dating, Naming Motivation and Function of an Iron Age Maritime Place Name in Scandinavia. – Journal of Maritime Archaeology 15(1): 5–39. doi:10.1007/s11457-019-09250-z.

Maixner, B. 2021a. The landscape of Urnes: settlement, communication, and resources in the Viking and Early Middle Ages. – Pp. 179–195 in: Ambrose, K., Murray, G. & Andås, M.S. (eds.). Urnes Stave Church and Its Global Connections. Studies in the Visual Cultures of the Middle Ages (SVCMA) 18. Brepols Publisher, Turnhout.

Maixner, B. 2021b. Urban market production and coastal trade in the early Viking Age: A study of eighth-century AD 'blue period' millefiori beads in central and northern Norway. – Journal of Urban Archaeology 4: 167–191.

Maixner, B. 2022a. Doppsko og spenne fra vikingtiden. – Pp. 244–248 in: Cadamarteri, J.P., Reed, I. & Pedersen, B.A. (eds.). Torvet i Trondheim. Museumsforlaget, Trondheim.

Maixner, B. 2022b. The Vesterfjellet hillfort on the island of Jøa on the coast of central Norway: Point of lookout or refuge? – Pp. 181–194 in: Ibsen, T., Ilves, K., Maixner, B., Messal, S. & Schneeweiß, J. (eds.). Fortifications in their Natural and Cultural Landscape: From Organising Space to the Creation of Power. Schriften des Archäologischen Landesmuseums. Ergänzungsreihe 15. Habelt-Verlag, Bonn.

Maixner, B. 2023. Gjemt og aldri hentet. En ny sølvskatt fra vikingtiden fra Kongshaugplatået ved Stjørdal. – SPOR 2023(1): 4–10.

Maixner, B. 2026. Implications of recent metal detector finds for the interpretation of King Øystein's Harbour in Agdenes, Norway. – Fornvännen 121(1): 23–36.

Maixner, B. in press. Mosaic eye beads between Abbasids and Vikings. – Journal of Glass Studies 67, 2025.

Maixner, B. & Hellan, T.M. 2024. Viking Period Trade and Communication in the Vinjefjord and Hemnfjord Areas, in Light of Topography, Place Names, Silver Coins and Imported Beads. – Pp. 113–128 in: Sauvage, R. (ed.). From Life to Death in Iron Age and Medieval Vinjefjord. Cappelen Damm Forskning, Oslo. doi: 10.23865/noasp.218.ch4 License: CC BY-NC 4.

Majchczack, B., Wunderlich, T. & Wilkens, D. 2020. Die nordfriesischen Inseln im 8. Jahrhundert. Aktuelle Grabungsergebnisse von Handelsplätzen auf der Insel Föhr, Kr. Nordfriesland. – Arkæologi i Slesvig / Archäologie in Schleswig 18: 89–104.

Marstrander, S. 1962. Et nytt vikingetidsfunn fra Romsdal med vesteuropeiske importsaker. – Viking 26: 123–159.

Martens, I. 1988. Jernvinna på Møsstrond i Telemark. En studie i teknikk, bosetning og økonomi. Norske Oldfunn XIII. – Universitetets Oldsaksamling, Oslo.

Mauss, M. 1969. The Gift. Forms and Functions of Exchange in Archaic Societies. – Cohen & West Ltd, London.

Mehler, N. 2015. Marine trade and transport related crafts and their actors – people without archaeology? – Pp. 360–374 in: Hansen, G., Ashby, S. & Baug, I. (eds.). Everyday Products in the Middle Ages. Crafts, Consumption and the Individual in Northern Europe c. 800–1600. Oxbow Books, Oxford.

Meling, T. 2023. Et finsmedverksted fra tidlig vikingtid på Sømme ved Hafrsfjord. – Viking 87: 101–128.

Mikkelsen, E. 1994. Fangstprodukter i vikingtidens og middelalderens økonomi. Organisering av massefangst av villrein i Dovre. Universitetets Oldsaksamlings Skrifter 18. – Universitetets Oldsaksamling, Oslo.

Moesgaard, J.C. 2023. Passiv akkumulering eller aktivt omløb? Brug af sølv i vikingetiden i lyset af enkeltfund af mønter, betalingssølv og vægtlodder. – Fornvännen 118(4): 239–258.

Myhre, B. 1993. The Beginning of the Viking Age – some current archaeological problems. – Pp. 182–204 in: Faulkes, A. & Perkins, R. (eds.). Viking revaluations.

Viking Society Centenary Symposium 14–15 May 1992. Viking Society for Northern Research. University College London, London.

Müller-Boysen, C. 1990. Kaufmannsschutz und Handelsrecht im frühmittelalterlichen Nordeuropa. – Karl Wachholtz Verlag, Neumünster.

Müller-Wille, M. 1982. Zwei karolingische Schwerter aus Mittelnorwegen. – Studien zur Sachsenforschung 3: 101–154.

Nielssen, A.R. 2016. Early Commercial Fisheries and the Interplay Among Farm, Fishing Station and Fishing Village in North Norway. – Pp. 42–49 in: Barrett, J.H. & Orton, D.C. (eds.). Cod and Herring: The Archaeology and History of Medieval Sea Fishing. Oxbow Books, Oxford.

Nilsen, G. 2017. Surplus Production and Marine Resource Use in the North Norwegian Iron Age. – The International Journal of Nautical Archaeology 46(2): 231–252. https://doi.org/10.1111/1095-9270.12237.

Nordeide, S.W. 2019. Fiskeeksport fra Sør- og Midt-Norge i vikingtid? – Pp. 72–86 in: Berge, R. & Henriksen, M.M. (eds.). Arkeologi og kulturhistorie fra norskekysten til Østersjøen. Festskrift til professor Birgitta Berglund. NTNU Vitenskapsmuseet, Institutt for arkeologi og kulturhistorie og Museumsforlaget, Trondheim.

Norseng, P.G. 2000. Fra farmannen Ottar til hansakjøpmannen Bertram Bene. Synspunkter på kilde- og metodeproblemer i studiet av handel. – Collegium Medievale 13: 11–77.

Näsman, U. 1978. Die Herstellung von Glasperlen, – Pp. 124–33 in: Bencard M. (ed.). Wikingerzeitliches Handwerk in Ribe. Eine Übersicht. Acta archaeologica 49. Brill, København.

Näsman, U. 2000. Exchange and politics: the eighth–early ninth century in Denmark. – Pp. 35–68 in: Lyse Hansen, I. & Wickham, C. (eds.). The Long Eighth Century: Production, Distribution and Demand. Brill, Leiden.

Nørgård Jørgensen, A. 1999. Waffen und Gräber. Typologische und chronologische Studien zu skandinavischen Waffengräbern 520/30 bis 900 n.Chr. Nordiske Fortidsminder Serie B 17. – Det kongelige nordiske oldskriftselskab, København.

Olsen, B. 1997. Fra ting til tekst. Teoretiske perspektiv i arkeologisk forskning. – Universitetsforlaget, Oslo.

Ögren, A., Hedenstierna-Jonson, C., Ljungkvist, J., Raffield, B. & Price, N. 2022. New institutional economics in Viking studies. Visualising immaterial culture. – Archaeological Dialogues 29: 172–187. doi:10.1017/S138020382200023X.

Ørsnes, M. 1966. Form og stil i Sydskandinaviens yngre germanske jernalder. Nationalmuseets Skrifter Arkæologisk-historisk række XI. – Nationalmuseet, København.

Østerås, B. 2017. Slipsteinsberget Soapstone Vessel Quarry. Home Production or Professional Craft? – Pp. 153–163 in: Hansen, G. & Storemyr, P. (eds.). Soapstone

in the North. Quarries, Products and People 7000 BC – AD 1700. UBAS 9. The University of Bergen, Bergen.

Øye, I. 2005. Introduction. – Pp. 9–20 in: Holm, I., Innselset, S. & Øye, I. (eds.). 'Utmark': The Outfield as Industry and Ideology in the Iron Age and the Middle Ages. University of Bergen Archaeological Series International 1. University of Bergen, Bergen.

Paulsen, P. 1933. Studien zur Wikinger-Kultur. Forschungen zur Vor- und Frühgeschichte aus dem Museum vorgeschichtlicher Altertümer in Kiel 1. – Karl Wachholz Verlag, Neumünster.

Pedersen, U. 2008. Weights and balances. – Pp. 119–95 in: Skre, D. (ed.). Means of Exchange. Dealing with Silver in the Viking Age. Kaupang Excavation Project Publication Series 2. Norske Oldfunn 23. Aaarhus University Press & The Kaupang Excavation Project, University of Oslo.

Pedersen, U. 2016. Into the Melting Pot. Non-ferrous Metalworkers in Viking-period Kaupang. Kaupang Excavation Project Publication Series 4. Norske Oldfunn 25. – Aarhus University Press & Unn Pedersen, Aarhus.

Pedersen, U. 2017. Viking-period non-ferrous metalworking and urban commodity production. – Pp. 124–138 in: Glørstad, Z.T. & Loftsgarden, K. (eds.). Viking-Age Transformations. Trade, Craft and Resources in Western Scandinavia. Routledge, Abingdon/New York.

Petersen, J. 1919. De norske vikingesverd. En typologisk-kronologisk studie over vikingetidens vaaben. Videnskapsselskapets Skrifter II. Hist.-filos. klasse 1. – I kommission hos Jacob Dybwad, Kristiania.

Petersen, J. 1928. Vikingetidens smykker. Stavanger museums skrifter 2. – Stavanger Museum, Stavanger.

Petersen, J. 1951. Vikingetidens redskaper. Skrifter utgitt av det Norske Videnskaps-Akademi i Oslo II. Hist.-filos. Klasse 4. – Jacob Dybwad, Oslo.

Pilø, L. 1990. Early soapstone vessels in Norway from the Late Bronze Age to the Early Roman Iron Age. – Acta Archaeologica 60: 87–100.

Pilø, L. & Finstad, E. 2021. Ancient reindeer hunting in Oppland, Norway. – Pp. 81–104 in: Betts, A. & van Pelt, W.P. (eds.). The Gazelle's Dream. Game Drives of the Old and New Worlds. Sydney University Press, Sydney.

Pilø, L., Finstad, E., Ramsey, C.B., Martinsen, J.R.P., Nesje, A., Solli, B., Wangen, V., Callanan, M. & Barrett, J.H. 2018. The chronology of reindeer hunting on Norway's highest ice patches. R. Soc. open sci. 5: 171738. doi:10.1098/rsos.171738.

Pilø, L., Finstad, E. & Barrett, J.H. 2020. Crossing the ice: an Iron Age to medieval mountain pass at Lendbreen, Norway. – Antiquity 94(374): 437–454.

Pilø, L., Finstad, E., Wammer, E.U., Post-Melbye, J.R., Rømer, A.H., Andersen, Ø.R. & Barrett, J.H. 2022. On a Mountain High: Finding and Documenting Glacial

Archaeological Sites During the Anthropocene. – Journal of Field Archaeology 47(3): 149–163.

Polanyi, K. 1957. The Economy as Instituted Process. – Pp. 243–270 in: Polanyi, K., Arensberg, C.M. & Pearson, H.W. (eds.). Trade and Market in Early Empires. The Free Press, New York.

Polanyi, K. 1963. Ports of Trade in Early Societies. – The Journal of Economic History 23(1): 30–45.

Price, D.T., Arcini, I. Gustin, C., Drenzel, L., & Kalmring, S. 2018. Isotopes and Human Burials at Viking Age Birka and the Mälaren Region, East Central Sweden. – Journal of Anthropological Archaeology 49: 19–38. doi:10.1016/j.jaa.2017.10.002.

Qvistgaard, S.S. & Sindbæk, S.M. 2023. Bone- and antlerworking. – Pp. 283–317 in: Sindbæk, S.M. (ed.). Northern Emporium. Vol. 2. The networks of Viking-age Ribe. Ribe Studier 3. Jutland Archaeological Society Publications 123. Jutland Archaeological Society, Højbjerg.

Raja, R. & Sindbæk, S.M. 2018. Through the Looking Glass: Glass, High-Definition Archaeology and Urban Networks in the 8th Century CE from North to South. – Pp. 289–295 in: Raja, R. & Sindbæk, S.M. (eds.). Urban Network Evolutions: Towards a high-definition archaeology. Aarhus University Press, Aarhus.

Ramstad, M. 2011. Bjørkum. Et innblikk i nye økonomiske og sosiale strukturer i tidlig vikingtid. – RISS 2: 40–53.

Renfrew, C. 1977. Alternative models for exchange and spatial distribution. – Pp. 71–90 in: Earle, T.K. & Ericson J.E. (eds.). Exchange systems in prehistory. Studies in Archaeology. Academic Press, New York/San Francisco/ London.

Renfrew, C. & Bahn, P. 1996. Archaeology: Theories, Methods, and Practice. 2nd ed. – Thames and Hudson, New York.

Resi, H.G. 1979. Die Specksteinfunde aus Haithabu. Mit Beiträgen von Else Augdahl, Björg E. Alfsen und Olav H. J. Christie. – Pp. 9–167 in: Schietzel, K. (ed.). Berichte über die Ausgrabungen in Haithabu 14. Karl Wachholtz Verlag, Neumünster.

Resi, H.G. 1987. Reflections on Viking Age Local Trade in Stone products. – Pp. 95–102 in: Knirk, J.E. (ed.). Proceedings of the Tenth Viking Congress, Larkollen, Norway, 1985. Universitetets Oldsaksamlings Skrifter Ny rekke 9. Universitetets Oldsaksamling, Oslo.

Resi, H.G. 2005. Archaeological Finds of Jet from Norway. Signs of continuous contact westwards in the Viking and Medieval Periods? – Collegium Medievale 18: 86–105.

Resi, H.G. 2011a. Amber and Jet. – Pp. 107–128 in: Skre, D. (ed.). Things from the Town. Artefacts and Inhabitants in Viking-age Kaupang. Kaupang Excavation Project Publication Series 3. Norske Oldfunn 24. Aarhus University Press & the Kaupang Excavation Project, University of Oslo.

Resi, H.G. 2011b. Gemstones: Cornelian, Rock Crystal, Amethyst, Fluorspar and Garnet. – Pp. 143–166 in: Skre, D. (ed.). Things from the Town. Artefacts and Inhabitants in Viking-age Kaupang. Kaupang Excavation Project Publication Series 3. Norske Oldfunn 24. Aarhus University Press & the Kaupang Excavation Project, University of Oslo.

Risbøl, O. 1994. Socialøkonomiske aspekter ved vikingetidens klæberstenshandel i Sydskandinavien. – LAG 5: 115–161.

Risbøl, O., Sauvage, R., Østmoe, E., Sait, S.T.L. & Asimakopoulo, A. 2021. Eldre jernalders tjæreproduksjon ut av tåken. Om tidlig norsk tjæreproduksjon med utgangspunkt i et funn på Averøy i Møre og Romsdal. – Viking 85: 63–88.

Risbøl, O. & Stenvik, L.F. 2022. Tjæreproduksjon i myrmiler – en særegen midtnorsk tradisjon. – Heimen 59(2): 113–133.

Risbøl, O., Hennius, A. & Hennius, J.S. 2025. Socio-Economic Aspects of Early Iron Age Wood Tar Production in Scandinavia. – Journal of Field Archaeology 50(7): 642–652. doi:10.1080/00934690.2025.2525682.

Rolseth, P.O. 1947. Kvernfjellet. Selbu og Tydals historielag. – Brødrene Tengs, Oslo.

Rohwer, B. 1937. Der friesische Handel im frühen Mittelalter. – Leipzig.

Rundberget, B. 2015. Late Iron Age (ca. AD 6/700–1000) – a white spot in the iron extraction history? – Pp. 107–113 in: Indrelid, S., Hjelle, K.L. & Stene, K. (eds.). Exploitation of outfield resources – Joint Research at the University Museums of Norway. Universitetsmuseet i Bergen Skrifter 32. University Museum of Bergen, Bergen.

