

Shipwreck OR49 and the shipping of peat around the Zuiderzee area in the 17th century

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Abstract: In this article the results of the excavation of a 17th century inland peat ship on lot OR49 in the IJsselmeerpolders are analyzed in a broad maritime historical context. Peat was the main source of energy in premodern times, and the economy of the cities of the Republic was dependent on these transport ships. Based on historical and geographical data the transport volume of peat is reconstructed and compared to other sectors of seafaring. Besides this, wreck OR49 offers a unique perspective on life on board of inland cargo ships during the Dutch Golden Age.

Keywords: Dutch Golden age, inland shipping, peat extraction, energy consumption, Zuiderzee, 17th century

1. Introduction

In the third quarter of the 17th century a storm took a peat skipper heading for Amsterdam by surprise (Fig. 1). Sudden heavy gusts of wind hit the sprit sail making the cargo ship, with peat logs stacked up to above deck level, list dangerously. While capsizing the logs spread into the wild waves of the Zuiderzee leaving a big brown stain behind. During the subsequent wreck formation process the ship transformed into an archaeological source of information. In 2014 and 2015 the well-preserved shipwreck was excavated at lot OR49 in the Flevopolder, a reclaimed land area from the former Zuiderzee or present-day IJsselmeer (Fig. 2). The site offered a fascinating insight into the life on board a peat ship. At the same time, it is an important contribution to the research on the significance of peat shipping for the development of the early modern economy in the Netherlands as will be argued in this article.



Fig. 1 Oil painting of the peat ship OR49 about to capsize during a storm by Arnold de Lange (2020). All details of the scene are based on the excavation data.



Fig. 2 Location of shipwreck at lot OR49 near Dronten, Flevoland (the Netherlands) (author: W. B. Waldus)



Fig. 3 The excavation of shipwreck OR49. The forward part of the hull is located in the forefront (photo: Groningen Institute for Archaeology).

2. Shipwreck OR49

In the context of the International Field-school for Maritime Archaeology Flevoland (IFMAF) it took two campaigns to excavate shipwreck OR49 in its entirety (Fig. 3). The ship was well-preserved and still joined together over a total length of 18 m and a width of 7.8 m. The excavation made it clear that the ship's bow was pointing in a north-westerly direction, with a 20 to 30 degrees list toward its starboard side when it settled in the mud. The port side collapsed at the turn of the bilge and fell inwards over the timbers of the hull. The stempost and parts of the forward hull were missing. However, OR49 could generally be reconstructed. A length from stem to stern of 20 m is probable. The width of the ship's bottom near the mast is 4.30 m, this is the widest part of the original ship. The width from board to board, measured on the outside of the hull, is 5.15 m. The hold of the ship near the mast is determined to be 2 m in depth. From the presence of deck knees, it was possible to infer the length of the cargo hold opening being 10.9 m. It is plausible that the cargo space extended towards the bulkheads separating the after hold and the living space forward. However, the exact position of the bulkheads and consequently the extra dimension of cargo space could not exactly be determined. Taking the position of the finds into account and the extent to which they were observed, the total length of the cargo hold must have been 13.1 m.

The shape of the hull is best described as bulky. The ship's sides, running parallel near the cargo hold, slightly curve towards the stern. The resulting rounded hull shape aft indicates a need to equip the ship with lee boards, unfortunately not found at the site location. The dimensions of OR49 as described signify that the ship-design cargo volume took precedence over maneuverability characteristics. In the cargo hold a high concentration of peat logs was still present.



