# A 13th century shipwreck with cog features, investigated off Skeppstad, western Sweden

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**Abstract:** This paper accounts for the preliminary investigations of a well-preserved shipwreck with several distinct cog features, discovered in Jorefjorden on the Swedish west coast and dated to the early 1260s. Investigations revealed a vessel with straight posts, clinker-built sides, and through-beams supported by large standing knees. Since the bottom section of the hull is missing it is uncertain whether it too was clinker-built, or if it was constructed with flush-laid planking in the so-called bottom based tradition, characteristic for vessels of the cog type. Furthermore, the paper discusses the shipwreck in relation to both contemporary European maritime transport geography and the local context of the site.

**Keywords:** Norway, 13th century, lapstrake vessels, cogs, *ummeland* voyaging

## 1. Introduction

During an aerial survey of filamentous algae distribution on the Swedish west coast in the summer of 2008, marine biologists spotted a distinct ship shaped feature in shallow water. The observation was made close to a place called Skeppstad on the northern side of Jorefjorden – a wide and shallow fjord situated approximately 100 km north of Gothenburg in the province of Bohuslän (Figs 1–2). A later diving inspection, conducted by maritime archaeologists from Bohusläns museum, revealed the archaeological nature of the feature. Archaeologists concluded that it constituted the remains of a wooden vessel, largely buried in silt, at a water depth of less than 1 m.


**Fig. 1** Map showing the location of the Skeppstad wreck, together with some of the more important locations referred to in the paper (from von Arbin 2021b, 187; map: A. Gutehall, Visuell Arkeologi Norden)

**Fig. 2** Aerial photo of the Skeppstad wreck, taken shortly after its discovery in the summer of 2008 (photo: L. H. Jenneborg, HydroGIS)

Observations of so-called through-beams signalled that the wreck was possibly of medieval date. In 2009, the wreck site was therefore revisited in order to retrieve wood samples for dendrochronological dating. Sampling was carried out as part of the project *Medeltida trader och transportstrukturer i Bohusläns skärgård* (Medieval routes and transport structures in the Bohuslän archipelago), led by the present author. The initial dendrochronological analysis suggested a building of the vessel in the early 1210s or 1220s, pointing towards a likely wood provenance within the regions of Westphalia or the Ardennes (Linderson 2010; von Arbin, Linderson 2011). Unfortunately, of the four analysed samples only one was possible to date at the time.

For this reason, additional timber sampling was carried out in 2012, in conjunction with a limited test excavation of the wreck. Thus, a further seven samples were provided for dendrochronological analysis, of which four eventually could be dated. An additional two samples, including one also of the previously analysed, were dated but with a slightly less degree of certainty. Taken together, the results show that the Skeppstad vessel was most probably built in the early 1260s, that is, approximately 40–50 years younger than initially assumed. Analysis also managed to further narrow down the geographical origin of the timber, showing that trees most likely grew in the Ardennes, that is, the wooded upland areas of south-eastern Belgium and adjacent parts of Luxembourg and France (Linderson 2013).

## 2. Field investigations: preliminary results

To determine the archaeological content and preservation status of the site, and to get a general idea of the vessel's construction, limited test excavations were conducted in 2012 and 2013 on behalf of the Country Administrative Board. The following account is based on the excavation report (von Arbin 2021a; see also von Arbin 2022: 20–21).

During two five-day campaigns, a total of five square metres were excavated within the coherent hull structure. Trenches revealed that the hull is partially preserved to a height of approximately 1.7 m. During excavation, however, it became apparent that the bottom section of the vessel, including keel and keelson, was missing in the excavated midship area. This probably explains why no traces of a cargo were detected. Except for a fully preserved proto-stonewere jug, which is likely to originate in the Lower Rhine region – most probably the area of Siegburg (Fig. 3) – very few artefacts were encountered as well.

The shipwreck is oriented in a northwest–southeast direction, slightly listing towards the southwest. Both sides of the vessel are more or less degraded down to seabed level but are still mostly discernible all the way from stem to stern. Both the stem and the sternpost appear to be straight. Unfortunately, it has not been possible to establish which of the posts constitutes the stem, and which is the sternpost. Even though exposed timbers are heavily degraded due to woodborer infestation, excavation has shown that buried parts of the hull are generally very well preserved. The preserved overall length of the hull has been measured to 17.4 m, while the beam reaches to 5.5 m (Fig. 4), thus suggesting a vessel of perhaps 19–20 m in length.

