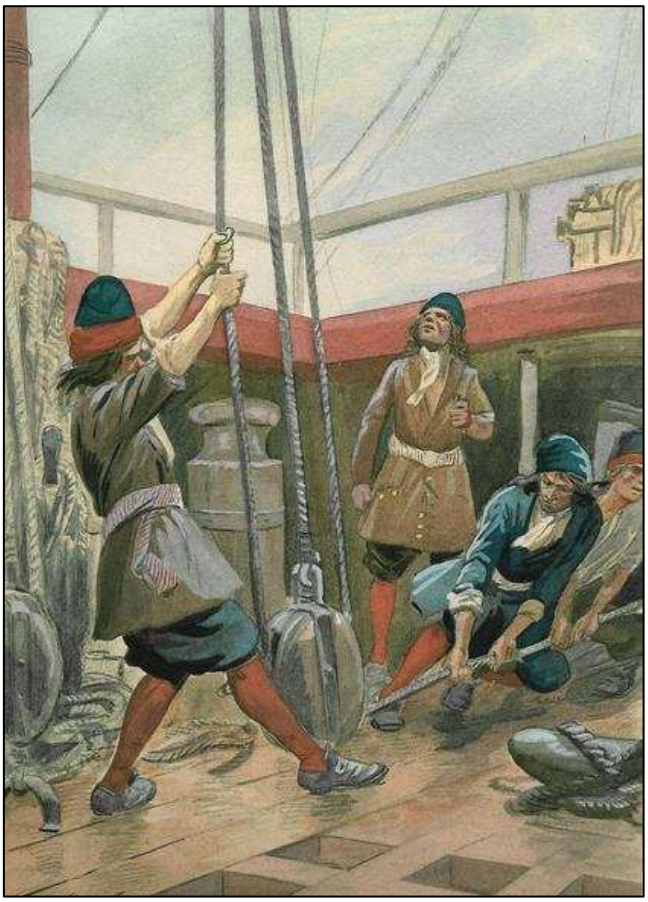
Danish-Norwegian Sailors During the Great Northern War, 1700-1721:

a portrait based on the available archaeological and historical sources.



Master's thesis submitted to the

Maritime Archaeology Programme

University of Southern Denmark

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2013

Acknowledgements

During the period in which this thesis was written I came across many people who shared their knowledge, advice and support with me. First, I would like to thank Jakob Seerup, the museum inspector of the Royal Danish Naval Museum (Orlogsmuseet), whose forthcoming article ' Absence of Shipwrecks' inspired me to direct my research towards common sailors and as the result to write this thesis.

I would also like to thank few people without whom dealing with the archaeological material in this thesis would remain impossible. For the information about the shipwreck and the finds from the frigate Lossen, I would like to thank Jørgen Johannessen from the Norwegian Maritime Museum (Norsk Maritimt Museum). For allowing me the access to the finds from the shipwreck of Dannebroge, I shall like to thank the director of the Køge Museum, Flemming Rieck, and the head of the conservation department Simon Botfeldt. For the information about the shipwrecks and the finds from Marstrand I would like to send many thanks to Thomas Bergstrand and Delia Ní Chíobháin from the Bohusläns Museum. For information and photos of the finds from the Swedish Naval Museum (Marinmuseum), I would like to thank Johan Löfgren. I am also grateful to Mrs Katrin Auer, for her help with deciphering early 18th-century handwriting.

I would also like to thank Charlotte Haaber Pettersen for her dedication and time spent on helping me with sources in all Scandinavian languages. I would also like to thank for her support, and patience in listening about Danish-Norwegian sailors during the Great Northern War for last half a year.

Lastly, and I think most importantly, I would like to express my gratitude to my supervisor, Jens Auer. His supervision and guidance together with the discussions were inspirational and motivational.

As this thesis concludes two years of my Maritime Archaeology education at the University of Southern Denmark, I would like to express my gratitude to Thijs J. Maarleveld, Bo Ejstrud and again to Jens Auer, for their knowledge, experience and passion they shared with me and other students for last two years.

*Ponadto chciałbym podziękować moim rodzicom, Alinie i Giedyminowi Wrób*lewskim, bez *których wsparcia (*przede wszystkim finansowego) *ukończenie* moich *studiów byłoby niemożliwe.*

Abstract

Although the Danish Navy of different periods has been a subject of many historical studies, it seems that the human element of the fleet has been neglected by many of the researchers. It appears that common sailors, without whom even the mightiest navy would be forced to stay in the harbour, were usually hidden behind the numbers of statistics. The following thesis attempts to change this picture of the navy and bring to attention the lives of common sailors.

The study focuses on the period of the Great Northern War, 1700-1721. In the analysis, it uses the available archaeological material from the contemporary shipwrecks and compares it with the historical documents found in the State Archives in Copenhagen. The process shows the benefits of incorporating historical sources in the archaeological research, and more importantly the need for historians to do the same. It also examines the parallels and contradictions that can be seen in the materials.

As the result, out of the combination of this different types of sources a more accurate portrait of an average sailor is created. It shows his dress and equipment, and, where possible, relates to his life on board of an early 18th-century ship of the Danish-Norwegian Navy.

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1. Introduction

In 2010 The Royal Danish Navy celebrated the 500th anniversary of its existence. Since its very beginning, the navy has been a key element of defence of the Danish interest in Northern Europe. Denmark in union with Norway had to secure thousands of kilometres of their coastline, and needed to protect its domination in Faroe Islands, Iceland and Greenland. Consequently it needed to conduct regular patrols of their waters and protected trading routes. Collecting high tolls in the Sund strait was then justified by providing safe passage between the Baltic and the North Sea. Early modern era is the time of constant competition between the Danish-Norwegian and the Swedish state. The Danish-Norwegian kingdom struggled to hold its domination in Northern Europe while Swedish Empire continued to enforce the concept of dominium maris baltici. The tension between the neighbours was one of the reasons for the development of their navies (Bellamy, 1997, pp.11–53).

The beginning of the 18th century brought the culmination to the rivalry collectively called Northern Wars. The new war reached far beyond Danish-Norwegian and Swedish borders, and lasted longer than conflicts of the 16th and the 17th century. The struggle between the Scandinavian neighbours became the matter of all the countries in the region. For all these reasons it is now known as The Great Northern War (Frost, 2000).

The history of rivalry in Northern Europe, the same as it happens in other parts of the world, seems to be looked at through the biographies of great leaders. The wars are discussed in terms of strategies, military manoeuvres and the people hidden by the statistical numbers. Under all these aspects, the lives of common people seem to vanish. Many have heard about the adventures of Peter Tordenskjold or the leadership of Niels Juel or Iver Huitfeldt, but it should be remembered that without their sailors, their ships would stay in the harbours. Naturally the officers were responsible for setting the directions of a ship, but the sailors made her move. Without common seamen even the mightiest fleet would not be able to operate. The importance of the common sailors is difficult to deny. In this light, surprising is the fact that they did not attract much attention of the researchers, what left a big gap in knowledge about the Danish-Norwegian Navy.

1.1. Literature review

Although there are many books regarding the history of the Great Northern War, there are not many publications that deal with sailor's lives aboard ships of the Danish-Norwegian Navy of the researched period. For this reason, Nils Vigeland's 'Norge *på Havet*' deserves particular attention. In the chapter written by Olav Bergersen '*Norske sjøfolk til orlogs i seilskipstiden*' (Norwegian seamen in the navy during the age of sail) there are many details told about the condition of life of the

common seamen. As the title suggest the chapter is also focused on the Norwegian sailors only. Also a chapter called 'En matros skriver dagbok' (A sailor writes a diary) gives an insight into the life on board. This chapter tells about the diary of Niels Danielson Trosner, a sailor who wrote a diary during his service in the navy. In this chapter the author recalls few of the entries from the diary illustrating few interesting events (Vigeland, 1953).

The 'human element' of the Navy is discussed in detail by Jakob Seerup in his PhD dissertation *'Søetaten i 1700-tallet, Organisation, personel og dagligdag'* . He describes life of sailors of the Danish navy in various aspects (both aboard and on land). The author focuses on the analysis of original ship books, ship protocols and other historical sources from the National Archive in Copenhagen. The dissertation contains: a full review of previous research and the literature (both Danish and foreign); a full description of historical sources used in the publication; an overview of the Navy's history in the 18th century; a description of Navy's economics and administration; a description of the organisation and life of Holmen naval base; a description of life on shore (the work day schedule, working time and regulations, etc.); a life on a ship (the hierarchy with description of the job and the responsibilities of different people on board, from officers to servants); the life on board in all its aspects (during sailing, keeping watches, cannon and weapon exercises, religious life, illness and death, food and drinks, clothing personal belongings, crime and punishment, leisure time, etc.). Although the dissertation describes the Royal Danish Navy in the time period from 1721 to 1801, many of the valuable information can be applied also to earlier periods (Seerup, 2010).

Also Jørgen H. Barfod attempts to describe lives of sailors. In his '*Så til søs!*' the emphasis is put on the navy sailors prior the year 1700. Barfod follows the history of common sailors in three sections: 1. 1390's – ca. 1600, 2. The sailors of Christian IV., 3. Later half of the 17th century. The publication has a general character. Sailors are presented as a group, not as individuals (Barfod, 2004).

Many information about the sailors of the period 1599-1720 can be found in 'Skuder og kompagnier' by Ole Degn and Erik Gøbel. This publication is the second part of the series 'Dansk *Søfarts Historie*', which focuses on the years 1588-1720. It discusses many aspects of Danish seafaring among which one is the sailors. The chapter '*Søfolkene*' (seamen) shows that there was a constant need for sailors in the 17th and early 18th century. It discusses how were they drafted, were did they come from, and how did the later enrolment system work. It also describes sailors living conditions, both on land and onboard a ship, and gives the information about their food and drinks. It also shortly discusses their clothing, their social status and crew's wages and salaries. Although rich in the information, the book focuses on the lives of merchant sailors. As many of the navy sailors were enrolled from the merchant fleet, Degn and Gøbel's book is a valuable source of information (Degn & Gøbel, 1997).

The disadvantage of the mentioned positions is that they are only based on the historical sources. None of the mentioned authors looks at the available archaeological material or uses other archaeological reports to supplement their picture of common seamen.

These publications leave a researcher with another problem as well. Among the mentioned books only '*Norge på Havet*' tells the story of sailors during the Great Northern War. The other publications cover the time before and after the conflict, and even if they mention the time of the war it is in the very limited way. Barfod's '*Niels Juels flåde*', which describes the history of the Danish-Norwegian navy between 1660 and 1720, does not focus on the lives of common seamen (Barfod, 1997).

The book which is often quoted in the context of the sailors of the Great Northern War is *'Fregatten "Lossen"*- Et kulturhistorisk skattkammer*'* published by the Norwegian Maritime Museum in 1983. In this publication the authors, Svein Molaug and Rolf Scheen, present the results of their excavation of the frigate Lossen. The book describes the history of the ship, the conducted archaeological work and the finds. The authors often try to address the subject of sailors' life on board, but they do it using bold statements without references or presentation of previous research. Although the publication is based on the archaeological material it lacks proper and thorough discussion, in which the finds would be presented in their archaeological context (Molaug & Scheen, 1983). '*Fregatten Lossen'* is often used as the reference in the later publication of the contemporary Danish-Norwegian and Swedish shipwreck. As the result the statements presented in this publication are continuously repeated, often unquestioned.

Additional information about the life on board in the age of sails can be found in the publications about the Royal Navy. Up to this day this has been the best researched fleet in the world. A good example is Brian Levery's 'The Arming and Fitting of English Ships of War 1600-1815' . Among the technical details about steering, anchors, capstans, pumps, guns, etc., the information about accommodation can be found (Lavery, 2006).

Inevitable element of every sea venture is concern about health of the crew. In such a small habitat as a ship is, diseases can spread very fast. In the 18th century Royal Navy suffered more from the spread of diseases than from the death brought by sea battles (Haycock & Archer, 2009, p.3). The *'Health and medicine at Sea, 1700-1900'* presents the history of the improvement of health aboard Royal Navy ships in the 18th and 19th century. It also shows the influence that the sea surgeons had on the development of the medicine in general. The book is a collection of nine essays written by various authors (Haycock & Archer, 2009).

Although not about the navy sailors but the merchant fleet sailors, and focused on the nineteenth and the beginning of the twentieth century, the 'Deep Sea Sailors – A Study in Maritime *Ethnology'* by Knut Weibust should not be omitted. His study is entirely based on memoires, diaries, sailor's descriptions of voyages and the account of their experiences found in the collection of Henning Henningsen's Archives. Weibust quotes sailors in detail, describing life on board as seen by them. The book is divided into three parts. First, 'Goals, environment and activities', discusses

physical aspect of life on board. It describes the setting in which sailors worked, how the work looked like, what were the living conditions, what were the leisure and festivals. The second part, 'Social roles and relations', examines the community of a ship. It tells about sailor's roles, communication on a ship, roles of deckhands and petty officers and the relation between them. In this part a reader can also find a chapter called 'Making of a sailor', which shows the process of becoming one. Part three of the book shows mental characteristics of sailors, their values, frustrations, needs and believes. Most of the testimonies, that the book is based on, comes from Scandinavian sailors (Weibust, 1969). In the lack of other publications of this kind, Weibust's study may be the only one which shows very detailed picture of how did sailor's life look like in the age of sail. The advantage of this publication is its psychological aspect. It tells about sailors' joys and sorrows and relations between crew members. In this regard it is very valuable source of information. Bearing in mind that this publication can not be directly applied for the research of the early 18th century Danish-Norwegian Navy, it still gives a glimpse at the life of common seamen.

1.2 Archaeological source review

The material culture of the early 18th-century ships testifies for the people who sailed them. Following chapter presents the previous research done on the shipwrecks of the Great Northern War, from which finds were used as the archaeological source in this thesis. The presentation focuses on the discovery of a wreck and the conducted survey or excavation. It also presents the research's outcome and the location of the recovered finds.

1.2.1 Frigate Lossen

Frigate Lossen was discovered in 1967, and became the first underwater-archaeology project in Norway (Nævestad, 1992, pp.8–9). In order to find the shipwreck, the staff of the Norwegian Maritime Museum (*Norsk Sjøfartsmuseum*) analysed the original documents. Knowing the course of the ship, the strength and the direction of the wind, and the sails that were used, it was possible to define the place where the ship sunk. The shipwreck has been located in the bay of Stolen, in the Oslo fjord. After few dives the cannons were found, and the discovery of wooden hull structure followed soon after. The excavation project was planned as a training in maritime archaeology for sport divers (Molaug, 1983, p.60).

Frigate Lossen sunk in storm on the 24. of December 1717. Although the portside of the ship has been eaten away by ship-worms, the rest of the ship wreck stayed almost intact. Four and a half

thousand finds have been catalogued. Personal possessions of the crew belong to the most interesting ones. There were: sailors' chests, wooden kitchenware and porcelain, pipes, buttons and buckles, navigational instruments, and many more, to name just few categories of finds (Molaug, 1983, p.60). The history of the shipwreck, the excavation and the finds have been presented in *'Fregatten "Lossen"*- Et kulturhistorisk skattkammer*'* published by the Norwegian Maritime Museum in 1983 (Molaug & Scheen, 1983), and most of the finds can be seen on display at the Norwegian Maritime Museum (Fig.1).

Figure 1 – Sailor's chest on the exposition at the
Norwegian Maritime Museum, photo: Jens Auer (2009)

1.2.2 Frigate Mynden

Frigate Mynden is located off Cape Arkona, the northern tip of the Island of Rügen in Macklenburg-Vorpommern, northern Germany. It was first found in the 1930's. Discovery of few parts of a shipwreck and lifting two cast-iron guns did not start any archaeological research. Rediscovery took place in 1991 during an exercise of the German Navy. The navy divers lifted four guns. Soon after, the finds started to deteriorate and were handed over to the *Landesamt für Vor*- und *Frühgeschichte* in Schleswig-Holstein. The Landesamt in association with the Navy conducted the first survey of the shipwreck. The year after, the site was handed over to the Society for Underwater Archaeology in Macklenburg-Vorpommern, which run the excavation until 1995. During this period many artefacts have been lifted. The researchers managed to estimate the sinking date due to the dendrochronological analysis of the firewood from the ships galley. The ship sunk in 1718 (Auer, 2004, pp.264–265). The full documentation of the site and the artefacts was a subject of a MA thesis

by Jens Auer in 2000. One of the results was the identification of the shipwreck (Auer, 2000). The project did not include any further excavation. The wreck is now part of an underwater museum (Auer, 2004, p.265). Few finds after conservation process have been exposed in the Museum for Underwater Archaeology in Sassnitz, Germany (Auer, 2004, p.278).

1.2.3 Ship-of-the-line Dannebroge

Dannebroge was first discovered in 1873, when after a storm the shipwreck became visible. It was decided to salvage guns of the ship which were then used to decorate Ivar Huitfeldt Column in Copenhagen (Vigeland, 1953, p.257). The modern day discovery took place in the 1980's, and since then has been an object of numerous archaeological investigations. The main campaign took place in the years 1986-1988. The last investigation was conducted in August 2010, after the reports of illegal sport divers activity on the shipwreck. The purpose of the investigation was to record damages caused by the divers (Dencker, 2010). The finds collected throughout the years belong to the Museum in Køge, Denmark.

Figure 2 - Finds from the ship Dannebroge on the exposition in the Museum in Køge (P. Nielsen, 2011).

The most comprehensive publication about the ship, so far, is the 'Dannebroge 1692-1710. *Forlis, arkæologiske undersøgelser og byggeprincipper*' written by Claus Rohden Olesen. The author focuses on the ship itself describing it in the following chapters, respectively: the battle of Køge in 1710, previous research, the shipwreck's history, documentation, conservation, deposition of the wreck, the history of the ship's building process, ship's armament, ship's decoration, the construction

characteristics, the results of the study, Dannebroge's construction and the conclusion with the outlook. The publication sums up all previously conducted archaeological research and tries to place the design of the ship in the right European context. The article does not refer to the material culture of the ship (Rohden Olesen, 2009).

In October 2010 Museum in Køge organised 4 days conference to celebrate the 300th anniversary of the Battle of the Køge Bay. Among many events the new exposition was opened presenting the history of the Battle of Køge. The finds from Dannebroge were on the display until February 2011 (Fig.2). The documentation of the events, supplemented by the information about the Dannebroge ship, the shipwreck site, the history of the battle of Køge, has been gathered and published in the internet by Palle Nielsen (P. Nielsen, 2011).

1.2.4 Frigate Schleswig

Another frigate which excavation could bring new information on the subject is Danish-Norwegian Schleswig. It was first discovered in 1957 by sport divers off Misingene in the Oslo fjord (Nævestad, 1992, p.9). The shipwreck was re-discovered in 1997. The same year the Norwegian Maritime Museum has conducted only limited examination of the wreck (Sveindal, 1997).

1.2.5 Ship-of-the-line Prinsessan Hedvig Sophia

Since the discovery of two cast-iron guns in 1970 near Bülk, Germany, by local diver Rolf Lorenz, Prinsessan Hedvig Sophia had to wait almost 40 years for the first archaeological excavation. Until the year 1987 few guns were lifted. In 2002 one more gun has been discovered, this time, by the research diver Erich Halbwidl from the University of Kiel. The Working Group for Maritime and Limnic Archaeology at the University of Kiel (*Arbeitsgruppe für maritime und limnische Archäologie* der CAU Kiel – AMLA) together with the state authority for archaeology in Schleswig-Holstein decided to lift the gun and range of shots, and conserve them. The historical research associated the find with the loss of the Swedish flagship Prinsessan Hedvig Sophia during the Great Northern War. In 2008 the location of the wreck was revealed by local diver Heinz Bojahr, and the local authorities created special protection zone around the shipwreck. The same year first archaeological survey and excavation took place. Dendrochronological samples were taken and the bow area has been uncovered and documented (sketches and photographs). Meanwhile Rolf Lorenz surveyed the surrounding area with a metal detector. During the following year two-weeks-long campaign, the stern area has been uncovered (Auer, 2011, pp.7–8). Years 2010 and 2011 brought two more excavation projects. For this

two seasons AMLA and the state authority for archaeology in Schleswig-Holstein were supported by the maritime archaeologists from the University of Southern Denmark. As the result of these campaigns two reports have been published (Auer, 2011; Auer et al., 2013). The finds are conserved and kept by the state authority for archaeology in Schleswig-Holstein in Schleswig, Germany.

1.2.6 Frigate Fredricus

In 1719 Marstrand in western Sweden was besieged by the Danish-Norwegian fleet. Swedes decided to scuttle their own ships to avoid their capture by Danes. Historical sources mention 10 sunken ships: frigates Halmstad, Stettin, Kalmar, Fredricus and Charlotta; galleys *Stå Bra* and Greve *Mörner*; the yacht Diana and two fire ships. Only four of the ships have been located: Halmstad – Marstrand 80, Stettin – Marstrand 92, Fredricus – Marstrand 93 and Kalmar – Marstrand 85 (Ní Chíobháin, 2010, p.11).

Two frigates Fredricus (Marstrand 93) and Stettin (Marstrand 91) have been discovered during preliminary survey of Marstrand harbour in 1997 (Bergstrand 2007a, p.5). Fredricus has been excavated by Bohusläns Museum the same year. Two reports have been published (Bergstrand, 2007b; Bergstrand, 2007a). Many information on the project can be also find in the report publish after examination of the cultural layer 'Marstrand 32', which shipwrecks Stettin and Fredricus are part of. The report contains full list of finds, analysis of the bone material, and the analysis of all the clay pipes (Bergstrand, 2009). Bohusläns Museum is the owner of the artefacts found in the Marstrand harbour. In the 2013 the final report about the shipwreck will be published (pers. comm. Bergstrand).

1.2.7 List of the ships

The following list sums up the basic information about the shipwreck, from which archaeological material will be used in this thesis (Table 1).

Name	Navy	Date of sinking	Place of sinking	Cause of sinking	Who excavated	When excavated
Dannebroge	Danish-Norwegian	4. October 1710	Bay of Køge, Denmark	Battle of Køge	Not excavated	August 2010 surveyed by Viking Ship Museum, Roskilde
Lossen	Danish-Norwegian	24. December 1717	Vesterøy, Norway	'Christmas storm'	Norwegian Maritime Museum	1967, 1968, 1974

Mynden	Danish-Norwegian	18. November 1718	Cape Arkona, Germany	Collision with underwater obstacle	Society for Underwater Archaeology in Meclenburg-Vorpommern, Jens Auer	1991–1995, 1999-2000
Prinsessan Hedvig Sophia	Swedish	April 1715	Bay of Kiel, Germany	Battle of Femern	MAP –SDU[1] & Archäologisches Landesamt Schleswig-Holstein	2010, 2011
Fredricus	Swedish	1719	Marstrand, Sweden	scuttled by Swedes	Bohusläns Museum	1997

Table 1 - List of the ships, from which archaeological material will be used in the thesis

The above list of the shipwreck from the Great Northern War presents only few shipwreck, which location is known and were the object of a archaeological study. They represent only a little fragment of Danish-Norwegian and Swedish fleets, which fought several battles at sea between 1700 and 1721: battle of the bay of Køge (1710), Rügen (1715), Dynekilen (1716), Marstrand (1719), and Gothenburg (1719) (Lyngby et al., 2010, pp.108–173). Moreover Swedish fleet was involved in the rivalry with Russian in Eastern Baltic: In 1702 twice on the lake Ladoga (Anderson, 1910, p.137); in 1703 and1704 on the lake Peipus (Anderson, 1910, p.138); 26th of June 1705 Swedish ships attacked Russian base of Kotlin (Anderson, 1910, p.139); Battle of Gangut in 1714 (Anderson, 1910, p.159; Rostunov, 1987, p.137); 4th of June 1719 – Battle of Ösel Island (Anderson, 1910, pp.196–197). There were many more naval operations in which the navy secured transport of troops and cargo to various locations, secured strategic positions or performed other actions. Both Danish-Norwegian and the Swedish fleet suffered losses. Many ships were captured and continued sailing under different ensign, while other ended at the sea bottom (Anderson, 1910, pp.360–364).

[1] MAP – SDU - Maritime Archaeology Programme at the University of Southern Denmark (Suddansk Universitet)

1.3 The review of the historical sources

The archaeology of the historical periods can be supported by the historical sources. These are: i.e. diaries, letters, manuscripts, administrative documents and other document – All written records made by contemporary people. In the discussion about the life on board Danish-Norwegian ships during the Great Northern War, these kind of sources are of special value. The high bureaucratization of the navy's administration brings archaeologists and historians very close to how the life on board was organised. The group of historical documents contain both, those made on land and on board ship, and they cover all aspects of navies activity, from navy's orders and mission reports to the management of ships' crews, victuals and ammunition.

The administration of a naval ship was recorded in ships' books. There are two types of ship's books containing two different types of information. First are the log books, which focus on the course of the ship and minor events on board, written day by day. The second type of ships' books are protocols – books which deal with the administration of the ship. In this kind of books the crew and the equipment of every ship was listed every week. Therefore they provide the complete record of how many sailors served on a ship, where were they recruited from and what were their names. They also include information about provision of the ship: when was what acquired in what quantities, how much was consumed and how much was left. The same applies to the ammunition. The protocols were also the books were all the orders received by the ship were copied to.

The whole administration is done according to the 'Sea Articles' (*Søkrigsartikler*) which deal with all aspects of life on board. For example, they define the duties of sailors of different ranks and describe punishments for different types of offenses and crimes. They also deal with cases of sailors' death. For the time of the Great Northern War there were 'Sea Articles' issued in 1700. The article 174 reads as follows:

174.

> Naar nogen doer paa Skibet da skal. Skriveren ubi Skipperens og højbaadsmandens Rærvæelse rigtig inventere den Af dødis efterlatte Gods og føre det med sig til Lands at det den Af dødis næste Arving er land vorde tilstillet. Er rejsen lang og Godsed land fælgis skal det med Capitainens Villie til den højestbidendis af hændis. Dersom den Afgaaendis forærer neget deraf til de Fattige eller andre da skalsam me og paa af Skriveren noteris og til børligen extraderis
> (Frederick IV, 1700, p.105).

This English translation of the above:

174.

When someone dies on the ship then shall Ship's clerk with skipper and high-boatswain, make the list of the dead man's possessions and with them bring them to land from where they will be sent to dead man's inheritor. If the journey is long and the land is far away, shall this be with Captain's will that they will be handed over to the highest bidder. If the late sailor gives something to the poor or others in need it should be noted by the clerk and extracted before sale (Frederick IV, 1700, p.105).

The lists which are mentioned in the above article can be found in the ships' protocols. They specify all the possession of deceased sailor. If the auction was conducted, the list also contains the information about the price an item was sold for (Fig.3). The study of this records gives an insight into sailors belongings often with information that could not be obtain otherwise.

Figure 3 – An auction of deceased sailor's possession
depicted by Niels Trosner in his diary (Nils Trosner, 1713)

An entry in a ship's protocol is always constructed the same way. First come the information about a deceased sailor: his name, where was he enrolled, which number he had, and when did he die. This is followed by a list of his possessions. Example of such entry is given bellow (Fig.4).

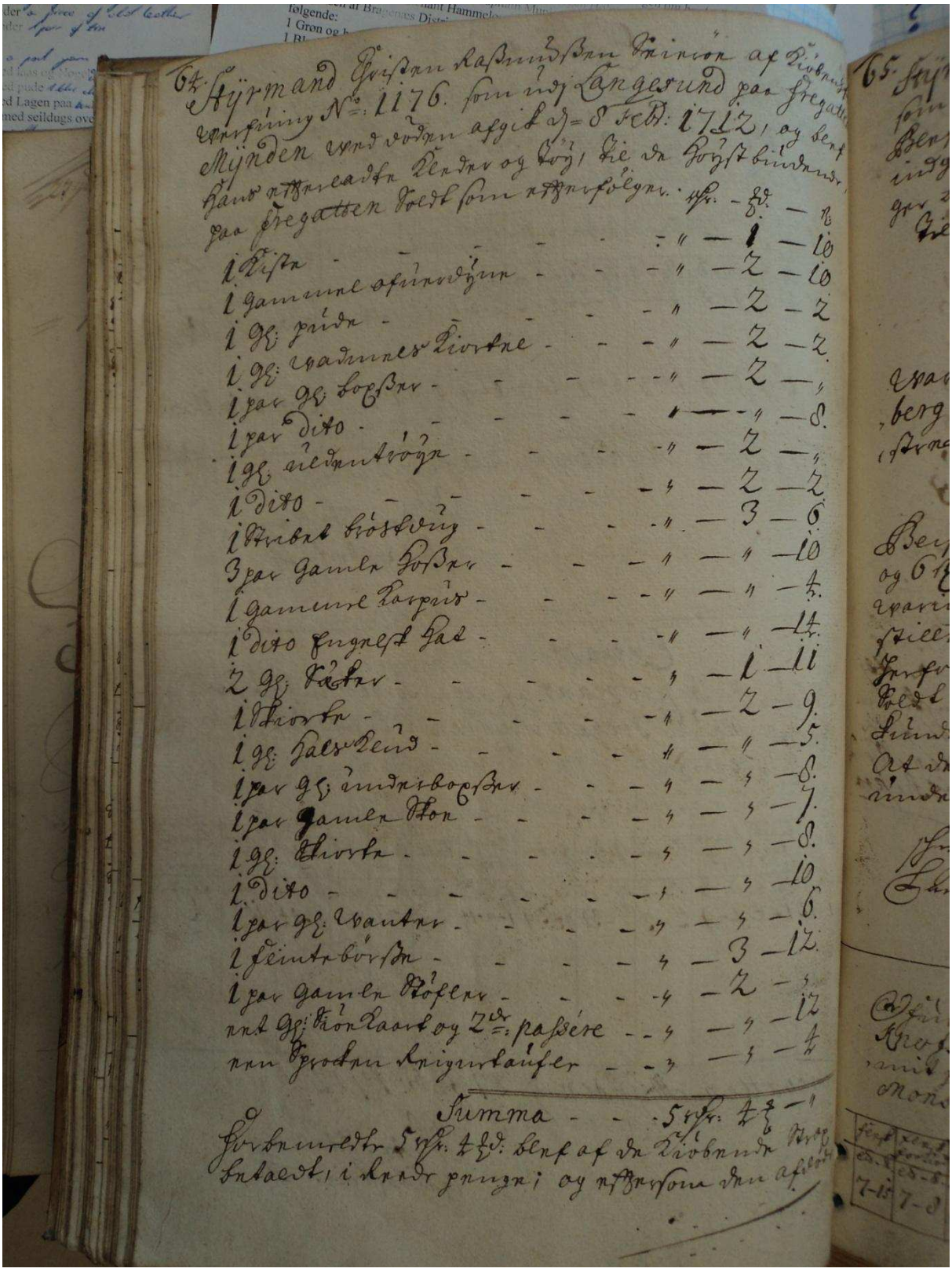

Figure 4 – List of possessions of deceased Stÿrmand Christen Rasmusen Seimøn found in the ships protocol from the frigate Mynden (Statens Arkiver 1, 1712), photo: Edgar Wróblewski (2012)

Stÿrmand Christen Rasmusen Seimøn af Kiubenhavns rgersuing Nº 1176. som udj Langesund paa Fregatten Mÿnden [MS. illegible] duder afgit [?] dj= 8 Febr. 1712, og blef hans effterladte kleder og tuj, til de hoyst biudende, paa fregatten Soldt som effterfülger.

[translation of the above: Stÿrmand[2] Christian Rasmusen Simon from Copenhagen register Nº1176, has passed away on board frigate Mynden off Langesund on the 8th of February 1712, and all clothes and equipment which were left by him was sold to the highest bidder, on the frigate as to an inheritor.]

After this short introduction, there is a list of his possessions with the prices they were auctioned for:

	Daler	Mark	Skilling
1 kiste	-	1	10
1 gammel ofurdyne	-	2	10
1 gl: pude	-	2	2
1 gl: vadmels kiertel	-	2	2
1 par gl: buxser	-	2	-
1 par dito	-	-	8
1 gl: uldentröye	-	2	-
1 dito	-	2	2
1 stribet bröstdug	-	3	6
3 par gamle hoser	-	-	10
1 gammel kaepus	-	-	4
1 dito engelsk hat	-	-	14
2 gl: suker	-	1	11
1 skiorte	-	2	9
1 gl: halsklud	-	-	5
1 par gl: underbuxser	-	-	8
1 par gamle skoe	-	-	7
1 gl: skiorte	-	-	8
1 dito	-	-	10
1 par gl: vanter	-	-	6
1 flintebürste	-	3	12
1 par gamle stöfle	-	2	-
een. gl. Siöekaart og 2 passire	-	-	12
een Sprocken reignetaufle	-	-	4

(Statens Arkiver 1, 1712, p.64)

The lists contain many useful information that testify for sailors' belongings. They are a good source of information, but it should be remembered that lists are not complete. The incompleteness is a result of two reasons. First, naturally if a sailor fall accidently overboard he took the clothes and object he had on him with him. Second, sailors were buried at sea in the clothes they wore at the moment of

[2] *Stÿrmand* – 'steerman' was a person who navigated the ship or acted as a pilot. He did not steer the ship. This was the job of quartermasters (kvartermester) (Bellamy, 1997, p.285).

their death. Therefore the inventories of dead sailors' possessions should be considered as just a representation of their belongings that could be find in his sea chest.

The ship books are stored by the National Archives (Danish: Statens Arkiver) in Copenhagen. They can be found in the archive series: skibsjournaler, created out of the documents of *Generalkommissariatet (Søetaten)*, Admiralitets- og Kommissariatskollegiet, Admiralitetet, Marineministeriet, and the *Søværnets Operative Kommando* in the years between 1650-1993. The collection is stored in cardboard boxes containing two, three or more, depending on the thickness, books. Each box is marked with a number, and the name of one of the ships which book can be found inside. The example of a box's signature is as follows:
Rigsarkivet, 0008 Marineministeriet, 1650-1969 Skibsjournaler, Lossen Fregat 1712, 96-1 - 96-3.
The signature does not contain the information of what kind of ship's book can be found inside. The books are gathered chronologically rather than by a ship they were created on.