Rundberget, B. 2017. Tales of the Iron Bloomery. Ironmaking in Southeastern Norway - Foundation of Statehood c. AD 700–1300. The Northern World 76. – Brill, Leiden/Boston.

Rundkvist, M. 2010. Domed oblong brooches of Vendel Period Scandinavia. Ørsnes types N & O and similar brooches, including transitional types surviving into the Early Viking Period. – Pp. 127–199 in: Hårdh, B. (ed.). Från romartida skalpeller till senvikingatida urnesspännen. Nya materialstudier från Uppåkra. Acta Archaeologica Lundensia series in 8°, No. 61. Uppåkrastudier 11. Kristianstads Boktryckeri AB, Kristianstad.

Rundkvist, M. 2024. The Dirham Background Radiation. – Fornvännen 119(2): 127–129.

Røstad, I.M. 2021. The Language of Jewellery. Dress-accessories and Negotiations of Identity in Scandinavia, c. AD 400–650/700. Norske Oldfunn 32. – Cappelen Damm Akademisk, Oslo.

Sanden, G.D. 2016. Villreinfangst in den sørlege delen av Midt-Norge – ein studie i fordelinga av bågastø, jordgravne og steinmura fangstgroper. – Viking 79: 53–74.

Sandnes, J. 1997. Vi og verden. Noen refleksjoner fra en norsk synsvinkel om lokal- og regionalhistorie i enkelte andre europeiske land. – Pp. 23–31 in: Braut, E. (ed.). Blikk på Lokalhistorie. Norsk lokalhistorie etter 1970, rapport frå eit jubileumsseminar. Skrifter fra NLI 33. Norsk lokalhistorisk institutt, Oslo.

Sandnes, J. 1981. Totalhistorie og mentalitetshistorie. Litt om fransk Annales-skole og norsk agrarhistorisk-lokalhistorisk tradisjon. – Heimen 18: 561–569.

Sandnes, J. & Stemshaug, O. 1997. Norsk stadnamnleksikon. – Det Norske Samlaget, Oslo.

Shetelig, H. 1912. Kar av kleberstein fra jernalderen. – Pp. 49–73 in: Brøgger, A.W. (ed.). Oldtiden, tidsskrift for Norsk forhistorie. A.W. Brøggers boktrykkeri, Stavanger.

Shetelig, H. 1927. Tidsbestemmelser i vikingetidens stilhistorie. – Finska Fornminnesföreningens tidskrift 36: 106–112.

Shetelig, H. 1946. Smykker av jet i norske vikingefunn. – Bergens Museums Årbok 1944: 1–14.

Schøning, G. 1979. Reise som giennem en deel af Norge i de aar 1773, 1774, 1775 paa hans majestets kongens bekostning er giort og beskreven af Gerhard Schøning. Første bind. – Tapir, Trondheim.

Serning, I. 1966. Dalarnas järnålder. – Kungl. Vitterhets Historie och Antikvitets Akademien, Stockholm.

Sigurðsson, J.V. 1999. Norsk historie 800–1300. Frå høvdingmakt til konge- og kyrkjemakt. – Det Norske Samlaget, Oslo.

Sindbæk, S.M. 2005. Ruter og rutinisering. Vikingetidens fjernhandel i Nordeuropa. – Multivers Academic. København.

Sindbæk, S.M. 2007. The Small World of the Vikings: Networks in Early Medieval Communication and Exchange. – Norwegian Archaeological Review 40(1): 59–74.

Sindbæk, S.M. 2011a. Silver Economies and Social Ties: Long-Distance Interaction, Long-Term Investment – and Why the Viking Age Happened. – Pp. 41–65 in: Graham-Campbell, J. & Sindbæk, S.M. (eds.). Silver Economies, Monetisation and Society in Scandinavia, ad 800–1100. Aarhus University Press, Aarhus.

Sindbæk, S.M. 2011b. Urban Crafts and Oval Brooches. Style, Innovation and Social Networks in Viking Age Towns. – Pp. 409–423 in: Sigmundsson, S. (ed.). Viking Settlements and Viking Society: Papers from the Proceedings of the Sixteenth Viking Congress, Reykjavík and Reykholt, 16–23 August 2009. Proceedings of the Viking Congresses Vol. 2011. University of Iceland Press, Reykjavik.

Sindbæk, S.M. 2013. Broken links and black boxes: material affiliations and contextual network synthesis in the Viking world. – Pp. 71–95 in: Knappett, C. (ed.).

Network Analysis in Archaeology: New Approaches to Regional Interaction. Oxford University Press, Oxford.

Sindbæk, S.M. (ed.) 2021. Northern Emporium I. The Making of Viking-age Ribe. Jutland Archaeological Society Publications 122. – Jutland Archaeological Society, Højbjerg.

Sindbæk, S.M. 2023a. Glass beads and beadmaking. – Pp. 239–281 in: Sindbæk, S.M. (ed.). Northern Emporium. Vol. 2. The networks of Viking-age Ribe. Ribe Studier 3. Jutland Archaeological Society Publications 123. Jutland Archaeological Society, Højbjerg.

Sindbæk, S.M. 2023b. An urban network of the Viking Age. – Pp. 411–429 in: Sindbæk, S.M. (ed.). Northern Emporium. Vol. 2. The networks of Viking-age Ribe. Ribe Studier 3. Jutland Archaeological Society Publications 123. Jutland Archaeological Society, Højbjerg.

Sindbæk, S.M. (ed.) 2023c. Northern Emporium. Vol. 2. The networks of Viking-age Ribe. Ribe Studier 3. Jutland Archaeological Society Publications 123. – Jutland Archaeological Society, Højbjerg.

Sindbæk, S.M. 2023d. Excavating Ribe's networks. – Pp. 9–19 in: Sindbæk, S.M. (ed.). Northern Emporium. Vol. 2. The networks of Viking-age Ribe. Ribe Studier 3. Jutland Archaeological Society Publications 123. Jutland Archaeological Society, Højbjerg.

Sindbæk, S.M. & Barfod, G.H. 2023. Stone and shell products. – Pp. 87–101 in: Sindbæk, S.M. (ed.). Northern Emporium. Vol. 2. The networks of Viking-age Ribe. Ribe Studier 3. Jutland Archaeological Society Publications 123. Jutland Archaeological Society, Højbjerg.

Sjøvold, T. 1974. The iron age settlement of arctic Norway. A study in the expansion of European Iron Age culture within the arctic circle II. Late Iron Age (Merovingian and Viking Periods). Tromsø Museums skrifter 10(2). – Universitetsforlaget, Oslo.

Skaare, K. 1976. Coins and Coinage in Viking-Age Norway. – Universitetsforlaget, Oslo.

Skar, B., Rosvold, J., Berthling, I., Callanan, M., Dahle, K., Finstad, E., Jarrett, L., Post-Melbye, J.R., Norberg, E., Peacock, E., Pilø, L., Ramstad, M., Vatne, G. & Wickler, S. 2022. Glasialarkeologi i Norge. NTNU Vitenskapsmuseet arkeologisk rapport 2022-2. – NTNU Vitenskapsmuseet, Trondheim.

Skjølsvold, A. 1961. Klebersteinsindustrien i vikingetiden. – Universitetsforlaget, Oslo.

Skjølsvold, A. 1969a. En fangstmanns grav i Trysil-fjellene. – Viking 33: 139–199.

Skjølsvold, A. 1969b. Et keltertids klebersteinsbrudd fra Kvikne. – Viking 33: 201–238.

Skre, D. 2000. Kaupang – et handelssted? Om handel og annen vareutveksling i vikingtid. – Collegium Medievale 13: 165–176.

Skre, D. (ed.) 2007. Kaupang in Skiringssal. Kaupang Excavation Project Publication Series 1. Norske Oldfunn 22. – Aarhus University Press & the Kaupang Excavation Project, University of Oslo.

Skre, D. (ed.) 2008a. Means of Exchange. Dealing with Silver in the Viking Age. Kaupang Excavation Project Publication Series 2. Norske Oldfunn 23. – Aaarhus University Press & The Kaupang Excavation Project, University of Oslo.

Skre, D. 2008b. Post-substantivist Towns and Trade AD 600–1000. – Pp. 327–342 in: Skre, D. (ed.). Means of Exchange. Dealing with Silver in the Viking Age. Kaupang Excavation Project Publication Series 2. Norske Oldfunn 23. Aaarhus University Press & The Kaupang Excavation Project, University of Oslo.

Skre, D. 2008c. Dealing with Silver: Economic Agency in South-Western Scandinavia AD 600–1000. – Pp. 343–355 in: Skre, D. (ed.). Means of Exchange. Dealing with Silver in the Viking Age. Kaupang Excavation Project Publication Series 2. Norske Oldfunn 23. Aaarhus University Press & The Kaupang Excavation Project, University of Oslo.

Skre, D. (ed.) 2011a. Things from the Town. Artefacts and Inhabitants in Viking-age Kaupang. Kaupang Excavation Project Publication Series 3. Norske Oldfunn 24. – Aarhus University Press & the Kaupang Excavation Project, University of Oslo.

Skre, D. 2011b. Commodity money, Silver and Coinage in Viking-Age Scandinavia. – Pp. 67–91 in: Graham-Campbell, J. & Sindbæk, S.M. (eds.). Silver Economies, Monetisation and Society in Scandinavia, AD 800-1100. Aarhus University Press, Aarhus.

Skre, D. 2011c. The Inhabitants: Origins and Trading Connexions. – Pp. 417–441 in: Skre, D. (ed.). Things from the Town. Artefacts and Inhabitants in Viking-age Kaupang. Kaupang Excavation Project Publication Series 3. Norske Oldfunn 24. Aarhus University Press & the Kaupang Excavation Project, University of Oslo.

Skre, D. 2013. Money and trade in Viking-Age Scandinavia. – Pp. 75–87 in: Bogucki, M. & Rębkowski, M. (eds.). Economies, Monetisation and Society in the West Slavic Lands 800–1200 AD. Wolińskie Spotkania Mediewistyczne II. Institute of Archaeology and Ethnology Polish Academy of Sciences, Szczecin.

Skre, D. 2017. Viking-Age economic transformations. – Pp. 1–27 in: Glørstad, Z.T. & Loftsgarden, K. (eds.). Viking-Age Transformations. Trade, Craft and Resources in Western Scandinavia. Routledge, Abingdon/New York.

Skre, D. (ed.) 2018. Avaldsnes: A Sea-Kings' Manor in First-Millennium Western Scandinavia, Reallexikon der germanischen Altertumskunde – Ergänzungsbände 104. – De Gruyter, Berlin.

Šmit, Ž., Knific, T., Jezeršek, D. & Istenic, J. 2012. Analysis of Early Medieval Glass Beads – Glass in the Transition Period. – Nuclear Instruments and Methods in Physics Research B 278: 8–14.

Sode, T. 2004. Glass Beadmaking Technology. – Pp. 83–102 In: Bencard, M., Kann Rasmussen, A. & Brinch Madsen, H. (eds.). Ribe Excavations 1970–76, vol. 5. Jutland Archaeological Society Publications 46. Sydjysk Universitetsforlag, Esbjerg.

Sode, T. & Feveile, C. 2002. Segmenterede metalfolierede glasperler og blæste hule glasperler med metalbelægning fra markedspladsen i Ribe. – By, marsk og geest 14: 5–14.

Sognnes, K. 1988. Sentrumsdannelser i Trøndelag: en kvantitativ analyse av gravematerialet fra yngre jernalder. – Riksantikvaren, Utgravningskontoret for Trondheim, Trondheim.

Sognnes, K. 1991. Sentrumsdannelser i Trøndelag i yngre jernalder. – Pp. 251–261 in: Wik, B. (ed.). Sentrum – periferi. Sentra og sentrumsdannelser gjennom førhistorisk og historisk tid. Den 18. nordiske arkeologkongress, Trondheim 28.8.–4.9.1989. Gunneria 64(1). Universitetet i Trondheim Vitenskapsmuseet, Trondheim.

Sognnes, K. 2009. Living on the edge of the world: Liminal settlements along the coast of Trøndelag, Norway. – Pp. 103–115 in: Holm, I., Stene, K. & Svensson, E. (eds.). Liminal Landscapes. Beyond the Concepts of 'Marginality' and 'Periphery'. Oslo Arkeologiske Serie 11. Unipub and Institute for Archeology, Conservation and History, University of Oslo, Oslo.

Sognnes, K. 2015. Glimt fra kystens kulturlandskap i Trøndelag. – Heimen 52: 205–217.

Solberg, B. 2012 [2003]. Jernalderen i Norge Ca. 500 f.Kr. – 1030 e.Kr. – Cappelen Akademisk Forlag, Oslo.

Stalsberg, A. 2008. Herstellung und Verbreitung der VLFBERTH-Schwertklingen. Eine Neubewertung. – Zeitschrift für Archäologie des Mittelalters 36: 89–118.

Star, B., Boessenkool, S., Gondek, A.T., Nikulina, E.A., Hufthammer, A.K., Pampoulie, C., Knutsen, H., André, C., Nistelberger, H.M., Dierking, J., Petereit, C., Heinrich, D., Jakobsen, K.S., Stenseth, N.C., Jentoft, S. & Barrett, J.H. 2017. Ancient DNA reveals the Arctic origin of Viking Age cod from Haithabu, Germany. – PNAS 114(34): 9152–9157. doi.org/10.1073/pnas.1710186114 (2017).

Stene, K. & Wangen, V. 2017. The Uplands. The deepest of forests and the highest of mountains – resource exploitation and landscape management in the Viking Age and early Middle Ages in southern Norway. – Pp. 160–187 in: Glørstad, Z.T. & Loftsgarden, K. (eds.). Viking-Age Transformations. Trade, Craft and Resources in Western Scandinavia. Routledge, Abingdon/New York.

Stenvik, L.F. 2001. Skei – et maktsenter fram fra skyggen. Vitark 2. Acta Archaelogica Nidrosiensia. – Vitenskapsmuseet, NTNU, Trondheim.

Stenvik, L.F. 1997. Ironproduction in Mid-Norway, an answer to local demand? – Studien zur Sachsenforschung 10: 253–265.

Stenvik, L.F. 2005. Jernalderen. Et nytt metall – En ny epoke. – Pp. 107–18 in: Bull, I. (ed.). Landskapet blir landsdel. Fram til 1350. Trøndelags historie 1. Tapir, Trondheim.

Stenvik, L.F. 2014. Jernframstilling i Midt-Norge. – Pp. 45–59 in: Røskaft, M. (ed.). Byen og kunnskapen. DKNVS Skrifter 2025(2). Fagbokforlaget, Trondheim.

Stenvik, L.F. 2015a. Fra malm og skog til jern og stål. – Heimen 52: 219–232.

Stenvik, L.F. 2015b. The bloomery in Mid-Norway: A retrospective glance and foresight. – Pp. 85–98. in: Indrelid, S., Hjelle, K.L. & Stene, K. (eds.). Exploitation of outfield resources – Joint Research at the University Museums of Norway. Universitetsmuseet i Bergen Skrifter 32. University Museum of Bergen, Bergen.

Steppuhn, P. 1998. Die Glasfunde von Haithabu, – Pp. 11–199 in: Schietzel, K. (ed.). Berichte über die Ausgrabungen in Haithabu 32. Wachholtz Verlag, Neumünster.

Steuer, H. 1987a. Der Handel der Wikingerzeit zwischen Nord- und Westeuropa aufgrund archäologischer Zeugnisse. – Pp. 113–197 in: Düwel, K., Jankuhn, H., Siems, H. & Timpe, D. (eds.). Der Handel der Karolinger- und Wikingerzeit. Untersuchungen zu Handel und Verkehr der vor- und frühgeschichtlichen Zeit in Mittel- und Nordeuropa, vol. 4. Vandenhoeck & Ruprecht, Göttingen.

