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Integrating Land and Water – The Federsee Logboats in the Context of Prehistoric Traffic Across the European Watershed

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ABSTRACT

In the Federsee basin, a large bog in the pre-alpine foreland of Upper Swabia/Southern Germany, hitherto 58 logboats have been discovered. This outstanding large number of watercraft raises questions on the interrelationship between Federsee bog and the Main European Watershed. At the southern edge of Federsee basin, the riverine systems of Rhine and Danube rivers are separated only by few kilometres of dry land. It is to be suggested that this isthmus between the two large European river systems was used as a portage and part of a traffic system that integrated land and water routes. A multitude of ethnographic and historical evidence indicates that portages played an important role in landscapes with poor conditions for land transport. In contrast, archaeological observations on portages are generally very scarce. Direct archaeological evidence is also lacking at Federsee. A potential Federsee portage remains therefore hypothetical.

KEYWORDS

Federsee; logboat; portage; watershed; Neolithic; Bronze Age; transport

Introduction

The Federsee bog is one of the most famous archaeological landscapes in Europe. History of research stretches back into the 19th century, when the forester Eugen Frank started to excavate 'Pfahlbauten' which had been discovered in 1875. In the 1920s large-scale excavations in Neolithic and Bronze Age settlements were carried out by the prehistoric department of Tübingen University (Reinerth 1929; Schmidt [1930] 1937). Due to the close association of archaeology and archaeologists with the propaganda of Nazi Germany, it then took six decades of stagnation, before the Federsee bog produced new, and alarming headlines. When Helmut Schlichtherle started a re-assessment of the prehistoric sites in the southwest German alpine forelands in 1979, a century of successive decline in ground water levels, extensive cutting of peat and agricultural cultivation had caused serious damage. Nevertheless, the rescue excavations of the State Office for Cultural Heritage Baden-Württemberg in the Neolithic site of Ödenahlen (Schlichtherle 1995), in the Early/Middle Bronze Age Settlement 'Siedlung Forschner' (Torke 2009), and in the Late Neolithic occupation of Torwiesen (Schlichtherle in preparation) can be considered important milestones not only for cultural heritage management, but also prehistoric research (Keefer 1992, 6f; Schlichtherle and Kramer 1996, 143f; Schlichtherle 2009, 9f).

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After 35 years of the development and implementation of long-term conservation plans and raising of ground water levels positive tendencies are coming into effect. In 2011 the Federsee sites became part of the UNESCO world heritage 'Prehistoric Pile Dwellings around the Alps'.

Geographically the Federsee basin is part of the pre-Alpine forelands of southwest Germany with formations of the Riss glaciation to the north, west and east and terminal moraines of the Wuerm glaciation directly to the south. The lake basin, which originally covered an area of 30 km^2, originates from the last glaciation – the Wuerm period – about 20,000 years before present (Geyer and Gwinner 1964, 171). The archaeology of the Federsee basin has close interrelations to this geological background, and specifically to its geographical position. The bog is situated at the northern end of a geographical axis that is formed by the river valleys of the Schussen and the Alpine Rhine. Imported objects prove distinctly that this axis constituted a communication route that crossed the alpine passes of Graubünden and reached out to northern Italy. The trans-Alpine route was used from the beginning of the Younger Neolithic period (ca. 4300 BC) and then served as a main traffic route up to at least the Bronze Age (Köninger and Schlichtherle 1999; Mottes, Nicolis, and Schlichtherle 2002).

However, imported finds originating from Bavaria, from the Swiss Plateau, the French Vosges and the Maas region illustrate that the Federsee Basin was also connected to far distant areas to the east and west (Schlichtherle and Strobel 1999, fig p. 10; Billamboz et al. 2009, 562). These regions are linked to the Federsee basin by tributaries of the Rhine and Danube Rivers. Hitherto not much attention has been paid to this aspect despite the specific hydrological situation of the Federsee bog (Figure 1; 4). The main Federsee basin discharge – the small stream of Kanzach – flows in a northerly direction and connects the Federsee basin to the Upper Danube, the Federbach discharges today in an easterly direction to the Danube tributary of the Riss. Sub-terrestrial drains flowing in southern directions supply the source of the Schussen River, which is a tributary of Lake Constance and the Rhine. The Main European Watershed between the Rhine and the Danubian systems cuts right through the southern part of the Federsee bog (Wall 1998, Figure 22; see also Schreiber 2016, Figure 1). From a large-scale perspective the Federsee region constitutes a 'land bridge' between the large European riverine systems. In view of the large number of archaeological finds of watercraft this begs the question of whether the Federsee region could have played a role as a portage – a location where boats and goods were moved from one river system to the other.