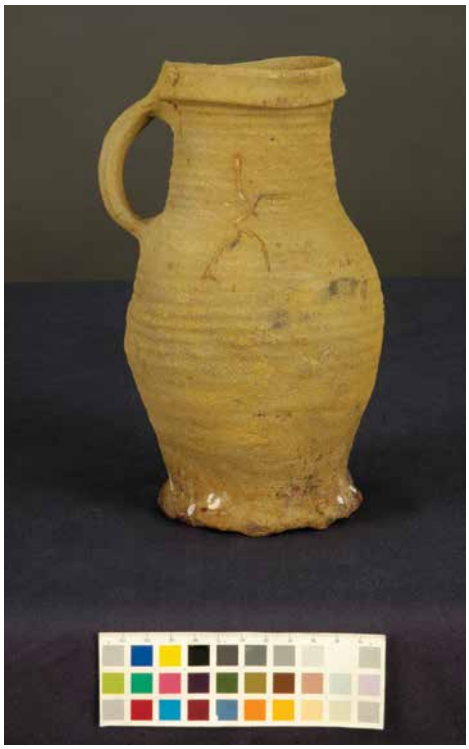

**Fig. 3** Proto-stoneware jug, recovered during the 2012 field campaign (photo: E. Phillips, Western Sweden Conservator's Trust)

Examined parts of the hull all appear to be built of oak in the lapstrake fashion. However, since the bottom section of the vessel is missing, it is currently not possible to determine whether it was clinker-built as well, or if it was constructed with flush-laid planks. Lapstrake planking is fastened with square-shafted iron nails that have been riveted with rectangular and rhombic roves. Planks are tangentially extracted from the logs, typically 20–44 cm wide and 3–5.5 cm thick. Luting between strakes consists of moss, of which the species Pointed Spear-moss (*Calliergonella cuspidata*), Kneiff's Hook-moss (*Drepanocladus aduncus*), and Heart-leaved Spear-moss (*Calliergon cordifolium*) have been identified. Instead of ending in rabbets on each side of stem and sternpost, planks seem to 'embrace' both posts, thereby suggesting that they were scabbed directly onto the timbers.

The dimensions of the frames are typically 18–20 cm sided and 10–12 cm moulded. Frames are fastened to the planking with treenails. Ceiling planks, placed some distance apart, are resting on top of the frames (Fig. 5). Like the

frames, they are fixed with treenails. Massive beams, with large standing knees on top, have served as transverse reinforcements of the hull. As previously mentioned, heads of beams have originally protruded through the hull sides. Six such beams and one loose knee are still visible on the wreck site. In a few cases knees are still attached to the beams; these knees however are almost entirely degraded. Even though beams are no longer interconnected with the planking, they appear to be situated in or close to their assumed original positions (Fig. 4).

