THE PILE-FIELD AND THE WOODEN STRUCTURES OF THE NEOLITHIC LAKESIDE SETTLEMENT ANARGHIRI IXb WESTERN MACEDONIA, GREECE

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To Eleni, Stefanos and George-Krateros

Acknowledgments

In the distant July of 1993, when still a student of the School of History and Archaeology of Aristotle University of Thessaloniki I saw for the first time the Neolithic wooden posts in the muddy trenches of prehistoric lakeside Dispilio excavation, I could hardly imagine that this "archaeological revelation" in the eyes of a post-adolescence enthusiast would be gradually developed into a research interest that would obsess almost all my professional life. Even in 2011, there were no forebodings that for more than seven years my early archaeological perceptions of the prehistoric wetlands around the four lakes of Amindeon, my homeland, would become an every-day challenge to work for and to think of. And it was beyond my expectations that as an already middle-aged researcher I would enjoy the moral satisfaction of completing a dissertation.

The present PhD thesis is the outcome of strenuous efforts - with all the inevitable ups and downs - encouraged and supported meaningfully by several people.

First, I would like to express my gratefulness to my supervisor Dr Albert Hafner, Professor at the Institute of Archaeological Science, University of Bern. Examining my study proposal in 2015 and commenting creatively my initial ideas, he helped me to set achievable study objectives within an effectively-structured research framework scheduled with the anticipated Swiss precision. As one of the leading experts in central European wetland archaeology, he encouraged me to widen my horizons on state-of-art methodologies, applications and research's trends, as well as to get to know with some of the most important on-going research projects realized in several prehistoric wetlands. Prof. Dr Albert Hafner's constant interest on the progress of my work was expressed by his valuable academic advice during the regular annual meetings in the Aristotle University of Thessaloniki, as well as by his prompt, analytic and elucidating response to any request for guidance and assistance. I am also grateful to my second supervisor Dr Kostas Kotsakis, Professor Emeritus at School of History and Archaeology, Aristotle University of Thessaloniki. His recommendations on my thesis' structure and his meaningful remarks on my notions about some stratigraphic and chronological issues were more than valuable. Sharing with me some of his undisputed expertise on northern Greek prehistory, Prof. em. Kostas Kotsakis helped me to examine more carefully specific aspects of the regional Neolithic and to hold a more focused comparative discussion of the study's basic propositions.

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Unfortunately, it is too late to express my gratitude to two very important teachers who are no longer with us. I commemorate Aggeliki Pilali-Papasteriou who supported me more than anyone in my first steps as an undergraduate student of archaeology. And I express my endless respect to George Hourmouziadis, my life's most inspiring teacher. This study is a humble tribute to his memory.

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PART 1

GENERAL INTRODUCTION

1.1 General aim and objectives

The large-scale excavation of the Neolithic lakeside settlement Anarghiri IXb at Amindeon Lignite Mining Zone of the Public Power Corporation S.A. - Hellas (Western Macedonia, Greece) realized by Florina Ephorate of Antiquities in 2013-2016 constitutes one of the most extended projects of preventive archaeology in Greece during the last few years. The discovery and documentation of numerous finds representing various aspects of the socioeconomic and ideological activities of the Neolithic resulted in an archaeological assemblage that forms a comprehensive basis for further research and study.

Beyond the rich set of movable finds, maybe the most extraordinary characteristic of the settlement's investigation was the exposure of several well-preserved wooden elements in the lowest habitation's layers. These constitute one exceptional pile-field in prehistoric southern Balkans due to various reasons that are to be presented and discussed. Considering the research potentials provided by this almost undetectable and unknown to Greek prehistorians archaeological material, the general aim of the present study was specified as follows:

The analytical approach of the qualitative and quantitative attributes of Anarghiri IXb pile-field, the identification of the main characteristics and the possible functions of the wooden structures discovered on the periphery of the Neolithic settlement and their integration into the wider context of northern Greece and southern Balkans prehistory.

Accordingly, taking into consideration Anarghiri IXb wood assemblage, as well as the current state of research in European wetland archaeology concerning the residential and non-residential wooden structures, but also the latest developments regarding the study of prehistoric settlements in northern Greece and the neighbouring countries, the main objectives of the study were:

1. The creation of a complete data-set regarding Anarghiri IXb pile-field with the deployment of the available information included in the excavation's record, using also some information resulted by the microscopic examination of the wooden samples collected.

2. The categorization of the elements that constitute Anarghiri IXb pile-field and the analytical approach of their general characteristics.

3. The documentation of the main attributes and the dating of the wooden structures discovered on the periphery of the habitation.

4. The reconstruction of the form and the discussion of the possible function(s) of the wooden structures.

5. The comparative and interpretative discussion of the structures with cross-references to excavational contexts and findings from European wetlands.

6. The reconstruction of the settlement's general outline and the proposition about its possible diachronic development.

7. The contextualization of Anarghiri IXb structural characteristics in the chronological and cultural framework of the neighbouring regions.

1.2 Methodology

To accomplish the aforementioned objectives the study was realized with the implementation of a general methodology developed as follows:

a. Specification of the study's context and data sources

Anarghiri IXb rescue excavation revealed one exceptional - at least in quantitative terms - assemblage comprising several categories of archaeological materials, among which the wooden elements consisted some of the most noticeable excavational findings. Moreover, due to the extent and the general development of the settlement's investigation a massive corpus of information was also formed, recorded with the use of the conventional archaeological means, as well as with the application of modern documentation methods.

During the initial stages of the present study, significant efforts were put into the specification of the study's context, namely by "scanning" the excavated area and detecting the areas where wooden elements where unearthed. As soon as the study's stratigraphic and spatial limits were defined, the available study's data sources were gathered and digitalized - particularly those referring to the excavational documentation's procedures - in order to create a set of easily recordable and retrievable information. Moreover, the perishable samples of wooden elements collected during the excavation were sorted and stored in a proper way to remain intact for their initial examination and future analysis. At the same time, some essential tasks for the progress of the study were performed, namely the preliminary analysis of the stratigraphic sequence of selected excavational areas, as well as the selection of samples for ^{14}C analysis.

b. Data recording

The general evaluation of the data contained in the available sources led to the selection of the most suitable methods and applications that would ensure some flexibility during the recording of the data, the retrievability of the information and the usability of the processed results. The next step was to create a specific tool for the recording of the data that would include all the necessary applications and fields to support this task.

The realization and completion of the recording process resulted in an extended, still sufficiently structured data-set that contained numerous useful information regarding the quantitative attributes of Anarghiri IXb pile-field. In addition, the use of specific applications for the digitization of the surveyed and georeferenced data of the distribution of structural wood within the excavated area made possible the merging of all the recorded evidence into one single multi-layered database.

c. Processing and analysis

The processing of the data making use of the above-mentioned tools led to systematized observations regarding Anarghiri IXb pile-field's quantitative attributes. The evaluation of these observations resulted in the categorization of the wooden elements adopting criteria related to their location and position in the excavational layers and their physical/technical attributes.

At the first level, the analysis of the information referring to the various categories of structural wood, combined with observations regarding recordable concentrations of elements and the spatial distribution of some with specific attributes, facilitated the approach of the general characteristics of Anarghiri IXb pile-field and of some aspects regarding specific technical solutions employed by the Neolithic builders. The second level of analysis was planned to identify and document the properties of the wooden elements' groups and alignments discovered on the periphery of the settlement. Their characterization as "trackways" and "fences", the examination of their structural attributes, their integration into the general excavational context and their dating led to specific propositions regarding the outline of the settlement's peripheral zone.

d. Comparative study

The documentation of the specific wooden structures on Anarghiri IXb perimeter that defined the basic characteristics of the spatial organization of the earliest habitation necessitated the examination of comparable examples from European prehistoric wetlands. The application of this methodological tool with a focused survey of the relevant literature led to the formation of the framework required for the interpretative discussion of Anarghiri IXb wooden structures. Furthermore, the fact that, although Anarghiri IXb constitutes one of the few investigated wetlands in southern Balkans the settlement was established and flourished in a specific geographical, chronological and cultural context brought about the examination of selected neighbouring settlements bearing similar characteristics on their peripheral zones in terms of spatial organization.

e. Synthesis

The application of the study's conclusive methodological tools aimed to form specific propositions regarding the Neolithic lakeside settlement Anarghiri IXb, taking into consideration the attributes of the pile-field, the characteristics of the peripheral wooden structures, as well as the comparative and interpretative discussions held in the study's successive stages. The final notions regarding the form, possible functions and integration into the settlement's perimetrical layout of the trackways and fences, as well the working hypothesis about the habitation's diachronic development constitute the outcome of this approach.

1.3 General framework

1.3.1 Structural wood in central European wetlands: early interpretations and modern research trends

It is widely acknowledged that the discovery in the second half of the 19th century of the prehistoric wetland habitations in the Swiss lakes constitutes one of the most significant moments in the history of European archaeology. It could be stressed that the study of the earliest investigations in the circum-Alpine lakes and the scholars' attempts to document, describe and explain the newly-discovered assemblages can lead to interesting remarks regarding the gradual development of archaeology from an antiquarian pursuit of objects to a structured discipline.

The typical illustration of the new discoveries comprised almost exclusively numerous wooden posts protruding from the muddy ground of the Swiss lakes, either exposed due to water fluctuations or as a result of excavations realized under the contemporary terms and with the corresponding means of early archaeological research. The pile-fields of well-preserved wooden elements were immediately and beyond any doubt attributed to prehistoric structures and from that point on became the focal topic of debates for several decades between the wetlands' archaeologists. The first notion of F. Keller - the so-called "father of lake-dwellings" - in 1854 that the prehistoric villages stood above lake-water on stilted platforms quickly became the dominant scientific interpretation of the findings across Europe (Menotti 2001; Ruoff 2004). Nevertheless, even in those early research stages the expansion of the excavations to wetland environments such as marshes and peatlands in Switzerland and Southern Germany and the discovery of successive layers of horizontally deposited wooden elements triggered some first debates regarding the possible existence of other types of building techniques employed by the prehistoric builders. Namely, it was F. Keller who introduced the term *Packwerkbauten* to describe one different house type built on compact wooden floors, yet without reassessing his initial, well-established reconstruction of the stilted platforms above water (Menotti 2001, 321).

Even though certain developments regarding the perception of the wetlands' habitations phenomenon and the refinement of their chronology were recorded, for nearly sixty years after the discovery of the first pile-fields, vertical and horizontal wooden elements were almost exclusively interpreted as structural parts of stilted features built above lake-water. This approach was for the first time markedly challenged by the systematic research projects organized and implemented by Urgeschichtlichen Forschungsinstituts der Universität Tübingen (UFI) in the peatland of Lake Federsee in Southern Germany during the 1920-1930s. The employment of rather innovative excavation and documentation techniques, as well as the first interdisciplinary approaches of the archaeological material unearthed in some of the most prominent prehistoric wetlands of the region (e.g. Aichbühl, Riedschachen, Wasserburg Buchau, Dullenried, Taubried) led to new interpretative propositions (Keefer 1992, 49-61). These were mainly formed by H. Reinerth, who together with R. Schmidt introduced the term *Uferpfahlbauten* to describe habitations comprised stilted houses that were built not in the open-water area, but on the semi-dry lakeshores that were seasonally influenced by water fluctuations (Schlichtherle 2004a, 24). Yet, Reinerth's later commitment to national-socialist ideology influenced significantly his interpretative suggestions regarding the form and function of the habitations with the projection onto the findings of prehistoric wetlands of ideas regarding the racial superiority of the ancient Germanic people (Arnold 1996; Keefer 1992, 14-48; Schöbel 2008; Strobel 2016).

In the first post-war years, the observations related to the stratigraphic location and deposition of structural wood were constantly used to support the researchers' ideas regarding the structural form and the exact location of the wetlands in respect to water. The corresponding debate led even to the serious questioning of the existence of the typical lake-dwellings. This idea was mainly supported by O. Paret, who proposed that the successive layers of wood and their correlation to non-anthropogenic sediments discovered in several prehistoric habitations constituted strong evidence that these materials were used as means of insulation against humidity in settlements built on the dry ground. These propositions were also adopted by Swiss researchers such as E. Vogt and W. Guyan who tested this hypothesis on the well-documented excavation of Egolzwil 3 in central Switzerland (Menotti 2004, 322-324; Ruoff 2004, 14).

It could be claimed that the general trend of wetland archaeology in the circum-Alpine region in the second half of the 20th century was characterized by the gradual disengagement from the controversy on the type and location of the habitations i.e. the so-called *Pfahlbauproblem*. It can be stressed that the decisive factors that led to this development were the realization of extended rescue excavations projects in the late-1960s and 1970s imposed by construction works in Switzerland and Southern Germany, the development and implementation of new research techniques and methodologies (e.g. underwater excavation, surveying, coring etc.), as well as the expanding interdisciplinary approaches of the archaeological material discovered (Hafner et al 2014, 60). In this modern research environment, the specialized studies of structural wood were conducted under quite favourable conditions - in terms of material availability, infrastructure, technical equipment etc. - playing at the same time a key-role to the elaboration of new, multi-levelled interpretative approaches of prehistoric wetlands.

Evidently the most significant achievement of the last decades related to the study of wood is the establishment of dendrochronology as the main and highly-reliable method for the precise dating of prehistoric wetlands (e.g. Billamboz 2005, 2013; Francuz 2018; Kaeser 2008; Schweingruber 1993; Van de Noort and O'Sullivan 2006, 90-103; Whittle 2018, 52-61). Even if today it is considered as a worldwide state-of-art scientific tool, some of the most prominent dendro projects were implemented in the circum-Alpine zone, facilitated by the existence of exceptionally large samples' assemblages deriving mainly from extended rescue excavations. Among several wetland habitations in Switzerland, some of the most robust dendro dates were resulted by the analyses of the pile-fields of the Arbon Bleiche 3 in Lake Constance (Leuzinger

2000), Zürich Mozartstrasse and Zürich-Parkhaus Opéra in Lake Zürich (Bleicher und Harb 2015, 2017, 2018; Ebersbach et al. 2015), Twann and Sutz-Lattrigen in Lake Biel (Hafner 1992; Francuz 2018; Francuz und Suter 2010). Of equal importance, quality and precision are the dates produced by the dendrochronological work in prehistoric wetlands of Southern Germany e.g. in Hornstaad-Hörnle (Billamboz 2006) and Bad Buchau-Torwiesen II (Bleicher 2009b; Schlichtherle et al. 2011). Similar developments in dendrochronology are also recorded in the broader circum-Alpine region, namely in the French Jura Lakes (Viellet 2009; Viellet et Pétrequin 2015), in northern Italy (Martinelli 2005), as well as in Slovenia (Čufar et al. 2013).

Within the general field of dendrochronology, dendrotypology was developed since the 1980s as a new innovative method for studying prehistoric wood assemblages. According to the expert who practically introduced this method, A. Billamboz (2011) *"…dendrotypology is an attempt to sort timber with respect to wood anatomy, tree-ring analysis and techno-morphology. This approach is suitable for dating purposes, especially for large sample assemblages that include young wood, as is frequently found in research into the prehistoric pile-dwellings around the Alps. Grouping tree-ring series according to cambial age and growth trend allows insights into the age structure of the exploited stands and on this basis, dendro-typological models of woodland management have been defined with respect to historical woodland practices. Dendro-typology is thus a basic tool in the reconstruction of building history and settlement structures and, as such, can act as a key approach to the study of timber sources and trade…"*. The employment of this methodological framework for the study of several pile-fields in circum-Alpine region and elsewhere, led to the refinement of existing dendrochronological dates and sequences, the investigation and clarification of the diachronic development of settlements and individual structures, as well as to the elaboration of specialized approaches regarding the environmental resources in the surroundings of wetlands impacted by human activities (e.g. Billamboz 2014a, 2014b; Bleicher 2009a, 2014; Martinelli 2013; Out 2017).

These major developments in European prehistoric wetlands' research fed back into the study of the exceptionally well-preserved and rich wood assemblages systematically sampled the last decades. Accordingly, in almost all publications - either preliminary or final - of European prehistoric wetlands specific studies regarding structural wood are included, usually incorporating results of corresponding dendrochronological analyses. In most cases, these approaches systematize in quite analytic ways the observations regarding the physical and technical attributes of various categories of wooden elements (e.g. Billamboz et al. 2009, 116-

140; Eberli 2010, 57-70; Eberschweiler 2004a; Köninger 2006, 66-96; Leuzinger 2000, 87-118; Seifert et al., 46-96; Schmidheiny 2011). These studies of structural wood have formed one large "database" containing numerous information regarding certain aspects of European prehistoric wetlands' architecture. The well-preserved wooden elements of structures' foundations, floors, walls, roofs etc. permit in several cases the reconstruction of the building techniques employed by the prehistoric builders, demonstrating at the same time a great variety of architectural forms and types (e.g. Coles 1998, 11-13, 2006; Hafner 1992, 47-66; Hasenfratz und Gross-Klee 1995, 212-222; Lundström-Baudais et al. 1989; Menotti 2012, 129-142; Passard 1986; Pétrequin, P. 1988; Schlichtherle 1997, 2004b).

Based on robust dendro dates of individual units and the consequent reconstruction of the habitations' diachronic development, as well as on the recordable variability of building techniques and structural attributes, some more recent approaches attempt to widen the interpretative framework of wetlands' space construction and organization (e.g. Bleicher und Harb 2018; Ebersbach 2010a, b, 2013; Hofmann 2013; Hofmann et al. 2016). The contemporary discussion of structures' and settlements' layouts is shifted towards the investigation of possible patterns in the dynamics of their construction, repairs, dislocation and abandonment or to the examination of the spatial segregation realized by specific means (e.g. fences, house-clustering, open spaces) which could point to individual groups of people or households, specialized activities, particularized buildings' functions. The detection of such differentiations leads to even more elaborated propositions regarding the interactions between the members of the villages' communities in socioeconomic and ideological level.

