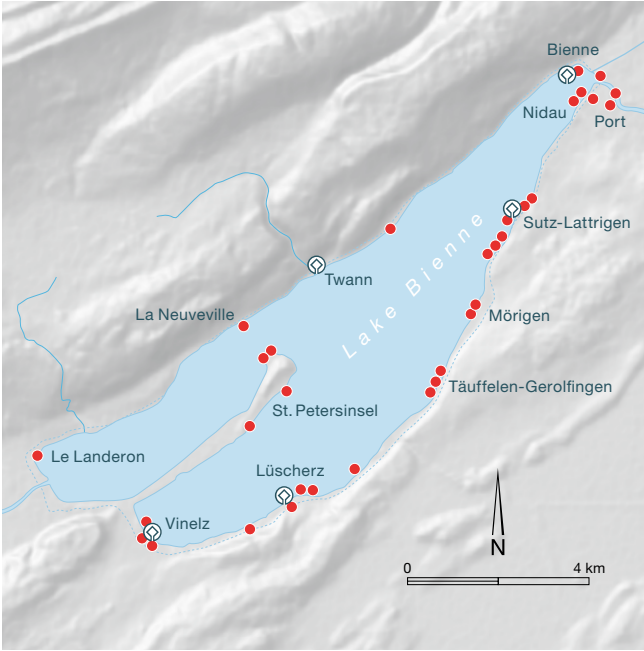


Pile dwellings in Canton Bern

Numerous sites dating from the Late Stone Age and the Bronze Age are located on the lakeshores of Canton Bern, often subsumed under the term «pile dwellings». Six of these were selected to represent the canton in the Unesco list of World Heritage sites. A particularly large number of pile-dwelling sites are concentrated around Lake Biemme, and at least one was found in the small Bernese section of Lake Neuchâtel. Most of them were discovered during the first Jura Waters Correction which was carried out in the 1870s.

Numerous small lakes on the Swiss Plateau, including the Inkwiler, Lobsige, Burgäschi and Moos Lakes as well as lakes that have completely silted up and are today bog land, were once locations of pile-dwelling settlements. Lake Thun has only yielded a few sites, and so far none at all have been found on Lake Brienz. We can assume, however, that these lakeshores were also settled, at least in some places. Their steeper shores and higher lake levels make it harder to discover sites.



- Lakeside settlements
- ⊗ Unesco World Heritage sites

The shores of Lake Biemme were lined with Late Stone Age and Bronze Age settlements. Five of them, and one site on Lake Lobsige, were designated Unesco World Heritage sites.



Organic finds from lakeside settlements give us an insight into everyday life in the Late Stone Age. Wooden cup (Sutz-Lattrigen, Rütte); comb used to hackle flax (Nidau, BKW); ladle (Twann, Bahnhof); hafted flint knife (Sutz-Lattrigen, Hauptstation); roll of fabric and bobbin (Twann, Bahnhof). Sc. 1:4.

How the pile dwellers lived

The sedentary lifestyle of the Late Stone Age, which involved crop cultivation and animal husbandry, spread from the east along the River Danube and via the Mediterranean region into Europe, gradually replacing the nomadic hunter-gatherer lifestyle from around 8000 BC onwards. These new influences began to arrive north of the Alps from around 5500 BC onwards. The earliest pile dwellings in our region were built around 4300 BC on the lakeshores of the Swiss Plateau.

The houses were timber-built. Usually the piles that were driven into the ground are the only elements that survive. The villages often lasted no more than a few years. Their inhabitants grew cereals and other crops in the surrounding areas. They kept cattle, sheep, goats and pigs and managed the woodlands. Hunting game and gathering wild plants were still a substantial part of their subsistence. In addition to serving as important transport routes the lakes, of course, also provided a variety of food.