Beside the official documents of ships' administration, there is a historical source, which shows life on board from very different perspective. '*Dagbok ført på flåten 1710*-1713' is a diary written by a Norwegian sailor Niels Danielson Trosner, who during the Great Northern War served on few different Danish-Norwegian ships. In his writing he describes events that take place on board his ship and other vessels. He also relates the topics of other sailors conversations. The diary is nicely illustrated with many black-and-white and colourful pictures which he drew on the margin of each page. This diary is the only written source that allows a glimpse into actual sailors' life on board a naval ship of this period (Nils Trosner, 1713). The original of Trosner's diary belongs to the collection of the Arkivverket, Riksarkivet og Statsarkivene in Oslo, Norway. The physical copy can be found in the archive: AE-3667 Manuskriptsamlingen, G - Manuskripter i kvartoformat, under the catalogue number: L0048, RAJ 268/1883. The complete diary is also scanned in high resolution, and can be downloaded from the Archive's website. In 1923 the Gyldendalske Bokhandel published the trunscribtion of the manuscript. This edition is written in modern Denish language, and contains only few of Trosner drawings (Niels Trosner, 1923).

While using Trosner's diary it should be remembered that as a diary it represents things and events which were of certain interest to the author. It also testifies for his opinion and therefore is not an objective source of information. Regardless author's effort to describe the reality around him as it was, it is still the life as he saw it, and which should not be applied on the general terms. On the other hand, having no other source of this kind it remains possibly the only way to get to know sailors' story which is told by one of them.

1.4 Aim, objectives and the structure

As the review of previously conducted research shows, there has not been a publication that would thoroughly focus on the lives of common sailors. It was also shown that the available publication are thoroughly based on the historical material. With relying only on the historical documents a certain risk is associated. In the 'Shipwreck as Data Base for Human Behavioural Studies' Larry Murphy discusses this issue arguing that 'the historical documents reflect the attitudes of the authority group or recorder than those of lower-ranking persons in the general society'. Naturally this does not give the full image of the research subject. In this context he talks about the importance and advantages of studying shipwrecks in combination with the historical sources. Murphy points out that shipwrecks often wrongly called 'time capsules' are in fact vivid example of the past times. Contrary to a 'time capsule' a shipwreck is not specially prepared to pass the information about the contemporary time to the future generations. In these understanding it is not similar to historical sources, that present the point of view of their author, but speaks for itself (Murphy, 1983).

Therefore, the main objective of this thesis is to create an accurate portrait of a common seaman of the Danish-Norwegian Navy during the Great Northern War and by this, fill in the gap in knowledge about the navy of this period. The thesis intends to use the archaeological material from the shipwrecks as the primary source of information and supplement it by the data found in the historical sources.

To create an accurate portrait of a sailor, the thesis intends to answer questions regarding two main topics. First one concerns the look of a sailor. The second one focuses more on sailors' characters. How much information about the owner can the analysis of seamen's belongings reveal? Is it possible to learn who these sailors were by looking at the objects they had? Who were they? Where did they come from? Are there any similarities between the sailors? What were the condition they had to live in on board a navy ship? How did their life on board look like? These questions will be the guidelines for the thesis.

Moreover, the thesis aims to examine the correlation between the archaeological and the historical sources. Can parallels be seen in them? Do they contradict each other? To what extend the sources supplement each other? Which kind of information comes from which kind of source?

By answering this questions it is intended to create a vivid image of an average sailor and create the interest in studying the lives of common people. This approach should contribute to the holistic view of the society of early modern Denmark and Norway. It should also add to the study of human behaviour in general, according to guidelines set by Murphy in 'Shipwreck as Data Base for Human Behavioural Studies'.

Furthermore, the thesis intends to raise awareness among historians and archaeologist about the importance of including different types of available sources for better understanding of the research subject.

The thesis is divided into five main parts. After the introduction the short history of the Great Northern War will be presented, together with the information about the drafting system used by the Navy in the discussed time period and the hierarchy on board a naval ship. The next chapter will focus on the historical sources and the information found in the lists of auctioned things that had belonged to a deceased sailor. Chapter four, on the other hand, will present the archaeological material found on Danish-Norwegian and Swedish shipwrecks. The information gathered in the chapters three and four will be discussed in the following part. The thesis will end with a conclusion of conducted research and an outlook.

1.5 Methodology

The methodological approach of this thesis consists of the analysis of the archaeological and the historical sources. The comparison of the finds from the Danish-Norwegian shipwreck supported by the finds from the Swedish ones will be the first source of the information. The reason for including finds from Swedish ships in the research about the Danish-Norwegian Navy is that, as will be explained in the chapter about the drafting system, many of the sailors from the western coast of Sweden served in the Danish-Norwegian Navy. Another example can be given by the history of the Swedish shipwreck of Prinsessan Hedvig Sophia. Because it was salvaged by the Danish sailors of the same time period, many of the finds can not be clearly interpreted as Danish or Swedish.

The description of finds will be based on the available publications, and in case of Swedish frigate Fredricus, on the information from the forthcoming report by Thomas Bergstrand. Only the finds from the ship Dannebroge, stored in the conservation laboratory in Køge, Denmark, have been accessed, photographed and measured by the author.

The second sources of the information will be the analysis of the historical documents. Of special interested are the ship protocols containing lists of things listed after sailors' death. The research will include the documents gathered and stored by the National Archives (Statens Arkiver) in Copenhagen. The boxes with the ships' books were selected in the Archive's on-line catalogue 'Daisy'. At first it was quite random choice. After studying few boxes the decision was made to focus on the documents from smaller ships. It appeared that the protocols of smaller vessels contained more various information than the books of ships-of-the-line. Ordering boxes with the documents from frigates was more likely to bring results. Another decisive factor was the year of the documents. As the Navy was not very active during the first years of the war, most of the ordered ship books come from the later period of the conflict, from 1710 to 1719. Following boxes were ordered within the period of the research (Table 2):

Box signature	Name of the ship and the year of the books	Lists of personal belonging found
14B – 15G	*Ørnen Fregat* 1690	
24A – 25D	Mynden Fregat 1706	
25E – 26O	Dannebrog 1707	
27bL – 27 bP	Lossen Fregat 1710	
60 – 61-1	Lossen Fregat 1711	
63-1 - 64	Mynden Fregat 1711	
65 - 67	Dragonen Fregat 1711	
68A – 70C	Raae Fregat1711	
70D – 71-2	Prins Carl Orlogskib 1711	
91-1 – 92A	Flyvende Dragon Fregat 1711	
99A – 99bA	Raae Fregat 1711	
82-1 – 83-1	Elephanten Orlogskib 1712	
92B – 93-2	Mynden Fregat 1712	X
94-1 – 94-2	*Søridderen Fregat 1712*	
96-1 – 96-3	Lossen Fregat 1712	X
123D – 123E	Serpenten Snav 1713	
106-1 – 107-2	Sophia Hedvig 1713	
119-1 – 120-1	Gravensteen Fregat 1713	
121 B-2 – 122-2	*Søridderen Fregat 1713*	
135-1 – 135-2	Raae Fregat 1713	
136-1 – 136-2	Macrelen Fregat 1713	
134A – 134C	*Søridderen Fregat 1714*	
137-1 – 137-3	Postillionen Fregat 1714	
169-1 – 169-4	Lossen Fregat 1715	
1771A – 171D	*Frøken Elsken Fregat 1715*	
192-1 – 192-3	Raae Fregat 1716	
225A – 226C	Raae Fregat 1716	
230-1 – 230-4	*Hvide Ørn Fregat 1716*	
249-1 – 249-3	Phoenix Fregat 1717	
276-1 – 277-2	Raae Fregat 1717	
281-1 – 281-2	*Hvide Ørn Fregat 1718*	
285A – 285C-2	Leoparden Fregat 1718	
291-1 – 291-2	Leoparden Fregat 1719	
293A – 293E-2	Dragonen Fregat 1719	X
298-2 – 298-4	Pommern Fregat 1719	

Table 2 – List of the examined archival documents

Dealing with the historical texts requires adopting a conventional transcription system. In this thesis rules suggested by the Minnesota Historical Society will be used. According to this rules a

word which can not be read with full certainty will be followed by a question mark in square brackets: [?]. A word which can not be read at all will be marked with: [MS. illegible]. If a word misses a letter it will be added in square brackets (Lucas, 2004). Otherwise the original spelling will be kept.

1.6 Terminology and usage

In most of the cases the English forms of names will be used. If otherwise a word will be typed in italics to indicate that a word is spelled in the original language. Also the Danish, Norwegian and Swedish names of ships will be used and therefore written in italics.

The specific terminology used in the description of the object will be explained in the same description. Also the meaning of words that has been change with time will be explained.

All dimensions given in this thesis are in centimetres, if not stated otherwise.

2. Historical background

2.1 Brief history of the conflict from the perspective of the Danish-Norwegian Navy

Since the middle of the 17th century Northern Europe witnessed constant struggle for domination in the Baltic Sea region. Fighting for supremacy were Sweden, Denmark-Norway, Russia, and Poland in the personal union with Saxony. Realising that Western European countries will not support Russia's war with Turkey, tsar Peter I the Great started preparation to war against Sweden (Franaszek et al., 2000, p.291). Between 1698 and 1700 Denmark, Poland-Saxony and Russia created an anti-Swedish alliance. As a matter of agreement each party was obligated to occupy Swedish military forces on different fronts (Lockhart, 2004, p.145). The war broke out in 1700. First Augustus of Saxony and Poland attacked Riga in February, then Fredric IV of Denmark invaded Holstein-Gottorp in March, and Tsar Peter I hit Narva in August. England and the Dutch Republic, which were interested in keeping the Holstein-Gottorp an autonomous province also became involved and decided to support Sweden by sending their ships into Baltic (Glete, 2010, p.201).

The first year of the war was not fortunate for the anti-Swedish coalition. Karl XII of Sweden encouraged by the presence of the English and the Dutch fleet decided to confront the Danish-Norwegian fleet, but Danes remained in their well-fortified base in Copenhagen. The Swedish forces started the bombardment of the city (Fig.5). This operation allowed them to land their troops in *Humlebæk*, north of Copenhagen. Fredric IV was then forced to sign a treaty and withdrawn his army from Holstein-Gottorp. Swedish army was sent to Livonia and Estonia and the navy got an order to secure transportation in the Baltic (Glete, 2010, pp.201–203). For the Danish-Norwegian Kingdom this was the end of the war and until 1709 they stayed out of the main war theatre.

In 1709 Danes invaded Scania with a plan of capturing the naval base in Karlskrona. But as they marched East, Swedish home army met them at Helsingborg on the 28th February 1710. Danish-Norwegian navy had to secure withdrawal of the Danish army after the lost battle. Swedish battle ships ware mobilised to protect Karlskrona and to continue naval war against Russian in the Gulf of Finland. It was too late to protect Swedish cities in the East. Viborg and few other bigger cities fell and the fleet was ordered to secure the evacuation of Tallinn (Reval). In 1710 Sweden lost the island of Saaremaa (*Ösel*). From March to June 1710 the Danish-Norwegian navy mobilised the biggest fleet of this war and biggest in its history. Swedish navy strengthened its naval forces in Gulf of Finland and Gothenburg. The Swedish west-coast squadron threatened the Danish-Norwegian communication in the Øresund. Danes decided to divide their big fleet of the Baltic and send ship to secure Kattegatt (Glete, 2010, pp.208–209).

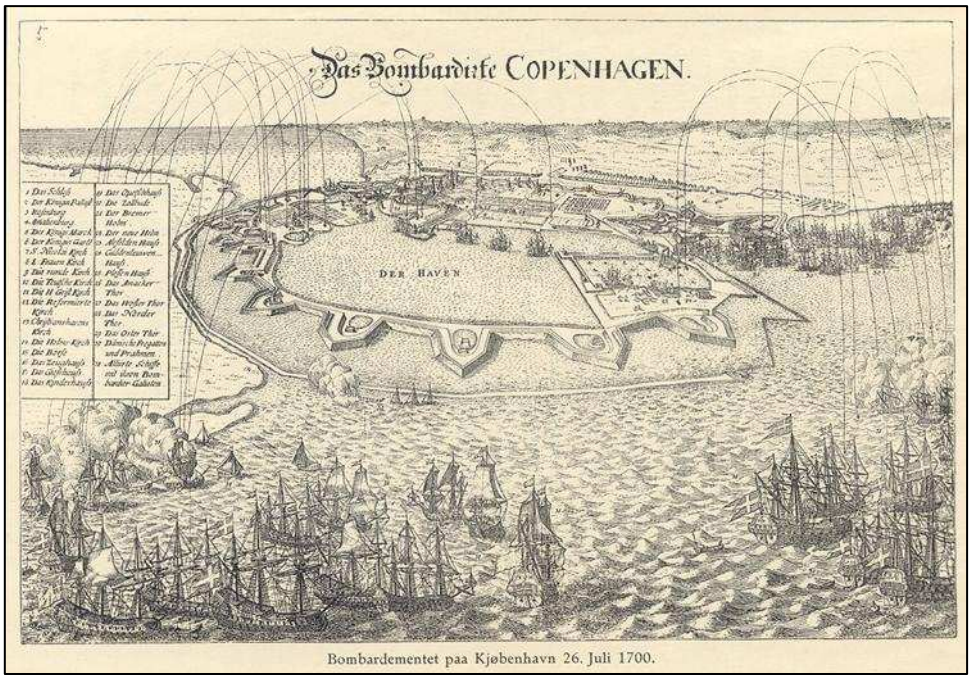

Figure 5 – Bombardment of Copenhagen, 26th July 1700 (Tuxen, 1872).

Denmark and Russia were planning to invade Sweden's main land, on 3rd of September 1710 Danes sent their ships to Gdańsk to secure transportation of Russian troops. Many of the ships were damaged on the way by gale and had to return to the Bay of Køge. Admiral-general of the Swedish fleet, Hans Wachtmeister, sailed to the Bay of Køge on the 20 September, and attacked Danish-Norwegian ships on the 4th of October. Danish-Norwegian fleet was unprepared for battle, tired after whole summer at sea and in the bad condition after last gale. Moreover it allowed itself to be surprised by not sending sea scouts, who would warn them about approaching Swedes. The battle was soon interrupted by strong wind which forced both fleets to anchor. During the encounter Danes lost the ship-of-the-line Dannebroge, which caught fire and exploded taking lives of 550 men of its crew. Sweden lost two ships which run aground south of Amager and had to be burned to prevent Danes capturing them. Two days later Danish ships returning from Gdańsk were sunk or captured by Wachmeister who waited for the opportunity to face the Danish-Norwegian fleet in a battle on the open sea. Danes did not take any actions and both fleet sailed back to their bases (Glete, 2010, pp.209–210).

Next two years passed without greater naval battles. Both fleets were involved in securing the logistics of their armies. For the Swedish navy focused mainly on protecting the Gulf of Finland. The most important naval event of 1712 was the battle of Rügen that took place on the 18th of September. In 1715 the whole military afford of the Swedish forces was put in Pomeranian and Rügen campaign. The most important naval event of this year was the Action of Femern. It was the last battle between the Danish-Norwegian and the Swedish navy. It ended in tactical draw. Both fleets needed to

withdrawn because of the losses and the need of repairs. Next actions limited to escort of their armies (Glete, 2010, pp.211–222).

The last stage of the war, 1716-1721, changed the front of the conflict again. Karl XII who retreated from Stralsund previous year, decided to invade Norway. Danish-Norwegian fleet was immediately sent to support defensive forces in Christiania (Oslo) and Fredrikstad. Swedish navy supported the army in the Bohuslän archipelago. On the 27th June the Danish-Norwegian navy was supported by shallow-draft flotilla sent from Pomerania. Peter Tordenskjold's victorious attack at Dynekilen ended Karl's campaign in Norway and Danes destroyed or captured many of Swedish ships (Glete, 2010, p.224).

On the 30th of November 1718 Karl XII died during the siege of Frederiksten. Succession issues were not certain and Sweden's politics turned chaotic. The elites were unwilling to continue paying high taxes to finance Karl's war. Swedish army and naval potential dropped immediately and the new government started to look for a truce with its most powerful enemy – Russia. In 1719 Denmark started the naval offensive on the Swedish west coast. Most successful attack was led by Peter Tordenskjold in Marstrand. Although almost whole Swedish west coast navy has been destroyed or captured, the final attack on Gothenburg failed. The same year Sweden signed a treaty with Gorge I. Bremen-Verden was surrendered to the Elector and naval assistance pact signed with Britain. English fleet was then ordered to support Swedish defence in the north of the Baltic. Russian fleet moved back to Tallinn (Reval) and Kronstad (Glete, 2010, pp.227–230).

Sweden signed three treaties: in Stockholm (February 1720), in Fredriksborg (June 1720) and in Nystad (August 1721). As the result Scania and Finland became part of Sweden again, but Bremen-Verden, most of Pomerania, Estonia, Livonia, Ingria, Kexholm, and most of Karelia were lost (Lockhart, 2004, p.147). More importantly, the Great Northern War changed completely the previous political influence system in the Baltic region. Hitherto dominating Sweden lost its authority and Russia which gained the access to the Sea and established St. Petersburg became European superpower.

The history of the navy during this period has been described by Jørgen H. Barfod in 'Niels *Juels flåde - Den Danske Flådes Historie, 1660*-1720'(Barfod, 1997) and in the '*Danmarks største søhelte*' by Thomas Lyngby, Søren Menz, Søren Nørby and Jacob Seerup (Lyngby et al., 2010). Moreover detailed analysis of the conflict can be found in Robert I. Frost's 'The Northern Wars: War, State and Society in Northeastern Europ, 1558-*1721'* (Frost, 2000).

2.2 Administration – drafting system

Looking at the drafting methods of both Danish-Norwegian and Swedish Navy can help to better understand life on board. It shows where sailors came from and from what backgrounds. The drafting system also influenced a crew structure. The maritime ethnological research of later periods conducted by Knut Weibust shows different relations between sailors drafted from the same place and crew members from divers locations. Seamen's background is one of the most important factors influencing life on board in many aspects (Weibust, 1969).

2.2.1 Danish-Norwegian Navy

Prior to the reforms introduced in 1703-04 Danish-Norwegian navy manned its ships through the enrolment offices in the main harbour cities of Europe. The most important one was placed in Amsterdam, where already many Norwegian sailors worked on Dutch ships. Enrolled could be sailors of all nationalities, but Norwegian were preferred as those best coping with the boredom on board (Vigeland, 1953, pp.215–217).

The Danish-Norwegian navy was interested in drafting people who already had some seamanship experience. In 1703-04 Ulrik Christian Gyldenløve, the admiral of the navy, introduced new drafting system, which was probably inspired by the French *Systéme des classes*. In the light of the new regulations everyone between 16 and 50 years of age, who wanted to work at sea, needed to sign the navy enrolment list. That allowed to work at sea and gave some fiscal benefits but on the other hand forced a fisherman or a sailor to serve in the navy every time they were selected at the annual draft. That also allowed sailors to avoid serving in the army, which was concerned the worst kind of service (Degn & Gøbel, 1997, p.155; Seerup, 2010, pp.59–60).

The service was usually one year long, but it could be prolonged if needed. The enrolment was in shifts to avoid the situation in which the same people would meet every time they were drafted. On average each person served 7 or 8 times. The system provided ca. 15,000 men enrolled in Denmark, Norway and Schleswig (Bornholm was excluded from the system), which gave the navy ca. 2000 men each year (Seerup, 2010, pp.63–64). Interestingly the enrolment system attracted also many Swedes living on the western coast of Sweden (Glete, 2010, p.606).

The system collided with the army's system of enrolment. Sailors were not allowed to sign up for a ship if they lived in the area which was under army's jurisdiction. This situation caused migration of Norwegian sailors, who did not want to serve on land. Commander Iver Huitfeldt realised the problem and tried to recruit Norwegian sailors who migrated and already served on foreign ship. He assumed that the number of sailors working abroad alone would be enough to men Danish-Norwegian

ships (Vigeland, 1953, pp.220–221). In 1704 the king issued the amnesty for those sailors who decided to serve in the Danish-Norwegian Navy (Degn & Gøbel, 1997, p.154).

Norwegians were the backbone of the navy. Not only well known officers, such as Niels Juel, Iver Huitfeldt or Peter Wessel/Tordenskjold, were born in Norway. The statistics from 1709 show that 67% of the sailors were Norwegian. To compare it with the other enrolment areas, 26% came from Denmark and 7% from Schleswig. In 1715 the ship *Løvendals Gallei* commanded by Peter Wessel carried a crew consisted of 79% of Norwegian, 14% of sailors from Hamburg and 7% of Danes. Sailors taking part in the battle of Dynekilen were in 83% Norwegians, 8% Danes, 2% sailors of Slesvig and 7% from Hamburg (Vigeland, 1953, pp.221–222).

These proportions seem to be influenced highly by the introduction of the enrolment system. The estimations, made by Degn and Gøbel show that in the years 1700-1701, when the Danish-Norwegian Navy numbered 6542 men, 35% were enrolled in Denmark, 35% in Norway and 30% in Hamburg, Bremen and the Netherland together. In 1705, when the navy became 13000 people strong, 64% of the crew was enrolled in Norway, 29% in Denmark and 7% in Schleswig (Degn & Gøbel, 1997, p.155).

The administrative duties on board took place every week. Among others, the lists of the crew were made. They are the vivid example of the ethnical structure of crew. The names of all the sailors and their duty on board was mentioned together with the place where they were registered. It must be remembered that the place of registration does not equal the place of sailors origins, but for many it could have been the closest place where they could enrol to serve in the navy and not in the army.

The following list presents the registering areas with the number of sailors enrolled there. The list has been made in January 1718 on board frigate Phoenix (Statens Arkiver 5, 1718):

Copenhagen	4	(Denmark)	
Holstein	4	(Denmark)	
Western Jutland	2	(Denmark)	(from *Fanø*)
Copenhagen	3	(Denmark)	
Bergen	4	(Norway)	
Stavanger	6	(Norway)	
Fredrikstad	5	(Norway)	
Kristiansand	2	(Norway)	
Trondheim	3	(Norway)	
Romsdals	2	(Norway)	[Møre og Romsdal]
Bragernes	11	(Norway)	
Hamburg	9	(Germany)	
Total	55		

Following chart shows that the sailors drafted in Norway are in majority (Fig.6). More than a half of the crew comes from Norway (60%). 24% comes from Danish drafting areas and 16% from the German ones.

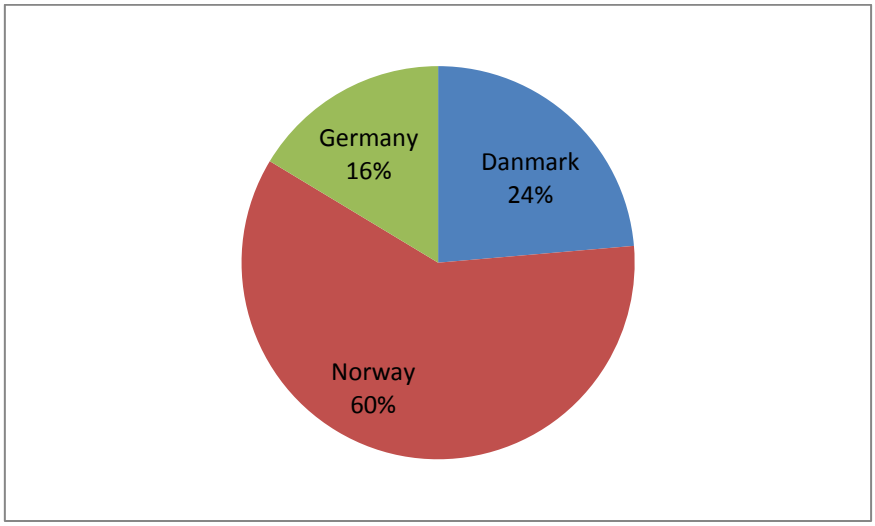

Figure 6 – Ethnical structure of the crew of the frigate Phoeninx in January 1718 based on the list in the ship's protocol (Statens Arkiver 5, 1718).

The study of the archival sources shows that the system worked quite efficiently. But it also shows that sailors were in constant demand. In most of the lists appears continuous shortage of seamen (Statens Arkiver 1, 1712; Statens Arkiver 2, 1712; Statens Arkiver 3, 1712; Statens Arkiver 4, 1719; Statens Arkiver 5, 1718). In 1710 all the enrolled sailors were called for duty, but even then many more seamen were needed (Degn & Gøbel, 1997, p.155).

The system was in use until 1849, with the break between the end of the Great Northern War and the year 1739 (Degn & Gøbel, 1997, pp.155–156).

2.2.2 Swedish Navy

The Swedish navy preferred other solution. The *Båtsmannshållet* system introduced in 1685 was based on the obligation of all the peasants from the province Blekinge to serve whenever the navy was in need. The navy could than mobilize big number of crew for their ships, but in most cases this were people without any seamanship experience. In addition, in 1704 Swedish navy introduced enrolment lists similar to those known in Denmark. The lists were compulsory for all the sailors and fishermen in provinces of Bohuslän, Halland and Skåne. This largely increased the competence of Swedish crews, giving ca. 3000 experienced seamen (Seerup, 2010, p.61).

The proportion between skilled and unskilled members of the crew did not stop the Swedish navy from operating. There was a constant need for simple muscle power (Glete, 2010, p.576). More importantly the number of the crew was determined by the number of guns to be served rather than to operate rigging (Glete, 2010, p.585).

When in the 1690's the navy's main base was moved from Stockholm to Karlskrona, the new system of manning had to be introduced. The reform of Hans Wachtmeister, the admiral general of the Swedish Navy, implied that there would be 1,200 skilled seamen permanently living close to the base, and 7,000 part-time *båtsmän* (common seamen, gunners and petty officers) who lived in Blekinge (2,000), Södra Möra (1,000), Öland (2,000) and Halland (2,000). To sustain the reform many seamen were transferred from Finland and several Swedish towns in the North. Soon the system had to be adopt to the actual men power, which was much poorer then firstly intended. In 1697 Hans Wechtmeister presented navy's strength as follows: 1,188 full-time *båtsmän* (half seamen, half gunners) at Karlskrona and 2,356 men from Blekinge and Småland who could be mobilised in 8 to 12 days (Glete, 2010, pp.604–605).

The situation on the west coast of Sweden was different. In 1699 decision has been made to increase the size of the fleet placed in Gothenburg. In 1702 formed squadron required 1,774 seamen. At first the system known from the east coast was applied, but soon the navy realised that it was not sufficient solution. New system of drafting was introduced in 1704 and was similar to the one known in Denmark and Norway. The enrolment list were issued for all the men who worked at sea. The Swedish navy had to offer better wages than the Danish-Norwegian navy to avoid its men resources being drafted by the enemy (Glete, 2010, pp.606–607).

This short presentation of the drafting systems used by the two competing navies show the difference in their crews. In the Danish-Norwegian Navy the recruits begin the service already with some seamanship experience. The situation is beneficial for both, the navy and the sailors. For the first party, because it can focus on other elements of the naval training. And for seamen it is a matter of adjusting to the naval life rather than learning completely new skills. In case of the Swedish Navy the situation is different. In fact, Glete, in his analysis of the manning of the navy, calls it 'the Navy of peasants'. Certainly the crews of the Swedish ships required much more training (Glete, 2010).

Another difference can be seen in the ethnical structure of the crews. For the Swedish navy operating from the naval base of Karlskrona the crews would contain the people from the same province, Blekinge. On the ships of the west-coast fleet people from Bohuslän, Halland and Skåne would meet. On the Danish-Norwegian ships the crew diversity was much bigger. On a same ship people who were enrolled in i.e. Trondheim and Hamburg could meet (Fig.7).

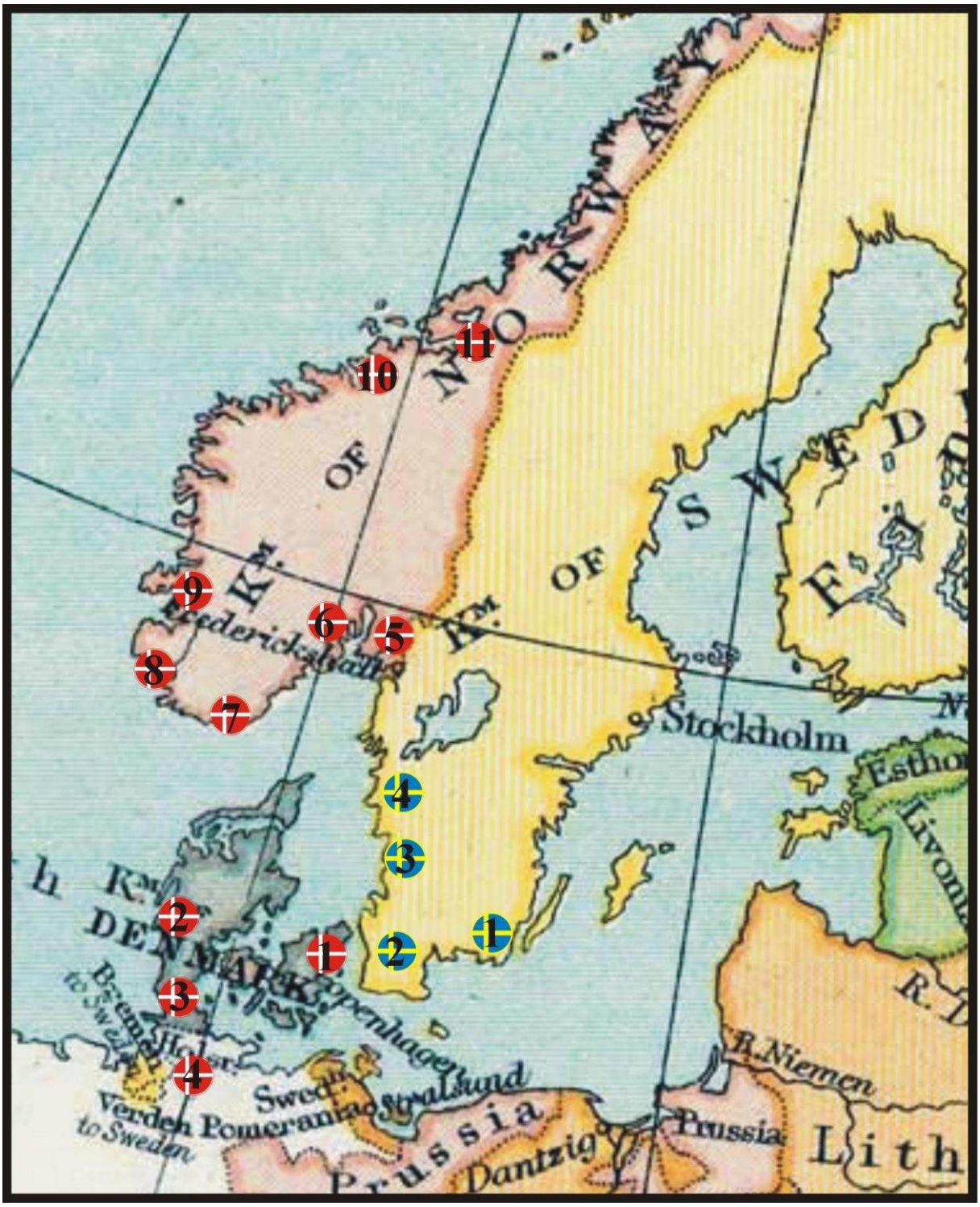

Figure 7 – Danish-Norwegian and Swedish enrolment areas. The Danish-Norwegian Kingdome are marked with the Danish flag: 1. Copenhagen, 2. Western Jutland, 3. Holstein, 4. Hamburg, 5. Fredrikstad, 6. Bragernes, 7. Kristiansand, 8. Stavanger, 9. Bergen, 10. Romsdals (Møre and Romsdal), 11. Trondheim. The Swedish enrolment areas are marked with the Swedish flag. For the naval base in Karlskrona: 1. Blekinge province, and for the naval base in Gothenburg provinces: 2. Skåne , 3. Halland, 4. Bohuslän.
Drawing: Edgar Wróblewski (2012) based on the map 'EUROPE, Illustrating wars of Charles XII & Peter the Great' by Longmans, Green & co., London, New York & Bombay.

2.3 Hierarchy on a naval ship

The crew of a ship is a complex hierarchical structure. The information about the ranks of sailors can be found in the ships' protocols. Every week lists of all of the crew were made. Each of them contain an information about how many of the sailors of the following rank were required, how many there were on a ship and how many was missing (Fig.8). In the list following ranks can be found:

Kommandør, Kaptajn, *Kaptajnløjtnant*, *Løjtnant*, Kadet, *Præst,* Skippere, Styrmand, Barber, Skriver, *Højbådsmand*, Skibsmand, Kvartermesteren, *Højbådsmand* Mather, Skibmands.Mather, *Tømmermand* en, Ruhucker, Sejlmager, Sejlmagers Drenge, Koche, *Bøndkeren,* Korporalen, Profos, *Bødkeren*, Archelimester, Underarchelim, Archelims Mather, *Bøssekytter*, Matroser, Soldater.