1.3.2 Wetland archaeology and structural wood in Greece and southern Balkans

In contrast to the long and rich history of European wetland archaeology and the corresponding employment of specialized methodologies for the study of structural wood, the research projects referring to the investigation of wetland habitations constitute a rather recent development in prehistoric archaeology of Greece, as well as of southern Balkans.

Although the famed passage of Herodotus describing a lakeside-settlement of his times in Lake Prasias in Eastern Macedonia is considered as the earliest historical reference to this particular type of habitation, it is generally accepted that the discovery of the prehistoric lakeside settlement **Dispilio** in Lake Kastoria in the 1930s by A. Keramopoulos signifies the birth of wetland archaeology in Greece (Keramopoulos 1939, 58-61; 1941, 22-23). Together with his general observations regarding this unknown type of prehistoric habitation, the excavator wrote down the earliest recorded observations regarding structural wood in Greek wetland. He estimated that more than 500 well-preserved posts were protruding from the shallow water, he removed one of them from the marshy ground noticing that its lowest part was processed to be transformed into a pointed end; he also identified for the first time in Greek archaeology the wood species of the post, namely a juniper.

The on-going excavation of the prehistoric lakeside settlement of Dispilio - conducted since 1992 by Aristotle University of Thessaloniki under the supervision for several years from G. Chourmouziadis and lately from Prof. em. K. Kotsakis - constitutes the longest-lasting and most prominent systematic investigation of a Balkan wetland habitation (Chourmouziadis 2002, 2008; Chourmouziadis and Sofronidou 2007; Moutsopoulos 1998). Moreover, Dispilio operates as an institutional centre for the education of students and young researchers in prehistoric wetlands' archaeology, while Dispilio Eco-Museum - namely the reconstruction in actual scale of part of the lakeside settlement at the shore of Kastoria Lake - is one of the most visited places in Greece related to prehistory.

The excavation of 5250m^2 of an area covered by anthropogenic layers measuring approx. 17000m^2 and the initial evaluation of the results led Chourmouziadis to distinguish three successive phases of habitation associated to the site formation processes and the spatial correlation of the habitation to the lake: “lakeshore,” “shore marsh,” and “dryland” phases. It is also proposed that there was a gradual shift from the earliest pile-dwellings' settlement above water to an almost dryland habitation on a low mound formatted by the subsequent anthropogenic activities and the water fluctuations. These conclusions were correlated to a series of ^{14}C dates, according to which the earliest occupation was established at the end of Greek Middle Neolithic and was inhabited almost continuously until the end of Final Neolithic. Then, it appears that the excavated part of settlement was eventually abandoned between the mid-4th to the mid-3rd millennium BC, a fact that is provisionally related to one of the lake-level rises, while there is also evidence for an Early Bronze Age habitation, which was probably enclosed by a stone wall (Chatzitoulousis et al. 2014; Facorelis et al. 2014; Karkanas et al. 2011; Kouli 2015).

Among several studies of Dispilio material culture realized all these years, some preliminary approaches of the settlement’s spatial organization, as well as of structural wood discovered in the lowest waterlogged layers were attempted. Regarding the analysis of the habitation's architectural remains, a lot of efforts were put to formulate a suitable methodology for the documentation, classification and study of variable material remains, i.e. the 2088 postholes, posts and horizontal elements discovered during the 1990s excavational campaigns, as well as of approx. 2000kgr of clay fragments deriving from buildings and thermal or other structures (Chourmouziadi and Giagkoulis 2001, 2002, 2004). The basic aim of this approach was to systematize every available information regarding the physical and technical attributes of these elements and to document their horizontal and vertical distribution within the excavated area. This approach resulted in some general observations regarding the combined use of wood and clay as structural materials, as well as some comments regarding the concentration of wooden and clay structural elements at specific areas of the lowest excavational layers. Yet, the more or less expected irregular spatial distribution and density of postholes and vertical posts did not facilitate the detection of clearly-defined layouts of residential or other structures.

The study of Dispilio structural wood conducted by S. Chatzitoulousis (2006, 2008) is so far a unique attempt in Greek prehistoric archaeology for a holistic approach of the specific material. The examination of the wooden elements' state of preservation, their categorization, the analytical description of their physical and technical attributes and the identification of wood species exploited by the Neolithic community constitute some of the most significant contributions of this study. Yet, it should be stressed that the results of this study - as well as the ones mentioned previously - were based on the examination of horizontal wooden elements, as well as of quite a few vertical posts extracted from the lowest layers, since for now no systematic sampling of Dispilio structural wood is realized.

Although the structural wood assemblage from Dispilio was regarded until recently one exceptional case for Greek prehistoric archaeology, a relatively unknown excavational context containing organic materials was discovered in a territory that hardly resembles a typical wetland. Coincidently, G. Chourmouziadis was the one who investigated in 1970 the Early Neolithic tell-settlement **Prodromos II** located at the western Thessalian plain, in the lowest deposits of which a layer of well-preserved branches, planks, as well as some vertical wooden posts, were discovered. In his report (Chourmouziadis 1971, 172-174) the excavator notices that the processed and unprocessed branches and logs were joined with wooden nails forming a surface measuring approx. 10x10m, which was interpreted as a house's roof. Chourmouziadis stresses the potentials that these findings offered for a detailed study of Neolithic architecture and for the reconstruction of the local natural environment. Yet, no further research or study of this specific excavational context was conducted ever since.

Located at Strymon's River estuary in eastern Macedonia, **Amphipolis** constitutes one extended archaeological entity with documented evidence for diachronic human presence from prehistoric to early modern periods. Given that the ancient city is mainly debated due the monumental burial tombs investigated at the surrounding area, the discovery of a unique structure is rarely referenced, namely a wooden bridge connecting the opposite bank of Strymon River with one of the fortified city's gates (Lazaridis 1977, 1978). According to the excavator's reports, approx. 1250 wooden elements were discovered, 220 of them being exposed in a total length of 42,3m. Those discovered in the lowest excavational layers were of round or square cross-section with a diameter up to 29cm and preserved the length of 1,5-1,6m, while their lower ends were processed and, in some cases, reinforced with iron-pointed heads. These vertical elements were placed in groups of 3 or 4, forming 12 almost parallel rows pointing to a possible width of 4-6m. The second cluster of verticals was discovered in upper excavational layers being smaller in diameter, thus the excavator estimated that they were of later date. The recent ^{14}C dating of 17 posts seems to verify the initial proposition of the excavator regarding the existence of multiple construction or repair phases, since the measurements documented nine chronological periods during which some works had been realized dating from Late Iron Age (8th-7th centuries BC) up to Late Ottoman period (15th-17th centuries AD) (Maniatis et al. 2010).

In order to track any corresponding developments in southern Balkan wetland archaeology, it would not be necessary to go much further away from Greece - North Macedonia - Albania cross-border area and the region's wetlands, namely Lakes Grate and Small Prespa, Lake Ohrid and the drained Lake Maliq.

Reviewing the archaeological activities in this area it can be noticed that the earliest and most extended investigations of prehistoric wetlands were realized in Korça Basin, Albania. Thus, even though the riverine habitation of **Dunavec** at the northwestern edge of this region is not recorded as a "typical" wetland, in its lowest excavational layer 87 vertical posts were unearthed, that were interpreted as supporting elements of a wooden platform on which the Neolithic houses were built (Korkuti 1995, 95-99, Fig. 16). Together with the recording of some technical attributes of the vertical posts (burnt upper part, processed lower end, approx. 1m preserved length), there is also some information regarding the partial investigation of a wooden floor made of planks. One noticeable remark regarding the structural wood from Dunavec is that they constitute evidence of the earliest pile-dwelling discovered in Balkans dated in Middle Neolithic, an assumption based only on the relative chronology of the pottery assemblage.

Furthermore, in the area that most probably was at the western shore of the former lake, two of the most typical Balkan prehistoric wetlands were investigated. The lakeside settlement of **Maliq** excavated in the early 1960s by F. Prendi and the proposed stratigraphic sequence showing the chronological development of the so-called Chalcolithic period are considered as guiding for the dating of prehistoric habitations in Albania (Korkuti 1995; Krapf 2015; Oberweiler et al. 2016; Prendi 1966). Beyond the general significance of this site, the numerous well-processed vertical posts, as well as horizontal wooden elements discovered within the waterlogged layers of Maliq IIa phase are regarded as evidence for the existence of raised platforms and houses.

In close proximity to Maliq an Albanian-French collaborative project realized since 1993 resulted in the discovery and systematic investigation of the multi-layered prehistoric wetland of **Sovjan**, with a stratigraphic sequence yielding evidence for several habitation's phases dated from Early Neolithic to Early Iron Age - including two ^{14}C deriving from a wooden floor pointing to a rather early dating in the 7th mil BC - while a possible abandonment of the site from Late Neolithic to Early Bronze Age is also attested (Gori 2015, 19-20; Krapf 2015; Oberweiler et al. 2016; Touchais et al 2004). The most substantial architectural remains were discovered in Layers 7-9 dated in Middle Bronze Age, comprised the wooden foundations of an apsidal house more than 15m long and 4m wide, whose apse was separated from the main large room with a wattle wall (Lera et Touchais 2002, 633-638; 2003, 587-593; 2004, 1105-1110; Lera et al. 1997, 874-877). Only some few meters to the north of the house part of a wooden trackway was found comprised mainly roundwood timbers horizontally placed on a complex substructure made of logs (Lera et Touchais 2000, 639-642; 2004, 1109). The excavators have stressed the importance of Sovjan's wood assemblage due to its potential for the conduction of a detailed dendro-archaeological study, for the reconstruction of local woodland, as well as for the establishment of dendrochronology in the region (Lera et Touchais 2002, 640; Touchais et al 2004, 256).

The most recent initiative in the framework of the aforementioned Albanian-French collaboration is the research realized since 2008 some 40km north of Sovjan at the western shore of Lake Great Prespa near the village **Kallamas** (Lera et al. 2009; 2010; 2015; Oberweiler et al. 2016). The possible extent and limits of the habitation were defined by several drillings and an indicative assemblage of artefacts was unearthed from some test-pits within the site's boundary. Despite the proximity to the Lake Prespa, there was no evidence for well-preserved wooden structural elements, except from some scattered indications for the presence of carbonized organic materials or wood imprints on structural clay (Lera et al. 2015, 691-693). However, four ^{14}C dates deriving from different stratigraphic horizons correspond to two habitation's phases dated in 5400-5200 cal BC and 4800-4500 cal BC respectively, which are already discussed as indicative for the reconsideration of the chronology of Albanian Middle and Late Neolithic and its synchronization with the Aegean chronological framework - namely the Late Neolithic I and Final Neolithic periods - according to the typological characteristics of pottery assemblages from the broader region (Lera et al. 2015, 698-699; Oberweiler et al. 2018). Furthermore, in 2007 a diving team of the Verein Unterwasserarchäologie Mecklenburg-Vorpommern investigated the open-water area of Kallamas' Gulf and recorded approx. 150 posts of a pile-field possibly comprising at least 1000 well-preserved wooden elements. The preliminary examination of the collected pottery suggests a dating of the site (named **Kallamas 3**) in the Middle Bronze Age, namely between 22nd and 18th centuries BC. Of 30 posts sampled for dendrochronological analysis 14 derived from pine trees, 14 from junipers and 3 from oaks (Westphal et al. 2007, 78).

The archaeological research in North Macedonia related to prehistoric wetlands was mainly focused on the perimeter of Lake Ohrid which constitutes one of the most exceptional waterscapes of southern Balkans. The earliest documentation of the existence of habitations in close proximity to the lakeshore was once more resulted by some technical works in 1961 at the estuary of River Crn Drim in the city-centre of Struga, at the location known as **"Ustie na Drim"** (Kuzman 2009a; Naumov 2016a, 181-183; 2016b, 15-16; Todoroska 2016). During a one-week excavation campaign in 1962 and within 84m^2 the remains of habitation were investigated, dated - from observations on the pottery assemblage - in the Late Neolithic period according to the chronological framework generally accepted for the Neolithic of North Macedonia, i.e. c. 4500-3300 BC. In respect of structural wood, the discovery of several vertical posts of various diameters seem to constitute a typical wetland's pile-field, the density and the spatial distribution of which did not permit the detection of any clearly recognizable structure's layout. The proposition that the different sizes of posts could correspond to early individual residential structures that later became houses built on platforms cannot be easily documented since no post was sampled to provide the potential of dendrochronological dating. One similar case in terms of discovery conditions is the detection in 2003 of a Late Neolithic habitation within the urban environment of Ohrid at the location **"Ohridati"**, known also as **"Penelope"** (Kuzman 2009b; Naumov 2016a, 181-183; 2016b, 15-16). The pile-field comprised posts of various sizes that were interpreted as the foundations of individuals structures not built on some big uniform platform, a supposition hardly controllable since the structural elements were destroyed by modern construction activities. Yet, during a short campaign realized in 2006, some posts were sampled deriving mainly from juniper trees. One of these posts bearing 427 annual growth rings was dated in the mid-6th mil. BC (5620-5370 cal BC), pointing to a quite earlier date compared to the generally accepted chronological framework in North Macedonia (Westphal et al. 2007, 88-89).

The last few years a renewed interest for the investigation of prehistoric wetlands can be attested, mainly with the realization of underwater surveys, as well as excavations that resulted in the detection of submerged sites on the lake's perimeter (Naumov 2016b, Fig, 2, 4). One of these is the site **Vrbnik** located approx. 1,2km to the west of River's Crn Drim estuary within Struga's vicinity, which is systematically investigated since 1998 (Todoroska 2010, 2017). Although the habitation - according to the movable finds - is of rather later date (7th-6th centuries BC), the research conducted is of particular interest due to the density and good preservation of more than 500 posts, which are systematically documented with the employment of the state-of-art available techniques.

One of the most prominent research projects is the one realized on the eastern shore of Lake Ohrid at the so-called **"Bay of Bones"** or **"Plocha Michov Grad"**, one of the small bays in which the remains of submerged habitations were detected (Kuzman 2008; Naumov 2016b, 18). The investigation of the settlement since 1997 yielded indicative pottery, as well as movable finds for its dating in the Late Bronze and Early Iron Age, a proposition that for now is not documented by ^{14}C or dendro dates. Regarding structural wood, the excavator estimates - after making some calculations based on the density of posts in specific areas - that more than 6000 vertical elements must be submerged in the bay. Moreover, based on their irregular arrangement and their bigger dimensions compared to the earliest tree's trunks recorded in the Neolithic habitations of Lake Ohrid, it is supposed that these posts were supporting a uniform platform, on which approx. 20 houses would have been built. The full-scale reconstruction of the settlement (Museum of Water) built on the habitation's remains reflects the excavator's hypothetical notions regarding the form and the size of the platform and the houses, constituting these last few years one of the most visited attractions of Lake Ohrid.

Lastly, one less known excavation of a prehistoric wetland was realized in 2012 on the southern shore of Lake Doiran at a location called **"Mrdaja"**, just a few meters away from the Greek - North Macedonian borderline. In an excavated area of $64m^2$, Late Bronze Age pottery was mainly discovered, as well as 22 posts with a diameter ranging from 10-25cm. The excavator claims that their spatial arrangement, as well as their west-east general orientation, could be correlated with the existence of a platform or even a bridge that connected two opposite parts of the settlement (Rujak 2014, 29-30 and Fig. 35).

1.4 The Amindeon Basin

1.4.1 Geographical, geological and environmental characteristics

The municipality of Amindeon, located in northwestern Greece close to Greece - North Macedonia - Albania cross-border region, belongs to the geographical as well as administrative Region of Western Macedonia and occupies an area of 599,6 km^2 **(Fig. 1)**. The central and biggest part of this area is one typical basin in an altitude of approx. 600m a. s. l. defined by relatively high mountainous ranges, namely Mount Askion (2111m) to the south-west, Mount Vitsi or Vernon (2123m) to the west, Mount Voras or Kaimaktsalan (2524m) to the north and Mount Vermion (2065m) to the southeast (Florina Prefecture 2002, 15-17). The basin was formed by the division of a major tectonic trench extended between the Pelagonian Plain in North Macedonia to the north and the River Aliakmon to the south which probably occurred in the late Miocene to the early Pliocene periods (Petrou 2008, 105). During this last period, the wider region, including also Ptolemais Plain to the south, was covered by an extensive shallow-water lake in which lignites and marls were deposited (Kloosterboer-van Hoeve et al. 2001, 61). The climate of the area is characterized as temperate continental with generally dry and cool conditions in summer and extremely cold and long winters. Average annual precipitation amounts to 516,7mm and the mean annual air temperature is 12,3°C, while the mean monthly air temperatures for January and July are 2,6°C and 22°C respectively (Gassner et al in press).