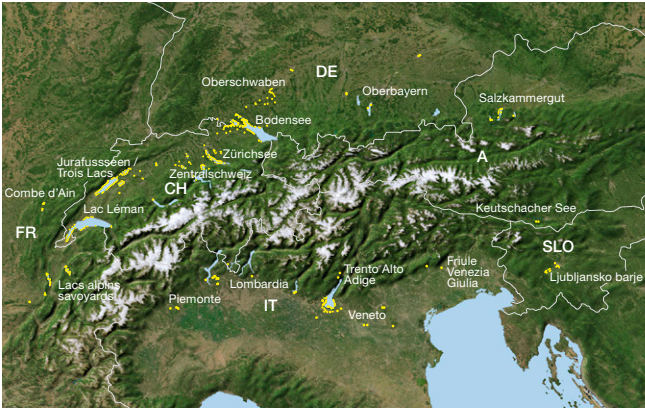
Pile dwellings under protection by Unesco

The almost 1000 known pile-dwelling sites in the alpine region are amongst the most important European cultural assets. Today they are located on the shores of lakes, in bog land created by silted-up lakes and on river flood plains.

In 2011 Unesco inscribed 111 of these settlements in six countries on their list of World Heritage sites. Switzerland played a major role in obtaining this status. Pile dwellings are known from all the big and most of the small bodies of water between Lake Geneva and Lake Constance. There is a particular concentration of sites in the so-called Three Lakes region.

The archaeological sites are largely invisible because they lie under water or beneath protective sediment deposits. Due to their locations in the waterlogged ground, organic materials from these sites, including wood, textiles (plant fibres), antler and animal bones, are extraordinarily well preserved.

Thanks to their unusually rich assemblages of finds, pile dwellings provide a fascinating insight into the world of early European farmers, their everyday lives, communication networks, technological innovations and also the beginnings of farming, crop cultivation and animal husbandry.



The Unesco World Heritage site «Prehistoric pile dwellings around the Alps» includes 111 archaeological sites in Switzerland, Germany, France, Italy, Austria and Slovenia.

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Kanton Bern
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Archäologie
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Pile-dwelling archaeology
and Unesco World Heritage

Things to do: guided tours of the dive centre at Sutz-Lattrigen for schools and groups; for more information please contact the Archaeological Service of Canton Bern.

Publication: Die Pfahlbauer – Am Wasser und über die Alpen. Published by the Archaeological Service of Canton Bern. Bern 2013.

Digital media: www.palafittes.org

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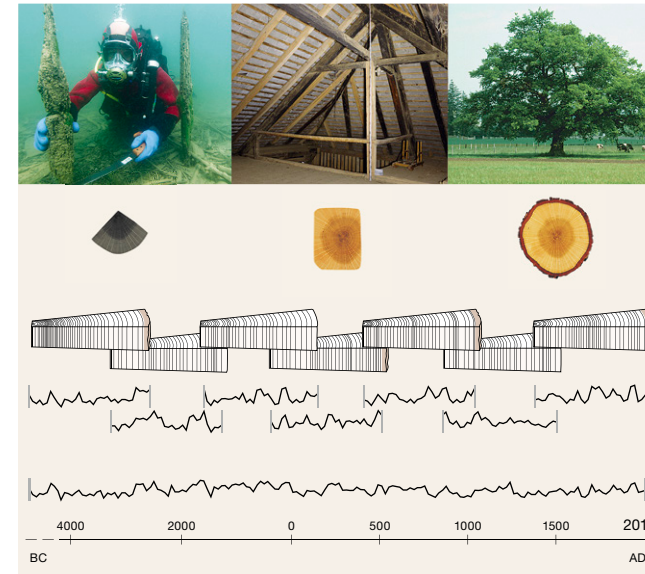




Of the houses in the pile-dwelling settlements, only the piles driven into the ground tend to survive today. Some of them are up to 6000 years old. Piles that were felled at the same time – as indicated by dendrochronological dating - can often be put together to form ground-plans. This information allows us to reconstruct the growth pattern of a Late Stone Age or Bronze Age settlement and what it perhaps looked like. The picture gives an impression of a village from the period around 3400 BC on Lake Bienne.