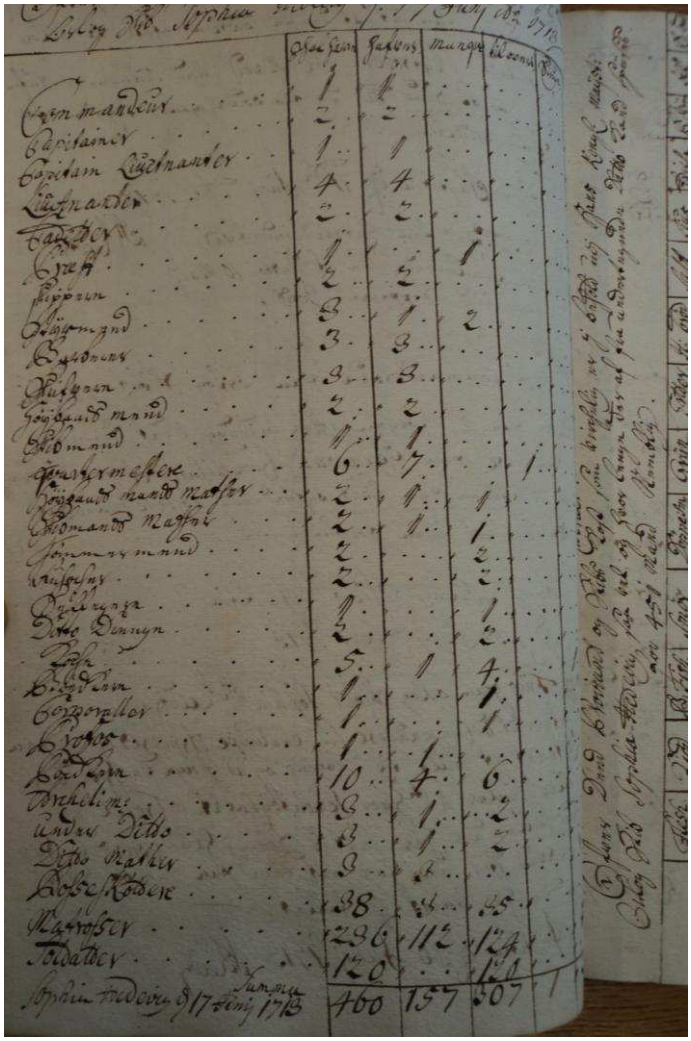

Figure 8 – An example of a list of the crew. The first column mentions the rank of a sailor, second gives the number of sailors of this rank that the ship requires, third column gives the number of present sailors and the forth shows how many of the sailors of this rank the crew needs.
Photo: Edgar Wróblewski (2012)

The information about some of the mentioned ranks can be found in the Master's thesis 'Das Arkonawrack. Studien zu einem neuzeitlichten *Schiffsfund vor der Küste Rügens'* by Jens Auer (Auer, 2000). The full description of the hierarchy on board a Danish-Norwegian naval ship in the later years of the 18th century, has been described by Jakob Seerup in his PhD dissertation '*Søetaten i 1700*-tallet, Organisation, personel og dagligdag' (Seerup, 2010). The information about the crew members' duties in the 17th century can be found in the PhD dissertation by Martin Bellamy, 'Danish Naval Administration and Shipbuilding in the Reign of Christian IV (1596-1648)' (Bellamy, 1997) (Table 3)

Rank:	**Description of duties:**	**English translation:**	
Kommandør	Responsible for the ship and its mission. When his ship was part of a squadron he was responsible for executing the orders from the squadron leader. Although k*ommandør* did not work according to the regular watch system, his duty was to fill in the ship's journal on daily bases. *Kommandør, Kaptajn* and *Kaptajnløjtnant* were commanders of the ships of different sizes.	Commander	**Officers**
Kaptajn		Captain	
Kaptajnløjtnant		Captain lieutenant	
Løjtnant	He was second in command. He was in charge of the fight on the gun deck. His duty was to supervise firing the guns and handling of the ammunition. Together with Cadets he was responsible in the combat training of the crew.	Lieutenant	
Kadet	Cadets helped Lieutenant or carried other duties. More importantly they were studying to became officers of higher ranks in the future. They were receiving navigational knowledge.	Cadet	
Præst	Priest had the same duties as he would have on land: conducting religious ceremonies, taking care of ill and dying, receiving sailors' confessions and burring the dead. He also reported sailors' indecent behaviours to their supervisors.	Ship's priest, chaplain	**Non-commissioned officers**
Skippere	Skipper was responsible for all the seamanship work on board a ship, both in the rigging and on deck. He coordinated all the sailing manoeuvres. He was in charge of executing the sailing orders from the captain. They also participated in dividing the crew so the less experienced sailors could learn from those with more seamanship skills.	Skipper	

Styrmand	Styrmand (steerman) was a person who navigated a ship. He was responsible for fixing ship's position and to set ship's course according to captains orders. He had to obtain all navigational tools by himself. He was also in charge of filling in the ship's log book.	Pilot, Navigator	
Barber	He responsible for ship's medicine chest, he examined and treated the crew on daily bases. In a battle he would take care of wounded sailors. Usually a civilian employed by the navy.	Ship's surgeon, doctor	
Skriver	Ship's clerk conducted administrative duties on board a naval ship. He was responsible for the 'protocols' of the ship. Usually a civilian employed by the navy.	Ship's clerk	
Højbådsmand	Together with *Højbådsmand Mather*, served as a boatswains. They were responsible for executing sailing manoeuvres, anchoring, supervising loading and unloading the ship. On the three-masted ships he supervised the work on the rigging and on deck. He handed over needed tools to the crew members and stored them afterwards. Also involved in ship's administration.	Boatswain	
Skibsmand	Holdsman's duty was to take care of ship's cargo. In later periods he was also responsible for the condition of all the ropes of the ship.	Holdsman	
Kvartermesteren	In the 17th century quartermaster was a person who physically steered a ship. Later, among the non-commissioned officers he was the one closest to the common sailors. On the long chain of commands he distributed people to different tasked and gave orders to individual sailors. He was also in command in ship's boat.	Quartermaster	
Højbådsmand Mather	Together with *Højbådsmand* coordinated sailors' work during manoeuvres (see *Højbådsmand* 's duties above). On three-masted ships he took care of the mizzen mast and the work below deck.	Boatswain Mate	
Skibmands Mather	Assisted Holdsman in his duties and received orders from him.	Holdsman's mate	
Tømmermanden	The ship's hull and masts were under his supervision. He was responsible for all cases of leakage and pumping the water out. During the battle he sealed all the wholes.	Ship's carpenter	
Ruhucker	Ruhucker executed carpenter's orders.	Carpenter's mate	
Sejlmager	Oversaw sails on the yards and those stored	Sailimaker	

	below. Was responsible for the repairs of the sails.		
Sejlmagers Drenge	Helped the sailmaker with his work.	Sailmaker's helper (sailimaker's boy)	
Koche	Responsible for the food on board and its delivery to the crew.	Cook	
Bøndkeren[3]			
Korporalen	He was the leader of the marines.	Corporal	
Profos	A person who carried punishments on board a naval ship.	naval provost	
Bødkeren	A craftsman who makes barrels, tubs, buckets, etc. out of wooden staves. His duty was to take care of all the barrels and food containers on board a naval ship (check if they were clean and did not leak).	Cooper	
Archelimester	Master Gunner (Constable) was a person who supervised gunners and was responsible for managing guns, gun accessories, hand weapons, ammunition and powder. He was also in charge of securing guns when the ship was at sea	Master Gunner	
Underarchelim	Carried all orders given to him by the Master Gunner.	Master Gunner's helper	
Archelims Mather	Carried all orders given to him by the Master Gunner.	Master Gunner's Mate	
Bøssekytter	A crew member operating guns, also involved	Gunner	
Matroser	Regular sailor, involved in all sailorising work on board a naval ship.	Sailor	
Soldater	A soldier serving his duty on board a naval ship. Soldiers were the main force to fight in defence or to board an enemy ship.	Marine	

Table 3 - The ranks of crew members of a Danish-Norwegian naval ship, based on Bellamy 1997, Auer 2000, Seerup 2010, ODS 2005.

Non-commissioned officers were recruited from among the crew according to their experience. Contrary to the non-commissioned officers, the doctor and the writer were usually recruited civilians. They did not work according to the everyday watch system (Auer, 2000).

[3] Non of the mentioned sources explain the role of the *Bønd*keren on board a naval ship.

2.4 Organisation of work aboard - Watch system

The information about the watch system used in the early 18th- century Danish-Norwegian navy can be found in the original ship books (Fig.9). According to the log books there were six watches, each four hours long. The day started at midnight with the dog watch. It was followed by the day watch, morning watch, afternoon watch, platfode[4], and the first watch.

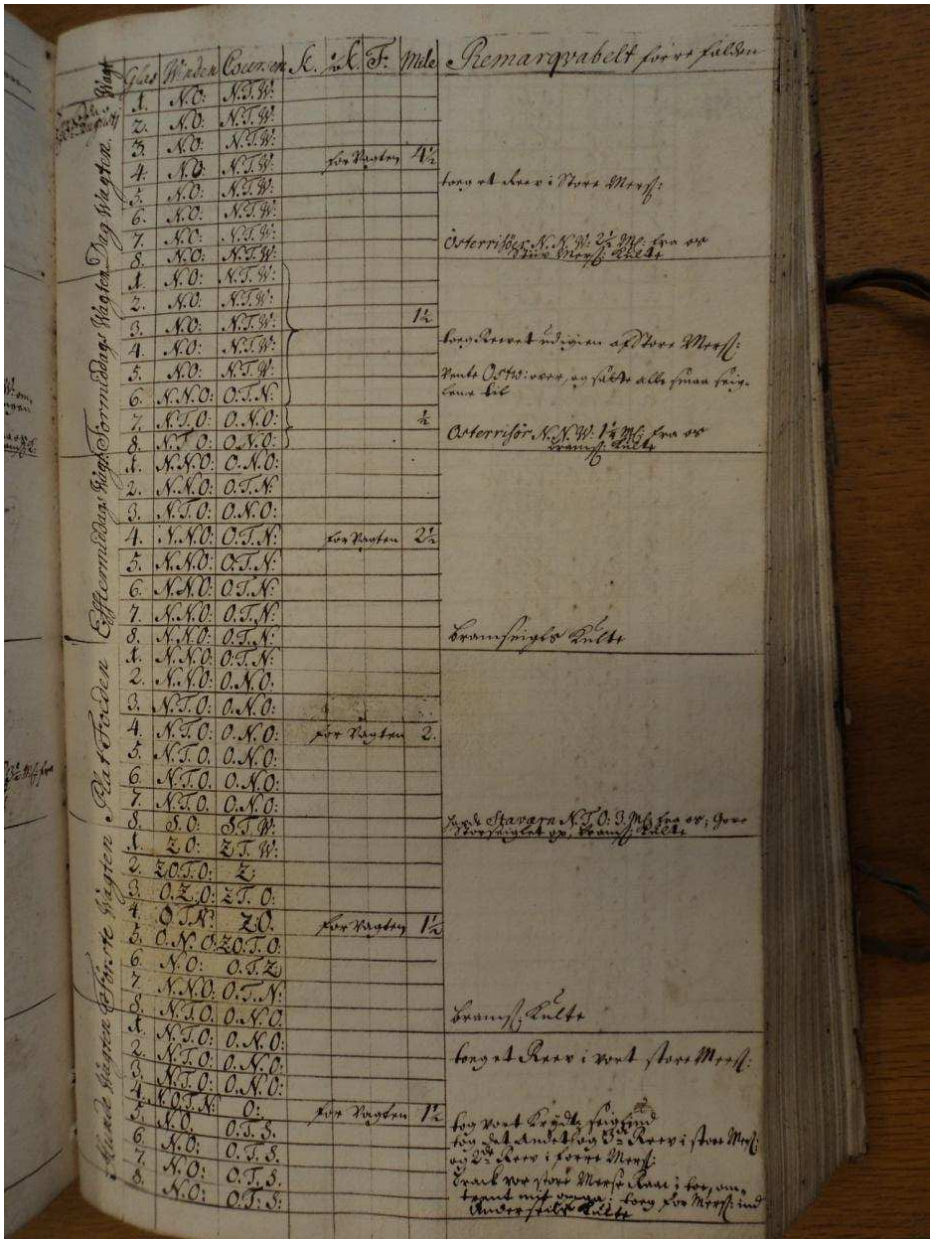

Figure 9 – A page of a ship's log book. One page represented one day, divided into 6 watches. For each watch the course and the wind direction was loged eight times – once every half-an-hour. The remarks were written down in the column on the right. Photo: Edgar Wróblewski (2012).

[4] To avoid the situation in which the Port or the Starboard watch stood always watches at the same timeof the day, the afternoon watch (eftermiddagsvagt) was extended to the Plat Foeden. Plat Foeden means 'flat foot', what reflects long hours of standing during this watch (J. K. Jensen, 2000, p.391).

The Danish names of the watches were respectively:

Time:		original spelling:		modern spelling:
00.00 – 04.00	-	Hunde Wagten	-	hundevagten
04.00 – 08.00	-	Dag Wagten	-	dagvagt
08.00 – 12.00	-	Formiddags Wagten	-	formiddagsvagt
12.00 – 16.00	-	Efftermiddags Wagten	-	eftermiddagsvagt
16.00 – 20.00	-	Plat Foeden	-	platfoden
20.00 – 24.00	-	*Første Wagten*	-	*første vagt*

Each of the watches was divided into eight bells (Danish: Glas). Each bell indicated each half-an-hour of the watch. First half-an-hour was mark with one strike, second with two strikes, third with three, and so on. The time between bells was measured with half-an-hour hourglass. The example of the half-an-hour hourglass has been found on board frigate Lossen (Molaug & Scheen, 1983, pp.144–145)

The crew was divided into two groups: Port and Starboard watch, which stood watches interchangeably. In case of difficult sailing manoeuvre or during a battle whole crew was called on deck. Each member of the watch was assign to one particular task to provide smoother and faster execution of orders (Auer, 2000).

3. A sailor seen through the historical sources

Many details about sailors clothes and other belongings can be found in ships' documentation. Of special value are the protocols in which whole ship's administration was written down (Seerup, 2010, p.318). The following chapter focuses on the information included in the lists of deceased sailors' possessions, and tries to draw a portrait of one based on these information

First list was found in the protocol of the frigate Mynden which contains the administrative information of the ship in the year 1712. The list reads as follows:

Stÿrmand Christen Rasmusen Seimøn af Kiobenhavns verfning Nº 1176. som udj Langesund paa Fregatten Mÿnden [MS. illegible] wed voden afgik d= 8 Febr. 1712, og blef hans effterladte kleder og toj, til de hoyst biudende, paa fregatten Soldt som effterfölger.

[*Stÿrmand*[5] Christian Rasmusen Simon from Copenhagen register Nº1176, has passed away on board frigate Mynden off Langesund on the 8th of February 1712, and all clothes and equipment which was left by him was sold to the highest bidder, on the frigate as to an inheritor.]

	Daler	Mark	Skilling	
1 kiste	-	1	10	One chest
1 gammel ofuerdyne	-	2	10	One old duvet
1 gl: pude	-	2	2	One old pillow
1 gl: vadmels Kiortel	-	2	2	One old wadmal coat
1 par gl: boxser	-	2	-	One pair of old trousers
1 par dito	-	-	8	One pair of the same
1 gl: uldentröye	-	2	-	One woollen jacket
1 dito	-	2	2	One the same
1 stribet bröstdug	-	3	6	One striped vest
3 par gamle Hoser	-	-	10	Three pairs of old stockings
1 gammel Karpus	-	-	4	One old cap
1 dito engelsk Hat	-	-	14	One the same English hat
2 gl: Sæker	-	1	11	Two old sacks
1 Skiorte	-	2	9	One shirt
1 gl: Halsklud	-	-	5	One old scarf
1 par gl: underboxser	-	-	8	One pair of old underpants
1 par gamle Skoe	-	-	7	One pair of old shoes
1 gl: Skiorte	-	-	8	One old shirt
1 dito	-	-	10	One the same
1 par gl: vanter	-	-	6	One pair of old mittens
1 flinte börste	-	3	12	One brush for cleaning a gun
1 par gamle Stöfler	-	2	-	One pair of old boots
eet. gl. Siöekaart og 2 passire	-	-	12	One old sea chart and two compasses

[5] *Stÿrmand* – 'steerman' was a person who navigated the ship or acted as a pilot. He did not steer the ship. This was the job of quartermasters (kvartermestre) (Bellamy, 1997, p.285).

een Sprocken reignetaufle	-	-	4	One broken abacus

(Statens Arkiver 1, 1712, p.64)

Another example of an auction documentation refers to a sailor called Jonas Hansen, from Trondheim enrolment area whose number was 35 and who died on the 10th of May 1712. The list of auctioned possessions specifies[6]:

- one pillow (5 skillings)
- one pair of shoes and two pairs of old trousers (1 mark, 2 marks and 5 skillings)
- one old skrin (4 skillings)
- three pairs of old stockings (1 mark, 1 skilling)
- one old blue jacket (1mark, 8 skillings)
- one shirt (28 skillings)
- sweater (*under tröyer*) (1 daler, 3 marks)
- [MS. illegible] (2 marks)
- [MS. illegible] (1 mark, 11 skillings)
- one old shirt (1mark, 6 skillings)
- one pair of old underpants and one old hat (6 skillings)
- two old blue jackets (1 mark, 6 skillings).

(Statens Arkiver 1, 1712, p.80)

Another sailor from Trondheim owned:

1 par gl. Engelsk strömper	-	One pair of English socks
1 par half Net graae klede bugser	-	One pair of half knitted grey linen trousers
3 skjorte	-	Three shirts
1 par Nye Skou	-	One pair of new shoes
1 par gl Graae kleds buxser	-	One pair of old grey linen trousers
1 gl Sort Vadmels tröye	-	One old black jacket made of wadmal
1 par gl. Skou	-	One pair of old shoes
1 gl Sort Hat	-	One old black hat

(Statens Arkiver 2, 1712, p.158)

A seaman Bioun Bouresen who served as a *bøsseskytter*[7] on the frigate Mynden died on the 1st of May 1711. Following list shows his possessions:

Eet skrin	-	One chest

[6] The winning bids are given in the brackets.
[7] *bøsseskytter* means gunner (Bellamy, 1997, pp.287–288).

1 par graae buxsen	-	One pair of grey trousers
4 skiorter	-	Four shirts
1 sejldugs tröye	-	One jacket made of sailcloth
1Hals klud	-	One scarf
1 par laerits underbuxser	-	One pair of canvas underpants
1 par gamle strümper	-	One pair of old socks
1 blaa bröstdug som hand behold paa som	-	One blue vest which he kept for himself
1 par hoser	-	One pair of stockings
1 Sulf Knap.	-	One silver button
1 Sue[?] Skjorter	-	One [?] shirt
1 Deter og er köydyer[?]	-	[?]
1 graae trüye	-	One grey jacket
1 hofuet pude	-	One head pillow

(Statens Arkiver 1, 1712, p.8)

A Constabel Maat[8] who died on the 9th February 1712 left:

	Daler	Mark	Skilling	
1 gammel ofuerdyne	-	-	8	One old duvet
1dito hofuet pude	-	-	9	One head pillow
1 gl: blaa tröye	-	-	10	One old blue jacket
3 gl: heel forslenden tröyer	-	-	8	Three pairs of old totally ripped jacket
1 bröstdug	-	1	1	One vest
3 par gl: forslidte buxser	-	-	10	Three pairs of old totally torn trousers
3 par gl: Hoser	-	-	6	Three pairs of old stockings
1 gl: Skiorte	-	-	6	One old shirt
1 par gl: Stöfler	-	-	8	One pair of old boots

(Statens Arkiver 1, 1712, p.66)

In the protocol of the ship *Söe Ridderen* from 1719 following, the lists of sailors who died on the 3rd of August can be found:

Hamburg W$^{\underline{w}}$ No 501
Qvarterimaster Hendrich Clato har efterladt sig följgende:

1 gl. Fyrre kiste	-	one old chest made of pine wood
2 gl. Skiorter	-	two old shirts
1 Hals Klud	-	one scarf
1 Töre Klæd	-	one handkerchief

[8] Constabel – Constable was a person who supervised gunners. Constabel Matt was his second in charge (Bellamy, 1997, p.286).

1 gl. Klud	-	One old cloth
1 par Graa Hoser	-	One pair of old stockings
1 par brune Ditto	-	One pair of brown the same
1 par Nye Vanter	-	One pair of new mittens
1 gl. Skiorte	-	One old shirt
1 par gl. under Buxser	-	One pair of old under pants
9 Bunter Bled Tobach	-	Nine packs of tobacco
3 Rauller Dito	-	Three rolls of Tobacco
1 par Sifer	-	One pair of boots
1 par gl. Buxser	-	One pair of old trousers
1 gl. Koye	-	One old hammock
3 gl. under Troyer	-	Three old sweaters
1 gl. Bröstdug	-	One old vest
1 par Brune Buxser	-	One pair of brown trousers
1 Brun Troye	-	One brown jacket
1 Graa troye	-	One grey jacket
1 par Seildugs Bugser	-	One pair of sailcloth trousers
2 par Klædis[?] buxser	-	Two pairs of broadcloth[?] trousers
1 par gl. Blaa under Ditto	-	One pair of blue under the same
1 Koye dechen	-	One hammocks blanket

Hamburg W^{w} No 1288

Mattros Anders Andersen har efterledt sig fulgende:

1 Koye	-	One hammock
1 par gl. Vadmels buxser	-	One pair of wadmel trousers
1 Graa serefters[?] Troye	-	One grey serefters[?] jacket
1 par gl. Vadmels Buxser	-	One pair of old wadmel trousers
2 Puder	-	Two pillows
1 Pose med gl. Falder udi	-	One bag with old [?]
1 par Brune Hoser	-	One pair of brown stockings
1 Koye dæchen med lamskind under	-	One hammock blanket lined with sheep's skin
1 par gl. Støfle	-	One pair of old boots
1 gl. Bröstdug	-	One old vest
2 par under buxser	-	Two pairs of under pants
1 Tør Klæd	-	One handkerchief
3 Skiorter	-	Three shirts
1 Hvid Trøye	-	One white jacket
4 Roulle Tobak	-	Four rolls of Tobacco
1 pund Saale leder	-	One piece of sole leather
1 Knife tang	-	One knife holder [?]
1 Skrün	-	One wooden box
1 par Hvide Hosser	-	One pair of white stockings
2 Skiorter	-	Two shirts
2 par under Buxser	-	Two pairs of under pants
1 par Brune Hoser	-	One pair of brown stockings
1 par Nye Ditto	-	One pair of new the same
1 par under Buxser	-	One pair of under pants

1 gl. lagen	-	One old sheet
3 Hals Klud	-	Three scarves
2 Tør Klæder	-	One handkerchief
3 Skiorter	-	Three shirts
1 par Graa Hoser	-	One pair of grey stockings
1 par lindu Ditto	-	One pair of lindu[?] the same
3 Roulle Tabak	-	Three rolls of Tobacco
1 Blaa under Trøye	-	One blue sweater sweater
1 hat	-	One hat
1 par Nye Brune Buxser	-	One pair of a new brown trousers
1 Brun Nye Trøye	-	One new brown jacket

Hamburg W^{w} No 1264
Mattros Petter Nielsen Efterlendt sig fölgende:

2 gl. Puder	-	Two pillows
2 dechener	-	Two blankets
1 Nathue	-	One nightcap
1 par gl. Plyhses[?] Buxser	-	One pair of old plyhses[?] trousers
1 Brun Vadmels Trøye	-	One brown sweater
1 Hvid Bröstdug	-	One white vest

Hamburg W^{w} No 36
Mattros Pouel Larsen efterlendt følgens:

1 Skrün derug penge 2p	-	One wooden box containing money 2p.
4 gammle Klud	-	Four old cloths
1 gl. paruque	-	One old wig
3 Roulle Tabach	-	Three rolls of tobacco
1 gl. Nathue	-	One old nightcap
2 gl Skiorter	-	Two old shirts
2 par gl under Buxser	-	Two pairs of old under pants
1 Koye	-	One hammock
1 Brun Troye og Buxser	-	One brown jacket and trousers
3 under Trøyer	-	Three sweater
1 Bröstdug	-	One vest
1 par Seildugs Buxser	-	One pair of sailcloth trousers
1 Graa Troye	-	One grey jacket
1 gl. Seilsdugs Troye	-	One old sailcloth jacket
4re par Hoser	-	Four pairs of stockings
2 Huer	-	Two caps
2 puder	-	Two pillows
1 dechen	-	One blanket
3 par gl. Buxser	-	Three pairs of old trousers

Hamburg W^{w} No 2588
Mattros Pouel Clausen har efterladt sig:

1 Skrün	-	One wooden box
2 pund Tabach	-	Two pounds of Tobacco
2 Klud	-	Two cloths

½ pund læder	-	Half a pound of leather
4re par gl. Hoser	-	Four pairs of old stockings
3 gl. under Buxser	-	Three old under pants
2 gl. Skiorter	-	Two old shirts
2 gl. Bröstdugger	-	Two old vest
2 par gl. Buxser	-	Two pairs of old trousers
1 gl. Koye	-	One old hammock
1 dechen	-	One blanket
2 gl. Troyer	-	Two old jackets
3 par gl. Buxser	-	Three pairs of old trousers
1 pude	-	One pillow
1 Nathue	-	One nightcap

Hamburg Ww No 1580
Mattros Jan Mogensen har efterlendt:

1 Skrün der udi	-	One skrin containing
1 Hollensk Bog og Een Stern Kruse	-	One Dutch book and a 'star mug'
1 pund Saale lader	-	One pound of sole leather
4 Skiorter	-	Four shirts
1 Blaa hals Klud	-	One blue scarf
1 par Brune Hoser	-	One pair of brown stockings
1 Stk. gl. Seigeldug og Een deel Tabak	-	One piece of old sailcloth and a part of Tobacco
1 Koye og 2de gl. Dechen med nogle falter	-	One hammock and two old blanket with some felt[?]

Hamburg Ww No 2003
Mattros Jørgen Christensen efterlandt sig

1 Skrün der udi penger 5p danske	-	One skrin containing money 5p. danish
1 Sye[?] Este[?] og Traa[?] med 1 Sax	-	One Sye Este[?] and Traa[?] with one scissors
1 Naglle Huus og 1Salme Bog	-	One Naglle Huus[?] and one psalm book
2de Bönne Böger og 1 gl. paruque	-	Two prayer books and one old wig
2 Skiorter	-	Two shirts
og 1 par gl. Handsker	-	and one pair of old gloves
1 Blaa ofvertræch til Een Pude	-	One blue pillowcase for a pillow
1 Stk. Saale læder	-	One piece Sole leather
og 1 Koye	-	and one hammock
1 pude noch Een lide Ditto	-	One pillow noch Een lide Ditto[?]
1 dæchen	-	One blanket
1 par gl. Buxser	-	one pair of old trousers
og Een Hat	-	and one hat

Hamburg Ww No 1201
Mattros Simon Bjergersen har efterlendt:

1 Kiste	-	one chest
og Een Nathue	-	and a nightcap
1 par Blaa Buxser	-	one pair of blue trousers

1 par Nye Skoe	-	one pair of a new shoes
1 par gl. Stöfle	-	one pair of old boots
1 Bröst dug	-	one vest
1 par Blaa under Buxser	-	one pair of blue underpants
2 gl. skiorter	-	two old shirts
2 Smale Blaa Hals Klud	-	two blue narrow scarves
2 par gl. Buxser	-	two pairs of old trousers
2 puder	-	two pillows
1 dechen	-	one blanket
Og 1 Koye	-	and one hammock

Hamburg W[w] No 2106
Mattros Jan Pettersen har efterladt:

1 Kiste der udi Eet Stk. Saale læder	-	one chest containing sole leather
1 Rage Knif	-	one shaving razor
1 pund Tabach	-	one pound of tobacco
1 Store Dito	-	one big of that
1 liden Ditto	-	one little that
5 Hals Klud	-	five scarves
2 Blaa Tør Klæder	-	two blue handkerchief
5 skiorter	-	five shirts
2 par under Buxser	-	two pairs of under pants
1 Hvid under Tröye	-	one white sweater
2 par Hoser	-	two pairs of stockings
1 par Skoe	-	one pair of shoes
2 smaa Rouller Taback	-	two small rolls of tobacco
Ofverlæder til Eet par Skoe	-	*Ofverlæder* for a pair of shoes
1 Stk. Brunt Klud til Een Cabusse	-	one piece of a brown cloth for a cap
1 Koye	-	one hammock
2 pudder	-	two pillows
1 Koye dechen	-	one hammocks blanket
1 Röd under Tröye	-	one wadmel sweater
1 gl. Skind pelz[?]	-	one old leather coat[?]
1 par Sorte Buxser	-	one pair of black trousers
1 par Brune Dito	-	one pair of brown the same
1 par Seildugs Dito	-	one pair of sailcloth the same
1 forret hue	-	one lined cap
1 Nathue	-	one nightcap
1 par graa Hoser	-	one pair of grey stockings

Holsteens W[w] No792
Mattros Knud Jensen:

1 Koye	-	one hammock
1 Nathue	-	one nightcap
1 par gl. Beged Buxser	-	one pair of old
1 Bröst dug	-	one shirt with no sleeves
1 Graa Tröye	-	one grey jacket
2 puder	-	two pillows

2 gl Beged[?] Tröyer	-	two old beged[?] jacket
1 gl. dechen	-	one old blanket

Christiandsans W[W] No 909
Mattros Jacob Simersen:

1 Koye	-	one hammock
3 dechener	-	three blankets
2 par gl. Hoser	-	two pairs of old stockings
1 par Sorte Strik Strømper	-	one pair of black knitted socks
1 par gl Buxser	-	one pair of old trousers
1 Skrün	-	one wooden box
3 Rouller Tabach	-	three rolls of tobacco
1 stk. gl. Seildug	-	one piece of old sailcloth
1 Blaa Klud	-	one blue cloth
1 par Brune Hoser	-	one pair of brown stockings
2 gl. Skiorter	-	two old shirts

Christiandsand W[W] No 1069
Mattros Burge, Tor Biørnsen har Efterladt sig fölgende:

1 Skrin	-	one chest
1 gl. Skiorte	-	one old shirts
1 Stk. af Eet lagen	-	one piece of a sheet
1 par Nye Skoe	-	one pair of new shoes
1 Nye bröst dug	-	one new vest
2 Rouller Tabak	-	two rolls of tobacco
2 hals Klud	-	two scarves
2 Tør Klæder	-	two handkerchiefs
2 par gl. Hoser	-	two pairs of old stockings
1 Koye	-	one hammock
1 dechen	-	one blanket
1 Dyne	-	one duvet
1 gl. Troye	-	one old jacket
1 pude	-	one pillow
1 par gl. Buxser	-	one pair of old trousers
1 par Hoser	-	one pair of stockings
1 gl. Blaa Troye	-	one old blue jacket
1 par Graa Vanter	-	one pair of grey mittens

(Statens Arkiver 4, 1719)

The lists consist of the same vocabulary. Each inventory contains: *trü*ye, skiorte, bugser, underbugser, hoser, *strümpe*r, stufler or skoe. Sometimes there is hat, kaepus, vanter or other accessories. This provides a good information about sailors' wardrobe. As the meaning of words has been changed with time, it is worth explaining what mentioned garments were at the beginning of the 18th century.

Trüye – [t*røje*]. The modern meaning of the word 't*røje'* means a jersey. But the early 18th- century 't*røje'* was more of a jacket than a jersey. The *'Ordbog Over Det Danske Sprog* (ODS) – Historisk Ordbog 1700-*1950'* (The Dictionary of the Danish Language – Historical dictionary 1700-1950) describes t*rüye* as a 'relatively short garment, with or without sleeves, covering upper body. (…) Among other meanings: tight-fitting jacket, (…) worn on the shirt' (ODS, 2005). Trosner's drawings show that sailors' jackets ended between the waistline and the middle of a thigh. The u*ldentrüje* mentioned in one of the auction lists would indicate that the jackets were made of wool. But the *sejldugs trüye* (sail cloth jacket) and the Sort Vadmels *trü*ye (black wadmal jacket) show that different materials were used as well.

Undertrüye – [under-*trøje*]. Is a piece of clothing worn under the jacket. It could be with or without sleeves (ODS, 2005).

Kiertel – [kittel]. A special coat for soldiers and common people (almuesfolk) (ODS, 2005). As the one of the auction lists mentions vadmel kiertel, it was probably made of wadmal.

Skjort – A shirt. The 18th-century shirts were long, down to the knees. It allowed to fold front pieces and the back one between legs what served as an underwear. A shirts had long, wide sleeves wrinkled at the cuffs (B. Jensen, 2008). Shirts were most often made of linen (ODS, 2005).

Brüstdug – Men's vest (ODS, 2005).

Bugser – [bukser]. Trousers. The short trousers were in the lower classes' fashion throughout the 18th century up till the 1830's. They were made of different materials: linen, wool or leather. Wadmal was most common in use. There were different cuts of trousers. Fishermen and farmers used *hørlærredsbukser*. These were made of woven flax yarns. The trousers were up to the knees long. There were two slits on both legs of the trousers, just above the knee on the outside. The slit was buttoned with few buttons or closed with small buckle. In the front there was a flap also buttoned up. The trousers rest on the hips supported by a waistband. The trousers did not have pockets (B. Jensen, 2008). The auction lists mention two pairs of gray linen trousers and one pair of gray trousers. There are few more simply described as old trousers.

Trosner's drowing show two kinds of sailors trousers (Fig.10). Trousers on the image B and C appear to be baggy, while the rest more fitting.

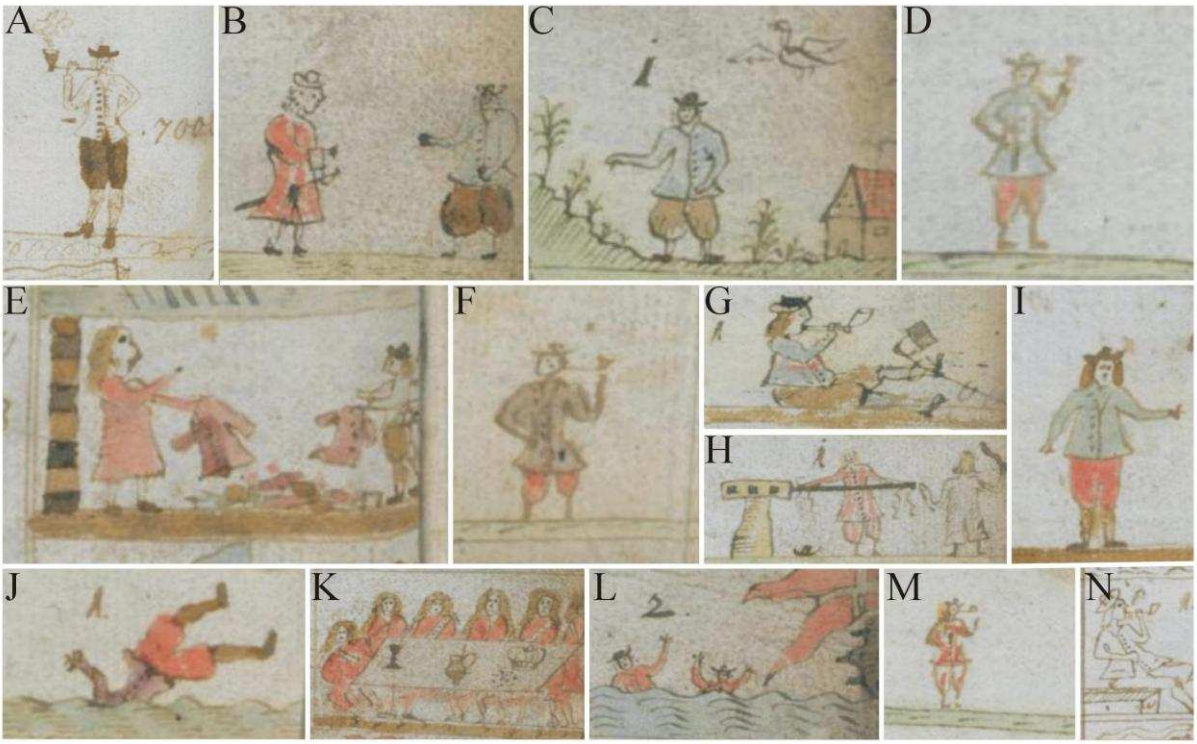

Figure 10 – Sailors' dress depicted by Niels Trosner in his diary (Nils Trosner, 1713)

Underbogser – [underbukser]. A garment worn under the trousers. It could mean both, underpants or long johns (ODS, 2005).