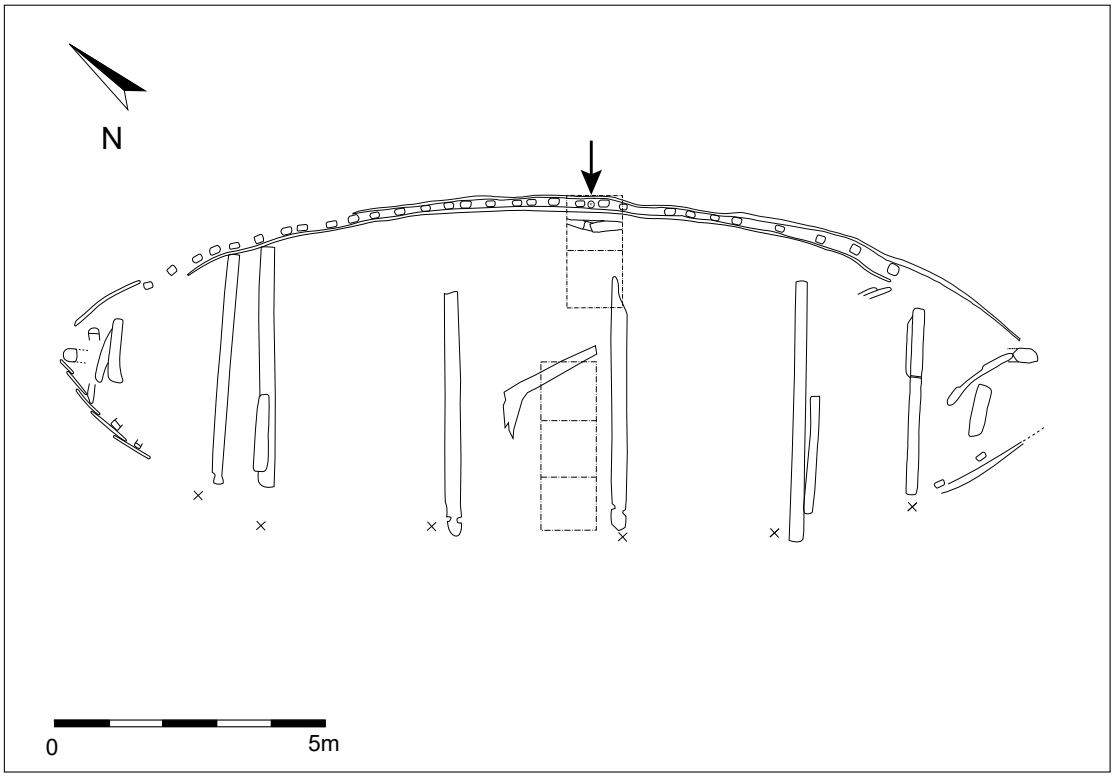


**Fig. 4** Site plan of the Skeppstad wreck with trenches excavated in 2012 and 2013 and the find-location for the proto-stoneware jug marked with an arrow (drawing: D. Ní Chíobháin Enqvist, Bohusläns museum)

**Fig. 5** Photo (detail) of trench 2, excavated in 2013, showing frames, lapstrake planking with rove imprints, and a ceiling plank (photo: S. von Arbin, Bohusläns museum)

## 3. Fish or fowl?

The Skeppstad wreck displays features that are often considered diagnostic for medieval cogs (see e.g., Crumlin-Pedersen 2000; Dokkedal 1996; Hocker 2004; Reinders 1985; Vlierman 2021; Weski 1999). One of the most prominent features – the straight stem and sternpost – would most certainly have given the vessel a cog-like outer appearance in its time. Planking scabbed directly onto the posts may also be considered a typical cog feature, although in most cogs, additional 'false' stems and sternposts have been mounted onto the proper posts. This double-post solution seems to be lacking however in some of the very earliest cog finds, such as the mid-12th century Kollerup cog (Andersen 1983). Whether the Skeppstad vessel was originally equipped with a false stem and sternpost is currently not known. Massive through-beams with large standing knees and moss luting between planks are also common features in cogs, even though they occur in medieval vessels of other types as well.

Some diagnostic features, such as double-clenched nails, used for holding together the lapstrake planking, and wooden laths and *sintels* (iron cramps, or staples) for keeping the moss luting in place, appear to be missing in the Skeppstad wreck. Others again, such as carvel bottom planking, plank keel, and so-called stem- and sternhooks, are yet to be confirmed or refuted. A most crucial question is of course the construction of the bottom section of the vessel, which is highly uncertain due to missing parts. Thus, it is currently not possible to determine whether it was entirely built in the lapstrake fashion, or if it was built with flush-laid bottom planking in the so-called bottom based tradition (Hocker 2004), characteristic for vessels of the cog type.

It is indeed possible that the loss of the vessel's keel and bottom planking may be related to constructional weaknesses in the bilge area, which, in that case, could indicate a different construction of the bottom section compared to the rest of the hull. This, however, is merely speculation. An entirely clinker-built hull is also fully plausible. There are in fact several wrecks of regionally built lapstrake vessels from the medieval period in present-day Belgium and the Netherlands, which suggest that there may have existed a domestic clinker tradition, similar to the Nordic, alongside with the other, more well-documented shipbuilding traditions of this coastal region (e.g., Reinders, Aalders 2007; van Holk 2003; *cf.* van de Moortel 2011: 95–97).

An interesting object of comparison is Kalmar II from the medieval harbour of Kalmar on the Swedish east coast. This wreck – found and excavated in the early 1930s, and tentatively dated to the 14th century – was fully clinker built, with planks fastened with iron nails and roves. It had a straight stem and sternpost with a stern rudder and was equipped with through-beams like the Skeppstad vessel. Hull size and timber dimensions are also very similar to the Skeppstad find (see Åkerlund 1951: 51–55). In some of the previous research it has alternatively been referred to as a cog and a Nordic vessel with strong cog influences (Hocker 2004: 73). However, since its timber provenance has yet to be established, the notion of it being of Nordic origin could very well prove to be wrong.

## 4. The Skeppstad wreck, *ummeland* voyaging and cogs

As has been stated already, timber used for the building of the Skeppstad vessel seem to originate in the Ardennes. This would in all likelihood exclude the possibility for a Nordic or Scandinavian-built vessel. Timber provenance instead implies that building may have taken place somewhere along the river Meuse or further downstream in the Rhine–Meuse–Scheldt delta, in the southern part of present-day Netherlands, close to the Belgian border. The vessel's homeport was likely one of the contemporaneous trading ports of Flanders, Zeeland, Holland, or the Zuiderzee region (von Arbin 2021a: 19–20).