The dominant characteristic of the landscape in Amindeon Basin is the four lakes, that are considered as the remains of the aforementioned ancient Lake Eordea **(Fig. 2)**. Lake Vegoritis, the third biggest lake in Greece, covers an area of approx. $59km^2$ at an altitude of 523m a. s. l.

with a mean and maximum depth of 20 and 70m respectively. Lake Petron at the northern edge of the basin covers an area of approx. 8km^2 at an altitude of 560m a. s. l. with a mean and maximum depth of 1 and 3m respectively (Skoulikidis et al. 1998, 14). The smallest of the four lakes is Zazari, measuring 2km^2 at an altitude of 606m a. s. l. and having a mean and maximum depth of 4,3 and 6,3m respectively, according to some more recent measurements (Gassner et al. in press). Lake Chimaditis covers an area of approx. 11km^2 at the southwestern edge of the basin at an altitude of 593m a. s. l. and with a mean and maximum depth of 1 and 2,5m respectively. Yet, the lake and its surrounding wetland ecosystem are constantly deteriorating during the last 60 years after the extended irrigation works of the 1960s. Subsequently, the drainage of the marsh aiming to the expansion of the cultivated lands, as well as the intensification of the activities in the neighbouring lignite mining zone that affects significantly the local environmental sources have brought up the noticeable decrease of the wetland's extent and quality **(Fig. 3)**.

The alternating environmental and altitudinal zones of Amindeon region are characterized by a variety of vegetation's zones. Except for the extended arable land that covers a significant part of the basin, the vegetation around the lakes and on lakeshores consists mostly of grassland, shrubs and reeds and deciduous trees as oaks (*Quercus sp.*), hornbeams (*Carpinus sp.*), ashes (*Fraxinus sp.*) and poplars (*Populus sp.*). Although their extent and density are relatively low, the lowland forests at the hilly zones of the basin are dominated by oaks, beeches *(Fagus sp.)*, together with maples (*Acer sp.)*, ivies (*Hedera sp.)*, dogwoods *(Cornus sp.)* and pines (*Pinus sp.)*. At higher altitudes, there are forests comprising maples, beeches and hazels (*Corylus sp.),* while pine forests grow above 1500m a. s. l. (Bottema 1982, 260; Gassner et al. in press).

Some recordable differences between the modern conditions and the prehistoric natural environment that formed the general setting for the development of the local Neolithic communities' socioeconomic activities are documented by earliest and more recent palynological investigations regarding northern Greece and particularly the Four Lakes region (Bottema 1974, 1982; Gassner et al. in press; Gerasimidis and Athanasiadis 1995; Syropoulou 2010). The results of all these studies clearly document the predominance of deciduous oaks in the forests that covered the neighbouring areas of Lakes Chimaditis and Zazari during almost all the Early, Middle and Late Neolithic, with one possible maximum expansion between the mid-6th and mid-5th mil. BC. These mixed forests included also species such as hornbeams, hazels, elms *(Ulmus sp.)*, limes *(Tilia sp.)* while at higher altitudes pines, firs *(Abies sp.)*, ashes and birches

(Betula sp.) were present. Moreover, according to recent anthracological studies that integrate data from several Balkan areas, the wetlands of northern Greece were covered by coastal halophytic and alluvial hardwood forests. More specifically, the Four Lakes' region is characterized as a zone with Sub-Mediterranean to subcontinental mixed oak-hornbeam forests (Marinova and Ntinou in press; Ntinou 2014, 410-412).

One critical factor that should have affected the activities of the basins' Neolithic communities was the alterations of the wetlands' form and extent and more specifically those referring to Lake Chimaditis, on the perimeter of which a significant number of prehistoric habitations were recently documented as it will be shown in the following paragraphs. According to the available indications from pollen diagrams and sedimentological analyses, during the Neolithic Chimaditis would have been an open water lake with a depth of approx. 4m characterized also by seasonal or periodic water fluctuations, while from around 2000 BC the lake gradually became shallower turning into a marsh for certain periods (Petrou 2008, 109).

1.4.2 Research history and the prehistoric occupation in the basin

The archaeological research in Amindeon region - especially regarding the documentation of prehistoric occupation - was until recently very limited. Yet, the discovery during the works for the construction of the railway line Thessaloniki-Bitola of an extended Iron Age Necropolis in Aghios Panteleimon (Patele) and its excavation in 1898-1899 by the Russian Archaeological Institute of Istanbul is considered as one of the earliest archaeological endeavours in Macedonia (Heurtley 1939; Makridis 1937).

One interesting reference to the region was made by A. Keramopoulos, the pioneering researcher of Western Macedonia during the 1930s, who in occasion of his report about the excavation at the prehistoric lakeside settlement of Dispilio he stresses that (1939, 61, this author's translation): *"Unfortunately, many lakes in Macedonia between the River Strymon and Kastoria were drained away by our modern state without the proper attention to the possible existence of lake dwellings. Yet, the villagers around Prespa testify the existence of house ruins in the lake and the same is said for the small Lake Rudnik [Chimaditis] or Rakita …"*. It is evident that this statement was not based on any planned research or excavation, but it was only one logical assumption that would be verified several decades later.

During the late 1980s some more detailed information regarding the presence, spatial distribution and chronology of several prehistoric settlements in Amindeon Basin were published, deriving mainly from the inspection of specific places bearing surface material (Kokkinidou and Trantalidou 1991; Trantalidou 1989). According to the authors, 29 prehistoric habitations were documented in this region dating from Middle Neolithic to Early Iron Age. Their distribution within the basin is of some significance in respect of the possible type of these settlements, since it was observed that 21 of those were located in spatial proximity to the rich hydrological network and 9 were exposed as small mounds up to 3m high after the lowering of the lakes' water-level and the drainage works of the marshes realized in the 1950-1960s (Trantalidou 1989, 1595). It is also worth mentioning that despite the limited extent and intensity of the research those years, a noticeable concentration of Neolithic and Bronze Age settlements around Lake Chimaditis was recorded and more specifically in the vicinity of the villages Anarghiri and Limnochori (Kokkinidou and Trantalidou 1991, 104).

This fragmentary view regarding Amindeon's prehistory changed rapidly shortly after 2000 due to the preventive archaeological work of Florina Ephorate of Antiquities (Greek Ministry of Culture and Sports) forced by the intensified mining activities at Amindeon Lignite Mining Zone of the Public Power Corporation S.A. - Hellas. The Rescue Excavations Project was initially focused on the systematic survey and trial trenching of an area of approximately 550 hectares on the shores of the region's four lakes and mainly in the margins of the Lignite Mining Zone. This first level of research resulted in the discovery and documentation of 54 new archaeological sites dating from prehistoric to late historic periods and brought to light a previously unknown archaeological culture, which was named "Culture of Four Lakes" (Chrysostomou and Giagkoulis 2016; Chrysostmou et al. 2015; Chrysostomou in press).

The Neolithic way of life was introduced in the region rather quickly, as documented by the presence of 13 settlements dated in the last centuries of the 7th millennium BC, namely the Early Neolithic period (c. 6500-5800 BC). During the subsequent Middle Neolithic (c. 5800-5400 BC) and most of the Late Neolithic I (c. 5400-4700 BC), the settlements rose to 15 and remain stable until Late Neolithic II (c. 4700-4500 BC), while during the Final Neolithic period (c. 4500-3300/3200) the settlements' number decreased to 12. In choosing the location of these settlements, the Neolithic communities showed a steady preference to low plateaus and flat lands, with lakeside settlements accounting for half of the sites dated to the beginning of the

Late Neolithic. The most typical features of the spatial organization of the Middle and Late Neolithic dryland habitations are individual or clustered post-framed single or two-storey dwellings and concentric ditches around settlements, as documented at Anarghiri XI and XIIIa.

During Early and Middle Bronze Age (c. 3300/3200-1500 BC), the Amindeon Basin witnessed a rapid increase in the number of settlements established on lakeshores or at low hills close to marshes and streams. The most significant habitation of the period is lakeside settlement Anarghiri I on Chimaditis Lake, while the dryland settlements Sotiras V, Anarghiri IXa, XI and XIIIa were bordered by simple or complex ditches and timber circular or oval palisades (Chrysostomou and Giagkoulis 2018).

Iron Age (c. 1100-550 BC) - a phase of an actual population boom in the region - is known from Patele (Aghios Panteleimon) Necropolis of Tombs, whose investigation restarted in 2001 yielding hundreds of graves organized in 18 tombs. This unique Necropolis in the Balkans with a great variety of graves' types, special burial customs and numerous high - quality grave goods was in use for at least 500 years, until the first half of the 6th century BC.

One of the most interesting results the survey realized in the framework of Rescue Excavations Porject was the documentation of the close spatial correlation of several prehistoric habitations to the region’s lakes and marshes. Namely, 8 habitations are characterized as pile-dwellings, while for 19 lakeshore settlements there were indications that the dwellings were situated in the lake at least during certain periods. Most of these were located on the northern shore of Chimaditis Lake, while three of them were situated in the marshes created by the lake’s spilling over into the adjacent plain (Chrysostomou et al 2015, 28) **(Fig. 4)**.

The second and most demanding phase of the Rescue Excavations Project of Florina Ephorate of Antiquities was the large-scale extended excavations from 2012-2017 at sites endangered by the lignite mining activities. These covered a total area of more than 25 hectares of the prehistoric settlements Anarghiri IXa, IXb, XI and XIIIa (Chrysostomou and Giagkoulis 2016, 6). The realization of the project would had never been possible without the funding by the Public Power Corporation S.A. - Hellas and the participation of a large staff of specialists and labourers, including 150 archaeologists, 1100 skilled and unskilled workers, as well as more than 50 scientific associates of various backgrounds (engineers, draftsmen, graphic designers, IT specialists, conservators etc.). This extensive operation and the enormous material yielded (more than 60000 movable finds), required the construction of several storage buildings and laboratories at Aghios Panteleimon measuring a total of 4500 m^2 to facilitate all the tasks that have been carried out by the specialized staff including sorting, cleaning, drying, conservating, documenting and storing of the excavated material (Chrysostomou et al 2015, 27).

In 2014 Florina Ephorate of Antiquities initiated a collaboration project with the Underwater Archaeology of Zurich. The "*Project for the rescue, conservation and documentation of wooden and other organic artefacts from the prehistoric lakeside settlements in Amindeon, Florina, Western Macedonia, Greece* ", co-funded by the Rescue Excavation Project and the Swiss Federal Office of Culture comprised know - how transfer, including the best practices concerning the excavation, documentation and processing of wooden finds and samples. The expertise of the Underwater Archaeology of Zurich helped to optimize the sampling strategy, the recovering and storage of samples, the database and highlighted the potential of dendroarchaeology for the Greek pile-dwellings. Several meetings took place in Switzerland and Greece bringing together archaeologists from both countries (Chrysostomou et al. in press).

1.5 The prehistoric lakeside settlement Anarghiri IXb

1.5.1 The excavation

The prehistoric habitation at this specific location was already known from the earliest surveys (Trantalidou 1989, 1614), yet it was archaeologically attested by eight test-pits excavated in 2012[1]. Those documented the existence of anthropogenic layers that covered an area of approx. 2,8 hectares, which was interrupted by a modern canal directed from southwest-northeast probably dug during the drainage works of 1950-1960s in Chimaditis marsh. According to the raw information documented in the pits, as well as one preliminary examination of the profiles created within the modern drainage canal, the anthropogenic deposits on the periphery of the habitation were nearly 2,7m thick, while in the central part of the settlement their thickness rose to approx. 3,8m (Giagkoulis in press).

The rescue excavation of the settlement was realized between 2013 and 2016 as one of the most challenging tasks of Florina Ephorate of Antiquities in Amindeon Lignite Mining Zone, since more than 800 skilled and unskilled workers, 120 archaeologists and 30 associates of various specializations were employed in the excavational campaigns lasted in yearly basis from

[1] The information about the development of the research were retrieved from Anarghiri IXb excavational records.

3 to 7 months. The gradual worsening of the stability of the site due to the surrounding lignite mining activities in 2017 brought about the final break of the excavation **(Fig. 5, 6)**.

The outcome of this endeavour was the investigation of an area that approximates 17410m^2 of 28000m^2 of the total area of anthropogenic layers. Depending on the extent and the stage to which the excavation reached, the investigated surface is subdivided into three main areas **(Fig. 7)**.

a. The periphery of the habitation, where the excavation was completed, and the anthropogenic layers were exposed and documented to the natural soil (approx. 11942 m^2).

b. The central part of the habitation, where only the upper anthropogenic layers were investigated (approx. 5000 m^2).

c. Selected areas of the central part of the habitation (approx. 468 m^2), where the upper anthropogenic layers were removed, and the vertical posts were recorded and sampled before the final break of the excavation in 2017.

1.5.2 Stratigraphy

The special conditions of the excavation, the extent of the investigated area, as well as the quantitative and qualitative attributes of the available documented information make the reconstruction of settlement's stratigraphy a quite demanding and multi-levelled task. Since the studies of crucial archaeological materials (pottery, small finds, clay building fragments and structures etc.) are pending, the preliminary approach of the settlement's stratigraphic sequence is for now based on raw information included in the excavation's records and digital photos' archive and on the macroscopic observations made by their examination.

The first-level analysis of layers' vertical succession in specific trenches' profiles was implemented for drawing a provisional view of the settlement's general stratigraphic sequence. This task was focused on selected trenches of three excavational areas (Northern, Central, Southern Sector) for obtaining some indicative information in respect of the spatial distribution of stratigraphy's basic characteristics **(Fig. 8)**. In the framework of this study, some general observations regarding the Southern Sector are shortly highlighted[2].

Southern Sector **(Plan 1)**

The grid's trenches (832d, 833c and d) selected for the layers' identification and description were considered as indicative for the succession of archaeological deposits in this specific area measuring 16m of stratigraphic sequence (with 1m baulk intervals). Furthermore, several samples (charcoals and posts) selected for ^{14}C dating from this area and the measurements resulted are incorporated into the stratigraphic sequence, providing information for the discussion of the chronological framework of the settlement's development. The layers' sequence, their components, as well as some possible features could be described as follows:

Layer 0 – I (Elevation's zone: 595,30-594,90m a. s. l.): the uppermost excavational layer on the modern surface, which in profiles 832 d and 833 c do not appear as distinguishable differentiation, possibly removed by agricultural activities. In the next two profiles, it appears as light brown soil, with small roots and pebbles. Most probably should represent some of the latest occupation's phases, still, it is disturbed and of limited stratigraphic value.

Layer II (Elevation's zone: 595,20-594,40m a. s. l.): this could be considered as the first archaeological layer, within which the indications of later disturbances are reduced. The soil of the layer appears to be compact dark brown and clumpy, with roots, small pebbles and scattered clay fragments, as well as pottery. Within the four profiles analyzed there are no indications for any particular structural activity.

Layer III (Elevation's zone: 594,90-594m a. s. l.): the layer generally appears as a zone of light greyish soil, with scattered small clay fragments and charcoals, while in profile 832 d abundant pottery is documented. In profile 833 c some clearly observable features are recorded, namely an oval pit nearly 1,20m deep a 2m long and approx. 70cm deep layer of compact red-yellowish clay layer (burnt?) with ashes and charcoals, as well as a second pit nearly 90cm deep.

[2] The general preliminary results that follow are the outcome of the collaborative work with my colleagues Stella Papadopoulou and Christoforos Arampatzis, members of the archaeological team of Anarghiri IXb excavation and PhD candidates of the Institute of Archaeological Sciences, University of Bern. The author of the present study is fully responsible for the presentation of the observed data, as well as for the remarks that follow.

These successive elements are clearly the remains of some building activity that most probably was associated with the use-surface of Layer III, disturbing the earlier Layer IV.

Layer IV (Elevation's zone: 594,40-593,60m a. s. l.): the layer's soil is generally brownish, with abundant charcoals and clay fragments, while pottery, animal bones and artefacts are abundant. In profile 832 d two postholes are disturbing the layer, while in the following profiles several grey-yellowish clayey lenses possibly belonging to clay thermal and other structures are observed. These features seem to be more densely distributed in northern profile 833 d, while similar feature approx. 1,40m long and 40cm deep is documented in eastern profile. It must be also stressed that Layer IV is extensively disturbed in profile 833 c by the features of the superimposed Layer III.

Layer V (Elevation's zone: 593,90-592,70m a. s. l.): the layer appears as a dark brownish compact soil, with increasing humidity towards its lowest excavated depth. Its distinctive characteristic is the presence of organic materials, well-preserved wooden elements and artefacts of all categories. Profile 832 d could be considered as one of the most typical of this layer, since all the aforementioned attributes are clearly documented, together with some horizontally deposited sandy or chalky sediments and lenses, appearing in at least two zones within the lowest elevations, interrupted by vertical posts.

Examining the characteristics of the stratigraphic sequence in the Southern Sector of Anarghiri IXb excavation described above and collating them with the data documented in Central and Northern Sector, some general remarks could be made. From the profiles presented it becomes rather evident that the excavational layers show some significant deviations regarding their depths of deposition and spatial distribution, which in the case of Southern Sector show an incline from the west towards east. This is mainly observed in respect of the upper layers (I-III), a fact rather expectable for a multilayer site that it might have taken the form of a low mound at the final stages of the habitation. Respectively, the lowest layers IV and V show smaller deviations, as if they were deposited in a more elevated ground.

Evaluating the layers' components and texture (inorganic and organic materials, sedimentations), the particular kind of the structural interventions recorded (pits, clay structures, structural wood), as well as the recordable differentiations in the state of preservation of the archaeological material, some relatively secure notions regarding the development of the occupation could be stressed. Namely, it seems plausible that the earliest habitations' phase (or phases) would be established in a more or less humid ground; yet, the extent and degree of water's continuous or periodic presence around or within the habitation cannot be estimated at the current stage of the settlement's study. Furthermore, it could be claimed that the accumulation of anthropogenic layers, together with the possible alterations of the water level in the successive periods could have created the conditions for building in a more dry and stable ground. Insofar these suppositions can be generalized in respect of the settlement's diachronic development, it is proposed that in the lowest Layers IV and V the remains of a typical wetland habitation were preserved, while the superimposed Layers I-III correspond to a dryland occupation.

