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## **Pile Dwellings around the Alps (Switzerland, Austria, France, Germany, Italy, Slovenia) No 1363**

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### **Official name as proposed by the States Parties**

Prehistoric Pile Dwellings around the Alps

### **Location**

Switzerland

Cantons of Aargau (AG), Berne (BE), Fribourg (FR), Geneva (GE), Lucerne (LU), Neuchâtel (NE), Nidwalden (NW), Schaffhausen (SH), Schwyz (SZ), Solothurn (SO), St. Gall (SG), Thurgau (TG), Vaud (VD), Zug (ZG), Zurich (ZH).

Austria

Federal state of Carinthia (Kärnten, KT): administrative district of Klagenfurt-Land;  
Federal state of Upper Austria (Oberösterreich, OÖ): administrative district of Vöcklabruck.

France

Region of Rhône-Alpes: Departements of Savoie (73), Haute-Savoie (74);  
Region of Franche-Comté: Departement of Jura (39).

Germany

Federal state of Baden-Württemberg (BW): administrative districts of Alb-Donau-Kreis (UL), Biberach (BC), Bodenseekreis (FN), Konstanz (KN), Ravensburg (RV);  
Free State of Bavaria (BY): administrative districts of Landsberg am Lech (LL); Starnberg (STA).

Italy

Region of Friuli Venezia Giulia (FV): Province of Pordenone (PN);  
Region of Lombardy (LM): Provinces of Varese (VA), Brescia (BS), Mantua (MN), Cremona (CR);  
Region of Piedmont (PM): Provinces of Biella (BI), Novara (NO); Torino (TO);  
Trentino-South Tyrol / Autonomous Province of Trento (TN);  
Region of Veneto (VN): Provinces of Verona (VR), Padua (PD).

Slovenia

Municipality of Ig

### **Brief description**

The serial property encompasses the remains of prehistoric pile-dwelling settlements in and around the Alps dating from around 5,000 to around 500 BC. These pile dwellings, or stilt houses, were constructed on wooden piles at the edges of lakes, rivers or wetlands. The land on which they were built was later inundated,

leaving their remains underwater and in ideal conditions for the conservation of organic material, such as wood, textiles, plants and discarded foodstuffs.

The settlements have yielded substantial evidence for the layout and subsistence practices of early agrarian societies and the way they developed over several millennia in the Alpine and sub-Alpine regions of Europe during the Neolithic, Bronze Age and early Iron Age periods. 111 sites have been nominated out of 937 so far identified. They appear to reflect the settlements of some thirty different cultural groups.

### **Category of property**

In terms of categories of cultural property set out in Article I of the 1972 World Heritage Convention, this is a serial nomination of 111 *sites*.

## **1 Basic data**

### **Included in the Tentative List**

Austria: 28 January 2009  
France: 5 November 2009  
Germany: 6 October 2009  
Italy: 28 January 2009  
Slovenia: 12 January 2010  
Switzerland: 28 December 2004

### **International Assistance from the World Heritage Fund for preparing the Nomination**

None

### **Date received by the World Heritage Centre**

26 January 2010

### **Background**

This is a new nomination.

### **Consultations**

ICOMOS consulted its International Scientific Committees on Archaeological Heritage Management and Underwater Heritage and several independent experts.

### **Literature consulted (selection)**

*Autour du Lac du Bourget : actes du colloque pluridisciplinaire, Le Bourget-du-lac*, 2008.

Bellwood, J., *First Farmers: The Origins of Agricultural Societies*, 2006.

Della Casa, P., & Trachsel, M., (eds.), *Wetland Economies and Societies: proceedings of the international conference, Zurich*, 2004.

*Le peuplement de l'Arc alpin, 131e Congrès national des sociétés historiques et scientifiques, Grenoble*, 2006.

In Situ Preservation of Submerged Prehistoric Settlements in Lakes of the Alpine Region. Anti-Erosion Measures at Sites in Lake Bièvre, Suisse, *Preserving archaeological remains in situ? Proceedings of the 3<sup>rd</sup> conference, 1-9 December 2006*.

Hafner, A., & Schlichtherle, H., Neolithic and Bronze Age lakeside settlements in the Alpine region, Threatened archaeological heritage under water and possible protection measures – Examples from Suisse and Southern Germany, ICOMOS World Report *Heritage at Risk 2006/2007*.

Menotti, Francesco, (ed.), *Living on the Lake in Prehistoric Europe*, 2004.

### Technical Evaluation Mission

An ICOMOS technical evaluation mission visited the property from 28 September to 4 October 2010 and 12 to 18 October 2010.

### Additional information requested and received from the States Parties

By letter of 14 December 2010, ICOMOS requested the States Parties to consider whether the Outstanding Universal Value of the property could be conveyed by a smaller number of nationally protected sites that reflect the known geographical spread of pile dwellings and can be seen as exemplars in terms of conservation and setting, to provide clarification on the contribution of the individual sites to the Outstanding Universal Value proposed, and to provide further details on resources for monitoring and management in Austria. The States Parties responded on 28 February 2011 with a revised nomination of 111 sites and details from their response are included in this report. The States Parties also submitted a revised Management Plan.

### Date of ICOMOS approval of this report

10 March 2011

## 2 The property

### Description

The concentration of remains of pre-historic pile (or stilt) dwellings underwater around the edges of lakes, rivers and wetlands in the Alpine and sub Alpine regions appears to be unique in Europe – perhaps reflecting the ideal conditions for their survival.

The nominated sites are the archaeological remains of prehistoric settlements from the period between around 5,000 and 500 BC. The visible elements mainly consist of architectural components of houses, access paths, and palisades. The submerged locations provide the ideal conditions for the survival of organic material – which does not survive in the dry conditions of land based remains. Where the archaeological layers of the sites that have been excavated (these are only a small number), the waterlogged remains have provided substantial evidence of tools, vessels, other utensils, textiles, and food, that together have provided a detailed insight into everyday life in prehistoric times and into the development of farming communities during the Neolithic and Bronze Age periods in Alpine Europe.

937 sites have so far been identified and these can be grouped into several clusters, with the densest concentration of sites being in the first two clusters:

### Northern Alps:

- Lakes Bienne, Morat and Neuchâtel, Western Switzerland, and Lakes Zurich and Zug, Central Switzerland;
- Lake Constance, Eastern Switzerland and Southern Germany, and the lower lands of Lake Federsee, the foothills of the Swabian Jura, and the Bavarian pre-Alpine lakes and wetlands, Germany.

### Western Alps:

- Lakes of the Jura Mountains and valleys of the Savoy Alps, France.

### Eastern Alps:

- Lakes of the Salzkammergut Alpine foothills, Upper Austria;
- Lake Keutschach, Austria.

### Southern Alps:

- Lake Garda, Italy;
- Areas in Lombardy, Veneto and Trentino-South Tyrol, Italy.

### South-East of the Alps:

- Low lying wetlands of Ljubljansko barje, Slovenia; this cluster is seen as a closed group unrelated to those in or near the Alps.

The original nomination covered 156 sites. The revised nomination submitted in February 2011, in response to observations by ICOMOS, covers a smaller number of 111 sites. These are distributed as follows:

Switzerland	56
Austria	5
France	11
Germany	18
Italy	19
Slovenia	2

The selection of the smaller number of sites was undertaken to avoid duplication of sites with similar values. This new selection was also aimed at selecting sites that contribute to the overall Outstanding Universal Value in a substantial, scientific and readily defined and discernible way and ensuring that the Outstanding Universal Value of the whole property is easily understood and communicated. The States Parties also stated that adequate protection/management of each component part is now emphasised, and, where necessary, the enhancement of protection measures, together with the management system and management plan already implemented, should ensure the overall manageability and coherence of the property.

The nominated sites are mostly small between 0.08 and 15.00ha; the exception is a site in France of 50.65ha. 37% of sites are underwater at depths between 0.5 and 10.00 metres; 33% are either on dry land or in bogs; while 30% are partly submerged and partly on dry land. The nominated areas mostly cover the archaeological remains and do not extend to their lake shore contexts.