Logboats in the Federsee Basin: a short outline of the state of research

The Federsee bog can be linked to archaeological superlatives: compared to Troy and Pompeii in the 19th century (Lehmkühler 1992, 14), it is considered today to be a 'unique archaeological landscape' (Schlichtherle 1997, 91) and 'the bog with the richest finds in Europe' (Schlichtherle and Strobel 1999). We know about 20 prehistoric settlement sites with more than 200 floor plans of houses, several wooden trackways and countless finds including wooden wheels which belong to the earliest respective objects worldwide (Schlichtherle 2010b). From the very beginning of research, further discoveries of watercraft added to this evidence. The first systematic work on the Federsee identified 25

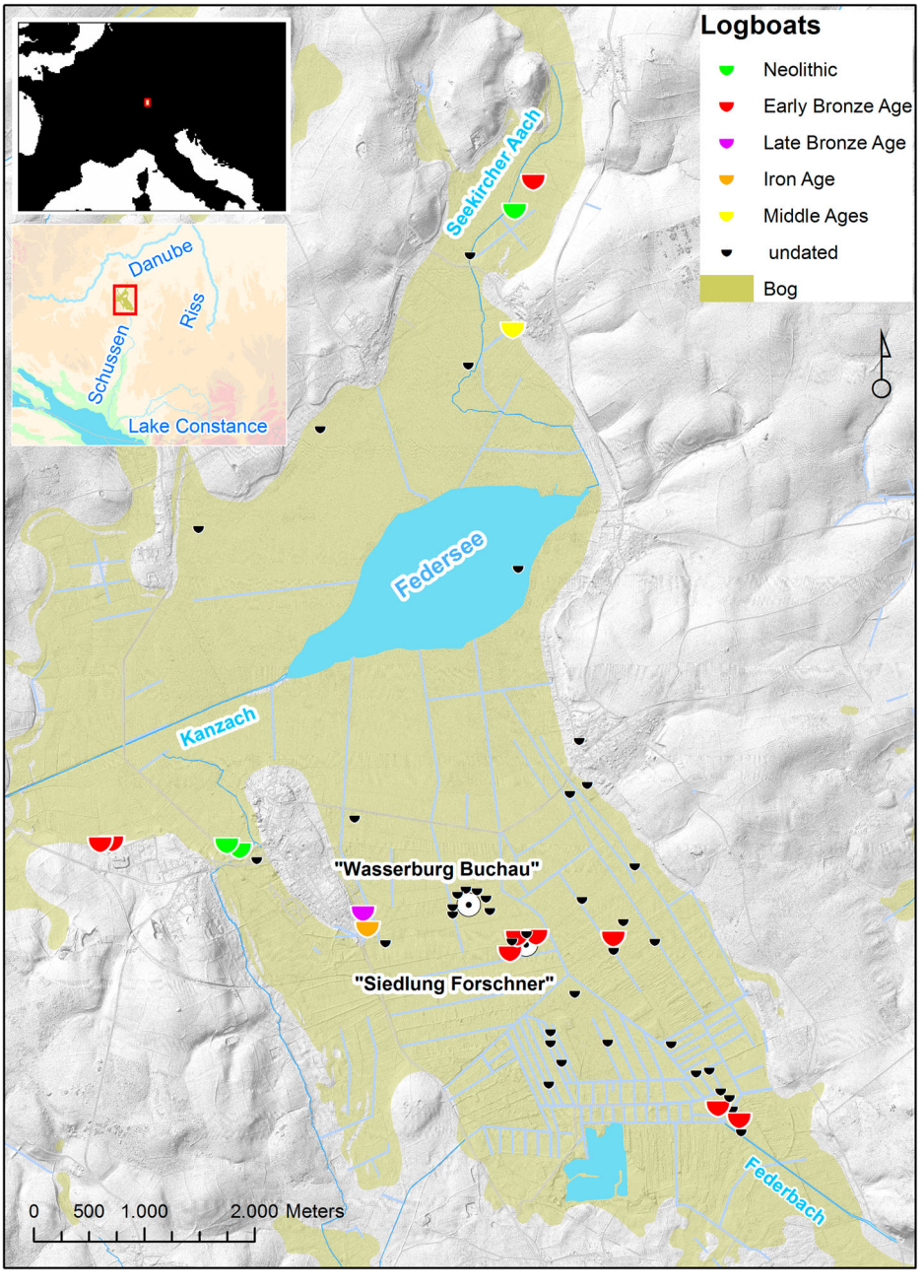

Figure 1. Map of Federsee logboats. Displayed are confirmed positions.

logboats (Paret 1930). Hirte (1987, 658) listed 'at least 35'. In 2005 'more than 40' (Schlichtherle and Hohl 2005) objects were known. Even these impressive figures proved to be under-estimates when we re-assessed the archaeological material in the framework of the analysis of the 'Siedlung Forschner' excavations (Mainberger 2016). After

new discoveries in 2015 the number of confirmed objects now amounts to 58 logboats (Mainberger/Dieckmann submitted).