1.5.3 Dating

After the completion of the rescue excavation of Anarghiri IXb in 2017, Florina Ephorate of Antiquities planed a specific project to document the chronological framework of the habitation. Alongside some studies of archaeological materials and the reconstruction of stratigraphy in progress, the basic tool for realizing this task was the selection of several samples for ^{14}C dating. For this scope, a collaboration with the Laboratory for the Analysis of Radiocarbon with AMS of the University of Bern was established in 2017 that resulted in the first months of 2018 the dating of 79 samples from Anarghiri IXb **(Plan 2)**. More specifically, the group of samples included:

a. 34 charcoals from various excavated areas, elevations and archaeological contexts

b. 12 vertical posts distributed all over the excavated area, that are not correlated to some specific architectural feature

c. 30 vertical posts from the wooden structures identified in the periphery of the habitation

d. 3 horizontal wooden elements and woodchips from specific excavational contexts

The raw measurements provided by the Laboratory were calibrated with the online open-access application OxCal of Oxford University, which was also used for the preliminary modelling and classification of the dates for the needs of the present study **(Plan 3, 4)**. It is self-evident that the complete evaluation of these results, as well as their comprehensive correlation with the stratigraphic sequence of the habitation, are quite demanding objectives that go far beyond the aims of the present study.

Nevertheless, some remarks for drawing one schematic outline of the habitation's diachronic development could be made. Consequently, this approach is confined to an attempt to integrate the available ^{14}C dates into the general chronological framework of Aegean and Balkan prehistoric cultures. Of course, this is one challenging on-going discussion, which incorporates the results of some pioneering research at northern Greek - mainly Thessalian and Macedonian - prehistoric settlements (Andreou et al. 2001) and is significantly enriched and refined by new evidence derived from several research projects realized the last two decades (e.g. Anthony and Chi 2010; Dietz et al. 2018; Papadimitriou and Tsirtsoni 2010; Sarris et al. 2017).

Taking into consideration the commonly accepted general framework regarding the archaeological phases and chronology of northern Greece Neolithic and Bronze Age established by Andreou et al. (2001), as well as the preliminary observations on Anarghiri IXb stratigraphic sequence made in the selected profiles, the following scheme is proposed as a working hypothesis for future examination and further research **(Plan 5)**.

Anarghiri IXb 1(?) **(Middle Neolithic/Late Neolithic I, c. 5500–5400 cal BC):** Two vertical posts and one charcoal deriving from the Southern Sector of the excavation in early or mid-55th century BC are the earliest dates recorded. They could be considered as an indication for some early human presence at the specific area of Lake Chimaditis; yet, it is rather questionable if these three dates are enough to document any systematic building or other activities in the supposed switch from Middle to Late Neolithic I period.

Anarghiri IXb 2 **(Late Neolithic I, c. 5400/5300–4900/4800 cal BC):** A relatively large group of dated posts, as well as some charcoals, could be considered as demonstrative for the first extended habitation phase of the settlement. The dated elements are distributed within almost all the excavated areas where the lowest archaeological Layers IV and V were investigated, bearing the general characteristics of a wetland habitation. Moreover, some of the wooden structures discovered at the peripheral zone of the settlement seem to be established, used and abandoned during this period (see chapters 2.3.1. and 2.3.2).

Anarghiri IXb 3(?) **(Late Neolithic II, c. 4900/4800–4600/4500 cal BC):** The evidence for the existence of this phase in the available dates is rather obscure since only 3 - 4 measurements fit this chronological time span, namely 48th and 47th centuries BC. Accordingly, it could be proposed that, either there was a hiatus in the settlement's occupation, or the activities realized in this area were of a specific type or of limited extent during this period being hardly detectable in the archaeological assemblage. The possibility of a sampling lapse should be also mentioned.

Anarghiri IXb 4 **(Final Neolithic, c. 4600/4500–4300 cal BC):** The dates attributed to this period derive almost exclusively from charcoals sampled from the upper Layers II and III and are distributed mainly within the Central and Northern Sectors of the excavated area. As already proposed, the characteristics of the findings and their state of preservation most probably indicate that during this last Neolithic phase the settlement was developed as a dryland habitation. Furthermore, according to the lack of any dated samples after the 44th - 43rd centuries BC, it could be assumed that the settlement was abandoned. Yet, since there are recordable interventions and modern destructions of the upper archaeological Layer I, the possibility of the existence of some human activity in the area should not be excluded.

Anarghiri IXb 5 **(Early Bronze Age, c. 2800–2500 cal BC):** the only clearly recordable evidence for some human activity during this phase derived from the dating of three vertical posts belonging to two different accessing wooden structures in the periphery of the settlement (see chapter 2.3.1.)[3]. Since for now there is no available information from the main excavational area regarding the presence of Early Bronze material, the form and extent of human activities in the settlement during this period remain unknown.

[3] One more date belonging to this period (Anarghiri IXb_S75) derive from a branch collected from the waterlogged layers of the Southern Sector (Trench 904 d), thus it is considered as less reliable due to the lack of specific and secure excavational context.

PART 2

ANALYSIS

2.1 Anarghiri IXb structural wood assemblage

Considering that the rescue excavation of Anarghiri IXb constitutes a unique example of extended research of a prehistoric wetland - not only in Greece but also in southern Balkans - from which an exceptional number of preserved wooden elements related to the structural activities of the Neolithic community were revealed, some information about the excavation's methodological choices and documentation practices referring to wooden elements should be provided. This reference is regarded as a prerequisite for obtaining a general view of the factors that inevitably affected certain quantitative and qualitative properties of the assemblage and the available data-set for the conduction of this research. Subsequently, the given characteristics of the material under study, as well as the excavational documentation's record led to specific methodological choices, posing at the same time actual restrictions to the research potentials.

2.1.1 Discovery

The implementation of the general plan of Anarghiri IXb excavation between 2013 - 2016 by a numerous on-site team working to tight deadlines, in combination with special demands related to the extent and thickness of the archaeological remains, led to the methodological choice of removing the anthropogenic deposits in fixed 10cm-thick arbitrary layers (symbolized with #). Following this technique not only for digging up the deposits but also for the collection, sampling, recording and documentation of finds and findings, the aim was to intensify the excavation's procedure, but also to create an as far as possible unified and codified data-set for further processing.

Thus, exposure, treatment and documentation of wooden elements were incorporated as a regular part in the typical excavational procedures of the fixed 10-cm-thick arbitrary layers.

After their excavational exposure, the wooden elements were documented as follows:

- Labelling of the elements with serial numbers from 1 - ... within every single grid's trench.
- Recording of their position in the excavational trench (north/east distances from the trenches' profiles) and the depth of their first appearance in the excavated arbitrary layer.
- Recording of their diameter (or radius) and their exposed length.
- Photographic documentation of their actual position in the anthropogenic layer.

- Recording of their actual x, y, z coordinates and integration in the excavation grid with the use of GPS devices.

- In the cases of extraction of vertical posts out of the natural soil or the anthropogenic layers, the final dimensions of their preserved part were also recorded.

At this point, it must be stressed that the standard documentation system employed in Anarghiri IXb rescue excavation did not include - until 2015 - any special recording sheet for structural wood. The information regarding the elements unearthed were noted at a section named "architectural remains" of the arbitrary layer's recording sheet. In 2015 excavation campaign a special table for the recording of wooden element's basic characteristics was introduced, together with specific written directions to the trenches' supervisors regarding the documentation and treatment of structural wood. Moreover, labelling of the elements was further elaborated with the employment of an overall numbering system, whith the attribution of a unique serial code to every new element unearthed. This practice aimed to the reduction of the recording problems derived from multiple and identical numbering of elements, making also easier the processing of the available information, as well as the post-excavation treatment and storage of sampled wood **(Fig. 9)**.

2.1.2 Treatment

Excavational treatment of structural wood was a subject of different practices followed during the successive research campaigns in Anarghiri IXb. The examination of the excavational records and further analysis of the available information led to the recognition of three different phases in respect to structural wood digging-out and treatment.

During the first two years of the excavation (2013 - 2014 campaigns), the elements were unearthed, recorded and documented according to the procedures already described and were left intact in the arbitrary layer of their first appearance, in order an overall picture of the material after the completion of the excavation to the natural soil to be obtained. For this reason, horizontal wooden elements were left on earlier deposits' earthen piles and the vertical posts were "surrounded" by rings of soil. In many cases, the exposed parts of the elements were covered for some days with aluminium-foil. Except for some rare cases of vertical posts deriving from specific excavational areas and contexts, no systematic sampling of wooden elements took place during 2013 - 2014 campaigns, resulting in their discard after the completion of the usual documentation processes **(Fig. 10 and 11).**

In 2015 - 2016 campaigns a significant shift was made towards the organization and realization of a systematic and extended sampling project of Anarghiri IXb structural wood. In the first place, the practice of preserving the wooden elements in their initial arbitrary layers of appearance for longer periods during the excavation was abandoned. Instead of this, immediately after their discovery and documentation, the horizontal elements were removed from the deposits and sampled and the uppermost - usually eroded - part of vertical posts was cut away and discarded. In these last cases of longer elements driven into the natural soil or earlier anthropogenic layers, sampling was made either when a better-preserved part of the wood was unearthed with the removal of one next 10cm-thick arbitrary layer or after the extraction of the post from the deposits together with the completion of the excavation. These tasks were assigned to two small teams, each one of them comprised an archaeologist and two skilled workers, which were equipped with all the necessary tools and materials and undertook labelling, sampling, packing and storage of the samples collected in an every-day basis from all the on-going excavation's trenches. Moreover, the two archaeologists - in collaboration with the trenches' supervisors - proceeded also to the photographic documentation of the elements, filling of the special recording sheets and noting down some descriptive information regarding the physical and technical attributes of structural wood unearthed and sampled **(Fig. 12)**.

Lastly, during the short 2017 campaign realized under quite urgent circumstances, a final wooden elements' sampling project was implemented in selected areas (Soundings) of the central habitation space of Anarghiri IXb, including only the elementary recording and documentation tasks, such as labeling, x, y, z coordinates recording, measuring of the basic elements' characteristics, sampling and storage.

The samples collected during all the above-mentioned campaigns were labelled, put in numbered plastic buckets filled partially with water and were stored in an easily accessible and with rather stable light and temperature conditions repository of Florina Ephorate of Antiquities facilities at Aghios Panteleimon.

2.1.3 Wood samples' examination

In the framework of a general collaboration established between Florina Ephorate of Antiquities and the Institute of Archaeological Sciences, University of Bern, a targeted project was realized in 2017 aiming to the preliminary examination of sampled wood from the prehistoric wetlands of Amindeon Basin, mainly from Anarghiri IXb. The main objective of this task was the quantitative and qualitative evaluation of the material collected in order to specify the potentials for future dendrochronological analysis. Accordingly, an elementary level of microscopic examination of the samples was realized, which resulted in the general classification of the trees' stems according to the species identified (oaks, conifers, deciduous trees), focusing mainly on the recording of their basic anatomical features (presence of pith, sapwood, waney edge and bark), which, in combination with the measured number of annual growth rings, constitute the most determinant attributes for further analysis[4].

2.1.4 Post-excavational information management and processing

For the implementation of the various stages of Anarghiri IXb wooden elements' study, the need for organizing and making easily accessible and retrievable all the available information was from the very beginning more than self-evident, due to the extraordinary scale of the excavated area and the large amount of information produced, the different trenches' supervisors involved in the excavational treatment and documentation of the material, as well as the variable practices followed during the rescue excavation.

The application evaluated as the most efficient for realizing the initial tasks of gathering, codification and organization of the available information was Microsoft Access. The specific database file was structured taking into consideration the different levels of information included in the excavational record (trenches' diaries, wooden elements' recording sheets, photographic archive, GPS devices). The table's fields, as well as the more user-friendly form for data-input **(Fig. 13)**, were organized in distinguishable groups according to the information contained as follows:

[4] The project was realized in two short campaigns (August and November-December 2017) by the dendrochronologist John Francuz, associate of the Institute of Archaeological Sciences, University of Bern, who was assisted by Katerina Dimitriadi – Papadimitriou, conservator. From 1036 samples examined, 116 derived from other the Neolithic lakeside settlements of Amindeon Basin and 920 from Anarghiri IXb. From these last group, the basic information regarding 757 samples deriving from 2013 - 2017 excavation campaigns are incorporated in various sections of this study.

a. Element's general ID: unique serial number, excavational info, such as discovery, recording and sampling dates, trench, square, treatment, general classification/category.

b. Spatial and stratigraphic positioning: in-trench location (north-east coordinates, excavational depth and arbitrary layer) and georefernced x, y, z coordinates.

c. Physical and technical attributes/characteristics: state of preservation, length (exposed and actual), width, thickness, diameter, cross-section, woodworking techniques and traces.

d. Wood anatomy (for sampled wood): general anatomic characteristics, growth rings, waney edge, species identification.

e. Interpretation: sampling, dating, attribution to recognized wooden structure(s).

f. Documentation and post-excavational treatment: photos, storage, general comments.

After the completion of the first stage of information recording, the data were filtered and organized in several secondary tables corresponding to specific classifications and categorizations according to the study's aims and objectives in respect of data analysis.

The second level of information management and processing comprised their conversion to georeferenced data and the creation of general maps and plans visualizing filtered information regarding specific attributes of Anarghiri IXb pile-field. For these purposes, the coordinated interpolation of the Access Data Base Tables into an ArcMap 10.5 file (ARC GIS Software) was realized **(Fig. 14)**. The construction of the ArcMap file facilitated mostly the representation of the spatial distribution of wooden elements, of some of their critical attributes, as well as of the wooden structures recognized. In this framework, the main visualized features are:

a. Excavation's grid system used as the base map for the georeferencing of all the available information.

b. Wooden elements' general plan and individual plans with classified categories.

c. Plans of spatial distribution of sampled elements, ^{14}C dates, wood species, woodworking techniques, elements' cross-section categories etc.

d. Plans of enclosing and accessing wooden structures recognized on the periphery of the habitation.

2.1.5 Some necessary clarifications

Structural wood and the available information related to its documentation is the outcome of an archaeological endeavour with very special characteristics in respect firstly of the issues posed by the necessity for a proper excavational treatment of an extraordinary type of settlement for Greek archaeology, i.e. a prehistoric wetland. Adding to this fact some other, almost equally decisive factors such as the rescue character of the excavation, the tight schedule, the extraordinary scale and the numerous teams involved in every stage of its realization, it can be reasonably claimed that certain impact on the assemblage under study is expected. Already during the first steps of this study, some objective difficulties would inevitably restrict the frames of the analytical methods and tools, with consequent influence on the range of the synthetic interpretational propositions.

As it was made clear in the introductory paragraphs of the study, the initial plan of removing the total of anthropogenic layers of the prehistoric lakeside settlement Anarghiri IXb was accomplished only on the periphery of the habitation. Therefore, one first significant limitation is related to the loss valuable archaeological information that should be preserved in the lowest waterlogged layers of the central part of the site. Presumably, a large number of wooden elements that could be associated with residential or other structures of the earliest Late Neolithic I occupation, were never unearthed, making almost speculative every attempt to approach the form, size and the construction techniques of these features, as well as the general layout and organization of the main habitation zone.

Except for this irreversible situation, the analytical examination of the excavational record and archive for obtaining every usable information regarding the wooden elements unearthed revealed some kind of incomprehensiveness in certain aspects of the excavational treatment and documentation of the material. As already mentioned, the first two years of Anarghri IXb rescue excavation there was no systematic plan for the sampling of structural wood, a fact that reduced the size of the samples' archive, depriving the study and any future dendrochronological analysis of a possibly decisive amount of information and data. Moreover, the excavational practices described above aiming to the preservation of the wooden elements in their initial position of discovery for some longer time for documentation purposes, caused significant alterations to their state of preservation and physical properties making them less suitable for sampling and further examination and analysis.

Finally, it is worth mentioning that some expected discontinuities or insufficiencies in the excavational recording and documentation of the wooden elements (e.g. occasionally fragmented information about their attributes, incomplete descriptions, bad quality or lack of photographic documentation) are in some cases over-emphasized due to the extraordinary scale of the rescue excavation. It should be also taken into consideration that these specific tasks were supervised by an abundant team consisting of archaeologists from various educational and experiential backgrounds and carried out by numerous skilled and unskilled workers, which had to confront with a series of challenging issues imposed by a more or less unknown archaeological material.

In specific topics analyzed in the upcoming chapters, some of the above-mentioned restrictions will be commented in cases that they affect in certain ways the proposed interpretive discussion.

2.2 Anarghiri IXb pile-field

The employment of every available resource of information, together with the use of suitable software and applications led to the construction of Anarghiri IXb structural wood Data Base, in which 3643 elements were recorded. Supplemented by the excavation's record and archive, the file constitutes the basic tool for the comprehension of the qualitative and quantitative properties of the material under study.

The analysis that follows is planned to be a step-by-step approach of Anarghiri IXb pile-field, which is gradually moving from the general overview towards focused presentations of specific material classes and categories, orientated ultimately to the reassembling of the individual observations and their transformation to interpretive propositions regarding the construction and organization of space on the periphery of Anarghiri IXb prehistoric habitation.

As a first attempt to obtain an overall picture of Anarghiri IXb pile-field, the main characteristics of the wooden elements of all categories unearthed and recorded are presented in the next paragraphs, together with specific complementary remarks regarding given material attributes, as well as certain aspects of their discovery, treatment and documentation.