The pile dwellings are seen to belong to three location types. The most numerous are lakeside settlements,

followed by bog settlements, with the least numerous being sites in the flood plains of rivers.

The areas chosen for settlements were the inundation zones of lakeshores or rivers, peninsulas or islands – settlements built on steep shorelines are very rare. Rising water levels in pre-historic times led to the abandonment of settlements which were then covered by lake and river sediments. When the water levels decreased, some settlements were then later re-occupied creating new archaeological layers, which in some sites are several metres deep.

The occupation of the waterside sites seems to have come to a sudden end around 800 BC coinciding with the emergence of iron technology and new iron-age societies.

The pile dwellings do not represent a uniform or homogenous culture rather they can be seen to reflect the settlements of some thirty different cultural groups, as identified from pottery and other artefacts that appear to reflect contacts with settlements in the neighbouring plains as well as trade routes across the Alps.

Analysis of the archaeological deposits has provided evidence for the following aspects of pre-historic Neolithic, Bronze Age and early Iron Age societies:

-Emergence of agricultural societies through evidence of wheat, barley and millet, the bones of domesticated animals, cattle, pigs, goats and sheep, the use of wild deer, boar and game, and wild berries, birds' eggs, fish and honey;

-The development of technological progress through tools, such as axes, from the use of stone to copper or bronze and then (in a few sites) to iron over a period of some 4,000 years;

-The earliest metallurgical evidence in south-eastern Europe from 4<sup>th</sup> millennium sites in Lake Constance, Austrian Salzkammergut, and Slovenian sites whose dating to around 2,200 BC has shed light on the development of bronze-working techniques in Europe;

-Trade routes for flint, shells, gold, amber, and pottery across the Alps and within the plains;

-Transport evidence from dugout canoes (some 30 have been found), and wooden wheels, some complete with axles for two wheeled carts dating from around 3,400BC – some of the earliest preserved in the world;

-Evidence of construction techniques, such as pile foundations, sill beams, foot-plate constructions, wattle and daub, round or split timber walls, roof shingles, bark floor insulation, and tongue & groove joints from the Bronze Age onwards, and of settlement planning such as rows of houses, ribbon developments, street settlements and clustered villages;

-Dating of remains by dendro-chronology of 300,000 wood samples during the last 25 years, of which firm dates can be provided for some 50,000 samples, that have given a great precision to the Neolithic and Bronze Age in Europe;

-Survival of organic materials such as bark used for boxes, arrow cases and pottery decoration; tar from birch trees for glue; oak and lime bast used in fabric for capes, hats, shoes and nets; the oldest textiles in Europe dating to 3,000 BC come from the pile dwellings.

This cumulative, detailed evidence has allowed an understanding of the evolution of the many settlements over time, which has revealed changing patterns. The earliest settlements were used only for around 5 to 20 years before re-building or re-location. By the Late Stone Age, longer lasting settlements appeared, and by the Late Bronze Age some villages persisted for between 50 to 100 years.

The evidence has also revealed social stratigraphy in terms of differing possessions and diet within single settlements. In terms of domestication of animals, the earliest settlements, around 4,000 BC, relied on feeding their animals in the summer on wood pastures and in the winter on dried leaves and as a result they maintained small herds. Only when grasslands were extended around 3,000 BC did the herd size increase. The evidence has also revealed the way societies responded to adverse climatic change in terms of increasing food storage and hunting as the potential to grow crops declined.

Highly developed dendro-chronological studies have provided unusual definition on the nature and sequences of construction, duration of occupation and building technologies. They have also defined the anthropological effects on the ambient character of woodlands and have provided significant definition on the nature of wood and woodland management. However, the chronologies established by several notable institutions (e.g. the Laténium museum; the dendro laboratory at the facility on Lake Bienn; Dendrodata, Verona; and Archaeology Branchoffice Hemmenhofen) have yet to be linked securely to a European master chronology.

The nominated sites have been chosen according to the following criteria and sub criteria:

1 Great increase in knowledge about early agricultural societies and people's everyday lives:

- Typical example
- Important reference assemblages
- Evidence of long-distance trade contacts
- Rarely found period
- Important technical innovations
- Special geographical situation
- Several settlement phases
- Contemporaneous sites: as identified by dendrochronology

- Other aspects – specific value

2 Important examples of the development of architecture, construction and habitat:

- Architecture elements
- Reconstructable village ground plans (or parts thereof)
- Settlements in unusual locations or with special functions
- Settlement dynamics within a micro-region

3 Excellent dating possibilities (dendrochronology):

- Good-quality dating possibilities
- Easy-to-understand pile field

4 Extremely rich and broad scientific data:

- Unusually thick cultural layers
- Evidence pointing to manufacturing techniques
- Very short settlement phase (1-2 decades)

5 Outstanding opportunities for natural sciences or rich organic finds:

- Excellent archive for archaeobotany, archaeozoology, palaeolimnology, climate and landscape history, etc
- Excellent conservation of organic finds (wooden artefacts, textiles, etc)

A detailed table is provided in the nomination dossier listing all the 937 sites and showing how the nominated ones have been chosen. There are detailed descriptions provided of each nominated site, giving details of the investigations that have been undertaken, the need for protection, etc.

The sites selected have not been substantially excavated. Generally, the largely excavated sites which provide the understanding of the content and cultural context for the chosen sites are listed as 'associated sites'. This point for example is well illustrated at Grand Lac de Clairvaux (FR-39-01) and Lac de Chalain (FR-39-02) where one site out of a total of 19 and 20 sites at each site respectively has been selected for the nomination with the remaining sites are located within the buffer zone.

There is a great diversity of challenging modern and sometimes vulnerable contexts in which the sites are located. A large percentage of the sites are located under shallow water, or lakes shores, or have their relict structures and deposits sealed beneath lake marls or similar natural deposits. Many were formerly sealed beneath peat and are now located beneath intensively cultivated (albeit hydrologically managed) agricultural environments. Few sites have any easily identified surface expression for the non specialist. Those that do have surface expression that are often composed of fragile, eroded, wooden 'pile fields' in shallow lake water, or may be identified by their particular morphological presentation in a topographical context (as preeminent elements of shoreline on lakes) but this is very rare.

Very few sites, therefore, can be overtly or securely presented and displayed in any meaningful way in situ.

### History and development

The nomination dossier provides an over-view of the development of the Alpine lacustrine landscape that allowed the pile dwellings to flourish. A detailed history of some thirty different cultural groups over a period of some 4,000 years that were associated with the pile dwellings has not been attempted. Instead a table has been produced indicating the pre-historic periods reflected in the finds from the twenty-two specific areas or clusters of sites. The nomination dossier also puts forward dates ascertained for the earliest evidence of Neolithic, Bronze Age and Iron Age settlements in various countries and the date when pile dwelling settlement ended.

Evidence is also set out on a country by country basis for the evolution of settlements from the Neolithic period through to the Iron Age – or equivalent in Slovenia.

And details are provided on the various changes in lake levels and lake environments in historic times, on the discovery of the pile dwellings in the 19<sup>th</sup> century, as well as on the history of research into these dwellings, of underwater survey work since the 1930s, and of underwater excavations since the 1950s, when scuba diving techniques made work possible at greater depths.

## 3 Outstanding Universal Value, integrity and authenticity

### Comparative analysis

A very detailed comparative analysis has been provided that compares the value and attributes of the nominated property with other sites that show similar typological, chronological and thematic features within the framework of early agrarian societies.

The property is compared with 20 properties on the World Heritage List representing cultural properties from the same era as the Prehistoric Pile Dwellings around the Alps, with sites on Tentative List and with other known sites, particularly other pile dwellings and wetland sites in Europe. Finally an internal comparative analysis is undertaken to justify the choice of sites.

The thorough analysis demonstrates clearly that the substantial evidence presented in the pile dwellings of the nominations is not matched on the World Heritage list. Furthermore it cannot be matched with other sites – on or off Tentative lists as the quantity and quality of the evidence and the density of the remains are un-matched by other sites.