Hoser – Originally the term referred to a garment covering a leg from hip to toe, but in the 18th century hoser were shorter, up to the lower part of thigh, above the knee. In this context the hoser means stockings (ODS, 2005).

Strömper – [s*trømper*]. They serve the same purpose as hoser, but are shorter, ending below the knee. (ODS, 2005). Socks were used in winter and cold days worn on stockings. Until 1680's striped socks were in fashion, later they were single-coloured (B. Jensen, 2008).

Hat – A hat. Although tricorn hat is in fashion in the 18th century, Trosner's drawings suggest that Danish-Norwegian sailors preferred other kinds (Fig.10). His images show a regular black hat with slightly rolled-up shade. Hats of the lower classes were made of felt - a cheap woollen material. Only one hat could be interpreted as a tricorne (Fig.10 - G). One of the auctions mentions an English hat (engelsk hat), that could be interpreted as a tricorne.

Kaepus – [kabuds] A cap; A hat without shade. It can be a simple skullcap or a cap with flaps covering ears. Some caps could be buttoned in the front of the mouth and rolled down over the neck for

the better protection in the bad weather (ODS, 2005). Caps were usually knitted of wool, but could be also made of cotton or leather. The most popular colours were: red, blue and white (B. Jensen, 2008).

Vanter – Mittens. Mittens were knitted out of wool. The mittens from the ship General Carlton show that, at least in the latter half of the 18th century sailors wore two types of mittens. The first type was a simple pouch-like woollen mitten with a separated thumb. The second type were the five-finger mittens (Ossowski, 2006). With no other evidence it is difficult to define how did the early 18th-century mittens look like.

Halsklud – Scarf was a piece of fabric tied on the neck for protection from the wind. Scarves were made of different materials, out of which cotton and linen were the most popular. Scarves made of silk were the most expensive ones. They were in different colours and patterns (B. Jensen, 2008).

Skoe – Shoes. Same as it is today there were many models of shoes used in the beginning of the 18th century. Different models had a vamp covering foot more or less. Also an opening could vary using a buckle, straps or a shoe lace as an fastener. Buckles could be attach on top or on the side of a shoe. At that time 3-4 cm high hills in the conical shape were in fashion. Shoes were made of few pieces of leather connected by thread seam (Auer et al., 2013, pp.48–52).

Stufler – [*støvle*]. Boots. Boots are higher kind of footwear. They extend above the ankle over the calf. Boots usually do not have an opening which would allow easier putting on. Made of leather, they were more expensive than shoes. Boots were mostly used by army and cavalry (Auer et al., 2013, p.50).

Vadmel – Wadmal is a rough, coarse, dense, grey woollen material. It was woven by peasants and worn by them. It was considered to be the symbol of lower classes (ODS, 2005).

The lists show that the sailors' clothing was not uniformed. The first attempt to introduce uniformed clothing in the Danish-Norwegian Navy in the 1680's concerned only permanent crews, commissioned officers and privets. The king's resolution from the 9th November mentioned that each one of the mentioned would receive a cloth jacket and a bosun's hat (*bådsmandshat*) every other year, and linen ship clothing (*skibsklæding*) every year. King's goodwill met an obstacle, though. Due to lack of cloth the clothes could not be delivered immediately. The solution was to provide all sailors with shoes and stockings and promise that they would be given their clothes until next Easter. The

order does not specify the colour or the look of clothes, other than that the hats should come with a lining in three different colours to show which unit the sailor was part of. E. Borg anticipates that the personnel of the navy wore gray dress. He recalls a note of a French diplomat from 1702, who observed that the sailors' clothing was grey (Borg, 1974, p.137).

During the Great Northern War common seamen wore their own clothes. According to instructions issued in 1677 each sailor drafted for service had to have: one set of canvas clothes, one good coat of cloth, three shirts, three pairs of stockings and two pairs of shoes, all obtained by himself. There were no regulation regarding colour or shape of the mentioned (Borg, 1974, p.230). Degn and Gøbel supplement this information saying that Niels Juels intended to equip every sailor with: wadmal coat, two shirts, few pairs of canvas trousers and a pair of wadmal one, few pairs of Icelandic stockings, few pairs of Icelandic mittens, a pair of shoes, a nightgown, an English hat and a red boatswains hat with white border (Degn & Gøbel, 1997, p.180).

In the lack of official uniforms for seamen it should be assumed that all the sailors were dressed differently in their everyday clothes according to their profession. Seamen would more likely wore functional garments than fashionable. The character of their work made them wear jacket rather than the fashionable long coats.

It is said that more sailors were casualties of diseases than of wounds suffered in sea battles. Lack of proper clothing or not enough clothing, made sailors sleep in their wet clothes after finished watch (Seerup, 2010, p.346). To limit the danger of an epidemic outbreak, navy provided some spare garment, which sailors could buy on credit. A seaman was given a piece of clothing, stockings or shoes and the price was withdrawn from his pay (Borg, 1974, p.190). There are no precise information about navy's support in pursuing sailors clothing. The clue can be found in the protocol from the frigate Von Bergens Gallej. On the day of 8th September 1714 Bendix Layon ordered: 22 linen jackets (*klede trüjer*), 22 pairs of linen trousers (dito bugser), 22 canvas jackets (*læritz trüjer* [*læret trøje*]), 22 pairs of canvas trousers (ditto bugser), 100 shirts (skiorter), 50 pairs of stockings (strömper ½ fiin[?]) , 40 pairs of shoes (skou [skoe]), and 150 lb. of tobacco for his ship (Statens Arkiver 2, 1712).

The custom of carrying spare garments on board survived well into 20th century. The place where this clothes and sometimes other sailor's equipment would be kept was called 'slop chest' (Weibust, 1969, pp.79–80). No such chest was found on board any of the Danish-Norwegian or Swedish shipwrecks of the Great Northern War.

Also the officers of the Navy wore their own clothes. As the representatives of the higher classes their garments had to fit according to the fashion of the era set by the French Court. The male costume consisted of a coat, waistcoat, breeches (short trousers) and stockings (Andersen, 1977, pp.299–301). Figure 11 presents male dress from 1692-95 on the left and on the right a costume from

1720’s (Fig.11). During the years of the war the dress remained almost unchanged. The minor modifications regarded the length of a coat and the cut of it (Andersen, 1977, p.45).

It is interesting that, without specific order all officers depicted by Niels Trosner wore red coats (Fig.10 B,E,K). This can be the reason why the uniforms introduced in 1722 consisted of red coat. Cuffs of these coats were in different colour which indicated officers’ divisions (Borg, 1974, pp.17–19, 223).

Figure 11 – Left: male costume from 1692-95 (Andersen, 1977, p.44),
Right: male costume from 1720's (Andersen, 1977, p.37).

Only cadets of The Royal Danish Naval College (*Søkadetakademiet*) wore uniforms during the Great Northern War. Since the foundations of the school in 1701 the dress consisted of gray coat, waistcoat, trousers, hat, stockings, bandoleer and rapier. Second uniform was introduced in 1714 as a Full Dress (Fig. 12). The red collar and red cuffs trimmed with plain gold lace and bows were added distinguishing it from the everyday dress. After the Great Northern War cadets did not use the Full Dress any more (Borg, 1974, pp.89–91, 226). It is possible that the introduction of the uniforms was

based on the French navy model, which Ulrich Christian Gyldenløve has seen during his stay in France (Seerup, 2010, p.60).

Figure 12 – Cadets' full dress (Steensen, 1951, p.444)

Clothes are not the only items mentioned in the lists. Each sailor was obligated to equip himself with a hammock and a coverlet (Degn & Gøbel, 1997, p.180). To protect themselves from cold, sailors slept under dechen – a kind of a rug or a blanket that isolated hammock from below and covered on top. One of these items, that belonged to sailor Anders Andersen, has been described as 'lined with sheep's skin under'. Other are simply listed as dechen, *dæchen* or koye dechen. Usually one of these is mentioned, but sailor Jacob Simersen had three of them. The higher number of sleeping gear is also visible in the amount of pillows. It seems that sailors of the *Söe Ridderen* usually had two pillows. Three of them had only one pillow. One detail of how these pillows may have looked like comes from the list of Jørgen Christiansen. Among his things a blue pillowcase is listed. Out of all the lists, duvets are mentioned only twice. First among the possessions of Christian Rasmusen Simon and second time belonging to the Constable Maat from the frigate Mynden. One more item can be seen in the deceased sailors' inventories. Nightcaps appear to be popular among early 18th-century sailors (Statens Arkiver 1, 1712; Statens Arkiver 2, 1712; Statens Arkiver 3, 1712; Statens Arkiver 4, 1719; Statens Arkiver 5, 1718).

The reason why some of the sailors do not have a hammocks or other sleeping equipment in the lists of their things is difficult to explain. A reasonable explanation could be that they shared a hammock with a sailor belonging to the other watch, but with no clear evidence in the archaeological or historical sources this remains only a possibility.

As mentioned earlier the Navy specified basic equipment that each sailor had to have. His possessions were stored in a sea chest. This personal belonging can be seen in the inventories of deceased sailors. Not every sailor owned a chest on board a ship. Because of a limited space on board a naval ship, sailors were asked to pair up and share one chest.

There are no many details concerning the size or shape of mentioned sea chests. Usually they are just listed as '1 kiste'. Only one chest deserved more specific description. Among the possessions of quartermaster Hendrich Clato who served on the *Söe Ridderen* the following can be read: 1 gl. Fyrre kiste. The ship's clerk pointed out that this was an old chest made of pine wood.

Little things were stored in wooden boxes (skrin). Few of these are listed. Also in this case ships' clerks focused on indicating what was inside rather than describing a container. Only one is mentioned to be old. Two sailors used them to store money. Among things stored by other sailor a Dutch book and a mug, can be found.

Twice there are mentioned two other types of containers. A sailor Anders Andersen had a bag (pose) and *stÿrmand* Christian Rasmusen Siemøn had two old sacks (2 gl. suker). Also in the case of these non-rigid containers there is no information regarding their sizes, shapes or materials they were made of.

An item often repeated in the lists is tobacco. Sailors stored it in packs and rolls. Although tobacco is often mentioned, smoking pipes do not appear in the lists. Many books have been written about the history of tobacco consumption or pipes in general (i.e.(Kiernan, 1991), (Bardenfleth, 2002)), and therefore it will not be discussed in detail. In the light of this thesis, though, it is worth mentioning how the habit spread in Scandinavia. First to have a contact with this new stimulant were the Danish-Norwegian sailors who at the end of the 16th and the beginning of the 17th century travelling to England. They adopted the fashion of tobacco consumption, and from them it spread among other Scandinavian citizens (Higgins, 2012, p.217). Smoking was accepted on board Danish-Norwegian navy ships only in the designated areas. Usually it was in the open air in fore the main mast due to the high risk of fire. Not meeting the regulations was severely punished (Higgins, 1997).

Not only frequent appearance in the lists of deceased sailors' possessions testify for popularity of tobacco consumption among the Danish-Norwegian sailors. In Niels Trosner's diary sailors are always depicted with their pipes (Nils Trosner, 1713). It seems that a clay pipe was one of the symbols associated with sailors.

The importance of tobacco should not be underestimated. Bergersen writes, that for Norwegian sailors tobacco was more important than food (Bergersen, 1953, p.223). Officers must have knew that. Bendix Layon from the frigate Von Bergens Gallej, ordered 150 lb. of tobacco along needed clothes for his crew (Statens Arkiver 2, 1712).

Beside listed items there are few more that testify for an individual who owned them. As mentioned earlier every sailor had to obtain tools which he would use during his service. The inventory of the Christian Rasmusen Siemøn is the best example. In order to serve as a *stÿrmand*, he was equipped with: a see map, two compasses and a abacus. Because other lists represent belongings of regular sailors, one constable and one quartermaster, there are no object specific for their duties.

Another category of objects will belongings not directly related to sailors' lives. Among these few remaining items following can be found:

- A Dutch book (hollensk bog) and a 'star mug' (een stern kruse) in the list of deceased Jan Mogensen.
- Sye[?] Este[?] og Traa[?] with one scissors (een sax), 1 naglle[?] huus[?] and one psalm book (een salme bog), two prayer books (*to bönne böger*) and one old wig (een gl. peruqe), which belonged to the sailor Jørgen Christensen.
- A shaving razor (een rage knif) of Jan Pettersen

The above items stand out among the other sailors' possessions, that seem to be similar for all of them. With just seventeen lists it is difficult to conclude whether differences can be found between the possessions of sailors from different enrolment areas or of different ranks. Never less already such a small sample brings valuable information to the research.

4. Sailors in the archaeological context

Following the portrait of a sailor based on the historical sources, chapter 4 will focus on the archaeological material. It will be presented in few subchapters describing respectively: sailors' chests, smaller boxes, sailor's clothing, tools, and finds that testify for sailors' time off duty.

4.1 Sailors' chests

Sailors brought their possessions on board in wooden chests. There are only three examples of seaman's chests found in its original context. Although the lids were missing, archaeologists who worked on the frigate Lossen came to the conclusion that the content of the chests remained intact after sinking. The containers were given names: 'Lars', 'Arne' and 'Jørgen'. All three of them are different. While 'Lars' and 'Arne' are of the similar size, 'Jørgen' is larger. Dimensions of the chests are presented in the table below (Table 4):

	'Lars'	'Arne'	'Jørgen'
Length	68.5 cm	62.4 cm	84 cm
Width	38 cm	40 cm	42 cm
Height	29.7 cm (originally 32 cm)[9]	32.2 cm (originally 34 cm)	28.8 cm (originally 32 cm)

Table 4 – Dimentions of the sea cheasts found on the frigate Lossen

'Jørgen' and 'Arne' are slightly narrower towards the bottom. The bottom of 'Lars' is wider than the perimeter of the walls, 0.5 cm on each side (Molaug & Scheen, 1983, pp.115–120).

The chest 'Lars' is an example of good carpentry skills. Pine tree was used to make the chest. All the panels are nicely attached at 90^{o} with the dovetail joint. The bottom, which is made of one big plank, is fasten to the panels with treenails. The marks on the inner side show that the chest was not an object of mass production (Molaug & Scheen, 1983, pp.115–116).

Contrary to 'Lars', the chest 'Arne' has not been made by skilled craftsman. Its construction is simple. The bottom and the panels are made of two planks. The front planks do not meet with the side ones precisely in the corner. Instead the side panels are attached one centimetre inside the box. Treenails were used as fasteners for the chest's walls. And the bottom is secured with big-headed nails. There are few signs of later repairs. Firstly, the lower plank of the front side has been replaced. In the lack of a plank of the same thickness as the other one, the person who repaired the chest carved the side panels so the new plank can go deeper and the front surface of the two planks is even in the

[9] Interpretation of Molaug and Scheen

front. The second repair is indicated by the use of larger treenails and nails to replace upper front plank (Molaug & Scheen, 1983, pp.117–118).

The chest 'Jørgen' is made similarly to the chest 'Lars'. The panels are connected by dovetail joint. Each side is made of one plank, and the bottom is made of two. The corners are strengthened with tongue-shaped fittings. An interesting feature is a separated room in the upper left part of the chest (Norwegian: leddik). It is trapezoidal in form, 6.5 cm high and 15.2 cm wide (Molaug & Scheen, 1983, pp.119–120).

'Lars' has two holes drilled on each of the side panels. The holes are 2 cm in diameter, with the 6 cm distance between them, 16.5 cm from the bottom. The similar arrangement can be seen on the side panels of 'Arne', where a piece of rope was found in one of the holes. These two examples show that the ropes were used to make handles, but 'Jørgen' shows also another method. Two holes on each of its side panels were only 0.6 cm in diameter and the marks around the holes on the inner side of the chest suggest that the handles were riveted (Molaug & Scheen, 1983, pp.115–120).

All three chests had locks on them. 'Lars' had it nailed from the inside, while on 'Arne' and 'Jørgen' they were attached with the fittings. The key hole of 'Lars' is pear-shaped with the wider part on top. 'Arne' has a hole in a shape of a drop with the sharp end pointing up. On the front plank of 'Jørgen' the piece where the lock was attached is broken off (Molaug & Scheen, 1983, pp.115–120).

Although no lids were found on the chests, the rust stains on the back panels suggest that the lids were originally attached with iron hinges. On 'Lars' the stains are 3.2 cm wide, on 'Arne' 3 cm wide and on 'Jørgen' 3.5 cm wide. On the last one, iron bands continued around the bottom to the front panel. There were iron bands also on the side panels. They went 10 cm onto the bottom surface, overlapping with the long iron bands that created hinges. The clue of how a lid of this chests could have looked like comes from the only one lid, that has been found complete. It is made of pine. The frame is 58 cm long and 39.5 cm wide connected in the corners with the dovetail joint. The top is cylindrical. It consists of two planks. The top and the frame are fastened together with treenails. The rows of little holes on the top side of the lid suggest that it was originally decorated with leather. Also iron bands were used to decorate and strengthen the lid (Molaug & Scheen, 1983, pp.115–124).

Figure 13 – A sea-chest of sailor Niels Jessen from Fanø, year 1749 (Hahn-Pedersen, 2001, p.72)

With no other evidence it is difficult to assume how chest lids looked like. It is likely that they were flat what would make storing the chests easier. The example of a sailor's chest with a flat lid comes from a slightly later period (Fig.15). Figure 13 Shows a chest which belonged to Niels Jessen from Fanø (Hahn-Pedersen, 2001, p.72).

The content of these three chests was different. Below are listed objects that were found inside 'Lars', 'Arne' and 'Jørgen':

Lars:

- One pair of shoes
- Leather pieces
- Two tool handles
- 2 cleats
- A dice
- 78 needles (gaming pieces[10])
- 2 ink holders (containers) – One made of lead, One made of soapstone
- 6 clay pipes
- A bottle with sail-yarn wrapped twice around the neck
- A bottom of a pot
- 3 buttons: one of brass, one of bone, one of oak
- Wooden pieces with a lead sheath

(Molaug & Scheen, 1983, pp.116–117)

Arne:

- A pair of shoes
- An awl
- A wooden handle of unknown tool
- Bowl of a clay pipe
- Two red pieces of sealing wax
- Two pieces of chalk
- 6 buttons: 3 of brass, 3 nicely decorated made of tin. One of the brass button had a royal monogram F4.
- 3 lead shots
- A gunflint
- A wooden pitcher with a lid
- A pair of fishing sinkers
- A little lead plate
- (some wooden pieces, probably accidental)

(Molaug & Scheen, 1983, pp.118–119)

[10] Given in brackets are the interpretation made by Molaug and Scheen (Molaug & Scheen, 1983, pp.116–117)

Jørgen:
Inside pocket:

- 37 buttons: 24 of bone, 5 brass, 7 tin, 1 leather
- A thimble
- A belt with buckle and two loose buckles
- Many buckles and buttons for clothing
- One clay pipe
- Bone whistle with wooden tongue (5.8 cm long, 1.9 cm in diameter, purpose not known, Maybe boatswain whistle).
- Long wooden pieces
- Corroded metal lump
- Wax concreted thing (possibly wax for sail yard sewing)

In the chest's main compartment:

- 2 pairs of shoes and leather pieces
- 3 buttons made of wood and one collar button made of tin
- A round bottle
- Piece of wooden mug made of staves (ca. 14 cm high, handle on the side attached with 2 treenails)
- Few staves, a bowl made of staves (wider on top than on the bottom, maybe tray for food)
- Narrow latch
- The bottom of a shrine (18 cm long, 7.8 cm wide, probably used to store writing equipment because of the traces of a red sealing wax)
- A handle for an awl
- A Fishing sinker
- An abacus
- Corroded metal lump

(Molaug & Scheen, 1983, pp.120–122)

Around 'Arne' few other objects were found. These were: a bowl of a pipe, a pipe case, bone comb, two brass buckles, several tin buttons, collar button made of bone, nicely decorated buttons (Molaug & Scheen, 1983, p.119).

The description and the interpretation of the sailors' chests made by Molaug and Scheen contains a drawback. In their publication the authors did not consider that due to limited space aboard sailors were often asked to pair up and share one chest. What is than a content of the chest 'Lars', 'Arne' and 'Jørgen', can, in fact, be a mixed possessions of two sailors. Lavery says that on the bigger ships, up to eight men shared one chest which was kept below while at sea. On the frigates usually one chest contained belongings of two sailors (Lavery, 2006, p.184).

There is also another issue which the authors of 'Fregatten "Lossen" - Et kulturhistorisk skattkammer' left without questioning. Among the finds from chest 'Jørgen', high number of different

kind of buttons can be seen. Both ‘Arne’ and ‘Lars’ contained lower numbers. The question that arises is, whether these buttons were originally attached to any clothes or just represent spares. In case of ‘Lars’ were one button of brass, one of bone and one of oak were found it could be assumed that these were spares. But in the collection of ‘Jørgen‘ there are forty-one buttons which could represent garments that were originally stored in the chest.

As the missing clothes from the sea chests found on the frigate Lossen show, ‘Lars’, ‘Arne’ and ‘Jørgen’ may not be an intact collection as assumed by Molaug and Scheen. Moreover the evidence for that can be found in the lists of deceased sailors’ possessions.

4.2 Wooden boxes

Sailors used also smaller boxes to store their personal belongings. They would contain little objects that could otherwise be difficult to find in a chest, or an objects of certain value. A good example of what may have been stored in a wooden boxes can be found among the artefacts from the frigate Lossen. A small wooden box contained a twine and a collection of buttons (Molaug & Scheen, 1983, p.231). The records from the later periods show that sewing tools were not only characteristic possessions of sailmakers. Sailors stored things to make and repair garments. Knut Weibust in ‘Deep Sea Sailors’ recalls a testimony of a sailor who witnessed an auction of a deceased seaman. Among his belongings was a nicely ornamented box containing: needles, thread, buttons and scissors (Weibust, 1969, pp.304–305).

Another example of a box was found on the frigate Mynden. The container is made of wood . It is 21 cm long and 6 cm wide. Because the lid is missing the original height can be only estimated. It was probably 5.5 cm high. The panels have ridges carved on the inner side which meet when the box is assembled. This divides the space inside into two compartments. The outside of the box is covered with carved ornaments. On both side panels and the front one rosettes have been carved (Fig.14). The box has been interpreted as a container of an valuable object. It could have been a navigation tool or tools, or possibly a clay pipe which would fit the arrangement inside the box. The container probably belonged to an officer (Auer, 2000; Auer, 2004, p.276).

More boxes have been found on the frigate Lossen. They were made of beech, oak, pine and other species of wood. The boxes were made of four side panels connected by the dovetail joint. The bottom was secured to the panels with small nails. There was a nail in each corner and in the middle of the sides. There were few different types of lids. The lid of the box 140 is larger than the circuit of the

container's side panels in the top part and therefore can be slid on top of it. Another type of a lid was a simple sliding lid. It was the part of the box that contained twine and buttons, mentioned earlier. The lid was slid in or out in two grooves cut in two side panels. The lid had a semicircular hole that could be used for easier opening. Two of the Lossen boxes have a tongue-shaped element that allowed locking (Molaug & Scheen, 1983, pp.263–265).

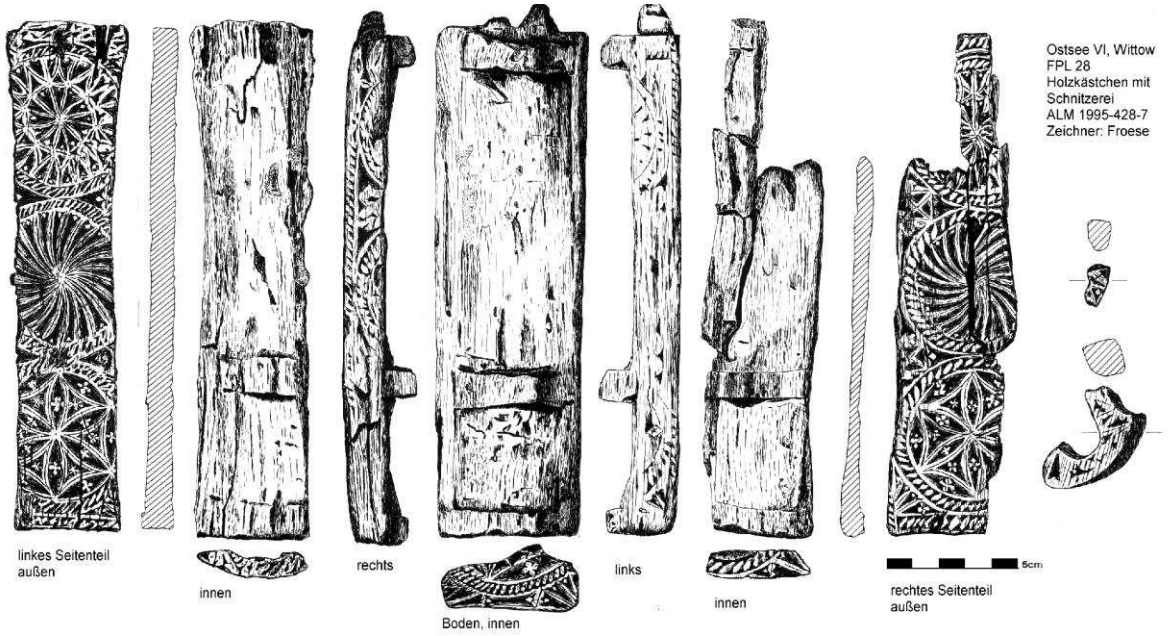

Figure 14 – Wooden box found on the frigate Mynden
drawn by Froese (1995) (Auer, 2004)

One pieces of a wooden box has been found on the shipwreck of Dannebroge. The find number 1042:1988 has not been fully preserved. Only one edge seems to be original. The element is ca. 13 cm long with 1 cm long trapezoidal piece that was originally a dovetail joint. The width is 4.5 cm, measured in the widest place. On the opposite end to the dovetail joint, a groove is visible, that goes parallel to the edge ca.1 cm from its end.

Although the boxes differ in types and sizes, there is one thing they have in common – the ornaments. The main element of the decorations are rosettes and stars (Fig. 14). The ornaments have been interpreted as the sailors' folk art. The origins of this style among Danish-Norwegian sailors are not known. Molaug and Scheen trace it back to Friesland, from where, through Denmark it came to Norway and became popular in the beginning of the 18th century (Molaug & Scheen, 1983, p.263).

4.3 Clothing

4.3.1 Shoes

Shoes are well represented in the archaeological material. There were eight complete shoes and eighty two pieces found on the Danish-Norwegian frigate Lossen (Molaug & Scheen, 1983, p.215) and few pieces on the frigate Mynden (Auer, 2000). Both shipwrecks delivered numerous collection of shoe buckles too. More information comes from the shipwreck of the Swedish ship Prinsessan Hedvig Sophia. The excavation in 2010 brought eighteen leather fragments, one heel with wooden plugs and two buckles. The year later archaeologists recovered five shoes in different condition, and four groups of leather pieces described as shoe fragments. No buckles have been found that year (Persson, 2012, p.48). Sixteen pieces have been recovered from the shipwreck of Nya Riga, which sunk in 1717.

Except one pair, all the footwear found on the frigate Lossen is the same type. This type is called latchet shoe. Each shoe consists of few leather elements: sole consisting of an insole, a midsole and an outsole; vamp – the front part of a shoe covering toes and upper part of a foot, and two quarters sawn to the vamp and covering the heel (Persson, 2012, p.48).

A vamp is made of a single piece of leather cut in a way that one edge attached to the sole suites toes and both sides of a feet. This edge is semicircular in the toes part and continues straight towards the middle of the shoe (Fig.15 – edge A). The line between the ends of the mentioned edge is cut in curves which connect with quarters (Fig.15 – edge B). Between these curves the vamp is cut straight and to this edge a tongue is sewn afterwards (Fig.15 – edge C). The toe part of a shoe was strengthen with few layers of semicircular leather pieces, which looked like small vamps inside the shoe (Molaug & Scheen, 1983, pp.217–218).

Back part of a shoe is made of two quarters, which are mirror images of each other. Edge E of both pieces is attached to the sole and strengthen with a brink. Quarters meet at the back of the heel. They are sewn together at the edge D. The seam called *spansøm* is very neat. It does not go through the leather. From the rectangular shape of a quarter a longer piece extends (Fig.15). One strap is used to attach a shoe buckle and the other, from the other quarter, has holes for the buckle thorn. This was very common way of fastening shoes (Molaug & Scheen, 1983, p.217).

One shoe found on the frigate Lossen has slightly different fastener. Two transverse, 1.2 cm long slits were cut in the quarters, 0.5 cm apart. The straps were then stuck into each other and fastened with a buckle. Another method of fastening shoes was using a shoe lace to tie quarters' straps together (Molaug & Scheen, 1983, p.217).

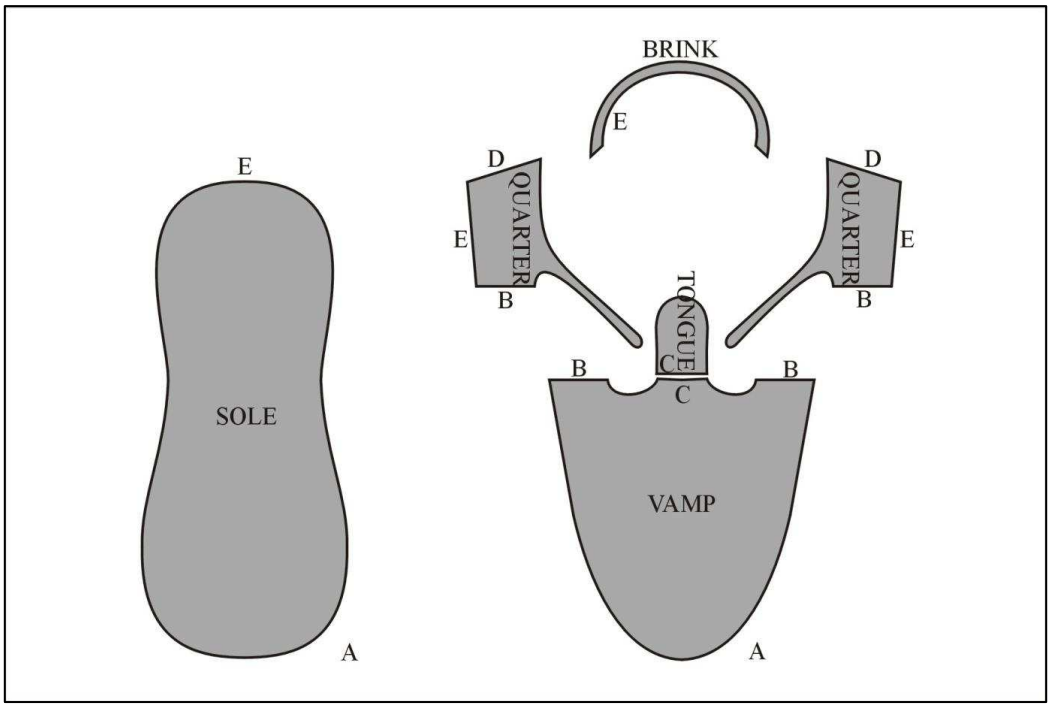

Figure 15 – The elements of a latchet shoe, drawing: Edgar Wróblewski (2012)

There were two types of heels attached to the shoes from the frigate Lossen. First was made by simple layering few pieces of leather. Six to eight layers were attached to an outsole with wooden pegs, 2 to 2.7 cm long and 0.5 to 0.7 thick. The second type of heels were the wooden heels. To make them, birch and beech were used. The height of hills differs. Four pieces from the frigate Lossen measured 2.2 cm to 3.1 cm, and the other four measured between 4.4 cm and 5.2 cm. On top of that should come the thickness of a leather element attached to the bottom part of a heel for better grip. Seven shoes with wooden heels have been found on the shipwreck (Molaug & Scheen, 1983, pp.217–118).

There were various methods of making shoes more comfortable. The heels from the frigate Lossen show carves on their top side, where the foot was supported. In this holes small pieces of rope or cloth were attached to soften the pressure between the heel pad and the hard wood of the heel. This was also used to shape this part of a shoe to a foot. (Molaug & Scheen, 1983, p.218).

The archaeological material reflects the notes in the auction lists, which mentions old pairs of shoes. The shoes are indeed well-worn with signs of mending. Few shoes were repaired by adding a patch and one of them had to be sewn back together. There are signs of continuous repairs which covered both upper part of shoes and their soles. Numerous small pieces of leather that could have been used as patches, show that shoes were repaired on board (Molaug & Scheen, 1983, p.221). The insight into deceased sailors' inventory shows, that some of them stored pieces of leather to be used in repairs. For example, among the possessions of sailors Anders Andersen, Jan Mogensen and Jørgen

Christensen, saale leder can be found, a pieces of leather used for shoe soles (Statens Arkiver 4, 1719).

Not only repairs were made on board. Number of shoe lasts found on the shipwreck suggest that whole shoes were produced by one of the crew members. The quality of the lasts suggest that it belonged to unskilled shoemaker. The initials carved on the lasts do not resemble the work of a skilled craftsman. The lasts were carved in a way that a shoe shaped on it could fit both feet, right and left indifferently (Molaug & Scheen, 1983, p.220). Shoes with the distinction for the right or left foot were not produced until around 1800 (Auer, 2011, p.38).

Only one complete shoe found on the frigate Lossen is clearly a result of work of a professional shoemaker. Not only its quality is better than the other shoes, it is also made in the latest, early 18th-century fashion. It is interpreted as a shoe belonging to an officer. The shoe had 2.5cm high heel. The comparison with other shoe elements from the shipwreck helped indentify few more shoe soles which were part of officers' shoes (Molaug & Scheen, 1983, p.220).

The shoe (the find number: ALM 1995/428-40) found on the frigate Mynden has a well preserved sole with attached heel. Its overall length is 25 cm, which gives the shoe size 37.5. The 1.5 cm heel is made of layered leather pieces, sawn together and strengthen with wooden pegs. The upper part of the shoe is not well preserved. The remaining leather pieces could indicate both a shoe or a boot. It is difficult to determine if the pieces of a shoe ALM 1995/428-41 was originally a part of the mentioned sole with the heel or belonged to another shoe (Auer, 2000).