Fig. 4 The hearth-plate dating 1638 features the picture of a man in a Roman-like outfit (photo: ADC ArcheoProjecten)

The construction of OR49 was dated dendrochronologically after 1630, and the provenance of the oak used for this vessel was Westphalia in Germany (Jansma 2015). Archaeological evidence suggests the launching of the transport vessel in 1638, the year mentioned on a recovered hearth-plate featuring a 17th century interpretation of a Roman soldier (Fig. 4). A lead textile-seal for sheets was marked 1664, indicating that the ship must have been operational for at least 26 years. Thanks to an abundance of ship-finds it is possible to reconstruct life on board in a fairly detailed manner. For example, a total of seven recovered tin spoons indicates what the crew-size might have been. Inland waterway ships like the OR49 could be handled with a skipper and two deckhands as a maximum, so the family of the skipper possibly lived on board also. The remaining finds in the forward living space support this proposition. Many elements of a typical Dutch 17th century household were retrieved, including a hearth, ornamental plates and tiles with and without maritime elements, children's toys, and a knife-handle crafted in the shape of a loving couple. These all indicate that a family lived on board.

Another element inferred from the assembly of finds is the standard of onboard living. Not only the amount but also character of the valuables leads us to believe that it relates to a thriving business. More specifically, the retrievals of two rummers and a so called 'kuttrolf' bottle are definitely clues for wine consumption. Wine drinking was not a common activity in the 17th century; wine glasses were not used by the working class (Waldus 2021: 213). Of all known 17th century wrecks of inland ships in the Zuiderzee area, no similar evidence for wine drinking has been found.

3. From OR49 to the larger context of peat shipping

Contrary to the international shipping trade, there are hardly any written accounts enabling us to reconstruct the Dutch inland shipping trade of the 17th century. Attempts to search for journals of inland trade skippers in the Zuiderzee area were fruitless. Some toll registers are the only administrative sources of information for this branch of trade. Therefore, the archaeological record of shipwrecks is relevant as source of information, currently comprising more than 500 shipwreck sites. The expectation is that a similar number of shipwrecks remain to be discovered in the IJsselmeer and Markermeer, the part of the former Zuiderzee that is not reclaimed. As written sources are largely missing, it is not surprising that the mainstream research on the rise and development of the early modern economy does not include the inland shipping trade.

However, there is much discussion about the role of the peat trade, a subject that is closely related to the inland shipping trade (De Zeeuw 1978; Gerding 1995; Van Zanden 1997; Waldus 2021). Extensive peatbog areas were available in the Netherlands, enabling the workforce to harvest peat logs on a large scale. This was the basis for the development of theories on the growth of this country as an economic focal point in 17th century Europe.