Most of the objects lack precise data on the details of their discovery, stratigraphical context and dating (see also Strobel 2000, 53). Unfortunately, many uncertainties remain also with the materials that were published by the excavators of the 1920s and 1930s, Oskar Paret and Hans Reinerth (Paret 1930; Reinerth 1979; Reinerth 1980). This relates, primarily, to the dating, that had to rely on stratigraphical observations and palynological evidence. Today we know that the Federsee bog with its complex lacustrine history (Schlichtherle 2009, 12) does not allow for resilient dating based on such observations. As a matter of fact, not one of the datings from the first part of 20th century could be ratified when dendrochronologically checked (Mainberger 2016, 331). Even with ostensibly clear-cut cases, like the six or seven boats excavated in the Late Bronze Age 'Wasserburg Buchau' site there are more open questions than plain facts or precise documents. The inconsistencies in the documentation, along with the lack of dating, leave most, if not all considerations on typology, functions or roles in the prehistoric communities problematic. Spatial information on the respective sites is in many cases much more reliable. Descriptions of places in relation to local infrastructure like buildings, driveways or ditches supplement the plans and maps published by Reinerth (1929, Table 1), Paret (1930, Figure 1) and other scholars. The map (Figure 1) shows exclusively sites and objects with confirmed and validated positions.

Within the group of vessels discovered after 1979, the best documented objects are the 'Siedlung Forschner' logboats. The heavily fortified settlement is linked to dendrochronological dates indicating that there were three occupations between 1700 BC and 1500 BC (Billamboz 2009, 504). All logboats were found in lacustrine sediments and in the context of the wooden palisade rings that enclose the settlement. In spite of this close stratigraphic and spatial context, the logboats are not exactly the same age. With dendrochronological datings starting in 2002 BC and ending in 1811 BC (last detected year-ring) they date to the Early Bronze Age and are decades older than the earliest known occupation of the site.

Three boats still preserved details of construction. The boats were at least 6 m long and about 60–80 cm wide and made of oak, one of them with circular patches of charred wood, indicating that a fire place was in use on board (Mainberger 2016, 347). The 'Forschner' boats seem to have been large and heavy vessels. In contrast, two more or less contemporary boats, that were found near a palaeochannel to the north of Federsee bog in 2012 and 2013 were fitted with stern transoms and built of limewood. In comparison to the Forschner logboats they are smaller – about 5 m long and 60 cm wide – and very lightly built. The side walls of these boats are only 2.5 cm thick. Both vessels were embedded in lake deposits (Figure 3; Schlichtherle 2013, 37; Schlichtherle 2014, 38).

Table 1 gives an overview on some key features of the boats that are absolutely dated. The most eye-catching result of this compilation is that nine of the fifteen objects, like the 'Siedlung Forschner' boats, date to a small period of time between the 24th and the 18th century BC (Billamboz 2009, 497). Some of those objects – e.g. Federsee 1937 is shown in Figure 2 – were dated half a century after their discovery by means of dendrochronology (Billamboz 1992, Table 1).

Table 1. Absolute dates of Federsee logboats (heartwood dating: in samples with missing sapwood, the process of estimating the earliest possible felling date by adding 20 ± 10 years to the outmost ring = terminus post quem).

Object	Dating method	Last measured year	Date/Calibrated	Species	Reference	Lab code	Radiocarbon conventional age BP
Federseeried 1986/1	Dendrochronology, heartwood dating (Sfk304)	2002 BC	1982 ± 10 BC tpq	Oak	Billamboz 1992, Table 1		
Federseeried 1986/2	Dendrochronology, heartwood dating (DC302)	1983 BC	1963 ± 10 BC tpq	Oak	Billamboz 2009, 455		
Federseeried 1986/3	Dendrochronology, heartwood dating (Sfk305)	1811 BC	1791 ± 10 BC tpq	Oak	Billamboz 1992, Table 1		
Federseeried 1921	Dendrochronology heartwood dating (Fek21)	1819 BC	1799 ± 10 BC tpq	Oak	Billamboz 1992, Table 1		
Federsee 1928/5 (?)	Dendrochronology heart wood dating (Fek19)	1979 BC	1959 ± 10 BC tpq	Oak	Billamboz 1992, Table 1		
Federseeried 1937	Dendrochronology waney edge dating (Fek20)	1963 BC	W-1963 BC	Oak	Billamboz 1992, Table 1		
Federseeried 1983	Radiocarbon		3652–3525 cal BC (2sigma)	Oak	Billamboz 1992, Table 3	HD 11996–11546	4810 ± 30
Federseeried 1988	Dendrochronology heartwood dating (Fek11)	650 AD	670 ± 10 AD	Oak	Billamboz 1992, Table 1		
Federseeried 2002	Stratigraphy*		3293–3281 BC	Oak	Schlichtherle in preparation		
Federseeried 2003	Stratigraphy*		3293–3281 BC	Oak	Schlichtherle in preparation		
Federseeried 2004/1	Radiocarbon		2138–1978 2200–1927 BC cal (2 sigma)	Oak	Schlichtherle and Hohl 2005, 61	Erl-6609	3675 ± 49
Federseeried 2012	Radiocarbon		2260 – 2210BC cal (2 sigma)	Lime	Schlichtherle and Hohl 2014, 38	MAMS-16588 MAMS-16589	3873 ± 28 3883 ± 31
Federseeried 2013	Radiocarbon		2051–2021 BC cal (2 sigma)	Lime	Schlichtherle and Hohl 2014, 38	MAMS-19702 MAMS-19703	3679 ± 18 3673 ± 18
Federseeried 2015/1	Radiocarbon		372–199 BC cal (2 sigma)	Oak	Mainberger and Dieckmann 2016	MAMS-26347	2204 ± 28
Federseeried 2015/2	Radiocarbon		1187–939 BC cal (2 sigma)	Oak	Mainberger and Dieckmann 2016	MAMS-26348	2875 ± 26