The collection of shoes found on the shipwreck of Prinsessan Hedvig Sophia shows that also in the Swedish navy the latched shoes were commonly in use. Most of the shoes are of the same type. Slight differences include: the length of the vamps, heels construction and the presence of the tongue on one of the shoes (ID 615). The height of the heels is on average 3-4 cm. Two of the shoes (ID 615 and ID 686) have heels made of layered birch bark, while the heel of the shoe 649 is made of layered leather. In both cases layered elements are secured with wooden pegs ca. 0.5 cm wide. Most of the heels are rectangular. Only the heel of the shoe 649 is conical (Persson, 2012, pp.48–51).

There is no clear distinction between right-foot or left-foot shoe. It seems that they all could fit both feet. In one of the shoes (ID 649) straw was found. That could be interpret twofold: as a method to keep the shoe's shape while not worn, or as an insulation. In the same shoe (ID 649) small pieces of thread survived in the stitching holes. The stitching pattern can be explained by two rows of stitching holes along the edge that joins the vamp with the sole. It shows that the seam went vertically from one hole to another and not diagonally. The material shows that also on board Prinsessan Hedvig Sophia sailors had to repair their shoes often (Persson, 2012, pp.48–51).

Figure 16 - Latched shoe from the Swedish ship Nye Riga. Photo: Johan Löfgren (2012)

The shoe recovered from the shipwreck of Nya Riga shares the characteristics with the other shoes from that period. The sole is ca. 26.5 cm long what gives the shoe size 40. It is made of two layers of leather with clearly visible stitching holes on the edge. The heel is made of eight layers of leather secured with wooden pegs. The shape of preserved quarter indicates that find is a latched shoe (Fig.16).

The sizes of recovered shoes varies between 40 and 43.5. This indicates that the shoe owners were in majority adults (Table 5).

Length (cm)	European Size	Number of shoes			
		Lossen	Mynden	Nya Riga	Hedvig Sophia
29.5	44	- - -	- - -	- - -	- - -
29	43.5	3	- - -	- - -	- - -
28.5	43	2	- - -	- - -	- - -
28	42	2	- - -	- - -	3
27.5	41	6	- - -	- - -	- - -
27	40.5	3	- - -	- - -	- - -
26.5	40	4	- - -	1	1
26	39	- - -	- - -	- - -	1
25.5	38	- - -	- - -	- - -	- - -
25	37.5	- - -	1	- - -	- - -
24.5	37	- - -	- - -	- - -	- - -
24	36	1	- - -	- - -	- - -

Table 5 - Amount of shoes of different sizes found on Danish-Norwegian and Swedish ship of the Great Northern War

4.3.2 Shoe buckles

As mentioned earlier, shoes were secured on feet with laces or shoe buckles. Out of fifty-seven buckles recovered from the shipwreck of the frigate Lossen, only three of them were interpreted by Molaug and Scheen as the shoe buckles. Two of them are very similar. They are rectangular with rounded corners. They measure 4.2 cm in length and 3 cm in width. The buckles are slightly arched lengthwise to fit the shape of a foot. The buckle thorn was attached on the small bar in the middle of the buckle. The third buckle seems to be originally of better quality. Although it is highly concreted it was possible to determine that it was made of copper with traces of silver. It is slightly bigger than two mentioned buckles. It is 4.6 cm long and 3.5 cm wide (Molaug & Scheen, 1983, p.224).

4.3.3 Buckles

The collection of buckles from the Danish-Norwegian ships show big diversity of types, shapes and sizes (Fig.17). Most of them are made of brass or tin. The lack of clear distinguishing characteristics makes it difficult to cluster buckles according to their purpose. Most of them were used as part of sailors clothing. Beside already mentioned shoe buckles, there were fasteners for belts and stockings or buckles on hats and trousers (Molaug & Scheen, 1983, p.221).

Figure 17 – Example of different types of buckles recovered from the ship Dannebroge,
Photo: Edgar Wróblewski (2012)

4.3.4 Buttons and other fasteners

Another very common type of fasteners were buttons. This one of the most numerous group related to seamen's clothing. In the military context buttons are usually a wonderful dating tool, due to symbols of regiments or squadrons they depicted (Bingeman & Mack, 1997), but the buttons of the civil clothes worn by sailors did not provide such information.

Buttons were made of different metals (tin, alloy, copper, silver etc.), wood, horn or bone. Especially those made of valuable materials were used for a long time and often were hand on to the following generation (Grølsted, 1985, pp.47–48). Although there are many buttons found in the sailors' chests only one is mentioned in the auction lists. Among the possessions of Bioun Bouresen there is a silver button listed, indicating its high value (Statens Arkiver 4, 1719).

Metal buttons can be divided into few groups. First cluster consists of pewter or silver buttons with star or floral patterns (Danish: Possementknapper). They are very well represented in the archaeological material of both Danish-Norwegian and Swedish ships (Fig.18). The buttons are circular, ca. 1,75 cm in diameter with hemispherical top and a shank on the bottom.

Figure 18 – Pewter buttons recovered from the ship Dannebroge,
Photo: Edgar Wróblewski (2012)

The second group include plane buttons of brass (Fig.19). On average they are 3 cm in diameter. They are flat, slightly semi-spherical, in the shape of squeezed bead. Some of them have ornamental rim at the edge. The next group is similar to the previous one, but its top side is ornamented.

Some of the sailors had the wooden imitation of metal buttons (Fig.20). Because some of the flat buttons were covered with fabric (Fig.21), they were probably cheaper alternative for many of the

seamen (Grølsted, 1985, p.48). The example of buttons covered with cloth can be found on the frigate Lossen: finds number 891and 829-13.

According to the purpose, sailors would use different types of buttons (Fig.21).

Figure 19 – Brass buttons recoverd from the ship Dannebroge, photo: Edgar Wróblewski (2012)

Figure 20 – Wooden buttons recovered from the ship Dannebroge, photo: Edgar Wróblewski (2012)

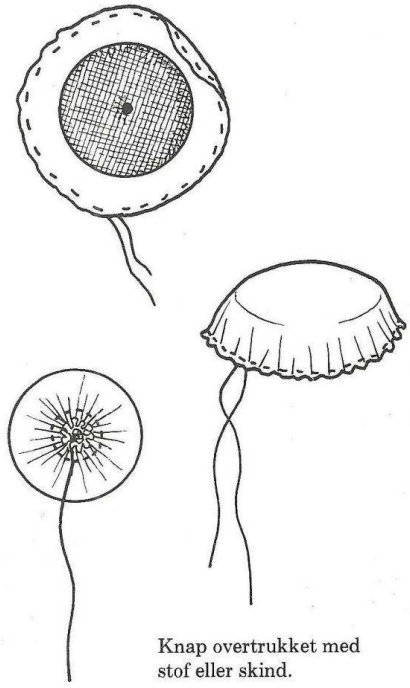

Figure 21– A method of covering a button with a fabric (Grølsted, 1985, p.48)

Figure 22 – Examples of other types of buttons recoverd from the ship Dannebroge, photos: Edgar Wróblewski (2012)

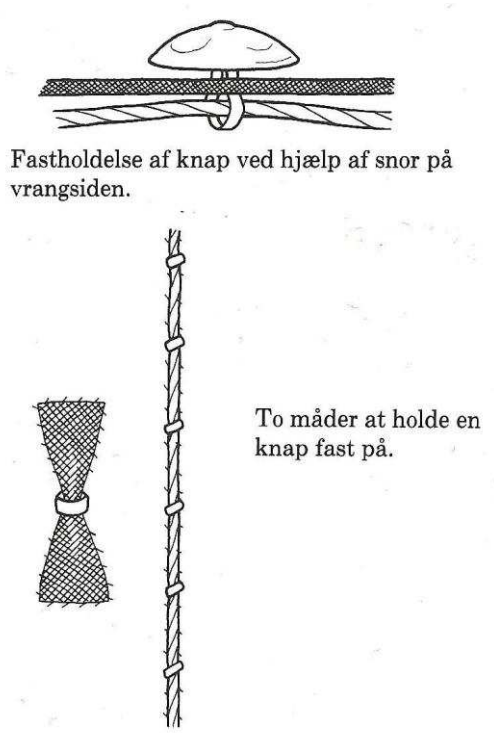

Figure 23 – Method of attaching buttons (Grølsted, 1985, p.47)

Figure 24 – The find ID 656, recovered from the Swedish ship Prinsessan Hedvig Sophia (Auer et al., 2013, p.77)

Figure 25 – The find ID661, recovered from the Swedish ship Prinsessan Hedvig Sophia (Auer, 2012, p.38)

Buttons were not sewn directly to a fabric. Instead, a small piece of leather was pulled through the shank of a button and then sawn (Fig.23). It was also common to plait buttons on a piece of twine which was then sewn to the inner side of a clothe (Fig.23). This method was used throughout the 18th century (Grølsted, 1985, p.47). There were two buttons found on the Swedish ship Prinsessan Hedvig Sophia that still have a piece of the leather pushed through the shank. These are the finds: ID 656 and ID 661 (Fig.244 and Fig.25).

Few finds show that along buttons sailors also used hook-and-eye fasteners (i.e. finds number ID 655, ID 662 and ID 685 from the Swedish ship Prinsessan Hedvig Sophia (Auer et al., 2013, sec.Appendix)).

4.3.5 Socks and stockings

There are no socks or stockings from the time of the Great Northern War found in the maritime context. The only example of the stockings found on board a ship comes from the late 18th-century shipwreck of General Carlton (Ossowski, 2006, p.4). The only finds from the period of the Great Northern War comes from the land excavations conducted by Museum of Copenhagen at Churchillparken in the winter of 2006-2007. Sixteen socks and stocking in a very good condition were excavated. The finds represent garments of all social classes and were dated from c.1700 to c.1770 (Borake, 2012).

The archaeological material shows that socks were used and reused for many years. There are signs of minor or major repairs on them. Five of the socks had their sole replaced and two of the socks had it replaced twice (Fig.26). One sock shows signs of extreme mending (Fig.27). Socks were most often made of wool (Borake, 2012, pp.274–275). Therefore, it should be assumed that the auctioned 'gamle huser/s*trömper'* were woollen, single-coloured socks or stockings with signs of mending.

Figure 26 – The sock excavated in Churchilparken in Copenhagen (Borake, 2012)

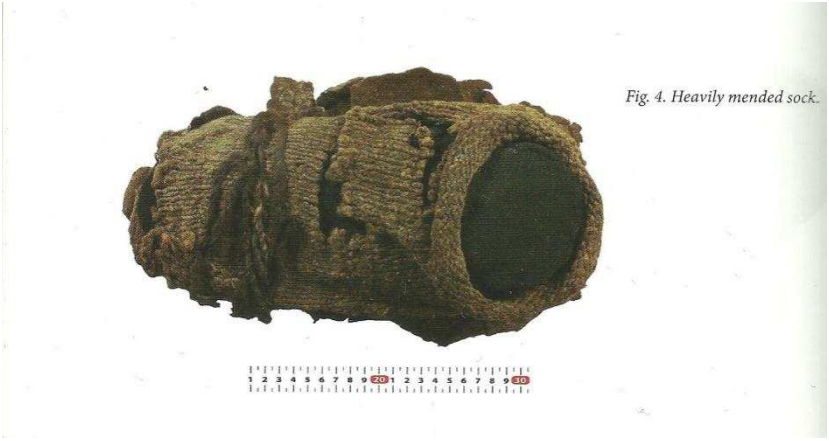

Figure 27 – Heavily mended sock from the excavation at the Churchilparken in Copenhagen (Borake, 2012)

4.4 On duty

The work system used by the Danish-Norwegian Navy has been previously described in the chapter 2.5. The group of finds that testify for sailors activities during the watch hours are tools. Because tools were made of iron, often what is left is just a wooden handle. There were five handles found on board the frigate Mynden, two on the shipwreck of Dannebroge, and many more on the frigate Lossen. There was only one tool handle recovered from the Swedish ship Prinsessan Hedvig Sophia (find number ID 654). In many cases it is difficult to define what kind of tool was a handle used for.

The most basic and simple tool that each sailor was equipped with was a knife. It was used for most of the sailorising jobs (Weibust, 1969, pp.200, 395). The forms of the wooden knife handles from the frigate Lossen are simple. It was important that the handle laid well in hand. Therefore most of them are oval in the cross-section, and slightly narrower at the ends. The lengths vary between 8 cm and 10,2 cm. The width is between 2.5 cm and 3.3 cm. The iron blade was attached to the handle through a rod that went all the way through the handle and was riveted at the end. There was also probably some kind of fitting at the end closer to the blade that secured it in place. In one case (find number 2984) it seems that the rod was much narrower than the hollow part of the handle. To secure it on its place a wedge was used. Although there are now elaborated ornaments on the knife handles, on two finds there are traces of a material that was originally wrapped around it. (Molaug & Scheen, 1983, pp.289–291). Slightly smaller knife handle was found on board frigate Mynden. The find number ALM 1995/428-26 is 8 cm long and cylindrical in shape (Fig.28).

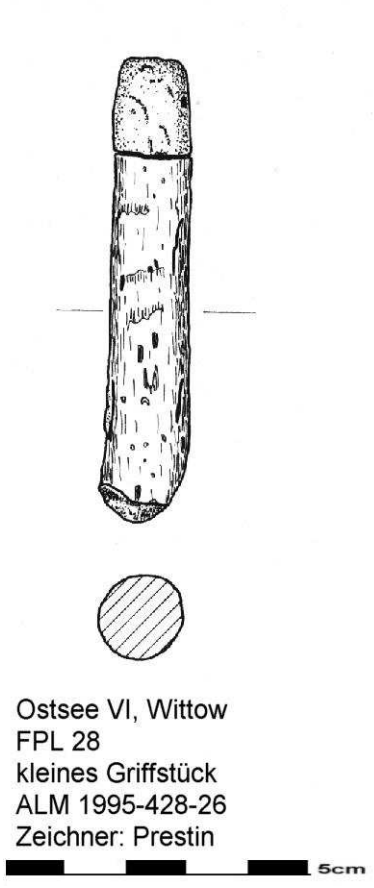

Figure 28– Knife handle from the frigate Mynden, drawn by Prestin (Auer, 2000)

Knives were kept in scabbards. There were two found on the frigate Lossen (find number 1764 and 1995) and one on the shipwreck of Dannebroge (find number 39). Scabbards 1764 and 39 are of the same type. They are both made of leather and they both hosted a knife with a normal blade[11]. The first scabbard is 15,1 cm long, 4,2 cm wide and 2 cm thick. The second one is 21 cm long, 4 cm wide and ca. 2 cm thick (Fig.29). Both are made of pieces of leather folded and sawn together. While the scabbard from

[11] The normal type of a blade is a blade with one cutting edge slightly curved at the end and a dull, straight back edge.

Dannebroge does not have any particular ornaments, except of the texture of the leather itself, the scabbard from the frigate Lossen is highly decorated. It is covered with a foliage consisting of little circles and vines (Molaug & Scheen, 1983, p.298).

Figure 29- Scabbard recovered from the ship Dannebroge,
photo: Edgar Wróblewski (2012)

The second type of scabbards found on the frigate Lossen is made of wood (find number 1995). It is 12.7 cm long, 2.5 cm wide and 1.5 cm thick. It was made of two pieces of wood. There are two grooves ca. 1 cm wide. In one of the grooves remains of a rope were found indicating that the two pieces of the scabbard were originally tightened together. The hollow part of the two pieces show that the knife had a spear point blade[12]. Because the scabbard is made of wood it is easier to measure what was the size of the knife. The opening of the scabbard measures 1.85 cm in width and is 0.8 cm thick (Molaug & Scheen, 1983, p.298).

The second most common tool among sailors were awls. These were used in all the sailors' rope jobs. They would use them to separate the strands of a rope for splicing. Similarly to the knives, only the wooden handles of the awls survived. There is number of different types that vary in size and

[12] Spear point blade is a symmetrical blade, with both edges curved at the end where they meet at the tip of the blade.

shape. The biggest, among finds from the frigate Lossen, is find number 768. It is 22.9 cm long and 2.15 cm in diameter in the widest place. It is conical in shape. It has two holes. One is 3 cm from the narrower end and 0.5 cm in diameter. The second at the other end 2.1 cm from the edge. The smallest of the similar conical form is 6.59 cm long and 2.35 cm in diameter(Molaug & Scheen, 1983, pp.285–289).

The most characteristic feature of an awl handle is the shape of its upper part. It has a round top to provide better grip. The middle part can be conical, egg-shaped or pear-shaped. All together twenty-three handles from the frigate Lossen have been identify as awls. Twelve of them represent the egg-shaped group (i.e. find number 2009 and 1343). The main difference between them is the length of the 'egg part' and the lower part. The sizes differ, but most of them are ca. 9 cm long. The handle number 897 represent a form between the 'egg' type and conical type. It is 8.95 cm long and 2.8 cm in diameter. Three of the handles are pear-shaped. The awl number 421 represents this type. It is 10 cm long and 4.8 cm in diameter. The other two are 6 cm long and 3.5 cm in diameter. Another three handles have a bead under the pear-shaped body. The example is an awl 1438 which is 12 cm long and 4.1 cm in diameter. The awl handles from the frigate Lossen are not nicely ornamented. Beside an occasional groove there were no other pattern carved in (Molaug & Scheen, 1983, pp.285–289). Very different is the find 1062:1988 which was recovered from the shipwreck of Dannebroge (Fig.30). It is conical in shape with a top part characteristic for awls. It is 9 cm long and 3 cm in diameter in the widest place. Its surface is completely covered with carved in patterns. The top part reminds of a pine cone and the middle part carries a combination of geometrical figures and slats. A carved ring separates the pattern from the smooth lower part on which a metal fitting would sit.

Figure 30– Awl recovered from the ship Dannebroge. On the left: decoration of its top part, On the right: decoration of its side, photo: Edgar Wróblewski (2012)

One more collection of finds from the frigate Lossen presents highly personalised group of tools. Nine of the handles have been identify by Molaug and Scheen as belonging to daggers. This interpretation has been based on the fact, that the sizes and shapes of the handles are not standardised, as they would be if they were military equipment. The handles are much more decorated than their

knife equivalents (Fig.31). This led to the conclusion that they must have been sailors' personal belongings (Molaug & Scheen, 1983, p.295). The above interpretation is difficult to explain. As an ornamented handle of an awl from the ship Dannebroge show, also other tool handles carried ornaments. Another fault lies in the meaning of the word 'dagger'. Dagger is a weapon and therefore it can not be sailors' personal belonging. Weapons were under strict supervision of the officers who handed them over for the battle. As the military equipment of a ship, they would be of standardised form. Moreover blades of these handles are not preserved, and the interpretation based only on the ornament of a handle can surly lead to a wrong conclusion.

Figure 31 – Other tool handles recovered from the frigate Lossen (Molaug & Scheen, 1983, p.295)

The forms of these handles vary in shape from the conical to more elaborate. The simplest is the find number 1571. It is 10.3 cm long, and 3.2 cm in diameter. It is conical in shape. The ornament consist of parallel wavy grooves set around the handle almost completely covering its surface. More elaborate handle is the find number 1993. It is oval in the cross-section, and 12.35 cm long, 3.9 cm wide and 2.9 cm thick. The top part is slightly bended. The ornaments are made of tin and above the fitting part a tulip is depicted. The handle number 2165 present very different type. It is octagonal in the cross-section. It is 10.1 cm long and the length is divided into 4 parts of different width. There are two triangles carved in the middle part from which two grooves lead to the opposite end of the handle.

Its width measures 3.2 cm in the widest place. Two handles stand out from the group: find number 1116 and 1750. The handles have two narrowing parts. The first one is not symmetrical. Three parts of this handle remind of 3 diamonds. The lowest one becomes narrow towards the end where the fitting would be. It is 10.6 cm long The second one (find number 1750) is more symmetrical. In the narrowest and the thickest parts there are carved rings around the handle. It also has longitudinal grooves (Molaug & Scheen, 1983, pp.295–297).

Sailors were also involve in other duties. The find that strongly testify for that is a bundle of yarn found on the frigate Mynden (find number ALM 1995/428-37). This is probably a sail-yarn which was used to repair sails (Auer, 2000).

Few other finds are most likely remains of tools that belonged to a ship carpenter. There are in total two mallets found. One was recovered from the frigate Lossen and the other from the shipwreck of Dannebroge. The head of the first one (find number 1830) is 28.7 cm long (measured with the handle), 22.6 cm wide and 9.8 cm thick. The edges on the longer sides are chamfered. The head sits on a cylindrical shaft that serves as a handle (Molaug & Scheen, 1983, p.287). The second one (find number 526:1963) has a cylindrical head. It is 22 cm long and 6 cm in diameter in the widest point in the middle. In the middle, there is a hole 2.2 cm in diameter, in which a handle would sit. On both sides of the middle part there is a ridge carved. The head of the mallet is narrowing towards the ends. The handle is missing (Fig.32).

Figure 32 – Malet recovered from the ship Dannebroge, photo: Edgar Wróblewski (2012)

The other remains of tools found on the shipwreck of the frigate Lossen were: two hand drills, two augers, a croze iron, three measuring sticks, rolling pin and an axe. The only remaining part of the axe is a broken handle. It is 7.2 cm wide and 3.4 cm thick. The wooden parts of the hand drills are better preserved. The first one (find number 2985) is in the shape of a question mark. It is made of one piece of beech and it is 9.4 cm high, 11 cm wide and 2.2 cm thick. The sides are flattened. The other drill is bigger. It is 28.7 cm long, 18 cm wide and 3.5 cm thick. It is made more rough. Another drilling tools were augers. Two handles of them were found (find number 1557 and 2947). The first one is almost cylindrical. It is 8.7 cm long and 3.1 cm in diameter. The second one is bigger. It is 13.2 cm long, 3.5 cm wide and 3 cm thick. The upper edge is slightly curved upwards, while the lower one is almost semi-circular. Both have a whole in the middle through which an iron part was originally attached (Molaug & Scheen, 1983, p.287).

One croze iron was found on the frigate Lossen. It is made of semi-circular board of oak. It is 24.5 cm long, 9.6 cm wide and 1.2 cm thick. It has a rectangular hole close to the straight edge in the middle. The hole is 2 cm long and 2.3 cm wide (Molaug & Scheen, 1983, p.287).

An interesting group of objects are measuring sticks. Three of them were found on the frigate Lossen (find numbers 1317, 2190 and 2205) and one on the shipwreck of the Swedish ship Prinsessan Hedvig Sophia (find numbers ID 663 and ID 727). The first measuring stick (find number 1317) is made of pine. It is 18.1 cm long, 0.9 cm wide and 1.35 cm thick. One of the edges is toothed. On one side distances are marked in the following intervals: 3.15 – 6.15 – 9.9 – 13.3 cm. On the other side 3 – 3.15 – 3.4 – 3.75 cm. Between each mark there are ten smaller grooves. The next measuring stick (find number 2190) is made of hardwood. It is 31 cm long, 1.2 cm wide and 0.8 cm thick. There are three points marking each distance. The space between the marks is 2.55 cm long, and there are eleven three-dotted marks in total. The middle mark is additionally represented by one extra dot on each side of the mark. Third measuring stick from the frigate Lossen (find number 2205) is made of bone. It is 14.45 cm long, 0.95 cm wide and 0.8 cm thick. Similarly to the previous one, the distances are marked with dots. Here every 2.54 cm is marked with three dots and every half of this distance is marked with two dots. The measuring stick was originally longer. One of its end is jagged. At the other end there is a hole, 0.5 cm in diameter. That could indicate that this measuring stick was originally foldable or there was a twine loop put through the hole to hang it among other tools (Molaug & Scheen, 1983, pp.287–289).

The measuring stick from the Swedish ship Prinsessan Hedvig Sophia has been recovered in three pieces among which two of them were heavily corroded. Therefore the original length is difficult to determine. The width is 1.4 cm and the thickness 1.1 cm. The distances of 0.24 – 0.25 cm are marked with grooves. The only other shape is a star which could have indicated the middle of the measuring stick (Auer, 2012, p.41)

The comparison of the measuring stick from the frigate Lossen and the Swedish ship Prinsessan Hedvig Sophia show that the Danish-Norwegian sailors and the Swedish sailors used

similar length units. The 2.4 – 2.5 cm distances on the Swedish measuring stick correspond with the Swedish Tum which measured 2.4742 cm (Auer, 2012, p.41). The distances on the measuring stick 2205 from the frigate Lossen are 2.54 cm, and on the find number 2190 are 2.55 cm. Both of them stand for a modern day inch, and are slightly below the old Danish tomme which measured 2.615 cm. The distances on the find number 1317 vary between 3 and 3.75 cm on one side and 0.15 and 0.35 cm on the other (Norsk Forlishistorisk Forening, 2012).This may have been caused by the long deposition underwater during which the pine stick could have changed its size (Molaug & Scheen, 1983, p.289).

Many of the wooden tool handles could not be identified. The variety of forms suggest that they belonged to different tools. For example the finds number 1995/428- ALM 31 and 1995/428-ALM 33 from the frigate Mynden were described as possibly belonging to a file or a rasp. The two remaining handles from the frigate Mynden (find number ALM 1995/428-21 and ALM 1995/428-28) were simply described as tool handles (Auer, 2000). Among unidentified handles from the frigate Lossen there are few worth mentioning. The first one is the find number 2839. It is cylindrical with the narrowing ends. It is 9.6 cm long and 3.2 cm in diameter. At the both ends it has carved in ring. Its surface is completely covered with ornaments consisting of the karvescurd pattern. On two sides there is a depiction of a tulip flower. The iron part of a tool was attached on a rod that went into the hole, 8 cm deep and 1.4 cm in diameter. Similar handle 1469 is also covered with the karvescurd pattern. It is 10.6 cm long and 2.55 cm in diameter. The hollow part is 10.2 cm deep and 0.4 cm in diameter. The interesting element of this handle is the initials carved on one end of the handle. 'K.E.' was probably the owner of the tool. Another personalised tool is the find number 757. It was signed by a single letter 'R' (Molaug & Scheen, 1983, p.297).

To keep their tools sharp, sailors used whetstones. Eighteen in total were found on the frigate Mynden, and one piece of a whetstone was found on the shipwreck of Dannebroge. There are many different types of the recovered whetstones. The find 1350 is triangular. It is 9 cm long, 3 cm wide and 1.6 cm thick. The most elaborate and the longest is the find number 1759. It is 17.7 cm long and 2.05 cm wide. It has been placed in a pine box, from which the upper part of the whetstone elevates. Two whetstones (find number 4923 and 4925) have a hole that may have been used to hang them among other tools. Moreover the second one is marked with the initials 'S.S.' (Molaug & Scheen, 1983, p.299). The whetstone found on the Swedish ship Prinsessan Hedvig Sophia is 21.2 cm long, 2.3 cm wide and 2 cm thick. It also has a hole to hang it (Auer, 2012, p.41). The whetstone from the shipwreck of Dannebroge has not been found complete. The remaining piece is ca. 8.5 cm long, 3.5 cm wide and 2 cm thick.

4.5 Off duty

4.5.1 Sailors' food and cutlery

There were few dishes found on the shipwreck of the frigate Lossen which were originally used to serve food to the crew. The vessels were made of different numbers of wooden staves. One of the dishes is made of twelve staves. It is 15 cm high, with the bottom of 20 cm in diameter widening upwards to 24.5 cm. All the serving dishes were built that way. Only difference could have been the size and the number of staves. Because separate staves were found rather than complete vessels the diameters of them are difficult to anticipate. The certain dimension is the height. Ten dishes that could be assembled from the found material would be respectively: 14.9 cm, 14.7 cm, 11.3 cm, 10.6 cm, 10.3 cm, 10.2 cm, 10 cm, 10 cm, 9.7 cm, 9.5 cm high. One of the staves, that originally belonged to the dish made of 11.3 cm long staves, is different. It is 19.2 cm long with the upper edge nicely carved and a hole in the middle. The shape of the hole reminds of a heart with little trapezoidal leg. This is probably the stave that served as a handle. Its shape also suggests that the serving dishes could have lids that could have been secured at the handle stave (Molaug & Scheen, 1983, pp.188–189).

Because not many pieces of pottery were found on the shipwreck of the frigate Lossen, it is believed that sailors ate directly from the vessels that the food was served in. Unlike the officers, sailors had to provided basic cutlery for themselves. The basic consisted of a spoon and a knife. There were forty-one spoons found on board frigate Lossen (Fig.33). There must have been more, but some of them probably floated away. Similarly to other groups of finds, some spoons were preserved fully and some other just in pieces. The diversity of types suggest that spoons were brought on board by every sailor himself. In this collection of finds, two groups are instantly visible. First are the spoons with short handle and big, almost round, blade. This type resembles 17th-century type. The example of such spoon is the find number 1727. It is 14,6 cm long, where the handle is 7.5 cm long and the blade is 7.5 cm long. The width of the blade is 6 cm. The handle is ended with a little knob. Another example can be the find number 1972 with its dimentions: 16.4 cm – length overall, 9 cm – length of the handle, 7.7 cm – length of the blade, 6 cm – width of the blade. In most cases this type of spoons has a handle which is round in cross-section (Molaug & Scheen, 1983, p.206). This type of wooden spoons has been found on board Swedish ship Prinsessan Hedvig Sophia. The find number 624 is 15 cm long with the blade 6.5 cm wide (Fig.34) (Auer et al., 2013, p.70).

The second type are the spoon with longer handle and more oval blade. These resemble more contemporary spoons. Two examples measure respectively: 18.5 cm and 18,7 cm. The blade of the first one is 5.2 cm wide and 8.5 cm long. The handles are respectively: 2.1 cm and 2.8 cm wide (Molaug & Scheen, 1983, p.208).

Both types are ornamented. The decorations are mostly concentrated on the handle and a bead/knob at its end. They can be a simple, acorn-like shaped (find number 2115) or more

complicated, like on the find number 1444 (Fig.31). Interesting is the fact that one of the spoon handles has been decorated with the karveskurd pattern. On another one, carved in initials 'AMP B' can be seen (Molaug & Scheen, 1983, pp.206–208).

The basic utensils were probably supplemented by wooden beakers. Because they float easily it is difficult to anticipate the original number of them aboard a ship. Three wooden beakers have been found on the frigate Lossen. One of them is 15.5 cm high, with the top edge of 7.3 cm in diameter. The bottom is 6.2 cm in diameter. The conical shale of the vessel is set on a profiled foot. It was hand turned in burled birch (*valbjørk*). Two other beakers are made of hardwood and also hand turned. They have the same diameter but differ in height. The first one is 7.3 cm high and the other 5.4 cm high. They both are supported on a funnel-like foot (Molaug & Scheen, 1983, p.190).

Beside mentioned vessels, sailors probably used also ceramic cups. There is one example of a very well preserved beer mug. The tankard is 13.2 cm high. At the bottom it is 8.7 cm in diameter and narrows upwards to 6.2 cm in diameter at the top edge. Close to the bottom and close to the top edge there are few parallel groves. Moreover the upper part of the tankard is white. The mug is glazed on the inside and the outside. It has one handle in a shape of a half of a heart. It originally had a pewter lid attached on a hinge. Three lids of other tankards have been found on the frigate Lossen. First is slightly vaulted. It is 8.1 cm in diameter and 1.5 cm high. It is folded at the edge. The top side is decorated with four concentric circles. On the inside there is a stamp, which only visible part is letter 'F' (Molaug & Scheen, 1983, p.192).

Second lid is 8 cm in diameter and 1.4 cm high. It is almost completely flat, only slightly vaulted. In the circle on the top side there are letter: 'I.L.V.' written above 'S.M.D.'. On the underside there is a depiction of a man holding halberd and a letter 'O' on his right side and an unreadable letter on his left side. The date '1710' stands under the figure. The third lid has different ornaments. There are concentrated circles and zigzag lines on the topside. Its form resembles already mentioned lids. It is 8.6 cm in diameter and 1.7 cm high. On one of the preserved hinges a palmet pattern can be seen (Molaug & Scheen, 1983, pp.192–193).

One tankard lid was found on board the Danish-Norwegian ship Dannebroge (Fig.35). It is 9 cm in diameter and it is made of pewter. It is semi-spherical with the flat top. The lower edge is foiled. The only part of the hinge preserved is a piece that was used to open the tankard with the thumb. It is crowned with a bead made of the same material. Beside the lid, a piece of a hinge of possible the same type of vessel was found (Fig.36).