Steuer, H. 1987b. Gewichtsgeldwirtschaften im frühgeschichtlichen Europa – Feinwaagen und Gewichte als Quellen zur Währungsgeschichte. – Pp. 405–527 in: Düwel, K., Jankuhn, H., Siems, H. & Timpe, D. (eds.). Der Handel der Karolinger- und Wikingerzeit. Untersuchungen zu Handel und Verkehr der vor- und frühgeschichtlichen Zeit in Mittel- und Nordeuropa, vol. 4. Vandenhoeck & Ruprecht, Göttingen.

Steuer, H. 1997. Waagen und Gewichte aus dem mittelalterlichen Schleswig. Funde des 11. bis 13. Jahrhunderts aus Europa als Quellen zur Handels- und Währungsgeschichte. Zeitschrift für Archäologie des Mittelalters Beiheft 10. – Rheinland-Verlag GmbH, Köln.

Stjernquist, B. 1967. Models of Commercial Diffusion in Prehistoric Times. Scripta Minora. Regia Societatis Humaniorum Litterarum Lundensis. 1965–1966:2. – CWK Gleerup, Lund.

Stjernquist, B. 1970. Zur Analyse von Verbreitungskarten. – Pp. 104–107 in: Filip, J. (ed.). Actes du VII□ Congrès International des Sciences Préhistoriques et Protohistoriques. Prague 21–27 août 1966. Academia, Praha.

Stjernquist, B. 1985. Methodische Überlegungen zum Nachweis von Handel aufgrund archäologischer Quellen. – Pp. 56–83 in: Düwel, K., Jankuhn, H., Siems, H. & Timpe, D. (eds.). Untersuchungen zu Handel und Verkehr der vor- und frühgeschichtlichen Zeit in Mittel- und Nordeuropa, 1. Methodische Grundlagen und Darstellungen zum Handel in vorgeschichtlicher Zeit und in der Antike. Bericht über die Kolloquien der Kommission für die Altertumskunde Mittel- und Nordeuropas in den Jahren 1980 bis 1983. Vandenhoeck & Ruprecht, Göttingen.

Storemyr, P. 2003. Stein til kvader og dekor i Trøndelags middelalderkirker – Geologi, europeisk innflytelse og tradisjoner. – Pp. 445–476 in: Imsen, S. (ed.). Ecclesia Nidrosiensis 1153–1537. Søkelys på Nidaroskirkens og Nidarosprovinsens historie. Tapir Akademisk Forlag, Trondheim.

Storemy, P. 2015. The medieval quarries at Sparbu: A Central Norwegian "little sister" of the Purbeck quarry landscape in England. – Pp. 141–154 in: Indrelid, S., Hjelle, K.L. & Stene, K. (eds.). Exploitation of outfield resources – Joint Research at the University Museums of Norway. Universitetsmuseet i Bergen Skrifter 32. University Museum of Bergen, Bergen.

Storemyr, P. & Heldal, T. 2002. Soapstone production through Norwegian history: geology, properties, quarrying, and use. – Pp. 359–369 in: Herrmann, J., Herz, N. & Newman, R. (eds.). ASMOSIA 5, Interdisciplinary Studies on Ancient Stone – Proceedings of the Fifth International Conference of the Association for the Study of Marble and Other Stones in Antiquity, Museum of Fine Arts, Boston, June 11–15, 1998. Archetype Publications, London.

Storemyr, P. Lundberg, N., Østerås, B. & Heldal, T. 2010. Arkeologien til Nidarosdomens middelaldersteinbrudd. – Pp. 238–267 in: Bjørlykke, K., Ekroll, Ø. & Syrstad Gran, B. (eds.). Nidarosdomen – ny forskning på gammel kirke. Nidaros Domkirkes Restaureringsarbeiders forlag, Trondheim.

Stylegar, F.-A. 2007. The Kaupang Cemeteries Revisited. – Pp. 65–101 in: Skre, D. (ed.). 2007. Kaupang in Skiringssal. Kaupang Excavation Project Publication Series 1. Norske Oldfunn 22. Aarhus University Press & the Kaupang Excavation Project, University of Oslo.

Stylegar, F.-A. 2009. Kaupangs omland og urbaniseringstendenser i norsk vikingtid. – Pp. 67–92 in: Brendalsmo, J., Eliassen F.-E. & Gansum, T. (eds.). Den urbane underskog. Strandsteder, utviklingssteder og småbyer i vikingtid, middelalder og tidlig nytid. Novus forlag, Oslo.

Sæther, S.B. 2005. Vegen framover. – Pp. 329–453 in: Aune, K. (ed.). Fosens historie. Fra istid til 1730. Fosen historieforlag, Orkanger.

Theuws, F. 2012a. A world of connections and peasant agency. – Pp. 180–186 in: Theuws, F. & van Haperen, M. (eds.). The Merowingian cementery of Bergeijk-Fazantlaan. Merowingian Archaeology in the Low Countries 1. Habelt-Verlag, Bonn.

Theuws, F. 2012b. River-based trade centres in early medieval northwestern Europe. Some 'reactionary' thoughts. – Pp. 25–45 in: Gelichi, S. & Hodges, R. (eds.). From one sea to another. Trading places in the European and mediterranean Early Middle ages. Proceedings of the International Conference Comacchio, 27th–29th March 2009. Brepols, Turnhout.

Tveiten, O. & Loftsgarden, K. 2017. The extensive iron production in Norway in the tenth to thirteenth century. A regional perspective. – Pp. 111–123 in: Glørstad, Z.T. & Loftsgarden, K. (eds.). Viking-Age Transformations. Trade, Craft and Resources in Western Scandinavia. Routledge, Abingdon/New York.

Ulbricht, I. 1978. Die Geweihverarbeitung in Haithabu. Die Ausgrabungen in Haithabu 7. – Wachholtz Verlag, Neumünster.

Undset, I. 1873. Indberetning om antikvariske undersøgelser i 1872. – Aarsberetning for 1872 fra Foreningen til norske Fortidsmindesmerkers Bevaring: 11–31.

Undset, I. 1874. Indberetning om Reiser og Undersøgelser i 1873. – Aarsberetning for 1874 fra Foreningen til norske Fortidsmindesmerkers Bevaring: 13–28.

Undset, I. 1874-77a. Indberetning til direktionen for det kgl. norske videnskabers-selskab om en med dets stipendium foretagen antikvarisk undersøgelsesreise i sommeren 1874. – Det Kongelige Norske Videnskabers Selskabs Skrifter i det 19. Aarhundrede 8: 17–36.

Undset, I. 1874-77b. Indberetning til direktionen for det kgl. norske videnskabers selskab om med selskabets understøttelse foretagne arkæologiske reiser i 1875. – Det Kongelige Norske Videnskabers Selskabs Skrifter i det 19. Aarhundrede 8: 89–100.

van den Hurk, Y., Sikström, F., Amkreutz, L., Bleasdale, M., Borvon, A., Ephrem, B., Fernández-Rodríguez, C., Gibbs, H.M.B., Jonsson, L., Lehouck, A., Cedeira, J.M., Meng, S., Monge, R., Moreno, M., Nabais, M., Nores, C., Pis-Millán, J.A., Riddler, I., Schmölcke, U., Segschneider, M., Speller, C., Vretemark, M., Wickler, S., Collins, M., Nadeau, M.-J. & Barrett, J.H. 2023. The prelude to industrial whaling: identifying the targets of ancient European whaling using zooarchaeology and collagen mass-peptide fingerprinting. – R. Soc. Open Sci. 10: 230741. doi:10.1098/rsos.230741.

Vangstad, H. 2017. From Numeric Data to Cultural History – A Typological and Chronological Analysis of Soapstone Vessels from the Medieval Bryggen Wharf in Bergen, Norway. – Pp. 185–205 in: Hansen, G. & Storemyr, P. (eds.). Soapstone in the North. Quarries, Products and People 7000 BC – AD 1700. UBAS 9. The University of Bergen, Bergen.

Vike, A.-K., Ringstad, D. & Strand, P.E. 2004. Jakt og fangst i Nesset. – Nesset fjellstyre, Eresfjord.

Vikstrand, P. 2013. Järnålderns bebyggelsenamn. Om bebyggelsesnamnens uppkomst och ålder i Mälarlandskapen. Skrifter utgivna av Institutet för språk och folkminnen. Namnarkivet i Uppsala Serie B, vol 13. – Institutet för språk och folkminnen, Namnarkivet i Uppsala, Uppsala.

Vinsrygg, S. 1979. Merovingartid i Nord-Noreg. Studie i utvalt materiale frå gravfunn. Arkeologiske avhandlinger fra Historisk museum i Bergen 2. – Historisk museum, Universitetet i Bergen, Bergen.

Wamers, E. 1985. Insularer Metallschmuck in wikingerzeitlichen Gräbern Nordeuropas. Untersuchungen zur skandinavischen Westexpansion. Offa-Bücher 56. – Karl Wachholtz Verlag, Neumünster.

Wickler, S. 2015. Soapstone in Northern Norway: Research status, production evidence and quarry survey results. – Pp. 117–128 in: Indrelid, S., Hjelle, K.L. &

Stene, K. (eds.). Exploitation of outfield resources – Joint Research at the University Museums of Norway. Universitetsmuseet i Bergen Skrifter 32. University Museum of Bergen, Bergen.

Wickler, S. 2016. The Centrality of Small Islands in Arctic Norway From the Viking Age to Recent Historic Period. – The Journal of Island and Coastal Archaeology 11: 171–194.

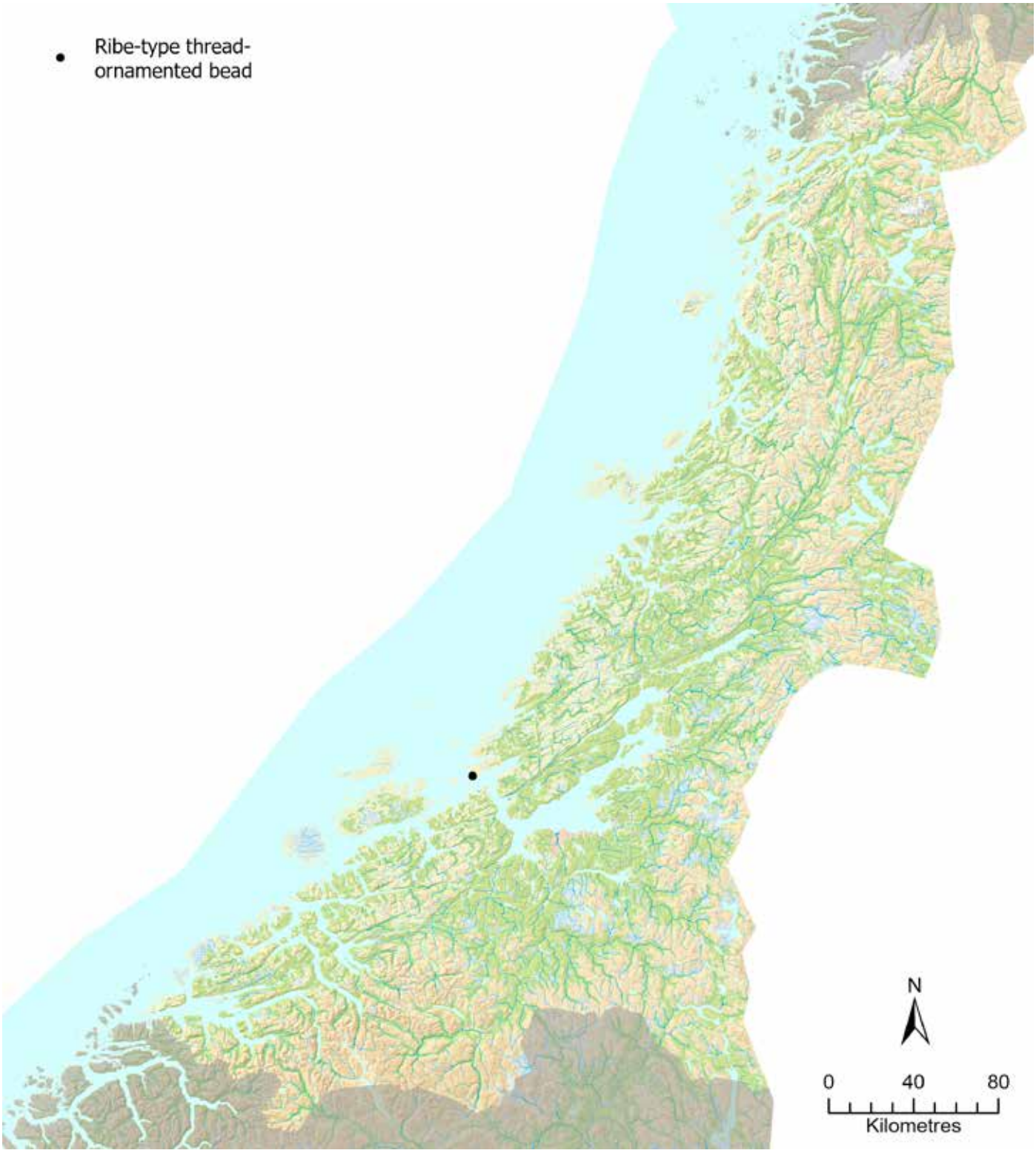
Wickstead, H. 2019. Cults of the distribution map. Geography, utopia and the making of modern archaeology. – Pp. 37–72 in: Gillings, M., Hacigüzeller, P., & Lock, G.R. (eds.). Re-mapping archaeology: Critical perspectives, alternative mappings. Routledge, Taylor & Francis Group, London/New York.

Wiechmann, R. 2001. Arabische Münzfunde des 8. bis 11. Jahrhunderts im Ostseeraum. – Pp. 169–186 in: Hübner, U., Kamlah, J. & Reinfandt, L. (eds.). Die Seidenstraße. Handel und Kulturaustausch in einem eurasiatischen Wegenetz. Asien und Afrika 3. EB-Verlag, Hamburg.

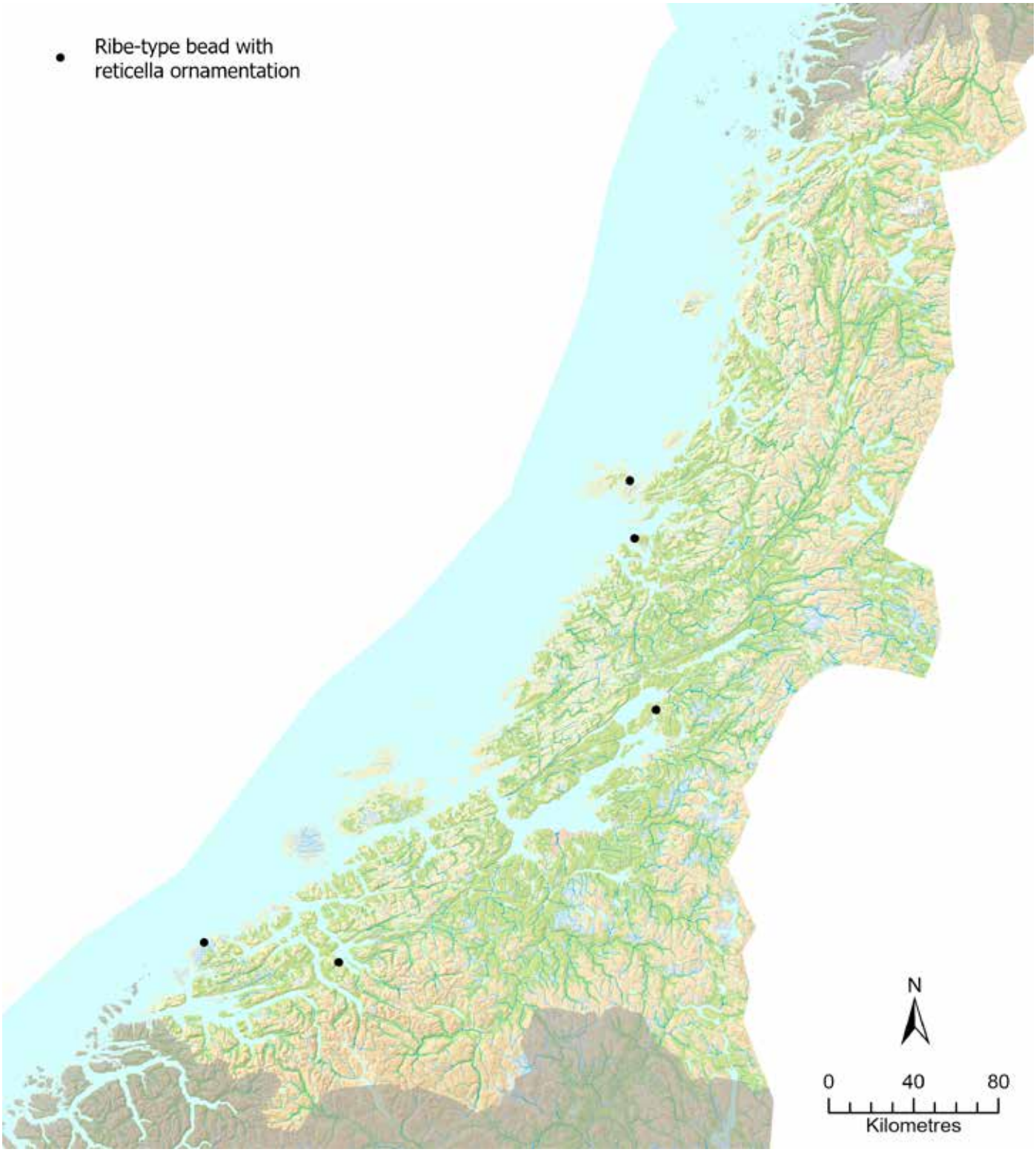
Wik, B. 1985. Jernalderen. – Pp. 172–264 in: Pettersen, K. & Wik, B. (eds.). Helgelands Historie Bind 1. Fra de eldste tider til middelalderens begynnelse ca. 1030. Helgeland Historielag, Mosjøen.