In terms of the internal comparison, this study sets out parameters for the choice of sites – as set out above. ICOMOS considered that these parameters needed to be augmented with others that relate to setting and conservation in order to nominate sites that could be

seen as exemplars in all facets and this issue was raised in the ICOMOS letter of 14 December 2010.

In its response, the States Parties further augmented the selection criteria, by adding sub criteria (as set out above) and has also emphasised the adequate protection/management of each component site. It did also give justification for including sites in urban areas as well as those with more natural settings, as otherwise important sites would be excluded. It did however accept that for some urban sites the protection would need to be enhanced and as a result some extra measures have been put in place – and these are mentioned below.

ICOMOS considers that the revised selection of sites more clearly reflects the Outstanding Universal Value of the property and more clearly relates individual sites to that Outstanding Universal Value.

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ICOMOS considers that the comparative analysis justifies consideration of this property for the inscription on the World Heritage List.

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#### **Justification of Outstanding Universal Value**

The nominated property is considered by the States Parties to be of Outstanding Universal Value as a cultural property for the following reasons:

- The series of prehistoric-dwelling structures, thanks to the exceptional number and importance of scientific results, most due to exceptional wealth of organic archaeological remains, provides an outstanding detailed perception of the world of the early agrarians in Europe, giving precise information on their agriculture, animal husbandry and the development of metallurgy.
- The period of more than four millennia covered by the serial of pile dwellings indubitably coincides with one of the most important phases of recent human history: the dawn of modern societies.
- In view of the excellent possibilities of exact dating of the remains of wooden architectural elements (annual resolution by dendrochronology) of the serial property the understanding of entire prehistoric villages and their detailed spatial development over very long periods can be followed on the pile-dwelling sites, giving the best known archaeological sources for prehistoric dwellings.
- The unique preservation of organic material from prehistoric times is as well an exceptional opportunity for research in many fields of natural science, such as archaeobotany and archaeozoology.

ICOMOS considers that this justification is appropriate although it needs to be recognised that the important phase in human history relates to a specific part of the world – in Europe.

#### **Integrity and authenticity**

##### **Integrity**

The series represents the well-defined geographic area around the Alps where the pile dwellings are extant to its full extent, as well as all the cultural groups within it during the whole period of prehistoric pile dwellings from 5,000 to 500 BC. The series and the nominated property therefore encompass the complete cultural context of the archaeological phenomena. The sites selected have been chosen to be those that still remain largely intact, as well as to reflect the diversity of structures, groups of structures and time-periods.

Many of the component sites can be said to be vulnerable to a range of threats ranging from the uses of the lakes, intensification of agriculture, development etc. ICOMOS considers that the monitoring of the sites will be crucial to ensure their continuing integrity.

ICOMOS notes that the visual integrity of some of the sites is to a degree compromised by their urban settings.

##### **Authenticity**

The physical remains are well preserved and documented. Their archaeological strata, preserved in the ground or under water are authentic in structure, material and substance, without any later or modern additions.

The remarkable survival of organic remains facilitates the highest levels of definition in relation to the use and function of the sites themselves and to a variety of everyday industrial, domestic and ritual functions. The very long history of research, and increasingly transnational research, co-operation and coordination, provide an unusual level of understanding and documentation of the sites.

In terms of the ability of the sites to display their value, this is difficult as they are mostly completely hidden underwater which means that their context in relation to the lake and river shores is important in order to evoke the nature of the sitting of pre-historic societies (even though the present day appearance of the lake and river shores is quite different from when the pile dwellings were inhabited). This context is compromised to a degree on those sites that survive in intensely urbanised environments. Nevertheless, ICOMOS accepts the need to include important sites in urban areas but stresses the need for their strict protection in order to ensure that their authenticity is ensured.

Because the sites cannot be overtly presented in situ, they are interpreted in museums. In most there is a high level of honest definition on what is based on archaeological evidence and what is necessarily reconstruction (where for instance there is a lack of precise evidence for roof construction). An over-arching presentation framework needs to be developed that allows coordination between museums and an agreed

standard of archaeological data to ensure understanding of the value of the whole property and how individual sites contribute to that whole.

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ICOMOS considers that the conditions of integrity and authenticity have been met although individual sites are vulnerable in terms of visual integrity and their ability to convey their value and to a range of different threats that will need careful monitoring.

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#### **Criteria under which inscription is proposed**

The property is nominated on the basis of cultural criteria (iii) and (v). ICOMOS considers that criterion (iv) should also be considered.

*Criterion (iii): bear unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;*

This criterion is justified by the States Parties on the grounds that the sites within the property are one of the most important archaeological sources for the early agrarian societies in Europe between 5,000 and 500 BC.

The exceptional waterlogged conditions preserved organic matter so the sites give an exceptionally detailed image of the living conditions of these prehistoric populations, providing unique knowledge of their social and economic development and their ecological interactions.

The results of over 150 years of research on the pile-dwelling sites had a considerable influence on the understanding of the development of the early agrarian societies of the Neolithic and the Bronze Age in general, and the interactions between the regions around the Alps in particular.

ICOMOS considers that this justification is more appropriate for criterion (iv), as the evidence from the collection of sites cannot be said to represent a single cultural tradition or civilisation – but does provide exceptional evidence for understanding developments in human history.

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ICOMOS considers that this criterion has not been justified.

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*Criterion (iv): be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;*

The States Parties did not propose this criterion.

ICOMOS considers that the evidence collected from sites that have been excavated and researched has clearly provided much detailed material to augment understanding of the development of agrarian societies in the Neolithic, Bronze Age and early Iron Age in the Alpine and sub-Alpine region, and of the organisation and material culture of their societies as it changed and

evolved over time. The evidence has also contributed to a wider understanding of these periods of prehistory in Europe more generally. In these ways, the sites can be said to have contributed in an outstanding way to our understanding of significant changes in the human pre-history of Europe.

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ICOMOS considers that this criterion has been justified

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*Criterion (v): be an outstanding example of a traditional human settlement, land-use or sea use, which is representative of a culture (or cultures), or human interaction with the environment especially when has become vulnerable under the impact of irreversible change;*

This criterion is justified by the States Parties on the grounds that the property gives excellent evidence of the early farmers' settlements, providing outstanding well preserved remains of wooden pre-historic architecture and reflecting building traditions over very long periods. The excellent state of conservation of wooden building elements in these villages and their most precise and detailed dating permit the reconstruction of architectural organization and development of these early human settlements and allow the writing of a history of architecture covering the span between 5,000 and 500 BC.

ICOMOS considers that the property has provided a very detailed and outstanding insight into the settlement and domestic arrangements of pre-historic, early agrarian lake shore communities in the Alpine and sub-Alpine regions of Europe over almost 5,000 years, thus allowing an unique understanding of the way they interacted with their environment, in response to new technologies and also to the impact of climate change.

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ICOMOS considers that this criterion has been justified.

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ICOMOS considers that the serial approach has been justified.

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ICOMOS considers that the nominated property meets criteria (iv) and (v) and conditions of authenticity and integrity and that Outstanding Universal Value has been demonstrated.

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#### **Description of the attributes**

The attributes are all the waterlogged remains and their associated archaeological finds and data as well as their location and setting that allows understanding of the relationship between the settlements and the lake shores.

## 4 Factors affecting the property

### Development pressures

Urbanisation of lakeshores (Lake Zurich; Zug, Lake Geneva; Lac d'Annecy; Lac Le Bourget; Lake Garda; Attersee and Lake Constance) is a threat.

Development controls are embedded in development planning (e.g. Lake Neuchâtel; and other Swiss lakes; on all the French lakes, and in the vicinity of all the Italian sites). All the nominated sites are being actively monitored in some way. At Zurich, Zug, Bienne, Geneva (CH), Cantonal Archaeological Services are actively monitoring the sites while this is undertaken at Attersee (AT) by underwater research archaeologists. However, some of the regions do not yet have a rigorous framework for the management of '*archéologie préventive*', i.e. the evaluation of development impact in advance of development, and some development, such as the development of jetties, and the mooring of private leisure boats, is exempt from planning control - notably in Austria and in some Swiss Cantons.