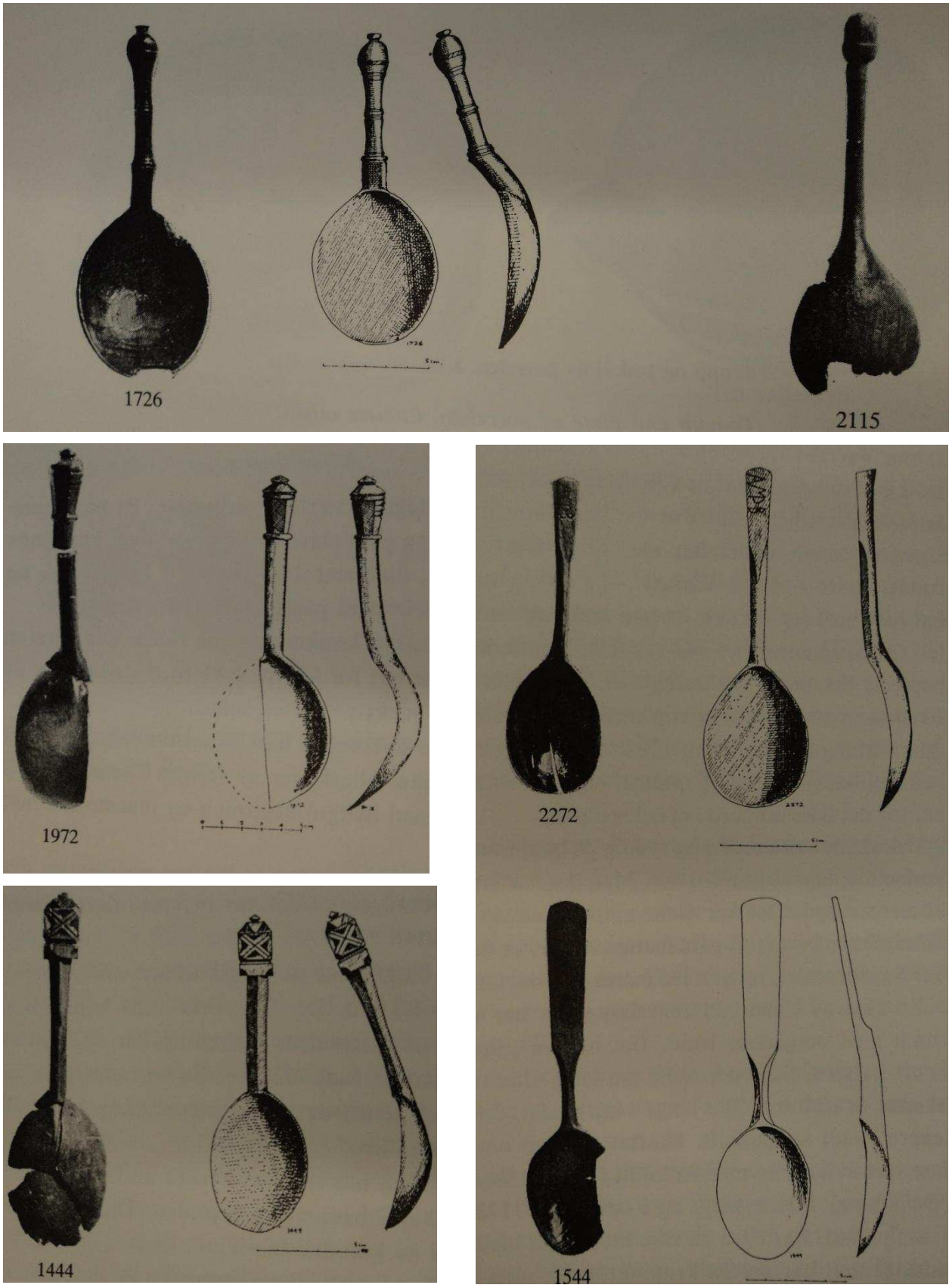

Figure 33 – Spoons recovered from the frigate Lossen (Molaug & Scheen, 1983, pp.204–205)

Figure 34 - Spoon recovered from the Swedish ship Prinsessan Hedvig Sophia (find number ID 624), (Auer, 2012, p.40)

Another types of vessels from which sailors drunk were crozed cans. There was only one found on the frigate Lossen. It was made of eighteen staves. The lower part of the vessel is cylindrical, with the bottom of 13.2 cm in diameter. It widens in the middle, up to ca. 15 cm in diameter. The upper part narrows down to 9.5 cm. On the outer side of the bottom a cross was carved in. On one of the staves a spout was carved, but the stave to which a handle would be attached is missing. The vessel was closed with a lid which was attached with a hinge. The lid is semi-circular, made of one piece of wood. It has a bead on top of it surrounded with an ornamental pattern.

Figure 35 – Tankard lid recovered from the ship Dannebroge, photo: Edgar Wróblewski (2012)

Figure 36 - Tankard hinge recovered from the ship Dannebroge, photo: Edgar Wróblewski (2012)

Figure 37 – Cutlery handles recovered from the ship Dannebroge, photo: Edgar Wróblewski (2012)

There is a big group of finds that traditionally has been associated with cutlery of the officers. The reason for that is the refinement and quality of how they were made. As an example of such finds can serve few cutlery handles from the shipwreck of Dannebroge (Fig. 37). It should be remembered that neither archaeological, nor historical sources exclude a possibility that common seamen used refined cutlery.

4.5.2 Tobacco consumption

The clay pipes from the 18th-century shipwrecks belong to the most numerous group of finds. There were 83 bowls and 71 stems of different sizes recovered from the frigate Lossen (Molaug & Scheen, 1983, p.270). One pipe has been found on board frigate Mynden (Auer, 2004, pp.275–276), and thirteen pieces of stems come from the shipwreck of Dannebroge.

No less material comes from the Swedish ships. There were thirty clay pipes from different periods found during the excavations of the ship Fredricus in Marstrand (Bergstrand, Forthcoming). Sixteen pieces of stems and two bowls were recovered from the shipwreck of Prinsessan Hedvig Sophia in 2010 (Auer, 2011, p.36), and six bowls and fifteen stems more the year after (X. Nielsen, 2012, p.45).

Sixty-six pipes recovered from the frigate Lossen carried producers stamps. The analysis of this signs allowed to interpret their origins. Thirty-nine of these pipes came from the Netherlands and twenty-seven from England. Among the Dutch pipes most common were these produced in Gouda in the manufactory of Lucas de Jong, probably made by Cornelis Vermeuler. These pipes were marked with a depiction of a snake in an oval. There were fourteen in total found with this sign. The next twenty-five pipes come from different Dutch producers (Molaug & Scheen, 1983, pp.270–273).

The English pipes were produced by many different producers. Seven of these pipes were marked with a sign presenting ‘A I B’. ‘A’ stands above ‘I B’, and all the letters are circled in an oval. Four carried a sign of crowned ‘W’ or crowned ‘M’. They were interpreted as made in London, but because ca. thirty-four producers of the period used this sign, the final interpretation needs more research. Other stamps were: ‘IP’, crowned ‘PB’, ‘J’ on one side and ‘M’ on the other, ‘B’, ‘M’, ‘W’, ‘J’ on one side and a spiral on the other, ‘T’ above an ‘O’ on one side and a snail above ‘F’ on the other, crowned vase, two-toothed fork, a cock, a man with a hummer and a hat. One sign was unclear (Molaug & Scheen, 1983, pp.274–275).

The pipe found on the shipwreck of the frigate Mynden has been interpreted as produced in the Netherlands between 1700 and 1730. The interpretation has been based on the ornamentation of the stem and the form of the bowl. The heel of the pipe has been broken off, what made it impossible to see the producers stamp (Auer, 2000).

The analogical ornament can be seen on three stem pieces found on the ship Dannebroge. The pattern consist of parallel rings formed of triangles and lines (Fig.38 - A, B, D). One pieces from the same ship has been twisted longitudinally, and the dotted lines were imprinted along the tops of the diagonal ridges (Fig.38 C). The other pieces of stems from Dannebroge were not decorated, therefore interpretation of their provenance is difficult.

Figure 38 – Pieces of ornamented pipe stems recovered from the ship Dannebroge, photo: Edgar Wróblewski (2012)

Interestingly all pipes from the ship Prinsessan Hedvig Sophia were produced in the Dutch city of Gauda between 1700-1715 (X. Nielsen, 2012, pp.43–45).

The analysis of thirty clay pipes from the frigate Fredricus show that pipes were used for many years. The earliest pipe in the collection is dated between 1605 and 1610 (pipe number 393.K502), while the youngest found were made in the 19th century. Discarding the finds that must have appeared on the shipwreck accidently after its sinking in 1719, there are twenty-one pipes that belonged to the sailors of Fredricus. The ship was built in 1698, what makes only five pipes made around 1700 contemporary to the frigate. The rest were made in the 17th century: nine of the them before 1650 and seven between 1650 and 1700. There is no significant difference in the provenance of the pipes found on the shipwreck. Ten were produced in the Netherlands and nine in England (Table 6). The producer of two pipes with stamps presenting birds could not be identify (Bergstrand, 2009 Appendix 21).

	Lossen	Mynden	Prinsessan Hedvig Sophia	Fredricus	Dannebroge
Dutch	39	1	8	10	3
English	27	- - -		9	
Other	- - -	- - -		2	

Table 6 - Provenance of the pipes based on the elements that could be identify.

There is a significant number of the Dutch and the English pipes in the archaeological material from the period. Even though since the 17th century there were pipe makers in Denmark and Norway, they were not capable of producing enough products for the still growing market (Bardenfleth, 2002, p.136). Naturally, this gave the chance to English and Dutch producers to flood market with their products.

The archaeological evidence from Norway, Denmark, Sweden and other parts of the Baltic suggest that the trade of the English-made pipes was well organised. On the same scale the Dutch pipes must have been exported. The second ones became increasingly popular in the second half of the 17th century onwards. Huge quantities of pipes were exported on board merchant ships. The trade was organised in harbours where sailors could easily buy their pipes (Higgins, 2012, pp.217–223).

Clay pipes are dominant in the archaeological material, but there are two finds that show that also wooden pipes were used. Both artefacts were found on the frigate Lossen. First, is a real nicely decorated long pipe. It has a bowl made of wood. It measures 6.3 cm in length, 5.1 cm in width and 4.8 cm in height. It is nicely made with the ornament presenting a bird. On one side of the bowl it has

wings lifted, and on the other side it keeps them down. It is 'painted' red with a substance resembling sealing wax. The 25.25 cm long stem is made of bone. One end is cone-shaped that fits into the silver ring between the bowl and the stem. Other end has nicely decorated mouthpiece (Fig. 39) (Molaug & Scheen, 1983, p.279)

Another wooden bowl has been preserved in worst condition than the first one. It is 5.7 cm long, 3 cm wide and 4.1 cm high. The construction suggest that it was the same type as the other wooden pipe (Fig.39) (Molaug & Scheen, 1983, p.279).

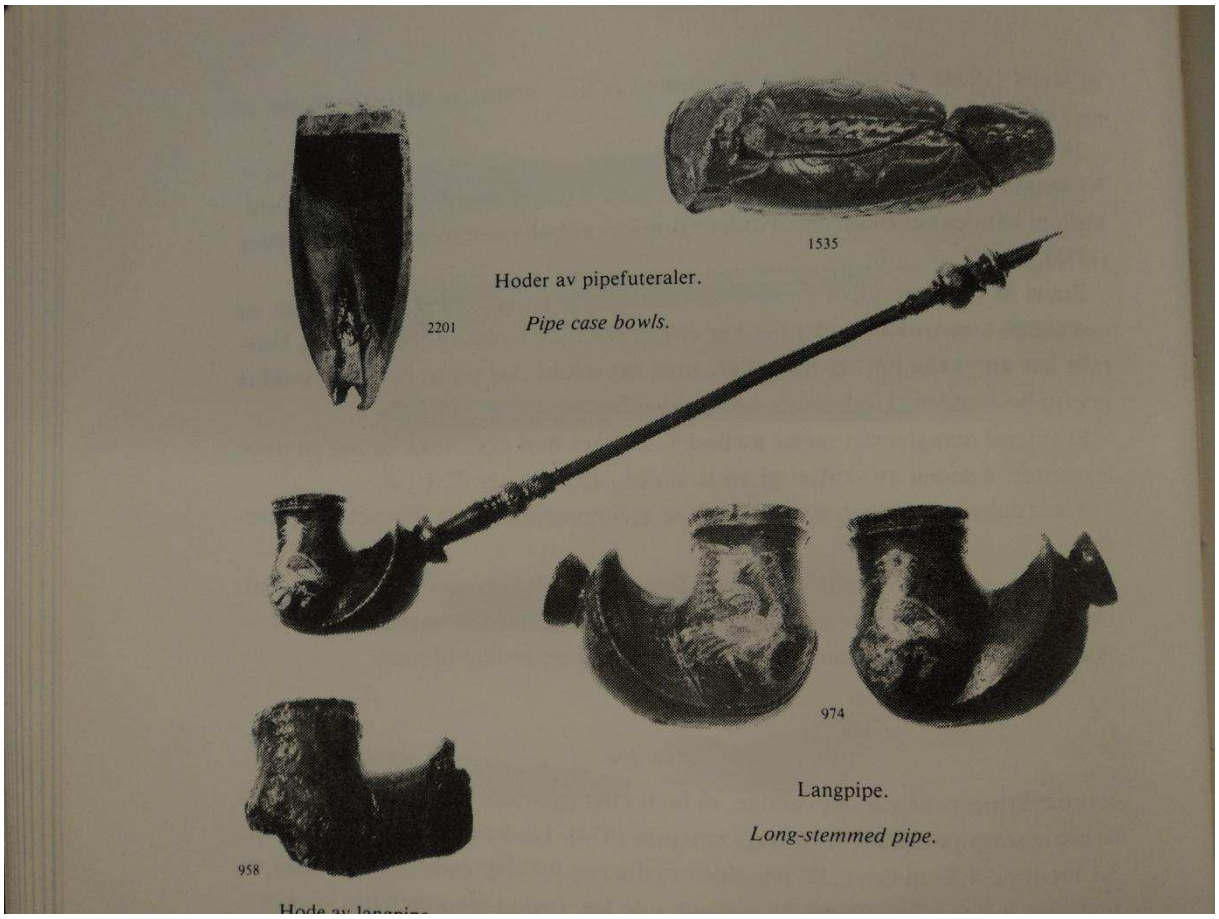

Figure 39 – Wooden pipes (finds number 958 and 974) and wooden pipe cases (finds number 1535 and 2201) recovered from the frigate Lossen (Molaug & Scheen, 1983, p.280)

Considering relatively low price of a pipe in the 17th and the beginning of the 18th century, the results of the analysis of the pipes from frigate Fredricus are very interesting. It shows that sailors tried to extend life of their pipes for as long as possible.

Pipes were fragile and especially at sea could be easily broken. Getting new one could be impossible, what for a tobacco-addicted person was certainly frustrating. Some sailors kept their pipes attached to a hat or in a pouch on the belt (Auer, 2000). Others to protect they fragile pipes used

special pipe cases. Eleven of this pipe cases and cases' fragments were found on the frigate Lossen, one was recovered from the frigate Mynden and one from the ship Prinsessan Hedvig Sophia.

There are two types of pipe cases from the frigate Lossen. First type is made of two elements. One part is shaped like a pipe, with long body round, hexagonal or octagonal in cross-section and a bullet-shaped head were the bowl of a pipe would come. The other element is a sliding lid. Cases can be more or less decorated. One has a simple ledge carved in the middle. Other case has four grooves set closely together, but it appears that the most common is a geometrical motif called in Norwegian 'karveskurd'. There is one case's body completely covered with this pattern and few only partially. There were four more pieces found covered with this pattern. The bowl parts of the cases are also decorated. One has three stripes with karveskurd pattern carved lengthwise and floral ornament between them. On top of the bowl part there is a crescent-shaped brass fitting. Another case has a 6-leafed rose carved in karveskurd technique. Yet another is decorated with longitudinal beads and a fleur-de-lis on the front part. One case has no decoration of the bowl part. Also the lid can be decorated. On one of them there was a palmet at one end and a wavy pattern carved lengthwise. Although hardwood is primarily used to make pipe cases, there was one made of beech. The sizes are not much bigger than a pipe itself. Two of the better preserved pipe cases measured: 1) length:18,7 cm, width: 3.7 cm, height: 6.7 cm (measured with the bowl part), 2) length: 28 cm, width: 3.65 cm, height: 6 cm (Fig. 39) (Molaug & Scheen, 1983, pp.277–279). The wooden pipe case of the same type has been found on the Swedish shipwreck of Prinsessan Hedvig Sophia. The body of the case is round in its cross-section. The surface is smoothly sanded. The ornaments are limited to few carvings on the bowl part. On its top there are five circles set in a cross and on its sides there are two pairs of V-shaped carving with little triangle in each one of them (X. Nielsen, 2012, p.47).

Figure 40 – Pipe and the pipe case recovered from the frigate Mynden (Auer, 2000; Auer, 2004, p.276)

The second type of a pipe case also consists of two elements. The body is pipe-shaped and hollow inside. A pipe was pushed inside through an opening on the bowl part of the case which could be closed with a sliding lid (Molaug & Scheen, 1983, pp.277–279). Beside the examples from the frigate Lossen, the bowl part with short piece of its body has been found among the artefacts recovered

from the frigate Mynden (Fig.40). The case is decorated with parallel ledges on the bowl part set longitudinally with the body. Where the bowl part turns into body four visible rings have been carved perpendicularly to the body. The rest of the case is missing (Auer, 2004, p.276) Because the karveskurd motif used on the pipecases has not been found on the pipe cases in the land context, it is believed that the cases were made by sailors on board (Molaug & Scheen, 1983, p.279).

Twelve pipes cases in comparison with the number of pipes is not many. The interesting example of what would sailor do if his pipe was broken has been found on the shipwreck of Prinsessan Hedvig Sophia (find number ID 621). The elements of a broken pipe have been joined together with a simple pieces of thick leather folded and sawn lengthways. To strengthen the tube and ensure that it keeps shape, few pieces of broken stem were put inside. The clay elements are heavily coloured, what shows that the pipe was used for a very long time (Fig.41) (X. Nielsen, 2012, p.46).

Figure 41 – Find number ID 621 recovered from the Swedish ship
Prinsessan Hedvig Sophia (Auer et al., 2013, p.45)

Sailors kept their tobacco in small boxes. There were three containers found on the frigate Lossen. Two of them are made of brass. First one is round, 10.2 cm long, 8.9 cm wide and 3 cm high. It has flat lid and a small fastener in the front. There are initials 'N.W.' and word 'AMSTERDAM' engraved on the bottom side of the box. The top side is decorated with a depiction of a three-masted-ship. The second box is 2.2 cm high and 7.5 cm in diameter. There was a fastener in the front. The lid is missing. The third tobacco box is rectangular with rounded corners. It is 9.8 cm long, 6 cm wide and

2 cm high. The top part was hinged with the lower on the short end (Molaug & Scheen, 1983, pp.281–282).

Finds of the frigate Lossen also show that same sailors used snuff. Two snuffboxes were found. One was made of birch and one of horn. Both of them round and flat. One is 8.9 cm high 2.3 cm thick and 8.1 cm in diameter. The second one is 7.9 cm high, 3 cm thick and 6.5 cm in diameter. The lid could be screwed of to put snuff inside. The snuffboxes have a small circular stem. Molaug and Scheen interpreted this piece as a kind of stem on which the snuffbox could have been left standing. It is highly unlikely on board a rocking ship, though. It is more probable that this stem could serve as an attachment. A twine could be tied to it what would prevent the owner from losing it. On the opposite side of the stem, the snuffbox has a small screw lid that allowed to dose the content (Molaug & Scheen, 1983, pp.279–281).

4.5.3 Sewing

Sailors' garments required constant mending. The lists of auctioned things show that sailor's wore old clothes. In case of the constable from the frigate Mynden, it was stressed that the all three pairs of his trousers and three of his jackets were completely torn. To prolong life of garments, patch the holes, sew two pieces together or sew on a button some of the sailors were equipped with basic sewing kit. There were needle cases, thimble, sewing ring (thimbles with open top), thread spools, and a pair of scissors found on the frigate Lossen. It is believed that each sailor had his own sewing kit (Fig.42 and Fig.43) (Molaug & Scheen, 1983, pp.267–269).

Needle cases were made of hardwood. They were cylindrical in shape. One end was cone-shaped end the other had a screw thread. They could be closed with a screw lid, although in one case a cork was used. The overall length varies between 7.4 and 8.3 cm. The hollow is 5 cm long. This shows that the cases were used for keeping regular sewing needles and not the longer sail sewing needles (Molaug & Scheen, 1983, p.267).

Thimble (find number 2554) was made of brass, with the surface covered with shallow cavities for better grip (Fig.40). It was 1.5 cm long and 1.55 cm in diameter. It seems that sewing rings were more common in use. Three in total were found. Similarly to the thimble they were also made of brass with the same surface texture. They are slightly conical, 1.5cm in height and 2 - 2.2 cm in diameter (Molaug & Scheen, 1983, p.267).

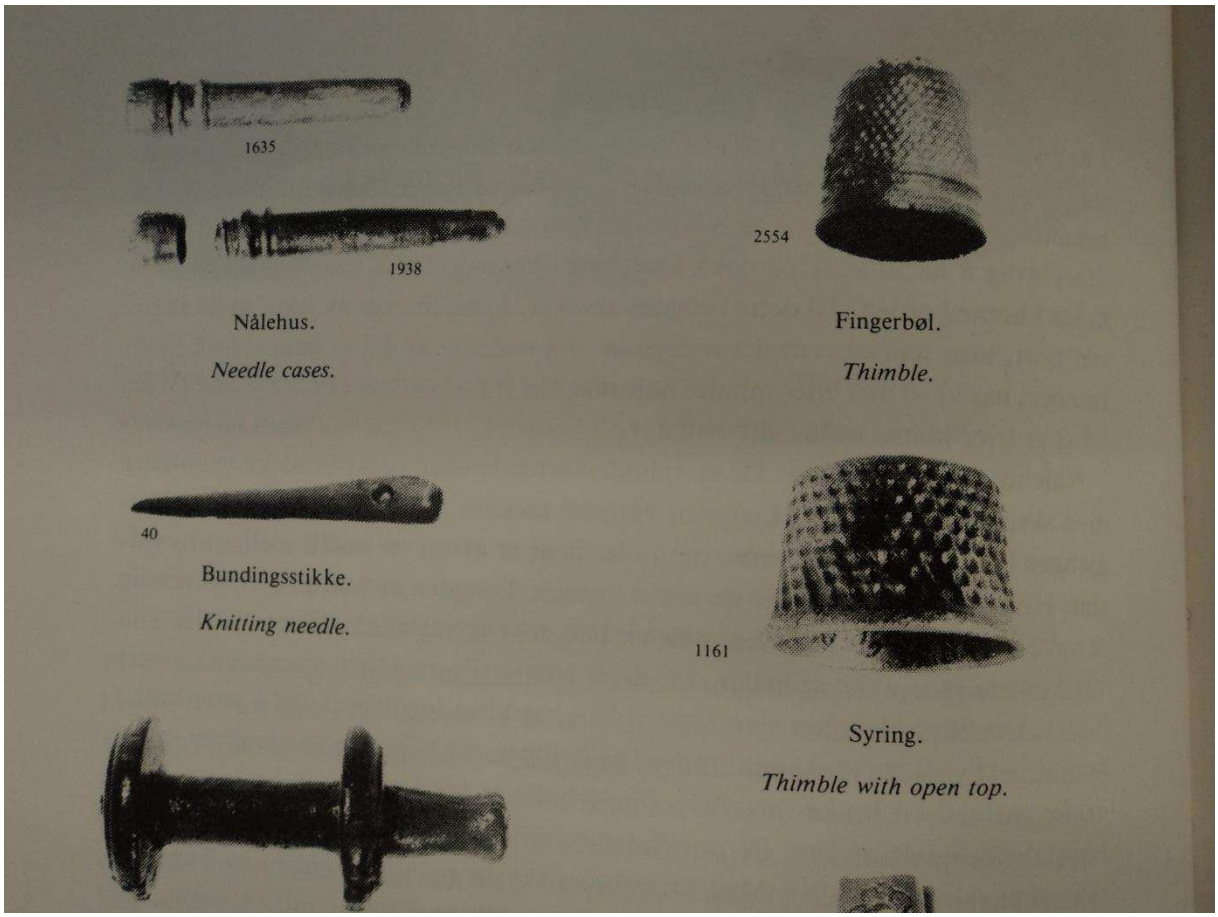

Figure 42 – Sewing utensils recovered from the frigate Lossen (Molaug & Scheen, 1983, p.268)

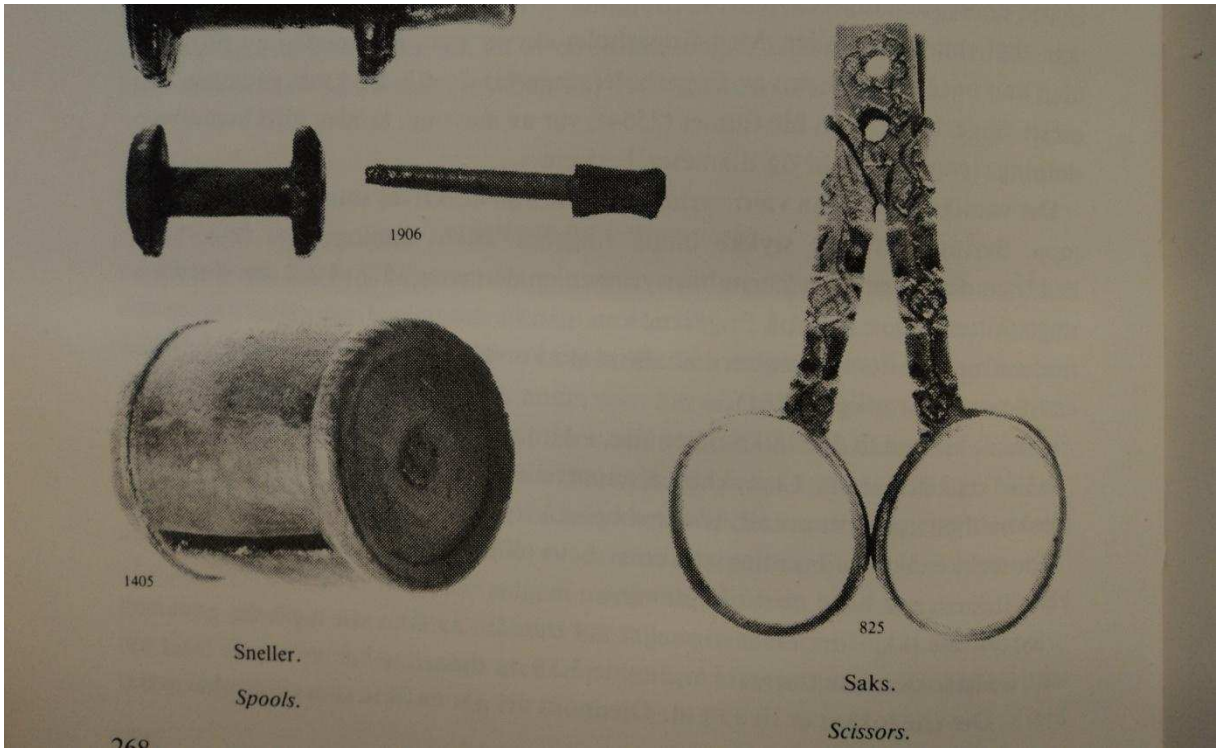

Figure 43 – Sewing utensils recovered from the frigate Lossen (Molaug & Scheen, 1983, p.268)

There were no threads found, but the wooden spools give an indication of how were they stored . There are two types of spools. On one (find number 1405) the thread was wound on a wooden axis and put inside barrel-shaped housing. The end of the thread was slit in the side of the spool. It was 5.15 cm in height and 3.8 cm in diameter. The second type did not have housing. One example (find number 1906) was 7.2 cm long and 1.75 cm in diameter with two discs (4.2 cm in diameter) on its end. The shaft is hollow and an axis with a handle can be slid in (Molaug & Scheen, 1983, p.269).

One pair of scissors was found. The blades which were probably made of iron rusted away. Only nicely decorated with geometrical pattern brass handle was preserved. It is not sure how handles and blades were connected. There are two holes of which one could have been used as an axis and the other to attach the blades(Molaug & Scheen, 1983, p.269).

The remaining sewing related finds consist of collection of pins, one knitting stick made of bone (find number 40) which was 6.6 cm long, 8.5 cm wide and 0.5 cm thick (Molaug & Scheen, 1983, pp.267–269).

4.5.4 Handcrafts

There are many indications of how sailors spent their time on the watch below. One of them is the collection of twenty-four half finished spoons found on the frigate Lossen. They are between 16 cm and 17 cm long and between 5.5 cm and 6 cm wide. If they were made from scratch or brought aboard half-made, it is not certain. They probably belonged to one of the sailors who wanted to earn some money in addition to his poor wages. This theory is supported by other finds, i.e. manglebrett from 1700's, decorated with karveskurd and a word 'NYBODER'[13] carved in, which can be seen in the Norsk Folkemuseum (Molaug & Scheen, 1983, p.208). Another category of finds that has been interpreted as made on board are pipe cases (Molaug & Scheen, 1983, pp.277–279).

4.5.5 Games

Few finds from the frigate Lossen show, that in their spare time, sailors played various games. There were: dices, one spinning dice, different kinds of pawns, and pins to play spillikins, mikado or pick-up sticks game (Fig.44).

[13] Navy's living quarters in Copenhagen

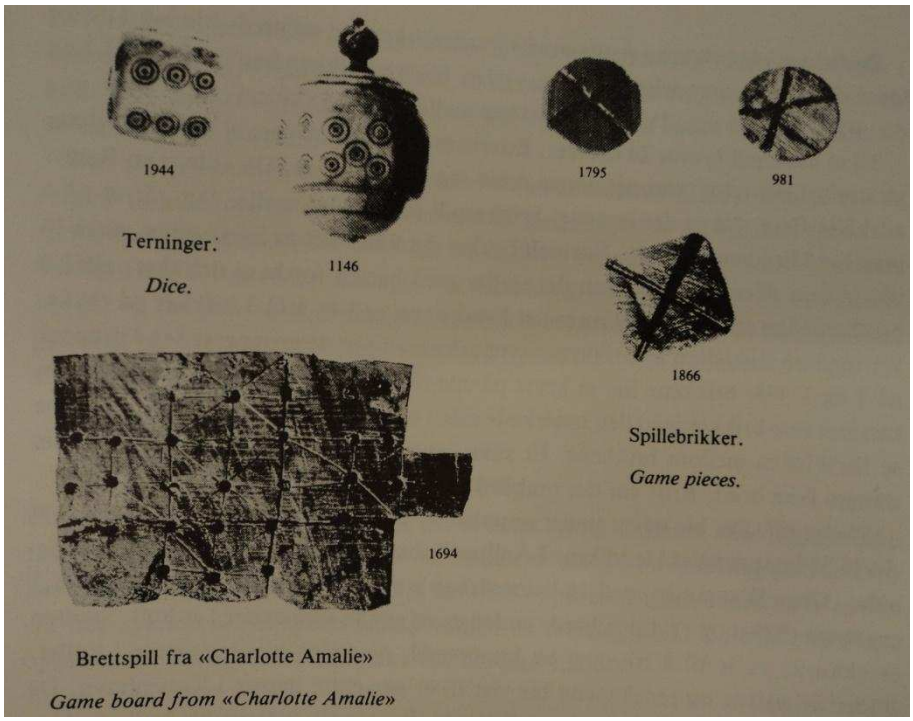

Figure 44 – Games pieces recovered from the frigate Losse and Charlotte Amalie (Molaug & Scheen, 1983, p.283).

The spinning dice is made of bone (find number 1146). It is 3.38 cm high and 2.6 cm wide. It has six sides. On each one of them there are circles carved in representing numbers. On the regular dices and the spinning one, the digits are shown the same way: a dot in a middle and two circles around it. The interesting feature about the spinning dice is that the cap can be screwed out and a little weight can be put inside to manipulate the results of spinning (Molaug & Scheen, 1983, p.282).

All together 23 pawns were found on the frigate Lossen. Because there are of different sizes they had been interpreted as the elements of different games. The pawns are all made of wood. Twelve of them are round with the diameter varying between 2.2 cm and 3.3 cm. The thickness is 0.7 cm for most of them. One pawn is 0.6 cm thick and another 1.08 cm. All the elements have grooves in a shape of cross, on the top side (Molaug & Scheen, 1983, p.283). The same round pawn has been found on the shipwreck of Prinsessan Hedvig Sophia (find number ID658). It is 1.9 cm in diameter and 0.7 cm high (Auer, 2012, p.37). The square pawns from the frigate Lossen vary in size between 3.2 cm and 1.9 cm. The thickness is between 0.5 cm and 0.9 cm. The corners have been rounded. On the top side two grooves have been carved. Coming diagonally they form a cross. While the round pawns were probably used to play draughts, the square elements could indicate game called Mills (Molaug & Scheen, 1983, p.284). The evidence of another game that could have been played by sailors is a game board from the Swedish ship Vasa. The finds shows that in 17th century sailors played backgammon (Statens maritima museer, 2012)

The collection of seventy-eight pins found in the chest 'Lars' have been interpreted as gaming pieces of spillikins, mikado or pick-up sticks game. Similar interpretation has been given to 392 pins found in the box of Andres Bohses (Molaug & Scheen, 1983, p.284).

4.5.6 Reading

It is difficult to say if the Danish-Norwegian sailors were literate or not. They certainly came from different background. On one hand Niels Trosner's diary shows that at least some of the seaman could write and read, but on the other some of the signatures in the ship books indicate that they clearly could not. The finds directly related to reading are scarce. There are only few artefacts that could indicate the presence of books among sailors.

Paper found on frigate Lossen was too fragile to recover it. Similarly possible finds from other shipwrecks were probably destroyed after sinking. Although there are no finds of paper, the two pieces of wood held together with leather straps could have been a book cover. The same applies to few thin pieces of leather (Molaug & Scheen, 1983, p.284).

The other interesting finds are 4 small buckles used to close books (Fig.45). One of the small rings was attached to the back cover and the other ring would be secured with a pin to the front one. The ornaments suggest that they were part of psalm books. One of them (find number 1682) presents a person holding a cup and a cross. Another (find number 3995) carries a floral pattern of six leafs. Two of the buckles are of the same size: 2.8 cm long, 0.8 cm wide and 0.4 cm thick. The buckle with leafs is 2.95 cm long, 1.3 cm wide and 0.2 cm thick. The fourth buckle is of slightly different type (find number 365). It has an anchor shape on one side and the other is rolled to created two short tubes that an axis can go through. This creates a hinge on which the buckle was attached to the book's cover. It is 2.6 cm long, 1.35 cm wide and 0.4 cm thick and is ornamented with a rose (Molaug & Scheen, 1983, pp.284–285). A similar find was recovered from the shipwreck of Dannebroge. It is 2.7 cm long, 1.5 cm wide and 0,4 cm thick. There is only one loop (Fig.46).

The maritime ethnological research conducted by Knut Weibust shows that sailors of later half of the 18th century to the first half of 20th century did not spend much time reading. The main factor was the shortage of reading materials. Books were also vulnerable to the damp conditions on board, and the darkness under the deck made it almost impossible to read (Weibust, 1969, p.115).

It seems probably that some of the sailors of the brought books with them, but it was certainly not a common custom. There are only few examples of books in the lists of deceased sailors' things.

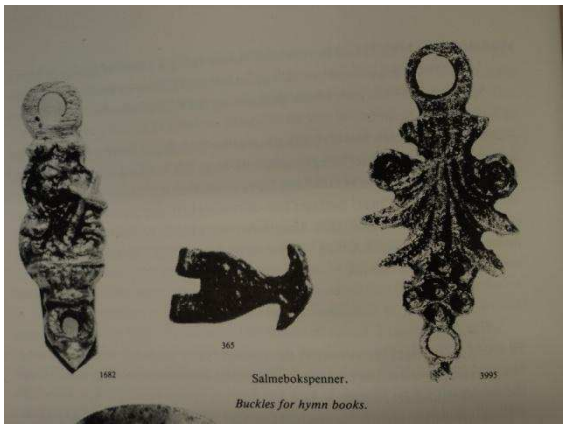

Figure 45 – Hymn books buckles recovered from the frigate Lossen (Molaug & Scheen, 1983, p.286)

Figure 46 - Book buckele recovered from the ship Dannebroge, photo: Edgar Wróblewski (2012

4.5.7 Writing

Similarly to the sailors' ability to read, it is uncertain to what extend was the skill of writing common among them. The fact that a sailor Niels Trosner has written a diary during his service in the navy shows that at least few of common seamen could write. There are few artefact directly related to writing. Although they were found in a context that would suggest that they belonged to officers, it must be assumed that few of these things must have looked the same regardless the social status of an owner. Among the finds from the frigate Lossen following artefacts were found: several inkpots, a sand container, few pieces of sealing wax, four seal signets, three pencils, pieces of chalk and slate pancils (Molaug & Scheen, 1983, pp.252–258). One sealing signet has been found on the shipwreck of Dannebroge.