2.2.1 Treatment

As already noted, the development of the rescue excavation in 2013 - 2017, together with the gradual implementation of a more elaborated recording and sampling plan affected the data set of structural wood in relation to their treatment after their excavational exposure (Fig. 15). Thus, according to the excavational records, most of the structural wood of all categories was discarded (56,35%) or remained in the natural soil or in the anthropogenic layers (21,45%), a fact that means that 77,8% of wooden elements unearthed were not sampled. Accordingly, 12,33% were sampled before discarding, 9,55% were sampled and remained in the layers. Some 0,33% (mainly vertical posts and horizontal wood) were extracted from the excavational layers and transported to Florina Ephorate of Antiquities laboratory in Agios Panteleimon for examination and conservation in a prospect of future presentation or exposition. According to the excavation's records, their selection was made due to their size, diameter, cross-section or woodworking traces considered as indicative of Anarghiri IXb structural wood. The elements are stored in a water-tank designed for organic materials' preservation purposes and their condition is regularly controlled by conservators

The overall 22% of sampled wood could be characterized as a relatively low percentage compared to the practices followed in European wetlands especially the last few decades regarding the treatment of preserved organic materials (e.g. Bleicher und Harb 2015, 100-103; Eberli 2010, 57-58; Eberschweiler 2004a, 23-36; Francuz 2018; Hafner 1992, 19-23). Although this relatively small - for reasons already stressed - archive limits the possibilities of a more general approach of the settlement's structural wood, the data extracted by the analysis of the available information is still useful for drawing some potentially indicative pictures.

2.2.2 Classification

The wooden elements unearthed were classified in the daily excavational records by the trenches' supervisors in two main categories: vertical posts (78% of total) and horizontal wood (12,8% of total) **(Fig. 16)**. A significantly smaller number of wooden elements were characterized as "waste" (4,56% of total) and were discovered in specific excavational areas, a fact that questions the recording processes followed in relation to their actual presence within the anthropogenic layers and their special distribution (see chapter 2.2.6). Additionally, at nearly the same excavated areas and contexts a limited number of twigs/ branches were discovered (3,16% of total). Two of the material categories related to the foundation of wooden structures and can be correlated to vertical posts are the post-holes, in which wood was preserved at their lower-end (0,8% of total) and the post-holes (0,5% of total). Lastly, some almost non-distinguishable categories of wooden elements were recorded, such as 'Other", "Unknown" or "Wattle" which all together constituted 0,3% of the material unearthed.

Looking into the results of this elementary wooden elements' classification, it is quite evident that Anarghiri IXb pile-field consists mainly of vertical posts, with a proportionally low presence of horizontal wood or other groups of organic materials related to the structural activities of the Neolithic community. If this setting is to be measured against selected structural wood assemblages documented in European wetland's - as for example those unearthed in habitations excavated in southern Germany (e.g. Dieckmann et al. 2006, 47-49; Schlichtherle 2004b., 19-31) or the Swiss lakes (e.g. Bleicher und Harb 2015, 71-81; Leuzinger 2000, 99-101, 104-

110; Schmidheiny 2011, 39-41) - it can be stressed that non-vertical wooden elements are obviously underrepresented in Anarghiri IXb layers. Since this situation is more or less comparable with the excavational picture of the lakeside habitations excavated in the neighbouring regions (Chatzitoulousis 2006, 322-333; Giagkoulis and Hourmouziadi 2002, 66; Oberweiler et al. 2016, 26-27), the possible explanations of such differentiation should be related with various factors. In one more obvious direction, these could be associated with the specific climatic and environmental conditions of the region - not only during the construction, lifetime or abandonment of the habitation, but also in the long-term perspective until recent times - that were not favourable for the preservation of horizontal wooden elements. It is also quite probable that changes of water level possibly occurred after the destruction and/or abandonment of the structures should have caused - among other post-depositional effects - the gradual deterioration and final decay of the elements exposed to the natural conditions and phenomena. Since the cases of preservation of horizontal wood and other smaller, non-vertically deposited organic materials in Anarghiri IXb deposits seem to be exceptional, their stratigraphic and spatial distribution, their excavation context and their possible function(s) will be appropriately discussed.

2.2.3 Vertical/stratigraphic distribution

Since the removal of anthropogenic layers, their documentation and the collection of the archaeological material in 10cm-thick arbitrary layers was the methodology selected for the rescue excavation of Anarghiri IXb, the analysis of the information regarding the vertical distribution of structural wood was made following this conventional distinction of the excavational layers. Furthermore, the basic stratigraphic differentiations observed and documented in specific excavational regions were also taken into consideration. Yet, the reconstruction of the settlement's stratigraphy is a multi-level and time-consuming endeavour which involves among other tasks the study of key-elements of the archaeological material unearthed in Anarghiri IXb, e.g. pottery. Since there are no usable results from this project so far, any reliable comparative data for the incorporation of structural wood into the layers' stratigraphic sequence are practically non-existent. Subsequently, the only useful information for this task is the absolute elevation of the appearance of the wooden elements within the excavational layers, complemented by the particular excavational context of the elements discovered. Nevertheless, the attempt to detect different and clearly distinguishable horizons of interrelated structural wood that could be considered as an indicative criterium for recognizing constructional/architectural episodes using the aforementioned method could be quite misleading in a wetland.

It should be also stressed that the processing of the data regarding the general stratigraphic distribution of structural wood did not include 293 elements (mainly vertical posts) that were extracted from the layers of the settlement during the last short excavational campaign of 2017. This choice was imposed by the controversial reliability of the GPS elevations' measurements due to the gradual collapse of the settlement resulted by the lignite mining activities realized in close proximity to the site, which has caused the immediate abandonment of the site and the final break of the excavation.

Nevertheless, the recorded wooden elements are distributed in various elevations all over the excavated area, which range from approx. 592m to 594m a. s. l. **(Fig. 17)**, i.e. within approx. 2m of anthropogenic deposits. A closer examination of this distribution shows that 58,4% of structural wood was found in an elevation between 592,51-593m a. s. l. This obvious concentration of elements within 50cm of archaeological deposit could be considered as evidence of some intensive structural activities of the earlier habitation phases of the settlement dated in Late Neolithic I, at least on the periphery of the habitation, where these layers were fully investigated.

At this particular point of the data analysis, a useful methodological attempt would be the integration of the available structural wood (mainly vertical posts) ^{14}C dates into the successive elevations' table corresponding to the 10cm-thick arbitrary layers of the excavated deposits **(Plan 6)**. One first remark regarding the vertical distribution of the dated wooden elements is that within the aforementioned elevation zone between 592,51-593m a. s. l., where the denser presence of structural wood is documented, is that nearly 1/3 (14 dated elements, namely 34,15 %) of the dated posts were located. The most considerable concentration of dated posts is detected within the elevation zone between 593,01-593,60m a. s. l. (23 dated elements, namely 56%), while a limited number is documented within the lowest elevation zone ≤ 592-592,50m a. s. l. (4 dated elements, namely 9,75%). This apparent inconsistency between the density of structural wood in specific elevations and the ^{14}C dated elements could be in the first place explained due to the sampling priorities and/or the selection of the posts for radiocarbon dating. One other possibility would be to explain the distribution of the dated wooden samples in several elevation zones by the actual level differences and grades between the distinct sloping habitation's areas and the subsequent differentiation regarding the stratigraphic deposition of the archaeological material. Furthermore, examining more closely the dates of the elements analyzed in combination with the actual elevations, it must be noted that within the zone between 592,18-593,60m a. s. l. - namely within 1,42m of archaeological deposits - there are 41 posts dated from the mid-55th to the mid-46th century BC, i.e. nearly one thousand years of human architectural and other activities in the settlement **(Plan 7)**.

In this attempt, the four Early Bronze Age ^{14}C dates (29th–26th centuries BC) are for methodological reasons not taken into consideration, since they derive from some extraordinary excavational contexts and are related to specific structural units. Nevertheless, it is already mentioned that the Early Bronze Age human activities in Anarghiri IXb were almost undetectable in the excavated archaeological layers as some distinct stratigraphic entity. Therefore, any effrots to correlate these dates with some of the actual elevation zones are not particularly clarifying.

All these assumptions are most probably suggestive of the difficulties to approach, reconstruct and interpret the vertical/stratigraphic distribution of Anarghiri IXb wooden elements' assemblage, at least under the current state of the study of the archaeological material of the excavation as a whole. Nevertheless, the detection of structural wood clusters in distinctive excavational contexts and their attribution to specific recognizable structural entities based upon supplemental criteria other than their strict stratigraphic distribution, make more plausible their incorporation to the synthetic attempts regarding space construction and organization of the Neolithic habitation.

2.2.4 Spatial distribution - density

The average density of the 3643 recorded wooden elements within the 11942m^2 totally excavated is approx. 0,3 element/m^2. For the evaluation of this result it should be taken into consideration that, extended parts of the excavated area contained only limited amounts and concentrations of archaeological material, since they were located at the periphery of the supposed core of the habitation during the earlier Late Neolithic I phase **(Plan 8)**.

In order to shape a different view of the Anarghiri IXb pile-field, which could be considered as being closer to the actual relation between space and structural wooden elements, a focus on specific excavated areas will be made. The areas selected for this testing approach are found in proximity to the central part of the settlement, showing also higher concentrations and quantities of archaeological material of all categories, a situation that could be recognized as evidence of gradually intensified activities. Furthermore, within these areas, a number of structural entities are ascertained pointing to specific uses of space, a fact that most probably should be reflected also in the density of structural wood.

According to this approach, the excavated area characterized as Southeast Sector **(Fig. 18)** shows the highest concentration of structural wood, since within 744m^2 959 elements were recorded, i.e. approx. 1,3 element/m^2, a rate four times higher than the average density of wooden elements/m^2. This situation is relatively justifiable considering the presence of elongated structural parts of the settlement's accessing and enclosing features that will be discussed in the following chapters. Moreover, most of the horizontal wood, twigs as well as waste were found in the lowest layers of this specific area, a depositional context that has affected the excavational setting. Similarly, over the general average density of structural wood is the rate recorded in Southern Sector **(Fig. 19)**, where 840 elements within 1070m^2 were found (i.e. 0,8 element/m^2), an area which, except from the remains of the posts-rows attributed to the habitation's enclosing and accessing structures, contains several scattered vertical and horizontal elements with no easily recognizable function. Another area of interest is the Northern Sector **(Fig. 20)**, where the density of structural wood (0,2 element/m^2) approximates the general average with 379 wooden elements found within 1920m^2. The specific excavated area, located at the edge of the habitation, is characterized by the presence of some partially preserved enclosing features, a relatively dense concentration of posts, as well as by spaces, where the building activities are of quite low intensity. On the contrary, within the 1.836m^2 of excavated area at the Western Sector of the habitation **(Fig. 21)**, only 107 wooden elements were unearthed, showing the lowest density (0,05 element/m^2) of structural wood compared to the rest of the excavated areas. Lastly, the case of the Soundings dug in 2017 **(Fig. 22)** covering an area of 468m^2 and the 293 posts found (i.e. a density of 0,62 element/m^2) could be interesting, considering that the Soundings - especially those at the northwestern part of the settlement - were located quite close to the core of the habitation, with some indications pointing to the existence of parts of specific residential or other structures that will be presented in the following chapters. Nevertheless, the exposure of the remains in the Soundings and their fragmentary documentation pose certain restrictions regarding the evaluation and utilization of the above-mentioned information.

2.2.5 Physical and technical properties

The wood exploited by the Neolithic community of Anarghiri IXb as raw material for structural purposes bear various characteristics as every distinct category of archaeological material. The first set of attributes is related to the physical properties of the trees or smaller plants used for the realization of different architectural activities. The familiarization of the prehistoric builders with the distinct properties of different trees' species would quite possibly lead to their targeted utilization in various building tasks, as well as their placement in certain parts of the structures. In addition, the physical attributes of structural wood recorded in Anarghiri IXb assemblage could be directly related to specific dendro-provenance practices followed by the prehistoric community, as well as more general elaborated and possibly modified strategies of management of the local vegetational reservoir. Such an approach could be also facilitated by the numerous small-wood (branches, twigs, woodchips etc.) collected during 2015 - 2016 campaigns and stored in 109 plastic 5lt-containers, deriving from the lowest waterlogged layers of the Southern Sector of Anarghiri IXb excavation. This assemblage, together with the sampled structural wood from the periphery of the habitation could constitute one sufficient base for future dendroarchaeological research, a task beyond the objectives of the present study.

It is also self-evident that a series of environmental, depositional/post-depositional factors and/or human interventions - either during the successive phases of the habitation, in later historical periods or in the modern era - have affected significantly the final excavational condition of the wooden elements at the time of their discovery. All these factors, together with the varying excavational techniques implemented by several trenches' supervisors, the occasional prolonged exposure of the wooden elements to the contemporary weather conditions, as well as their post-excavational treatment and sampling efforts have in many cases affected critically the state of preservation of structural wood and their physical properties.

Furthermore, planning and building of different architectural entities and the emerging special structural needs most frequently led to the modification of the initial form of the trees' stems or smaller wood exploited through the implementation of specialized processing techniques. Since at least the earliest Late Neolithic I building activities seem to have taken place at a location affected by water - in a degree that at this very stage of research cannot be precisely estimated - the needs to transform the lowest part of the vertical posts in ways that would facilitate their sinking in the ground are probably the most critical factors that imposed trees' stems processing, a practice well-documented in Anarghiri IXb assemblage.

In any case, it can be stressed that despite the exceptional preservation of organic building materials in prehistoric wetlands, fragmentation of the wooden elements is an inevitable excavational fact, which should always be taken into consideration in any attempt to approach and reconstruct building processes and their outcome.

Preservation

In most cases of Anarghiri IXb excavational records, the wooden elements unearthed are classified as "waterlogged", a characterization attributed by the excavators to the majority of stems immediately after their discovery (63,7%) **(Fig. 23)**. The closer examination of the photographic archive shown that the state of preservation of the general class "waterlogged" wood varied, depending on the excavational context, the relative humidity and the thickness of the deposits, as well as the position (vertical posts or horizontal wood) and the elevation of the initial appearance of the elements within the arbitrary layers. Moreover, the state of preservation was in many cases differentiated due to the special physical characteristics of the stems, such as their diameter, the presence of bark or their overall preserved length within the humid or semi-humid deposits **(Fig. 24)**.

One second classification of the material unearthed are the elements characterized as "dry" (8,2%), apparently found in a less humid state of preservation, always according to the trenches' supervisors' descriptions. Also, in these cases it is arguable that their preservation was affected by the same factors mentioned previously. It should also be stressed that in several cases one decisive factor for the possible drying-out of structural wood was their immediate exposure to the modern light and temperature conditions until the completion of the removal of the arbitrary layer and the documentation of the excavational context, a practice that was mainly followed during the first two excavational campaigns (see chapter 2.1.2).

In addition, a few wooden elements (6,9%) were described as “eroded”. A more attentive examination of the excavational records and photos pointed out that this characterization was attributed to elements that, even in a state of relative humidity, shown certain traces of degradation mainly on their outer surface. As recorded in various excavational reports, this kind of erosion is caused by several factors e.g. fungal and bacterial infection, exposure to light and weather conditions after the abandonment or destruction of the wooden structures (Huisman and Klaassen 2009, 20-27; Petrou 2008, 35-39; Taylor 2001, 168-169).

Except for these classifications, there is also a relatively big number of wooden elements for which there is no recorded information related to their state preservation (20,9%). Lastly, there is a rather small percentage of elements whose preservation is characterized as "other" (0,2%), with no further clarification or detailed description of their condition, as well as only three elements (0,1%) that were characterized as "carbonized".

As a short concluding comment, it could be stressed that although the preservation of structural wood from Anarghiri IXb constitutes for the time being one rare case in Greek archaeology, its state is comparable only to some extent to analogous assemblages from European prehistoric wetlands. In the corresponding bibliography it is often documented that well-preserved organic structural elements constitute an advantageous database not only for reconstructing building techniques, processes, settlements' architecture and plans but also for approaching broader research topics.

Through the analytic presentation of structural wood’s categories from the lowest habitation’s layers In the following paragraphs it will be eventually demonstrated that the state of preservation and the general characteristics of the material under study allows the documentation of some basic physical and technical properties. Their further processing and correlation to the available excavational information leads to certain interpretive suggestions regarding the construction and organization of space at specific parts of the settlement’s excavated area.

Wood species and anatomic features

The evidence regarding the resources exploited by the Neolithic community of Anarghiri IXb derive from 805 samples, i.e. 22,1% of the total wooden elements' assemblage **(Fig. 25)**[5]. According to the results of the species identification, most of the sampled elements (605) are oaks (*Quercus sp.*), in a percentage of 79,9%. One second distinguishable group of 140 trees' stems belong to conifers (i.e. 18,5%), whose species' identification was beyond the aims of this study. There is also a limited number of samples (12 elements, i.e. 1,6%) belonging to deciduous trees' species, namely 8 elms (*Ulmus sp.)* and 4 unidentified ones **(Plan 9)**.