There is commercial and intense leisure boat traffic on all major and minor lakes, with the exception of Mondsee (AT) which is privately owned and where leisure boating is prohibited.

Speed is regulated close to the shoreline of all Swiss lakes. It is also controlled on the larger French lakes e.g. Lac d'Annecy and Lac Le Bourget; and on the Italian lakes, including Lake Garda where traffic and activity is policed by a special force of the *Carabinieri*. There are also speed restrictions on Lake Attersee. Boat sizes are limited and engines in many instances are limited to 2hp electric engines, or rowing boats (e.g. the smaller French lakes including Chalain and Clairvaux).

Leisure boat access is restricted or prohibited on a very great number of lakes in specific littoral areas where natural heritage protection measures have been taken.

The areas frequently coincide with the archaeological sites chosen for designation, but there are many notable instances where the natural heritage zones marked by buoys do not 'embrace' the nominated sites (e.g. Lake Zurich, Lake Geneva, Lac Le Bourget and Attersee). However, ICOMOS notes that dialogue with natural heritage agencies is increasing and that this was a growing trend across all countries and the regions visited.

ICOMOS notes also individual responses as at Lake Keutschach (AT-KT-01) where leisure craft are limited in size and power and the site is actively supervised and monitored by water safety personnel who have dived on the site with the regional research archaeologist and know the site well.

Mooring of private boats (Lake Zurich; Lake Geneva, Lake Constance, Lac d'Annecy; Lac Le Bourget; N.

Austrian Lakes; Bavaria) is a largely unregulated activity in Switzerland and Austria and thus an issue for some of the nominated sites. While the mooring blocks of concrete are not especially damaging, particularly if the pile field is buried, temporary anchoring and the movement of mooring chains attached to mooring blocks are significant issues. Where natural protection measures are in place this activity is prohibited. The degree of erosion to-date is not extreme, but it is incremental, unrelenting and damaging - and ICOMOS considers that it could be ameliorated with a more concerted level of management close to the sites concerned.

In the additional information provided in February 2011 in relation to the reduced number of nominated sites, it was stated that for some sites in urban areas, additional measures will be taken, or have already been launched, in order to enhance their protection. These include extended 'no-anchoring' zones with surface marking buoys, or the relocation of mooring facilities further away from the site.

### Tourism pressures

#### Looting

ICOMOS noted one instance of looting, following the recent interception of looters by the *Carabinieri* on the south-eastern shore of Lake Garda (on an associated site close to IT-VN-04). The issue is mentioned in the nomination dossier in relation to sports diving activity. However, the identification of sites with signage could lead to further negative interest.

### Environmental pressures

#### Erosion

Significant and accelerating erosion issues were identified on a number of the Swiss and French lakes during the 1980s and 1990s. The causes are numerous, but human activity is certainly a major contributing factor. Natural erosion is a significant factor and is caused by waves, created and driven by strong winds onto the windward shores of lakes. This occurs particularly where shallow former prehistoric shorelines on which the sites are located now form shelves of shallow littoral lake bed and fall away sharply and steeply to deeper lake water (exceptionally well-documented in France). Motorised boat traffic also creates significant wave action along lake shores.

Loss of water quality in the past 50 years (improved in the past 2 decades on a lot of lakes) together with the scale and intensity of boating activity has resulted in a major loss of reed beds and other littoral vegetation that formerly stabilized the lake shores. The regression of lake shorelines has occurred as a result with the resulting erosion of lake marl deposits that formerly covered the archaeological sites.

ICOMOS notes that a number of actively eroding sites are included in the nomination dossier (notably on Lake Zurich; Lake Neuchâtel; Lake Bienne (CH), the lakes of

Haut-Jura and Haute-Savoie (FR); and also at Lake Starnberg (DE)). Most of these sites have either had works undertaken already or have plans in place to undertake works to slow/halt erosion. The damage to the nominated sites concerned is not catastrophic, but over time ICOMOS considers that it could be considerable.

#### Agricultural practices

Intense cultivation of corn and other cultivated crops in relatively shallow wet, peaty soil could damage some remains where the overburden of cultivated soil covering the sites is not especially deep - in some cases less than 1m. Some of these vulnerable sites are being actively monitored (e.g. at the largely excavated sites at Egolzwil bog (CH-LU-01/2) due to the presence of the museum there and its associated activity); the sites at Desenzano del Garda (IT-LM 01), Lucone (IT-LM-05) are also being monitored.

Hydrological monitoring and controls coupled with natural heritage designation are in place at Zug-Sumpf (CH-ZG-06); adjacent to Fiavè (IT-TN-02); Ljublansko barje (SI-IG 01-2); and at Federsee bog, where a concerted programme of land acquisition is linked to the recharging of land drains and the management of water levels (DE-BW-12-15). In these contexts also, there are instances where private landowners exercise a valuable degree of custodianship (e.g. Castellaro Lagusello IT-LM-08) or the local mayors have overseen a programme of land acquisition (e.g. Chalais and Clairvaux, Palù di Livenza and Federsee).

#### Natural disasters

ICOMOS notes that storms that generate large waves pose the biggest threat to the pile dwelling sites as these can erode the banks as well as damage the sites. Wave action is exacerbated where reed beds no longer exist and there is nothing to slow down the force of the water. Various trial projects have been undertaken to control erosion and re-introduce reed beds – although their impact on the pile sites is not yet fully understood.

A third of sites are said to be threatened by erosion or drying out and ten per cent severely threatened.

#### Impact of climate change

Changes in climate could lead either to more unpredictable weather and thus more storms, or prolonged dry periods that could lead to the drying out of sites.

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ICOMOS considers that the main threats to the property are erosion, much of which is exacerbated by development and the changing uses of the Lakes.

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## 5 Protection, conservation and management

### Boundaries of the nominated property and buffer zone

The significant variation in the boundaries of the nominated sites reflects the known and recorded extent of each site (e.g. the topographic expression of the site, above water level, at Inkwil (CH-SO-02), or the surveyed extent of the site as at Sutz-Lattrigen-Rütte (CH-BE-06). Some of the sites are exceptionally large (e.g. at Rapperswil (CH-SG-01) which is close to an important historical and modern crossing point between the upper and lower Lake Zurich).

ICOMOS considers that the boundaries of the nominated sites are appropriate and reflect the existing knowledge of the site and are supportable in terms of definition of extent at least.

ICOMOS notes that there is a greater variation displayed between the smaller and larger areas of buffer zones. Where these are extremely 'tight' to the nominated site boundary, the reason is generally linked to the ability to manage the area surrounding the known site (e.g. Zug-Riedmatt (CH-ZG-05) the site is in a modern urbanised environment and has been built on using piled foundations; a larger buffer zone would make no sense). Where very large buffer zones have been defined, there is good reason for this decision based on existing/survey knowledge. It reflects a supposition that associated remains – or indeed sites – may exist within the designated buffer area. The significant variation in size, therefore, is appropriate and also reflects the degree to which the areas defined can be managed.

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ICOMOS considers that the boundaries of the nominated property and of its buffer zone are adequate.

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### Ownership

A detailed table is provided in the nomination dossier of ownership which is a mixture of public and private.

### Protection

#### Legal Protection

As the series is transnational it does not have uniform, protective provision.

Each of the six States Parties from which the sites are drawn has a range of discrete systems of legal protective provision at national, regional and local level including federal government systems and their independent legislatures, notably in Switzerland, Germany and Austria.

The primary 'platform' for legal co-operation and protection of the nominated sites between the States Parties at a transnational level is adherence to a number of international conventions which have been ratified by most, but not all of the States Parties (for instance



Austria has not signed the Valletta Convention 1992, although in the supplementary information received in February 2011, it was stated that ratification of the Valletta convention is now treated with priority by the Federal Ministry of Education, Arts and Culture).

