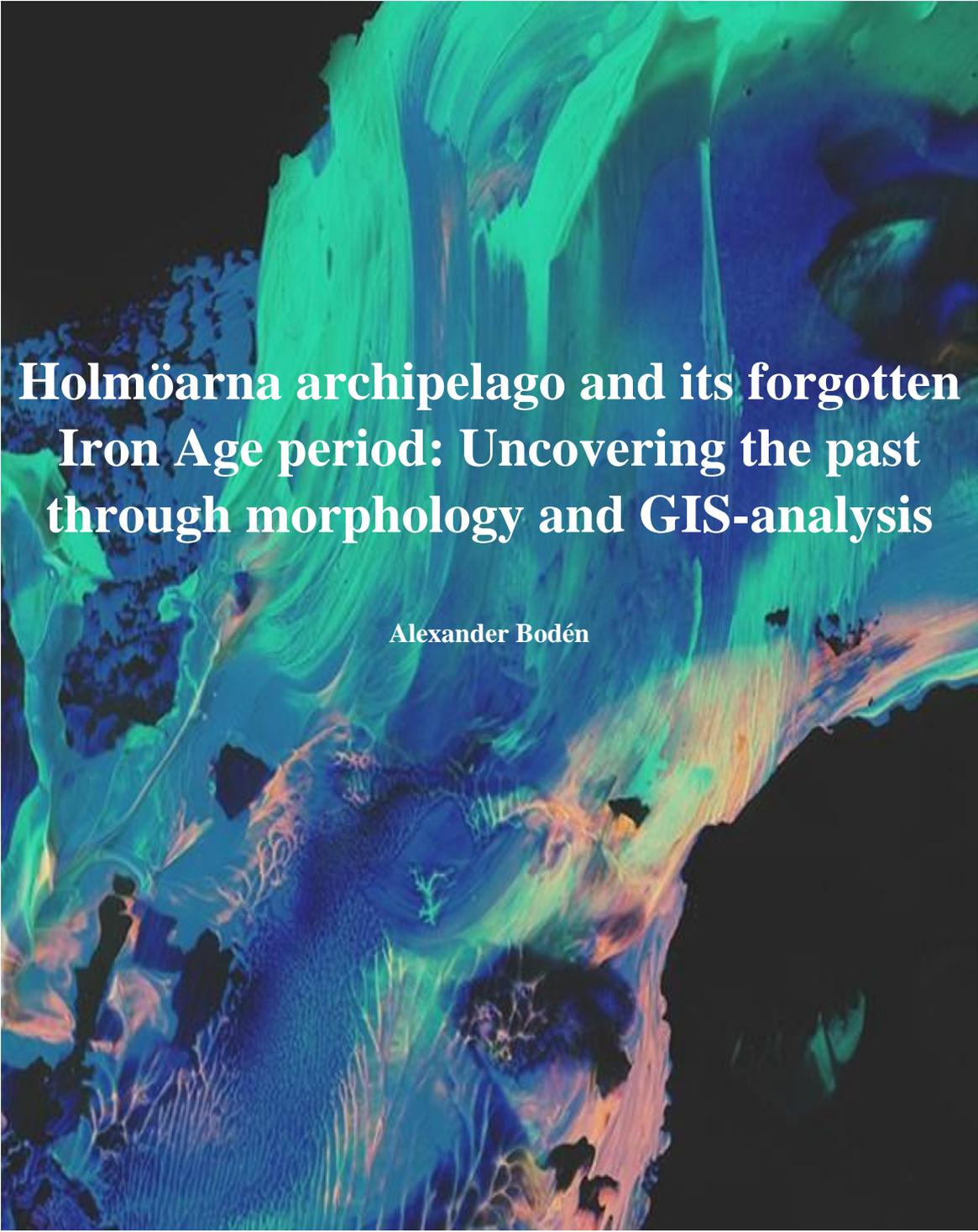




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An aerial photograph of a coastal archipelago, likely the Holmöarna islands, with a color-coded topographic map overlay. The map uses a gradient from dark blue (low elevation) to green and yellow (higher elevation) to show terrain features. The text is overlaid on the map.

Holmöarna archipelago and its forgotten Iron Age period: Uncovering the past through morphology and GIS-analysis

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Abstract

The geographical focus area of this essay is Holmöarna archipelago, which is a very large group of islands that are located a short distance to the east of the city Umeå, in northern Sweden, Västerbotten county. This essay is an attempt to uncover and provide knowledge regarding Holmöarna archipelago's forgotten Iron Age period through the means of GIS-analysis, literary studies, a field visit, as well as morphological comparisons of ancient artefacts and monuments from the area.

Det geografiska fokusområdet i denna uppsats är Holmöarna skärgård, vilket är en mycket stor ögrupp som är lokaliserad ett kort avstånd öster om staden Umeå, i norra Sverige, Västerbottens län. Denna uppsats är ett försök att avslöja och förse information som har med Holmöarna skärgårds bortglömda järnålder att göra. Detta sker med hjälp av GIS-analyser, litterära studier, ett fältbesök, samt morfologiska jämförelser av artefakter och fornlämningar från området.

Keywords: Holmön, Holmöarna archipelago, Västerbotten, Umeå, Iron Age, landscape archaeology, settlement archaeology, computational archaeology, Sweden, northern Sweden, hut foundation, cooking/storage pit, cairn, labyrinth, compass rose, seamark, fishing village

Preface

I have found myself to be fascinated by the Scandinavian Iron Age period for as long as I can remember, but since I began studying archaeology at Umeå university in the year 2020 I noticed that there was an overall lack of research done in regards to the Iron Age of northern Sweden, especially if compared to southern Sweden. One day when experimenting with the QGIS application and making maps of how certain areas would have looked like with the sea level of the Iron Age, I noticed that a majority of the registered ancient monuments in the archipelago of Holmöarna seemed to have been located on land that was elevated above the sea level even over a thousand years ago, at 1000 AD, with a few exceptions of course (see figure 3). The chronology of most ancient monuments in this area is unknown, and little is known about the Iron Age in this place, so therefore I asked myself if these undated ancient monuments could perhaps belong to the Iron Age period. Which would mean that Holmöarna archipelago has a much richer history of Iron Age settlement than what is known today. Was Holmöarna archipelago more relevant in terms of settlement during the Iron Age than what it is currently believed to have been? This question is one of the main reasons as to why I chose to write this essay, with the hope of finding an answer that is based on scientific research.

I would like to thank Tone Hellsten at Västerbottens museum for her quick responses via e-mail regarding the ancient artefacts of Holmöarna and also for providing me with a complete pdf file of an archaeological report from the year 1978 which contained information on the surveys and documentations of some ancient monuments located in the Holmöarna archipelago. I would also like to thank my supervisor Peter Holmblad for advising me not only on the essay's structure itself, but also for providing me with important bits of information regarding the topic of the essay. Lastly, I want to thank my family, friends and classmates for their unwavering support throughout the years.

Central concepts

Hut foundation (Swedish *tomtning*) - A hut foundation, or tomtning in Swedish, makes up the majority of all registered ancient monuments that are present at the archipelago of Holmöarna (see appendix 1). A hut foundation is described in Broadbent (2010) as a place of living that is often associated with fishing activities. Hut foundations are also widely believed to have been used for seasonal settlement (Andersson 2000:1).

Cooking/storage pit (Swedish *boplatsgrop*) – This type of ancient monument seemingly lacks an official English translation and the best translation in my mind is Cooking/storage pit. This type of monument is known in Sweden as Boplatsgrop. The definition of a Boplatsgrop as described by Hägerman (2011:5), is a dug out pit where the material that was dug out often is found as an embankment around the pit itself. It is uncertain what exactly these pits were used for, but the most common interpretation is that they were used mainly as storage pits, but also for cooking and more.

Cairn (Swedish *röse*) - A cairn, or röse in Swedish, is a wide term that encompasses mounds, stacks or piles of rocks that have been made by humans to serve a number of purposes (Uyeno 2019). These purposes are as navigational markers, monuments, burial and much more (Uyeno 2019).

Labyrinth (Swedish *labyrint*) - Labyrinths made out of stone. The labyrinths of the Swedish coasts are believed to have brought good fortune in fishing and hunting activities for those who walked through it (Wallin n.d.).

Compass rose (Swedish *kompasros*) - Compass roses made out of stone. They are believed to have served as markers which pointed towards a certain place or direction that was of importance for the fishers and other seafarers of the time (West *et al.* 2009:193).

Iron Age (Swedish *järnålder*) – In this essay the words of Iron Age refers to the Scandinavian Iron Age period, which started with the pre-roman Iron Age period at year 500 BC, and ended with the Viking period at 1050 AD, covering a total of 1550 years of ancient history (Price 2015:255–323).

Useful abbreviations in the essay

KMR – Abbreviation for Kulturmiljöregistret

QGIS – The application that is called QGIS is an open source geographical information system

SGU – SGU is the abbreviation for Geological survey of Sweden, or Sveriges geologiska undersökning in Swedish

Vbm – Vbm stands for the museum of Västerbotten, or Västerbottens museum in Swedish

SHM – SHM stands for the Swedish History Museum, or Statens historiska museum in Swedish

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1. Introduction

The archipelago of Holmöarna is a large group of islands in the Baltic sea that is located just a short distance of *ca.* 10 kilometers eastward of the city of Umeå in northern Sweden, Västerbotten county (Holmon 2011). The archipelago of Holmöarna is made up of 4 larger main islands; Holmön, Ängesön, Grossgrunden and Holmögadd, followed up by a number of smaller, yet historically important islands such as Stora Fjäderägg and Lill-Fjäderägg, where a large number of archaeological sites have been registered in KMR (Rathje 1996:131; Riksantikvarieämbetet 2023). But even so, the area seems to have been neglected when it comes to archaeological research, and written works on the ancient history of Holmöarna is incredibly hard to find due to the extreme sparsity of it, and therefore most of the available information on ancient monuments in the area comes from old field documentation that were written as far back as the early to mid 1900s (see appendix 1). The sheer amount of both dated and undated ancient monuments that are located in the Holmöarna archipelago suggests that the area has a very rich ancient past, an ancient past that still remains undiscovered for the most part because of the existing research gap, a research gap that this essay aims to fill.

There are some maritime ancient monuments in the form of boat wreckages from the 1800s in the water around Holmöarna, as well as several artefacts and monuments left behind from the Russian invasion of the area which took place in the early 1800s (Sandström 2009:32; Riksantikvarieämbetet 2023). These may be considered ancient monuments, but these will not be included in this essay, as they are not relevant for the topic whose narrative is about the Scandinavian Iron Age period in the area of the Holmöarna archipelago. This means that only the ancient monuments and artefacts that are either confirmed or possible Scandinavian Iron Age monuments are included in the essay.

1.1. The purpose of the essay

There is currently a wide research gap regarding Holmöarna and its ancient past, and the purpose of this essay is to uncover and provide new information about Holmöarna and its Iron Age period with the aim of filling this gap. This purpose will not only be achieved through the methods of GIS-analyses and morphological analyses of Holmöarnas ancient and possible ancient monuments and artefacts, but also through a field visit, and through the study of literature and previous research. To guide this purpose, four research questions were asked.

1.2. Problem formulation

There are three main reasons as to why this topic needs to be addressed. The first reason comes from the fact that most of the archaeological surveys that were undertaken at the sites at Holmöarna is very old, from a time when the quality of archaeological research was very much lacking if compared to where it is today, where the methods of documentation and knowledge in the field generally is vastly improved due to the higher standards of modern archaeology. It seems that the archaeologists that carried out the surveys at Holmöarna might have found several remains of ancient hut foundations that may possibly be linked to the Iron Age, hut foundations that they did not know the chronology of (Riksantikvarieämbetet 2023).

Since knowledge was seemingly lacking at the time of the surveys, these sites were only described in the field documentation as probable remains of very old and primitive buildings. The past lack of knowledge about Iron Age monuments is further backed up by Andersson *et al.* (2009:4), which states that the knowledge about both the Iron Age and medieval period is indeed lacking in previous research at Holmöarna and the entire county of Västerbotten as a whole. So, the first reason as to why this topic needs to be addressed is because of the general lack of knowledge about the Iron Age period of Holmöarna and the fact that most of the information that is available regarding the ancient monuments in the area is outdated.

Secondly, there is evidence of Iron Age people being present at the islands of Holmöarna at very early dates (Broadbent 2005:45–55), but the scale of this presence is largely unknown. A majority of all the registered ancient monuments in the area seem to be located strategically on the shores of the Iron Age coastlines of Holmöarna, which raises the probability that they could have been constructed during the Iron Age period, as most of the ancient monuments do indeed find themselves inside of this pattern (see figure 3).

If these ancient monuments that are only described as very old remains of primitive buildings proved to be from the Iron Age, it would mean that the islands of Holmöarna could have had a much more significant Iron Age settlement than what was previously believed to be the case (Riksantikvarieämbetet 2023). Thus, the second reason as to why this topic should be addressed is because there are promising signs that the area was settled during the Iron Age, but this is often overlooked in literature, and it is believed that the archipelago was not permanently settled until the 1300s (Andersson *et al.* 2009:3), even though there is a possibility that Holmöarna had a permanent population at a time much earlier than this.

The third and perhaps most important reason why addressing this topic is of need comes from the fact that there is very little archaeological research done in regards to the Holmöarna archipelago as a whole. This has created a large research gap, which if not addressed could very well lead to much of the ancient history of Holmöarna archipelago becoming lost in time. This area is very rich in ancient history due to its many ancient and possible ancient monuments, but only a tiny fraction of these have been investigated or studied. Thus, there is most certainly a need to explore this topic before this invaluable information is lost forever.

1.3. Geography and chronology

Geographically, this essay encompasses the entire archipelago of Holmöarna.

Chronologically, the essay covers the Iron Age period of Holmöarna with a focal point at *ca.* year 1000 AD, while also comparing the area as it is in the present day to that of the Iron Age. The reason why year 1000 AD was chosen as the focal point is because it is a milestone that represents the latest stage of the Scandinavian Iron Age period. This is important for the GIS-analyses as the land areas that were below sea level during this time would have been so throughout the entire Iron Age period. Thus, year 1000 AD represents the archipelago of Holmöarna as it was during its full extent at the end of the Scandinavian Iron Age.

1.4. Questions

- 1) Currently there is an uncertainty regarding when humans first set foot upon the islands of Holmöarna. Is there any evidence that can provide answers on what period in time it might have happened at?
- 2) Are there any reasons why the ancient monuments are located where they are in the landscape of the Holmöarna archipelago, and could there be any strategic reasons behind their exact localizations?
- 3) How many undated possible Iron Age monuments exist in the archipelago of Holmöarna, and is it possible to link chronologically unspecified ancient monuments and artefacts to a certain time period through the use of morphological analysis?
- 4) Was the population at Holmöarna archipelago during the Iron Age seasonal or permanent, and what size could it have been in relation to the amount of settlement remains in the area?

2. Theoretical perspectives and points of departure

2.1. Theoretical perspectives

Through the spatial computer system GIS, which stands for Geographic Information System, it is possible to transform various kinds of data into pure information. The usage of GIS in archaeology has occurred for decades due to its many benefits (Landeschi 2019:17). But in recent times, it has become more of a necessity. In McCoy (2021:1), it is stated that it has long been argued that the adoption of GIS in archaeology is of comparable importance to that of the invention of radiocarbon dating. The adoption of GIS, which is also referred to as the geospatial revolution by some, supposedly began *ca.* year 2005 (McCoy 2021:8), and GIS has perhaps now become the most effective way to analyse spatial data (Scianna & Villa 2011:337). Through GIS-analysis, it is possible to reconstruct past landscapes and ancient coastlines in order to find out whether or not an archaeological structure would have been submerged beneath the sea level at a particular period in time (Aucelli *et al.* 2021:118).

By analysing ancient artefacts and monuments through the method of morphology, it is possible to assign the studied material to a particular group and date them (Pala & Costiner 2022:2). A common type of archaeological find that is often analysed through morphology are pots (Karasik & Smilansky 2011). But this method can also be used for other types of artefacts, and even ancient monuments. In Bergman & Ramqvist (2018:16–17), hut foundations are distinguished from one another simply on the basis of their morphology. Older hut foundations are described as being large and more rectangular or square in shape, while the hut foundations that are from younger periods in time are usually round or oval in shape while being smaller in size (Bergman & Ramqvist 2018:16–17).

2.2. Theoretical points of departure

It is believed that several islands in the archipelago of Holmöarna had already risen above the sea level over two thousand years ago, at *ca.* 0 AD (Andersson 2000:1). But sources claim that the archipelago was not permanently settled until the 14th century AD (Andersson 2009:3; Holmon 2000). This means that the archipelago would have remained unsettled for over thirteen hundred years after it had already risen above the sea level. There are large research gaps regarding the ancient history of Holmöarna and almost nothing is known about the Scandinavian Iron Age period at this place. The previous archaeological research that has been conducted at Holmöarna was done before the adoption of GIS in archaeology, and perhaps some of the existing research gaps regarding Holmöarna and its ancient monuments could be filled by analysing the area with help of GIS. Through GIS it is possible to conduct spatial analyses on all of the registered ancient monuments at Holmöarna archipelago and convert data into information that could contribute in answering the essay's research questions and ultimately provide new information regarding Holmöarnas Iron Age period.

In year 1987, the Arctic Studies Center, led by Noel Broadbent (Lindström & Olofsson 1993:64), conducted an archaeological investigation of several hut foundations on the island of Stora Fjäderägg (Broadbent 2005:44–52). During this investigation, charcoal from within several hut foundations were dated to the Iron Age period, with charcoal from one hut foundation providing a date from year 250 AD (Broadbent 2005:52). As there is evidence pointing towards people living in Holmöarna as early as the 3rd century AD, more than one thousand years before it was believed to have been permanently settled in the 14th century AD (Andersson *et al.* 2009:3), it seems likely that the archipelago could have been settled earlier than what is currently believed to be the case.

3. Source material and method description

3.1. General about the primary source material and work methods

In order to answer this essay's four research questions, many different kinds of data and informational sources from a number of suppliers was used in order to conduct GIS-analyses. The GIS-analyses were then combined with literary sources that are related to the topic of the essay, and also with the results from the morphological analysis in order to provide answers for the research questions.

3.2. The essay's primary source material

3.2.1. Monuments of Holmöarna

The primary source material for this essay is the ancient and possible ancient monuments that are registered in Riksantikvarieämbetet's IT-system KMR (Riksantikvarieämbetet 2023). There is a total of 66 monuments included in this essay. Out of these 66 monuments, there are 52 ancient monuments, 13 possible ancient monuments, and 1 monument that has received no antiquarian assessment (see appendix 1).

3.2.2. Ancient artefacts that have been turned in by grave plunderers

When communicating with archaeologist Tone Hellsten at Västerbottens museum through way of e-mail, it was confirmed that they were in possession of three different types of artefacts which had previously been turned in by grave plunderers (Hellsten 2023). These artefacts were supposedly all plundered at the same time, in year 1911, and the finds consisted of 1 Iron arrowhead (see appendix 2), 1 slate whetstone (see appendix 2), and 1 human cranial fragment (see appendix 2). It is believed that all of these artefacts were plundered from the exact same cairn (Vbm 2023).

There was another plundering in the year 1911 that took place at the island of Stora Fjäderägg. From this plundering, 5 artefacts of two different types were found. These artefacts were later turned in to Statens historiska museum, and they consist of 1 silver ring and 4 bronze bells (SHM 2023).

3.3. The essay's methods of information and data gathering

Nearly all of the data that is used in this essay comes from the means of online search of various databases, publications and documentations. Additionally, Holmöarna archipelago was visited in order to better understand the place and its ancient monuments, while also documenting these monuments through photographs and new measurements.

3.3.1. Data and information gathering from KMR

A large majority of the data and information that was used for this essay was gathered from the Swedish National Heritage Board's IT-system called Kulturmiljöregistret, or in short KMR, by using the tool Fornsök, which allows all of the available data and information from KMR to be accessed quite easily (Riksantikvarieämbetet 2016:1). KMR has information on all the registered ancient monument in Sweden (Riksantikvarieämbetet 2016:1) This means that information on all the registered ancient monuments of Holmöarna archipelago can be obtained from this IT-system. Riksantikvarieämbetet's tool Fornsök has an option for open data extraction that can be used in order to transfer data on ancient monuments into external apps such as QGIS (Riksantikvarieämbetet 2016:4). When transferred to QGIS, this data can be used to pinpoint the location of all the ancient and possible ancient monuments that are located in Holmöarna archipelago to maps of different kinds.