Piles of houses protruding from the lakebed are all that remain of a pile-dwelling settlement. The associated settlement layers have usually already eroded. In waterlogged ground, however, other constructions such as this trackway also sometimes survive.



One ring per year – narrow or wide depending on the weather conditions. Starting with living trees, overlapping tree ring sequences can be fitted together in a standard chronology that leads further and further back over the millennia.



In stormy weather conditions and high wave action the lakebed is disturbed and certain areas of the shoreline are gradually swept away. This results in the fragile archaeological layers being exposed and destroyed.

Forgotten villages

As early as 1811 the first pile-dwelling site on Lake Bienne was entered on a map of Nidau. In the 1850s the Zurich scholar Ferdinand Keller coined the term «pile dwellings» when writing about archaeological sites with numerous piles driven into the lakebed, which he correctly interpreted as the remains of past villages.

The first Jura Waters Correction (1868–1891) shifted the focus of pile-dwelling research from lake Zurich to Lake Bienne. When the lake levels were lowered the piles of numerous sites suddenly began to appear on the now dry lakeshores. People immediately began looting the pile-dwelling finds which, at the time, were easy to sell to an international audience. This led the cantonal parliament of Bern to issue the first law for the protection of archaeological sites in 1873.

The lakeside and wetland settlements in Canton Bern have been archaeologically monitored since the 1980s. The aim is to track the erosion processes at the sites and, where required, to put in place protection measures or carry out rescue excavations. The hope is for future generations to be able to benefit from the precious cultural heritage from the Late Stone and Bronze Ages.



The oldest wheel in Canton Bern was recovered from a settlement at Vinelz. It was made of maple and ash wood around 2700 BC. Sc. 1:8.

Underwater and wetland archaeology

Research on archaeological settlement sites in water and in waterlogged ground began around the mid-19th century. Modern underwater archaeology, however, only developed from 1960 onwards thanks to the invention of the regulator, which allowed for autonomous diving. Today, the established method of working is technologically quite challenging and the diving equipment must meet very high safety requirements.

Numerous pile dwellings are today located away from the water on waterlogged shorelines or in bogs. Thanks to the oxygen-deprived atmosphere the preservation conditions for organic remains are ideal, much like in the lakes. That is why such sites are of the greatest scientific value. Natural scientific analyses on seeds, fruits and pollen, for instance, provide us with a unique insight into the environment and people's dietary habits at the time.

Dendroarchaeology: wood as a source of information

The annual growth rate of a tree is primarily dependant on weather conditions. All trees in a region are similarly affected, which, over the years, leads to a uniform and characteristic pattern of narrow and wide growth rings. Once the tree-ring sequences of wood samples have been measured, standard chronologies are studied and comparable patterns identified. Ideally, this results in felling dates to the exact year. This is often the only way of associating the piles with the ground-plans of individual houses. The timbers also provide important insight into settlement dynamics and forest management. Since the large-scale excavation carried out in Twann from 1974 to 1976, dendrochronology has remained a permanent component of Bern's archaeological research. So far almost 30 000 timbers have been analysed in our very own dendrochronological laboratory and innumerable settlements and settlement phases have been dated.

Protecting instead of excavating

Artificial lowering of the lake levels, developing large sections of shorelines and busy shipping traffic lead to ongoing shoreline and lakebed erosion in many lakes on the Swiss Plateau. As a consequence numerous prehistoric sites are acutely endangered or have already been destroyed. Because it is impossible to excavate them all, various methods for the preservation of the fragile archaeological layers have been developed and tested since the 1990s. Covering the lakebed with geotextile and weighing it down with a gravel fill has revealed itself to be the most effective protection measure and has already been employed at several sites in Lake Bienne. However, this method is not suitable for every site. Larger constructions, including the installation of stone blocks, are required in highly exposed areas in shallow water, where the waves break in stormy weather, or in locations with significant elevation differences in the terrain.