For the particular sites in the nomination, the ratification of the Ramsar Convention (1971) is helpful as a range of protective provisions, arising from the protection of natural heritage areas, now extend to the sites nominated and in many cases incorporate their buffer zones. For the EU countries (all the States Parties except Switzerland) the Environmental Directives are also important and linked to statutory spatial planning controls. It is notable that Slovenia (which has no underwater sites within the nomination) is the only country to have signed/ratified the Paris (2001) convention on underwater heritage.

Switzerland has a strong federal legal and policy basis for cultural heritage protection. The central provision is used at cantonal level to provide the basis for a wide range of discrete cantonal statutory systems (26 in all), each with a system of community-based local government (which adheres to cantonal law). Added to this, there is a legal provision in respect of water protection.

The Federal Inventory of cultural heritage sites notably, does not include all the sites nominated. However, the federal law on spatial planning (RPG; SR 700) regulates land use and the Cantons and Communities prepare development plans. In the past 10 years a number of cantons have identified the protection of cultural heritage sites as a cantonal commitment. Cantonal archaeologists, frequently with links to dedicated research centres and museums, are employed to oversee this.

Cantonal inventories of the nominated sites have been undertaken, and assessment of planned development proposals – that are not exempt and where the cantonal law requires it – facilitates the identification of potential development impact and the protection of the sites. However, there does not appear to be a uniform system of mandatory planning referral and development impact assessment (for all developments) to all cantonal archaeologists. In the highly urbanised larger lake shore areas small-scale, but very damaging, development appears to be exempt from planning control, such as the mooring of private boats, the installation of private jetties; dredging to deepen shallow waters for a variety of purposes (not archaeologically controlled, but policed).

France: The concept of *Archéologie Préventive* permeates regional and local spatial planning control, and is underpinned by the national *Code du Patrimoine*, linked to the EU Environmental Directives and an Act 1993 establishing zoning provision for development control purposes. The concept of *Archéologie Préventive* was formally instated in law in 2001. All the nominated

sites have been assigned the status '*Monuments Historiques*'. This provides them with a nationally-governed protective provision, under legislation passed in 1913, and provides control of excavations. It does not extend to the buffer zones. Spatial planning and protective provision is rigorously upheld at local level by the local Communes and mayors and their local government structures. ICOMOS has understood that the purchase of the land on which some sites are located is also under way.

Italy's legislative provision for cultural heritage is complex. Two laws, one for natural heritage and one for cultural heritage, passed in 1939, underpin the protective provision for the sites selected for nomination, with a list of ancillary legislation (*Codice*) and national measures (*Derecto Legislativo*) to support these. The nominated sites are all protected under the national system for the protection of known/inventoried sites and the waters of the larger lakes (e.g. Lake Garda) are state-owned and policed by a dedicated force of Carabinieri. The state also 'owns' all archaeological objects and through its regional offices for archaeology, controls excavation activity and the management of artefacts. This is all linked to spatial planning control through a number of instruments, vested in the preparation of Development Plans (PGT and PAT). Furthermore, there is an extremely strong network of regional museums, linked to the particular dispersed funding tradition in Italy that provide further support for the protection locally of cultural heritage.

Slovenia's legislative system for cultural heritage is comparatively straightforward with its Constitution upholding "*the preservation of natural wealth and cultural heritage*" and its Cultural Heritage Protection Act that provides the framework for management, and an inventory of all its archaeological sites (Cultural Heritage Registry) which affords legal protection to each inventoried site. The nominated sites in the Ljubjansko barje are further protected by the legally constituted creation of the Ljublansko barje Landscape Park and the spatial planning instrument for the Municipality of Ig. The protection and management of the sites extends to the control of the water table.

Austria has a federal system of legislation, but the protection of its historic monuments is a central federal responsibility and therefore the federal states do not have dedicated legislative provision for the protection of historic or archaeological Sites. The site at Keutschach (AT-KT-01) is protected under federal law as are the sites at Mondsee. The sites on Attersee, however, are not protected in this way but the process of placing these sites under such protective provision is under way having commenced in early 2010. This will mean that underwater and wetland archaeology will be embedded in the Federal Monument Protection Agency (*Österreichisches Bundesdenkmalamt*) for the first time.

There is also federal legal provision for the protection of previously unknown finds. In addition, upon inscription,

sites inscribed on the World Heritage List are protected through a link to EU Environmental Directives in the form of a provision for the preparation of Environmental Impact Assessments.

At Keutschach, there is federal state legal protection for the natural environment, defined in 2005 as a Ramsar area (BGBl. III Nr. 12/2006), while both Atersee and Mondsee are European Natura 2000 protection areas (LGBl. Nr. 131/2006). Protection of natural heritage areas is marked by buoys, as at the Swiss lakes, but this action is not linked to the identification or restriction of boating activity on/close to the nominated sites. ICOMOS notes that while the legal provision appears to be reasonably comprehensive, the structure for heritage management especially with relation to private development is somewhat limited.

#### Effectiveness of protection measures

Overall the protection in place is adequate but there is a need to ensure uniformity in relation to the approaches to development control and to Heritage Impact assessments, particularly amongst the Cantons in Switzerland, and, in the case of Austria, in relation to permission for private development.

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ICOMOS considers that the legal protection in place is adequate but there is a need for consistent application across the six States Parties to ensure consistency in approaches to development control and heritage impact assessments.

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### Conservation

#### Inventories, recording, research

The sites have been surveyed and sometimes excavated over many different time spans and according to differing levels of detail and sophistication. The nomination dossier stresses that the international collaboration over the past five years that has taken place to allow submission of this trans-boundary nomination has encouraged the assembly of known material. In all areas inventories of the nominated and associated archaeological sites are now in place. ICOMOS notes that what is not clear is where and how this cooperative archive is stored for all sites.

At Lake Neuchâtel, the lake is over-flown and comprehensively photographed triennially and the photographic record is made available for archaeological monitoring purposes.

#### Present state of conservation

The current state of conservation is outlined in some considerable detail in the nomination dossier and the sites have been graded to reflect their conservation status, with 78% of the nominated sites deemed to be of Class A status (i.e. where the archaeological layers and structural elements are preserved and can be examined in the future).

However the vulnerability of all the nominated sites has to be acknowledged, but some sites are evidently more vulnerable than others. Some sites have suffered more damage and loss than others. The losses prior to nomination, have been occasioned largely on those sites that are located within the shallow waters of lakes and caused by natural erosion, urbanisation and development, desiccation, historical/past archaeological excavation, and commercial, leisure and tourism pressure/erosion.

The sites remain vulnerable due to their lack of surface expression, the contexts in which they survive and the fragility of their organic composition. They are vulnerable to natural erosion; the intensification of construction and development; the intensification of agriculture (requiring drainage of marshy ground); dredging on lakes for commercial boating traffic; increasing leisure boating activity; and other leisure activities, such as public swimming areas on the lakes and lake shores. Many were looted in the 19<sup>th</sup> century and modern looting has been noted in Lake Garda.

The exposed timbers are all actively decaying and eroding. Timbers and other materials, where partly or wholly covered either with lake marl, sand and gravel, and especially surviving organic archaeological deposits, are conserved in these lake contexts in a much better state of preservation than those with their upper elements exposed to open water – or indeed to the air (as at Fiavè IT-TN-02).

Where active natural erosion is taking place, the conservation of sites presents quite a challenge. Active erosion can be seen on the windward sides of lakes (wind/wave action), especially where there has been a loss of reed beds; on shelves of lakes that have shallow littoral areas with a steep drop-off to deeper, central lake waters, culture layers are literally 'falling off' the shallow shelves that they once accumulated on as the shelves themselves are eroding; where there is a very active through-flow of water; where intense commercial boating activity is taking place, giving rise to the creation of artificial waves when the boats move, or as a result of the natural wind-driven movement of a moored boat and both disturb/remove lake bed material.

These erosion processes are relevant at Lake Zurich, Lake Neuchâtel, the lakes of the Savoyan region, potentially at Atersee, and active, but not extreme at Lake Starnberg. Care has been taken, however, to identify the badly eroded or actively eroding sites and to ascribe them the status of 'associated sites'.

The use of erosion markers has been initiated at Lake Bienne and at Lakes Zurich and Constance erosion is being formally studied under an Interreg IV Project.