There are some source critical aspects regarding KMR that should be addressed. First off, this essay relies quite heavily on the IT-system KMR. This IT-system is not flawless, and it is possible that important data or information on monuments that are registered in KMR could be either wrong or missing. One example of this can even be seen in this essay. The monument known as L1938:1388 has no antiquarian assessment. The selection of monuments for analyses in this essay were also derived from KMR. This means that only monuments that are registered in KMR were included in this essay. If there are any monuments missing from the database of KMR, they are not included in this study. As KMR is not a flawless IT-system, it could be possible that one or even several monuments are missing, especially since most of the surveys at Holmöarna took place as far back as 1959.

3.3.2. Data gathering from SGU

SGU or The Geological Survey of Sweden in English, is a government agency that works with geological information and provides geological knowledge, which includes the ground water levels (SGU 2020). When information or data is needed on water levels throughout the times, this agency is a good place to look for it, as they even have open data in the form of Geopackage, which can be used in order to map the historical coastlines of different time periods in a relatively accurate way (Lindberg 2022:1–7). The waterlevels might not be one hundred percent accurate, but they do provide a good overview of how the landscapes could have looked like at the time (Lindberg 2022:1–7). In this essay, open data from SGU was used in the application of QGIS to create maps that depicts how Holmöarna archipelago could have looked like at the year 1000 AD (SGU 2019).

3.3.3. Data gathering from Lantmäteriet

Lantmäteriet or The Land Survey in English, is a government agency that works amongst other things to make geodata widely available to society, and they have been mapping Sweden for hundreds of years, ever since the year 1628 AD in fact (Lantmäteriet 2023c). Lantmäteriet is a good choice when maps for projects regarding Swedish territory is needed. Hence, the open data from Lantmäteriet was used as a stable foundation in the creation of maps for this essay.

3.3.4. Information from field documentation

In this essay the main source of literary information on the ancient and possible ancient monuments comes from the handwritten documentations by the people that carried out archaeological surveys at Holmöarna archipelago in the past (Riksantikvarieämbetet 2023). The reason for these field documentations being the main source of literary information regarding the monuments is that there is a very tiny amount of information available on these monuments and there is no complete report of the surveys that took place here, therefore all of the information that one might expect to find on the monuments of Holmöarna is that which was written down in the field documentations from these past surveys.

3.3.5. Data gathering for implementation to QGIS

In order to produce the maps for this essay, data was needed from different suppliers. The data used for the creation of maps in QGIS was gathered from three different sources. First off from Riksantikvarieämbetet's tool Fornsök, where data on ancient and possible ancient monuments were obtained, secondly from SGU, where the data on ancient water levels was gathered, and lastly, Lantmäteriet's portal for open data where the main background maps and height data was obtained (Lantmäteriet 2023b; Riksantikvarieämbetet 2023; SGU 2019).

3.3.6. Information gathering from Vbm's database

Information regarding the 3 archaeological artefacts plundered from an unknown cairn at Holmöarna archipelago was gathered from Västerbottens museum's database (Vbm 2023).

3.3.7. Information gathering from websites

Some information was gathered from websites when no publications were available. The search engine used for this task was Google Scholar, as it was specifically developed for the purpose of finding scientific or scholarly literature online (Halevi *et al.* 2017:824).

3.3.8. Information gathering from literature

When gathering information from literature, physical copies of certain books were used, while Google Scholar was used as the primary search engine for finding sources online, as it has proven reliable when it comes to finding the proper scientifically based publications that are needed for a project such as this, which is its intended purpose (Halevi *et al.* 2017:824).

3.3.9. Information from field visit

Four ancient monuments in the area of Kammen at the archipelago of Holmöarna was visited and documented through the means of photography, measurements and visual analysis.

3.3.10. Information gathering from SHM's database

Information regarding 5 individual ancient artefacts that were plundered from a cairn in the year 1911 AD at the island of Stora Fjäderägg was gathered from the database of the Swedish History Museum, or Statens historiska museum in Swedish (SHM 2023).

3.4. The essay's methods of analysis

3.4.1. GIS-analysis of all the ancient monuments at Holmöarna archipelago

The main method of analysis for this essay is GIS-analysis. The GIS-analyses were done in the application QGIS, version 3.16.14-Hannover. QGIS stands for Quantum Geographical Information System, and it is a free open source geographic information system (Palino & Sparks n.d). In the application QGIS it is possible to compile lots of important data. It is for example possible to create maps that contain the sea levels throughout history, granting the ability to view landscapes as they were in the past at any given time, which in the case of this essay is the Scandinavian Iron Age period. It is also possible to then add the exact position of any registered ancient monuments onto this map with the past sea levels, effectively reconstructing the past landscapes and the ancient monument's relation to it. GIS was used in this essay to reconstruct the landscape of Holmöarna archipelago as it looked like during the Scandinavian Iron Age period at *ca.* 1000 AD. Data on the identity and position of the ancient and possible ancient monuments of the area was then implemented into the program, allowing for the creation of relatively accurate Iron Age maps for the whole archipelago. Topographic maps with height contours were created in order to find out the previously unknown elevation of the ancient and possible ancient monuments of Holmöarna.

3.4.2. Morphological analysis of ancient monuments and artefacts

The second method of analysis for this essay is morphological analysis. Morphology is the study of shapes, and it has long been used as a method of analysis in order to date chronologically undetermined ancient artefacts or monuments by comparing their shape and form to that of the already chronologically determined ancient artefacts or monuments (Pala & Costiner 2022:2). As most of the ancient monuments and artefacts that are covered in this essay remains chronologically undetermined, using morphology could perhaps prove useful.

4. Analysis and results

This chapter covers the entirety of all the analyses that were done for this essay, while also presenting the results in a detailed manner. The analyses include all of the 66 various types of ancient and possibly ancient monuments that are presented in appendix 1, as well as the 8 different ancient artefacts that are presented in appendix 2.

4.1. GIS-analysis and morphological analysis of the monuments at Holmöarna

The GIS-analysis and the morphological analysis in this essay are both quite extensive due to the large number of ancient and possible ancient monuments in the area, and the analyses are therefore split into different subchapters to better explain each part in a more specific and detailed manner.

4.1.1. Comparing Holmöarna archipelago in the modern day against the Iron Age

In the modern day, Holmöarna archipelago is the largest archipelago reserve in all of Sweden, thanks to its 4 large main islands that are known as Holmön, Ängesön, Grossgrunden and Holmögadd (Holmon 2011; Holmon 2000). But the massive size of the archipelago as it is today was not always the reality. In northern Sweden, just east of the city of Umeå, where the archipelago of Holmöarna lies, the largest uplift of land in the entire Nordic region is found. Here, according to the land uplift model called NKG2016LU, the land rises approximately 9,6 mm each year, which is a lot compared to the extremely low 0–1 mm uplift per year in southern Sweden (Vestøl *et al.* 2019:1759–1764). The rapid land uplift in this region means that the total land mass in this area would have been drastically smaller during the Scandinavian Iron Age period compared to what it is today, as much of the modern day land mass of Holmöarna would have been submerged beneath the waters of the Baltic sea at the time. With the help of data on ancient water levels that was gathered from SGU's portal for open data (SGU 2019) and implemented in the application QGIS, it was possible to create a map that quite accurately depicts how the archipelago of Holmöarna could have looked like during the later stages of the Scandinavian Iron Age period at *ca.* 1000 AD, and the results of this can be seen on figure 1 & 2. As can be seen on these figures, the difference in total land mass is immense, but there are still large chunks of land above the sea level that human settlers from the Scandinavian Iron Age period could have made use of (see figure 1 & 2).

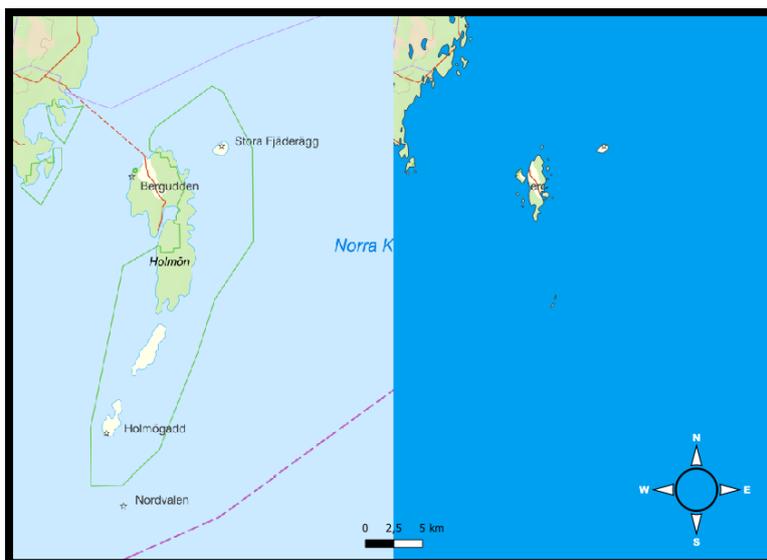


Figure 1. Maps created in QGIS. The left side shows the modern day Holmöarna archipelago, while the right side shows how it would have looked like during the Iron Age at approximately 1000 AD. Both images are generated from the exact same angle and scale.

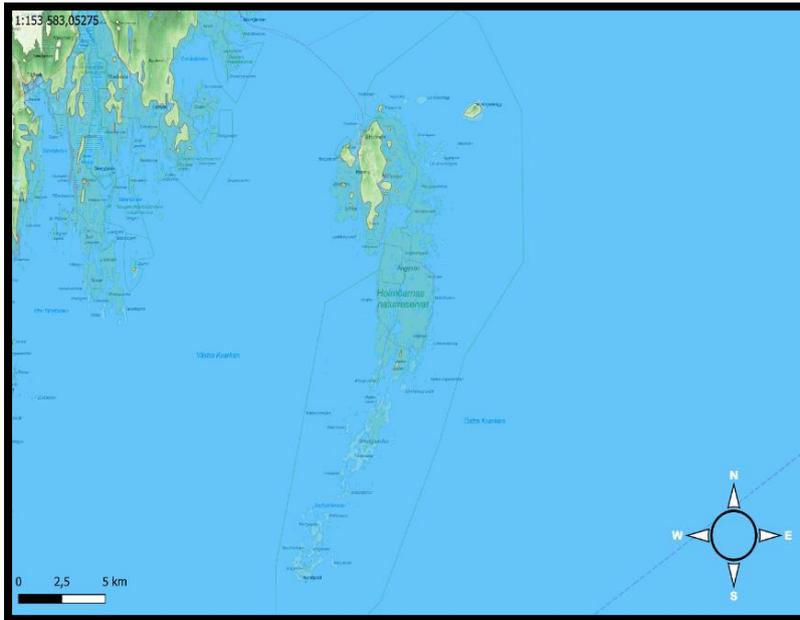


Figure 2. Map showing the archipelago of Holmöarna as it was in the Scandinavian Iron Age period at ca. 1000 AD with the modern day area in the background for a visual comparison.

4.1.2. Distribution map of all the ancient and possible ancient monuments

Holmöarna archipelago was a lot different in many ways during the Iron Age compared to the current day, and on figure 1 and 2, parts of these differences are visualised. Now, what happens if data from KMR on registered ancient monuments are added to the map of Holmöarna during the Iron Age. The results of this is visible on figure 3. When looking at figure 3, it becomes very clear that even though the land area was much smaller during the Iron Age if compared to the present, a majority of monuments in the area still remain on land that existed above the sea level during the time of the Scandinavian Iron Age (see figure 3).

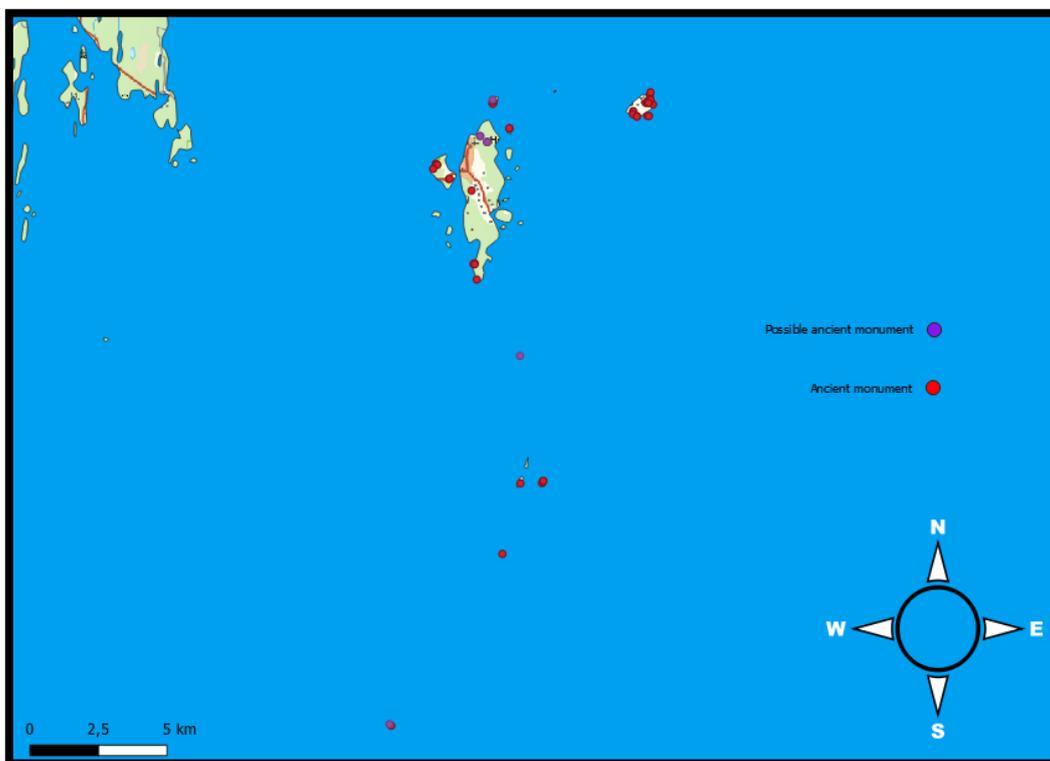


Figure 3. Map depicting Holmöarna during the Iron Age at approximately 1000 AD, with ancient and possible ancient monuments pinpointed.

4.1.3. Individual analysis of all the ancient and possibly ancient monuments

4.1.3.1. Trapporna

The first area of research in this essay is Trapporna. This area contains a total of 4 registered ancient monuments and 1 registered possible ancient monument (Riksantikvarieämbetet 2023). In the modern day, the land area of Trapporna forms a headland that is part of the main island of Holmön. But this was not always the case. During the Scandinavian Iron Age period, the area of Trapporna was in fact an island that was cut off from the mainland and surrounded by the Baltic sea (see figure 4). One notable thing about the ancient and possible ancient monuments that are located in the area of Trapporna is that they are all located on areas that would have been land elevated above the sea level during the Scandinavian Iron Age period (see figure 4). The known types of ancient and possible ancient monuments that exist in the area of Trapporna are hut foundations and cooking/storage pits (see table 1 & 2).

Hut foundations of Trapporna

In the area of Trapporna, there is a total of 3 registered ancient hut foundations (see table 1), and they are all very large in size, which according to the morphology of hut foundations as described by Bergman & Ramqvist (2018:16–17) mainly suggests that they are of an older type that would be typical to the Scandinavian Iron Age period. Out of these there are 2 hut foundations that are round in shape, which is a trait that the younger, post Scandinavian Iron Age hut foundations commonly has, while 1 hut foundation is rectangular, which is a trait that is common for the older types (Bergman & Ramqvist 2018:16–17). Each respective ancient monument in this area is also located on land that was elevated well above the sea level during the Scandinavian Iron Age period at *ca.* 1000 AD (see figure 4). In addition to the large and robust structure of these hut foundations, the elevation of all 3 hut foundations also suggests that they are Iron Age monuments, as hut foundations that are placed between 10–20 meters are commonly associated with an Iron Age chronology (Broadbent 2010:43). These hut foundations are also rather spread out from each other, which is yet another sign that they are older types of Iron Age hut foundations (Landin & Rönby 2003:9).

Table 1. Data on all the hut foundations located in the area of Trapporna.

Identification number	Year of survey	Year of excavation	Shape	Outside diameter	Inside diameter	Wall width	Height	Elevation	Possible Iron Age monument
L1938:1619	2002	Null	Round	6m	4m	1m	Null	12m	Yes
L1938:2391	1959	Null	Rectangular	6-7m	Null	Null	Null	14m	Yes
L1938:2472	1959	Null	Round	6-7m	Null	1m	0,1–0,2m	13m	Yes

Cooking/storage pits of Trapporna

In the area of Trapporna, there is a total of 2 registered Cooking/storage pits, 1 of which is registered as a possible ancient monument, while the other is registered as an ancient monument (see table 2). Both of these 2 monuments are located on a ground level that would have been elevated above the sea level during the Scandinavian Iron Age period at *ca.* 1000 AD (see figure 4). The true purpose of these particular pits are unknown, but it is mainly believed that these kinds of pits were used for storage and cooking (Hägerman 2011:5). Cooking/storage pits are commonly found alongside with hut foundations, which means that they could have a connection to the hut foundations in the area, but the morphology of this type of ancient monument remains rather uncertain (Hägerman 2011:8). Both of these pits could very well be from the Iron Age considering their elevation and connectivity to the hut

foundations in the same area. The inhabitants of the connected hut foundations would likely have used the cooking/storage pit to process and store food (Hägerman 2011:8).

Table 2. Data on all the Cooking/storage pits located in the area of Trapporna.

Identification number	Year of survey	Year of excavation	Shape	Pit diameter	Pit depth	Wall width	Wall height	Elevation	Possible Iron Age monument
L1938:2155	2002	Null	Oval	1,5x1,2m	0,4m	1,5m	0,1–0,2m	12m	Yes
L1938:2227	2002	Null	Null	1,4x1,2m	0,3m	1–1,3m	0,1–0,3m	12m	Yes

Summary of Trapporna

There is a total of 5 possible Iron Age monuments located in this area. These consist of 3 hut foundations and 2 cooking/storage pits. The morphology of the ancient monuments in this area mainly suggest that they are Iron Age monuments. But none of these 5 monuments have been dated using absolute dating methods. Further research and investigation of both types of monuments in the area would be required in order to determine the true chronology of these 5 ancient and possible ancient monuments.

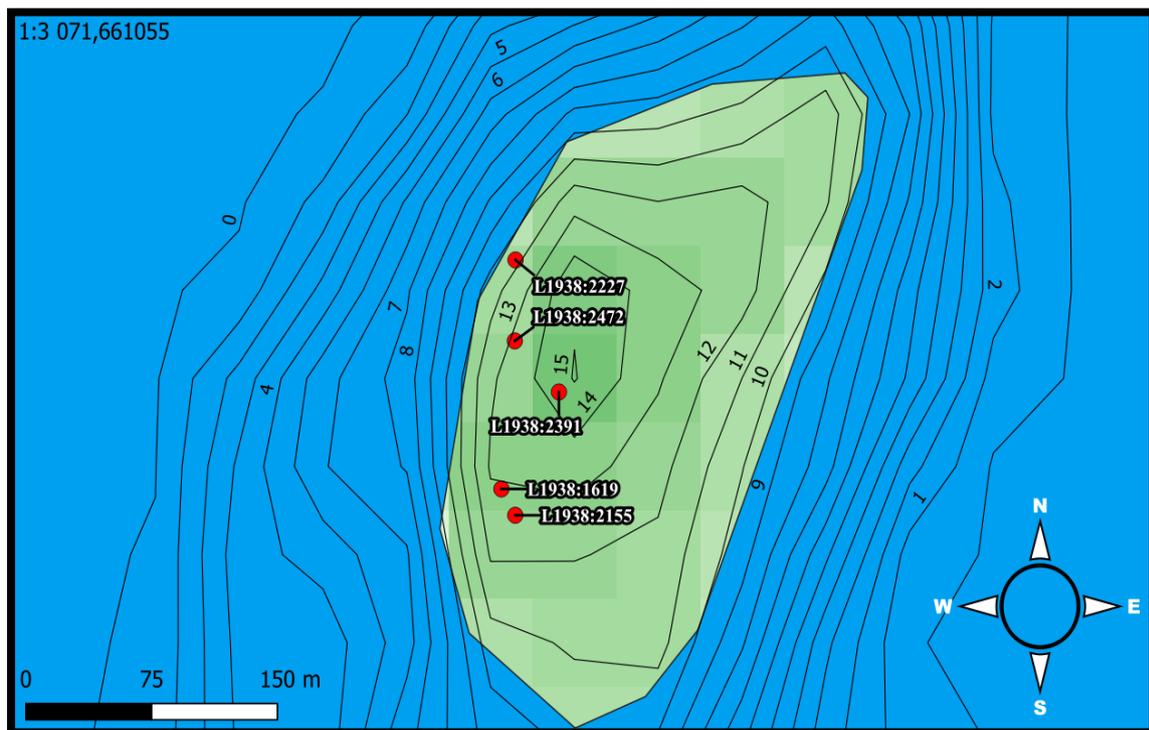


Figure 4. Topographic map showing the area of Trapporna as it was in the Scandinavian Iron Age period at ca. 1000 AD. Each contour line represents 1 meter height intervals.