This obvious predominance of oak in Anarghiri IXb structural wood assemblage can be correlated with the data provided by the earliest, as well as by some recent palynological studies, which indicate a general expansion of oak forests in the broader area of Lake Chimaditis and Zazari (Bottema 1982, 260; Gassner et al. in press). It is also worth mentioning that the data deriving from the palynological analysis of one archaeological trench from the neighbouring Late Neolithic I lakeside habitation Limnochori II seem to document periodic fluctuations regarding the presence of oak, a fact that is considered as indicative of the anthropogenic impact on the local woodland (Syropoulou 2010, 32-37). Furthermore, recent anthracological evidence from Neolithic habitations in various Balkan regions - among them from the comparable neighbouring area of River Aliakmon - demonstrate the dominant presence of oak open forests. Subsequently, the intensive exploitation of oak as firewood and structural material is widely documented, together with the probable employment of certain woodland management strategies (Marinova and Ntinou in press).

At this specific point, it could be useful to compare these results with those derived from the study of Dispilio wooden elements as the nearest example of a Neolithic pile-field (Chatzitoulousis 2006, 374-379). Even if there are considerable differences in comparison to Anarghiri IXb assemblage regarding the absolute numbers (447 elements) and the categories of the elements' examined - namely 69,35% of them were horizontally deposited wood, branches and woodchips and only 30,65% vertical posts - there is an observable differentiation in respect of wood species exploited. In Dispilio 80,11% of the studied assemblage belong to conifers, 11,4% to deciduous trees, while 8,6% samples were unidentifiable. The dominant species is

[5] From these 805 sampled stems, 48 elements were not examined, thus the information presented here refers to 757 samples.

juniper (40,05%), followed by pine (30,8%), while oak represents only the 6,1% of the samples examined, with not a single vertical post identified as oak. As it becomes obvious, this is a reversed picture compared to Anarghiri IXb assemblage, where the dominant species is oak. Most probably this considerable difference regarding the exploitation of wood is related to the characteristics of the neighbouring environment and the woodland resources available to the Neolithic communities of Dispilio and Anarghiri IXb.

Beyond this first-level information, the examination of the samples resulted in additional data regarding some of the basic anatomic features of Anarghiri IXb wood. Looking into the statistical data derived from the measurement of the annual growth rings, it could be stressed that 52,6% of the stems bear from 16 up to 35 rings, 35,8% bear from 36 to ≥101 and 11,6% bear less than 15 annual rings **(Fig. 26)**. This situation is only slightly differentiated regarding the annual rings measured on oak tree stems, with those bearing from 16 up to 35 rings covering 55,5% of the total and the other two groups of values ranging more or less at the same level as the general average **(Fig. 27)**. The results regarding the conifers show some increase of the stems that bear more than 36 rings, i.e. 45,7% of the total with a respectively reduced percentage of the stems that bear from 16 up to 35 annual growth rings (40%) **(Fig. 28, 29)**[6]. According to these results, a certain preference to the exploitation of young trees - mainly oaks - for structural purposes is recorded, while in the case of conifers a slight differentiation towards the use of older trees' stems is observed.

Another anatomical feature whose existence was detected in 436 of 757 samples examined (57,6%) is the waney edge, the curved cambial surface exposed by removing the bark of a tree’s stem i.e. the last-formed growth ring before felling. According to the available information, this specific indication of tree growth is present or probably present in 84,2% of these elements, while for the rest there is an estimated number of annual growth rings missing before waney edge **(Fig. 30)**. The results regarding the presence of waney edge in oak stems seem to be totally compatible with the general view (81,9% present or probably present) **(Fig. 31)**, while waney edge is detected in almost all stems deriving from conifer trees (92,1% present or probably present) **(Fig. 32, 33)**.

[6] Due to their limited presence in the samples’ record, the stems belonging to deciduous trees are not included in this analysis.

In the analysis that follows in specific sections of the study, there will be some specific references to the above-mentioned characteristics of the wooden elements examined in respect to their spatial distribution and their probable correlation with recognizable structural entities of the settlement's layout.

Length

The information related to this specific property of the settlement's structural wood is processed in this study after taking into consideration some circumstances that pose certain restraints to the utilization of the results for the reconstruction of building techniques and structural entities. The first actual alteration of the physical properties of wood could have taken place during the raw material procurement from the available vegetational resources with the preliminary processing of the stems immediately after the trees' felling by the Neolithic builders. Secondary processing of the trees' stems should have taken place within the habitation area during the construction of architectural units in order to be transformed in specific structural parts. One next factor that affected the length of the elements found in the deposits is their fragmentation, caused by environmental, depositional and post-depositional disturbances, as well as after-use anthropogenic interventions, which altogether altered this specific physical property of structural wood exploited.

Looking into the statistical data referring to the length of wooden elements of all categories **(Fig. 34)**, it can be claimed that their majority are documented to be from 11 up to 60cm long (63,5%), while a considerable percentage (33,55%) is measured to be from 61 up to 150cm. Smaller wood with a recorded length of less than 10cm constitutes only 1,2% of the total, while exceptionally big elements, bigger than 151cm comprise only 1,8% of the total.

However, at this point it must be noted that, aside from a general overview of this specific property of Anarghiri IXb assemblage, further data processing is cautiously carried out due to a specific factor related to the ways that structural wood was treated as an archaeological finding during the rescue excavation of Anarghiri IXb, that evidently influence the reliability of any further remarks. According to the excavational records, 1053 vertical posts - i.e. 28,9% of structural wood and 37,1% of vertical posts found - were not extracted out of the excavational layers. Accordingly, the value recorded in the database refers only to the exposed length of the posts and not to their overall length, which obviously was bigger.

Thus, this distortion of the "actual" data-set regarding the length of structural wood could be partially adjusted by focusing only to the vertical posts and horizontal wood that were extracted from the deposits and their overall preserved length was recorded (2256 elements). As a result, structural wood with a length from 11 up to 60cm remain the dominant category slightly reduced (57,9%), since the posts and horizontal wood measuring from 61 up to 150cm rise to 38,2% and the bigger examples rise to 2,9% **(Fig. 35)**.

But even if the values of the size of the extracted elements illustrate more accurately the excavational picture of Anarghiri IXb **(Fig. 36)**, it should be always kept in mind that actual dimensions of the wood exploited for structural purposes cannot be precisely calculated. In the related bibliography some attempts to estimate the actual size of the posts can be spotted, based on assumptions regarding the possible length of the elements that was exposed above water level and therefore decomposed after the destruction or abandonment of the structure they belonged to (Leuzinger 2000, 95-96; López-Bultó and Piqué Huerta in press). Nevertheless, the current state of research and analysis of Anarghiri IXb stratigraphy and site formation processes do not allow further investigation of this topic. For the time being, it should be more acceptable to consider the recorded size values of the extracted elements as the minimum length of the wood exploited by the Neolithic builders.

Diameter

The diameter of structural wood unearthed in wetlands is generally accepted as a quite reliable attribute for further examination in order to obtain useful information, not only in respect to the possible reconstruction of building techniques. The correlation of stems' or smaller woods' diameter with other anatomic features, such as annual growth rings, preserved bark and waney edge provide broader research potentials on topics related - except from chronology - to woodland management strategies, raw material provenance, processing practices etc. (e.g. Billamboz 2011; Dufraisse et Leuzinger 2009; Out 2017, 68-73; Out et al. 2013).

The distribution of the diameter's values of Anarghiri IXb structural wood indicates that 69,8% of the elements measure from 5 to 10cm, while 20,75% of the total is bigger than 11cm **(Fig. 37)**.

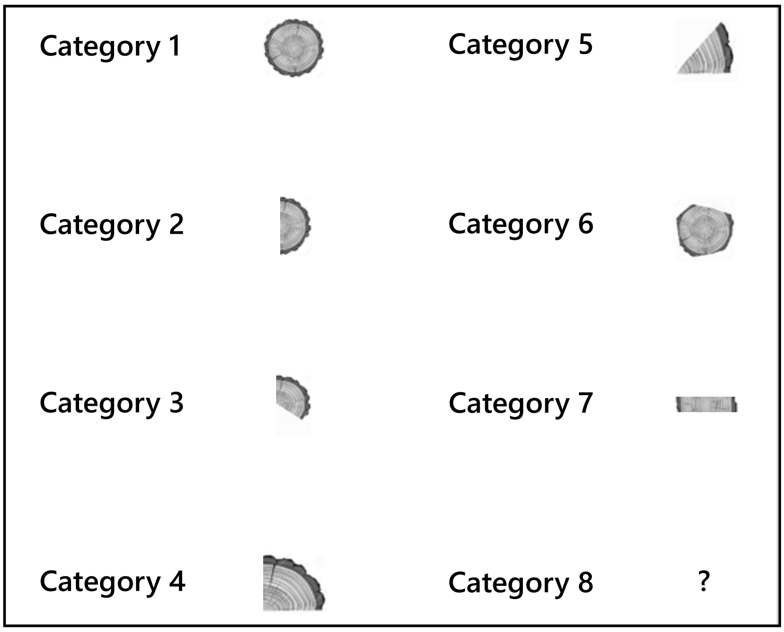
The observable 9,4% of wood with a diameter smaller than 4cm belong mainly to thinner twigs or woodchips/waste. In the assemblage there are also 82 elements that are not included in this analysis, for which no values were entered into the database. These were mainly woodchips/waste and twigs, as well as some scattered, poorly documented elements. Furthermore, the stratigraphic, as well as the special distribution of some exceptional vertical posts measuring over 25cm in diameter are annotated in the following parts of the study.

Also, in the case of stems' diameter, it could be useful to focus again on the sampled elements and comment the results of the statistical analysis. Accordingly, there is a quite recordable increase in all the rates of the elements with a diameter from 11 up to 31cm (47,1%) and a corresponding downturn of the percentages of the elements smaller than 8cm in diameter **(Fig. 38, 39)**. This differentiated outcome could be considered as more indicative regarding the size of the trees' stems exploited for structural purposes, with an average diameter that seems to range between 9-14cm. Yet, it must be noted that this adjustment occurred because the samples under examination derived mainly from vertical posts (93,7%) and secondarily from horizontal wood (6,3%), while smaller twigs/branches or woodchips were not included. Subsequently, it would be more accurate to stress that, the aforementioned remarks refer almost exclusively to vertical elements used for the foundation of the structures they belonged to.

Cross-section

During the excavational campaigns that preceded the introduction and use of the wooden elements' recording sheet, the information regarding the cross-section of stems or smaller branches discovered were only occasionally documented in the excavational records. This information was enriched with observations made by the closer examination of the elements' digital images, as well as with some more elaborated remarks noted in the recording sheets.

The classification of the wooden elements in respect of this specific attribute made after the systemization of all the available data followed the basic distinction between complete trees' stems and those whose initial form was altered by cutting-off some part. The eight distinct categories in which the material was codified are presented in the following scheme:



Category 1: According to the statistical analysis of the information, roundwood is the most frequent type of stems exploited by the Neolithic builders **(Fig. 40)**. It is self-evident that the term "roundwood" is used not to describe literally the shape of the element, but to point out the fact that the stem was not radially or tangentially cut and split. Also, it must be noted that this categorization refers to the top part of the stems (mainly of vertical posts) as they are discovered in the archaeological deposits, in contrast to the usually processed lower end driven into the soil.

Category 2: Includes the stems that are cut radially and used as half-splits **(Fig. 41)**.

Category 3: The determination of this specific category is made with some reservations because the description of the exact shape of the cross-section of some radially-cut stems is not quite clearly distinguishable from the rest of the split elements **(Fig. 41)**. Even if these observations are scattered and ambiguous within the excavational records, the presence of this category can be evaluated and discussed in correlation to the other groups of cut and processed trees' stems.

Category 4: Similar reservations stand also for the distinct categorization of a very limited number of radially-cut wooden elements, from which splits measuring approximately "1/4" of the initial tree stem are produced **(Fig. 42)**.

Category 5: One relatively recordable number of radial-cut stems were transformed into thinner splits, measuring approximately “1/8” of the initial tree stem **(Fig. 42)**.

Category 6: This is also a category which is not quite comprehensively documented, since the trees’ stems are supposed to be radially processed, with the resulted splits formed in an irregular cross-section shape. Yet, a closer examination of the available information leads to the assumption that at least some of these elements of this category could be misinterpreted by the excavators as processed because of the alterations occurred to their initial surface due to old or new erosion or decay processes (e.g. see Fig. 40, VP 4144, 6164 and 6277). Presumably, some of these elements could be considered as proper roundwood and could be added to Category 1.

Category 7: This is one of the most easily recognizable groups of wooden elements that emerged from the splitting-off bigger tree stems cut tangentially into thinner parts with an orthogonal cross-section **(Fig. 43)**. Usually, this kind of elements characterized as "planks" or "boards" were used in specific tasks in prehistoric wood-architecture (e.g. flooring, walling or even roofing). In contrast to what might someone expect, most of these elements are recorded as "vertical posts" in Anarghiri IXb assemblage and are found driven into the natural soil or earlier anthropogenic deposits.

Category 8: This category includes a proportionally big number of elements for which no information regarding their cross section was recorded.

The statistical analysis that follows refers to vertical posts, horizontal wood and post-holes with wood preserved in their lower end, since the information regarding the cross-section of smaller twigs/branches or woodchips is not usable. The available data show that 68,5% of the elements belong to Category 1 while the categories that include the processed stems are noticeably under-represented in the assemblage **(Fig. 44)**. As already mentioned, apparently there are questions posed about the accuracy of the recorded data by different trenches' supervisors regarding the cross-section of structural wood, since there is also a considerable 23,9% of the total for which there was no reference to this specific attribute.

In an attempt to draw a picture that could approximate more accurately the actual situation regarding the cross-section of structural wood, an evaluation of the distribution to the different categories only in respect of sampled elements could be made, since the documentation of this specific attribute should be more reliable **(Fig. 45, 46)**. Nevertheless, the results of this approach seem to confirm in the most emphatic way that the vast majority of the elements exploited were roundwood (81,4%), while the rest of the split-wood categories, though proportionally increased, still represent only a small group of the excavational assemblage.

Consequently, it could be stated that the spatial distribution of the sampled elements categorized after their cross-section does not provide any substantial result since the plan produced is dominated by the presence of roundwood **(Plan 10)**. Yet, one rather interesting assumption would be that, since the timbers used were not split for obtaining more structural elements from each tree trunk, the availability of raw materials should be sufficient at the surroundings of Chimaditis wetland. Yet, some visible concentrations of split trees' stems at Northern, Western and Southern Sectors of the excavation will be commented below.

Other physical characteristics

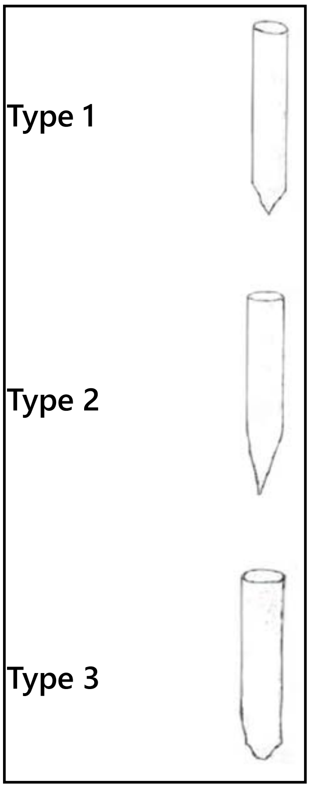
Looking into the excavational records and photographic archive, there is a quantifiable group (i.e. 124 recordings in the database) referring to vertical posts driven into the soil **(Fig. 47)**, as well as to horizontally deposited wood **(Fig. 48)** bearing one or more protruding branches from the tree's stem. The practice of retaining knots and branches even after the stem's cleaning is generally documented in wetlands' structural wood assemblages (Bosch et al. 2000, 87; Furger 1980, 116, Fig. 67; Leuzinger 2000, 90, Fig. 114; Mainberger 1998, 45, Fig. 47; Pétrequin 1997, 208, Fig. 53; PIllonel 2007, 57-59) One possible intended outcome of such a deliberate choice by the prehistoric builders would be the prevention of a structure from sinking, especially in soft lake or marshy sediments (Brunning 2007, 115). Another possibility could be that the branches and knots were not removed - in the case of vertical posts - in order to be used for bearing horizontal structural elements in specific parts of the structures. Yet, such a suggestion is not easily documented in cases that the horizontal structural parts are not preserved *in situ* directly combined or joined to vertical posts. Nevertheless, the presence of some quite indicative examples of wooden elements with branches in certain excavated areas of Anarghiri IXb, their spatial alignment **(Plan 11)** and their possible correlation to specific wooden structures will be examined.

Woodworking

Most frequently, the need to transform the initial physical properties of raw wood are imposed by several factors, starting out from the general decision-making regarding the spatial organization of the structural activities into an existing environmental context, whose geological, hydrological and vegetational attributes may be determinant for the establishment and stabilization of the architectural units planned. Furthermore, the type and the form of the structure(s) selected by the prehistoric builders necessitated the adoption of various technical solutions regarding the foundation, flooring, walling and roofing of the buildings. Accordingly, several woodworking techniques (cutting, smoothing, perforating) were applied for performing the intended results.

Since wood constituted the dominant structural material in Anarghiri IXb - at least as far as the lowest LNI and II layers at the periphery of the occupation are concerned - its processing was probably one of the critical tasks before and during the various building stages. Due to the preservation's conditions, but also due to the excavational practices and sampling of structural wood already mentioned, the data regarding woodworking derive mainly from vertical posts and the processing of their lowest part, that was driven into the natural soil or earlier anthropogenic deposits. Thus, in the database, this information refers to 643 elements (i.e. 17,65% of total), of which 584 are vertical posts extracted from the excavational layers **(Fig. 49)**.