Transnational approaches to the in situ preservation of eroding sites and lake shores have been the subject of two notable conferences (1994 and 2004) exploring the

issues, methods and assessment of the efficacy of methods used.

However on the positive side, post Iron Age deposition of natural deposits covering sites (caused by inundation of sites on lakes and the development of peat on existing fens and mires) has had the effect of sealing a great number of waterlogged sites. While dredging and significant exposure and erosion events in the 19<sup>th</sup> century exposed many sites (associated sites), as did peat extraction during the first half of the 20<sup>th</sup> century, many sites still remain securely covered, if not deeply buried. A great number of the sites either had a 'natural' protective covering or, where erosion is taking place, the sites were being monitored or conserved.

#### Active Conservation measures

There is evidence of an increasing coincidence of protective provision on lake shores and littoral zones on both natural and cultural heritage grounds, especially where the local municipality or regional authority has acquired the land. Furthermore, conservation appears to work best where natural heritage/environment protection measures (Ramsar, Natura 2000 or similar designations) are integrated with those focused on the preservation of the archaeological sites.

Modern management of water levels and water quality in many of the larger lake systems is taking place. This regulation of water levels and water quality ensures that, where it takes place, the sites are no longer exposed during period of extreme drought and water usage (many of the lakes and water bodies supply water to large municipal centres). Improvements in water quality are facilitating the concerted re-planting and subsequent natural regeneration of reed beds and lakeshore vegetation.

The link to natural heritage protection on the ground is well-established on the French lakes, with the reinstatement of reed beds actively underway in areas where sites are located (some nominated, some associated).

#### Effectiveness of conservation measures

Overall the array of conservation instruments that are being used is helping to stabilise the remains but the causes of decay and degeneration still remain susceptible to more preventative measures.

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ICOMOS considers that the conservation measures are adequate.

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### Management

Management structures and processes, including traditional management processes

The six States Parties have formally agreed on the common management of the serial sites. By signing the nomination dossier they have each adopted the

Management Commitment between the States Parties. The establishment of the International Coordination Group with clearly defined aims and agreed rules was a first step. It has a Secretariat, hosted by Switzerland, for technical support.

In May 2010, the International Coordination Group held its constituting meeting in Ljubljana (Slovenia). A second meeting was organized in November 2010 in Vienna (Austria). The management Committee is therefore now operational. The Presidency changes each year between States Parties.

In the revised Management Plan that was submitted in February 2011, the overall management structure is defined. It comprises three levels. The International Coordination Group is formed of experts and representatives of each State Party; where necessary, there are national working groups that include regional experts and local entities in each country; and thirdly, regional / local entities are responsible for individual site management.

ICOMOS notes that the management of the nominated sites is informed by a huge body of scientific research knowledge and literature together with the active involvement regionally and locally of research institutions, archaeologists and scientists. On the ground, the management is national, regional and local. At local level strong and well-established systems of management exist in some, but not all, of the regions visited by the mission. In some instances, inscription is seen as providing leverage for additional protection and management and also for more specific development control in the future. Local management is particularly necessary for development control.

In Switzerland, where cantonal/regional and local archaeologists are employed, an efficient system of monitoring the sites and proposed development appears to be in place and an active and useful dialogue is under development about management controls, frequently linked to natural environment protection controls. However, ICOMOS is concerned that, as a management tool, monitoring (albeit active and concerted) is the main method of management proposed in many instances. This approach presupposes that damage has to be occasioned before any action can take place.

ICOMOS notes that where archaeological and heritage management resources are stretched and the lake shore is privately owned – and in some locations this was evident (notably on Lake Geneva and in Austria at Attersee) – protection of the sites from minor development appears to be very difficult to achieve.

Overall, the current methods of management range from:

- monitoring, including concerted underwater archaeological inspections;

- water-level and water quality controls on the larger lakes;
- active liaison with natural heritage protection personnel, increasingly including conservation and reinstatement or regeneration of lakeshore vegetation;
- inventory (database) of sites;
- inventories linked to development plans and, by association, development control;
- detailed archaeological survey and limited excavations where necessary;
- active monitoring (erosion markers, etc.) and conservation to prevent erosion;
- inventory linked to lake water policing;
- navigation and motorised boating speed controls;
- non-lake water table monitoring and controls.

In the additional information received from the States Parties in February 2011, it is acknowledged that not all the States Parties have reached the same level of management. In Austria several new management actions have been adopted in order to ensure adequate financial funding and institutional support for the enhancement of the management of the pile-dwellings sites. These include work by the Federal Monument Protection Agency (*Österreichisches Bundesdenkmalamt*) to compile a list of priorities for protection measures, the identification of deficiencies and capacity building.

Policy framework: management plans and arrangements, including visitor management and presentation

A management plan for the overall property has been prepared and agreed by all the States Parties. This is a high level document that sets out the aims of management but also includes an overall Action Plan to be delivered by individual countries as well as specific management actions for each of the participating countries.

Because most of the sites have no overt surface expression, the sites themselves are not suited to presentation for visitors or for tourist development without dedicated presentation and explanatory panels at the site location and this really only works where the sites are in an undeveloped context.

However, ICOMOS notes that the Management Plan does include details of a concept being developed in Switzerland to make visible sites in an appropriate way - probably by audio guides and information panels. It is intended to extend the project to all the sites in the other participating countries following a standardized guideline. In this way, the pile dwellings would be represented as an international phenomenon enveloping the entire Alpine region.

Currently, the presentation of the sites is mostly done in museums. These include the Laténium, the Federseemuseum at Bad Buchau and the almost 90-

year old Pfahlbaumuseum at Unteruhldingen / Bodensee; the experimental archaeological reconstructions at lake Chalain, linked to a low-cost, museum display on the first floor of the local community centre; Italian and Swiss regional and local museums at Zug (CH); Annecy (FR); Cavriana (IT); Riva del Garda (IT). In Italy, the Museo Archaeologico Della Valle Sabbia, Gavardo coordinates a network of museums MAGNET each presenting these sites (the group uses the Palafittes, UNESCO and World Heritage brands) and providing teaching materials for children. In Austria the museum at Mondsee is by contrast poorly resourced, with the material on display dating to the 1980s and the artefacts on display lacking provenance and contextual reference.

Overall ICOMOS considers that there is a need to ensure some coordination between museums so that there is not an unnecessary proliferation and also to ensure structured access to finds and archaeologically sound presentations that allow understanding of the value of the whole property and how individual sites contribute to that whole.

#### Risk preparedness

Storms pose the biggest threat to the pile-dwelling sites. Unprotected sites can be seriously endangered by wave action as well as flotsam and jetsam, etc. Protection measures (covering, breakwaters) put in place to prevent natural erosion help to diminish the immediate destructive impact of storms and more long term measures include erosion control and the introduction of reed beds.

#### Involvement of the local communities

Involving local communities is one of the common objectives shared by all States Parties.

#### Resources, including staffing levels, expertise and training

Basic funding for the International Coordination Group of approximately 27,000 € will be provided by the Swiss cantons, while the individual projects included in the action plan of the management plan will be financed by voluntary contributions from the States Parties involved, and by sponsorship from organisations and private individuals. Ongoing work on rescue archaeology and erosion control is funded mainly at a local level. However provisions of funding vary considerably even within countries. Some Swiss Cantons have regular funding while others do not and have to apply to Foundations.

In Austria, it appears that there are currently no regular sources of funding with universities and NGOs being the main providers of funds for excavation projects. However it is stated in the supplementary information that a national coordination group will be established and that this organisation will be sufficiently funded for communication, management and protection measures

by the Austrian Federal Ministry of Education, Arts and Culture.

In France, the staff involved in the management and protection of lacustrine sites comes from the devolved archaeological services of the ministry in charge of culture.

In Germany, within the State Cultural Heritage Department Baden-Württemberg, the wetland archaeology branch (*Fachgebiet Feuchtbodenarchäologie*) is responsible for wetland and underwater archaeology.