As Niels Trosner wrote his diary with a quill, few artefacts from the frigate Lossen shall be mentioned. A typical inkpot of the era was made of lead. The heavy material provided stability. It was cubic in shape with an extended edge on top that kept dripped ink and prevented it from spilling. The quill hole was ca 1cm in diameter. When not in use this hole was closed with a cork. There were five inkpots of this type found. There were not the same but similar. The smallest measured 4 cm in length, 4 cm in width and 4.2 in height. The biggest was a cube which side was 4.47 cm long. One of the inkpots had initials 'MNS' engraved with a dotted line on one side. An example of slightly different inkpot is a find 3405. It is also an cubic container, but it does not have a 'collar' around the upper edge. It is a little bit smaller than the ink containers mentioned earlier. It is 3.8 cm long, 3.6 cm wide

and 3.1 cm high. It has two shallow groves on the top side. There was only one inkpot of a very different type (find number 1062). It was almost cylindrical in shape, 4.7 cm high and 7.5 cm in diameter. A collar extending from the upper edge had six holes in it, that could be for decoration or to store dry quills (Molaug & Scheen, 1983, pp.252–254).

To dry wet ink on the paper, fine sand was used. Therefore among writing equipment sand containers can be found. One sand container found on the frigate Lossen was made of beech (find number 2269). It was cubic in shape. The tin sieve through which the sand was disposed rusted away (Molaug & Scheen, 1983, p.254).

Along quills and ink, pencils were used. There were three pencils found on the frigate Lossen. Two of them are very similar. They are round in cross-section that varies in diameter between 0.65 cm and 1.2 cm. They are 6.3 cm and 6.2 cm long respectively. The third pencil is more oval with the cross-section of 0.7 cm in length and 0.4 cm in width. It is 4.03 cm long. The graphite of the pencils is the same. It is square in the cross-section and measures 0.3 x 0.35 cm. The graphite has been put between two wooden elements glued together. There has been one more piece of graphite found. It was 1.2 cm long, 0.9 cm wide and 0.5 cm thick. All the pencils are sharpened at one end (Molaug & Scheen, 1983, p.257).

Less common were slate pencils. They were found in one of the boxes with writing equipment. There varied in sizes and cross-sections. There were round or square. The narrowest was 0.5 cm, there were two slate pencils 0.6 cm thick and the rest varied between 0.7 and 0.8 cm. The thickest measured 1 cm. The longest was 12.8 cm long. Both, the slate pencils and a slate board were interpreted as used in navigation (Molaug & Scheen, 1983, p.258).

Naturally paper did not survive in the archaeological material, but the State Archive in Copenhagen has gathered big collection of the original ship books. The watermarks seen on the pages of Danish-Norwegian ship journals, in most cases, present the coat of arms of Amsterdam. In one book the watermark shows a lion holding a sword in one paw and the bunch of arrows in the other, which is the coat of arms of the United Provinces. Other watermarks presented: a male figure with a goblet in one hand standing next to a female figure with a flower, both underlined by words ‘MODE PAPPIR’; ‘AG’, which was also used under the coat of arms of Amsterdam on other watermark; the word ‘MARCHAD’.

The introduction of the ‘Hollander beater’ in 1680’s made the Netherlands the biggest producer of paper in the late 17th century up to half of the 18th century (Thomas, 2006, p.29). The rising demand for paper in the 17th century forced Dutch paper producers to open paper mills outside the Netherlands. In different places they continued to use the coat of arms of Amsterdam. In the 18th

century most of Dutch paper was made back in the Netherlands. The production was much higher than before and the paper could be exported (Douwes Fine Art (Amsterdam), 2005, p.152).

If the paper was actually bought in Amsterdam, it is not certain. Since 16th century there were few paper mills operating throughout Danish-Norwegian kingdom. Interestingly, coat of arms of Amsterdam was used in 1707 by the Strandmøllen paper mill, north of Copenhagen. The crowned lion holding an axe, was used as a watermark of a paper mill near Christiania (modern-day Oslo) which between 1698 and 1717 was owned by Gerhard Treschow (Voorn, 1959). The watermark of this producer can be seen on the pages of one of the ship books of the frigate Lossen.

To write on other surfaces than paper, chalk was used. There were 10 little pieces found on the frigate Lossen (Molaug & Scheen, 1983, pp.257–258).

The writing utilities were kept in a wooden shrine. Although two such finds from the frigate Lossen (find number 829 and 1473) most likely belonged to officers, the similarities between them suggest that everyone who wanted to conduct any writing activity would have a 'writing shrine' (Fig. 47). The content of boxes would vary depending on its owners wealth.

The first box found on the frigate Lossen is made of beech. It is 22.4 cm long, 15.6 cm wide and 7.3 cm high. It was painted gray and green with the 'AB' mirrored monogram on the lid. The box could be locked with a little fitting in the front. The inner space was divided into four compartment: one long and taking half of the boxes width and three smaller ones which were square in shape and took other half of the box. First compartment was design to hold an inkpot. It was covered with 0.8 cm thick lid which had a hole 2.55 cm in diameter. The middle compartment was covered with a lid with a little knob. The last compartment was originally holding a sand container. The full content of the box is as follows:

- remains of cloth
- four slate pencils
- one piece of red sealing wax
- one piece of black sealing wax
- a lump of red sealing wax
- a tweezer (7.75 cm long, 6.09 cm wide and 4.05 cm thick)
- a button with a shaft
- two buttons without a shaft
- 392 pins
- five forked bone tools
- a nutmeg

The 'inkpot compartment' contained:

- a piece of sealing wax, a seal
- a pencil
- a cork
- a piece of silver chain
- a half of a glass bead
- a collar button
- three buttons
- two buttons without shaft
- eleven forked bone tools

The middle compartment contained:

- eleven buttons
- two double buttons
- one pin

The content shows that the owner used the box to store not only writing equipment but his little possessions too (Molaug & Scheen, 1983, pp.258–259).

The second box was not fully preserved. It is made of oak and measures 25 cm in length, 8.7 in width and 5.9 cm in height. The box can be closed with a sliding lid. The inner space is divided into 3 compartments: one long and two small, square ones. These two smaller ones originally contained a sand container and an inkpot. Inside the second one is covered with a lid with a whole which is 1.9 cm in diameter. Under the lid there is a fitting that used to secure an inkpot. Although one of the ends was broken allowing foreign objects in, it seems that the content of the box is original. It contained:

- four pistils in various length
- two pencils
- a graphite for a slate pencil
- a seal
- a piece of whetstone (3.9 cm long, 1.35 cm wide and 1 cm thick)
- a small stone with a square cross-section (1.5 cm long, 0.8 cm wide and 0.6 cm thick)
- twelve brass pins (2.1 cm long, 0.15 cm in diameter, measured at the head)
- two brass wires (First: 0.15 cm in diameter and 2.6 cm long, Second: 0.15 cm in diameter, S-shaped, 1.3 cm long)
- a bone needle with flat end (7.4 cm long, 0.4 cm wide and 0.7 cm thick)
- wooden pieces that were interpreted as toothpicks (7.6 cm long, 0.5 cm wide and 0.2 cm thick)
- remains of a small oval box containing an end piece of a spool (6.3 cm long, 3.55 cm wide, due to decomposition the original height cannot be determined)

The content of this ‘writing box’ also shows that it was used to store more things than just the writing equipment (Molaug & Scheen, 1983, pp.262–263).

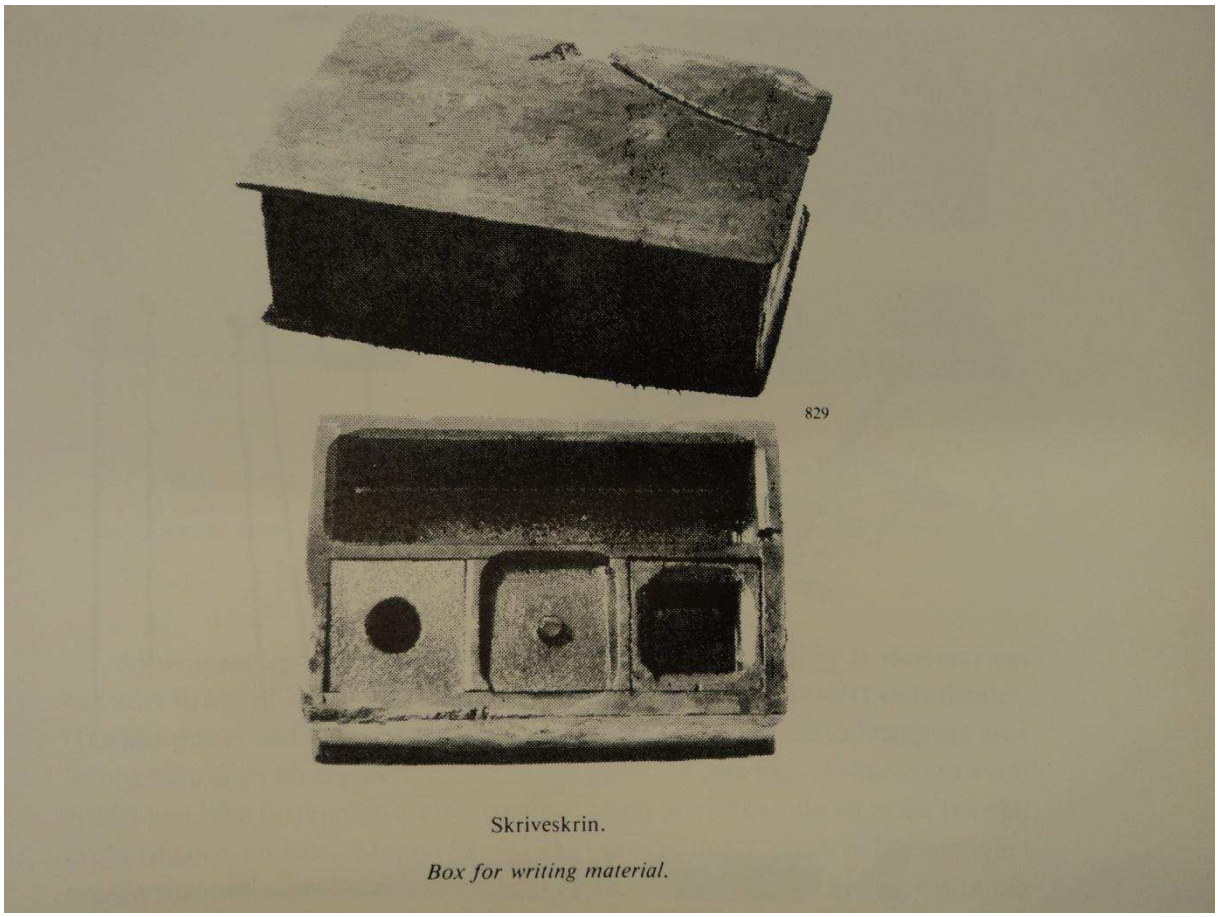

Figure 47 – Box for writing utensils recovered from the frigate Lossen (Molaug & Scheen, 1983, p.259)

4.5.8 Fishing

Of how much time did sailors spare for fishing during their leisure time is not known. There are few artefacts that show that till certain degree, fishing was practised on board Danish-Norwegian and Swedish ships during the Great Northern War.

A boat-shaped wooden mould to cast lead sinkers was found on the frigate Lossen (find number 1471). It is 13.2 cm long, 4.5 cm wide and 6.9 cm high. There are three sinkers that could have been made in this mould (i.e. find number 1349). Their size is ca. 6 cm in length, 3 cm wide and 3 cm high (Molaug & Scheen, 1983, p.302). Very similar boat-shaped lead sinker has been found on the ship Prinsessan Hedvig Sophia (find number ID 634). It is 5 cm long and 2.2 wide. While the Lossen sinkers have one hole at one of the ends, the one from Prinsessan Hedvig Sophia has two holes.

This boat-shaped sinkers could have been used to fish mackerels. Weibust gives a early 20th-century description of how it was done in the North Sea. He quotes Sternvall:

'... Meantime the skippers had dragged out a mountainous array of tackle, fishing lines wound round small square wooden blocks. Each line had a two-kilo boat-shaped sinker with peg and a couple of *hooks with gut at the "stern". Linus took charge now and we rigged up long poles from the mizzen* rigging with two trolling-lines on each pole and half a dozen lines over the taff-*rail...'* (Weibust, 1969, p.118).

Other interpretation indicates that the sinkers were attached to fishing nets (Auer, 2012, p.41)

There were also seven other sinkers of different types found on the frigate Lossen. Six of them are slightly curved cuboids with a hole on each end. The length varies between 8.45 and 14.2 cm. One (find number 500) is made of soapstone and is 7.2 cm in long, 6.4 cm wide and 3.4 cm thick.

There were two sinkers found in the 'Arne' chest and one in the 'Jørgen'. This could mean that the owners was a fisherman. Whether fishing was done individually or belonged to crew's duties can not be clearly answered. Certainly the French ships of the 18th century carried official fishing equipment to be used by the crew. Also a report from 1742 proves that it was practiced in the Swedish navy (Auer, 2000).

4.5.9 Hygiene

There are two types of artefacts directly related to the hygiene onboard: combs and razors. Eight combs were found on the shipwreck of the frigate Lossen and one on Prinsessan Hedvig Sophia. All of them are of the same type. The combs are rectangular with the teeth set on two opposite edges. One side, on which the distance between the teeth was bigger, was used for combing. The other with the teeth set more densely was used to remove lice. Five of the combs from frigate Lossen were made of horn and two made of bone (Molaug, Svein & Scheen, Rolf, 1983, pp.250–251). The comb from the ship Prinsessan Hedvig Sophia could be made of either bone or horn (Auer, 2012, p.40; Molaug & Scheen, 1983, pp.250–251).

The comb from the ship Prinsessan Hedvig Sophia (ID 609) is 6.5 cm wide on the only one original edge. Its length is difficult to determine. The preserved element is 2.5 cm long, with five teeth on one side and six broken teeth on the other (Auer, 2012, pp.40, 67). Horn combs from the frigate Lossen are on average between 4.7 and 5.15 cm wide. The length cannot be measured. The biggest of the combs is 8.7 cm long and 5.2 cm wide. All the combs share the same thickness between 0.2 and 0.25 cm (Molaug & Scheen, 1983, pp.250–251).

There are two combs found on frigate Lossen which are made of bone. They are of the same type and share the size of the horn combs. One is: 8.3 cm long, 4.8 cm wide and 0.2 cm thick, and the other: 4.6 cm long, 4.55 cm wide and 0.3 cm thick. Both are fine toothed on both sides (Molaug & Scheen, 1983, p.252).

One comb (find number 1406) has teeth only on one edge. It looks as originally there were teeth on both opposite edges. According to the interpretation the last teeth were removed after the edge lost too many teeth to serve its purpose. The measurements of the comb are: length 7.4 cm, width ca. 6 cm, thickness 0.2 cm (Molaug & Scheen, 1983, pp.250–251).

The remains of razors are the second indicators of the hygiene standard onboard the ships. One wooden handle has been found on the frigate Mynden (find number 1995/428-47). It is 14.7 long, 1 cm wide. There is a groove on one edge in which the blade was secured. One end is solid, while on the other, where the blade was originally mounted, the attachment consisted of a brass rivet can be seen. The blade has not been found. This simple razor with wooden handle is interpreted as belonging to a sailor (Auer, 2000).

Similar razor has been found on the frigate Lossen (find number 1065). Also in this case the blade is missing. The handle is oval in the cross-section. It is 14.35 cm long, 1.3 cm wide and 1.1 cm thick. The 11.6 cm long groove stretches on one edge. The blade's attachment consists of round, brass fitting with an iron axis on which the blade would rotate (Molaug & Scheen, 1983, p.252).

During the excavation of the Swedish ship Fredricus in Marstrand a very interesting find has been recovered. In appearance it was a shaving brush, but the analysis of the substance found on it indentified it as tar (Bergstrand, Forthcoming). Tar in the maritime context was commonly used in seamanship work. Today it is also used as an ingredient in pharmacy (Encyclopaedia, 1984, p.742). There are no records that would prove that already in 18th century sailors used tar as a cosmetic.

Only one artefact has been found that could be interpreted as a mirror. The find 3253 from the frigate Lossen was 12.7 cm in diameter and 0.25 cm thick. The glass element was found without a frame (Molaug & Scheen, 1983, p.252).

4.5.10 Sleeping

The limited space on board was the decisive factor of how things were organised. To use the available space to maximum sailors slept in hammocks.

The only hammocks known from the shipwrecks of the Great Northern War come from the frigate Lossen. The wooden elements could be interpreted as hammocks' spreaders due to pieces of a rope still residing in one of the holes.

Some of the spreaders are semicircular, some crescent-shaped and others straight (Fig 48). The first two groups have holes drilled in the irregular distance, 1 cm to 2.5 cm from the curved edge. The holes are 1 to 1.4 cm in diameter, and their number differs. One spreader has six holes, while the rest ten to twelve. The straight spreader is 40 cm long, 6 cm wide and 1.5 cm thick. The holes on its ends are bigger than the rest (Molaug & Scheen, 1983, pp.112–113).

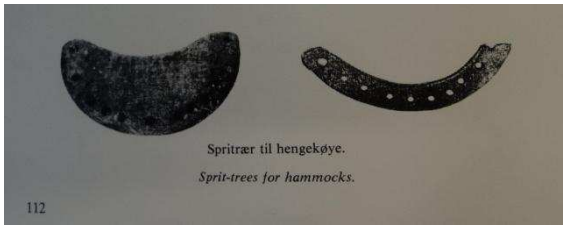

Figure 48 – Spreaders recovered from the frigate Lossen (Molaug & Scheen, 1983, p.112)

Figure 49 –Spreader recovered from the French ship Dauphine (L'Hour & Veyrat, 2010)

Very similar spreader was found on the shipwreck of Dauphine, which sunk in 1704 (Fig.49). This find allowed Christine Lima and Claude Brissaud to make a reconstruction of an early 18th-century hammock (Fig.50) (L'Hour & Veyrat, 2010). It can be assumed that the Danish-Norwegian hammock looked similar.

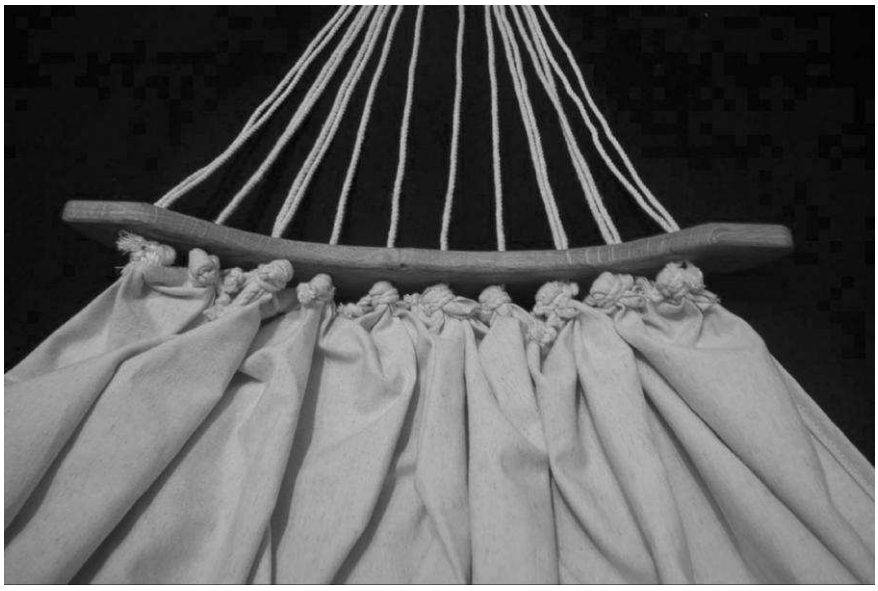

Figure 50 – Reconstruction of the hammock based on the spreader found on the French ship Dauphine, made by Christine Lima and Claude Brissaud, photo: Christine Lima (L'Hour & Veyrat, 2010)

The variety of the spreader types led Svein Molaug and Rolf Scheen to the conclusion that the hammock must have been brought on board by sailors themselves. This is due to the lack of standardized form of the hammocks (Molaug & Scheen, 1983, p.112). Indeed, many hammock are present in the inventories of deceased sailors' possessions.

5. Discussion

5.1 How were sailors dressed and how did sailors look like?

In the lack of textiles preserved in the archaeological material, the information provided by the historical sources is indispensable. In 'Fra busseronne til matroskrave' Per Bøgh tried to show clothes of a sailor from 1710 (Fig.51) (Bøgh, 1999, p.35). The basis for his drawing were Niels Trosner's images of sailors in the diary (Fig.52). The reason why Bøgh decided to depict a sailor in a red jacket and black trousers is questionable.

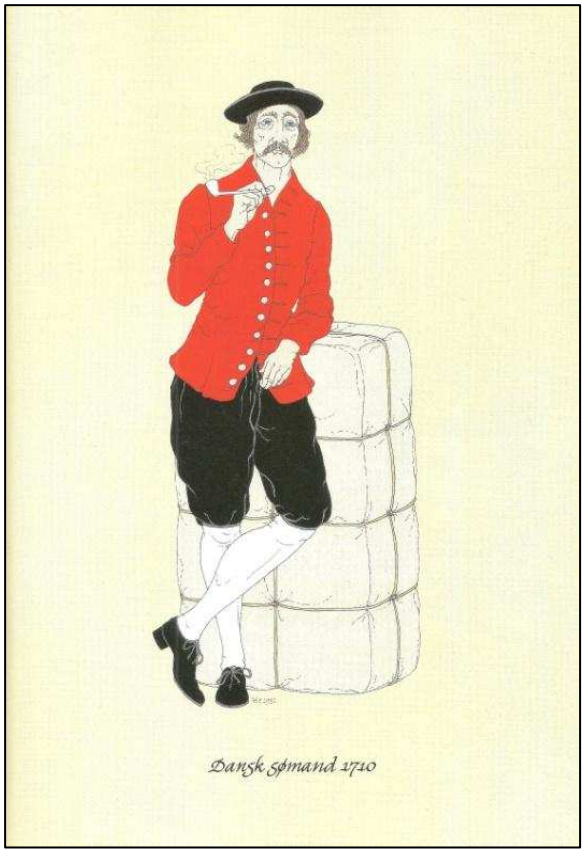

Figure 51 – Danish seaman ca. 1710, drawing by Per Bøgh (Bøgh, 1999, p.35)

Not every item in the lists of auctioned possessions is supplemented by any description, but in many cases there is an information what was the colour of a garment or what it was made of. Jackets (tröye) were made of: wadmal, wool, linen or sailcloth. The most common colour was grey. It is mentioned six times in the lists and probably the jackets made of sailcloth were also grey. Four times jackets were described as brown. One of them was made of wadmal. Other colours mentioned are: white and blue. Each of them appears in the list only once.

Sweaters (u*nder tröye*) are not often described. Only three of them contain an additional information. One of them was blue, other was white and the last one was red. Under this garment a vest (*bröstdug*) was worn. Three examples give following colours: blue, white and the last one was described as striped. Shirts, which was worn under

Figure 52 – Danish sailor wearing red jacket, depicted by Niels Trosner (Trosner, 1713)

the vest, stand in the lists simply as shirts, with no descriptions.

Trousers are of big diversity. Similarly to jackets they were made of wadmal, linen, broadcloth or sailcloth. The example of sailors clothes given by Degn and Gøbel mention also a pair of trousers made of leather (Degn & Gøbel, 1997, p.180). Three of them are mentioned to be grey. Three others as made of sailcloth were probably also grey. This makes this colour the most common. Four pairs of trousers were brown and only one pair was black. No red trousers are mentioned, but in the Trosner's diary few images show a sailor wearing them (Fig.10 - D,I,J).

Underpants were, in one case, made of canvas. Two pairs of underpants were blue. Socks are once described as English and once as black and knitted. Stockings in four cases are brown, and in three cases gray. Only once a list contains a pair of white stockings. As the land excavation from Copenhagen show, the possibility that stockings and socks were also of other colours should not be excluded (Borake, 2012).

Sailors' accessories were: hats, caps, nightcaps, scarves, handkerchiefs and mittens. There is only one hat that is described as black and one is English, which mean a tricorne. The other headwear is not described. The scarves that sailors wore on their necks also lack descriptions. Only three examples mentioned were blue. Also one handkerchief is blue. There is one pair of mittens that is said to be grey.

Sailors' wardrobe, in majority, consisted of old clothes. The list of possessions of deceased Constabel Maat puts an emphasis on the condition of his garments, stating that his jacket and his trousers were totally torn. There are two factors that had an influence on the state of sailors' clothing. First is the fact that they were drafted from the lower class. The second is the sailors' hard work itself.

Even though sailors were poor, they certainly were not sloppy. In fact, they did care about their appearance. Both, historical and archaeological sources show that seamen tried to mend their clothes and prolong their use. In the list of auctioned things of deceased Jørgen Christensen from Hamburg there are sewing utensils, and in few other cases there were pieces of cloth mentioned. They could probable be used as patches on clothes. The finds from shipwrecks prove that many sailors had their sewing kits with them. Mending clothes is then reflected in the historical documents and in the archaeological finds.

The similar applies to sailors' footwear. Many of the sailors whose possessions have been listed had sole leather that could be used to repair their shoes. The shoes found in the archaeological material show that repairs were often needed and therefore conducted.

In the auction lists shoes and boots are always described only as new or old. The archaeological material shows that they were black and made of leather. Also Trosner illustrating sailors gives them black footwear. But black was probably not the only colour of shoes. During the excavation of the ship Dauphine which sunk in 1704 off Saint-Malo in France, a brown leather shoe was found (L'Hour & Veyrat, 2010).

The information found in the historical sources is not enough to produce a full image of an early 18th-century sailor of Danish-Norwegian Navy. It gives colours and materials of garments but does not tell anything about how did they look like in terms of shape and cut. In search for this information of certain value are the iconographic sources. Naturally there is Trosner's diary which depicts contemporary sailors. Another source can be a relief from the Rosenborg castle in Copenhagen, 'Fidelitas havende i de*n ene hånd en bog at enroulere matroserne*' (Fig.53). It shows sailors being enrolled on the day of 16th December 1704.

Figure 53 – Relief '*Fidelitas havende i den ene hånd en bog at enroulere matroserne*', Rosenborg castle, photo: Rosenborg (Barfod, 1997)

Applying the information about colour found in the historical sources the sailors would look as follows (Fig.54):

Figure 54 – Danish-Norwegian sailors in 1704, based on the relief from Rosenborg castle, Edgar Wróblewski (2012)

The colour configuration of the clothes is a proposed possibility. Naturally sailors could dress differently within the same range of colours. The composition of colours used by the Danish-Norwegian Navy sailors would be:

Jacket:	grey, brown, white, blue, red[14]
Sweater:	blue, white, red
Vest:	blue, white, striped
Trousers:	grey, brown, black, red[15]
Stockings:	grey, white, brown,
Hat:	black
Scarf:	blue

The tones of the colours can not be determined. Considering the long period of usage, newer clothes were probably more vivid and older ones more pale.

The possibility that some sailors wore garments of colours not mentioned above should not be excluded. The question whether sailors wore red, and how popular was this colour is difficult to answer. On one hand Trosner depicts sailors dressed in red trousers or red jacket, but on the other hand the only red garment mentioned in the auction lists is a red sweater of sailor Jan Pettersen. Can Trosner's choice of colour be a result of limited amount of his colour pencils?

It seems that if sailors' clothing is in majority gray, brown and blue, the presence of a red garment would be most likely mentioned in the auction lists as something distinctive. It appears that this colour was popular among officers during the Great Northern War, and adopted later for the new officers uniforms (Borg, 1974, pp.17–19). It is worth noticing, that Trosner depicts officers wearing red as well.

The details such as the type of buttons, which are in big quantities depicted on sailors' garments, naturally come from the archaeological research. Different types were used for different purposes. They were also a symbol of sailors wealth. The mentioning of a silver button in the list of possessions of deceased seaman Bioun Bouresen from the frigate Mynden indicates that such objects were of higher value. More common among sailors were pewter buttons of the same kind. This pattern was used also in the later periods (Grølsted, 1985, p.47), and interestingly, the same type of button with the similar star or floral ornament, among other, modern designs, is still in use on the Norwegian national costumes (Fig.55).

[14] Few sailors depicted by Trosner wear red jackets.
[15] Sailors wearing red trousers are depicted in Trosner's diary.

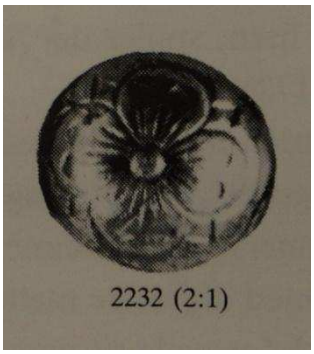

Figure 55 – Left: Button recovered from the frigate Lossen,
Right: Button used on the traditional Norwegian costume today.

Interestingly nine out of ten sailors on the relief wear shoes, while only one of them has boots on (Fig.53). Similar proportions can be seen among the archaeological finds and in the inventories of the auctioned sailors' things.

The relief in the Rosneborg castle gives also an additional information. It shows that sailors wore long hair and their faces were shaven. This information is only partially confirmed by the images produced by Trosner. His sailors indeed wear long hair, but the level of detail in the presentation of their faces makes it difficult to see if they were shaven or had any facial hair. Long hair were typical for sailors and peasants of the era. In the archaeological material combs and razors are present.

One could ask whether the collection of objects found in the chests of deceased sailors really represents their everyday clothing. There were wigs found in two of the inventories what could suggest that these were sailor's 'Sunday best'. In fact, there is no information how often sailors had access to their chests. If there were any restrictions and sailors had admissions to their possessions only on certain days that could prove this idea.

On the other hand, it is more likely that sailors had constant access to their chests. It was in captains' and officers' interest, that sailors changed wet clothes and kept dry. An ill sailor was less efficient, and more importantly could infect the rest of the crew. Taking this into account sailors must have had free access to their chests and the garments found among their possessions represent their everyday fashion.

5.2 Who were the sailors?

The key element in the discussion about the social structure aboard the ships of the Danish-Norwegian navy during the Great Northern War is the analysis of the drafting system. As it has been previously mentioned in the chapter 2.3, the navy was interested in enrolment of recruits who already

had some seamanship experience. The introduction of the new enrolment system in 1703-1704 had a decisive role in influencing social structure of crews. This influence can be seen on two levels: 1. Sailors' ethnicity, and 2. Sailors' background.

Prior to the introduction of the enrolment lists, there was balanced number of sailors enrolled in the three mentioned regions: 35% in Denmark, 35% - in Norway, and 30% in Hamburg, Bremen and the Netherland together. After the 1703-1704 reform the dominant number of sailors enrolled in Norway can be seen. The explanation of this phenomenon is twofold. While Vigeland talks about virtues of Norwegian sailor who were preferred for their excellent seamanship and ability to deal with boredom on the ships (Vigeland, 1953, p.217), Degn and Gøbel point out that there was constant emigration of the Danish sailors, who travelled to the Netherlands to avoid service in the navy (Degn & Gøbel, 1997, p.156).

How is the dominance of the Norwegian sailors reflected in the archaeological material? Many of sailors' possessions are decorated with the karvescurd pattern. It could be seen, for example, as the ornament on wooden boxes, a spoon or a pipe case. Molaug and Scheen gave two interpretations to the karvescurd pattern. In first one, they linked it with the Norwegian folk art. In the second one they associate it with the unique sailors' culture arguing that this ornament has no parallels on similar types of object in the land context. Considering the high number of the Norwegian sailors aboard Danish-Norwegian ships, these two interpretations are a coherent explanation. Sailors would use the ornaments they knew from their homes, and apply them on their objects. As Norwegians were in majority this pattern could be associated with sailors as a group.

The second aspect of social structure influenced by the new drafting system in 1703-1704 is the background of new recruits. It is worth reminding that Danish-Norwegian seamen were forced to sign the navy's enrolment list to be able to make their leaving of their work at sea. This provided the navy with merchant fleet sailors, fishermen, boatmen, pilots and people of other maritime professions. All of them between the age of sixteen and fifty. Both, the age and the background is reflected in the archaeological material. For the age testifies the analysis of the shoe sizes, among which the majority cluster between sizes 40 and 43.5, which represents the sizes of adult men (see table 5, page - 58 -).

The information about sailors' background can be found among their possessions. Fishing sinkers found in the sailors' chests from the frigate Lossen would suggest that they belonged to fishermen. In case of the lead sinker found on the Swedish ship Prinsessan Hedvig Sophia such interpretation is difficult to make. As the excavation report states, that the sinker was found deeply buried in the ballast (Auer et al., 2013, p.41), with no better archaeological context it could be both: a personal belonging or the ship's equipment.

Many of the writing utilities and the example of sailors like Niels Trosner are difficult to associate with only one path of seamen's life. The skill of writing suggest a presence of merchant fleet seaman who used writing in his everyday 'paper work'. Most likely sailors who served as navigators and pilots would also know how to read and write. The same applies to the presence of books in some

of the deceased sailors' inventories and the small book buckles in the archaeological material. From the fact that some of the sailors brought books with them can be concluded that this few could read. Taking the list of possessions of Jørgen Christiansen it appears that only the psalm book and the prayer book are outstanding. The rest of his possession is not different from other sailors', containing clothes and hammock. The same example can be seen in the list of Jan Mogensen's possessions, who brought aboard a Dutch book. It appears that in this regard story of each sailor should be discussed separately. There is no reason to believe that all the sailors were illiterate, because there is evidence of many who could both read and write. Trosner himself testifies for that. How common was this skill among sailors can not be said with certainty, and therefore could be the subject of further study.