Zachrisson, I. 1976. Medeltida ekkorpilar? – Fornvännen 71: 117–120.

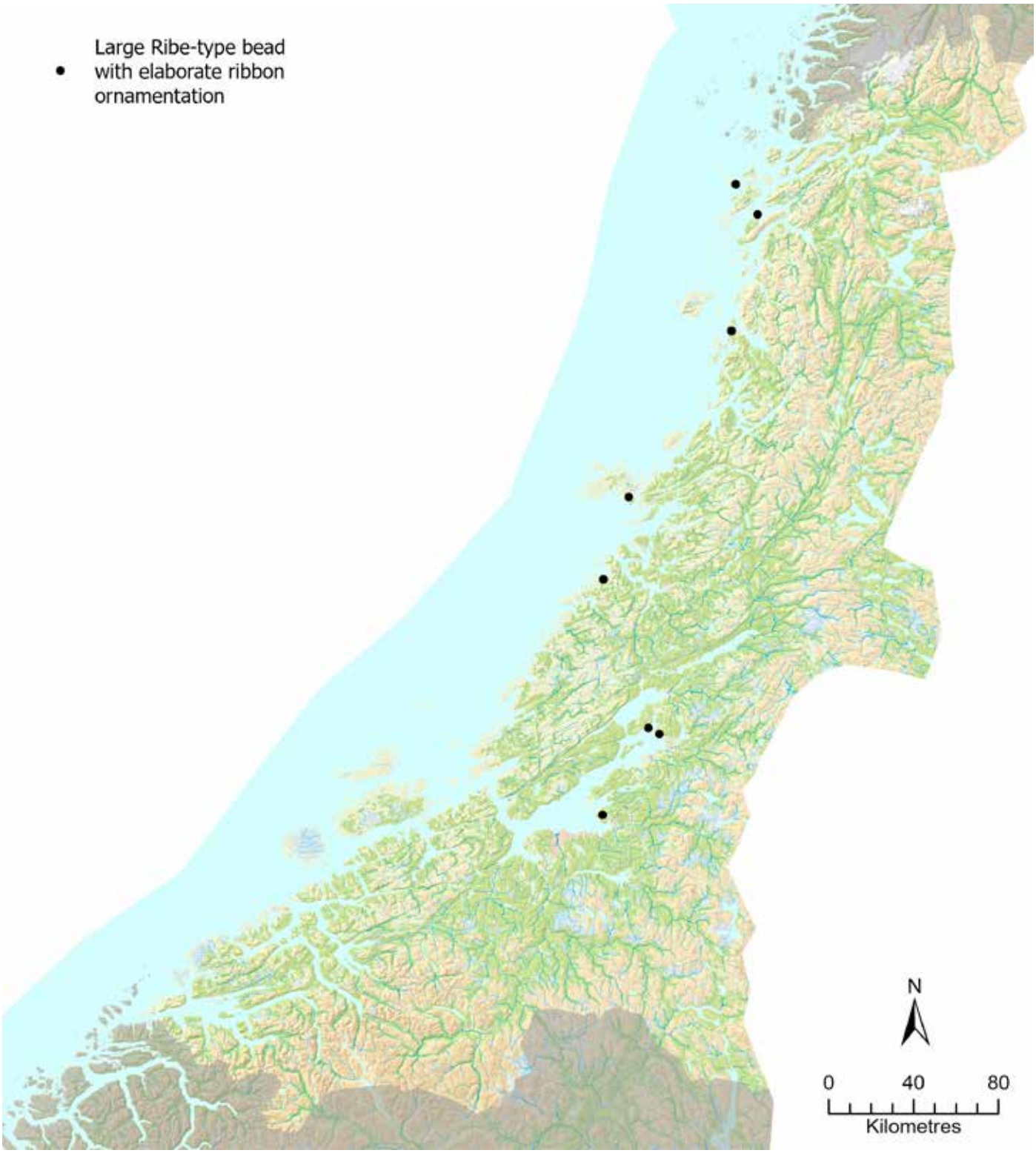
10 APPENDICES



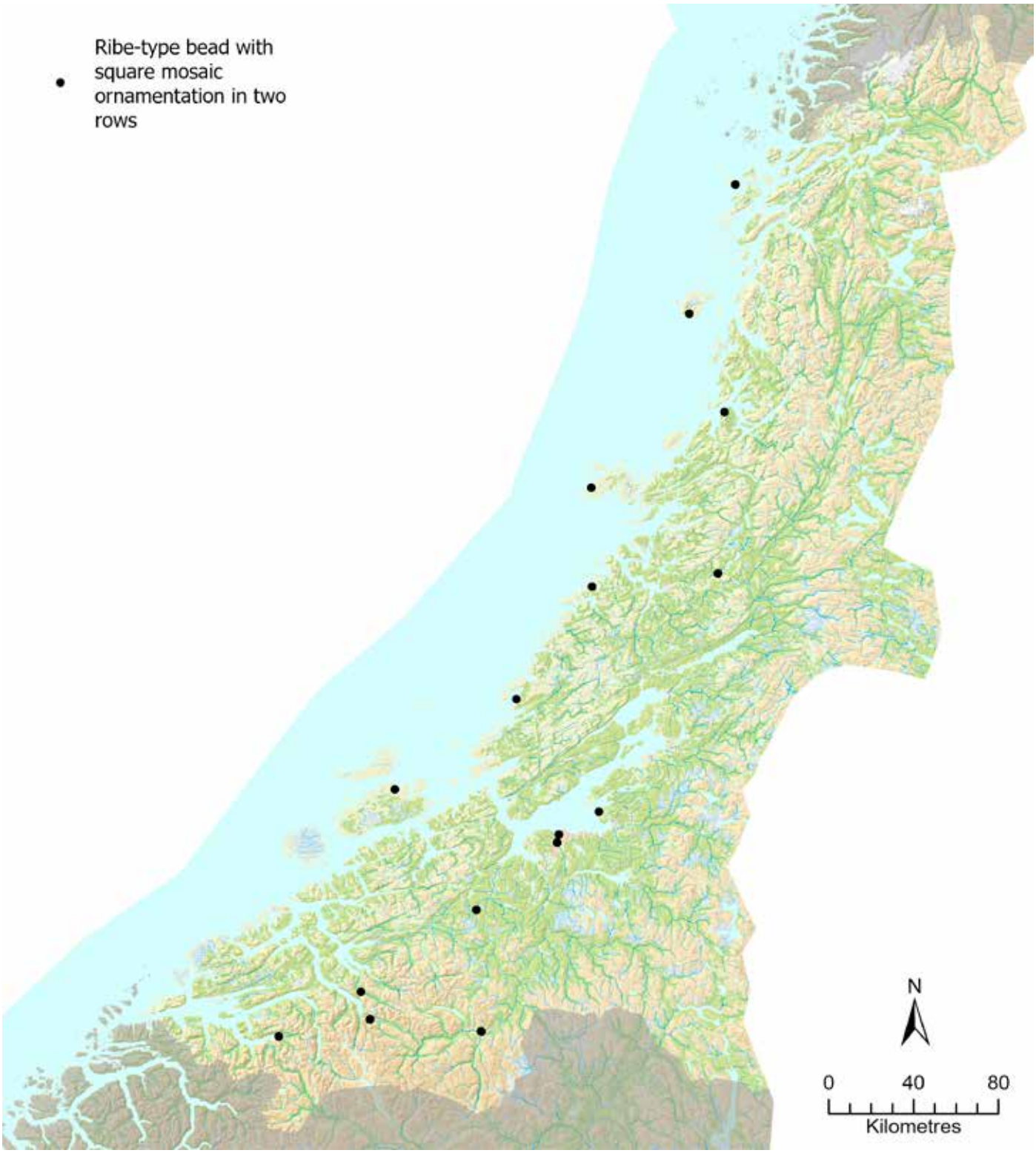
Appendix 1. Distribution of Ribe-type beads with thread-ornamentation in Central Norway.



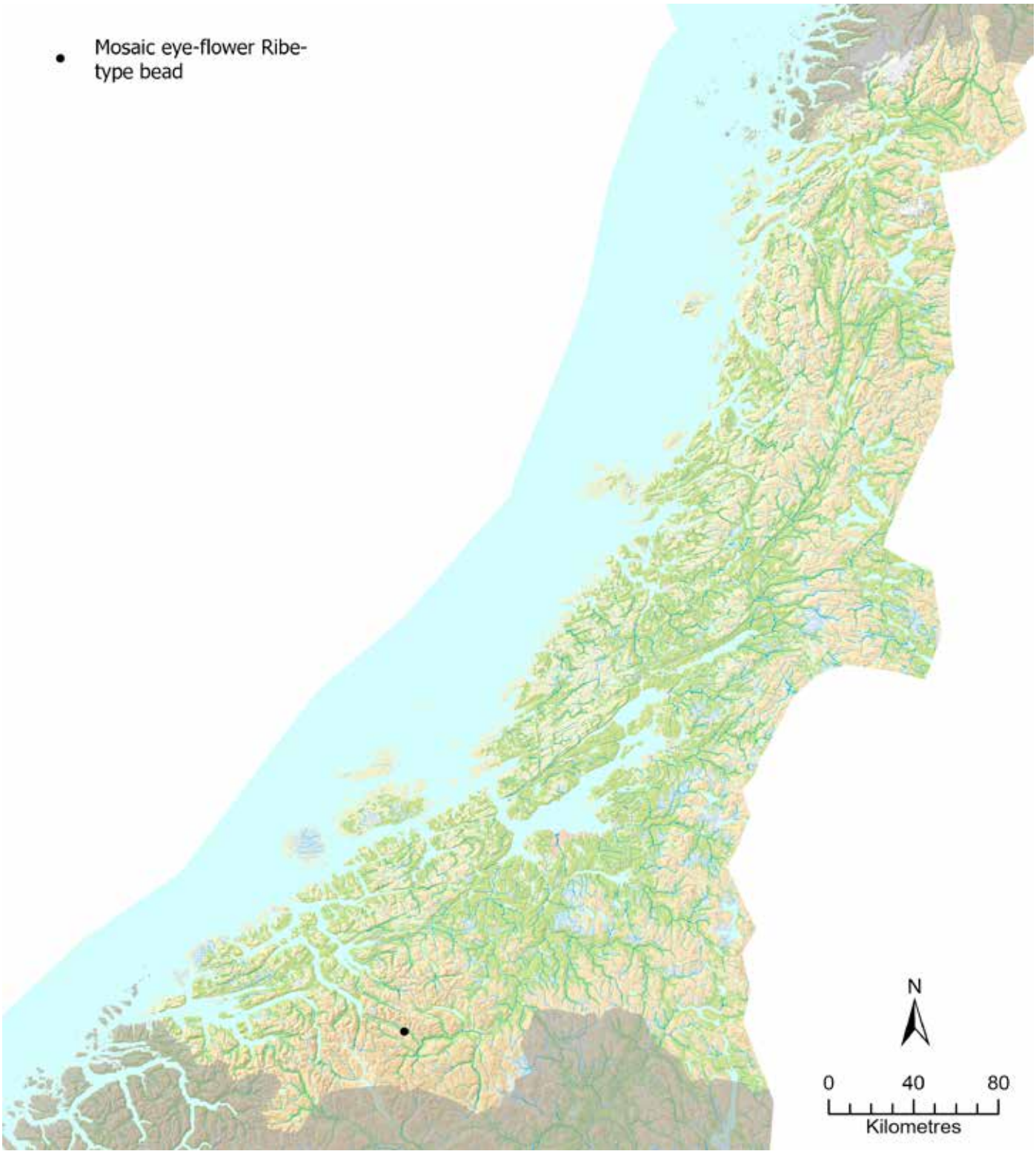
Appendix 2. Distribution of Ribe-type beads with reticella ornamentation in Central Norway.



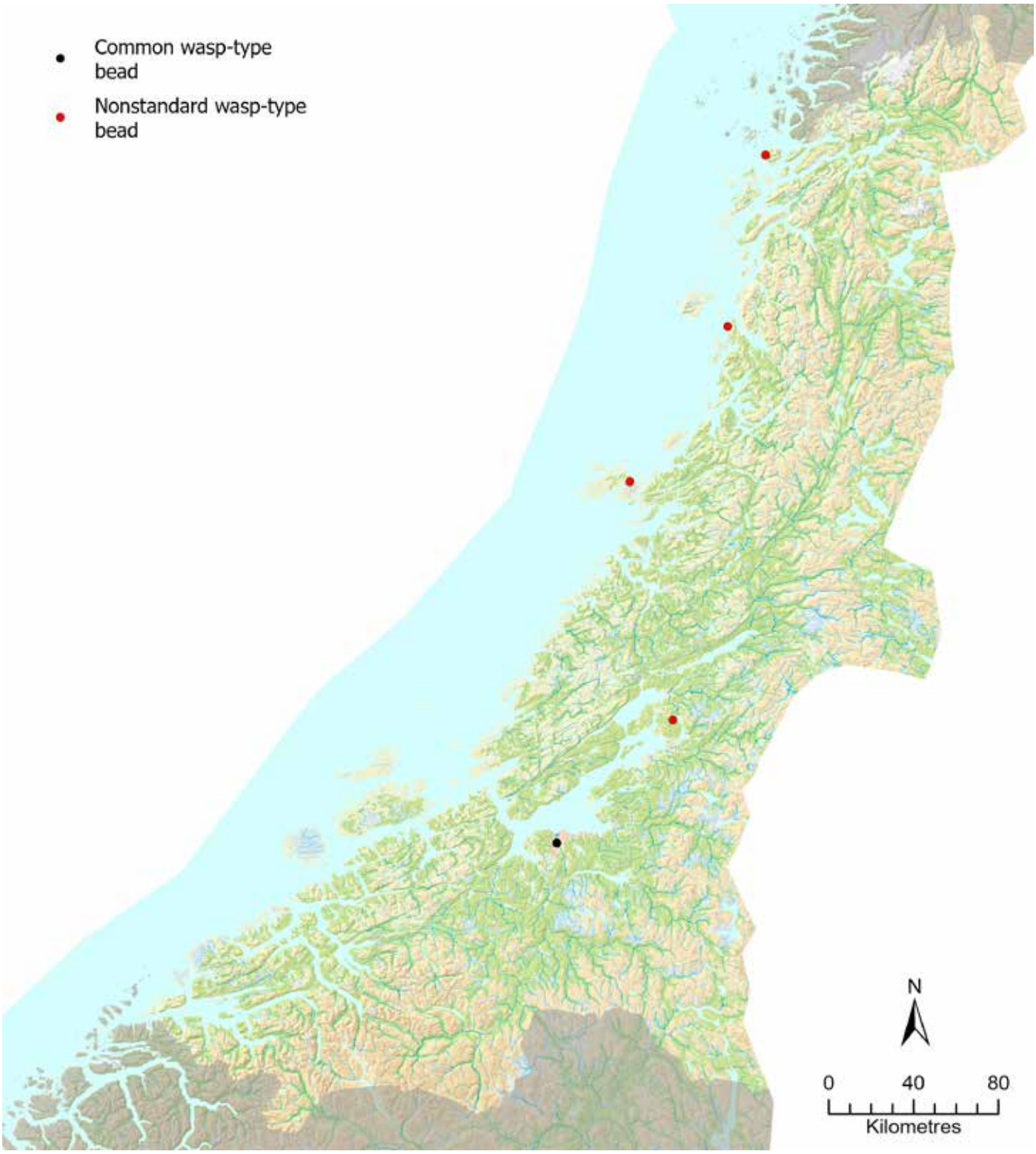
Appendix 3. Distribution of large Ribe-type beads with elaborate ribbon ornamentation in Central Norway.