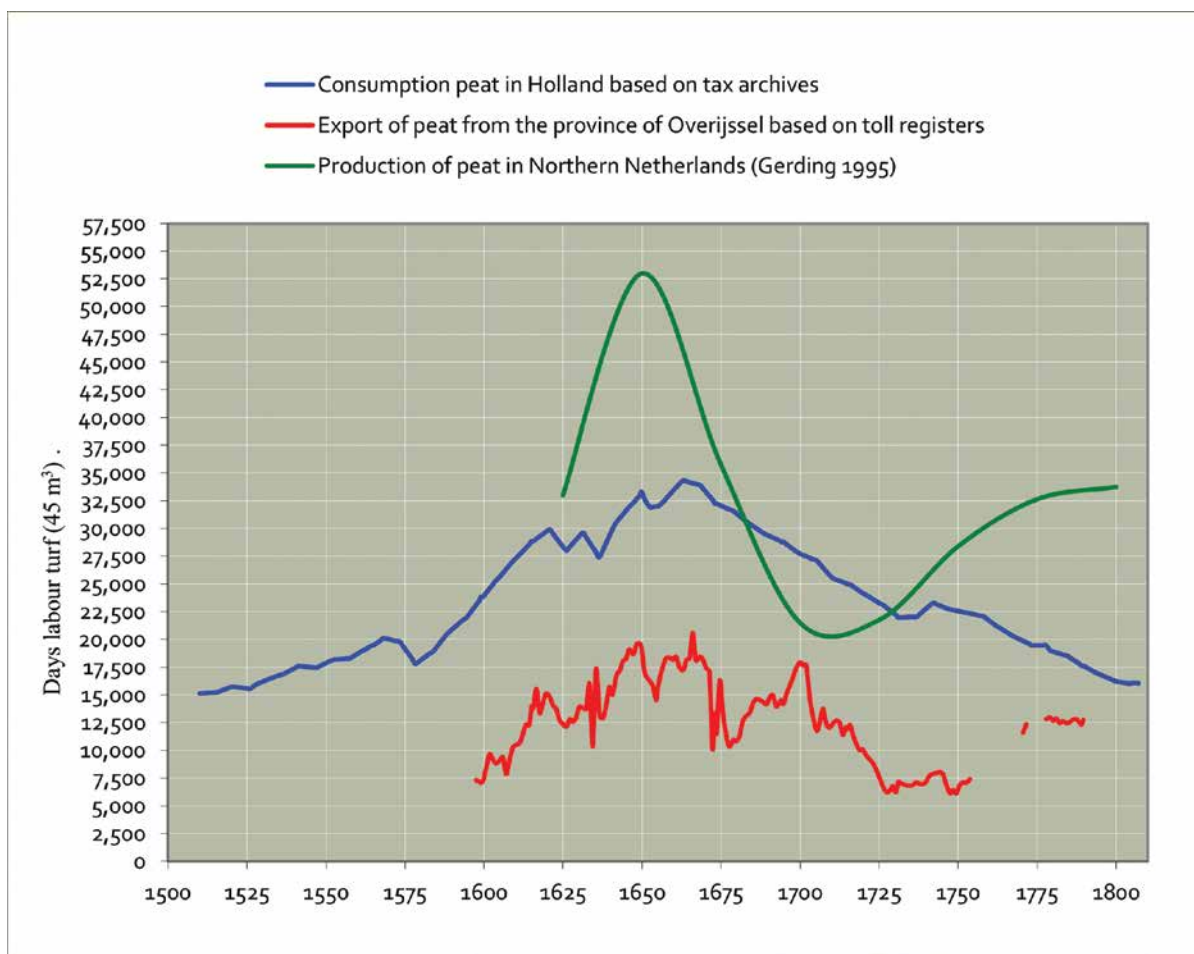


Fig. 5 Graphic of the peat production (green line), peat consumption (blue line) and transportation (red line) over time from Overijssel (author: W. B. Waldus)

The description of the site excavated at lot OR49 reveals an interesting little history about life on board of a peat ship. The question, however, is to what extent the archaeological record has the potential to contribute to the large-scale socio-economic developments of the past. The answer is found when a broad perspective on shipwrecks is studied. On the one hand, a shipwreck is a unique archaeological source, a time capsule or a frozen moment in time of a distant past in which all remains correlate to each other. On the other hand, a shipwreck is a leftover of an economic activity, rooted in a maritime system that evolved over a long period of time. In this case the economic activity is a complex combination of peat exploitation, trade activity and transportation involving a host of organizations and individuals. Cargo ships are an important link in the logistics chain from peat company to end user. The study of shipwreck OR49 has yielded evidence on the provenance of the cargo and the home city of the skipper, which allowed reconstruction of the maritime transport landscape of this sector. The comparison of all known wrecks of cargo vessels in the Zuiderzee area has clarified relevant aspects of the adaptations in 17th century shipbuilding to optimize cargo capacity within the socio-economic system of inland peat trade (Waldus 2021, 220-222).