According to the descriptions of the trenches' supervisors, as well as the examination of the digital photographs of the elements after their removal from the soil, the processed tress' stems are categorized in three general types according to the shape of their lowest part after the use of stone tools, represented schematically as follows:



Type 1: The wooden elements included in this category comprise 38,7% of the total. The distinctive attribute for their classification is that their lowest part was processed on one or two sides and was transformed into a V-shaped edge, noted in several excavational records as "wedge-shaped post's end" **(Fig. 50-52)**. This specific formation seems to be produced by few, but relatively forceful stone-axe blows on the stems' surface for driving them more easily into the soil. This kind of processing is quite often documented in structural wood assemblages from Neolithic wetlands across Europe (e.g. Bosch et al. 2000, 83-84; Chatzitoulousis 2006, 402, Fig. 10-46; Leuzinger 2000, 93, Fig. 118; Pétrequin 1997, 242-243; 1988, 372).

Type 2: In this second large group of processed elements (34,7% of total) belong these posts whose lowest end was worked in all sides to become more or less pointed **(Fig. 53, 54)**. Taking into consideration the determining presence of water - or at least its impact to the formation of specific soil conditions – it could be claimed that this woodworking method was even more effective compared to the one mentioned above, in terms of better insertion properties resulted. (Bosch et al. 2000, 86; Chatzitoulousis 2008, 77, Fig. 15; Leuzinger 2007, 135-136; Menotti and Pranckenaite 2008; Mischka 2007, 41, Fig. 12.1)

Type 3: A smaller group of tree stems comprising 17,6% of the total show a slightly different processing practice of their lowest part, which was formed as a rounded end, less sharp than the posts processed to the ways previously mentioned **(Fig. 55, 56)**. Looking closer into some of the examples included in this category, it could be stressed that this specific shape of the posts' lowest end could also be the result of the axes' blows during the felling of the tree, with some minimum clearing of the remaining bark. Still, it seems possible that even this limited processing is effective for driving these posts into the soil.

Except these three types, there is also a recordable 9% of elements which, although there are recorded remarks for their processed lowest-end, they are not classified in some of the above-mentioned categories.

Regarding the spatial distribution of the processed wooden elements **(Plan 12)**, it can be stressed that the structural wood of all three types was found dispersed all over the excavation of Anarghiri IXb. Nevertheless, some patterned distribution of specific groups of vertical posts can be attested, correlated to specific wooden structures, that will be commented in sections that follow this basic analysis.

Except this evidence concerning the practices implemented by the Neolithic builders of Anarghiri IXb in order to facilitate the foundation and stabilization of the architectural features of the habitation, the wooden elements that bear certain traces of other types of woodworking are quite rare and scattered within the excavated area. One evident explanation for this fact would be that the specific environmental conditions of the settlement's micro-region - during the lifetime of the habitation, after its' abandonment as well as during later periods - most probably were not totally appropriate for the preservation of a larger, more representative assemblage of wood and other organic materials exploited by the Neolithic community. Furthermore, it could be stressed that, since there are no clearly documented archaeological remains related to residential structures, whose construction would obviously be highly-demanding in terms of structural and woodworking techniques, the presence within the excavated periphery of the settlement of processed structural wood with easily traceable marks was rather limited.

In the structural wood database, some excavational information were included concerning 66 elements that bore woodworking marks on their upper part, which was recorded as being transformed in a "U-shaped" curved end. This kind of processing is frequently documented in assemblages deriving from Neolithic as well as later wetlands, constituting one of the technical solutions applied for joining vertical elements with horizontal ones in specific spots of the wooden features' sub- and super-structure (e.g. Bleicher und Harb 2015, 76; Furger 1980, 116, Fig. 67; Eberschweiler 2004a, 203, Taf. 3.10; Leuzinger 2000, 94, Fig. 119; Pétrequin 1997, 301; Taylor 2001, 482). However, the closer examination of the relevant information included in recording sheets and photographs from Anarghiri IXb excavation demonstrated that most of these elements recognized as bearing "U-shaped" upper end were trees' stems exploited for their natural fork-branching **(Fig. 57)**, a practice that is also quite common in prehistoric wetlands. Even so, some rare cases were spotted referring to vertical posts with possibly processed curved upper-end **(Fig. 58)**. Actually, a group of them belong to a particular posts' alignment discovered in the Southern Sector of the excavation, probably one of the enclosing structures of the habitation, a fact that could be arguably related with the structural form of the specific architectural unit (see chapter 2.3.2.7). Moreover, the examination of the excavation photographs of the large post VP 11476 extracted from the natural soil in the Northern Sector shows that the processing of its upper part created a surface that could support more than one horizontal element fitted one upon the other in a possibly complex joint.

2.2.6 Categories

A. Vertical posts

The general overview of Anarghiri IXb pile-field is dominated by the presence of 2841 wooden elements driven into the natural soil or into earlier anthropogenic layers documented in the excavational records as "vertical posts". In the following paragraphs, certain methodological tools will be employed to present the basic characteristics of this unique for Greek archaeology assemblage.

Treatment

According to the excavational records, 48,7% of the posts were discarded without been sampled, together with 24,8% that remained within the natural soil or unexcavated anthropogenic layers **(Fig. 59)**. On the contrary, the vertical elements extracted from the deposits, sampled and discarded were 13,95% of total, which, together with the posts sampled, but remained unexcavated in the layers (12,25%) and those transferred to the laboratory (0,32%), raise the percentage of sampled posts to a final 26,5% of total. Compared to the percentage of sampling referring to the total of structural wood (22,2%), this rate is slightly higher, while it is considerably higher than the sampled horizontal elements (see Fig. 15). As already mentioned, not only the extent of sampling in Anarghiri IXb was affected by variable factors, but also the available data-set regarding the vertical elements discovered was in a significant degree influenced and formulated in respect of some of its qualitative and quantitative characteristics.

Vertical/stratigraphic distribution

As applied for the total of structural wood discovered in Anarghiri IXb, the only usable information to obtain a general view regarding the posts' vertical distribution within the settlement's stratigraphic sequence is the recorded elevation of their first appearance in the 10cm-thick arbitrary excavational layers. However, certain reservations already discussed are kept in mind regarding the perspective of generalizing the observations produced in the direction of reconstructing the settlement's spatial organization diachronic development.

Accordingly, the processing of the available information shows that the vertical posts are distributed within several elevations ranging between 592,00-594,00m a. s. l. **(Fig. 60)**. Their denser concentration is documented within an elevations' zone between 592,61-593,00m a. s. l., demonstrating that within these 40cm of archaeological deposits 50,6% of the total number of posts were unearthed. This result seems to be comparable with the distribution of all categories of structural wood discovered (58,4% of the total between 592,51-593m a. s. l). This recordable concentration of structural wood and more specifically of vertical posts within these 40-50cm of archaeological deposits, it should not be considered as accidental even if it cannot be associated with a more precisely describable constructional/architectural episode. Furthermore, within the aforementioned elevations' zone, there are five ^{14}C dates deriving from vertical elements that are not attributed to some of the recognizable structures of the habitation's periphery (see Plan 3, Samples S_63, 65, 68, 71, 72). Four of them are dated between the early-53rd to the late-51st centuries BC corresponding to the Late Neolithic I habitation phase of the settlement, while one is dated between the early-47th to the late-46th centuries BC. Still, nine dated posts that are not correlated to some specific building not discovered within this elevations' zone are also of Late Neolithic date. This observed contradiction between the stratigraphic distribution/density of structural wood and the ^{14}C dates underlines again the difficulty to draw secure stratigraphic, as well as chronological conclusions based on the elevations in which the vertical posts are discovered in a wetland habitation.

Spatial distribution - density

These 2841 posts were discovered in an overall area of 11942 m^2, which respectively means a density of 0,23 post/m^2. Taking account of the fact that this area includes extended spaces with limited evidence of anthropogenic activities and for obtaining a view that probably approximates the actual distribution of vertical posts in settlement's parts more intensively built, the subdivision of the excavated areas in smaller sections was followed, a methodological choice already implemented for the overview of the total of wooden elements (see Fig. 18-22).

According to this, within the Southeast Sector 622 posts were unearthed resulting a density rate of 0,83 element/m^2, which is nearly four times higher than the average density of posts in the full extent of the excavated surface. It is also worth mentioning that this value is lower than the density rate regarding the aggregate of structural wood in this sector (1,3 elements/m^2), a fact that is probably justified by the relatively high presence of horizontal wood, twigs and waste in this specific area. Proportionally higher is also the density rate of posts documented within the Southern Sector (0,61 element/m^2), but still lower than the rate regarding the aggregate of structural wood in this sector (0,8 element/m^2). Northern Sector is the excavated surface where the density of vertical posts (0,17 element/m^2) approximates the general rate of posts, as well as the rate of structural wood in this specific area (0,2 element/m^2). Regarding the density of posts within the Western Sector and the Soundings, there is no noticeable deviation from the general rate as documented for the aggregate of structural wood, since posts constitute the exclusive class of elements unearthed in these excavated areas.

Even if the posts' density is examined separately in the various excavational areas, it is rather obvious that Anarghiri IXb pile-field is significantly sparse compared to excavations of other European wetlands. The pile-field of multi-layer pile-dwelling Zürich «Mozartstrasse» could be mentioned as one indicative example demonstrating the rank of this difference, wherein an excavated area of 2175m^2 23658 posts were recorded i.e. a density of 10,9 posts/m^2 (Ebersbach et al. 2015, 122). The self-evident explanation of this differentiation is related to the investigated part of Anarghiri IXb habitation - namely its periphery - where it seems that the types and structural characteristics of the wooden features constructed, used and destroyed/abandoned, left some particularly preserved and spatially distributed remains. It should also be considered that the gradual development of the settlement from a Late Neolithic I habitation intensively influenced by water to a Final Neolithic dryland low mound most probably affected both the architectural practices and materials employed, as well as the state of preservation of their structural remains.

Nevertheless, a more indicative picture regarding the density of posts within the supposed central residential zone of the settlement during the earliest habitational phases could be assumed by the examination of the setting derived by the documentation of the vertical elements in the Soundings made in trenches 644 and 680 (See Fig. 22). In an investigated area of approx. 235m^2 some 168 posts were recorded, resulting in a density of 0,71 post/m^2, one of the highest rates calculated so far. In the following paragraphs, a focused commenting of this excavational context will provide useful information regarding the posts' alignments discovered and their possible interpretation.

Preservation

Looking into the available data that refer to the posts' state of preservation, it could be stressed that the rates concerning the various classes recorded, variate only slightly in comparison to those of the total of structural wood **(Fig. 61)**. More specifically, the percentage of the posts characterized by the excavators as "waterlogged" rise to 63,2%, while 6,8% were recorded as "dry" and 8,1% as "eroded". There is also a considerable 21,7% for which there is no description of their state of preservation.

Compared to the rest of the wooden elements' categories, the physical properties and the deposition of vertical posts constitute generally some more favourable conditions for preservation that can facilitate further analysis and study. Still, a closer examination of the available information regarding Anarghiri IXb assemblage, especially of those posts sampled during the last excavational campaigns, shows detectable differentiation with respect to their condition during their discovery. These variations seem to be closely related to the basic physical attributes of the trees' stems (length, diameter, age), as well as their specific context of deposition in terms of archaeological layer's or soil's composition and degree of humidity.

These general observations can be tested comparing two excavational areas and some quantitative data referring to the preservation of vertical posts. Namely, in the Western Section and within an elevation zone between 593,30-593,90m a. s. l., of 107 discovered vertical elements 83 were recorded as "eroded" or "dry" (77,5%). Indeed, this picture is confirmed by the examination of the extracted and sampled posts, whose outer surface bears visible traces of erosion **(Fig. 62)**. It must be also noted, that the surrounding geological setting, which consituted the natural soil in which the posts are driven into, was of a specific yellowish chalky composition, that could possibly have affected in some degree the preservation of the wooden elements.

On the contrary, the situation seems to be quite different regarding the preservation of vertical posts unearthed in several trenches in the Northern Sector (Trenches 497-500, 535-537 and 574-576) **(Fig. 63)**. In this area, 120 of 320 posts were characterized by the excavators as "eroded" or "dry", i.e. 37,5%. In this case, it is rather plausible that the relatively deep stratigraphic/elevations' zone within which the posts were deposited (between 592,30-593,50m a. s. l.), as well as the relatively higher level of humidity of the archaeological deposits documented where decisive factors for the good preservation recorded. In addition, the structural activities realized in this particular habitation's area, possibly combined with the soil's conditions and the presumed presence of water, necessitated the exploitation of bigger trees' trunks, whose preservation's potentials proved to be better.

Leaning posts

The discovery of leaning posts within the deposits of Neolithic wetlands constitutes a rather common situation, which is evaluated and explained in various ways, depending on the specific excavational context, the general stratigraphic setting and the site-formation processes. In several examples - supported also by experimental or ethnoarchaeological parallels - the leaning of the posts is considered to have resulted after the destruction or/and abandonment of wooden structures, especially those that are supposedly reconstructed as stilted houses or platforms. In these cases, it is assumed that the structure not any more in use did not collapse *en bloc* (at least not its main vertical founding elements), but it gradually decayed, moving slowly into a gradient position. Accordingly, the vertical posts driven into the ground (or the lake-bottom) were finally deposited in a more or less leaning position. Other explanations provided by some excavators correlate the posts' leaning with post-excavational processes and factors i.e. water fluctuations or sediments' formation processes that gradually alter the morphology of levelled surfaces or smooth slopes, affecting the state of preservation and the position of vertical elements (Leuzinger 2000, 95). Of course, there is always the possibility that some of these posts were intentionally driven into the soil in such a leaning position to serve specific structural needs as auxiliary means for supporting other decaying or unstable vertical elements.

Within the excavational records among the wood classified as vertical elements, there are 289 posts characterized as "leaning" (10,2% of total). Indeed, the examination of the photographic archive showed that these posts were not found in an exactly vertical position, but they had a grade in respect to their more or less plane surrounding archaeological deposits or the natural soil. Although there is no exact calculation of the degree of this grade, for most of these cases there is a recorded observation regarding the direction towards which these posts were leaning, always correlated with the general excavational grid's orientation. Thus, 90 posts (31,15%) were recorded as leaning from north towards south, 51 (17,65%) from west towards east, 50 (17,3%) from northeast towards southwest, 46 (15,9%) from northwest towards southeast, while for 52 posts (18%) there is observation regarding their leaning direction.

Taking account of the current level of the reconstruction of the settlement's stratigraphy, as well as the absence of any documented information regarding the site's formation processes and the possible impact of water, it is quite difficult to propose any definite explanation regarding the leaning posts of Anarghiri IXb. Still, a more focused examination of the spatial distribution of these elements in combination with their attribution to specific structures on the habitation's periphery could probably provide some working hypotheses to be discussed **(Plan 13)**.

"Compressed" posts

Within the vertical posts' assemblage distributed mainly within the Southeast Sector of the excavation, 71 elements (2,45%) were recorded being partially deformed, bearing an S-like shape **(Fig. 64, Plan 14)**. Their diameter ranges from 5-17cm and their length from 24-125cm, while the mechanical alteration of their initial physical form was observed usually on the top or the middle parts of the vertical posts. This "compression" is quite often documented in wetlands and is related to the pressure put to the vertical elements during the formation of subsequent cultural layers, as well as the extended deposition of sediments of natural origin, mostly related to water fluctuations at the littoral zones of the wetlands (Furger 1980, 112-113; Leuzinger 2000, 97; Schmidheiny 2011, 22; Vogt 1977, 126). In respect of Anarghiri IXb findings, there is for now no usable information regarding the site's and layers' formation processes, thus it is not possible to correlate the compression of these elements to some specific sedimentation's episode.

Wood species and anatomic features

Vertical posts were the main source of the extended sampling efforts made during the last campaigns of Anarghiri IXb rescue excavation, whose outcome was the collection of 753 trees' stems, i.e. 26,5% of the total vertical posts' assemblage. Of these, 709 elements were examined in 2017 sorting campaign for their species identification and documentation of their basic anatomic features **(Fig. 65)**. Oak (*Quercus sp.*) is the tree mostly exploited by the prehistoric builders as documented in 581 samples (81,95%). Conifers constitute the second group of species used (123 samples, i.e. 17,35%), while only 2 elms (*Ulmus sp.*) and 3 unidentified deciduous trees are present (0,7%). This distribution is almost identical to the data referring to the overall of Anarghiri IXb wooden elements' archive.

In respect to the annual growth rings measured in the trees' stems used as vertical posts, 52,75% of these bear from 16 up to 35 rings, 37,1% bear from 36 to ≥101 and 10,2% bear less than 15 annual rings **(Fig. 66)**. The deviation of this rate is rather small in respect of the annual growth rings documented in oaks' samples, since 55,9% bear from 16 up to 35 rings **(Fig. 67)**. Contrary to this, the increase of the conifers' samples that bear more than 36 annual growth rings is noticeable, since their percentage rises to 51,2% **(Fig. 68, 69)**. These data confirm the observations already made regarding the trees' ages used by the Neolithic builders, namely the exploitation of rather young oaks for the structures' foundations, as well as some older conifers' stems.

Information regarding the existence of waney edge was recorded in 408 of 709 vertical posts' samples (i.e. 57,5%), of which 83,3% bear certain or most probable indications for its presence, while for the remaining 16,7% of the samples there is an estimated number of annual growth rings missing before waney edge **(Fig. 70).** Similar data derived by the separate calculations of oak and conifer trees' stems regarding this specific anatomical feature, as well as an equally balanced distribution after their comparative examination **(Fig. 71-73)**.

This information regarding the trees' wood species exploited as vertical elements, combined with their spatial distribution within the excavated area **(Plan 15)** will be further utilized for formulating usable observations regarding structural choices made by the prehistoric community of Anarghiri IXb for the implementation of specific building activities and architectural plans.