4.1.3.2. Stor-Halörs-grundet

The second area of research in this essay is Stor-Halörs-grundet. This area harbours a total of 4 registered ancient monuments (Riksantikvarieämbetet 2023). Stor-Halörs-grundet is an island that is located just a short distance to the southeast of the large main island of Ängesön in the archipelago of Holmöarna (see figure 5). All 4 of the ancient monuments in this area are hut foundations (see table 3). Notable about this area is that it was completely submerged beneath the Baltic sea throughout the entire Scandinavian Iron Age period (see figure 5). In addition to the land itself being submerged beneath the Baltic sea, the morphology of hut foundations as described by Bergman & Ramqvist (2018:16–17), suggests that all of the hut

foundations that are located at Stor-Halörs-grundet are of younger types that typically were constructed after the end of the Scandinavian Iron Age period. This is mainly because they are round in their shapes, but also because they are rather small in size, which are both common traits of younger hut foundations (Bergman & Ramqvist 2018:16–17).

Hut foundations of Stor-Halörs-grundet

In the area of Stor-Halörs-grundet there is a total of 4 registered ancient hut foundations. None of the registered ancient hut foundations in this area are possible Iron Age monuments. The reason for this is that the island that they are located on seemingly did not exist during the Scandinavian Iron Age period, and all of the hut foundations shares the common traits that are typical of younger post Iron Age hut foundations, as they are small in size, not robust in their structure and located in close proximity to one another (Bergman & Ramqvist 2018:16–17; Landin & Rönnby 2003:9).

Table 3. Data on all the hut foundations located at Stor-Halörs-grundet.

Identification number	Year of survey	Year of excavation	Shape	Outside diameter	Inside diameter	Wall width	Height	Elevation	Possible Iron Age monument
L1938:2068	1959	Null	Round	4m	Null	Null	0,6m	5m	No
L1938:2384	1959	Null	Null	Null	Null	1m	0,4m	6m	No
L1938:2372	1959	Null	Round	5-6m	Null	1-2m	0,9m	6m	No
L1938:1836	1959	Null	Round	3m	Null	Null	0,4m	6m	No

Summary of Stor-Halörs-grundet

There are no possible Iron Age monuments in the area of Stor-Halörs-grundet. This is based on the fact that the island was submerged beneath the Baltic sea throughout the entire Scandinavian Iron Age period. The morphology of the ancient monuments in this area also suggest that they are younger, post Scandinavian Iron Age monuments.

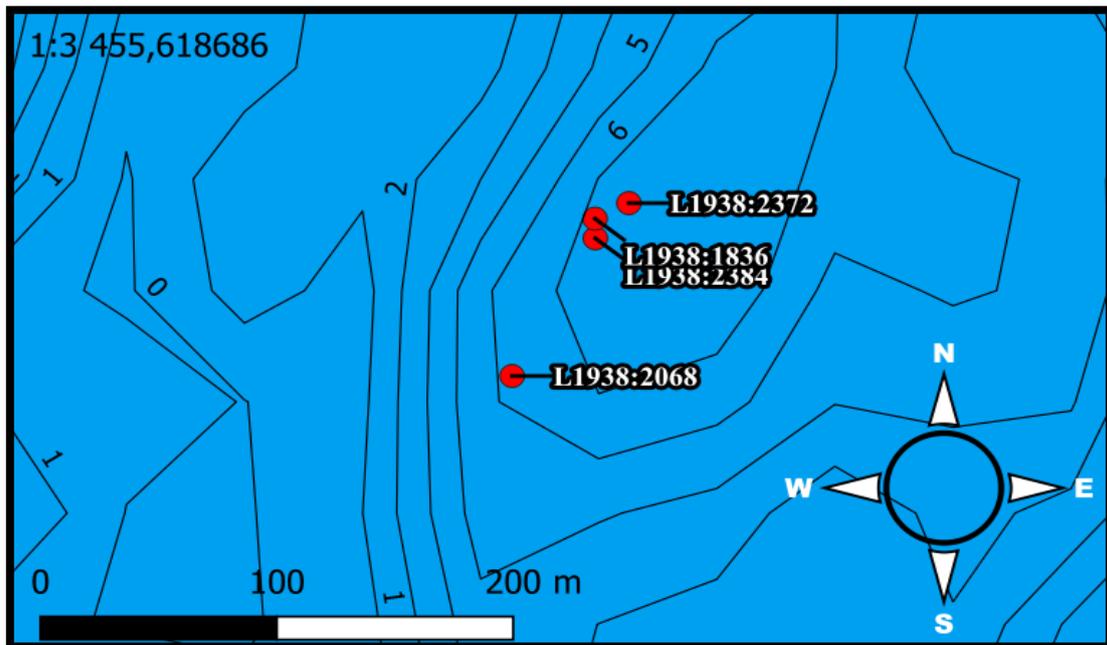


Figure 5. Topographic map depicting the submerged area of Stor-Halörs-grundet. Each contour line represents 1 meter height intervals.

4.1.3.3. Stora Fjäderägg

The third area of research in this essay is Stora Fjäderägg. Stora Fjäderägg is an island that is located in the northeastern part of Holmöarna archipelago (see figure 6). This island, although large in size, is not one of the main islands that make up the majority of the archipelago in the modern day. This could perhaps have been different during the Scandinavian Iron Age, when the island of Stora Fjäderägg made up a large percentage of the archipelago's total landmass (see figure 1 & 2). This island harbours a total of 20 registered ancient monuments (see figure 6). These monuments consist of 10 hut foundations, 1 stone circle, 4 labyrinths, 3 compass roses, and 2 fishing villages (Riksantikvarieämbetet 2023).

Hut foundations of Stora Fjäderägg

The most common type of ancient monument in the area of Stora Fjäderägg are hut foundations. There is a total of 10 registered ancient hut foundations in this area. All of these hut foundations are located on land which would have been elevated above the sea level of the Scandinavian Iron Age period (see figure 6). When it comes to morphology, there are hut foundations in this area that has morphological traits of both younger and older types of hut foundations, as they come in many different shapes and sizes (see table 4). The Iron Age hut foundations are often larger, more robust, and superiorly constructed compared to the typical post Scandinavian Iron Age hut foundation (Bergman & Ramqvist 2018:16–17). Several ancient monuments in this area were subjected to archaeological investigations in the year 1987 by the Arctic Studies Center (Broadbent 2005:44–55). One of the investigated ancient monuments is hut foundation L1937:7633 (see table 4). Inside this hut foundation there was a hearth in which the remains of bone and charcoal was found. These archaeological finds were dated to between 890–1160 AD (Broadbent 2005:46). Another hut foundation that was investigated is hut foundation L1937:7634 (see table 4). When this ancient hut foundation was investigated, a hearth was found containing archaeological finds in the form of ceramics, charcoal, and flint (Broadbent 2005:51). The charcoal was dated to between 710–1040 AD, which is a period of time that falls entirely inside that of the Scandinavian Iron Age period (Broadbent 2005:51). A third ancient hut foundation at the island of Stora Fjäderägg that was subjected to archaeological investigation is L1938:1779 (see figure 6). Inside this hut foundation the archaeologists discovered yet another hearth that held archaeological finds in the form of ceramics, bones, slag, and flint (Broadbent 2005:49). Notable about this hut foundation is that the artefacts from within provided dates between 250–1200 AD (Broadbent 2005:49), which theoretically could suggest that this particular hut foundation was in use for almost a thousand years.

Table 4. Data on the hut foundations of Stora Fjäderägg.

Identification number	Year of survey	Year of excavation	Shape	Outside diameter	Inside diameter	Wall width	Height	Elevation	Possible Iron Age monument
L1938:1779	1959	1987	Rectangular	7m	Null	0,6-1m	0,3m	20m	Yes
L1937:7633	1987	1987	G-formed	8x5m	3x4m	1m	0,3–0,5m	22m	Yes
L1937:7634	1987	1987	Oval	6x4,5m	4x3m	Null	Null	12m	Yes
L1938:1285	1959	Null	Round	4m	Null	0,7m	0,3m	15m	Yes
L1938:1446	1959	Null	Rectangular	4x3m	Null	1m	0,3m	15m	Yes
L1938:1447	1959	Null	Null	Null	Null	1m	0,2m	15m	Yes
L1938:1759	1959	Null	Round	4-5m	Null	0,5-1m	0,2–0,3m	20m	Yes
L1938:1838	1959	Null	Square	4x4m	Null	1m	0,4m	15m	Yes
L1938:1839	1959	Null	Rectangular	5x4m	Null	0,3–0,4m	0,2–0,3m	15m	Yes
L1938:2447	1959	Null	Rectangular	4x3m	Null	1m	0,3m	20m	Yes

Stone circles of Stora Fjäderägg

There is only 1 stone circle located on Stora Fjäderägg (see table 5), and it is located less than 10 meters above the modern day sea level and would therefore have been below the sea level of the Scandinavian Iron Age period (see figure 6).

Table 5. Data on the Stone circles of Stora Fjäderägg.

Identification number	Year of survey	Year of excavation	Shape	Outside diameter	Inside diameter	Wall width	Height	Elevation	Possible Iron Age monument
L1938:1550	1959	Null	Square	3x2m	Null	0,4–0,5m	0,3m	9m	No

Labyrinths of Stora Fjäderägg

There are 4 labyrinths located on Stora Fjäderägg (see table 6). All of these are below 10 m.a.s.l. and therefore located on land that would have been submerged beneath the sea level of the Scandinavian Iron Age period (see figure 6). In Broadbent & Sjöberg (1990:295), it is stated that all labyrinths of Stora Fjäderägg most likely were built in the 16th century AD.

Table 6. Data on the Labyrinths of Stora Fjäderägg.

Identification number	Year of survey	Year of excavation	Shape	Diameter	Stone size	Elevation	Possible Iron Age monument
L1938:1587	1959	Null	Round	7-8m	0,1–0,2m	8m	No
L1938:1999	1959	Null	Round	8-9m	0,1–0,2m	9m	No
L1938:2150	1959	Null	Round	8-9m	0,1–0,4m	9m	No
L1938:1303	1959	Null	Round	12-13m	0,1–0,2m	7m	No

Compass roses of Stora Fjäderägg

There are 3 ancient compass roses located on Stora Fjäderägg (see table 7). It would seem like none of these are possible Iron Age monuments based on the fact that the land on which they are located is several meters below the sea level of the Scandinavian Iron Age period (see figure 6).

Table 7. Data on the compass roses of Stora Fjäderägg.

Identification number	Year of survey	Year of excavation	Diameter	Stone size	Middle cairn diameter	Elevation	Possible Iron Age monument
L1938:1449	1959	Null	3m	0,1–0,4m	Null	7m	No
L1938:1588	1959	Null	3–4m	0,1–0,2m	0,5m	5m	No
L1938:1304	1959	Null	1,5-2m	Null	Null	7m	No

Fishing villages of Stora Fjäderägg

There are 2 fishing villages located on Stora Fjäderägg (see table 8). One of them, L1938:1932, is of particular interest. This ancient fishing village is located on land that would have been elevated above the Scandinavian Iron Age sea level (see figure 6). It is also one of the very few sites in the entire archipelago of Holmöarna that has been subjected to an archaeological investigation and dated (Broadbent 2005:49). The date of this monument was determined to be between year 1010–1170 AD (Broadbent 2005:49).

Table 8. Data on the fishing villages of Stora Fjäderägg.

Identification number	Year of survey	Year of excavation	Number of hut foundations	Diameter of hut foundations	Dating	Elevation	Possible Iron Age monument
L1937:7631	Null	1987	2	A) 4x3,5m B) 5x4m	1480–1650 AD	8m	No
L1938:1932	1959	1987	10	3–5,5m	1010–1170 AD	15-17m	Yes

Summary of Stora Fjäderägg

The area of Stora Fjäderägg contains the most registered ancient monuments in the entire archipelago of Holmöarna. In this area alone, there is a total of 7 possible Iron Age monuments and 4 confirmed Iron Age monuments. These consist of 10 hut foundations and 1 Fishing village.

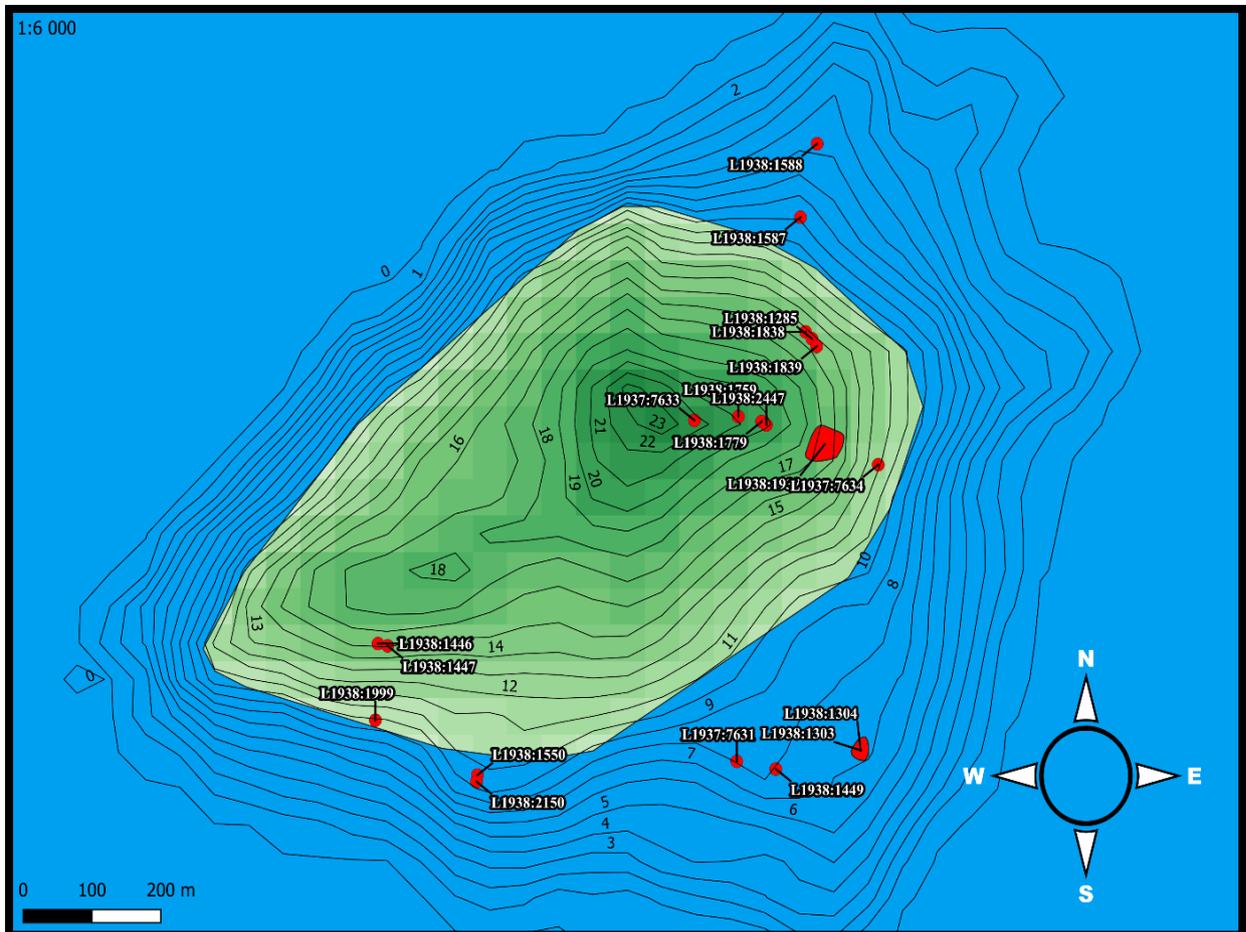


Figure 6. Topographic map showing Stora Fjäderägg as it was in the Scandinavian Iron Age period at ca. 1000 AD. Each contour line represents 1 meter height intervals.

4.1.3.4. Myrorna

The fourth area of research in this essay is Myrorna. The area of Myrorna is located roughly in the center of the main island Holmön. This area only has 1 registered ancient monument (Riksantikvarieämbetet 2023). This ancient monument is a hut foundation (see table 9). What is perhaps most notable about the area of Myrorna and its one and only registered ancient monument, is that this area would have been located on fairly high ground even during the Scandinavian Iron Age period at ca. 1000 AD (see figure 7). Therefore it is possible that the area could contain many more ancient monuments that might have been overlooked in previous surveys. Another explanation as to why this ancient hut foundation is found in an isolated location that is far away from any other hut foundations could be that it is a very old hut foundation. According to Landin & Rönby (2003), the older hut foundations are more often than not isolated from other hut foundations, as is the case of L1938:390.

Hut foundations of Myrorna

The only registered ancient hut foundation in this area is a possible Iron Age monument (see table 9), as it is very large in size, robust, and located on high ground in a very isolated location far away from any other hut foundations (see figure 7), which are all common traits of Iron Age hut foundation (Bergman & Ramqvist 2018:16–17; Landin & Rönby 2003:9).

Table 9. Data on the hut foundations of Myrorna.

Identification number	Year of survey	Year of excavation	Shape	Outside diameter	Inside diameter	Wall width	Height	Elevation	Possible Iron Age monument
L1938:390	1959	Null	Round	7m	Null	1–1,5m	0,3-1m	16m	Yes

Summary of Myrorna

In the area of Myrorna there is 1 possible Iron Age monument. This monument is a hut foundation. The morphology of this hut foundation mainly suggest that it is a Scandinavian Iron Age monument. The hut foundation is located on very high elevation that was many meters above the sea level during the Scandinavian Iron Age period.

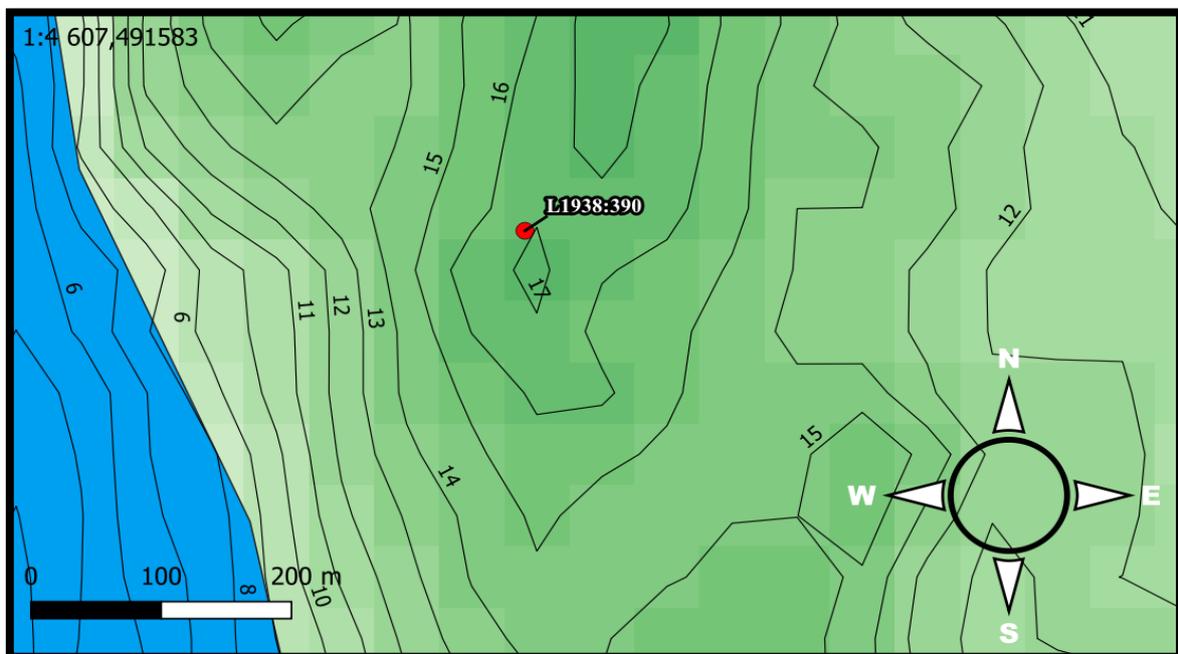


Figure 7. Topographic map showing the area of Myrorna as it was in the Scandinavian Iron Age period at ca. 1000 AD. Each contour line represents 1 meter height intervals.

4.1.3.5. Skatan

The fifth area of research in this essay is Skatan. In the modern day, Skatan is located a bit inland on the southern part of the main island of Holmön (see figure 8). But this was not the case during the Scandinavian Iron Age period at ca. 1000 AD, when this area was a peninsula located at the very bottom of what is the largest island in the archipelago of Holmöarna (see figure 8). In this area there are 5 different monuments that has been registered in KMR, these consist of 3 hut foundations and 2 cairns (Riksantikvarieämbetet 2023).