At first sight sailors did not posses many things. In the historical sources these are in majority clothes. Few mentioned items and many more archaeological finds show that the number and category of items that sailors decided to take with them on board a navy ship was limited to the most necessary things. The important factor of this was the limited space on board, and as dry clothes were certainly in constant need, it appears logical that garments dominate the lists of deceased sailors' possessions. The collection of the archaeological finds show that most of the other sailors' possessions were related to their work as a Navy sailor. This has been pointed out by Murphy, who said that: 'Normally aboard a vessel during a voyage there is little activity not directly related to ship operation and mission objective. The nature of activity aboard would vary according to the purpose of the voyage' (Murphy, 1983). At this point it is worth reminding that the Navy required from the sailors to be equipped in spare clothes, a hammock and a blanket and all tools needed for their service (see chapter 3).

Sailor's possessions were stored in a sea-chest, which he shared with a fellow-sailor. With only three chests found in the archaeological context it is difficult to say if these containers in any way reflected owner's personality. The historical sources only once mention that a chest was made of pine and did not relate to its size or shape or any decoration. It is interesting that slightly younger chest from Fanø (see chapter 4.1) carries painted ornaments. Also in the ethnographical study of Knut Weibust, the information can be found that sailors spent much time decorating their chests (Weibust, 1969, pp.79, 108–113). With no more archaeological material, than available today, the question whether chests of Danish-Norwegian sailors were decorated or not, and whether the decoration reflected sailors personality remains open.

The selection of sailors' possessions may suggest two things. First, that as the seamen with experience, they knew what they would need, and to these few things they limited their baggage. And second, that sailors saw their service in the Navy as something temporary. After all, the official term for service was one year long. Could this be, that knowing that all the discomforts will be over within a year, a sailor gathered only the most needed things with him, leaving the rest at home where he hoped to return? The analysis of sailors' possessions seems to prove that. The *stÿrmand* Christian Rasmusen, who served on the frigate Mynden, beside his clothes, had sea charts, two compasses, a

broken abacus, and a brush to clean a pistol. Also sea-chests from the frigate Lossen do not contain any redundant things. There are mostly: tool handles, buttons and dishes, to name few.

Sailors did not feel helpless. Bergersen recalls an example when sailors fought for their rights. They sent a letter to the king himself demanding salaries to be paid while they were accommodated on land. They signed 'round robin'[16] and trusted their quartermaster to deliver it. Although the king did not fulfil their demands completely, offering just half of the salary for staying on land, the story shows that sailors were considered a valuable material of the navy, and therefore not worth ignoring (Bergersen, 1953, pp.223–224).

On this stage the discussions about the characteristics of sailors remains on the general level. It shows that the creation of a portrait of an average sailors of the Danish-Norwegian Navy during the Great Northern War would be based on a seaman from Norway. But can the more detailed analysis of sailors' possession reveal more information about this average sailor?

Among possessions that are systematically repeated in the lists are the rolls and packs of tobacco. Together with the high number of pipes found on the shipwrecks it testifies for the scale of tobacco consumption among sailors. Olav Bergersen suggested that this may have been one of very few joys that sailors had during their service. It is difficult to state if all the sailors were smokers, but in this discussion it is correct to assume that an average seaman was one. Bergersen argues that for Norwegian sailors tobacco was more important than food. He also recalls that Sailors depicted by Trosner always carry a pipe (Bergersen, 1953, p.223). The pipes sailors used were mass produced Dutch or English products. The condition of many and dating show that they were used for many years.

Trosner, in his diary, discusses sailors' beliefs and superstitions. He describes in detail sailors' stories about ghosts and throughout the narration refers to death being invariable part of seaman's life. In the archaeological material the spiritual bonds are represented by the book buckles that were identify as being part of psalm books. Also the lists of auctioned things show the presents of psalm books about the possessions of common sailors. It appears that sailors were religious people. This information finds its contradiction in one of the articles in the *Søkrigsartik*ler, which anticipates punishments for sailors who did not attend religious ceremonies. In the discussion about sailors' beliefs, each one of them should be considered individually. Similarly to the people today, sailors of the early 18th century were of different characters. As an example should serve a spinning dice from the frigate Lossen. As mentioned in the chapter 4.5.5, it has a screw lid and is hollow. That allowed the owner to attach a little weight inside and manipulate the result of the spin against the rules of 'fair play'. Even if the owner was religious, he was not always honest. To avoid gambling and all its

[16] Round robin is a method of signing a document or a letter not under it but in the circle around it, as to disguise the order in which it was signed. This method was used to avoid the punishment for those who signed a letter first. A letter which may have upset the recipient (Weibust, 1969, p.239) .

consequences playing dices was forbidden (Molaug & Scheen, 1983, p.282). This could be the reason why not many were found, and considering the sever punishments it is still surprising to find few. Maybe they were used in other games together with other game pieces found on board the shipwreck.

As mentioned, different characters met on board navy ships. As the precaution all three sea-chests found on the frigate Lossen had locks. Knut Weibust describing sailors' chest of the later period, points out that they did not have locks to show the trust to the fellow crew members. He recalls that sea-chests secured with a lock were usually those from which content was missing (Weibust, 1969, p.191). It appears that Danish-Norwegian sailors of the Great Northern War had to find another way to show each other trust, and although theft was strictly punished, securing their chests with a lock was still a good idea.

There is a feature that is shared by many sailor. There are many examples of sailors' resourcefulness and ingenuity. One of the best example is a pipe from the Swedish ship Prinsessan Hedvig Sophia. It shows how a sailors assembled a fully functioning thing out of few available objects he had (find number ID 621). Shoes carry signs of mending, and the sewing equipment proves that all kinds of stitching were often done. Sailors were most likely to repair things than buy new ones. The resourcefulness is the result of the conditions they had to live in. Firstly, it was difficult to buy spares at sea. And secondly they would probably have not enough money to buy a new thing every time the old one got damaged. In Trosner's diary it is apparent that sailors were rather poor people. He often mentions sailors' financial troubles (Bergersen, 1953, p.223).

It also shows that sailors had high craftsmanship skills. This is reflected in many objects. Certain attention deserve artefacts that have been interpreted as made on board by sailors in their free time. These are pipe cases and spoons. On the example of the objects made by sailors on board ships it can be stated, that this tradition of handcrafts described by Knut Weibust, can be traced back at least to the beginning of the 18th century (Weibust, 1969, pp.110–115).

5.3 Life on board

It seems that for the crews recruited from seamen, sailing was not a problem. The difficulties that sailors had to deal with were related to the rules and living conditions provided by the Navy. The ship's environment with no privacy and in constant coldness, dampness and darkness below deck were far from luxurious. Adding to this the strict rules set in the *Søkrigsartikler*, the life on board seems to be far from one that sailors' would wish for. In the light of this information it is surprising that some dose of optimism can be seen in Trosner's descriptions of the life on board (Vigeland, 1953, p.248). Can the archaeological finds and the historical sources tell us more about the living conditions on board a naval ship?

The high concentration of men on the space limited to the size of the ship, could affect health problems or even death. Among many diseases, infectious ones were of the greatest threat (Lavery, 2006, p.201). In the years 1710-1711 Copenhagen and other regions of northern Europe witnessed the bubonic plague (Frandsen, 2010). To limit the danger of an epidemic outbreak on board naval ships, few precautions were taken. Niels Trosner refers to the plague very often. For example, on the 22nd of July 1711 he writes that 'those who get ill in the evening are dead in the morning, and those who get ill in the morning will be dead by the evening'. The entries in his diary covering next two days describe countermeasures introduced by the new naval order. According to this order sailors' hammocks had to be kept in a cargo net suspended under one of the yards and ventilated during the day. Another precautions was to steam decks with frankincense. This had to be done every evening and every morning. Trosner often writes: 'we smoked our ship again' (Niels Trosner, 1923, pp.58–59). Using smoke against the plague was not a treatment used only on naval ships. Trosner describes that this was also done on land, where sailors' living quarters had to be cleaned and smoked before new seamen would arrive. He also says that clothes which were not washed had to be given away to the 'plague-wagon', which would take them outside the city and burn (Niels Trosner, 1923, pp.80–84). Back on board, the third element of the '*order for the health's sake*', as called by Trosner, involved changes in sailor's diet. On Mondays, Wednesdays, Thursdays and Saturdays sailors were not given beer to drink with their porridge for breakfast. They were also not allowed to have any drink before eleven in the morning. The last precaution was to limit crews exchange between ships (Niels Trosner, 1923, p.58).

Among his other duties, it was quartermaster's responsibility to keep the ship clean. His work had to be conducted on two levels. First was to ensure that the ship was clean and neat. Second level concerned the crew. The quartermaster had to conduct regular checkups for vermin and lice. Moreover, sailors concerned about their health and life kept an eye on the hygiene of their fellow crew members (Molaug & Scheen, 1983, p.250).

There are not many object, which would reveal how did sailors take care of their health. In the 'hygiene' category of finds there are only combs and razors. The combs with their two sets of teeth show that sailors attempted to get rid of lice. Shaving, for which the evidence is visible in both, the archaeological and the historical context, must have also help to stay clean.

After all, the most common practice to remain healthy was changing wet clothes and keeping warm after a watch was over.

Sailors worked according to the six-watches system, four hour on and four hours off, with the exception of the platfoden watch (see chapter 2.5). Their work was characteristic for the sailing a ship of the era. The subject has been previously discussed in the 'Seamanship in the age of sails - an

account of the ship handling of the sailing man-of-war 1600-1860, based on contemporary sources' by John Harland (Harland, 1984).

The basic tool of their work were knifes. As the 'most indispensable tool' (Weibust, 1969, p.395) they should be seen as the second, after a smoking pipe, symbol of a sailor. There has been found big variety of knife handles on the shipwrecks of the Great Northern War. This diversity shows that a knife was a highly personal item. This may be the reason why knives are not present in the inventories of deceased sailor's possessions.

Another tool often used by sailors were awls. They were handy in all kinds of rope-work. Also in this case, the diversity of forms shows that they were personal possessions. The interpretation of the tools is based on the remaining wooden handles. The archaeological material consists of many of them. This is a group of finds that certainly deserve much more attention. In the archaeological publications they are collectively called 'tools'. The better analysis of these finds could eventually result in better understanding of sailors' work.

During their service, sailors were given limited time to rest. The archaeological sources give many examples of how sailors used their free time. Some of the activities were already mentioned earlier, i.e. tobacco consumption or mending clothes. Also the possibility that some of the sailors were reading or writing was addressed in previous chapter. The archaeological finds show that another past time activity were different types of games. There were dices, a spinning dice, pawns, and pins for spillikins, found on the frigate Lossen. These items created a short list of games that sailors may have played. Among the interpretations there were: draughts, mills, spillikins, and in comparison with the material culture of the earlier ship Vasa also backgammon (see chapter 4.5.5).

The only historical document which tells about the watch-below activities is Trosner's diary. The author often refers to subjects of conversations between sailors (Vigeland, 1953, p.249). It indicates that sailors spent time simply on talking. The research of later period placed storytelling or 'spinning-the-yarn' among the most important sailors' entertainments (Weibust, 1969, p.135).

There are two elements of the life on board that have not been yet addressed in this discussion. The first one is sailors' food. The issues related to sailors' diet have been discussed in the Master's Thesis written by Jens Auer. Based the information on the archival sources, he mentions that per week sailors were provided with:

527g of pork	|	or twice as much meat
992g of meat	|	
992g of dried cod	|	or the same amount of cheese
496g of butter	|	or twice as much cheese
2.89 l of groats	|	
1.44 l of peas	|	or the same amount of groats

2976g of hard bread		or 4464g of soaked/soft bread
16.663 l of beer		

Water for sailors was accessible from a container on the deck, but on the long voyages it was strictly rationed. The food was served in one wooden vessel, one per seven crew members among whom one was responsible for bringing the food from the cook and cleaning after the meal. The food was eaten on the floor of the lower deck (Auer, 2000)[17].

Slightly different information is provided by Molaug and Scheen. They say that the food was delivered by ship boys. They also provide the information that the sailors were divided into small groups by the quartermaster. Changing groups without permission was punishable. Just before the meal one of the ship boys was chosen to read a prayer. It was done next to the main mast. Ship boys shared this duty changing turns every day. It was quartermasters responsibility to keep everyone in order and decency during the meal. The lunch was eaten at 11.00 a.m. and the dinner at 5.00 p.m. or 6.00 p.m. (Molaug & Scheen, 1983, p.202)

The dishes in which food was served for the sailor and spoons the used together with other kitchen utensils has been already described earlier (see chapter 4.5.1). In this context an interesting question appears. Can the nicely decorated and better quality cutlery be associated only with the officers of a ship? The interpretation of this finds traditionally falls into the category of the belongings of the higher class. But this group of objects is very similar to the writing utensils. Although traditionally related to officers, the example of Trosner writing a diary shows otherwise. It shows that a commons sailor owned a 'higher class objects'. In this case refined cutlery should be looked at in a more individual way. The information where such object was found would naturally give a clue. For now a basic sailors' kitchenware consists of wooden spoons.

Another element of the life on board a naval ship is a sleeping condition. It was mentioned earlier that sailors slept in hammocks. Exact hammock arrangements on board Danish-Norwegian ships are not known. The beams supporting the deck of a ship, under which hammocks were suspended, did not survived. It is not sure if the hammock were hanged on the nails or if lanyards were tied to the timber. Another unknown is if the newly built ship had the nails to hang hammocks on already in place or if this was done by the new crew. It seems unlikely that the nails once placed would be removed. Brian Lavery in *'The Arming and Fitting of English Ship of War, 1600*-1815*'* gives a 14 inches (35.56 cm) distance between the nails. To maximise given space, sailors hanged their hammocks on slightly different levels. Moreover the crew was accommodated according to the watch keeping system. That placed hammocks of the sailors with the same duties but of different watches next to each other. With every second hammock empty and lashed up the watch below could have a little bit more space. This, of course, did not apply when the daily watch system was altered, i.e. when

[17] After RA,SK 521 - *Riks Arkiver, Søkrig Kanselariet* file 521 (The signature of the archival document before the reform of the State Archives in Copenhagen).

the ship was in the harbour. In such situation whole crew had to sleep below deck (Lavery, 2006, p.181).

The example of the late 18th-century French ship gives an example of other arrangement. On board the Seventy-four gun ship two sailors had to share one hammock. One seaman used it while the other was on watch (Boudriot, 1988, p.144). Both, the English and the French, arrangements were designed to use the space maximally. The similarity can be also seen in the placement of different crew divisions. Traditionally marines were always located between the officers and the sailors to lower the risk of a mutiny. To make it easier for sailors to get to their working stations they were given hammocks in certain parts of the ship. Those working on the fore-mast would sleep in the fore part, followed by main-mast sailors and mizzen-mast sailors (Lavery, 2006, p.182). The French and the English system differ in placing their sick. On the English ships they were located in the bow area (Lavery, 2006, p.181), while the French had few hammocks hanged in the mid-ship (Boudriot, 1988, p.144). A hint of how were the ill treated on board Danish-Norwegian ships, can be found in the article 175 of the Sea Articles. The article says that the sailors who were heavily or prolong ill should leave the ship in the next port of call, and return to the service when recovered (Frederick IV, 1700, pp.105–106). This could suggest that until the ship reached the harbour, a sailor would sleep at his usual place.

In the light of the previously mentioned information, it is possible to make a theoretical hammock arrangement on one of the Danish-Norwegian ships. As an example the frigate Raae will serve. The construction drawing of this ship gives the information where the beams supporting deck were situated. This gives the indication of where the hammock would have been suspended, regardless the method of attachment. Knowing that the spreaders were ca.30-40 cm long and an average man was ca. 170 cm tall it is possible to draw an average hammock suspended between the beams. It is interesting that the distance between the beams fits ideally for this purpose. One more information that needs to be taken into account is the number of the crew. The crew of the frigate Raae consisted of ca. 170 sailors (orlogsmuseet, 2012). Figure 49 shows how this information applies to the construction drawing of the frigate Raae and gives an idea about the living condition on board (Fig.56). It is worth remembering that according to the watch system every second hammock may have been empty, and it can only be assumed that the crew would place their hammock to match their duties, similarly to the arrangements on the British or French ships. Moreover, remembering that the ships' protocols mention constant insufficient numbers of sailors, supposedly there was slightly more space between hammocks then the drawing suggest.

The hammocks were used only in the night time. The exact time is not know. Lavery recalls that 'one captain ordered that this be done a quarter of an hour before sunset, one division at the time, to prevent confusion' (Lavery, 2006, p.182). The hammocks were then rolled up neatly and stored in the morning, probably between seven and eight a.m. (Boudriot, 1988, p.140).

One of the spreaders found on the frigate Lossen had number 4 carved in, and the other had a half-circle (Molaug & Scheen, 1983, p.113). This was done to help sailors finding their own hammock, both when hanged and when stored. Lavery says that also the place where a hammock was hanged carried the same symbol (Lavery, 2006, pp.181–182).

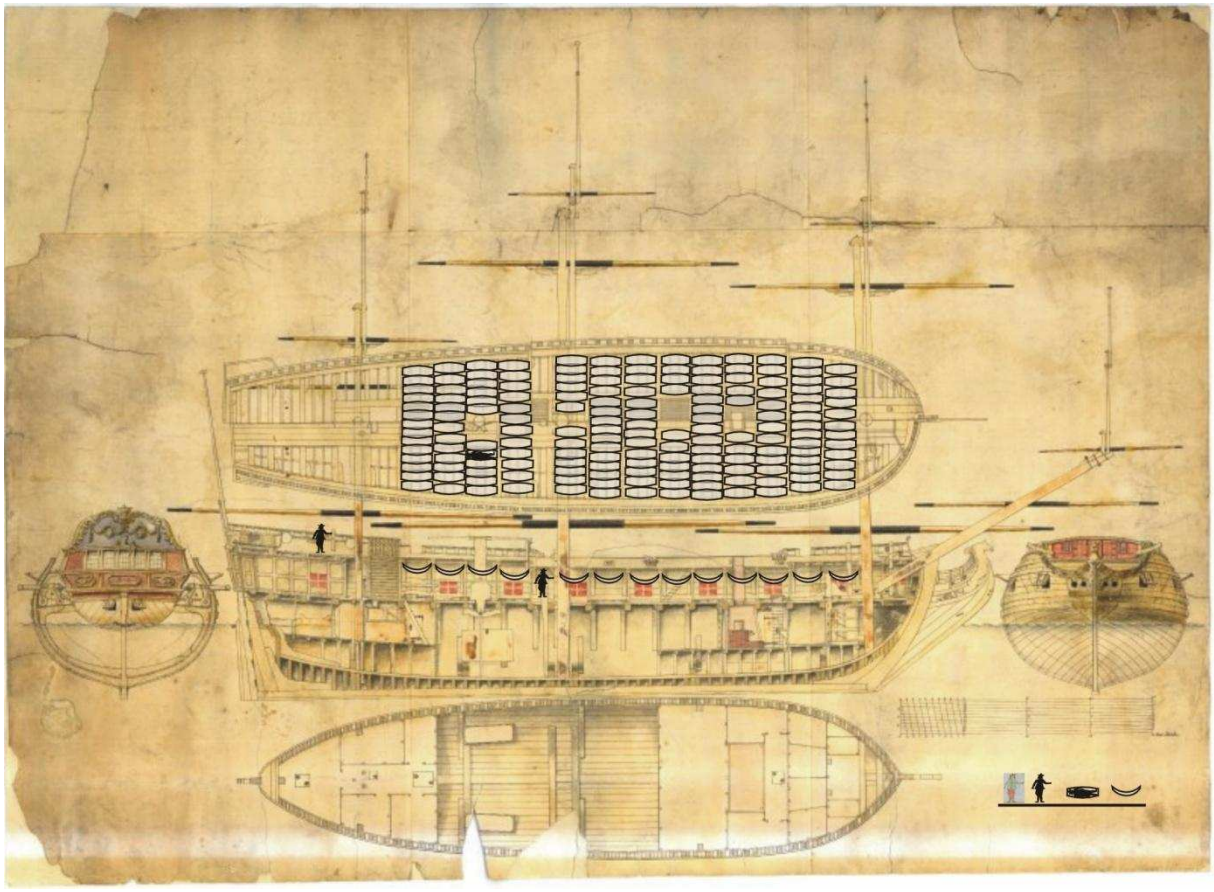

Figure 56 – Theoretical hammock arrangement on the frigate Raae. Edgar Wróblewski (2012)

The last factor that influenced living conditions on board a naval ship were the crews themselves. Knut Weibust often refer to this issue (Weibust, 1969b). In this regard the environment of each ship could be studied separately. After all the navy is not only about the number and size of the vessels but also about the people who serve on them.

5.4 How do sources supplement each other and how do they contradict each other?

Already on the very basic level of the analysis of the available sources it becomes apparent that only by taking into account both, the archaeological and the historical sources, it is possible to create full image of a sailor. The conducted research gives a good example of cooperation of the two kind of sources.

One of the best examples of the cooperation of different kind of sources was recreation of the sailors dress. In this case the information about colours and the fabrics that were used to make them was found in the lists of auctioned possessions. The cut of clothes was based on the contemporary iconographical sources. The details, such as buttons and buckles came from the archaeological material. The archaeological excavation provided also the example of stockings used by people of the early 18th century.

The cooperation between sources can be also seen in other cases. For the Ship's secretary who was writing down the things left by a deceased sailor it was obvious what a mentioned thing was. As many things changed its form throughout centuries, the archaeological sources show how these things actually looked like, how were they made and how did they function. Good example can be razors and scissors. Both can be found in the archaeological material and among listed things.

Some information can be seen directly overlapping. Among things of deceased Quartermaster Hendrich Clato a chest made of pine wood can be found. The excavation of the frigate Lossen showed that also the chest 'Lars' was made of pine wood. Overall sources support each other rather than contradict. On the other hand, in the comparison of different sources it became apparent that different kind of information can be only obtained from different kind of sources. While there is many information about the textile in the historical documents, they are rarely found in the archaeological context.

On the other hand taking into account only one historical type of sources could lead to wrong conclusions and the creation of incomplete image. Let's take spoons as the example. They are not present in the lists of deceased sailors' possessions, but in large quantities they can be found on the shipwrecks. This is one example where the sources do not overlap. The explanation of this could be that, spoons were considered very personal items. It finds a reflection in a German saying: 'Den L*ö*ffel abgeben' (to hand over the spoon), which means 'to die'. Using a dead persons spoon could be simply considered a bad luck. The historical sources also omit sailors' knives and other tools, as well as clay pipes.

The study shows that to create the full image of sailor, all possible sources should be considered. This thesis is an example where archaeological sources and the historical ones go hand in hand, overlapping and supporting each other. It is especially important while dealing with the subject

in which there is no much materials. The finds from just five shipwrecks and the lists of belongings of only seventeen sailors, is a modest representation of men of the early 18th-century Danish-Norwegian Navy.

It is worth remembering that non of the individual sources is perfect and working with them requires evaluative approach. But critique of the different types of sources and including them in the research may bring good results.

5.5 What kind of information is missing?

There are obviously many information that can not be extracted from the finds and neither from the historical sources. One of the most important aspect of sailors' lives would be their 'nonmaterial culture' and their mindset. Knut Weibust talks a lot about the importance of storytelling or 'spinning the yarn'. He refers to it as a very popular pastime activity among the 19th-century sailors (Weibust, 1969, p.135). The analysis of this stories could reflect sailors' system of values, fears and motivations. Sadly, the only information that comes from the time of the Great Northern War is the diary of Niels Trosner. His testimony shows that sailors indeed discuss things and told stories, but it is not enough to reconstruct their way of thinking. Trosner often refers to the subjects discussed by his fellow crew members. These are mostly comments on current events on the ship and other vessels (Vigeland, 1953a, p.249). Certainly the research focused on Trosner's writing and other contemporary sources, that could reveal more about sailors' mindset, would be of high value and would bring many information into the discussion.

In popular culture sailors are often associated with the shanties. As singing was an important part of their lives this image is true. Good sailor had to be a good singer at the same time (Weibust, 1969, p.134). This is another kind of information about the Danish-Norwegian sailors of the Great Northern War that is lacking.

A ship creates a cultural system (Murphy, 1983). It is also an environment where different characters constantly clashes (Weibust, 1969, pp.183–184). And although some conclusions could be based on the *Søkrigsartikler* and the Trosner's diary, it is very difficult to describe actual relations between crew members. One clue comes from an event described by Trosner in which non commissioned officers were punished for being late (Vigeland, 1953, p.255). They were whipped the same way as common sailors would be, what suggests certain degree of an egalitarian structure. Without further study this aspect of sailors' life remains just a speculation.

5.6 Encountered difficulties

During the writing process of this thesis few difficulties were encountered, which may have influenced the results. First of them was, that having access only to the finds from the ship Dannebroge, this research relied hugely on available publications. Naturally it influences the results to certain degree. The analysis of finds is based on the available descriptions. In few cases inconsistence in presenting dimensions could be noticed, in other some were simply omitted. Other risk may be the result of an information overlooked in the used publications. For example, constantly missing was the location of where an object was found. This also applies to the finds from Dannebroge, which documentation is scattered in many places. The information about location of finds on shipwreck could help better interpretation and understanding life on board. It could help better associate certain objects with certain parts of a ship and therefore connect to certain group of people.

Another encountered difficulties was finding right historical material in the State Archives. The difficulty lies in the archive's catalogue system 'daisy'. The on-line search engine shows the signature of a box and a name and type of a ship together with a date of the documents inside. This solution could be good if one would look for the information about a particular ship in a particular year. Searching for specific kind of document, as in the case of this research protocols and judicial protocols, is more of sampling, and finding wanted information may depend on luck. This is because, ordering a box with the right ship in the right period does not guarantee finding the right ship books inside. Out of thirty-five boxes only three contained inventories of deceased sailors' possessions. This raises a question: why so little list were found? It is possible that the encountered lists were from some reason written down in the regular ship protocols, while in other cases it would be done in the special 'judicial protocol' which dealt with law issues on board. For sure the Sea Articles from 1752 contained an instruction to conduct a record of all judicial administration in a book separate from the log books and the protocols (Seerup, Forthcoming). For this reason further study would require more research in the State Archives in Copenhagen and more complex analysis of the historical documents.

Working with the historical documents and the sources which were mostly in Danish, Norwegian and Swedish brought another difficulty. As the non-native speaker of non of these languages the author recognises the possibility that the results could be better if there was no language barrier. But at the same time it should be remembered that the basis for this thesis are the archaeological finds which speak for themselves. Also working with the historical documents, which mostly consisted of lists of objects required translating single words rather than grammar, and therefore brought satisfactory results.

6. Conclusion and outlook

Summing up the information gathered in the discussion, an average sailor of the Danish-Norwegian Navy during the Great Northern War was an experienced seamen. His skills and practise were the results of his background. As he was recruited from among fishermen, merchant fleet sailors or other maritime professions, he knew requirements of working at sea. Vigeland points out that not only he was an experienced sailor, but also an experienced navy personnel, due to the repeatable character of his service (Vigeland, 1953, p.234). According to his experience in the civic and the naval life, an average sailor would serve as a non-commissioned officer on board a navy ship.

Considering the dominant number of the Norwegians in the navy it could be assumed that the very average sailor was enrolled, indeed, in Norway. It is difficult to recon what was his age. Although the enrolment lists applied to the male population between 16 and 50, shoes found in the archaeological material can only suggest that he was an adult.

His luggage was highly influenced by the character of his work. It consisted of clothes and very few objects among which most were related to his service. His possessions were stored in a wooden chest which he used alone or shared it with a fellow crew member. He would keep it locked and probably use it every time he needed. His possessions were few. To the very personal belonged a knife, a spoon and a pipe. First was used in all kinds of sailorising jobs. Second, with association with few other kitchenware was used to eat. The third one, as argued by Bergersen, represent one of very few of sailors' joys (Bergersen, 1953, p.223).

This basic group of object was supplemented by a hammock, a pillow and a blanket or a duvet. These were used between 8 p.m. and 8 a.m. and gave a sailor four hours of sleep at night or twice four hours every second day, according to the watch system. Suspended in the hammock this was probably the only time in which a sailor could enjoy a little bit of privacy, and relax, even though tightly next to his was hanged a hammock of his colleague. The other time on the watch below would be spent on mending clothes and shoes, tobacco consumption, handcrafts, playing board games or, as Trosner's diary suggests, on conversations with fellow crew members. Possibly it could also be spent on reading or writing.

The wardrobe of an average sailor reflected the fashion of the lower classes of the early 18th century. It consisted of: latchet shoes, stockings, trousers (knee-long), shirt, sweater, jacket, scarf and a hat. All above would be chosen to be comfortable rather than fashionable. The clothes were mostly grey. The archaeological and the historical sources show that his clothes were in use for a long time. The average sailor would have few of this garments for change. It was in the officers interest that the crew kept dry and possibly warm to prevent any illness on board.

Surprisingly the picture of a Danish-Norwegian sailor is not very different from the image of other sailors from the same era. For example, many similarities can be seen in the comparison with a

print of a Dutch artist Caspar Luyken presenting a Dutch sailor in 1703 (Fig.57), or a 'study of a boatman in raingear' painted by Luca Carlevarijs in ca.1700 (Fig.58). There are also two French paintings, which show similar sailors' fashion. Both of them are painted by Jacques Vigouroux Duplessis ca. 1700 (Fig.59 and Fig.60).

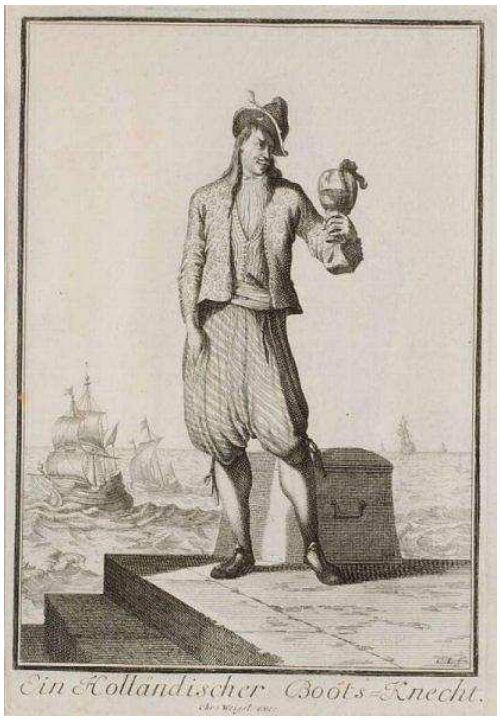

Figure 57 – Dutch sailor, Caspar Luyken, 1703 (I. Henry, 2012)

Figure 58 – Study of a boatman in raingear, Luca Carlevarijs, ca.1700 (I. Henry, 2012)

Figure 59 – French sailor depicted by Jacques Vigouroux Duplessis ca. 1700 (I. Henry, 2012)

Figure 60 – French sailors depicted by Jacques Vigouroux Duplessis ca. 1700 (I. Henry, 2012)

Not only in their appearance they seem similar to sailors of other nations. For example, many parallels can be found among the material culture of the French shipwrecks off Saint-Malo (L'Hour & Veyrat, 2010). This is not surprising considering the fact that sailors were always the group of people with the highest cultural exchange. Degn and Gøbel gave the example of multinational crews who travelled to the West Indies on board Dutch ships (Degn & Gøbel, 1997, pp.156–158). Throughout the years sailing-ship-sailors created their own subculture. The best example of the study of this subject is Knut Weibust's 'Deep Sea Sailors' (Weibust, 1969). But the period discussed in this thesis requires much more attention. This thesis could led to further research, which woul try to answer question asked by Larry Murphy in 'Shipwrecks As Data Base for Human Behavioural Studies': 'To what extent does the individual member of the shipboard subculture replicate any role analogy in the parent culture, or the shipboard subculture of other societies?'. Do Danish-Norwegian sailors have more in common with seamen of other nations or share more characteristics with lower classes of Danish-Norwegian Kingdom? Murphy argues that 'questions of this nature contribute to more general anthropological questions about the nature and extent of the influence of environment of social groups, and the efficiency and effectiveness of the organization of specialized tasks' (Murphy, 1983).

The research shows that from the combined information found in the archaeological and the historical sources it is possible to create an accurate portrait of a common seaman of the Danish-Norwegian Navy during the Great Northern War. It also shows that available material allows to work on two levels. First, creating a portrait of an average sailor, and therefore the results can be presented on a general level. And second, the analysis of the possessions of separate sailors allows an insight into lives of individuals. On both levels the results are valuable. They also contribute to better understanding social structure of a ship and on the wider-scale they bring perspective of common people of the navy who are usually hidden behind numbers of the statistics.

The thesis proves the opinion of Larry Murphy who argues for the importance of including various types of sources in studying human behaviour. Through its focus on the life of common people the thesis fits into the holistic approach of archaeology. It also fits in the philosophy of the annales school of French historians on two structural levels. First, on the 'short term – *événements*' which deals with the narratives, events, and individuals. And second with the 'medium term – conjonctures', which focuses, among others, on social aspects of the past, with the history of regions and societies (Renfrew & Bahn, 2005).

It is also a very good example of the cooperation between the archaeology and history. The study shows that only by including different kind of sources it is possible to create complete picture of the research subject. It gives an example in which different information coming from different type of sources supplement each other giving data that could not by obtained by looking only at the archaeological material or the archival documents.

Above results are based on only limited available material. Certainly, access to the finds from more 'Scandinavian' shipwrecks would enrich the results of this thesis. Of special value would be finds from the Swedish ship Kronan. Sadly, finds remain inaccessible, and the lack of relevant publication keep valuable knowledge out of reach. The same way, finds from the Danish ship Dannebroge deserve proper attention, which would lead to proper analysis and publication. Of certain value would be reassessment of the finds from the frigate Lossen. Comparing them with the field documentation and overlaying them with the map of the shipwreck could encourage new interpretations and conclusions.

Naturally there would come more archaeological material with the shipwrecks of the discussed era that may be discovered in the future. There has been no archaeological survey on a bigger scale, that would deal exclusively with the sites connected to the Great Northern War. Obvious archaeological site 'Dannebroge' lies in the Bay of Køge, and beside few limited surveys, has not yet attract enough attention to conduct full scale archaeological project. Finds from such a big ship would contribute to the study. Considering the fact that Niels Trosner himself served on Dannebroge, there would be even more direct correlation between his diary and the archaeological finds. As the Danish-Norwegian fleet stationed in the Bay of Køge during each of their conflicts, the general survey of the venue would be of immense importance to the researchers of all the eras of the Danish and Danish-Norwegian maritime history. Considering the little number of properly surveyed and excavated shipwreck of the early-modern and modern period, it becomes apparent that there is still more attention paid to the ships of the Viking era in Denmark than any other times. And it shows that there is much to be done to better understand Danish maritime past.

7. References

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