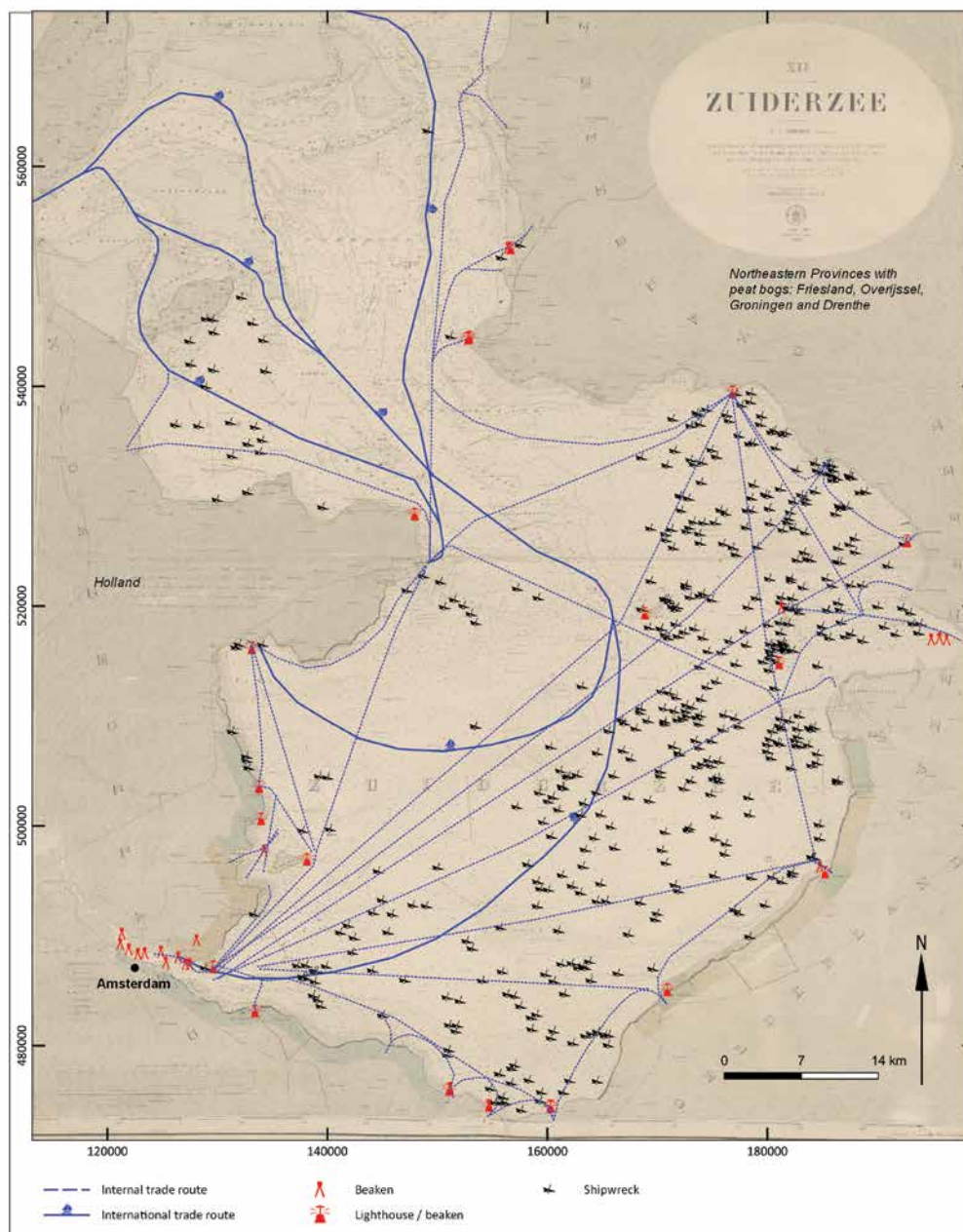


Fig. 6 Shipping routes across the Zuiderzee and all known wreck sites (N=489) in 2020, projected on a 19th century map (author: W. van Baarsel)