Investigations thus show that the Skeppstad wreck is likely to be an exponent of the so-called *Ummelandfahrt*, that is, the hazardous circumnavigation of the Skaw that allegedly commenced after the silting-up of the Limfjord passage in the first decades of the 12th century (see von Arbin 2021b with references). *Ummeland* voyaging is first mentioned in the year 1251 in two charters issued by King Abel of Denmark, in which he grants merchants, presumably from the town of Kampen, certain privileges in relation to the so-called Scanian fairs (Höhlbaum 1876: Nos 411, 413). However, early Danish cog finds, such as the so-called Kollerup and Skagen cogs, dated to *c.* 1155 and *c.* 1195 respectively, suggest that vessels of the cog type were circumnavigating the Skaw on a regular basis already in the second part of the 12th century (Crumlin-Pedersen 2000: 238–239, 244; Hocker, Daly 2006).

Interestingly, there seems to be a connection between early cogs and *ummeland* voyaging, illustrated not only by archaeological ship finds, such as the Danish shipwrecks mentioned here, but also by various written sources. For instance, in one of his 1251 charters, King Abel specifically mentions cogs (*coggone*) in the context of *ummeland* voyaging (Höhlbaum 1876: No. 411). Possibly, this indicates that the development of this ship type was triggered by *ummeland* voyaging and the increase in seaborne long-distance trade of bulk commodities at that time (*cf.* Westerdahl 1995: 222; Crumlin-Pedersen 2000: 238–239; Zwick 2016: 33–35).