Most of the funding for archaeological research on Italian pile-dwellings comes from the State (through the Ministry of Cultural Heritage & Activities), the regions and the municipalities.

In Slovenia, the Natural Park Ljubljansko barje is financed through the Ministry of Environment and Space and the Municipality of Ljubljana, while the Ministry of Culture entirely funds the work of the specialist staff (curators, technical staff and the director of the public institution) of the Institute for the Protection of Cultural Heritage of Slovenia and museums.

In all countries a wide range of specialist staff is available to advise on the conservation and management of the sites – mostly through State Agencies.

#### Effectiveness of current management

By and large the ongoing management of the sites in terms of rescue archaeology, recording, conservation of finds and erosion control seems to be well resourced in all countries except Austria where there appears to be no regular ongoing funding for specialist staff or regular activities of the pile dwellings sites. However this is under consideration, as part of the basic framework for a sustainable conservation and development of the sites, established in 2010.

Overall there is a need for the highest level of protection for urban sites that are subject to the greatest range of threats to the site and setting.

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ICOMOS considers that the management arrangements are mainly adequate but they need consistency in terms of effect and of the provision of adequate resources, and there needs to be a particular emphasis on the monitoring and protection of sites in urban areas.

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## 6 Monitoring

Detailed monitoring indicators have been developed for three types of sites:

- Category A: the site is located in the lake, on an undeveloped section of shoreline or in a bog with little construction.
- Category B: the site is located entirely or partially on dry land and near existing towns or villages. The location is either a zone of average development density or agricultural usage.
- Category C: the site is located in an urban zone that is already developed.

The indicators relate to sediment cover, vegetation cover and the use of the lakes. The monitoring is carried out at intervals of between one and fifteen years. The erosion monitoring is linked to a series of erosion markers and they in turn are linked to detailed mapping of the site. At Lake Neuchâtel, active erosion of the sites on the lake has been the subject of concerted study and management over the past 15 years.

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ICOMOS considers that the monitoring arrangements are adequate.

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## 7 Conclusions

The Prehistoric Pile Dwellings around the Alps are an indisputably unique and discrete group of exceptionally well-preserved and culturally rich, prehistoric archaeological sites. They are also a group of sites that have been very well researched and documented over the past 100 years and their waterlogged structures have delivered extraordinarily well preserved evidence of houses, changing settlement patterns and the accoutrements of daily life of the early agrarian societies in Europe who lived in pile dwellings on the edges of lakes and river.

A total of 937 sites have been recorded in six countries. Many of these sites are fragile and they are also vulnerable to a wide range of threats, relating to their location at the edge of lakes that have a multitude of uses and whose shores are under pressure from development. To preserve these sites into the future will require long-term commitment, rigorous monitoring and perhaps expensive erosion control.

Of the 937 sites, 111 have been nominated as part of the series. They have been chosen to illustrate, or be linked to, certain expressions of prehistoric life and regional culture at particular points in a well-understood and researched chronology and cultural context.

ICOMOS considers that the series of sites of pile dwellings reveals exceptional evidence of life of prehistoric communities across a wide area of Europe and the way different cultural groups organised their settlements in response to varying social, and economic imperatives.

For a serial nomination there is a need to understand the relationship between the individual components and the

overall property that manifests Outstanding Universal Value. This raises the question as to how many sites are needed to convey Outstanding Universal Value – in terms of capturing the necessary evidence and also conveying the value in visual terms.

ICOMOS considers that the response by the States Parties to select a smaller number of sites that can be seen as exemplars in terms of their inherent evidence and conservation as well as in terms of the criteria agreed by the States Parties is satisfactory.

The serial nomination that has been presented is impressive in terms of detail and collaboration between States Parties. Agreement has been reached in principle to ensure that as far as possible there are common approaches to protection, conservation and management – within very different national frameworks. In this respect, ICOMOS considers that it would be desirable to ensure all sites have the highest level of protection available within each national system, that there are on-going resources for monitoring and erosion control and that a common standard exists for where Heritage Impact Assessments may be required. Furthermore it would be desirable to put in place an over-arching presentation framework that allows coordination between museums and an agreed standard of archaeological data.

#### **Recommendations with respect to inscription**

ICOMOS recommends that the Prehistoric Pile Dwellings around the Alps, Switzerland, Austria, France, Germany, Italy, Slovenia, be inscribed on the World Heritage List on the basis of **criteria (iv) and (v)**.

#### **Recommended Statement of Outstanding Universal Value**

##### **Brief Synthesis**

The series of 111 out of the 937 known archaeological pile-dwelling sites in six countries around the Alpine and sub-alpine regions of Europe is composed of the remains of prehistoric settlements dating from 5,000 to 500 BC which are situated under water, on lake shores, along rivers or in wetlands.

The exceptional conservation conditions for organic materials provided by the waterlogged sites, combined with extensive under-water archaeological investigations and research in many fields of natural science, such as archaeobotany and archaeozoology, over the past decades, has combined to present an outstanding detailed perception of the world of early agrarian societies in Europe.

The precise information on their agriculture, animal husbandry, development of metallurgy, over a period of more than four millennia, coincides with one of the most important phases of recent human history: the dawn of modern societies.

In view of the possibilities for the exact dating of wooden architectural elements by dendrochronology, the sites have provided exceptional archaeological sources that allow an understanding of entire prehistoric villages and their detailed construction techniques and spatial development over very long time periods. They also reveal details of trade routes for flint, shells, gold, amber, and pottery across the Alps and within the plains, transport evidence from dugout canoes and wooden wheels, some complete with axles for two wheeled carts dating from around 3,400BC, some of the earliest preserved in the world, and the oldest textiles in Europe dating to 3,000 BC.

This cumulative evidence has provided a unique insight into the domestic lives and settlements of some thirty different cultural groups in the Alpine lacustrine landscape that allowed the pile dwellings to flourish.

**Criterion (iv):** The series of pile dwelling sites are one of the most important archaeological sources for the study of early agrarian societies in Europe between 5,000 and 500 BC. The waterlogged conditions have preserved organic matter that contributes in an outstanding way to our understanding of significant changes in the Neolithic and Bronze Age history of Europe in general, and of the interactions between the regions around the Alps in particular.

**Criterion (v):** The series of pile dwelling sites has provided an extraordinary and detailed insight into the settlement and domestic arrangements of pre-historic, early agrarian lake shore communities in the Alpine and sub-Alpine regions of Europe over almost 5,000 years. The revealed archaeological evidence allows an unique understanding of the way these societies interacted with their environment, in response to new technologies, and also to the impact of climate change.

##### **Integrity**

The series of prehistoric pile-dwelling sites represents the well defined geographic area within which these sites are found to its full extent, as well as all the cultural groups in it during the time period during which the pile dwellings existed. It therefore comprises the complete cultural context of the archaeological phenomena. The sites selected have been chosen to be those that still remain largely intact, as well as to reflect the diversity of structures, groups of structures and time-periods. As a whole the series and its boundaries fully reflect the attributes of Outstanding Universal Value.

The visual integrity of some of the sites is to a degree compromised by their urban settings. Many of the component sites can also be said to be vulnerable to a range of threats ranging from the uses of the lakes, intensification of agriculture, development, etc. Monitoring of the sites will be crucial to ensure their continuing integrity.

## Authenticity

The physical remains are well preserved and documented. Their archaeological strata, preserved in the ground or under water are authentic in structure, material and substance, without any later or modern additions.

The remarkable survival of organic remains facilitates the highest levels of definition in relation to the use and function of the sites. The very long history of research, co-operation and coordination provide an unusual level of understanding and documentation of the sites.

However the ability of the sites to display their value is difficult as they are mostly completely hidden underwater which means that their context in relation to the lake and river shores is important in order to evoke the nature of their setting. This context is compromised to a degree on those sites that survive in intensely urbanised environments.

Because the sites cannot be overtly presented in situ, they are interpreted in museums. An over-arching presentation framework needs to be developed that allows coordination between museums and an agreed standard of archaeological data to ensure understanding of the value of the whole property and how individual sites contribute to that whole.