Note: Waney edge, last ring beneath bark is present, i.e. felling date.

*Stratigraphy/layer containing the logboat is dated by dendrochronology. Conventional radiocarbon ages were re-calibrated using Oxcal 4.3 software (Bronk Ramsey 2017, https://c14.arch.ox.ac.uk/oxcal.html) with IntCal13 curve.

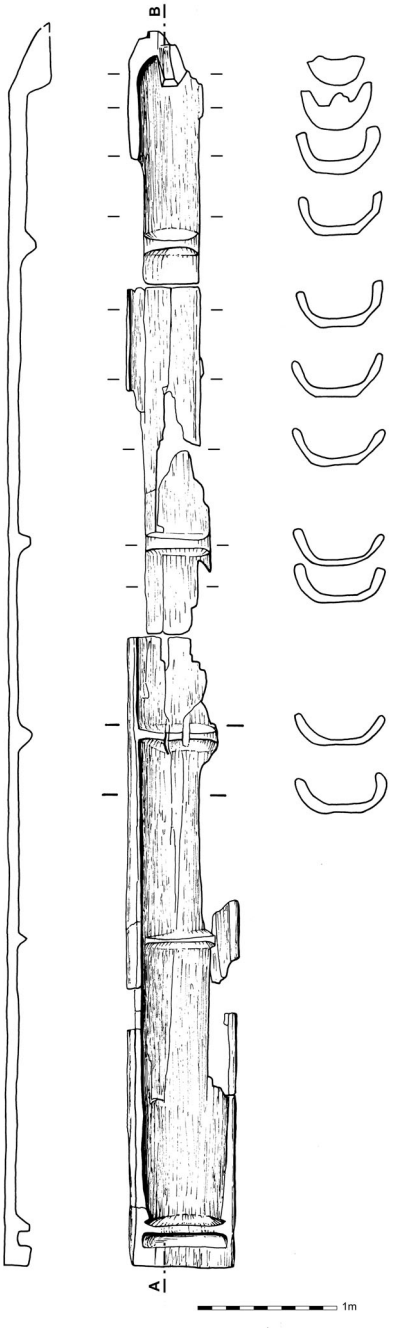

Figure 2. Federseeried 1937. The boat is nearly nine metres long and 0.8 m wide and was originally fitted with a transom.

Even more striking, however, remains the large number of objects, 58 in total, within a comparatively small area. This evidence is unique not only in Baden-Württemberg, but also in Central Europe. Although linked to a similar history of peat cutting, the neighbouring bogs of Wurzach and Pfrungen have yielded altogether only three objects so far.

Watercraft on small water bodies and portages in the historical, ethnographic and archaeological records

The term '*portage*' (in English also 'discharge', or 'carrying place') originates from francophone *voyageurs* and fur traders who travelled the interior of the North American continent from the 17th century on (Friderici [1975] 1907, 93). It describes places where boats and goods had to be taken out of the waterways due to rapids and obstacles or to cross watersheds between river systems. The vessels had to be carried or dragged overland. In a roadless country, boats and waterways were the most important components of a traffic that covered huge distances in the Americas. While bark canoes where the main means in the north, to the south, where larger trees were available, logboats were used both in North and South America. Historical observations illustrate that both types of vessels were moved overland. Contemporary drawings show wooden canoes maneuvered across rapids by people of apparently European origin as well as by natives (Hartmann 1985, Figures 15–16).