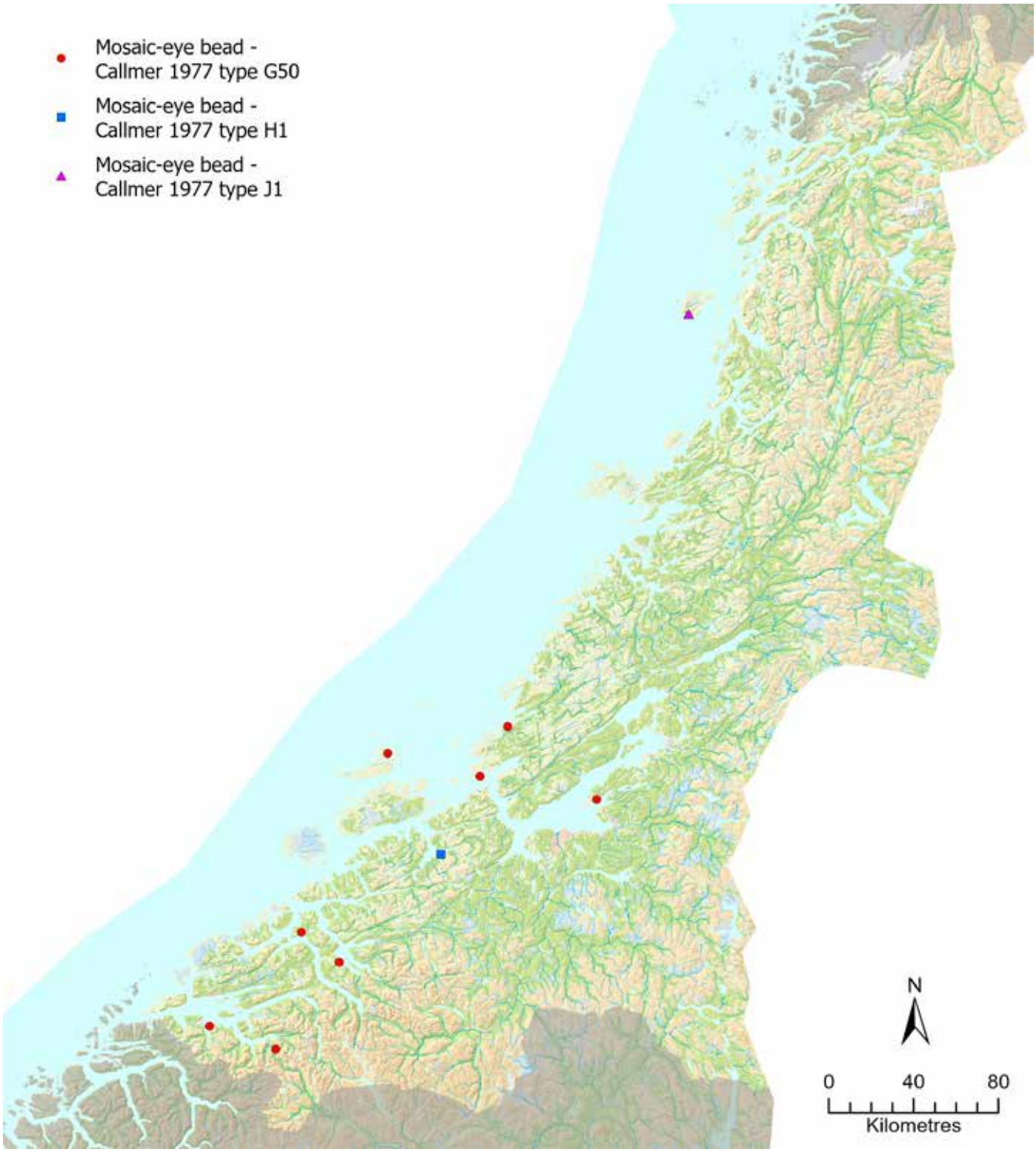
Appendix 4. Distribution of Ribe-type beads with square mosaic ornamentation in two rows in Central Norway.



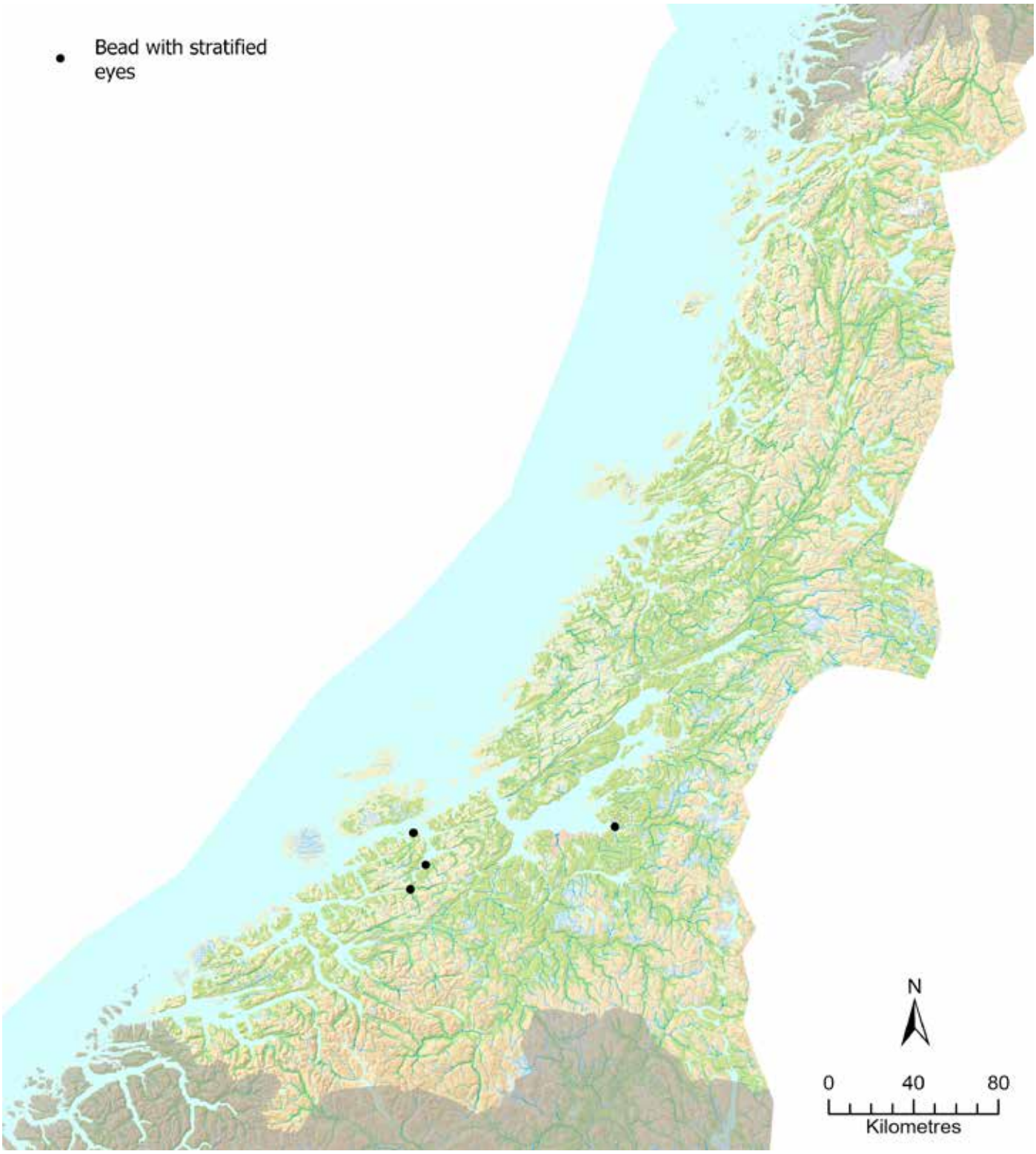
Appendix 5. Distribution of Ribe-type beads with mosaic eye-flowers in Central Norway.



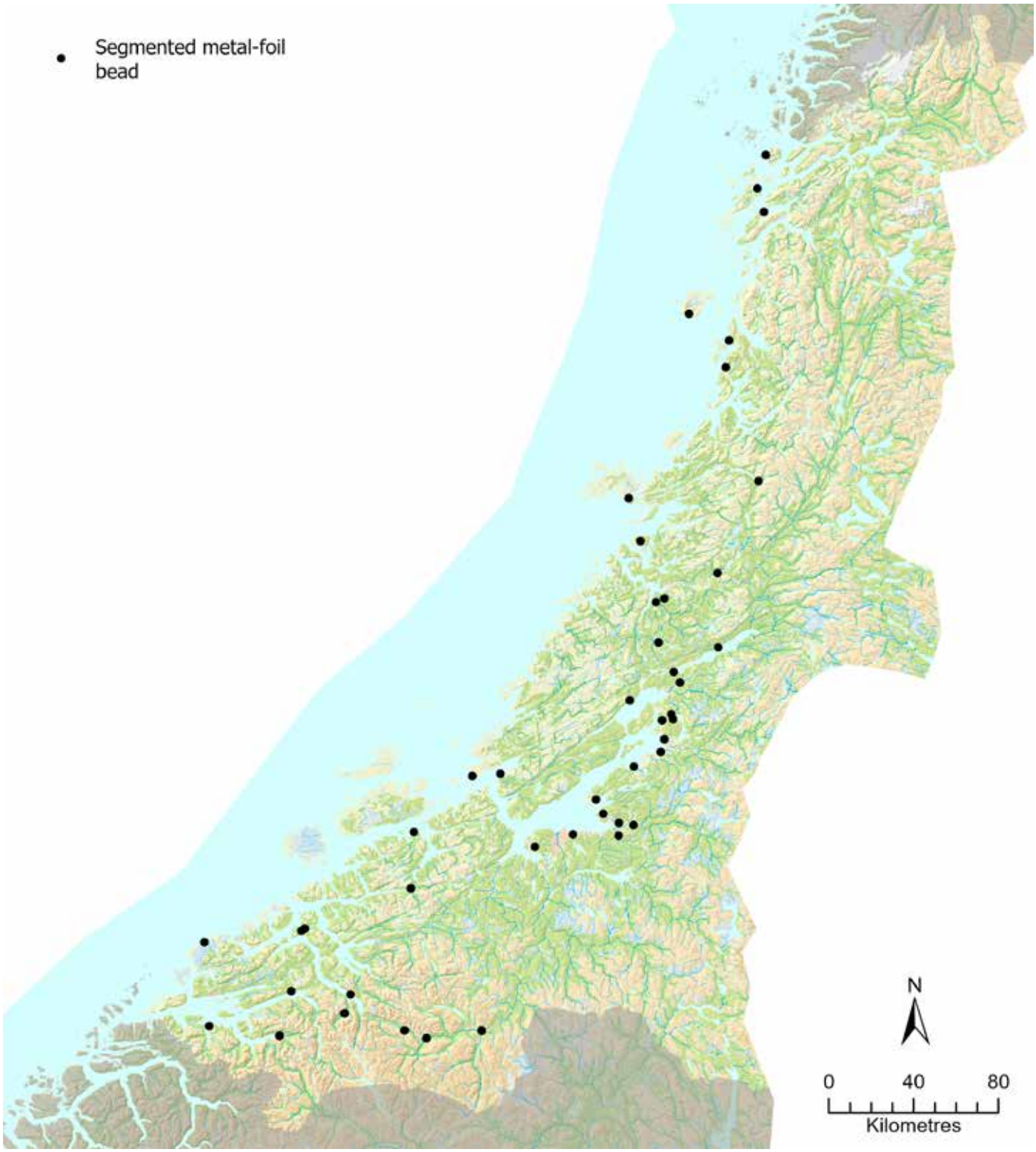
Appendix 6. Distribution of Wasp-type beads in Central Norway.



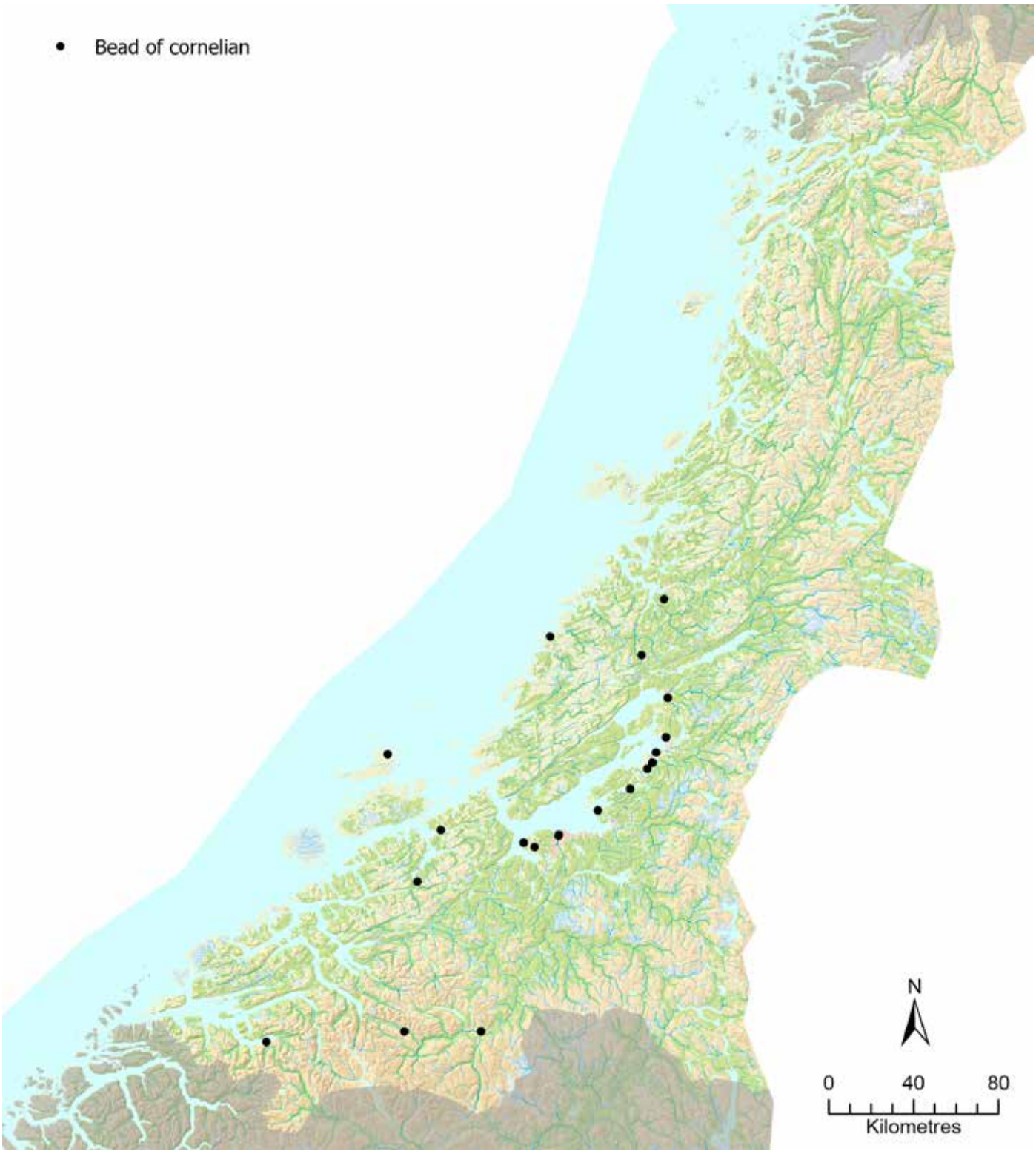
Appendix 7. Distribution of mosaic-eye beads in Central Norway.