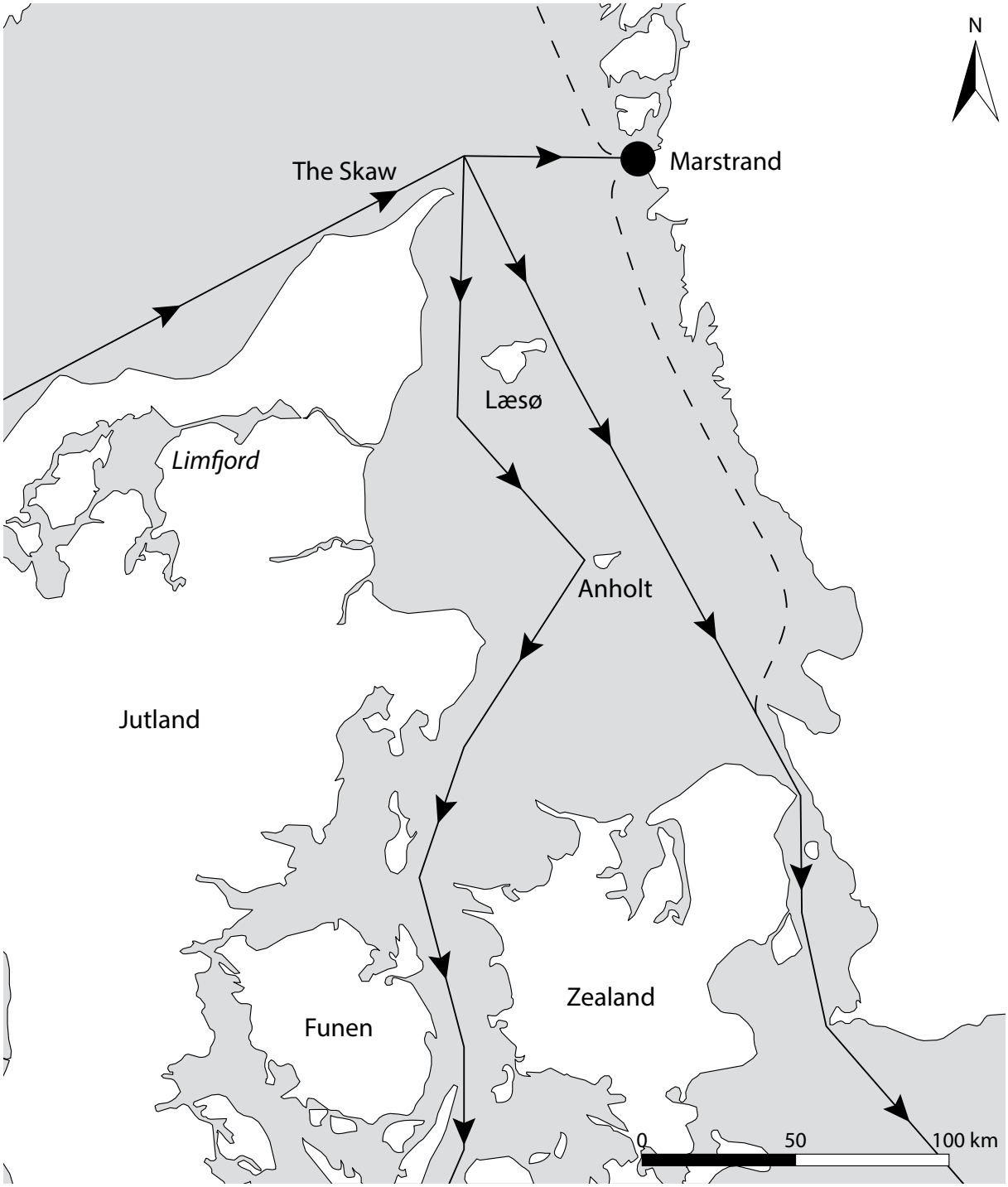


**Fig. 6** Alternative sea routes around the Skaw, according to the *Seebuch* of *c.* 1470 (from von Arbin 2021b, 193; map: A. Gutehall, Visuell Arkeologi Norden)

## 5. Medieval maritime transport geography

In order to understand why a 13th century cargo vessel, presumably from the area of present-day Netherlands, ended up being shipwrecked in one of the fjords of northern Bohuslän, it is necessary to take a deeper look into the maritime transport geography of medieval Europe. Before doing so, however, it should be pointed out that Bohuslän in this period was not Swedish, but Norwegian. One of the most important written sources regarding seafaring and maritime transport geography in Europe in this period is the German so-called *Seebuch* (Koppmann 1876). Although written around 1470, this sailing instruction is believed to go back, at least in part, to 14th century Dutch sources (Sauer 1997: 219–221). Of particular interest in this context is its description of *ummeland* voyaging. According to the instruction, the helmsman of a ship, sailing northwards from the Rhine–Meuse–Scheldt delta, bound for the Baltic Sea, would have had three main options after having circumnavigated the Skaw (Koppmann 1876: XII; Fig. 6):

(1) He could follow the eastern coast of Jutland southwards to the Danish straits;

(2) Alternatively, he could take a more direct southerly route to the Sound, keeping east of both Læsø and Anholt;

(3) Finally, he could choose to go along with the Jutland Coastal Current, aided by the prevailing westerly winds, aiming for Marstrand on the southern Bohuslän coast.

The latter, direct route between Jutland and Marstrand, across the Kattegat, was most likely the preferred option also for vessels heading for Kungahälla, Oslo, Tønsberg, Skien, or any of the other contemporary ports in the so-called Viken region (von Arbin 2021b). Western ships bound for ports further north along the Norwegian coast however probably chose a more direct course to either Lindesnes, on the Agder side of Viken, or Skudenes, on the southern tip of the island of Karmøy in Rogaland, as indicated by the *Seebuch* (Koppmann 1876: XII). When travelling in the opposite direction, coming from the Baltic Sea, it appears as if most vessels followed the Norwegian coast all the way up to Lindesnes before setting the course for either the West European mainland or the British Isles (*cf.* Stylegar 2004). Jorefjorden was situated along this heavily trafficked northern coastal route.

In this period, sea voyages were mainly undertaken during daylight hours. Often, they were hindered by bad weather and foul winds. Therefore, medieval seafarers were largely dependent on good anchorages and natural harbours, situated at regular intervals along the sailing routes, where they could seek shelter for the night, weather storms, and await fair winds. In the vicinity of Jorefjorden are at least three such harbours, which, according to both written sources and archaeological evidence, appear to have been in use during the 13th century: Dyngö, 4.5 km to the west (von Arbin 2023), Hamnholmarna, 7 km to the southwest (Bergstrand 2015), and Hamburgsund, approximately 4 km to the south (Linder, Haggson 1872: 211). Hamburgsund, however, was more than just a sheltered natural harbour. In this period, Hornborg, a high rock situated in the southern part of the Hamburgsund strait, is likely to have been the location of the thingstead of Ranrike (corresponding to northern Bohuslän). Allegedly, this was also where the mythical Hornborg castle was situated (Arvidsson 1985: 42).

## 6. Concluding remarks

That no cargo has been observed during test excavations makes a reconstruction of the Skeppstad vessel's intended route difficult at the present stage. Possibly, future investigations of the wreck may shed some light on this issue. In addition, further investigations of the wreck could help determine the building method of the lower hull. Such investigations may strengthen the assumed relationship between cogs and *ummeland* voyaging, as described above, but may also reveal a much more complex picture. In any case, investigations would most certainly lead to new insights regarding the technical development of the vessels used in early *ummeland* trade.

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