Hut foundations of Skatan

In the area of Skatan, there are 2 registered ancient hut foundations and 1 possible ancient hut foundation (see table 10). By looking at the morphology of these hut foundations, it would seem that they are of younger, post Scandinavian Iron Age types. This is based on the fact

that they are rather small in size, round in their shapes, and also located in somewhat close relation to each other, which are all traits that are typical of younger types of hut foundations (Bergman & Ramqvist 2018:16–17; Landin & Rönby 2003:9). The elevation of these monuments suggests that they would have been just above sea level at the latest stage of the Scandinavian Iron Age. Based on the elevation and morphology of these hut foundations, it is likely that they are medieval monuments, although still possible Iron Age monuments.

Table 10. Data on the hut foundations of Skatan.

Identification number	Year of survey	Year of excavation	Shape	Outside diameter	Inside diameter	Wall width	Height	Elevation	Possible Iron Age monument
L1938:216	1959	Null	Round	5m	Null	1m	0,4m	11m	Yes
L1938:217	1959	Null	Round	4m	Null	0,5-1m	0,2m	10m	Yes
L1938:914	1959	Null	Round	4,5m	2m	1m	0,4m	11m	Yes

Cairns of Skatan

In the area of Skatan, there are 2 registered ancient cairns, one of which is a possible Iron Age monument (see table 11). Cairn L1938:283 is located on land that would have been below the sea level of the Scandinavian Iron Age period, and it is therefore not classified as a possible Iron Age monument. Cairn L1938:234 is located on land that would have been above sea level at the time (see table 11), and is therefore a possible Iron Age monument.

Table 11. Data on the cairns of Skatan.

Identification number	Year of survey	Year of excavation	Outside diameter	Height	Stone size	Middle pit diameter	Middle pit depth	Elevation	Possible Iron Age monument
L1938:234	1959	Null	6m	1m	0,2–0,5m	4m	0,4m	12m	Yes
L1938:283	1959	Null	3-4m	0,6m	0,3–0,7m	1m	0,6m	9m	No

Summary of Skatan

In skatan there is a total of 4 registered ancient monuments and 1 possible ancient monument. Out of these monuments, 4 are possible Iron Age monuments. The morphology of the ancient monuments in this area mainly suggest that they are younger, post Iron Age monuments.

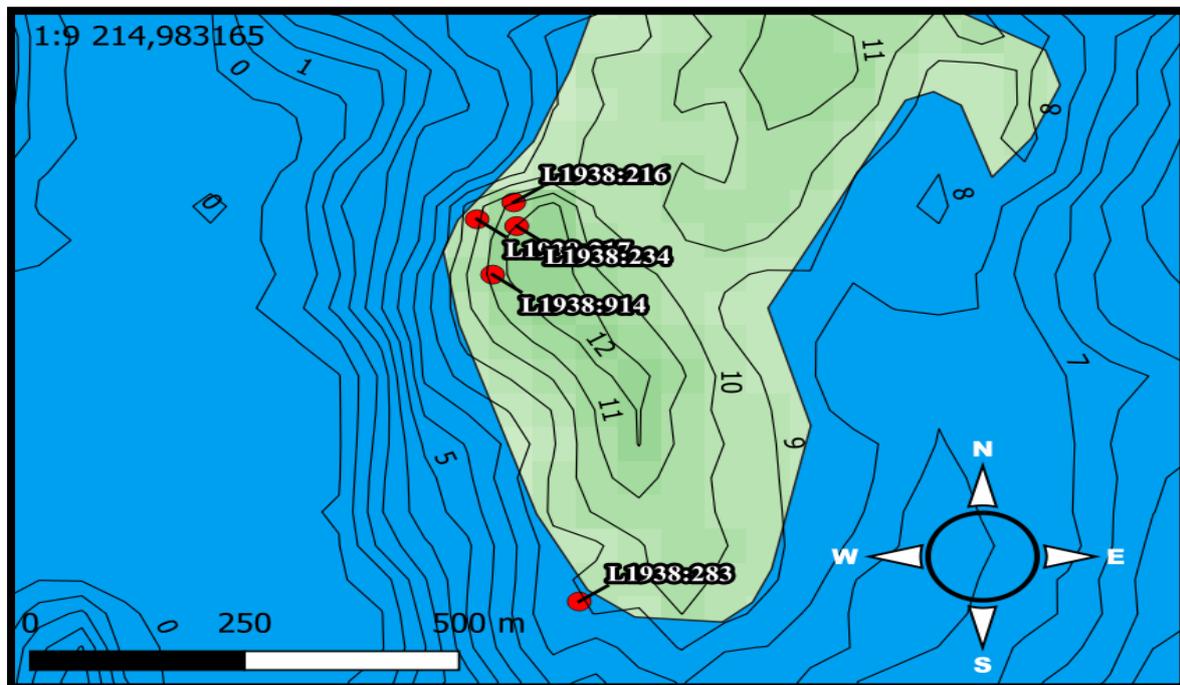


Figure 8. Topographic map showing the area of Skatan as it was in the Scandinavian Iron Age period at ca. 1000 AD. Each contour line represents 1 meter height intervals.

4.1.3.6. Kvarnhällorna

The sixth area of research in this essay is Kvarnhällorna. Kvarnhällorna is a location that in the modern day lies in the northernmost parts of the main island of Holmön. During the Scandinavian Iron Age, this area was a tiny island (see figure 9). In this area there are 2 ancient monuments, both of which are hut foundations (Riksantikvarieämbetet 2023).

Hut foundations of Kvarnhällorna

In the area of Kvarnhällorna, there are 2 hut foundations (see table 12). The morphology of these hut foundations suggest that they are of an older type, as they are rather large while one of them is shaped as a square, which are common traits of the older Iron Age hut foundations, but they also show signs of being younger, post Scandinavian Iron Age types due to them being located in such close proximity to each other (Bergman & Ramqvist 2018:16–17; Landin & Rönnby 2003:9). However, both monuments are located just below the sea level of the Scandinavian Iron Age (see figure 9). Based on the elevation of these hut foundations, they were most likely constructed a short period of time after the end of the Iron Age period.

Table 12. Data on the hut foundations of Kvarnhällorna.

Identification number	Year of survey	Year of excavation	Shape	Outside diameter	Inside diameter	Wall width	Height	Elevation	Possible Iron Age monument
L1938:1976	1959	Null	Square	6x5m	Null	1m	0,5m	9m	No
L1938:2473	1959	Null	Oval	6x4m	Null	1m	0,5m	9m	No

Summary of Kvarnhällorna

In Kvarnhällorna there are 2 registered ancient monuments. Both of these are hut foundations of which none are possible Iron Age monuments. The location of these 2 hut foundations was submerged beneath the waters of the Baltic sea during the Scandinavian Iron Age period, and their morphology suggest that they are of older types typical of the Scandinavian Iron Age. Nonetheless, as their location was submerged under the waters of the Baltic sea even during the later stages of the Scandinavian Iron Age, they can not be Iron Age monuments.

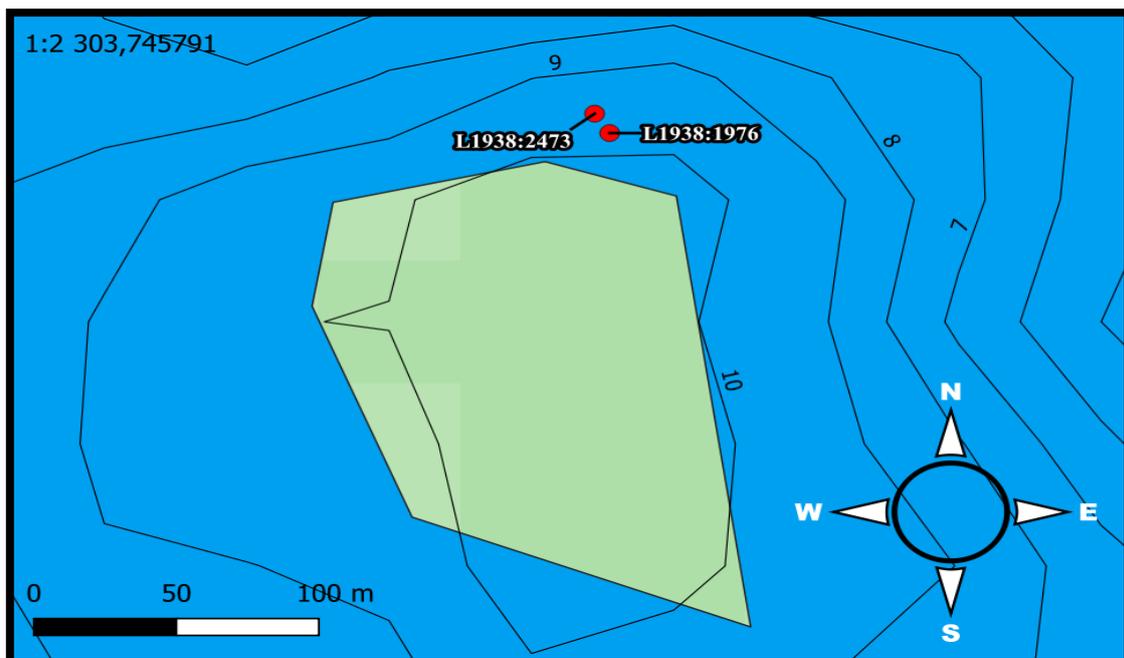


Figure 9. Topographic map depicting Kvarnhällorna as it was during the Scandinavian Iron Age period at ca. 1000 AD. Each contour line represents 1 meter height intervals.

4.1.3.7. Grossgrunden

The seventh area of research in this essay is Grossgrunden. Grossgrunden is one of the four main islands of Holmöarna. There is only 1 registered ancient monument in this entire area (Riksantikvarieämbetet 2023). This one and only monument is hut foundation L1938:1996, which is located in the northeastern part of the island. During the Iron Age period, the entire island of Grossgrunden was submerged beneath the waters of the Baltic sea (see figure 10).

Hut foundations of Grossgrunden

There is 1 hut foundation on the island of Grossgrunden (see table 13). The morphology of this hut foundation suggests that it is of a younger, post Scandinavian Iron Age type, as it is rather small in size and round in its shape, which are both common traits of post Scandinavian Iron Age hut foundations (Bergman & Ramqvist 2018:16–17). Based on the elevation of this hut foundation, as well as its morphology, this is no Iron Age monument.

Table 13. Data on all hut foundations of Grossgrunden.

Identification number	Year of survey	Year of excavation	Shape	Outside diameter	Inside diameter	Wall width	Height	Elevation	Possible Iron Age monument
L1938:1996	1959	Null	Round	5m	Null	1–1,5m	0,3–0,7	4-5m	No

Summary of Grossgrunden

There are no possible Iron Age monuments in the area of Grossgrunden. The entire land area of the island was submerged beneath the Baltic sea throughout the Scandinavian Iron Age period. The morphology of hut foundations also suggest that this ancient monument is of a younger, post Scandinavian Iron Age type.

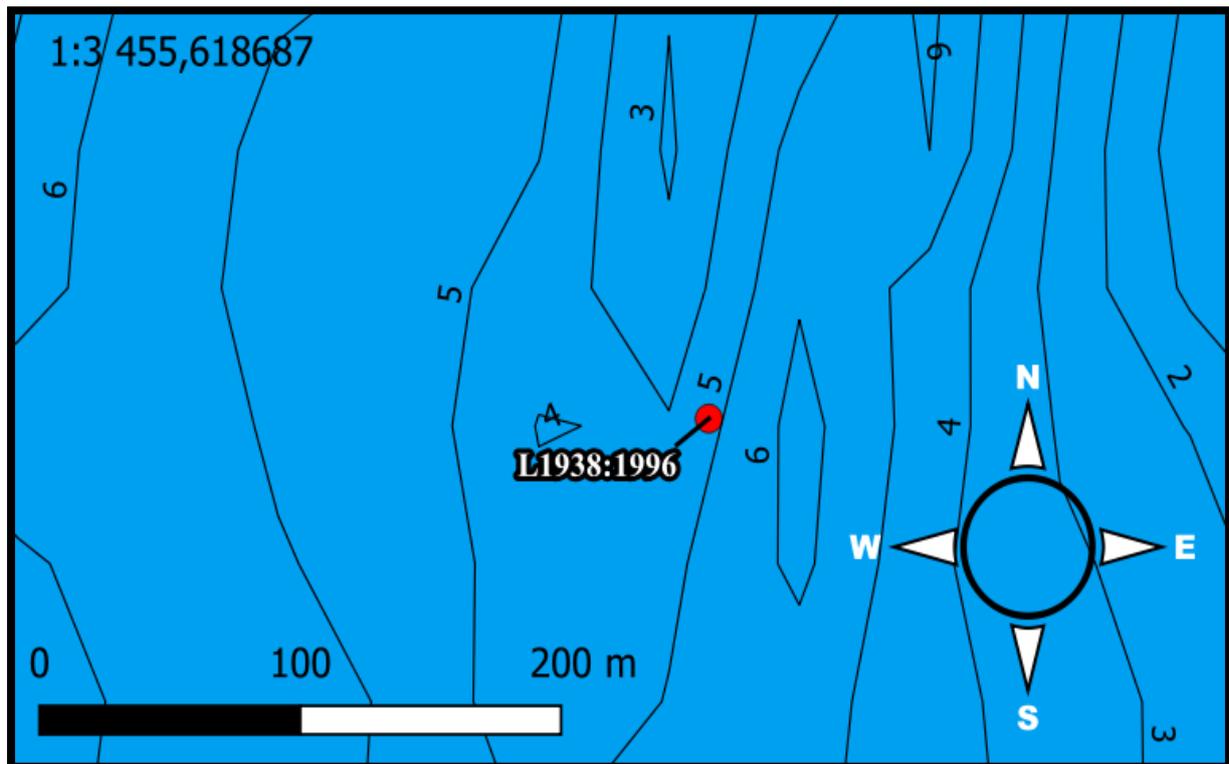


Figure 10. Topographic map depicting Grossgrunden as it was during the Scandinavian Iron Age period at ca. 1000 AD. Each contour line represents 1 meter height intervals.

4.1.3.8. Kammen

The eighth area of research in this essay is Kammen. Kammen is located in the northwestern part of the main island of Holmön. During the later stages of the Scandinavian Iron Age period, at *ca.* 1000 AD, this area was a small island, separated from the much larger main island (see figure 12). There is a total of 4 ancient monuments located in this area. These consist of 1 ancient hut foundation and 3 ancient cairns (Riksantikvarieämbetet 2023).

Hut foundations of Kammen

There is 1 registered hut foundation in the area of Kammen (see table 14). The morphology of this hut foundation suggest that it is a younger, post Scandinavian Iron Age hut foundation, mainly as it is round in shape, but also because it is not very large or robust in its structure (Bergman & Ramqvist 2018:16–17). However, the hut foundation is located on relatively high ground (see figure 12), in what seems like an isolated location without any other hut foundations nearby, which are common for Iron Age hut foundations (Landin & Rönby 2003:9) As this hut foundation is chronologically unspecified and located on land that was above the sea level during the Scandinavian Iron Age, it is a possible Iron Age monument.

Table 14. Data on the hut foundations of Kammen.

Identification number	Year of survey	Year of excavation	Shape	Outside diameter	Inside diameter	Wall width	Height	Elevation	Possible Iron Age monument
L1938:2445	1959	Null	Round	5-6m	Null	0,5-1m	0,2-0,3m	13	Yes

Cairns of Kammen

In the area of Kammen, there are 3 registered ancient cairns (see table 15). These cairns are all possible Iron Age monuments, as they are located on land that would have been elevated above the sea level of the Scandinavian Iron Age period (see figure 12). There is a sign with information next to cairn L1938:1365 which states that it was a cairn assumed to be from the Iron Age period that had been plundered sometime in the 1910s (see figure 11). The sign further states that during the plundering a spearhead and a cranium was found amongst other things (see figure 11), which are 2 items that are very similar in description to the artefacts that are currently in the possession of Västerbotten's museum, which are registered in their database as an iron arrowhead and cranium of which both were plundered from an unknown cairn in the archipelago of Holmöarna. Although it is uncertain, based on this evidence cairn L1938:1365 could be the same unknown cairn that the iron arrowhead, cranium and slate whetstone from the database of Vbm was originally plundered from.

Table 15. Data on the cairns of Kammen.

Identification number	Year of survey	Year of excavation	Outside diameter	Height	Stone size	Middle pit diameter	Middle pit depth	Elevation	Possible Iron Age monument
L1938:1287	1959	Null	7m	0,8m	0,1-0,4m	5x4m	0,8m	15m	Yes
L1938:1364	1959	Null	5m	0,6m	0,2-0,4m	Null	Null	15m	Yes
L1938:1365	1959	Null	6m	0,5m	0,1-0,5m	Null	Null	16m	Yes

Summary of Kammen

In the area of Kammen there is a total of 4 ancient monuments that are possible Iron Age monuments. Due to the high elevations of the ancient monuments of Kammen, and the fact that they are all chronologically unspecified, they must all be considered as possible Iron Age monuments. There is even a sign next to cairn L1938:1365 that outright states that the cairns in the area are traces from the viking age (see figure 11), but the source of the information that is written on this sign is uncertain.

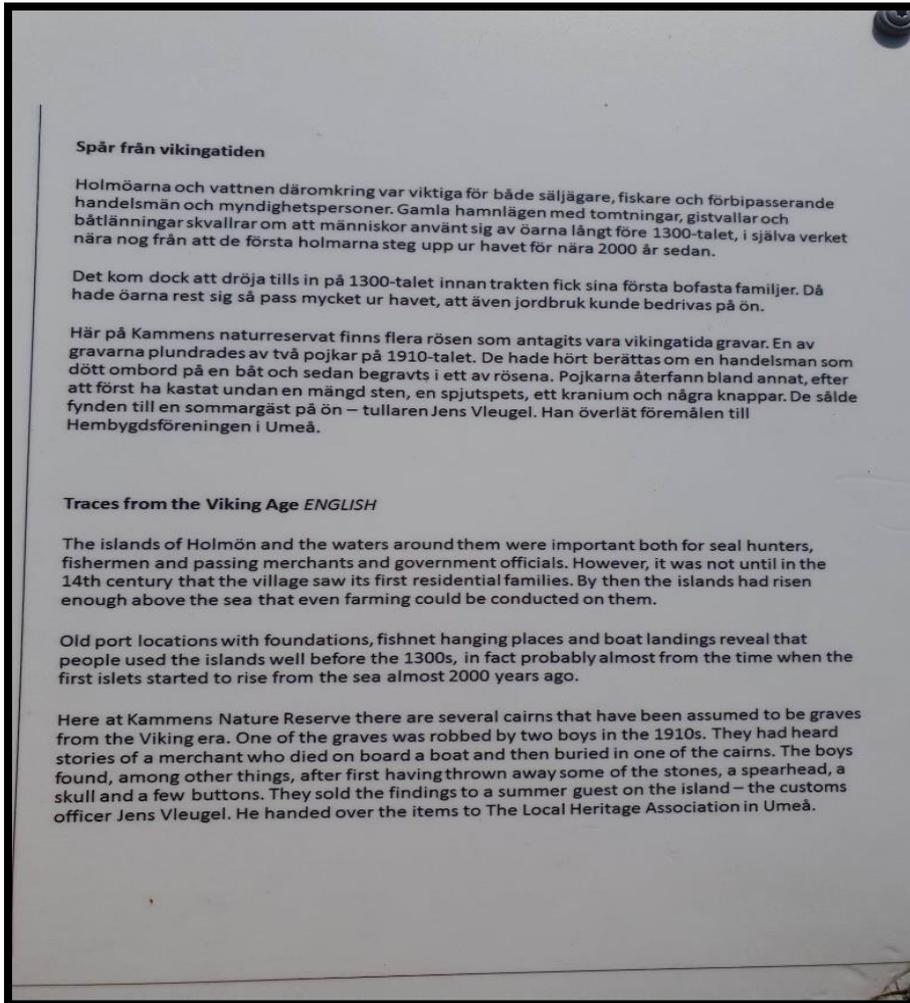


Figure 11. Image of the sign next to L1938:1365, which states that there are several assumed Viking era cairns in the area. Photo: Alexander Bodén.