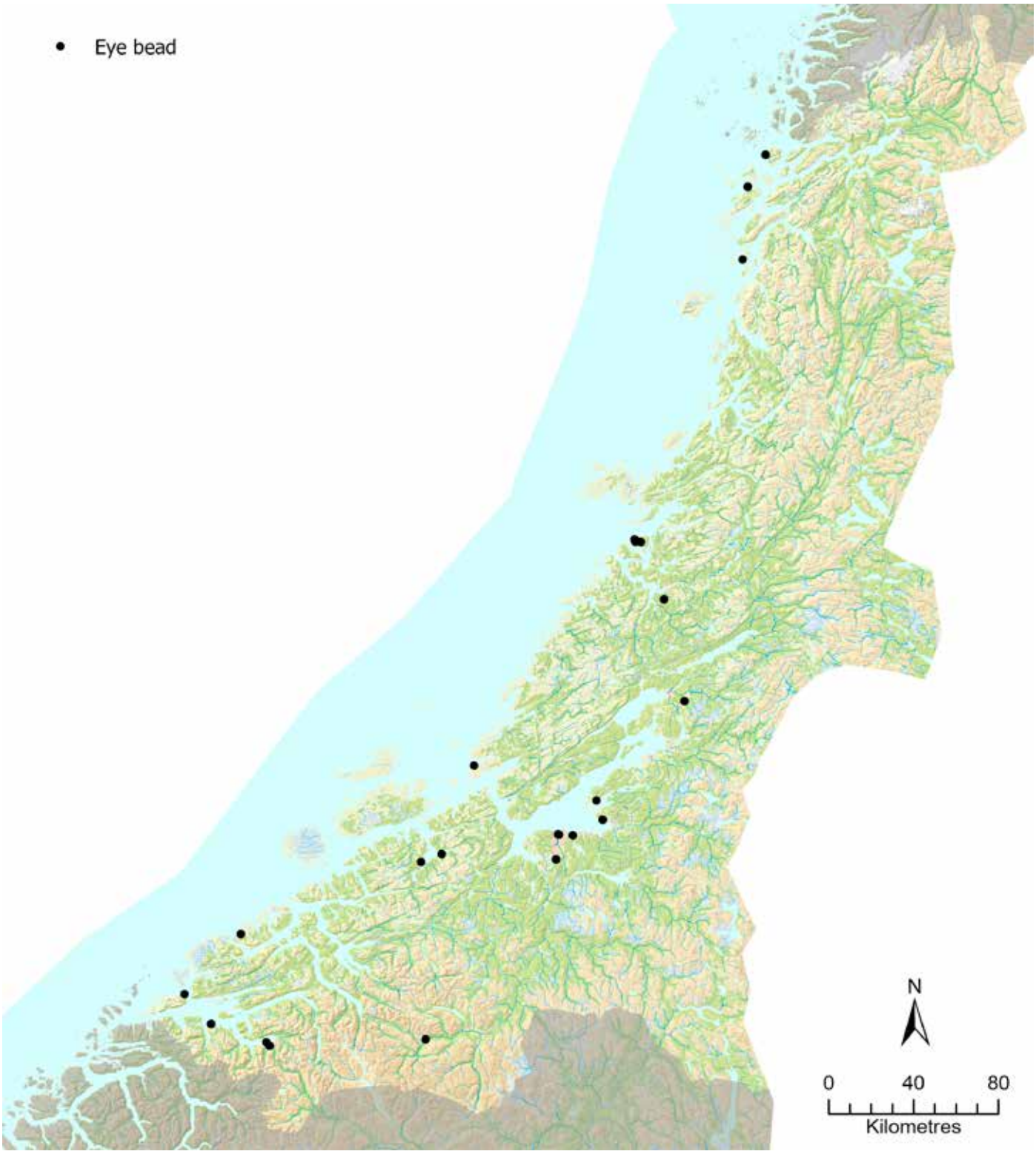
Appendix 8. Distribution of beads with stratified eyes in Central Norway.



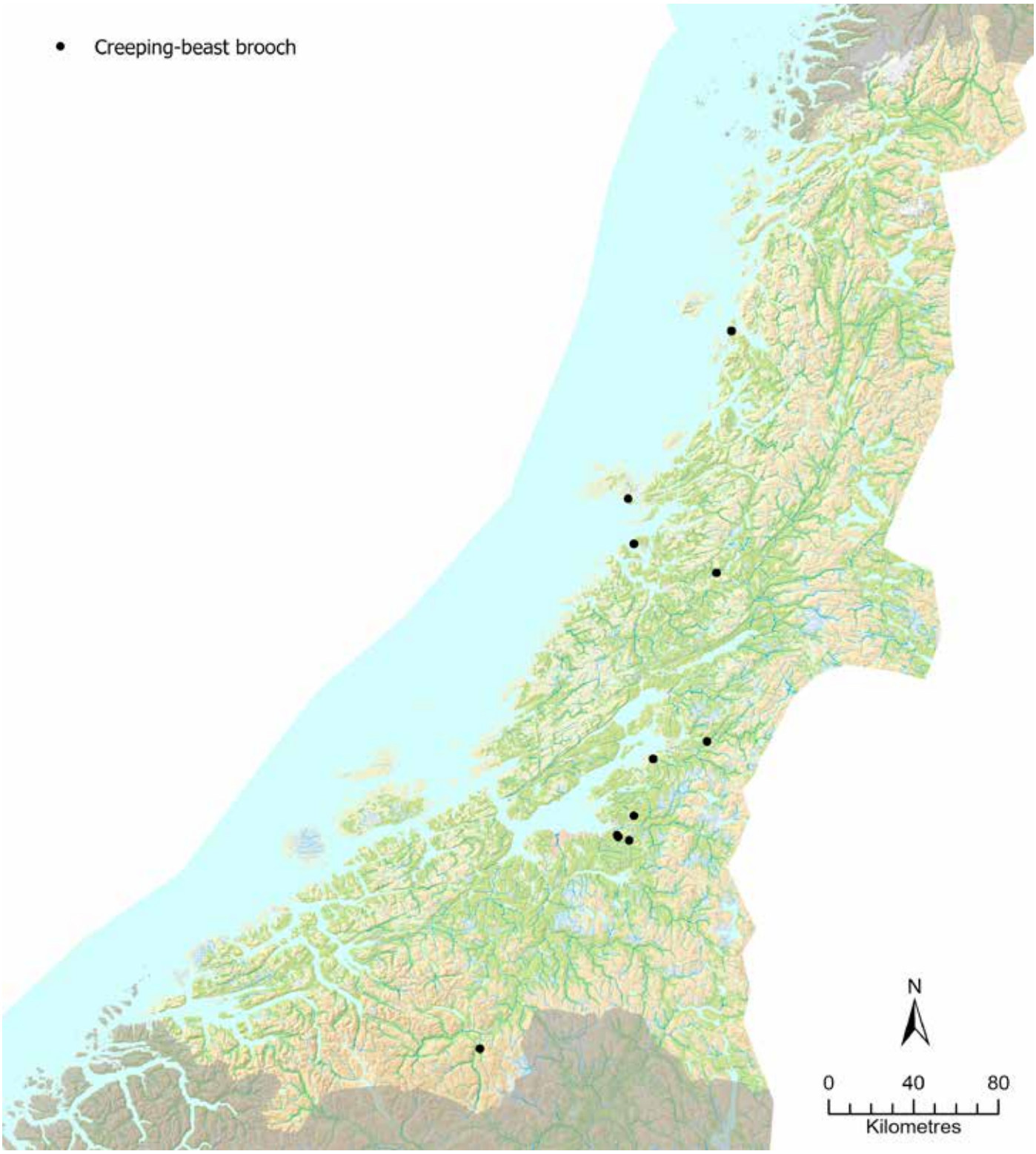
Appendix 9. Distribution of segmented metal-foil beads in Central Norway.



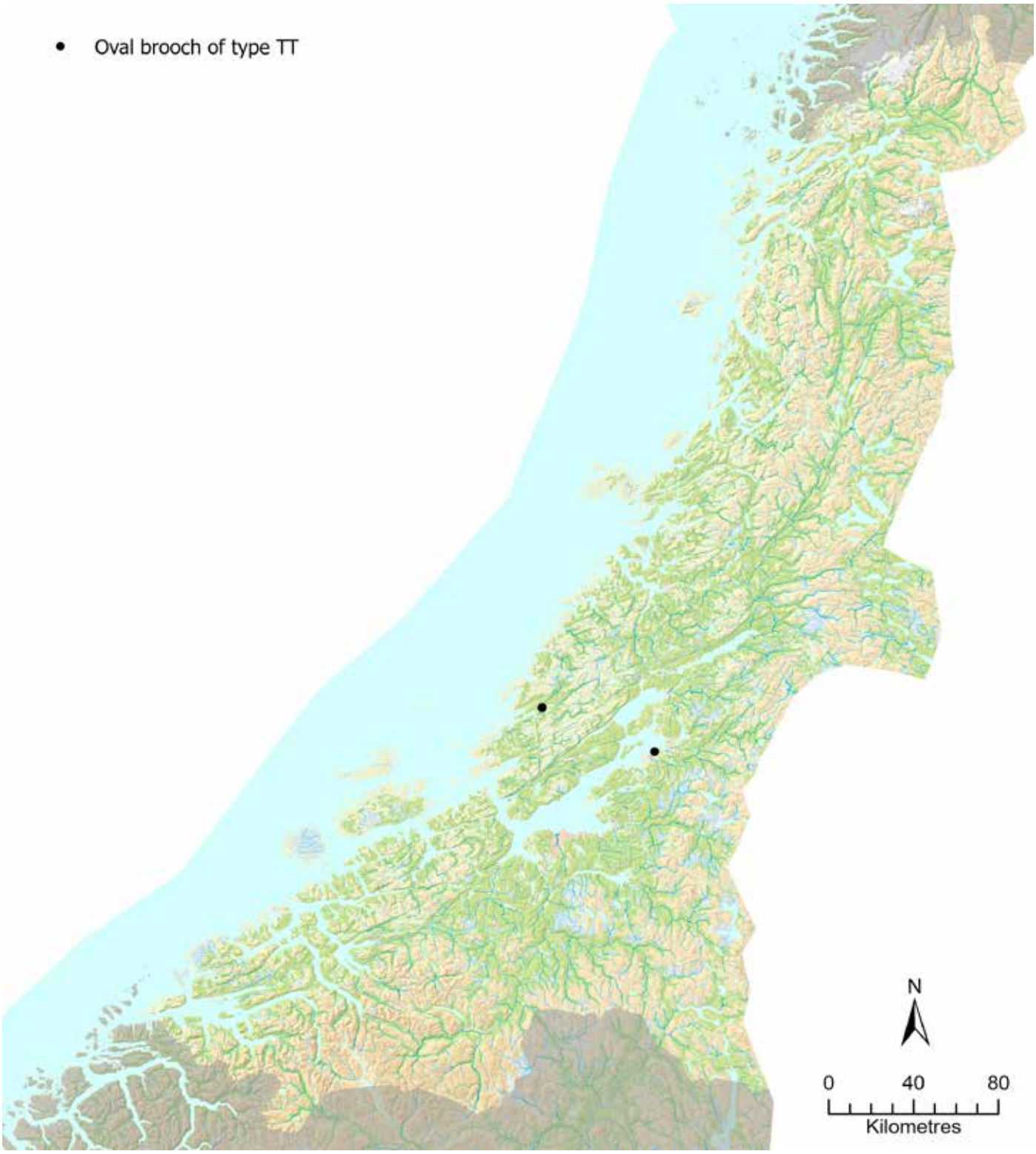
Appendix 10. Distribution of cornelian beads in Central Norway.



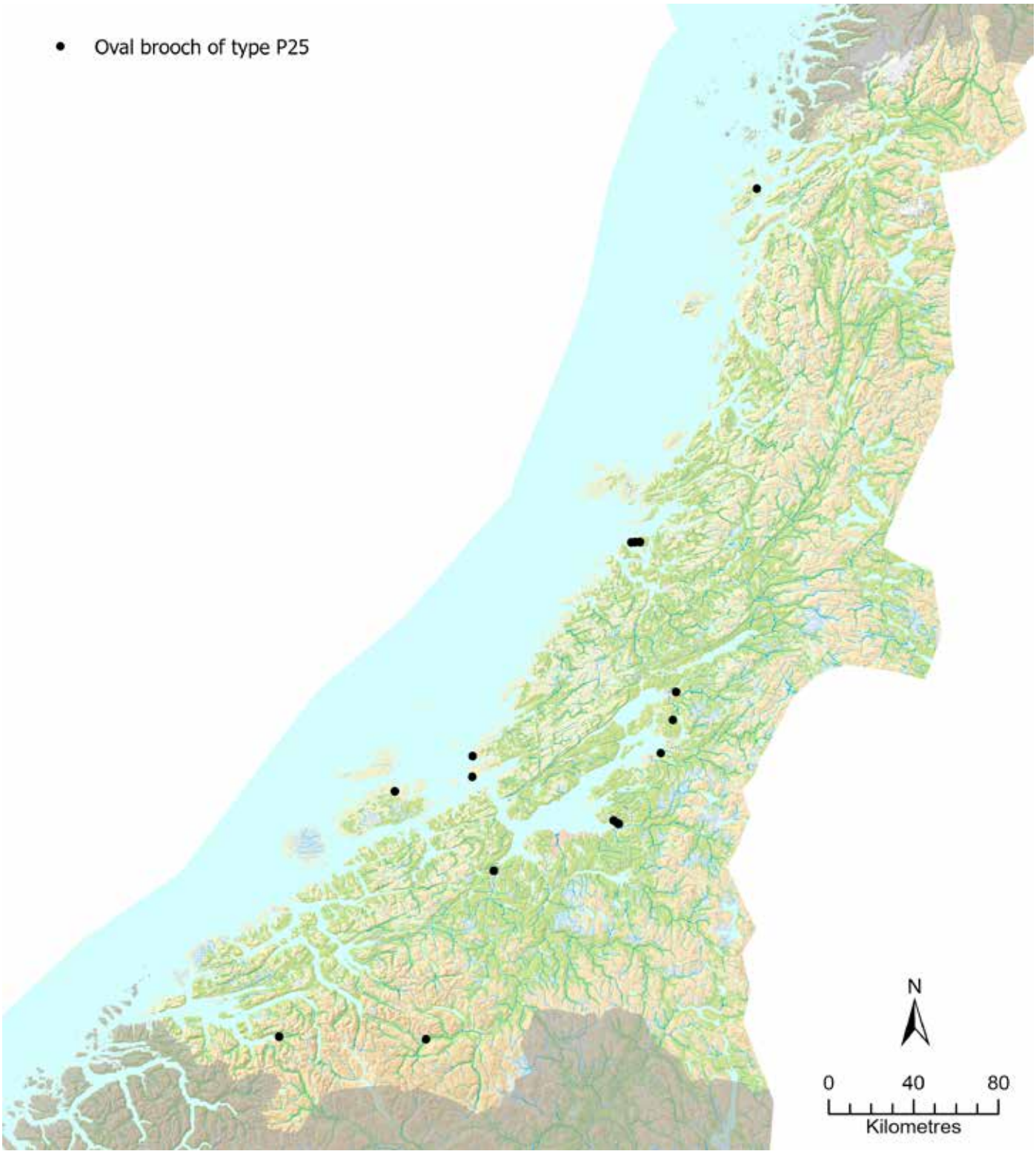
Appendix 11. Distribution of eye beads in Central Norway.