4. The volume of peat shipping on the Zuiderzee in the 17th century

A challenging question is to determine the volume of the peat-shipping fleet supplying Holland with this energy source. Holland is a province west of the Zuiderzee. The scarce data in the peat tax-return record provide some answers. It lists transaction costs which is a determining factor in establishing the market price of the peat logs. Based on documented tax and toll data, combined with a set of estimates, the volume of the peat trade and the size of the associated fleet of cargo ships were calculated. The calculations were based on three elements: (1) the total peat production in the northern part of The Netherlands as revealed by Gerding in his book *Vier eeuwen turfwinning*, (2) the peat consumption in Holland calculated on the basis of tax returns from peat logs as an energy source in the project *Nationale Rekeningen* at the University of Utrecht as conducted by Van Zanden, and (3) tax data of Overijssel from which the export volume of peat logs can be inferred: the turfimpost and the Ensser geld. Overijssel is a province east of the Zuiderzee. The data is projected in the next graphic (Fig. 5).

Figure 5 shows that during the 17th century Overijssel accounted for around half of the export demand for peat-energy of Holland. Practically all this peat was mined in Drenthe, a province that lacked a harbor at the Zuiderzee. The remainder was imported by peat ships from Groningen and Friesland, both provinces to the northeast of the Zuiderzee area (Fig. 6). The arithmetic unit of 'a day's labour', the production of a team of peat diggers in one day, corresponds to 10,000 peat logs and has a volume of 45 m³ (Gerding 1995: appendix 1). Based on the reconstructed volume of the hold of a selection of 89 wrecks in the Zuiderzee cargo ships with a length of more than 15 m, it can be deduced that an average load of 2 to 3.5 day's labour of peat logs could be loaded for every transport. The number of peat transport-runs into Holland in a year was derived from accounts of 19th century peat skippers in Overijssel. The number of peat ships from Zuiderzee ports in Overijssel crossing the Zuiderzee amounted to around 20 per year. From Groningen and Friesland 10 to 15 crossings per year were made into Holland. By combining all available data it was possible to put a number on the volume of the peat-ship fleet needed to meet the energy demand of Holland. In the 17th century the size of this fleet must have amounted to 600 in all.

To be able to determine what the ratio is to the total number of cargo ships sailing the inland waterways in this period, an inventory of the Dutch taxation office covering 1808 was scrutinized. It appears that in this year 18,421 professional inland cargo ships sailed the Dutch waters (De Vries, Van der Woude 1995: 230–231). The subgroup with a cargo capacity smaller than 40 ton includes a total number of 16,176 ships, almost 88%. On the basis of the same source it was calculated that 1337 large cargo ships, central to this study, must have sailed the inland waterways of the Netherlands in 1808. By comparing the population size in 1808 to the population size in the middle of the 17th century, and applying this ratio to fleet size, it is concluded that around the year 1650 a total of 1111 cargo ships with a cargo capacity of 40 tons or more sailed the Dutch waters. The number of peat ships, full-time involved in the peat trade, therefore amounted to over half this number.

5. The intensity of maritime traffic on the Zuiderzee in the 17th century

How does this fleet of peat ships compare to other sectors of maritime traffic on the Zuiderzee? This can be estimated from a variety of different written sources. The numbers presented in this paragraph do not add up to a grand total, however they do give some quantification for the intensity of shipping in the Zuiderzee area.

According to Ypma (1962: 66–67), the volume of water-ships in 1505 amounted to 90 vessels. The water-ship was the top-of-the-line fishing vessel at the time in the Zuiderzee area. Around 1600 this number had increased to 130 ships. When it is assumed that the fleet-size increased proportional to population size, the number of these vessels back in the 17th century must have amounted to around 200.