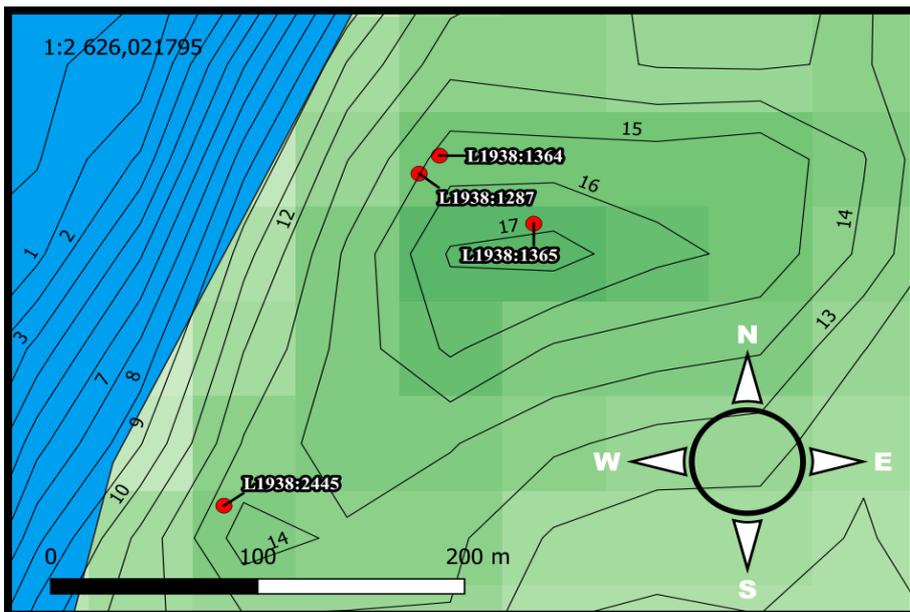


Figure 12. Topographic map showing the area of Kammen as it was in the Scandinavian Iron Age period at ca. 1000 AD. Each contour line represents 1 meter height intervals.

4.1.3.9. Lill-Fjäderägg

The ninth area of research in this essay is Lill-Fjäderägg. Lill-Fjäderägg is an island of relatively large scale in the modern day. But this was not the case during the Scandinavian Iron Age period, when the island seemingly was fully submerged beneath the waters of the Baltic sea (see figure 13). The ancient monuments at Lill-Fjäderägg was surveyed as a group and seemingly even briefly as such. The information from the survey on these ancient monuments are written on the same page, in the same old field documentation from the year 1959. The monuments that are registered at Lill-Fjäderägg consist of 1 hut foundation, 1 stone cairn, 1 compass rose, and 1 labyrinth (Riksantikvarieämbetet 2023). The monuments of Lill-Fjäderägg are registered as one single entity in KMR, and they are therefore represented on the map as a polygon (see figure 13). This makes it impossible to calculate the exact elevation of each individual monument from this data. According to the GIS-analysis, the monuments of Lill-Fjäderägg are all located somewhere between 6–9 meters above the modern day sea level (see figure 13), which means that their location would have been below the sea level of the latest stage of the Scandinavian Iron Age period. Additionally, one of the monuments was dated to the 16th century AD (Broadbent & Sjöberg 1990:295), and thus the monuments of Lill-Fjäderägg are not considered as possible Iron Age monuments.

Hut foundations of Lill-Fjäderägg

In the area of Lill-Fjäderägg there is 1 registered ancient hut foundation (see table 16). The morphology of hut foundations does suggest that this is a younger, post Scandinavian Iron Age hut foundation, as it is small in size and round in its shape (Bergman & Ramqvist 2018:16–17). The location of this hut foundation was submerged beneath the waters of the Baltic sea during the Scandinavian Iron Age period.

Table 16. Data on the hut foundations of Lill-Fjäderägg.

Identification number	Year of survey	Year of excavation	Shape	Outside diameter	Inside diameter	Wall width	Height	Elevation	Possible Iron Age monument
L1938:2072	1959	Null	Round	4-5m	Null	1m	0,4-0,5m	6-9m	No

Labyrinths of Lill-Fjäderägg

There is 1 registered ancient labyrinth on Lill-Fjäderägg (see table 17). According to Broadbent & Sjöberg (1990:295), this labyrinth was dated to the 16th century AD through lichenometry.

Table 17. Data on the labyrinths of Lill-Fjäderägg.

Identification number	Year of survey	Year of excavation	Shape	Diameter	Stone size	Elevation	Possible Iron Age monument
L1938:2070	1959	Null	Null	6m	0,2-0,3m	6-9m	No

Compass roses of Lill-Fjäderägg

On Lill-Fjäderägg there is 1 registered ancient compass rose (see table 18). This compass rose is described in its field documentation as having a insignificant cairn in the middle of the compass with smaller strings of stone reaching outwards from this middle cairn. This ancient monument is located in an area that was submerged beneath the Baltic sea during the Scandinavian Iron Age period.

Table 18. Data on the compass roses of Lill-Fjäderägg.

Identification number	Year of survey	Year of excavation	Diameter	Stone size	Middle cairn diameter	Elevation	Possible Iron Age monument
L1938:2073	1959	Null	2,5m	0,1-0,3m	0,4m	6-9m	No

Seamarks of Lill-Fjäderägg

In the area of Lill-Fjäderägg there is 1 registered ancient seamark (see table 19). This seamark is described in its field documentation as a cairn with some sort of pole in it. The purpose and origin of this pole is unknown. This ancient monument is located in an area that was located below the sea level during the Scandinavian Iron Age period.

Table 19. All of the data on the seamarks of Lill-Fjäderägg.

Identification number	Year of survey	Year of excavation	Diameter	Height	Stone size	Elevation	Possible Iron Age monument
L1938:2071	1959	Null	5m	1,2m	0,2-0,5m	6-9m	No

Summary of Lill-Fjäderägg

In the area of Lill-Fjäderägg, there are no possible Iron Age monuments, as the location of the monuments was below sea level during the latest stage of the Scandinavian Iron Age period. The morphology of the hut foundation in this area also suggests that it is of a post Scandinavian Iron Age type. The ancient labyrinth was dated to the 16th century AD through lichenometry (Broadbent & Sjöberg 1990:295), which could suggest that the other monuments are from this period in time as well.

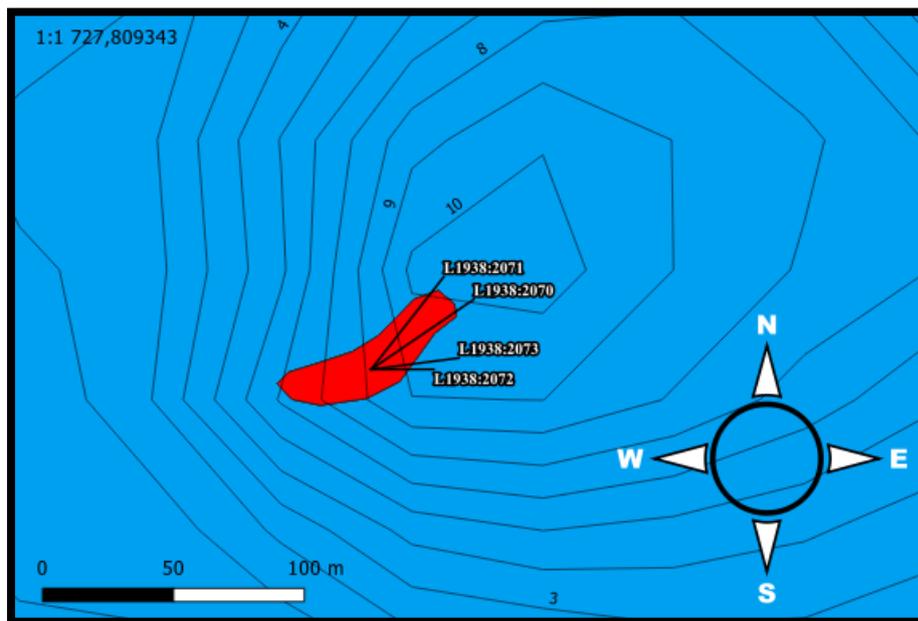


Figure 13. Topographic map depicting Lill-Fjäderägg as it was during the Scandinavian Iron Age period at ca. 1000 AD. Each contour line represents 1 meter height intervals.

4.1.3.10. Svinberget, Strandberget and Sör-Snöcksmyran

The tenth area of research in this essay is a combination of three different smaller areas. These areas are known as Svinberget, Strandberget and Sör-Snöcksmyran, and they are included in the same area of analysis as they all have monuments within their vicinities that are located in very close proximity to each other (see figure 14). In the modern day, this area is located quite the distance inland on the main island of Holmön. But during the Scandinavian Iron Age period, this area was situated much closer to the coastline (see figure 14). There are 10 possible ancient monuments and 1 confirmed ancient monument in this area (see figure 14). The 10 possible ancient monuments consist of 4 hut foundations, 2 stone embankments that are registered as resembling ancient monuments, and 1 pit of undescribed

purpose that is registered in KMR simply as other (Riksantikvarieämbetet 2023). The one and only confirmed ancient monument here in this area is a fishing village (Riksantikvarieämbetet 2023). It is rather unclear in what year the majority of the monuments in this area were first surveyed, but from the field documentation that is available for these particular monuments, it would seem that they were surveyed in the year 1994, although not certain.

Hut foundations of Svinberget, Strandberget and Sör-Snöcksmyran

There is a total of 7 registered hut foundations in the areas of Svinberget, Strandberget and Sör-Snöcksmyran (see table 20), and they are all registered as possible ancient monuments. The reason for this is rather unclear, as many other monuments in the archipelago of Holmöarna that have received either the same amount or less attention are registered as ancient monuments. The morphology of these hut foundations is tricky, as they all have several traits that are common of both Iron Age hut foundations and post Iron Age hut foundations. The traits that suggest an Iron Age chronology for these hut foundations are their shapes, which are mostly rectangular, and the fact that they are located 18–19 meters above sea level, which is common for Iron Age hut foundations (Broadbent 2010:43). The traits that suggest a post Iron Age chronology is that they are mostly small in size with thin walls, and that some hut foundations are oval in shape (Bergman & Ramqvist 2018:16–17).

Table 20. Data on the hut foundations of Svinberget, Strandberget and Sör-Snöcksmyran.

Identification number	Year of survey	Year of excavation	Shape	Outside diameter	Inside diameter	Wall width	Height	Elevation	Possible Iron Age monument
L1938:1992	1994?	Null	Oval	4,5x2,5m	3x2m	0,5-1m	0,7m	18m	Yes
L1938:2013	1994?	Null	Oval	5x4,5m	2,5x2m	0,8-1,5m	0,2-0,5m	18m	Yes
L1938:2469	1994?	Null	Rectangular	5x4m	3,2x2m	0,5-1m	0,3m	19m	Yes
L1938:1278	1994?	Null	Rectangular	6,5x5,5m	4,5x2,5m	1,5m	0,4m	18m	Yes
L1938:1384	1994?	Null	Oval	6x4m	3m	1-2m	0,4m	18m	Yes
L1938:1910	1994?	Null	Rectangular	6x4m	4x2,5m	0,5-1m	0,4m	19m	Yes
L1938:1277	1994?	Null	Rectangular	6x4m	4,5x3m	0,7-1,2m	0,3m	19m	Yes

Fishing villages of Svinberget, Strandberget and Sör-Snöcksmyran

In the area of Svinberget, Strandberget and Sör-Snöcksmyran, there is 1 fishing village. This fishing village consists of 6 total hut foundations (see table 21). The morphology of the hut foundations that are located in this fishing village mainly suggest that they are of Scandinavian Iron Age chronologies, as they are all rectangular in shape, while some are large and robust in their structure, and they are located 16–18 meters above the sea level (Bergman & Ramqvist 2018:16–17; Broadbent 2010:43).

Table 21. Data on the fishing villages of Svinberget, Strandberget and Sör-Snöcksmyran.

Identification number	Year of survey	Year of excavation	Number of hut foundation	Shape	Diameter of hut foundations	Wall width	Elevation	Possible Iron Age monument
L1938:2451	1959	Null	6	Rectangular	4x3-6x3m	1-1,5m	16-18m	Yes

Resembling ancient monuments of Svinberget, Strandberget and Sör-Snöcksmyran

The monuments that are registered in KMR as resembling ancient monuments are in fact stone embankments (see table 22). It is unclear what type of monument these stone embankments were part of, but they are located 18–19 meters above sea level, which means that they would have been well above sea level during the Scandinavian Iron Age period.

Table 22. Data on the resembling ancient monuments of Svinberget, Strandberget and Sör-Snöcksmyran.

Identification number	Year of survey	Year of excavation	Type of monument	Length	Width	Height	Stone size	Elevation	Possible Iron Age monument
L1938:1934	1994?	Null	Stone embankment	3,5m	0,9m	0,4m	Null	18m	Yes
L1938:2448	1994?	Null	Stone embankment	4m	1m	Null	0,2-0,4m	19m	Yes

Other of Svinberget, Strandberget and Sör-Snöcksmyran

The possible ancient monument that is registered in KMR simply as other, is in fact some kind of pit (see table 23). The purpose that this pit served in the past is very unclear and there is almost no information available at all in regards to this monument. Nonetheless, this possible ancient monument is located at an elevation of 18 meters above sea level, which means that it would have existed above the sea level of the Iron Age period (see figure 14).

Table 23. All data on the other of Svinberget, Strandberget and Sör-Snöcksmyran.

Identification number	Year of survey	Year of excavation	Type of monument	Diameter of pit	Depth of pit	Elevation	Possible Iron Age monument
L1938:2012	1994?	Null	Pit	1,5m	0,4m	18m	Yes

Summary of Svinberget, Strandberget and Sör-Snöcksmyran

The area of Svinberget, Strandberget and Sör-Snöcksmyran contains a total of 11 possible Iron Age monuments. All of the monuments in this area are located well above the Scandinavian Iron Age sea level.

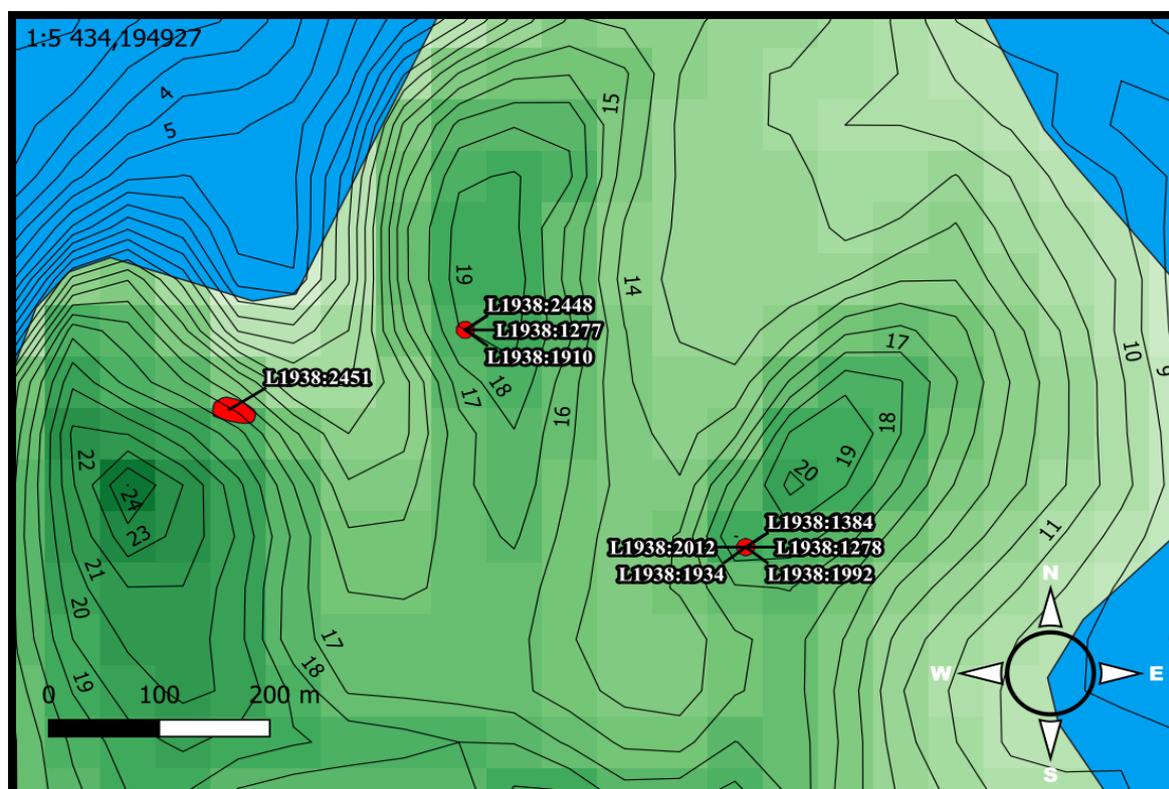


Figure 14. Topographic map depicting the area of Svinberget, Strandberget and Sör-Snöcksmyran as it was during the Scandinavian Iron Age period at ca. 1000 AD. Each contour line represents 1 meter height intervals.

4.1.3.11. Sörbyn

The eleventh area of research in this essay is Sörbyn (see figure 15). In Sörbyn there are 3 registered ancient monuments (see table 24 & 25). These consist of 2 cairns and 1 burial site (Riksantikvarieämbetet 2023). During the Scandinavian Iron Age the area of Sörbyn was split in half by the Baltic sea, and its westernmost part was situated on an island (see figure 15).

Cairns of Sörbyn

In the area of Sörbyn there are 2 registered cairns (see table 24). The first cairn L1938:2082 is rather large in size with a flattened top, while the second Cairn, L1938:1438, is somewhat smaller in size and described in its field documentation as being overgrown by very young pine trees (Riksantikvarieämbetet 2023). Both cairns are located on land that was elevated above the Iron Age sea level (see figure 15).

Table 24. Data on the cairns of Sörbyn.

Identification number	Year of survey	Year of excavation	Outside diameter	Height	Stone size	Middle pit diameter	Middle pit depth	Elevation	Possible Iron Age monument
L1938:2082	1959	Null	6m	0,5m	0,1–0,5m	Null	Null	14m	Yes
L1938:1438	1959	Null	5m	0,6m	0,2–0,4m	Null	Null	14m	Yes

Burial sites of Sörbyn

In Sörbyn there is only 1 registered burial site (see table 25). The burial site is known as L1938:1380, and it is situated almost in the center of Sörbyn (see figure 15). This monument is described in its field documentation as being overgrown by several deciduous trees (Riksantikvarieämbetet 2023). This burial site is located on land that would have been fairly well elevated above Iron Age sea level (see figure 15).

Table 25. All data on the burial sites of Sörbyn is presented here.

Identification number	Year of survey	Year of excavation	Total size	Stone wall width	Stone wall height	Elevation	Possible Iron Age monument
L1938:1380	1959	Null	40x30m	1–1,5m	1–1,7m	13–14m	Yes

Summary of Sörbyn

In Sörbyn, there are 3 possible Iron Age monuments. All of these monuments are located on land that would have been elevated above the sea level of the Scandinavian Iron Age period.

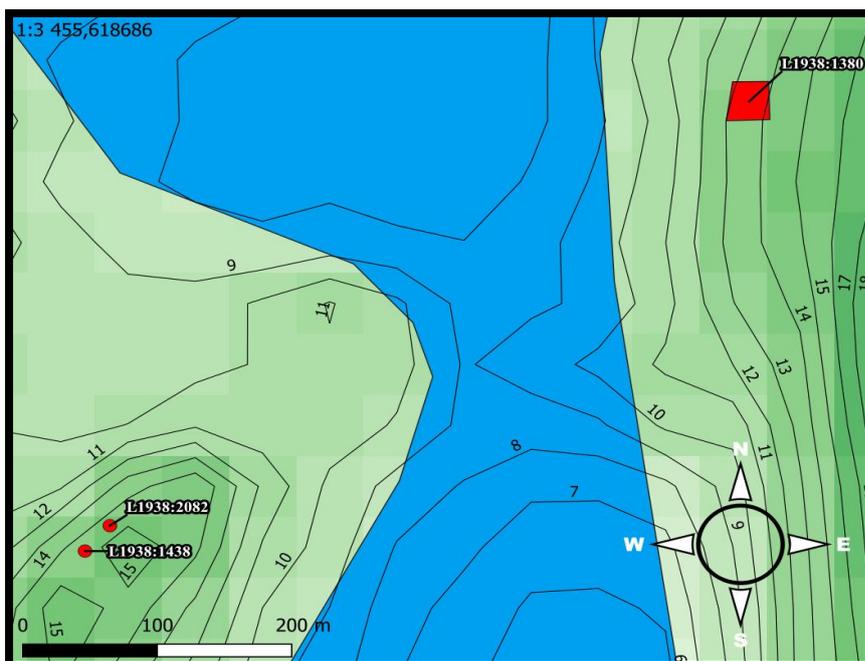


Figure 15. Topographic map depicting the area of Sörbyn as it was during the Scandinavian Iron Age period at ca. 1000 AD. Each contour line represents 1 meter height intervals.

4.1.3.12. Halörsskatan

The twelfth area of research in this essay is Halörsskatan. In Halörsskatan, there is one ancient monument (Riksantikvarieämbetet 2023). This area seems to have been a small island during the Scandinavian Iron Age, and it is the only area in Ängesön with a ancient monument that could have been located above the Scandinavian Iron Age sea level (see figure 16).