There are numerous sources that prove the use of portages also in European contexts. The German word 'Schleppstelle' (dragging place) has equivalents in different European languages, especially in the Scandinavian tongues ('ed', 'eid', 'drag' etc. in Swedish, Norwegian; Nymann 2006), but also in Russia ('volok'; Westerdahl 2006, 27). In some parts of Scandinavia portages were used until very recently (Larsson 2006, 153f). Written sources report, for instance, 'church boats' travelling on routes up to 50 km in distance, rowing downstream, poling upstream and vessel being dragged across isthmuses and watersheds (Larsson 2006, 156). In some places in Sweden the respective routes were prepared with logs or rollers, forming wooden trackways (Larsson 2006, 158f, with photographs). Remarkably, the ethnoarchaeological records indicate that for some routes specially built carriages were also used to carry boats and cargoes (Larsson 2006, 159 and Figures 5, 6)

In the historical records, overland transport of boats and ships has been part of several military operations, like the war between Venice and Milan in AD 1439 (Westerdahl 2006, 25). Much better remembered are the early medieval and Viking river routes and *voloks* linking the Baltic to the Black Sea and Constantinople (Sherratt 2006, 29; Westerdahl 2006, 28f) Contemporary wood-cuttings illustrate that boats – in one case evidently a logboat – were carried or dragged overland (Westerdahl 2006, Figures 1, 2). Written sources indicate that the use of locals to carry goods and boats, to build and maintain roads and to provide travellers with draught animals led to the development of settlements alongside *voloks*. *Voloks*, and also the American portages – were 'the most important places' (Friderici [1975] 1907, 93) and most significant meeting places along a travel route (Westerdahl 2006, 152). Historical sources on portages and logistical hubs linked to them reach back deep into the classical period of the Mediterranean and ancient Egypt. A famous example is the *diolkos* of Corinth that crossed the isthmus between the Aegean and the Ionian Sea (Westerdahl 2006, 25f). Archaeological investigations have revealed a partially paved trackway that proves the deployment of wagons to carry ships or goods (Höckmann 2006a).

At the same time, historical sources on *portages* illustrate the importance of water transport. In antiquity, land transport was calculated as being about ten times more expensive than water transport (Kunow 1980, 22f; Kunow 1983, 53–55). The respective figures match quite well with sources from Europe and China in historical times (Scheidel 2013b, 4). The

main factor regarding cost was sailing time (Scheidel 2013a, 2). Combined river and land transport took only a fraction of time compared to transport over land. Such figures cannot directly be transferred to the prehistory of central Europe, but they give hints on the importance of water transport before the Roman system of paved roads became established. From Montelius (1911, 274) onwards scholars have agreed that river valleys played the main role in the distribution of goods and as communication routes, and that watercraft must have been used everywhere that natural conditions allowed for it (Ellmers 1989, 300; Bleile 2010, 219). However, at least Alpine rivers, with their strong currents, rapidly changing water tables, rapids and cataracts were certainly not to be used for waterborne trade.

Archaeological experiments have shown the decisive role of the weight of the respective boats (Larsson 2006, 151f; Westerdahl 2006, 36). While there remain singular exceptions in written sources on the overland transport of large and heavy ships, small and light boats can easily be moved over large distances by people or animals. Experiments illustrate that a half ton boat – an Iron Age replica – was moved by seven adults a distance of 900 m and an elevation of about 10 m in one hour and 15 minutes. The ground consisted of even and uneven meadow grass and a small bog, which was prepared with rollers (*lunnar)* or split logs as observed in ethnographic contexts (Larsson 2006, 164f). This, and several other experiments carried out with different boats and in varying conditions leads to the conclusion that 'ship hauling between rivers and lake systems is not only probable, but also possible to prove' (Larsson 2006, 167).

Direct archaeological indications of portages, however, remain rare. An ethnoarchaeological survey in Sweden illustrates what the evidence could look like. In the more or less roadless north, portages were still in use until recently (Larsson 2006, 167). At some places wooden trackways, consisting of *lunnar* laid out at regular or irregular distances to each other, have been preserved. In other cases ditches could be observed, one of them still fitted with wooden logs densely laid out at right angles to the main axis of the trail. At a portage in Samland specially built, single-axle carriages were used (Larsson 2006, 159).

It is certainly no coincidence that the best examples of comparable archaeological finds were also observed in Sweden. They date back to early medieval times (Westerdahl 2006, 33) and include finds of wooden trackways made of *lunnar*, but apparently also remains of wooden axles and wheels (Westerdahl 2006, 33). For Germany, only indirect evidence has been presented so far. Investigations at the North Sea harbour from Viking times, Hedeby, at Hollingstedt, have underlined the importance of a potential portage route across the south Jutland isthmus for temporary trade (Brand 2006). Teigelake (2006) has argued that distribution patterns of Roman import finds suggest portages linking the lower Elbe River to the Baltic. Höckmann (2006b) has presented evidence that in Roman times and in the Late Bronze Age portages must have been used between northern German riverine systems, connecting the copper – producing alpine and pre-alpine landscapes to the bronze-using communities in the north.