## Management and protection requirements

The series of pile dwelling sites are legally protected according to the legal systems in place in the various States Parties. There is a need to ensure that the highest level of legal protection available within each of the States Parties is provided.

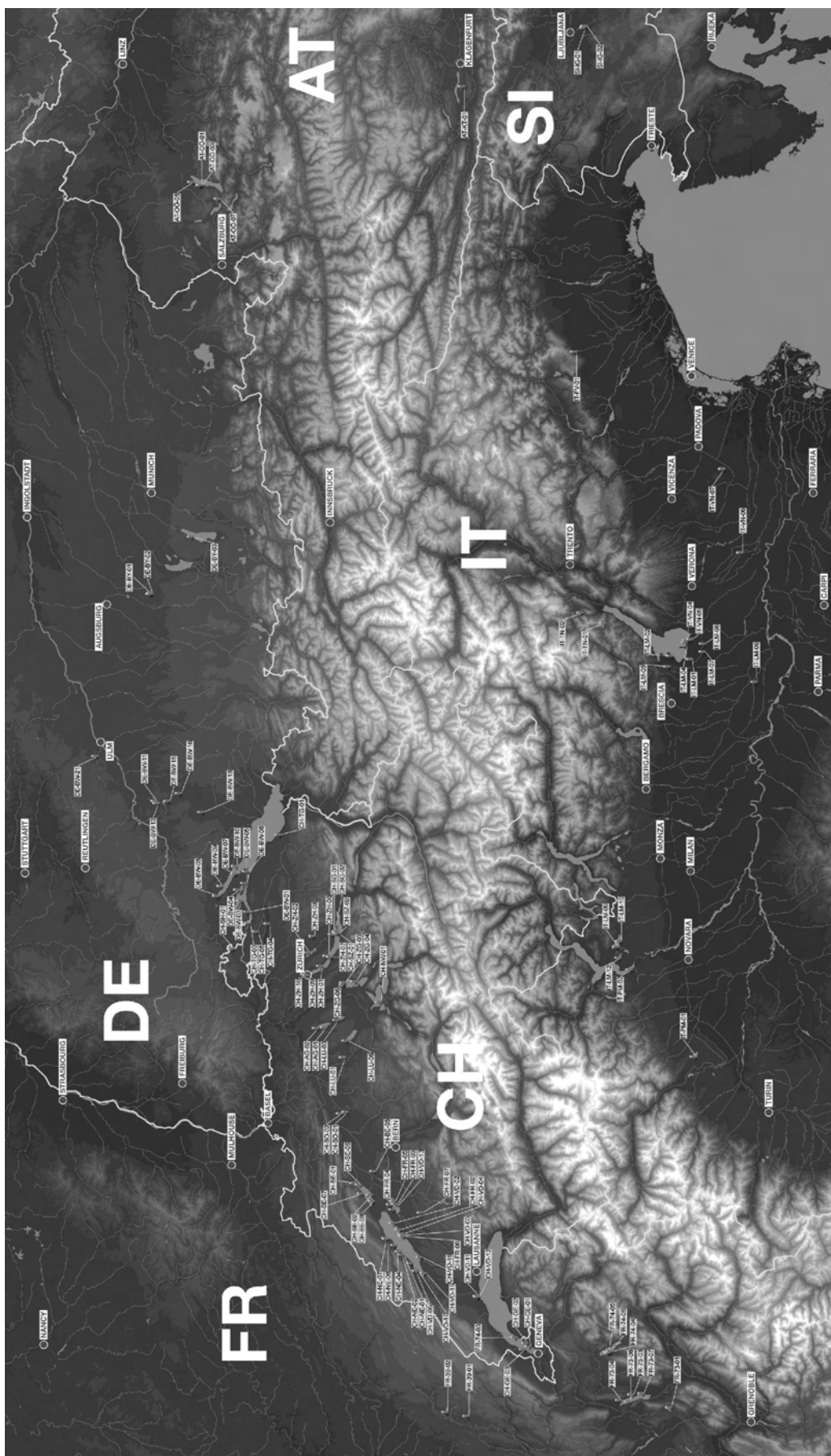
The common management system integrates all States levels and competent authorities, including the local communities, in each country, and connects the different national systems to an international management system, through an established International Coordination Group, based on a Management Commitment signed by all States Parties. Common visions and aims are translated into concrete projects on international, national and regional / local level in a regularly adapted action plan. Funding is provided by Switzerland for the Secretariat and by the States Parties for the different projects.

Proposed actions that may have a significant impact on the heritage values of the archaeological areas nominated for inscription are restricted. There is a need for consistent application of protection arrangements across the six States Parties to ensure consistency in approaches to development, particularly in terms of lake use, mooring arrangements and private development, and to heritage impact assessments.

Given the extreme fragility of the remains, and the pressures on sites especially in urban areas, there is a need to ensure that adequate funding is in place for on-going monitoring.

ICOMOS recommends that the States Parties give consideration to the following:

- Afford the highest level of legal protection available within national systems to all the sites and give priority to protecting all sites in Austria;
- Make available adequate resources to allow regular monitoring and erosion control systems to be put in place for all sites, including strict controls on boat mooring;
- Ensure consistency in approaches to development control across the six States Parties, and especially to heritage impact assessment procedures;
- Develop an over-arching presentation framework that allows coordination between museums and an agreed standard of archaeological data to ensure understanding of the value of the whole property and how individual sites contribute to that whole.



Map showing the location of the nominated properties

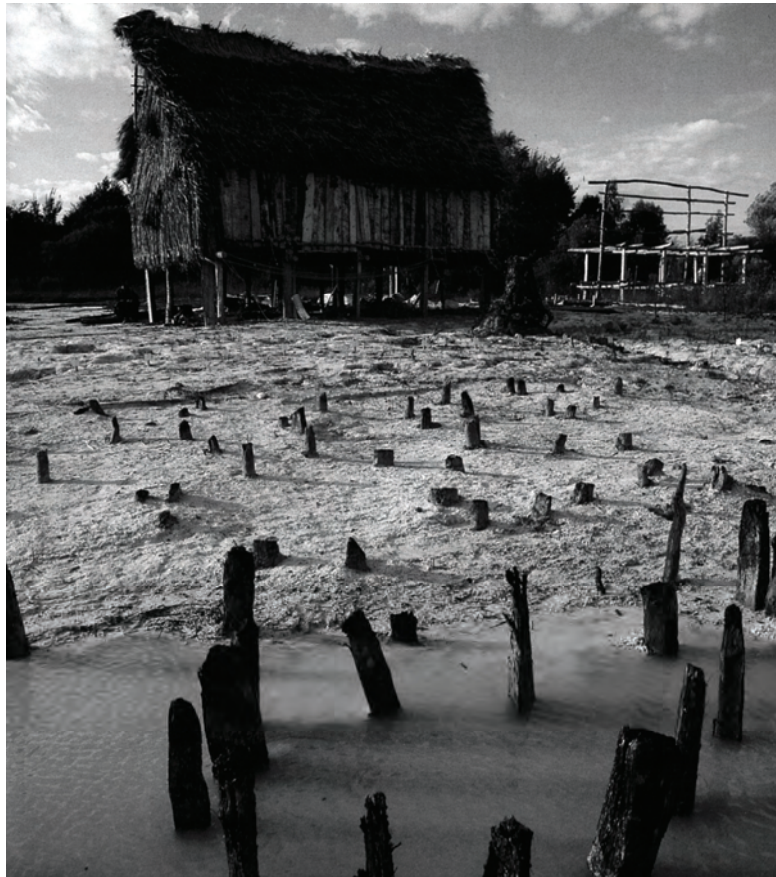




Aerial view of Lake Zug (Switzerland)



Aerial view of Neolithic settlements located on the shore of Lake Constance (Germany)



Original piles in Lac de Chalain with reconstruction of a Neolithic dwelling in the background (France)



Pile field of Fiavé – Lago Carera (Italy)





Maharski prekop – excavations from 1970 to 1976 (Slovenia)



Late Stone Age copper objects from settlements around Lakes Mondsee and Attersee (Austria)