Cairns of Halörsskatan

The only registered ancient monument at Halörsskatan is a cairn (see table 26). It is uncertain wheter or not this area and its monument really were above sea level during the Iron Age, as they are right on the edge of being below the Scandinavian Iron Age sea level (see figure 16). According to the data on ancient sea levels that was gathered from SGU (SGU 2019), this monument would have been on land (see figure 16). Due to the uncertainty regarding this monuments elevation, it remains as a possible Iron Age monument untill proven otherwise.

Table 26. Data on the cairns of Halörsskatan.

Identification number	Year of survey	Year of excavation	Outside diameter	Height	Stone size	Middle pit diameter	Middle pit depth	Elevation	Possible Iron Age monument
L1938:1995	1959	Null	4-5m	0,6m	0,3-0,5m	2x1m	0,3m	9-10m	Yes

Summary of Halörsskatan

Almost nothing is known about Halörsskatan and its ancient monument, as the only registered ancient monument here is a cairn with little to no information available to it. Whether or not this cairn was buildt during the Iron Age remains a mystery.

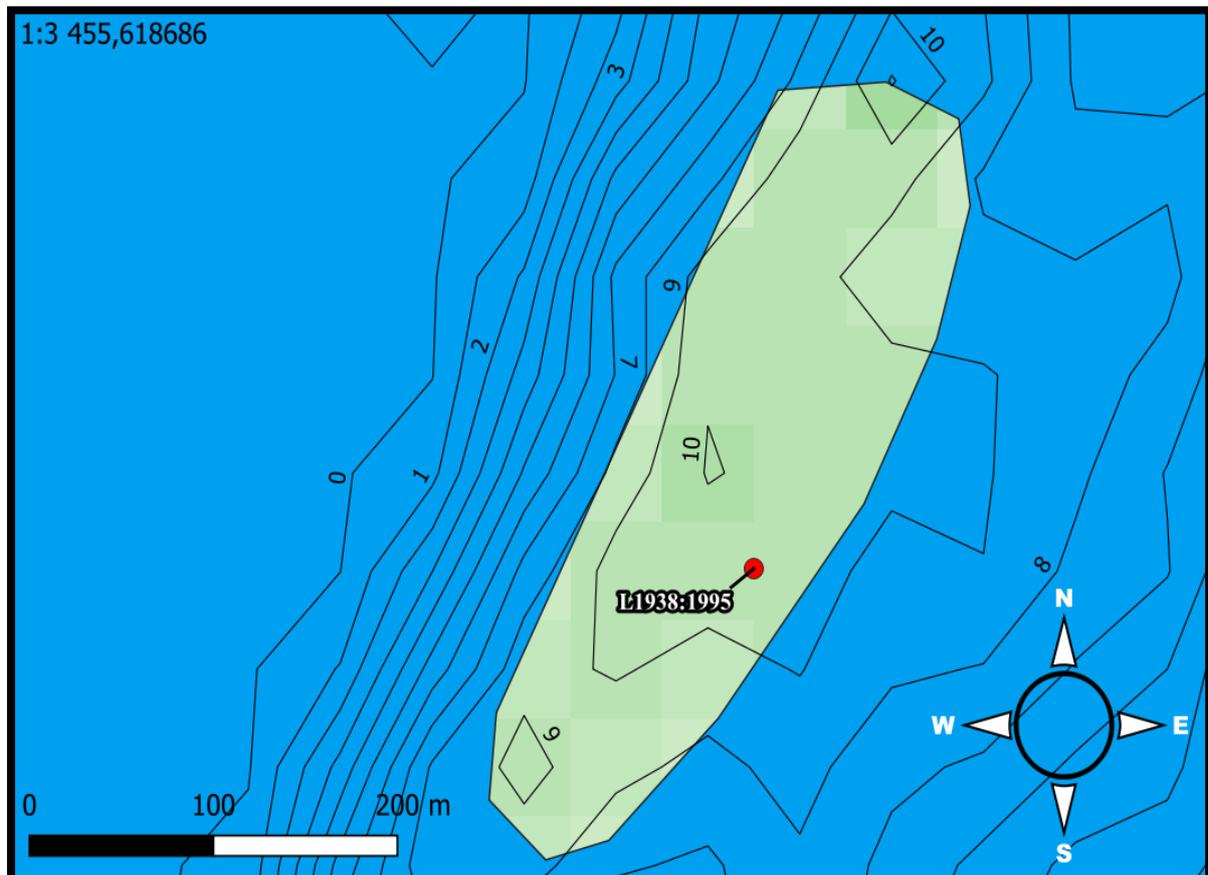


Figure 16. Topographic map depicting Halörsskatan as it was during the Scandinavian Iron Age period at ca. 1000 AD. Each contour line represents 1 meter height intervals.

4.1.3.13. Norrgadden

The thirteenth area of research in this essay is Norrgadden. The area of Norrgadden is located in the northern part of the Holmögadd main island. During the Scandinavian Iron Age period at *ca.* 1000 AD, the entire island of Holmögadd on which the area of Norrgadden is located was completely submerged beneath the waters of the Baltic sea (see figure 17). In this area there is 1 ancient monument (see table 27) and 1 possible ancient monument (see table 28). These ancient and possible ancient monuments consist of a compass rose and a large stone cairn that is registered as resembling ancient monument (Riksantikvarieämbetet 2023).

Compass roses of Norrgadden

The compass rose at Norrgadden is registered as an ancient monument and very little is known about it (see table 27). Its location would have been several meters below the sea level of the Scandinavian Iron Age period (see figure 17).

Table 27. Data on the compass roses of Norrgadden.

Identification number	Year of survey	Year of excavation	Diameter	Stone size	Middle cairn diameter	Elevation	Possible Iron Age monument
L1938:1600	1959	Null	2,5m	0,1-0,3m	0,4m	5m	No

Resembling ancient monument of Norrgadden

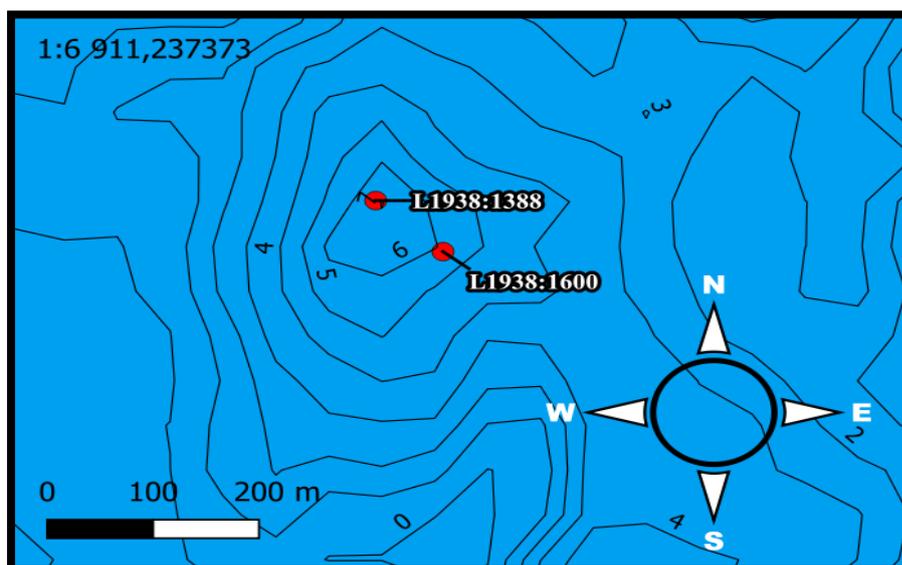
The monument at Norrgadden that is registered in KMR as resembling ancient monument is in fact a large stone cairn that is 9 meters in diameter (see table 28). The location of this cairn would have been below the sea level of the Scandinavian Iron Age period (see figure 17).

Table 28. Data on the resembling ancient monument of Norrgadden.

Identification number	Year of survey	Year of excavation	Type of monument	Diameter	Height	Stone size	Elevation	Possible Iron Age monument
L1938:1388	1924 & 1959 & 1978	Null	Cairn	9m	0,8m	0,2-0,5m	7m	No

Summary of Norrgadden

There is very little information available regarding the ancient and possible ancient monuments of Norrgadden. From the GIS-analysis conducted in this essay, it would seem that neither of the monuments in this area are possible Scandinavian Iron Age monuments, as they are both located on ground that was submerged beneath the sea level at the time.



*Figure 17. Topographic map depicting Norrgadden as it looked like during the Scandinavian Iron Age period at *ca.* 1000 AD. Each contour line represents 1 meter height intervals.*

4.1.3.14. Innerviken & Rentjärnen

The fourteenth area of research in this essay is a combination of two separate areas that are known today as Innerviken and Rentjärnen. The areas of Innerviken & Rentjärnen are located almost in the center of the modern day main island of Holmön. During the Scandinavian Iron Age period, this area was a lot different compared to the modern day, and instead of being located in the center of Holmön, these areas made up a small peninsula (see figure 18). In these areas there are 2 registered ancient fishing villages (Riksantikvarieämbetet 2023).

Fishing villages of Innerviken & Rentjärnen

Both of the fishing villages in the area of Innerviken & Rentjärnen consist of 7 hut foundations each (see table 29). But, the morphology of the hut foundations that are located within these two fishing villages are very different from each other. In the case of fishing village L1938:2213 the morphology of the hut foundations mainly suggest that they are of younger, post Scandinavian Iron Age types, as they are rather small in size (Bergman & Ramqvist 2018:16–17). However, when it comes to fishing village L1938:314, the morphology of the hut foundations mainly suggest that they are older types that are typical to the Iron Age, as they are very large in size, which is a common trait of Scandinavian Iron Age hut foundations (Bergman & Ramqvist 2018:16–17). Both of these fishing villages would have been located above the sea level of the Scandinavian Iron Age (see figure 18).

Table 29. Data on the fishing villages of Innerviken & Rentjärnen.

Identification number	Year of survey	Year of excavation	Number of hut foundations	Shape	Diameter of hut foundations	Dating	Elevation	Possible Iron Age monument
L1938:2213	1959	Null	7	Rectangular	4x3-5x4m	Null	14-15m	Yes
L1938:314	1959	Null	7	Oval	6-10m	Null	12m	Yes

Summary of Innerviken & Rentjärnen

Both ancient fishing villages in the area of Innerviken & Rentjärnen are possible Iron Age monuments. Both sites are located on land which was elevated above the sea level during the Scandinavian Iron Age period.

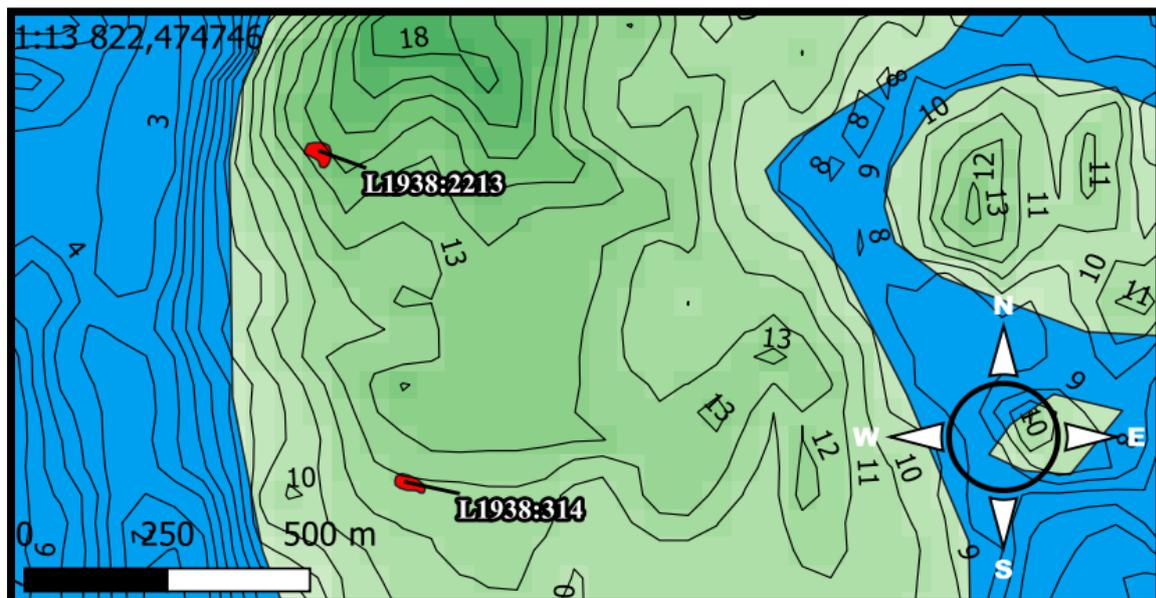


Figure 18. Topographic map depicting Innerviken & Rentjärnen during the Scandinavian Iron Age period at ca. 1000 AD. Each contour line represents 1 meter height intervals.

4.1.3.15. Spiken

The fifteenth area of research in this essay is Spiken. In the modern day, the area of Spiken is situated in the center of the main island of Ängesön. This was not the case during the Iron Age period, when this area was submerged beneath the waters of the Baltic sea (see figure 19). In the area of Spiken, there is 1 possible ancient monument. This possible ancient monuments is L1937:8508, and it is a cooking/storage pit (Riksantikvarieämbetet 2023).

Cooking/storage pits of Spiken

Little is known about the only possible ancient monument in the area of Spiken. What is known however, is that its location was below sea level during the Iron Age period (see figure 19), therefore it is excluded as a possible Iron Age monument (see table 30).

Table 30. All data on the Cooking/storage pits of Spiken

Identification number	Year of survey	Year of excavation	Disturbed	Shape	Pit diameter	Pit depth	Elevation	Possible Iron Age monument
L1937:8508	2011	Null	Yes	Null	10x3m	0,4-0,5m	7m	No

Summary of Spiken

Whether the lone monument in the area of Spiken is an ancient monument or not remains a mystery. According to the GIS-analysis, this possible ancient monument could not have been constructed during the Scandinavian Iron Age period, as this entire area was located below sea level at the time.

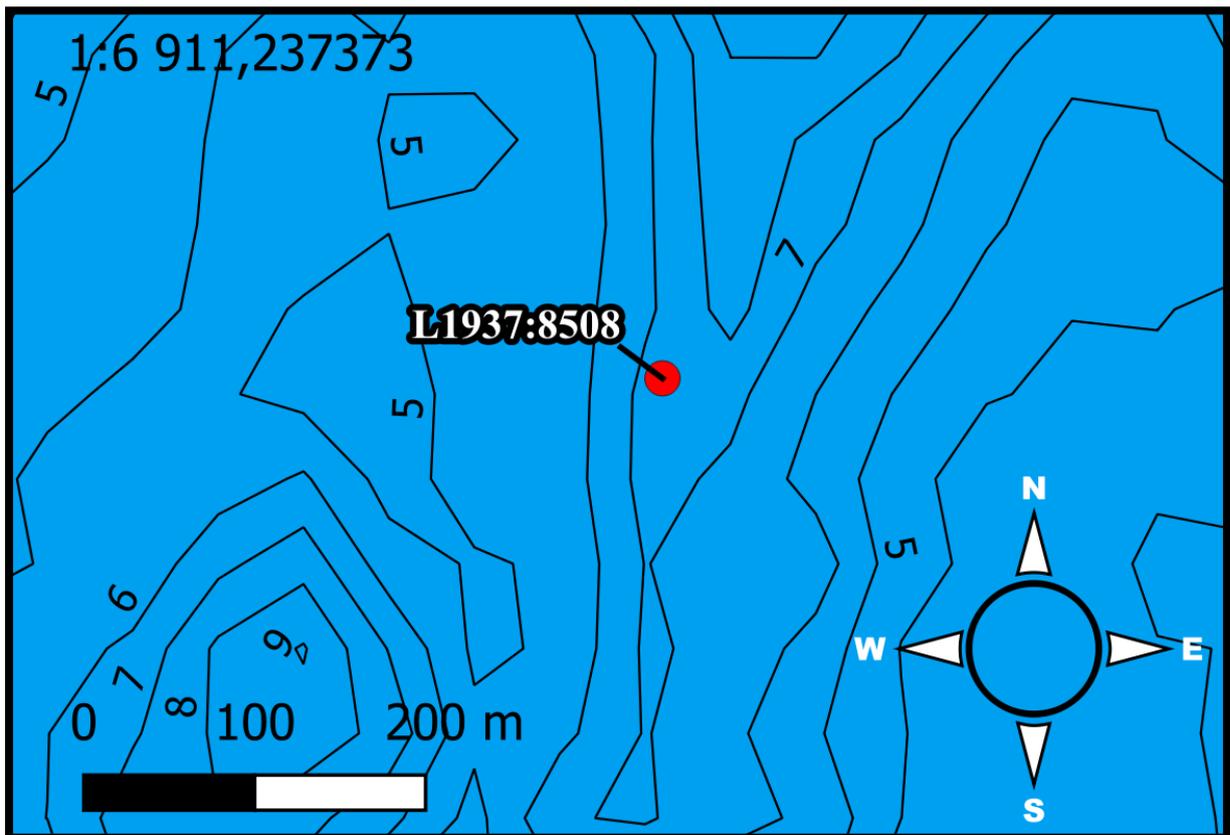


Figure 19. Topographic map depicting Spiken as it was during the Scandinavian Iron Age period at ca. 1000 AD. Each contour line represents 1 meter height intervals.

4.1.4. Summary of all the ancient and possible ancient monuments

As a result of the GIS-analyses, that was backed up by the morphological analyses, it is now known that out of the 66 total registered monuments of various kinds that exist in Holmöarna archipelago, there is a grand total of 43 registered monuments that possibly can be traced back to the Scandinavian Iron Age period (see table 31). Out of these 43 monuments only 4 of them have been dated (Broadbent 2005:44–52). All of the dated ancient monuments are located in close proximity to one another on the island of Stora Fjäderägg (see figure 20). The reason for this is that they were all investigated at the same time in the year 1987 by the Arctic Studies Center (Broadbent 2005:44–55). As all of the dated ancient monuments at Stora Fjäderägg were dated to time periods within the the Scandinavian Iron Age, it seems quite possible that some or even many of the 39 undated ancient and possible ancient monuments of Holmöarna would be as well.

All data from the field documentation of the old surveys that mainly took place in year 1959 were gathered and put into tables (Riksantikvarieämbetet 2023). Some of the field documentations had elevations of the monuments written down, but these elevations are now outdated, as the land of Holmöarna would have risen *ca.* 0,614 meters since year 1959 according to the land uplift model NKG2016LU (Vestøl *et al.* 2019:1759–1764). Therefore, new elevations were created for the monuments of Holmöarna through the use of topographic maps with height contours and data on the ancient sea level (Lantmäteriet 2023b; SGU 2019).

Table 31. All registered monuments with a possible Scandinavian Iron Age chronology.

Nr	Identification number	Location/area	Type of monument	Dating	Elevation
1	L1938:1619	Trapporna	Hut foundation	Null	12m
2	L1938:2391	Trapporna	Hut foundation	Null	14m
3	L1938:2472	Trapporna	Hut foundation	Null	13m
4	L1938:2155	Trapporna	Cooking/storage pit	Null	12m
5	L1938:2227	Trapporna	Cooking/storage pit	Null	12m
6	L1938:1779	Stora Fjäderägg	Hut foundation	250-1200AD	20m
7	L1937:7633	Stora Fjäderägg	Hut foundation	890-1160AD	22m
8	L1937:7634	Stora Fjäderägg	Hut foundation	710-1040AD	12m
9	L1938:1285	Stora Fjäderägg	Hut foundation	Null	15m
10	L1938:1446	Stora Fjäderägg	Hut foundation	Null	15m
11	L1938:1447	Stora Fjäderägg	Hut foundation	Null	15m
12	L1938:1759	Stora Fjäderägg	Hut foundation	Null	20m
13	L1938:1838	Stora Fjäderägg	Hut foundation	Null	15m
14	L1938:1839	Stora Fjäderägg	Hut foundation	Null	15m
15	L1938:2447	Stora Fjäderägg	Hut foundation	Null	20m
17	L1938:1932	Stora Fjäderägg	Fishing village	1010-1170AD	15-17m
18	L1938:390	Myrorra	Hut foundation	Null	16m
19	L1938:216	Skatan	Hut foundation	Null	11m
20	L1938:217	Skatan	Hut foundation	Null	10m
21	L1938:914	Skatan	Hut foundation	Null	11m
22	L1938:234	Skatan	Cairn	Null	12m
23	L1938:2445	Kammen	Hut foundation	Null	13m

24	L1938:1287	Kammen	Cairn	Null	15m
25	L1938:1364	Kammen	Cairn	Null	15m
26	L1938:1365	Kammen	Cairn	Null	16m
27	L1938:1992	Svinberget, Strandberget and Sör-Snöcksmyran	Hut foundation	Null	18m
28	L1938:2013	Svinberget, Strandberget and Sör-Snöcksmyran	Hut foundation	Null	18m
29	L1938:2469	Svinberget, Strandberget and Sör-Snöcksmyran	Hut foundation	Null	19m
30	L1938:1278	Svinberget, Strandberget and Sör-Snöcksmyran	Hut foundation	Null	18m
31	L1938:1384	Svinberget, Strandberget and Sör-Snöcksmyran	Hut foundation	Null	18m
32	L1938:1910	Svinberget, Strandberget and Sör-Snöcksmyran	Hut foundation	Null	19m
33	L1938:1277	Svinberget, Strandberget and Sör-Snöcksmyran	Hut foundation	Null	19m
34	L1938:2451	Svinberget, Strandberget and Sör-Snöcksmyran	Fishing village	Null	16-18m
35	L1938:1934	Svinberget, Strandberget and Sör-Snöcksmyran	Resembling ancient monuments	Null	18m
36	L1938:2448	Svinberget, Strandberget and Sör-Snöcksmyran	Resembling ancient monuments	Null	19m
37	L1938:2012	Svinberget, Strandberget and Sör-Snöcksmyran	Other	Null	18m
38	L1938:2082	Sörbyn	Cairn	Null	14m
39	L1938:1438	Sörbyn	Cairn	Null	14
40	L1938:1380	Sörbyn	Burial site	Null	13-14m
41	L1938:1995	Halörsskatan	Cairn	Null	9-10m
42	L1938:2213	Innerviken & Rentjärnen	Fishing village	Null	14-15m
43	L1938:314	Innerviken & Rentjärnen	Fishing village	Null	12m



Figure 20. Map depicts the island of Stora Fjäderägg along with all of the dated ancient monuments in the archipelago of Holmöarna as it looked like during the Scandinavian Iron Age period at ca. 1000 AD, with a modern day map in the background for visual comparison.