Federsee bog: a prehistoric portage?

Outside the distribution area of pre-Alpine 'pile dwelling culture', logboats have often been found in riverine contexts. Accordingly, they have been interpreted as ferry and travelling boats. Especially larger boats of Neolithic and Bronze Age periods, besides uses in

fishing, hunting and local transport could also have had roles in regional and inter-regional distribution systems. The increase in numbers and sizes during the time can be understood as a result of the growing need to exchange goods (Ellmers 1983, 483f; Arnold, Gassmann, and Lambert 1995, 151f). Distribution maps show that watersheds have not hindered the migration and dissemination of goods, and that waterways and land routes were linked to each other at least from the Early Neolithic on (Ellmers 1989, 324).

The Lake Federsee logboats, in contrast, have always been interpreted as fishing boats and vessels for local transport (Reinerth 1979, 9, 1980, 20; Paret 1930, 89; see also Hirte 1987, 14). It seems, however, that this assumption has its roots more in common perceptions of the 19th century than in the archaeological record. Until the beginning of the 20th century logboats still were in use in north Alpine lakes. The large and robust vessels of Lake Zug, Lake Aegeri (Keller 1869, 34), Lake Starnberg (Gröber 1990) or Mondsee (Ellmers 1974, 480f) served typically for fishing, shore-to-shore travelling and transport. Ferdinand Keller, the most influential authority in the field of 'pile dwelling' archaeology, was the first to draw a direct line between these 'reverend' contemporary logboats and the prehistoric objects (Hirte 1987, 14). When more logboats were discovered in the pre-Alpine lakes, scholars adopted this point of view (Rütimeier 1024), and at the beginning of the 20th century logboats and pile dwellings had become a common *topos* which were closely linked to each other not only in popular drawings (Hirte 1987, 14), but also as a conception of a purely local use of prehistoric watercraft.

Actually, there are serious arguments against the use of logboats on small tributaries of lakes and larger rivers like Schussen, Kanzach or Federbach. If one calculates, for example, Siedlung Forschner 'Einbaum 2' with its conserved dimensions, and take the specific weight of oak into account, the object weighs more than 400 kg; if we then add at least 150 kg for the missing stern and bow sections, the vessel totals more than half a ton in weight. A replica of the large logboat from Roseninsel / Starnbergersee (Bavaria) weighed more than a ton (Schöbel 2009, 82). Although technically possible, as shown above, nobody would like to propel such a boat upstream, or drag it across obstacles like the beaver dams of small streams (Coles 2001; Bleile 2010, 218) or even larger stretches of dry land if there were better alternatives.

The objects discovered in the recent years, however, offer strong indications that besides the large, robust oak boats much lighter vessels were in use. The specific weight of limewood is only half of that of oak; if we calculate the better preserved 2012 vessel, we get a weight from 80 kg (dry) to 120 kg (partly saturated by water). According to the ethnographic evidence cited above, such a boat could easily overcome the headwaters of small streams or be dragged and carried overland. It can be assumed that frail archaeological objects like Federseeried 2012 (Figure 3) have often been overlooked in the past and that they are under-represented in the evidence we know.

The shape of the Bronze Age Federsee, as well as the courses of its inlets and discharges, has been reconstructed, based on geological, stratigraphical and palynological evidence (Figure 4; Schlichtherle 2009, Figure 19). Such models are always tentative and depend on the emergence of new evidence. What becomes clear, however, is that Federseeried 2012 and Federseeried 2013 vessels, which date to the Final Neolithic and Early Bronze Age (Figure 1, Figure 4, Table 1), were not discovered at the lake shore, but some kilometres north of it, close to the small inlet stream that today is called the Seekircher

Figure 3. Excavation of Federseeried 2012. Photograph: Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart/W. Hohl.

Aach. Actually, with exception of the Siedlung Forschner boats, all Early Bronze Age logboats have been uncovered in the spatial or stratigraphical context of palaeochannels or in the neighbourhood of inlets or discharges. In view of this evidence there is no reason to assume that the Early Bronze Age water transport was restricted to Federsee Lake. On the contrary: if Bronze Age navigators used small inlet streams, they were also able to navigate the discharges flowing in northerly directions to the Upper Danube. A good illustration of the close hydrological, spatial and archaeological relations of Federsee Lake to the Upper Danube is provided by Iron Age evidence. Archaeological features and faunal remains indicate that the Hallstatt hillfort Heuneburg (Lkrs. Sigmaringen) was provided with Federsee fish (Köninger 2016). Since the fishery installations could only be reached by watercraft (Köninger 2016, Figure 351), there is no reason to assume that this perishable cargo was transported on land routes (Figure 5). A newly discovered logboat Figure 6; Mainberger and Dieckmann 2016) dates about two centuries later and is contemporary to the La Tene occupations that followed the burned and abandoned hillfort at the Upper Danube (Hansen et al. 2015).