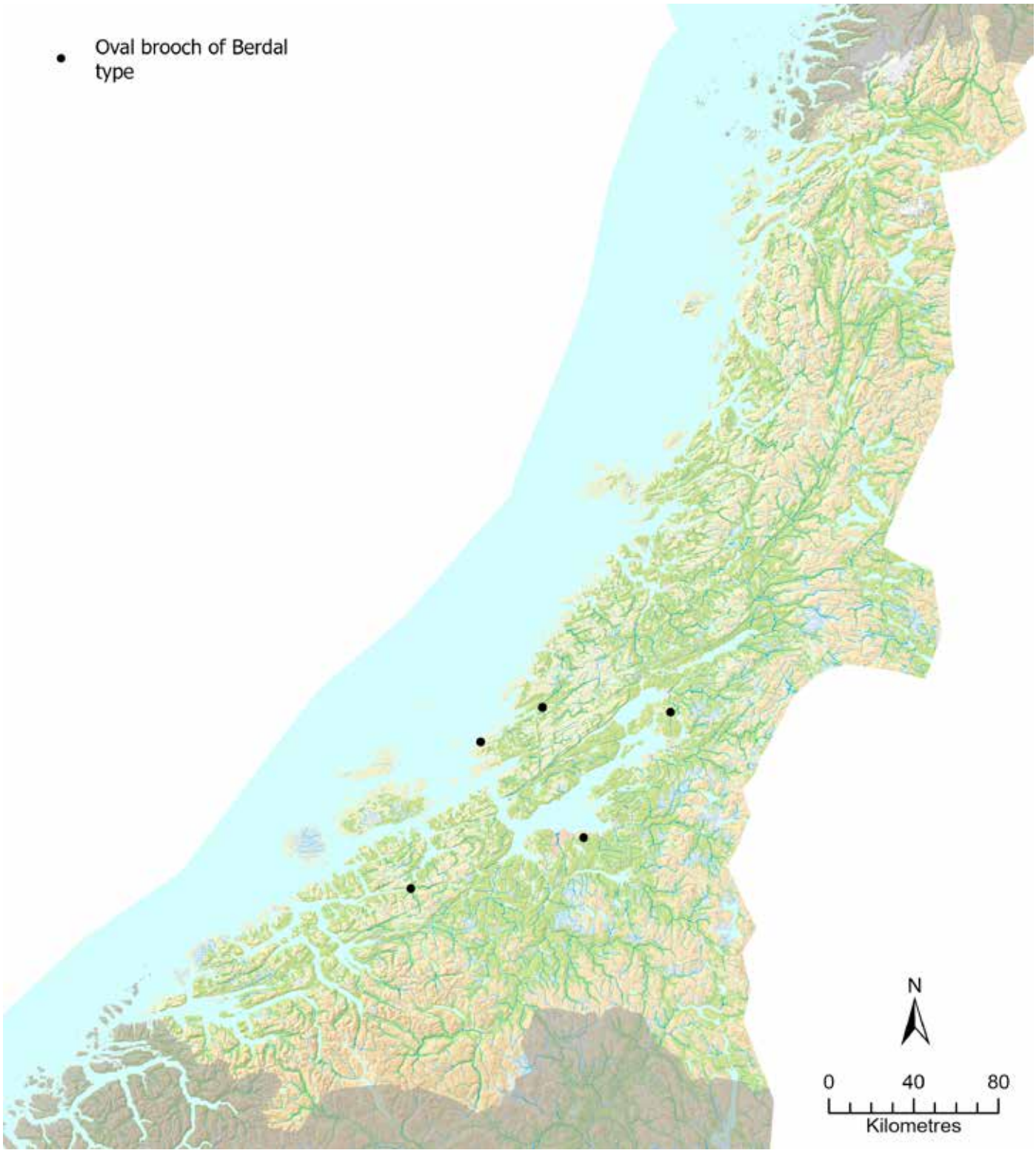
Appendix 12. Distribution of creeping-beast brooches in Central Norway.



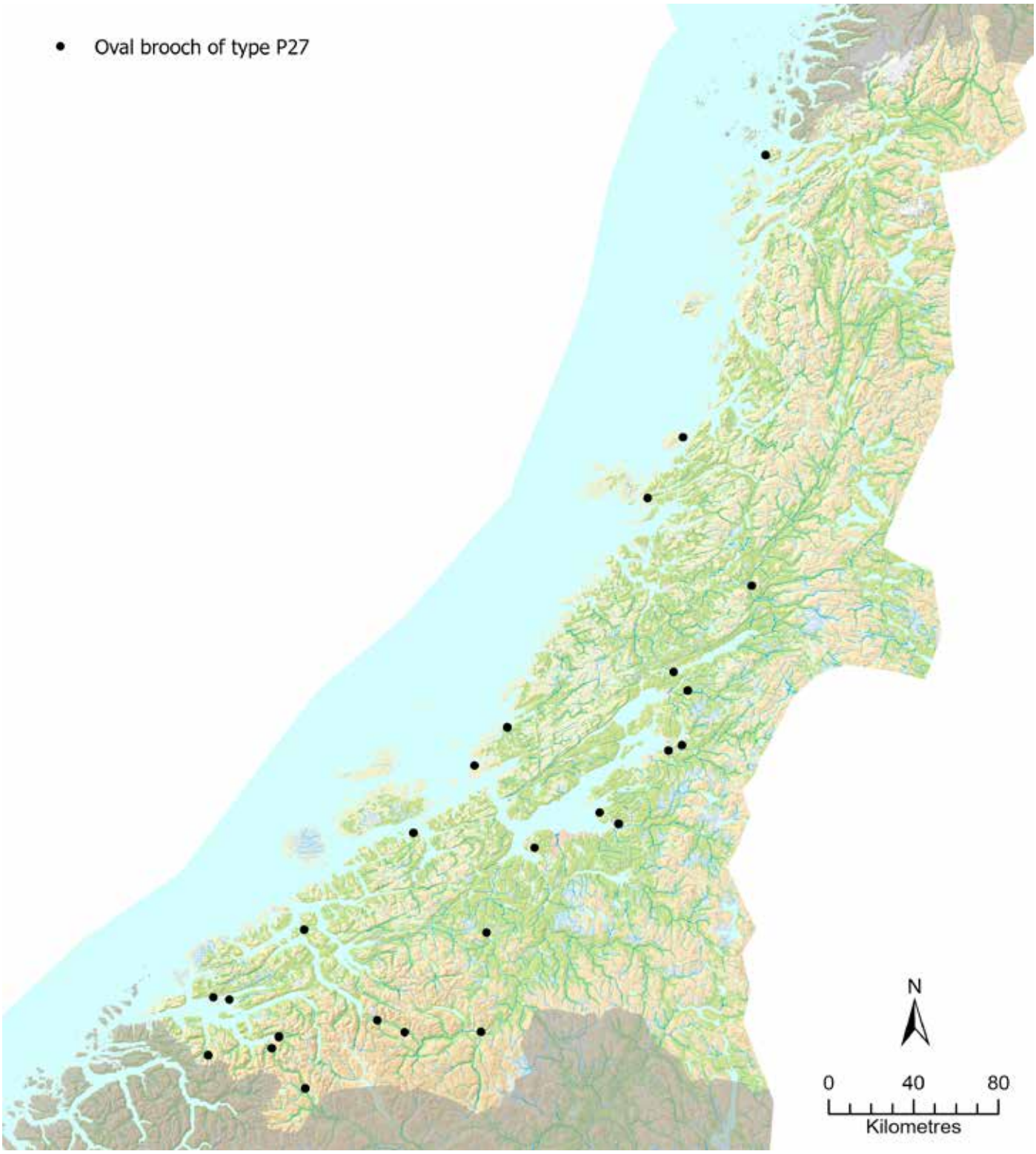
Appendix 13. Distribution of oval brooches of type TT in Central Norway.



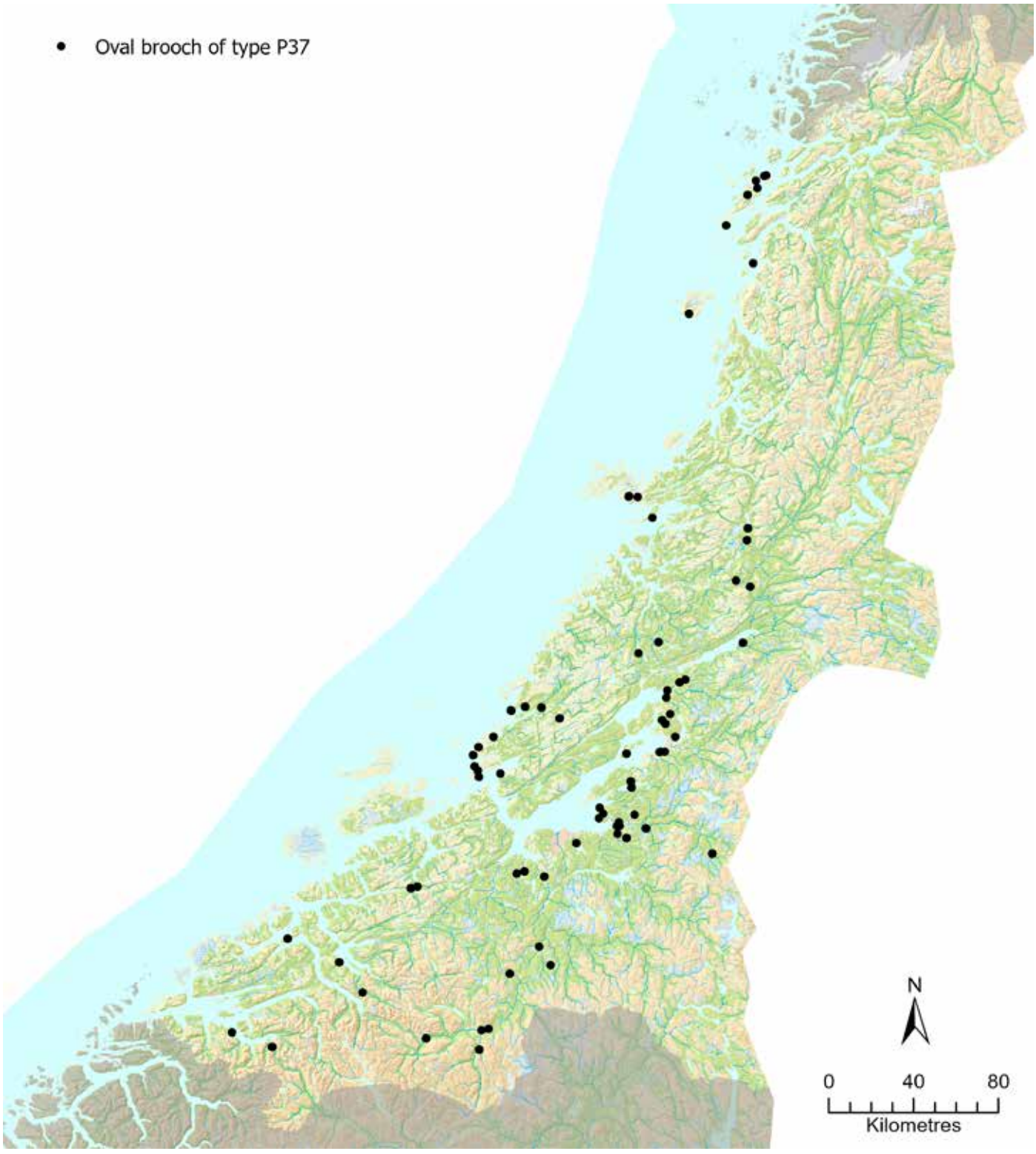
Appendix 14. Distribution of oval brooches of type P25 (Rygh 650) in Central Norway.



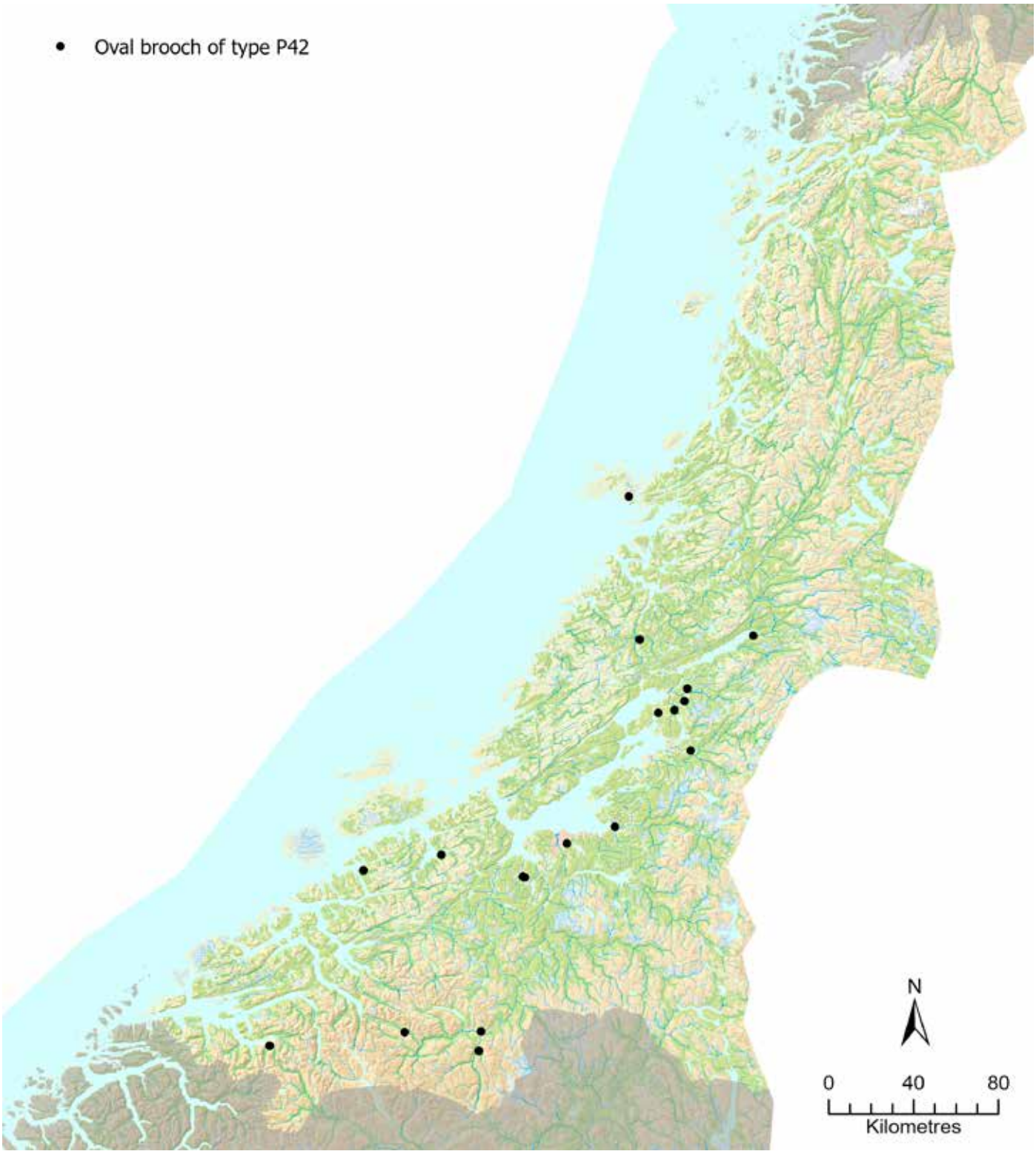
Appendix 15. Distribution of oval brooches of Berdal type in Central Norway.