4.2. Individual analysis of all the ancient artefacts from Holmöarna archipelago

Iron arrowhead - Vbm 2554 1

The Iron arrowhead that is registered as Vbm 2554 1 (see figure 21) is classified as an ancient artefact (Vbm 2023). This artefact was turned in to Västerbottens museum by a grave plunderer of unknown identity that had plundered a cairn in the archipelago of Holmöarna during the year 1911 (Vbm 2023). The location of this cairn is said to be situated at an elevation of *ca.* 18 meters above the modern day sea level, which could mean that it perhaps came from a very old Iron Age cairn, as cairns in this area with Iron Age chronologies are often found at elevations between 10–20 meters above the modern day sea level (Broadbent 2010:35). When it comes to the morphology of this ancient artefact, it is hard to determine what type of arrowhead this is, as it is very worn out by time, thus its features are difficult to assess in a profound manner (see figure 21). The arrowhead is described in Vbm (2023), as having a plane midrib and a rhombic tang. It is possible that this iron arrowhead has a unique design that does not fit any previous typology.



Figure 21. Iron arrowhead from Holmöarna archipelago (Vbm 2554 1 - Spets 2023).

Slate whetstone - Vbm 2554 2

The slate whetstone that is registered as Vbm 2554 2 (see figure 22) is classified as an ancient artefact. This artefact was turned in to Västerbottens museum by a grave plunderer of unknown identity that had plundered a cairn in the archipelago of Holmöarna during the year 1911 (Vbm 2023). The location of this cairn is described as being situated at an elevation of *ca.* 18 meters above the modern day sea level (Vbm 2023), which theoretically could mean that it came from a very old Iron Age cairn, as cairns in this area with Iron Age chronologies are often found at elevations between 10–20 meters above the modern day sea level (Broadbent 2010:35). Found in the same cairn as the Iron arrowhead, this slate whetstone is very hard to assign a certain type. However, it is very similar to another slate whetstone known as ÅM328:69 that is currently in the possession of Ålands museum and has been dated to the Iron Age period (Ilves 2019:93–94). Slate whetstones were very common throughout the Iron Age period, and they were used as an easy to carry around tool for sharpening things such as needles, fishing hooks, weapons and any other thing that simply needed to stay sharp (Ilves 2019:89). Perhaps this slate whetstone could have been used when sharpening the Iron arrowhead that was found in the same cairn (see figure 22).



Figure 22. Slate whetstone from Holmöarna archipelago (Vbm 2554 2 – Hänge 2023).

Cranial fragment - Vbm 2554 3

This cranial fragment was turned in to Västerbottens museum by a grave plunderer of unknown identity that had plundered a cairn in the archipelago of Holmöarna during the year 1911 (Vbm 2023). The location of this cairn was described as being situated at an elevation of *ca.* 18 meters above sea level, which could mean that it came from a very old Iron Age cairn, as cairns in this area with Iron Age chronologies are often found at elevations between 10–20 meters above the modern day sea level (Broadbent 2010:35). The cranial fragment was found in the same cairn as the Iron arrowhead and the slate whetstone, which might suggest that these items were grave offerings or personal belongings of the buried person.

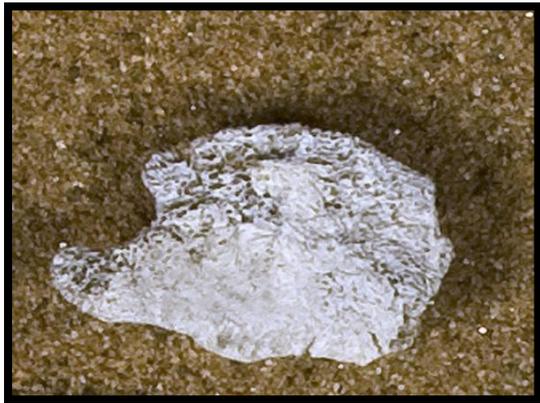


Figure 23. Cranial fragment from the plundered cairn at Holmöarna archipelago (Vbm 2554 3 – Kranium 2023).

Silver ring & Bronze bells - SHM 15291

Five individual artefacts of two different types were found by plunderers in a cairn that was located at the island of Stora Fjäderägg before it was completely destroyed (SHM 2023). From the description of the aquirement of these artefacts, the silver ring was found first relatively high up in the middle of the cairn, just a few stones deep, while the bronze bells were found scattered around at the very bottom of the cairn, in the gravel on the ground (SHM 2023). There was apparently also a piece of bone and a rusty piece of iron found within the same cairn, but these 2 finds were of no interest to the plunderers, and thus they threw them away (SHM 2023). The silver ring and the bronze bells have all been dated to the Scandinavian Iron Age period (SHM 2023; Broadbent 2005:52).

Silver ring

The silver ring is described in its catalogue as being broadest in its middle, and adorned with a total of 13 somewhat leveled and transverse ridges (see figure 24). The smooth ends are described to end as pointy spikes that would have met eachother point against point, but one of the ends are broken off, as seen on figure 24 (SHM 2023). The measurements of this silver ring are presented in table 32. Looking at the morphology of this silver ring, it is very difficult to assign it to any specific type. It seems to be rather unique in its design and although many attempts were made to find a ring that resembles this one, nothing was found. When searching for information regarding this silver ring, a very hidden piece of information that seemingly was not presented anywhere else was found. This information did not only contain the identity of the individual who plundered the cairn at Stora Fjäderägg, but it also described how the plundering happened (Löfgren & Olsson 1983:97). In Löfgren & Olsson (1983:97), it is claimed that the individual who plundered this cairn and found both the silver ring and bronze bells was Emelia Pettersson, the daughter of the lighthouse keeper at Stora Fjäderägg in the year 1911. After finding the silver ring in the cairn, she supposedly recruited a friend to help her plunder the rest of it (Löfgren & Olsson 1983:97). After digging through

the cairn with help of the new recruit, they then found the 4 bronze bells as well (Löfgren & Olsson 1983:97). After the plundering, the finds was sold to an antiquarian known as Sigurd Dahlbäck and then somehow ended up in the possession of the Swedish History Museum (Löfgren & Olsson 1983:97). In Löfgren & Olsson (1983:97), it is stated that the appearance of the silver ring from Stora Fjäderägg suggests that it originates from Gotland or “the east”, and that not a single find that resembles this one has been found along the coast of Norrland.

Bronze bells

The bronze bells are described in their catalogue as having a loop of bronze thread on the upper halves, and cross shaped cutouts on the lower halves, with each cutout ending with a round hole (see figure 25). There is not much else information provided about the 4 bronze bells except that they consist of 4 bottom halves and only 2 upper halves, which means that there are only 2 complete bells (SHM 2023). The measurements of the bronze bells are presented in table 32. When it comes to the morphology of these bronze bells, it looks like they could be of southwestern Finnish origins, as their features are very similar to the Finnish bronze bells of type 6 that are described in Rainio (2010:39–40), which are believed to be from 1000–1100 AD. This would mean that the bronze bells were made towards the end of the Scandinavian Iron Age period, into the first stages of the early Scandinavian middle age.



Figure 24. Image of the silver ring that was plundered from a cairn at Stora Fjäderägg (SHM 2023).



Figure 25. Image of the 4 bronze bells that was plundered from a cairn at Stora Fjäderägg, with 2 out of 4 top parts present (SHM 2023).

Table 32. Data on the ancient artefacts from Holmöarna archipelago.

Identification number	Type of artefact	Date of plunder	Material	Lenght	Width	Thickness	Elevation	Possible Iron Age artefact
Vbm 2554 1	Iron arrowhead	1911	Iron	102mm	16mm	7mm	18m	Yes
Vbm 2554 2	Slate whetstone	1911	Slate	80mm	14mm	11mm	18m	Yes
Vbm 2554 3	Cranial fragment	1911	Human bone	46mm	30mm	3mm	18m	Yes
Identification number	Type of artefact	Date of plunder	Material	Outer diameter	Largest width	Thickness	Elevation	Possible Iron age artefact
601912	Silver ring	1911	Silver	2,2cm	0,8cm	0,2cm	Null	Yes
601915	Bronze bell	1911	Bronze	1,6–1,7cm	Null	Null	Null	Yes

Finding the location of the plundered cairn

The exact location of the cairn that the ancient artefacts were looted from had remained a mystery, but interestingly enough, there were descriptions in the catalogue of these finds that could be used to help unravel the mysterious location of this cairn and pinpoint its exact location. In the catalogue there are three directions given in Swedish that can help find the location of this cairn (SHM 2023) These directions can be translated to english as follows:

1. When standing in the middle of the cairn from which these finds were plundered, the compass points one line to the west of N.W. – towards the lighthouse (SHM 2023).
2. When standing in the middle of the cairn from which these finds were plundered, the compass points one line to the west of S. – towards the white beacon (SHM 2023).
3. When standing in the middle of the cairn from which these finds were plundered, the compass points directly to the N.E. – towards the small oil shed that lies just beyond the signal house (SHM 2023).

The landscape at the island of Stora Fjäderägg is a rather barren one, and the island is not very built up or particularly large for that matter. Therefore it is very easy to recognize the structures that are used as navigational markers in these descriptions. The results of the triangulation in accordance to the navigational descriptions are visible on figure 26.



Figure 26. Triangulation of the location of the plundered cairn at Stora Fjäderägg. Map produced with Lantmäteriet's map printing tool (Lantmäteriet 2023a).

As can be seen on figure 26, the location of this cairn should be in the area where all three lines meet together. For a zoomed in version of the triangulated location, see figure 27. In the middle of figure 27, there is some sort of oblong disturbance on the ground which could be what remains of the plundered cairn that was described as having been a oblong cairn that was completely destroyed (SHM 2023). However, this is just a theory that was created from the results of the triangulation, and the real location might be somewhere else completely.



Figure 27. Zoomed in version of the possible location of the plundered cairn. Map produced with Lantmäteriet's map printing tool (Lantmäteriet 2023a).

4.2.1. Summary of ancient artefacts

This essay covered a total of 8 ancient artefacts from the archipelago of Holmöarna that has either confirmed or possible Iron Age chronologies. The artefacts that are registered in the database of Vbm, meaning the iron arrowhead, the slate whetstone and the cranial fragment all have rather uncertain chronologies, as they have never been properly dated, and the location of the cairn that they were plundered from remains uncertain. In Vbm (2023), it is written that the cairn from which these items were taken, most likely is located on the comb of the mountain ridge at Bergnäs, at an elevation of 18 meters above the sea level. There are several reasons to believe that the area of Bergnäs is the same area that is known as Bergudden in the modern day.

First off, in the database of Vbm it was mentioned that the plundered cairn that housed these 3 items was located on “the comb” of the mountain ridge at Bergnäs (Vbm 2023). In Swedish, the comb translates directly to *kammen*, which happens to be the name of the nature reserve that a plundered cairn, along with 3 other ancient monuments are located in.

Secondly, in the Swedish language, Bergnäs and Bergudden translates to the same thing, which is mountain headland, and there is currently no area in the entire archipelago of Holmöarna with the name Bergnäs.

Thirdly, next to cairn L1938:1635, there is a sign with information that states that the cairn was plundered in the 1910s and that during this plundering a spearhead and cranium was found amongst several other things, items that are suspiciously similar to the iron arrowhead and cranial fragment in the database of Vbm, which are also said to have been plundered in the 1910s (Vbm 2023). This information suggest that cairn L1938:1635 in the area of Kammen is the cairn that the ancient artefacts from Vbm's database were plundered from.

Unfortunately, the morphological analyses of the ancient artefacts from Vbm did not provide very much information, and without conducting further research and properly dating the

ancient artefacts, it is impossible to know the chronology of these particular ancient artefacts. The ancient artefacts that are registered in SHM has more clarity behind their origin. These artefacts have all been dated to the Scandinavian Iron Age period so there is no speculation needed when it comes to their chronology (SHM 2023). There were some compass directions provided in the catalogue of these finds that could be used in order to triangulate the position of the destroyed cairn at Stora Fjäderägg where these artefacts were plundered from. The result of this triangulation is visible on figure 26 & 27. The fact that these ancient artefacts are from the Iron Age suggests that there was also an Iron Age burial cairn located at the island of Stora Fjäderägg, as bones were also found buried within this cairn (SHM 2023).

4.3. Field visit of Kammen's ancient monuments

A field visit was conducted at the archipelago of Holmöarna in order to document and perform visual analyses of ancient monuments. The field visit took place on May 10th, in order to allow the deep snow that covered the archipelago to mostly melt away. But upon arrival at Holmöarna by way of ferry, there was still very thick layers of snow covering many of the sites with ancient monuments. Therefore, the only area that could be documented and analysed during this field visit was the area of Kammen, as it was the only area that was mostly free of snow. In Kammen there is a total of 4 ancient monuments. These 4 ancient monuments consist of 1 hut foundation and 3 cairns of which all had previously been surveyed in the year 1959. As all 4 of these ancient monuments had previously been surveyed, the results from the field visit could be compared to that of the surveys. The new measurements are not flawless, as all the measuring was done with a simple measuring tape.

Kammen - hut foundation L1938:2445

The first ancient monument that was researched in the field visit to Holmöarna is hut foundation L1938:2445 (see figure 28, 29 & 30). The area of this ancient hut foundation was completely free of snow, allowing for a full view of the monument. In table 33, the new data is compared to the previous data from the survey of year 1959. It is unknown what part of the hut foundation the surveyor measured in year 1959, but the new measurements were rather different than that which is presented in the old field documentation (see table 33). The walls of the hut foundation were somewhat collapsed, and might have been morphed due to various reasons in the timespan between the years 1959–2023, which might explain the difference in measurements from then and now. New information that is not mentioned in the old field documentation is that the hut foundation was located on the highest point in its vicinity.



Figure 28. Hut foundation L1938:2445 as of May 10th, 2023. Photo: Alexander Bodén.



Figure 29. Hut foundation L1938:2445 as of May 10th, 2023. Photo: Alexander Bodén.



Figure 30. Hut foundation L1938:2445 as of May 10th, 2023. Photo: Alexander Bodén.

Kammen - cairn L1938:1365

The second ancient monument that was researched in the field visit is cairn L1938:1365. This ancient cairn was completely free of snow during the field visit, and thus fully observable. This cairn was easy to spot, as it was very large and rose high above the ground while at the same time being devoid of vegetation. One notable thing about this cairn is that it has a pine tree growing right in the center of the middle pit (see figure 31, 32 & 33). In table 33, the new data is compared to the previous data from the survey of year 1959.



Figure 31. Cairn L1938:1365 as of May 10th, 2023. Photo: Alexander Bodén.

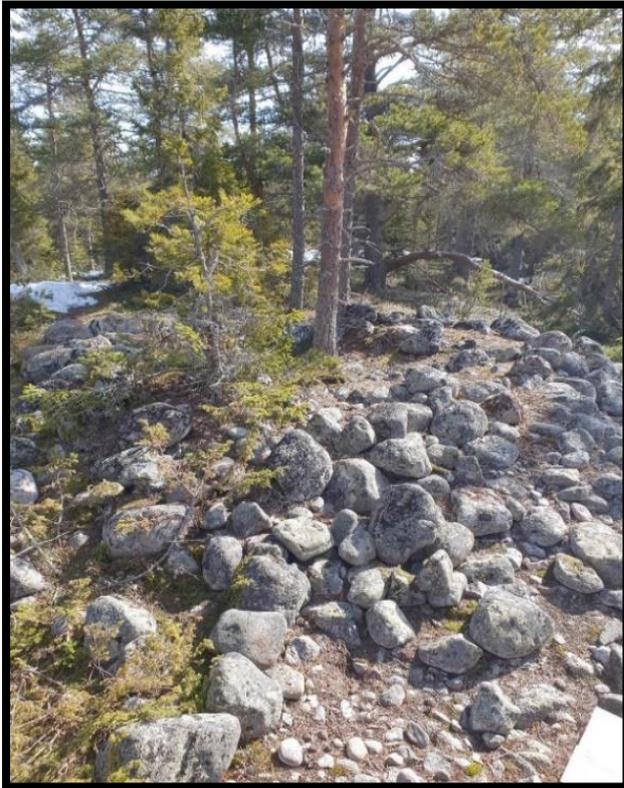


Figure 32. Cairn L1938:1365 as of May 10th, 2023. Photo: Alexander Bodén.



Figure 33. Cairn L1938:1365 as of May 10th, 2023. Photo: Alexander Bodén.

Kammen - cairn L1938:1287

The third ancient monument that was researched in the field visit to Holmöarna is the ancient cairn known as L1938:1287. This ancient monument is located right next to the cairn L1938:1634, separated only by a couple of meters. Most parts of this cairn was free from snow during the field visit, but the middle pit was almost filled up entirely (see figure 34, 35 & 36). This cairn was extremely overgrown by vegetation, which made it difficult to spot (see figure 34, 35 & 36). The new measurements obtained from this cairn are somewhat similar to the old measurements from 1959 (see table 33). There is a massive middle pit that is several meters wide, which suggests that this cairn was plundered sometime in the past.



*Figure 34. Cairn
L1938:1287 as of May 10th,
2023. Photo: Alexander
Bodén.*



*Figure 35. Cairn
L1938:1287 as of May 10th,
2023. Photo: Alexander
Bodén.*



*Figure 36. Cairn
L1938:1287 as of May 10th,
2023. Photo: Alexander
Bodén.*

Kammen - cairn L1938:1364

The fourth ancient monument that was researched in the field visit is the ancient cairn known as L1938:1364. This cairn is located just a few couple of meters northeast of the cairn L1938:1287. Unfortunately, this cairn was barely visible and only about a quarter of it could be observed, as snow covered half of the monument, while heavy vegetation covered another quarter (see figure 37, 38 & 39). Luckily, there was still enough observable parts on this ancient monument to take the necessary measurements and photographs. These new measurements are compared to the older measurements from the year 1959 in table 33. In 1959 this cairn was described as having a flattened top, and there are no mention at all of any middle pit. But in 2023 there is a large middle pit on this ancient cairn that suggest that it has been plundered some time in the years between then and now (see figure 37, 38 & 39).



Figure 37. Cairn L1938:1364 as of May 10th, 2023. Photo: Alexander Bodén.



Figure 38. Cairn L1938:1364 as of May 10th, 2023. Photo: Alexander Bodén.



Figure 39. Cairn L1938:1364 as of May 10th, 2023. Photo: Alexander Bodén.

Table 33. Data on all the visited ancient monuments in Kammen.