Direct access to Schussen River and the Rhine system to the south, in contrast, are blocked. The end moraine hills rise up some 20–50 m above today's wetlands (Schreiber

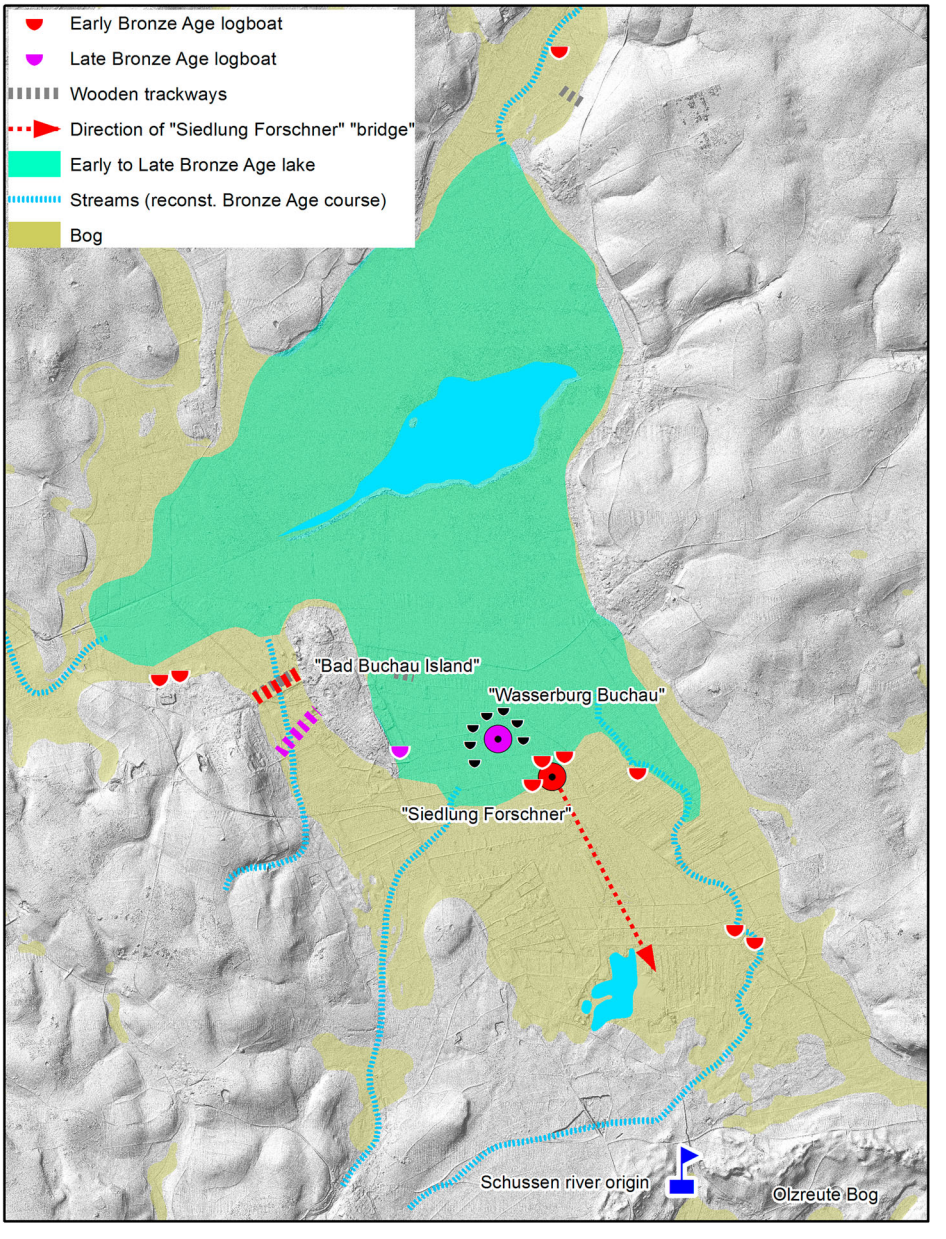

Figure 4. Model of Federsee Lake in Bronze Age. The shape of the lake is based on stratigraphical, palaeoenvironmental and archaeological observations and remains tentative. Colours of trackways refer to datings of logboat symbols. 'Wasserburg Buchau' logboats are not dated independently/absolutely.