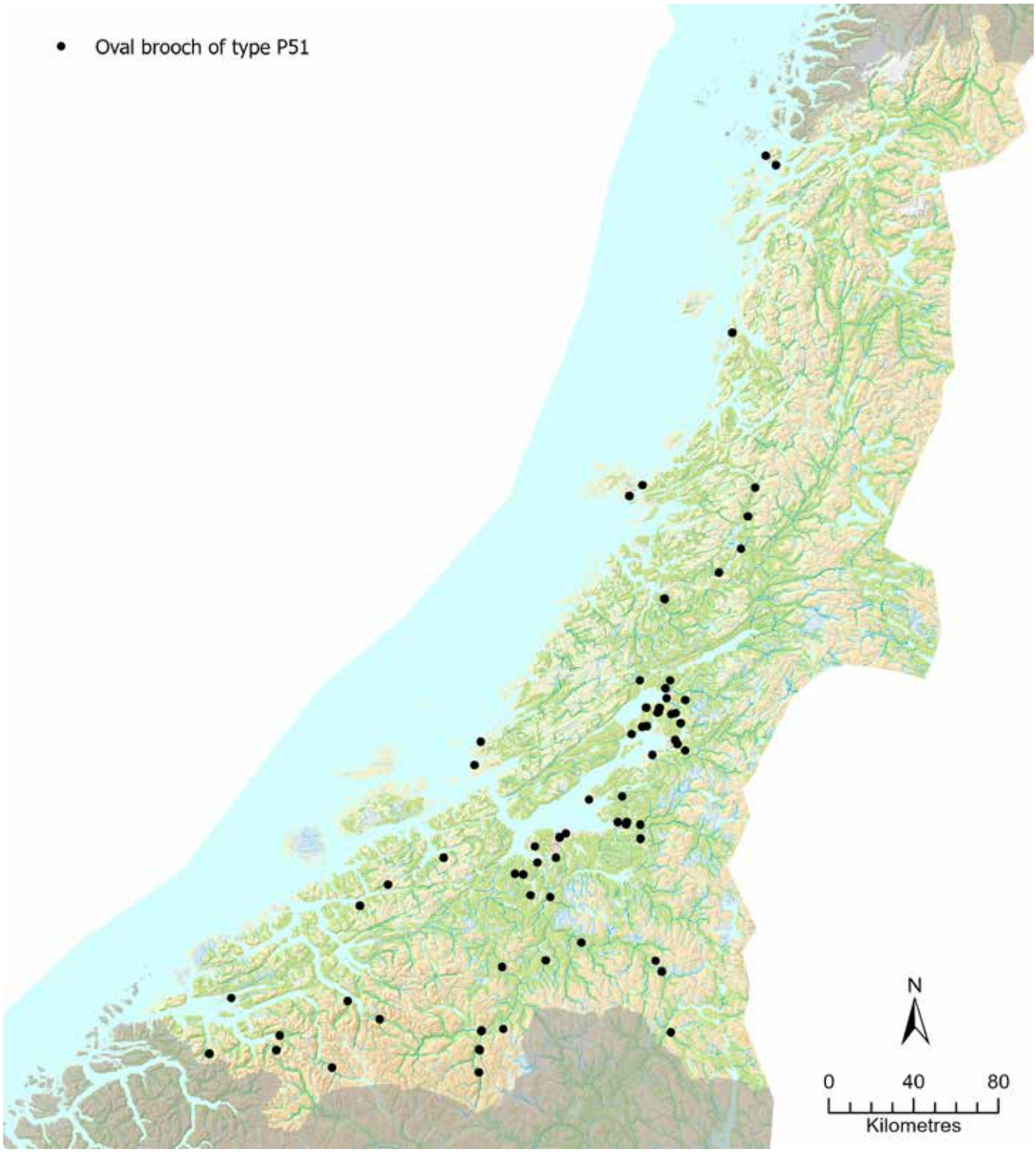
Appendix 16. Distribution of oval brooches of type P27 in Central Norway.



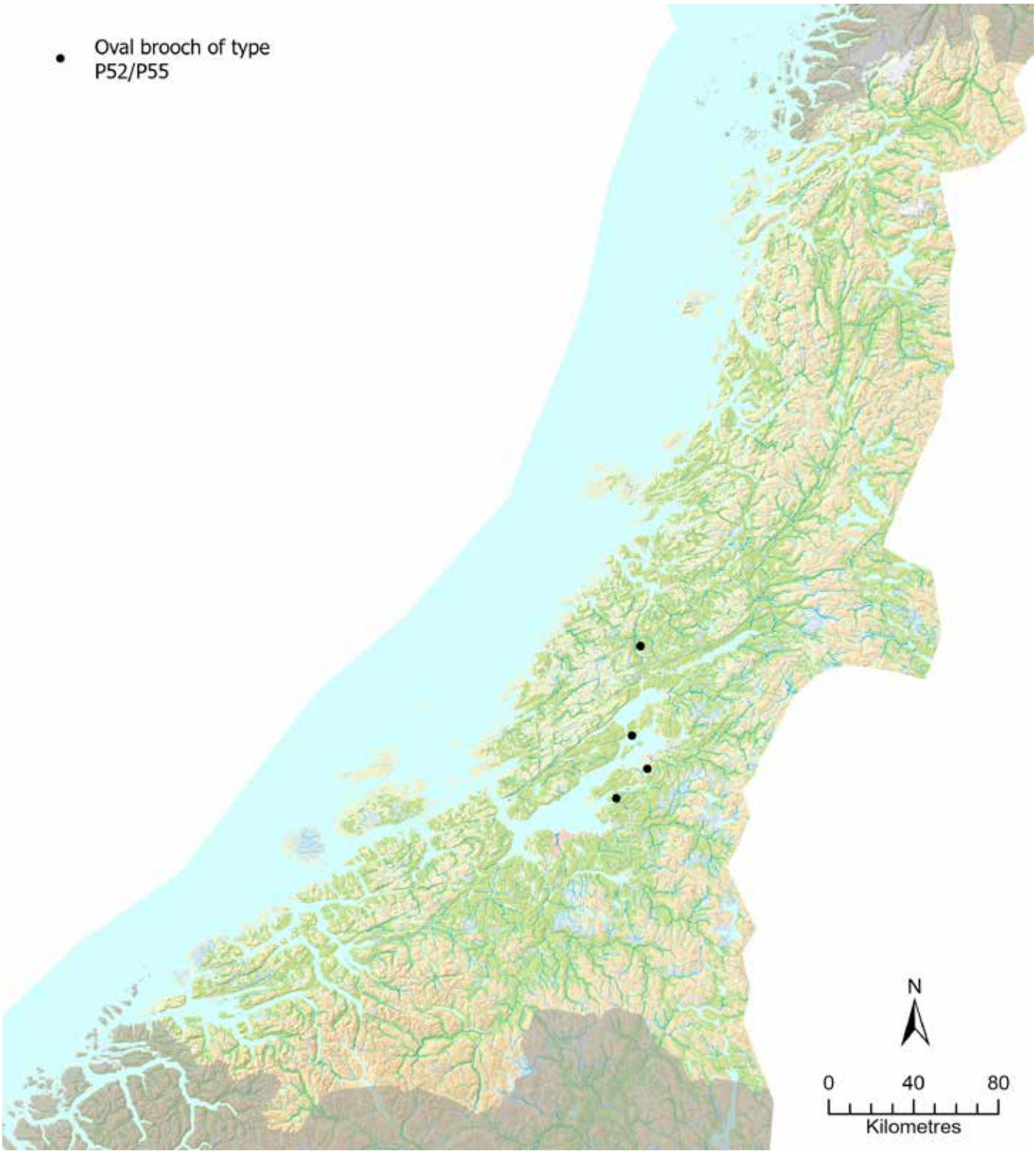
Appendix 17. Distribution of oval brooches of type P37 in Central Norway.



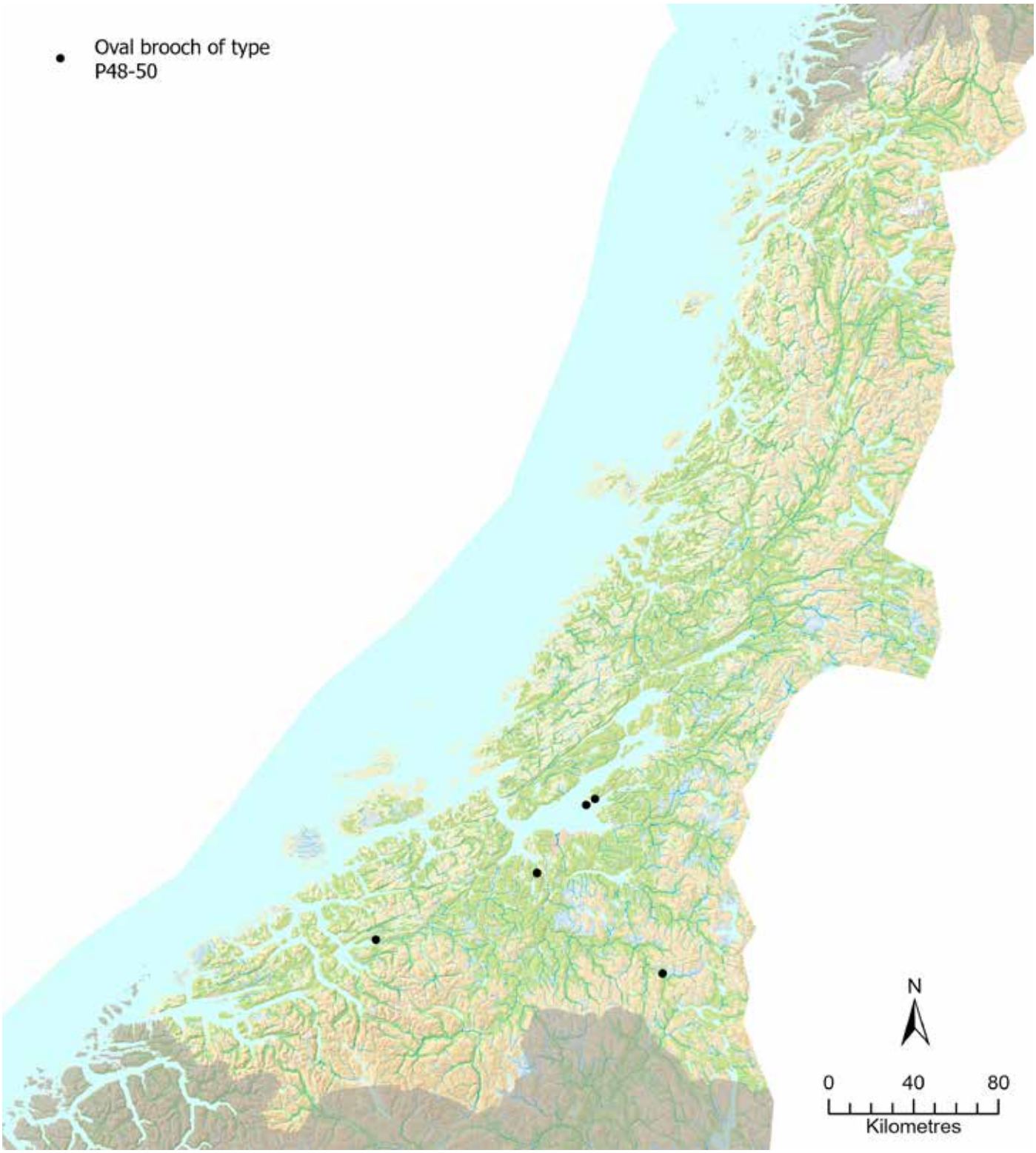
Appendix 18. Distribution of oval brooches of type P42 in Central Norway.



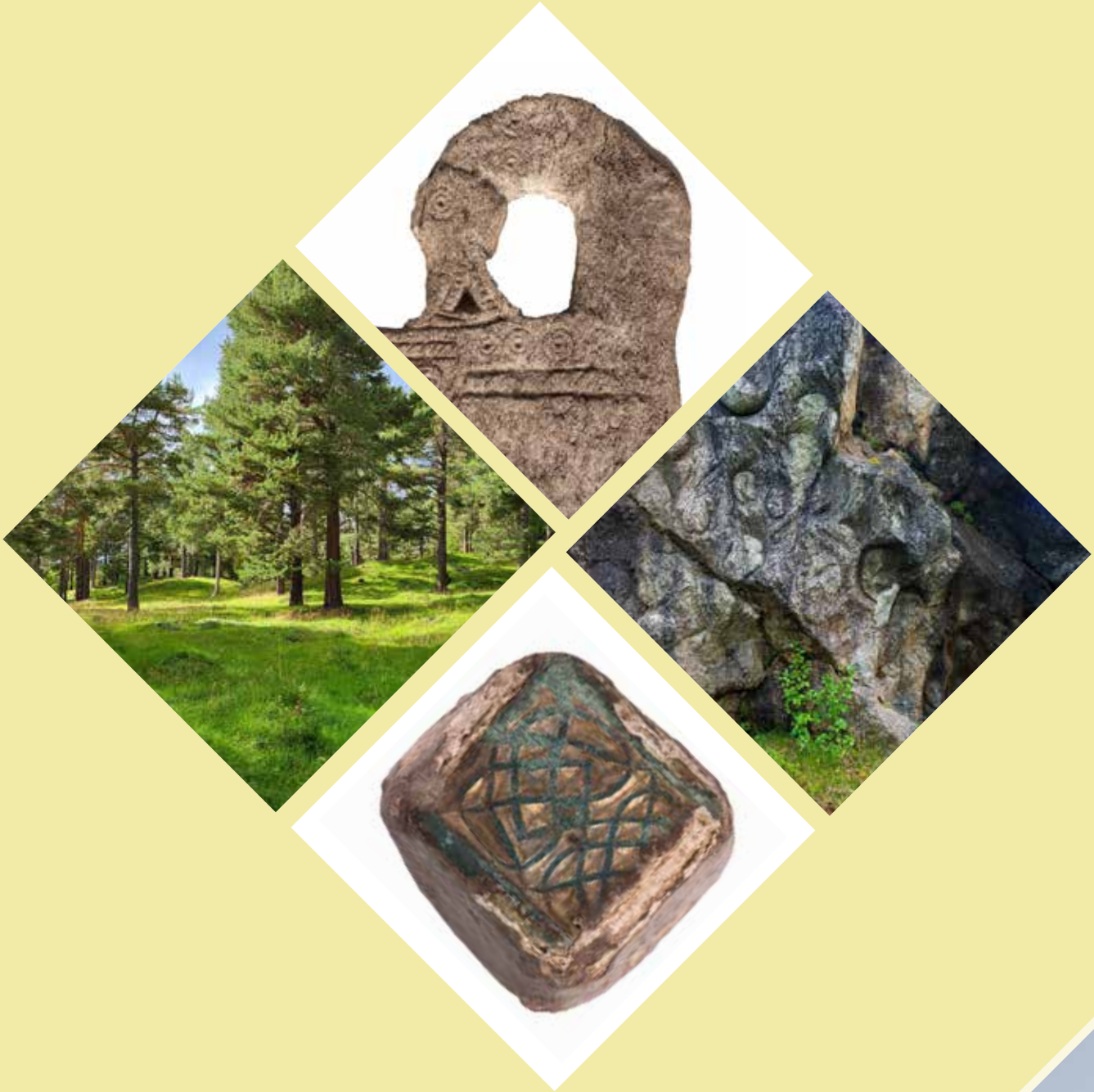
Appendix 19. Distribution of oval brooches of type P51 in Central Norway.



Appendix 20. Distribution of oval brooches of type P52/55 in Central Norway.



Appendix 21. Distribution of oval brooches of type P48-50 in Central Norway.



ISSN: 1894-7859
ISBN: 978-82-8322-445-0

www.ntnu.edu/museum/gunneria