Type & identification number	New/old data	Shape	Total diameter	Wall width	Wall height	Photograph	
Hut foundation L1938:2445	New data (2023)	Round	6–6,5m	1–1,5m	0,25m	Yes	
	Old data (1959)	Round	5-6m	0,5-1m	0,2–0,3m	No	
Cairn L1938:1365	New/old data	Shape	Total diameter	Height	Middle pit diameter	Middle pit depth	Photograph
	New data (2023)	Round	7-8m	0,80-1m	2,20–2,30m	0,60–0,70m	Yes
	Old data (1959)	Null	6m	0,5m	Null	Null	No
	Older data (1924)	Null	5-10m	Null	Null	Null	No
Cairn L1938:1287	New/old data	Shape	Total diameter	Height	Middle pit diameter	Middle pit depth	Photograph
	New data (2023)	Round	7–7,5m	0,5–0,6m	3m	0,6–0,7m	Yes
	Old data (1959)	Null	7m	0,8m	5x4m	0,8m	No
	Older data (1924)	Null	5-10m	Null	Null	Null	No
Cairn L1938:1364	New/old data	Shape	Total diameter	Height	Middle pit diameter	Middle pit depth	Photograph
	New data (2023)	Round	6m	0,5–0,6m	1,6–1,7m	0,5–0,6m	Yes
	Old data (1959)	Null	5m	0,6m	Null	Null	No
	Older data (1924)	Null	5-10m	Null	Null	Null	No

4.3.1. Summary of the field visit

The field visit to the archipelago of Holmöarna was successful despite of snow covering most of the ancient monuments, and it resulted in the documentation of all registered ancient monuments in the area of Kammen. The exact location of these monuments in relation to the area can be seen on figure 40. It would seem that all of the registered cairns in this area has been plundered some time in the past, as they all had large or even massive dug out pits of several meters in their middle. All of the monuments had been heavily overgrown by vegetation except for the cairn L1938:1365, which is perhaps due to it being located right next to popular hiking trail, thus probably being disturbed much more often, preventing vegetational growth. The new measurements that were obtained was quite different from the old ones. The reasons for this could be many. Perhaps different measurement techniques were used and both the landscape and the ancient monuments morphed over time due to both anthropological reasons and natural factors. Much could have happened during the timespan of 64 years from 1959 until 2023.



Figure 40. The area of Kammen with all 4 of its registered ancient monuments along with the surrounding area during the Scandinavian Iron Age period at ca. 1000 AD, with modern day map in background for visual comparison.

5. Discussion and interpretation

5.1. General discussion

The GIS-analyses on the registered ancient monuments of Holmöarna provided new data and information in many forms. Through the use of topographic maps, the previously unknown elevation of the ancient and possible ancient monuments of Holmöarna was obtained. The GIS-analyses also visualised the relation between the Scandinavian Iron Age landscape and the monuments in all of the analysed areas. Through the GIS-analyses it was possible to determine which monuments were possible Iron Age monuments and which were not. The land uplift in Västerbotten county is *ca.* 1 meter per century, which means that during the later stages of the Scandinavian Iron Age period, at year 1000 AD, any land less than *ca.* 10 meters above the modern day sea level would have been under water (Broadbent 2010:23).

Maps with the sea level of *ca.* year 1000 AD was created with open data from SGU (SGU 2019). The location of registered ancient and possible ancient monuments were then added to these maps in order to find out which monuments were above sea level at the time (Riksantikvarieämbetet 2023). Any chronologically unspecified monuments located on land elevated above the Iron Age sea level must be considered as possible Iron Age monuments. As a result of the GIS-analyses, it was determined that out of the 66 analysed monuments, 43 of them are possible Iron Age monuments. However, among these there are 4 monuments that have already been dated, and they were all dated to the Scandinavian Iron Age period (Broadbent 2005:44–52). This leaves 39 undated monuments as possible Iron Age monuments that would require investigation in order to find out their true chronologies.

Morphology was used to group many of the ancient monuments to Iron Age or post Iron Age types. The morphological analysis did not determine anything of greater significance on its own, but it acted as further evidence that could help strengthen the possibility of some monuments and artefacts being from the Iron Age period. The field visit to the area of Kammen provided some new information that includes measurements of the ancient monuments, photographs, and also evidence suggesting that all cairns in the area has been dug out and plundered sometime in the past.

The methods of analysis that were used in this essay managed to fulfill their original purpose, which was to uncover and provide new information regarding Holmöarna and its Iron Age period and contribute in filling the current research gap. However, there are still large gaps in research regarding Holmöarna's ancient past, and in order to fill these gaps, new archaeological surveys and investigations would need to be conducted. Based on the evidence from the GIS-analyses of this essay, there are at the very least 39 monuments in Holmöarna archipelago that has yet to receive proper scientific attention (see table 31). Investigating these monuments could provide lots of information regarding Holmöarnas ancient past.

5.2. Discussing the research questions

The first research question of this essay was focused on the topic of when humans first set foot upon the islands of Holmöarna archipelago and if there is any evidence that can provide answers on when this might have happened. The amount of previous archaeological research that has been conducted at the archipelago of Holmöarna might be small, but nevertheless, this previous research proved to be crucial in answering this essay's research questions. The archaeological investigations at Stora Fjäderägg by the Arctic Studies Center, led by Noel Broadbent, provided invaluable information on the Scandinavian Iron Age period of

Holmöarna (Broadbent 2005:44–52). This information was key in order to understand when humans first may have set foot upon the archipelago.

The earliest evidence of human presence at the archipelago of Holmöarna is that which comes from the dating of the archaeological finds from within hut foundation L1938:1779. In the case of this particular hut foundation, which is located on the island of Stora Fjäderägg, charcoal from within the hearth of the hut foundation was dated to 250 AD (Broadbent 2005:52). This is the absolute earliest date obtained so far in the archipelago of Holmöarna (see table 31). The earliest median date obtained in Holmöarna is 386 AD (Broadbent 2010:229). Based on this evidence, the answer to the first research question would be that the earliest evidence of humans setting foot upon the archipelago of Holmöarna is pointing towards the later stages of the Roman Iron Age period at *ca.* 250 AD, as both the earliest date and the earliest median date obtained falls within the range of this time period, which stretches from year 0 to year 400 AD (Price 2015:255).

It is believed that the island of Stora Fjäderägg had already risen above the sea level at *ca.* 0 AD (Andersson 2000:1), which means that it is indeed possible that hut foundation L1938:1779 was constructed and used in the 3rd century AD. There are examples of hut foundations on the east coast of Sweden from even earlier than this, such as the hut foundation from Hornslandsudde in Hälsingland which was dated to the 2nd century AD (Broadbent & Edvinger 2009:110–113). The GIS-analysis and the morphological analysis that were conducted in this essay supports this evidence as well. Based on the topographic maps that were created in QGIS, the location of hut foundation L1938:1779 is located very far inland even with the shoreline of *ca.* 1000 AD, at an elevation of 20 meters above sea level (see figure 20). This suggests that the hut foundation could indeed have been constructed in 250 AD or even earlier than so. The morphology of hut foundation L1938:1779 also suggests that it is a hut foundation of an older type, as it is large in size and has a rectangular shape (Bergman & Ramqvist 2018:16).

The second research question of this essay was focused on the location of the ancient monuments of Holmöarna and whether or not there would have been any strategic reasons behind the choice of location when they were constructed. It would seem that the ancient monuments in Holmöarna archipelago are much more often than not located in rather close proximity to the coastline (see figure 3). During the ancient times, the monuments distance to the shoreline would have been much shorter than it is in the present time, as this area has the fastest land uplift in all of northern Europe. The land here rises at a rate of approximately 9,6 millimeters per year, which means that during the Scandinavian Iron Age period for example, all of the land in Holmöarna that is less than *ca.* 10 meters above sea level in the modern day most likely would have been submerged beneath the waters of the Baltic sea (Vestøl *et al.* 2019:1759–1764).

The main type of ancient monument found in the archipelago of Holmöarna are hut foundations (see appendix 1). Hut foundations in northern Sweden are widely believed to have been used mainly as fishing hubs (Andersson 2000:1). In Norman (1995:44), hut foundations are described as shore-bound buildings. Therefore they would likely have been constructed on the shore, in close proximity to the sea in order to easier access important fishing locations. Other types of monuments, such as cooking/storage pits and labyrinths are often associated with the hut foundations. The cooking/storage pits are believed to have been

used to either cook or store food, and they are most commonly found along with hut foundations (Hägerman 2011:8). The labyrinths are believed to have brought luck at sea or with fishing to anyone who walked through it (Andersson 2000:1; Wallin n.d.). This would explain why these monuments often are located in close relation to the hut foundations, which themselves are located close to the coastline. Based on this information, it seems possible that the location of the majority of Holmöarnas ancient monuments were strategically chosen in order to have easier access to the sea and its many resources.

The third research question of this essay was focused on how many undated possible Iron Age monuments there are in the archipelago of Holmöarna and whether or not it is possible to link the chronologically unspecified ancient monuments and artefacts to a certain period in time by analysing them through the method of morphology.

Based on the results that were obtained from the GIS-analysis, there is a total of 39 registered ancient and possible ancient monuments that are undated and located on ground that was elevated above the sea level during the Scandinavian Iron Age period in the archipelago of Holmöarna (see table 31).

Regarding the question of whether or not it is possible to link ancient monuments and artefacts to a certain time period through the use of morphology, the answer is that it is possible in some cases. But in order to do so, there must be other monuments or artefacts of the same type with an already established chronology and known set of traits, so that comparisons can be made (Pala & Costiner 2022:1–11).

With the little information that is available for the ancient monuments that are located at Holmöarna, morphology proved to be useful, atleast in the case of the hut foundations, as Iron Age hut foundations have several traits that can differentiate them from post Iron Age hut foundations (Bergman & Ramqvist 2018:16–17). But, in the case of the artefacts covered in this essay, only the slate whetstone was able to be dated through this method. Even though a monument or artefact might possess many or all traits of a typical Iron Age monument or artefact, no exact chronology can be determined without the use of more precise and absolute dating methods.

The answer to research question three would be that morphology can provide evidence that suggests a certain chronology, given that it has comparable features, but not determine the ancient monument or artefact's exact chronology all on its own. Morphology is a relative dating method, which means that it can only be used to determine a relative age, unlike ^{14}C dating for example, which is an absolute dating method that is used to determine the absolute age of the studied material in direct numerical ages (Watchman & Twidale 2002:1).

The fourth research question of this essay was focused on what size the population at Holmöarna might have been during the Scandinavian Iron Age period, and whether or not it would have been a permanent or seasonal population. Unfortunately, it is currently not possible to answer this question, but the population at Holmöarna seems like it could have been both permanent and seasonal to some extent during the Scandinavian Iron Age period. It seems unlikely that the archipelago of Holmöarna had no permanent settlers in over thirteen hundred years since it first rose above the sea (Andersson 2000:1).

The Iron Age hut foundations were commonly larger in size and more well buildt, and they also lacked suitable boat landings (Bergman & Ramqvist 2018:16–17). The lack of suitable

boat landings and the larger, higher quality hut foundations, could suggest that there was permanent settlements at Holmöarna during the Iron Age period, as boat landings were perhaps not needed, due to the inhabitants of the archipelago not traveling regularly by boat. The younger, post Iron Age hut foundations, were seemingly more often used as seasonal settlements, as less time and energy was invested in their construction so that they were both smaller and more poorly constructed compared to the higher quality Iron Age hut foundations (Bergman & Ramqvist 2018:16–17). However, although it might seem like the Iron Age hut foundations could have been permanently settled in some cases, the most common interpretation of hut foundations is that they were seasonal maritime camps that were used for various fishing activities (Landin & Rönby 2003:9-10).

The definition of a hut foundation as described in Norman (1995:44), can be roughly translated as follows: A hut foundation is the remains of a shore-bound building in a maritime environment, if it consists of stone ramparts (stone walls), which surround one or more stone-cleared, flat or vaguely coal-shaped surfaces. Alternatively, earthen blocks or rock outcroppings can also constitute the plot's limitation. The plots are mainly below the level of 25 m.a.s.l. (Norman 1995:44). Not once in the definition of hut foundations is it mentioned whether or not this type of monument would have been seasonally or permanently settled.

To further complicate things regarding the hut foundations of Holmöarna is the fact that in the past, at the time when most of the surveys at Holmöarna was conducted, the word hut foundation was often used synonymous with house plot (Swedish *husgrund*), which means that many of the supposed hut foundations at Holmöarna might have been house plots that has been wrongly referred to as hut foundations (Norman 1995:44). Therefore, due to all of these different factors, it is not possible to know if the settlements at Holmöarna during the Scandinavian Iron Age period was seasonal or permanent. In order to find out the answer to this question, further research and archaeological investigations are most definitely needed.

As for the total size of the Iron Age population in the area, when including all of the hut foundations from the fishing villages, there is a total of 55 possible Iron Age hut foundations located in Holmöarna archipelago (see table 31). It is unknown how many people that usually would have lived together in a hut foundation, but as an example, assuming that all 55 of these hut foundations were indeed from the Scandinavian Iron Age period, and inhabited simultaneously with an average of maybe 3 inhabitants, the total size of the Iron Age population could have been as many as 165 people. However, This is just an example in which it is assumed that all of these hut foundations are from the Iron Age with 3 inhabitants each. It is very unlikely that this would have been the case, and it is currently impossible to answer the question regarding population size.

In order to answer this question, all of the hut foundations at Holmöarna would need to be investigated, and a standard on how many people that usually inhabited a hut foundation at one time would need to be produced. Additionally, new surveys should also be conducted in the case that the previous surveys missed any monuments, which is a possibility, as the majority of surveys took place many decades ago when technology, and perhaps even technique would have been worse. In conclusion, without knowing exactly how many residential monuments there are with Iron Age chronologies at Holmöarna, and how many people that inhabited them at once, research question 4 can not be properly answered.

6. Conclusions

- 1. Currently there is an uncertainty regarding when humans first set foot upon the islands of Holmöarna. Is there any evidence that can provide answers on what period in time it might have happened at?**

At the moment, the oldest evidence of human presence at Holmöarna archipelago is from the later stages of the Roman Iron Age period, at *ca.* 250 AD. This evidence comes from the dating of charcoal that was obtained during the investigation of hut foundation L1938:1779 at the island of Stora Fjäderägg by the Arctic Studies Center in year 1987.

- 2. Are there any reasons why the ancient monuments are located where they are in the landscape of the Holmöarna archipelago, and could there be any strategical reasons behind their exact localizations?**

The ancient monuments of Holmöarna archipelago would most likely have been constructed in close proximity to the shoreline for easier access to the sea. Hut foundations are the only type of ancient residence that has so far been registered at Holmöarna. Hut foundations are known to be shore-bound and closely related to fishing activities, while monuments such as cooking/storage pits and labyrinths are both related to the hut foundations and the sea itself.

- 3. How many undated possible Iron Age monuments exist in the archipelago of Holmöarna, and is it possible to link chronologically unspecified ancient monuments and artefacts to a certain time period through the use of morphological analysis?**

In Holmöarna archipelago there is a grand total of 39 possible Iron Age monuments registered in KMR that has yet to be investigated and dated with proper methods. Morphological analysis can be used in order to help link ancient monuments and artefacts to a relative age, but it can not be used to determine their absolute age.

- 4. Was the population at Holmöarna archipelago during the Iron Age seasonal or permanent, and what size could it have been in relation to the amount of settlement remains in the area?**

The size of the population at Holmöarna archipelago and whether this population was seasonal or permanent remains a mystery, as it is currently impossible to answer these questions with the current research gap regarding the Iron Age period in this area.

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Appendices

Appendix 1. General information about the registered ancient and possible ancient monuments of Holmöarna archipelago.

Nr	Raä	Monument type	Antiquarian assessment	Identification number
1	Holmön 53:1	Hut foundation	Ancient monument	L1938:1619
2	Holmön 24:1	Hut foundation	Ancient monument	L1938:2068
3	Holmön 17:3	Hut foundation	Ancient monument	L1938:2384
4	Holmön 12:1	Hut foundation	Ancient monument	L1938:2391
5	Holmön 31:2	Hut foundation	Ancient monument	L1938:1779
6	Holmön 10:1	Hut foundation	Ancient monument	L1938:390
7	Holmön 68	Hut foundation	Ancient monument	L1937:7633
8	Holmön 69	Hut foundation	Ancient monument	L1937:7634
9	Holmön 6:2	Hut foundation	Ancient monument	L1938:216
10	Holmön 6:3	Hut foundation	Ancient monument	L1938:217
11	Holmön 32:2	Hut foundation	Ancient monument	L1938:1285
12	Holmön 26:1	Hut foundation	Ancient monument	L1938:1446
13	Holmön 26:2	Hut foundation	Ancient monument	L1938:1447
14	Holmön 31:1	Hut foundation	Ancient monument	L1938:1759
15	Holmön 17:2	Hut foundation	Ancient monument	L1938:1836
16	Holmön 32:1	Hut foundation	Ancient monument	L1938:1838
17	Holmön 32:3	Hut foundation	Ancient monument	L1938:1839
18	Holmön 13:2	Hut foundation	Ancient monument	L1938:1976
19	Holmön 16:1	Hut foundation	Ancient monument	L1938:1996
20	Holmön 17:1	Hut foundation	Ancient monument	L1938:2372
21	Holmön 19:1	Hut foundation	Ancient monument	L1938:2445
22	Holmön 31:3	Hut foundation	Ancient monument	L1938:2447
23	Holmön 12:2	Hut foundation	Ancient monument	L1938:2472
24	Holmön 13:1	Hut foundation	Ancient monument	L1938:2473
25	Holmön 37:1	Hut foundation	Ancient monument	L1938:2072
26	Holmön 41:6	Hut foundation	Possible ancient monument	L1938:1278
27	Holmön 41:2	Hut foundation	Possible ancient monument	L1938:1384
28	Holmön 40:2	Hut foundation	Possible ancient monument	L1938:1910
29	Holmön 40:1	Hut foundation	Possible ancient monument	L1938:1277
30	Holmön 41:4	Hut foundation	Possible ancient monument	L1938:1992
31	Holmön 41:1	Hut foundation	Possible ancient monument	L1938:2013
32	Holmön 40:3	Hut foundation	Possible ancient monument	L1938:2469
33	Holmön 6:4	Hut foundation	Possible ancient monument	L1938:914
34	Holmön 27:2	Stone circle	Ancient monument	L1938:1550

35	Holmön 6:1	Cairn	Ancient monument	L1938:234
36	Holmön 7:1	Cairn	Ancient monument	L1938:283
37	Holmön 1:3	Cairn	Ancient monument	L1938:1287
38	Holmön 1:2	Cairn	Ancient monument	L1938:1364
39	Holmön 1:1	Cairn	Ancient monument	L1938:1365
40	Holmön 2:2	Cairn	Ancient monument	L1938:1438
41	Holmön 15:1	Cairn	Ancient monument	L1938:1995
42	Holmön 2:1	Cairn	Ancient monument	L1938:2082
43	Holmön 29:1	Labyrinth	Ancient monument	L1938:1587
44	Holmön 36:1	Labyrinth	Ancient monument	L1938:1999
45	Holmön 27:1	Labyrinth	Ancient monument	L1938:2150
46	Holmön 34:1	Labyrinth	Ancient monument	L1938:1303
47	Holmön 37:1	Labyrinth	Ancient monument	L1938:2070
48	Holmön 35:1	Compass rose	Ancient monument	L1938:1449
49	Holmön 30:1	Compass rose	Ancient monument	L1938:1588
50	Holmön 38:1	Compass rose	Ancient monument	L1938:1600
51	Holmön 34:1	Compass rose	Ancient monument	L1938:1304
52	Holmön 37:1	Compass rose	Ancient monument	L1938:2073
53	Holmön 67	Fishing village	Ancient monument	L1937:7631
54	Holmön 8:1	Fishing village	Ancient monument	L1938:2213
55	Holmön 11:1	Fishing village	Ancient monument	L1938:2451
56	Holmön 33:1	Fishing village	Ancient monument	L1938:1932
57	Holmön 9:1	Fishing village	Ancient monument	L1938:314
58	Holmön 53:2	Cooking/storage pit	Ancient monument	L1938:2155
59	Holmön 55:1	Cooking/storage pit	Possible ancient monument	L1938:2227
60	Holmön 80	Cooking pit/storage pit	Possible ancient monument	L1937:8508
61	Holmön 23:1	Resembling ancient monument	NULL	L1938:1388
62	Holmön 41:3	Resembling ancient monument	Possible ancient monument	L1938:1934
63	Holmön 40:4	Resembling ancient monument	Possible ancient monument	L1938:2448
64	Holmön 41:5	Other	Possible ancient monument	L1938:2012
65	Holmön 37:1	Seamark	Ancient monument	L1938:2071
66	Holmön 3:1	Burial site	Ancient monument	L1938:1380

Appendix 2. General information about all of the archaeological artefacts from Holmöarna.

Nr	Artefact type	Quantity	Museum code and Inventory number
1	Iron arrowhead	1	Vbm 2554 1
2	Slate whetstone	1	Vbm 2554 2
3	Canial fragment	1	Vbm 2554 3
4	Silver ring	1	SHM 15291 - 601912
5	Bronze bells	4	SHM 15291 - 601915