2016, Figure 1). If the Schussen River was used for waterborne transport, cargoes and potentially also the vessels, had to be carried or dragged across the barrier. Moreover, it cannot be assumed that the shallow creek of upriver Schussen with its varying water depths was navigable, at least not in both directions. If there was a portage

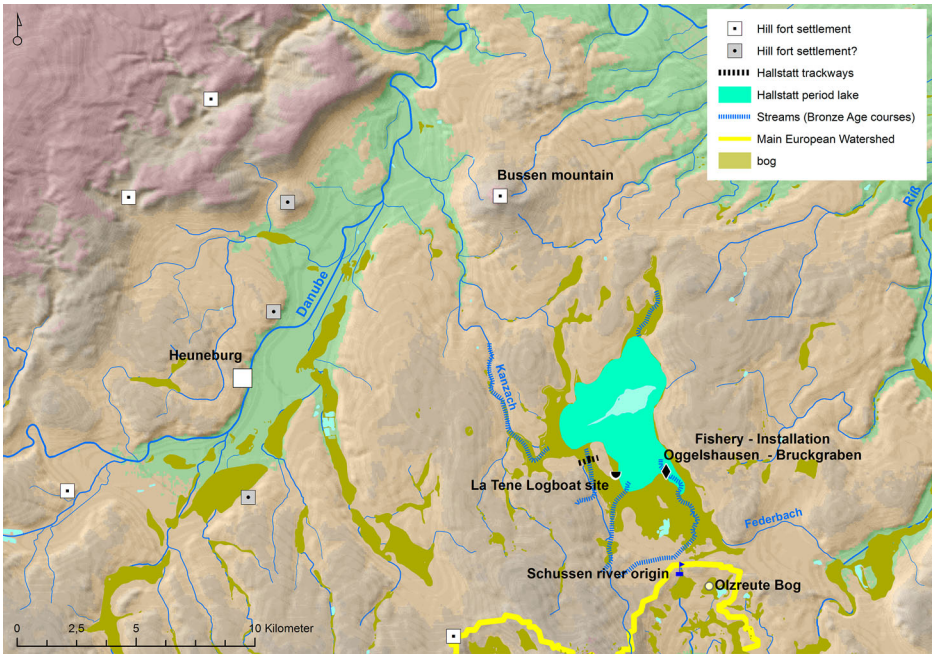

Figure 5. Spatial relations of Federsee Basin to the Upper Danube region in Hallstatt and Early La Téne periods. After Hansen et al. 2015, supplemented.

between Federsee basin and Schussen river valley, the distances to overcome, dragging boats and carrying goods, were to be measured in kilometres rather than hundreds of metres.

Conclusions

While navigation on the Federsee discharges to the Upper Danube, in view of the archaeological, geographical and hydrological data seems quite probable, a prehistoric Federsee portage remains hypothetical, as direct archaeological evidence is lacking. What such evidence could consist of has been illustrated by the analysis of organic calfat materials that contain information on where boats have been built (Schulz 2007, 101; Dickson et al. 2015, 406). Dendrochronological evidence from Bavaria suggests that vessels have crossed watersheds (Herzig and Weski 2009, 102). Comparable studies of the Federsee basin have not been carried out so far. However, in view of the historical and ethnographic data presented above it makes much more sense to interpret the moraines to the south of Federsee basin as a kind of land bridge than as a serious obstacle for a transport system that must have integrated waterborne and land based travelling. It is tempting to connect some of the archaeological discoveries of the last decades to this conception – for instance the evidence of Neolithic wheels found in Olzreute – Enzisholz, a site that is situated directly south of the moraine barrier and, at the same time, in close proximity to a potential Federbach – Riss route (Figure 5; Schlichtherle 2010a).

In any case, for a better understanding of Federsee bog archaeology it would certainly be useful to add a new perspective to the approaches we have used so far. In the Upper

Figure 6. 'Federsee 2015'. The Iron Age logboat was uncovered in 2015. Photograph: Courtesy Landesamt f. Denkmalpflege, W. Hohl.

Swabian landscape with its variety of lakes, bogs, streams and rivers, Westerdahl's (1997, 2011) concept of a 'maritime cultural landscape', that has recently been adopted to north German inland water environments (Bleile 2010), might be of particular use. Fortified settlements like 'Siedlung Forschner' or 'Wasserburg Buchau' would possibly appear in a different light if seen from the perspective of a traveller 'on board a vessel' (see Westerdahl 2011, 740). Footbridges and wooden trackways (Heumüller 2016, 446f) or landing sites (Schlichtherle and Hohl 2000) have hitherto been understood as elements of a cultural landscape formed preliminarily by farming activities. Such archaeological evidence represents at the same time components of a culture based on the use of waters – of an 'aquatic' cultural landscape.

Disclosure statement

No potential conflict of interest was reported by the author.

Notes on contributor

Martin Mainberger is based in Staufen i. Br., Southern Germany. His work focuses on the pre-alpine Neolithic and Bronze Age lakeshore settlements in South West Germany. He has published several papers on transport in the Neolithic.

Geolocation information: South-West Germany

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