The so called 'beurtschepen' a regular service transporting goods and people on inland waters, is a sector in the maritime trade that is better quantifiable. Numbers from the start of the 18th century provide clues about the intensity of this close-knit transportation network. Each week 800 ships in the regular service departed to 121 different destinations (De Vries, Van der Woude 1995: 222). Looking at the departures with destination Amsterdam around 1700 in the Zuiderzee area alone, it is concluded that each day many ships sailed from Hoorn, Enkhuizen and Workum. Also, seventeen ships sailed the Zuiderzee from other towns with destination Amsterdam, eight departures more often than weekly and seven departures once a week or less (Lesger 2004: 158). This amounts to a fleet of 30 to 50 ships sailing the Zuiderzee in a regular service towards Amsterdam. Additionally, other regular services to multiple destinations in the Zuiderzee area existed (De Vries, Van der Woude 1995: 223; Fuchs 1946: 32–33). If each city or town in Holland

bordering the Zuiderzee area maintained at least one regular service to the most important destinations, then it would mean that another 56 ships sailed the Zuiderzee on a daily basis. So it is likely that a total number of around 100 'beurtschepen' daily sailed the Zuiderzee area.

As detailed before, a minimum of 900 large inland cargo ships with a length of more than 15 m were connected to the Zuiderzee area. Additionally, numerous small vessels were professionally active on a daily basis; however, it is not possible to make an educated guess of total volume. On top of that, coasters and international seafarers used the Zuiderzee routes. The Dutch merchant navy combined with the ships of the East Indies Company and West Indies Company included between 1750 to 1800 ships at the time (Bruin 1977: 200; De Vries, Van der Woude 1995: 470). The fleet of herring boats operating in the North Sea included 500 to 600 ships of which 50% were based in Enkhuizen (Willemsen 1988: 56–57). Concrete administrative information on the number of whalers operating from the Zuiderzee area into the high seas is not available. On the basis of known shipping contracts, the number may have been around 60 ships in the 17th century (De Jong 1979: 314). Finally, the five admiralties operated a navy comprising 64 ships after the assignment for scaling up by the Republic in 1654 (Bruin 1998: 95–97).

In summary, numerous ships arrived regularly in the many Zuiderzee ports. At the apex of shipping intensity in the 17th century the Amsterdam port-registers listed 5000 payments of duty per ton in a year, which is a taxation for the large seagoing vessels (Lesger 2004: 120). All-in-all the trading activities of small boats and large ships from all corners inland and abroad must have been overwhelming. Seventeenth century paintings and etchings depicting the harbor of Amsterdam and the adjacent IJ-river seem somewhat exaggerated while featuring an endless number of masts. However, based on the numbers mentioned in this study it may be concluded that they do reflect reality more than might be expected at first glance. Last but not least, the study of peat shipping in the Zuiderzee area shows that it was dominant in the overall maritime trade business.

6. Concluding remarks

The research of the peat trade in the Zuiderzee included an extensive synthesis of a wide variety of data. It placed the site of a 17th century shipwreck found at lot OR49 in a broader perspective. Peat trade is an important topic in Dutch history as it interfaces with socio-economic processes, inland waterway trade, ship building processes, water management and with the natural changes in the maritime landscape. This article highlights some of these aspects. The answer to the question what the role was of inland shipping in the spectacular developments of the 17th century Netherlands is not an easy one. First, it must be concluded that the conditions for economic growth were already present in the late Medieval period, such as a relatively large population, a dense city landscape, and relatively free citizens focusing on maritime trade. External factors such as the rebellion against the Spanish ruler acted as catalyst for further economic growth. An important contributing factor was the influx of rich merchantmen from Antwerp.

In addition, two more internal catalyzing factors in the context of this study of the peat shipping trade had a significant effect on the economy. The first one is the orientation of the energy market in Holland on the peat bog areas in the northeastern provinces after 1530 and the second one is the changing natural dynamics of the Zuiderzee between 1575 and 1625. As a result, the maritime landscape rapidly developed and the shipbuilding sector with all related activities developed into a booming business. From the maritime archaeological record, it is inferred that a substantial scaling up of cargo ships happened from the second half of the 16th century onwards, commensurate with innovations in ship building techniques and higher levels of specialization. The cultivation of the peat bog areas, the construction of canals and the development of a maritime infrastructure can be attributed largely to the peat shipping trade. It accounts for the development of an efficient internal maritime transport landscape centered on the Zuiderzee area from which the early modern economy in its totality profited.

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