Length

As already stated, the documentation of the length of vertical posts in the excavational records was directly connected to variable practices followed by the trenches' supervisors, as well as the general treatment of wooden elements during the rescue excavation of Anarghiri IXb. In addition, in every attempt to approach this topic, it should be taken into consideration that even in the cases of the posts that were dug-out and extracted from the natural soil or the anthropogenic layers, the available measurements refer to the preserved length of the posts and most probably not to their initial size.

According to the information included in the database, the majority of vertical posts (62,9%) measure from 21-70cm, 26,7% measure over 71cm to ≥221cm, while 10,4% are recorded to be smaller than 20cm **(Fig. 74)**. Only some slight "calibration" of this view comes about with the statistical analysis of the posts that were extracted from the natural soil or the anthropogenic layers, thus their actual length was recorded. Subsequently, the percentage of the posts that measure from 21-70cm rise to 63,6%, as well of this referring to the posts that are bigger than 71cm (30,5%), with a commeasurable reduction of the percentage of the posts that are smaller than 20cm (5,9%) **(Fig. 75, 76)**.

Diameter

Though this specific attribute of vertical posts was consistently recorded by the trenches' supervisors of Anarghiri IXb rescue excavation, the extrapolation of any conclusions regarding the size of trees' stems exploited by the Neolithic builders as vertical structural elements should be cautious. Some reservations arise from the detailed examination of the excavational records in which the measurement of many stems' diameter is recorded immediately after their first appearance in the arbitrary excavational layers. The accuracy of such recordings could be arguably questioned since the upper preserved part of the vertical posts was usually dry or eroded and in consequence, the diameter's measurement did not correspond to the actual size of the tree's stem. In the cases that the excavation continued and revealed a more representative part of the post regarding its actual diameter, the measurement was introduced into the daily record anew.

Two different ways of approaching the data related to the vertical posts' diameter measurements demonstrate the possible biases in the distribution of the values and the resultant misleading initial remarks. Thus, looking into the data referring to the total of vertical posts unearthed, it is assumed that the diameter of 71,8% of the stems ranges from 5-10cm, a percentage of 23,8% measures from 11cm to ≥31cm, while a small group of 4,4% of stems are smaller than 4cm in diameter **(Fig. 77)**. However, the analysis of the diameter's measurements of the sampled vertical posts - whose physical attributes were more closely recorded during the last two excavational campaigns - shows some considerably different results. Namely, there is a quite observable decrease in the percentage of the stems that bear a diameter ranging from 5-10cm (50,6%), the stems with diameter smaller than 4cm could be considered as practically non-existent (0,8%), while there is a respective increase of the posts with diameter bigger than 11cm, whose proportion is almost doubled (49%) **(Fig. 78, 79)**. These recordable deviations between the results of the two analyses lead to the conclusion that the measurements of sampled posts seem to be once more of greater reliability for the estimation of the size of the trees' trunks used as vertical elements. Accordingly, it could be generally stated that trees' trunks with a diameter usually bigger than 9cm were exploited for the foundation and support of the various wooden structures in the lowest excavational layers.

Cross-section

The general impression drawn by the examination of Anarghiri IXb assemblage about the dominant presence of roundwood as structural material seems to be confirmed also in the case of posts. The data regarding the vertical elements extracted from the excavational layers show that roundwood constitutes 68,2% of the total, splits of various shapes and types constitute only small groups within the assemblage, while there are a considerable 24,5% of elements for which there is no information recorded **(Fig. 80)**. This last rate is remarkably reduced (1,1%) when the data referring to the cross-section of sampled vertical posts (752) are examined. In this case, the percentage of roundwood rise to 82,2% and the presence of splits is almost doubled **(Fig. 81, 82)**, meaning that for the foundation of the structures roundwood was almost exclusively exploited, while splits were only occasionally used. The extensive use of roundwood is also attested in its spatial distribution within the excavated area **(Plan 16)**.

Woodworking

The classification regarding all the categories of wooden elements from Anarghiri IXb in respect to the processing of their end was based on the observations made mainly on vertical posts dug-out and extracted from the earliest deposits of the settlement. Respectively, the distribution's rates of the material to the three already recognized types do not diverge significantly compared to the general rates. Thus, 38,4% of the posts were attributed to *Type 1* ("wedge-shaped" edge), 34,6% to *Type 2* ("pointed" edge) and 17,2% to *Type 3* ("rounded" edge), while 9,8% bear some kind of processing, that was not classified in none of these categories **(Fig. 83, Plan 17)**.

Vertical posts: some exceptional cases

The abrupt break of the excavation, the restricted availability of other cross-reference data about the archaeological material unearthed as well as the quantitative and qualitative attributes of Anarghiri IXb pile-field do not permit for now any detailed approach regarding the spatial organization of the Late Neolithic I habitation based on the recognition of houses' plans within the main residential zone of the settlement. Though, keeping these significant restrictions in mind, there are certain areas within the investigated zone, where interesting excavational contexts comprised mainly vertical posts or some exceptional findings worth highlighting and commenting.

In the Northern Sector and in trenches 498, 499 a relatively distinguishable - in terms of stratigraphic distribution, physical/technical attributes and spatial arrangement - group of vertical posts were discovered **(Fig. 84 a, b)**. Namely, within the elevation's zone between 592,74-593,73m a. s. l. (most of them between 593,20-593,57m a. s. l.), 21 posts with a diameter ranging from 20 to 42cm and overall length from 98-193cm were recorded, while the processing of their lowest end (pointed in most of the cases) can be considered as exceptional in respect of elaboration, but also of preservation. Of those, 18 posts belong to oak (8) and conifer (10) trees. It is noticeable that the oaken elements bear from 30-80 annual growth rings, pointing to the exploitation of older trees than the usual ones documented in Anarghiri IXb assemblage, while the conifers bearing 14-65 annual growth rings approximating the average rates. In respect of spatial distribution, the obviously low density of those in trenches 498/499 and their relative regular arrangement which possibly formed at least one angle, should not be accidental. Lastly, the oaks VP 11476 (4679-4499 cal BC) and VP 11463 (4542-4457 cal BC) are the latest dated wooden elements from Anarghiri IXb, constituting one considerable indication for the existence of building activity in this area during the Final Neolithic. Nevertheless, the identification and documentation of a conclusive pattern of posts' arrangement that could be correlated to a house or some other structure's plan, remains for the present state of research unachievable.

In this same area, a quite unusual for Anarghiri IXb assemblage vertical element was unearthed. Namely, VP 11480 was a spilt driven into the natural soil in the elevation of 592,78m a. s. l., being 48cm long, 14cm wide and approx. 6cm thick **(Fig. 85)**. The uniqueness of this vertical element lies in the processing of its lowest end, which was formed to obtain a "fork-like" shape. It is not quite discernible whether its two protruding parts were broken or processed and finished. The form of the post and its vertical placement into the natural soil looks even more peculiar since its neighbouring vertical elements bear the typical characteristics of this area's posts (large size, diameter, pointed end). Moreover, in the surrounding deposits, no horizontal or other kinds of structural wood were discovered which could be in some way correlated to this specific post. This type of woodworking is quite common in assemblages from central European wetlands and it is mostly applied as technical solution for joining vertical with horizontal structural elements in various parts of the wooden structures (floors, walls, roofs), and in some cases even in their foundations (Eberschweiler 2004a, 209, Taf. 9.38; Pillonel 2007, Pl. 4.3). Since any comparable evidence like those is missing, one possible explanation for the case of VP 11480 would be that it was initially used as a joint in a different part of some structure and after its discard it was secondarily used as a vertical supporting or foundation element.

Although the exposure of the posts and their sampling in the soundings 644/680 were realized under the untypical circumstances of 2017 campaign, there are some noticeable results regarding their spatial distribution **(Fig. 86)**. In an area covering approx. 230m^2 158 elements were discovered, indicating a density of 0,68 post/m^2, a rate considerably higher compared to the average rate of posts' density recorded all over the excavated area (0,23 post/m^2), as well as slightly higher from the average rate documented in the soundings (0,62 post/m^2). Within this group there are several classes of elements in respect of diameter (ranging from 5-26cm) and length (from 28-185cm), while the examination of some 141 samples demonstrated the typical dominance of oaks (112 of 141 samples, namely 79,45%), of which almost half (56) bear more than 35 annual growth rings. Furthermore, there are 24 conifers (17%), all bearing over 35 annual growth rings, as well as 5 stems (3,55%) of some deciduous species, probably elm.

Nevertheless, some observable patterns of the posts' arrangement in this area could be of value in respect of space construction and organization. Thus, among a number of dense but still not easily clustered vertical elements in sounding 680, one linear alignment of oaks running from southwest towards northeast for approx. 10m could be distinguished and characterized as

Feature 1. Even most interesting is the arrangement of oaks at the western part of the sounding 644 comprised one linear alignment running from southeast towards northwest for approx. 5,70m, possibly intersecting the shortest alignment exposed in a length of 3,5m. The possible structural co-existence of the posts' rows could be also complemented by one third oaks' alignment at the southern edge of the sounding, which runs from southwest towards northeast for some 3,40m and intersects the southeast-northwest orientated post's row, being almost parallel to the oaks-alignment exposed at the northern part of the sounding. It is not quite clear if the aforementioned cluster of oaks, characterized as *Feature 2*, could be correlated with the group of posts discovered at the central area of the sounding or these last should be considered as an individual structural entity, provisionally characterized as *Feature(?)*. A considerable differentiation regarding the trees' species used as a structural material is documented at the most eastern part of sounding 644, where a noticeable linear posts' row comprises nine vertical elements - of which seven were identified as conifers - was discovered. The alignment, characterized as *Feature* 3, runs from southeast towards northwest for approx. 6,20m, with its posts, almost regularly placed. It is also worth mentioning that the stems exploited were almost exclusively roundwood bearing 55-85 annual growth rings. Lastly, it could not be excluded that some more conifers exposed at the last meters of the sounding to the east were parts of the same structural entity.

Given the fragmentary investigation of this specific area it would be for now rather premature to jump to any safe conclusions regarding the form and the type of the structures to which these alignments or features could be attributed.

One more exceptional context comprised vertical posts, as well as other organic (possibly structural) materials, was discovered - still partially investigated - at the eastern area of the excavated zone, characterized as *Feature 4* **(Fig. 87, 88)**. Namely, in an area measuring 14x3m specified in the grid as trenches 687c, 721a and c, 40 posts were documented, almost equally distributed within an elevation zone between 592,13-593,2m. Their physical and technical characteristics do not diverge significantly from the general picture of Anarghiri IXb pile-field since the majority belong to roundwood with an average diameter of approx. 12cm and a length ranging from 10-90cm; yet, it must be noted that this data refer only to the exposed part of the posts, whose biggest part might have been retained within the unexcavated layers, a fact that did not facilitate the accurate measurement of their size and their sampling.

However, the area under discussion is dominated by the presence of an approx. 20-25cm thick layer characterized initially by the excavators as "wooden surface". Since this setting was only exposed, but not removed, the only information regarding its components derives from the macroscopic observations of its upper surface and the profiles created around its edges - in the spots where these were defined. Exposed in an area of approx. $24m^2$, *Feature 4* seems to consist of plant remains (reeds?) preserved in a moderate state, most probably intentionally placed and packed in successive sheets forming a compact organic layer **(Fig. 87 d)**. Its southern edge detected in trench 721 c was most possibly defined by two large posts 34 and 35cm in diameter, with three smaller vertical elements between them **(Fig. 87 b)**. To the north, the organic layer covers the whole excavated surface of trench 721 a, with some protruding vertical elements of various sizes. A unique for Anarghiri IXb excavation structural arrangement of vertical posts is the one discovered close to the eastern profile of the trench, which comprise a 35cm post and a number of elements (7-10 possible splits according to the excavational images) driven into the soil one next to the other, forming some continuous vertical wooden feature **(Fig. 87 e)**. The northwestern edge of *Feature 4* covers a small part of trench 687 c, with not many vertical elements found in this area. It is rather obvious that this excavational context would have continued to the west; still, its extent and characteristics remain unknown, while from this area there are no ^{14}C dates available.

The excavational picture documented in the lowest layers of trenches 832 d, 833 c and d at the southern edge of the central excavational zone bears certain similarities to the setting of *Feature 4* discussed above. Namely, an approx. 15-20cm thick layer of organic material, which according to the excavators' observations is most probably comparable to this of *Feature 4* (packed reeds?), was exposed in a moderate state of preservation. Since this excavational zone was selected for the preliminary approach of the settlement's stratigraphic sequence, an attempt to correlate the present setting characterized as *Feature 5* to a specific layer could be considered as a faint indication of the settlement' s earliest habitation phases **(Fig. 89, 90)**. Namely, *Feature 5* is integrated into the lowest elevations of the distinguishable Layer V, which is at least 1m thick and characterized by the dominance of dark brown compact and humid soil, rich in organic materials. The setting is clearly deposited under some typical sandy or chalky sedimentations and lenses of possibly natural origin. *Feature 5* was exposed in a total area of approx. $27m^2$

covering one small part of trench 832 d and the biggest parts of trenches 833 c and d, with a possible extension to the north, where during 2017 campaign several posts were documented.

Within this area, 33 vertical elements were recorded bearing the average physical characteristics of the wood assemblage of Anarghiri IXb, inasmuch as these could be documented at their exposed part. Only nine stems were sampled, seven of them belonging to oaks and two to conifers. However, some of these posts could be considered as exceptional due to different reasons. For example, the oaken post VP 6273 dated in 5211-5029 cal BC is by far the oldest tree detected so far in Anarghiri IXb assemblage, bearing 195 annual growth rings **(Fig. 90)**. Furthermore, the two conifers selected for ^{14}C dating, namely VP 6211 (60 rings) and VP 6211 (35 rings) gave the earliest dates known from Anarghiri IXb settlement: 5480-5362 cal BC and 5467-5308 cal BC respectively. Together with the oaken VP 6279 dated in 5221-5047 cal BC, these data are adequate to document some structural activities at this specific area of the habitation during the Late Neolithic I phase. Still, the integration of *Feature 5* into this chronological framework should be cautiously made, since for now there can be no secure evidence that the dated posts were co-existing with the feature as a structural part of it.

To complete the presentation of the vertical wooden elements of Anarghiri IXb pile-field, two last exceptional finds are shortly commented, having as a common characteristic their almost accidental discovery during the last excavational campaign of 2017 in Anarghiri IXb. The post VP 9261 unearthed in the fragmentary investigated sounding 715 is the biggest post documented in the settlement: a broken conifer 250cm long with a diameter of 35cm and 85 annual growth rings **(Fig. 91)**.

The second post discovered in sounding 716 is a 1,40m-long broken element, made of an irregularly grown conifer tree with a diameter of approx. 25cm. Yet, its substantial characteristic is the processing of the lowest part, which was fully perforated some 25cm before the pointed end **(Fig. 92)**. The formation covers a surface of approx. 12cm in the long axis of the stem and almost all its width of approx. 20cm, while the hole is only 4-5cm high. A pine post discovered in the waterlogged Late Neolithic I layers of the pile-dwelling Anarghiri III **(Fig. 93)**, some 5 km to the south of Anarghiri IXb, bore a similar processing at its lower part; yet, in this case the stem was curved and not fully perforated, which was interpreted as an effort to create an opening for the placement of another wooden element (Petrou 2008, 223).

This kind of processing is a frequent practice followed by the Neolithic builders as one of the methods for joining vertical with horizontal structural wood in several parts of wooden structures. More specifically in the cases of foundation posts, the transversal placement of horizontal elements is considered as an effective technical solution for the stabilization of the vertical posts and the prevention of further sinking in water or in marshy soils. Evidently, the Neolithic community of Anarghiri IXb should have confronted similar static problems at least in the realization of building activities on muddy soils, thus the processing of the post discovered in the lowest layers of the habitation should be considered as expectable.

Yet, some remarks regarding this specific find could lead to an alternative proposition. Considering the size of the tree stem, as well as the spot at which the hole was opened, it could be difficult - if not useless - to adjust a horizontal element so close to its pointed end, probably deeply driven into the ground. Even if this practice should have been followed, the dimensions of the hole do not permit the insertion of a horizontal element big enough to be effective in respect of sinking prevention. Subsequently, it would be no exaggeration to propose that this woodworking aimed to transform the specific part of the stem into a literally graspable handle for making easier the transportation of a tree of evidently extraordinary size. If such an assumption is correct, the processing of the trunk should have taken place after the tree's felling in the woodland, which constitutes certain evidence for the planning and implementation of off-site preparatory tasks related to building activities. Nevertheless, the discovery conditions of this extraordinary post during the last excavational campaign at Anarghiri IXb in 2017, as well as its uniqueness within the wood assemblage of the settlement, leave the discussion regarding its interpretation open.

B. Horizontal wood

The discovery of horizontal wooden elements constitutes one of the most typical excavational settings in prehistoric wetlands, with significant variations in terms of size, state of preservation and complexity regarding their deposition, as well as their stratigraphic and spatial distribution. Reviewing some characteristic assemblages of this category, it could be generally stressed that there is certain graduation in respect to the research and study potentials they provide, which is defined by the factors mentioned above. On one hand, in the long history of wetlands' research orientated to the study of wooden structures there are plentiful examples of well-preserved, easily recognizable, securely stratified and dated excavational contexts containing numerous horizontal elements, which, combined with other organic building materials, made available some of the most vivid evidence archaeologists have ever met regarding prehistoric residential and non-residential architecture (e.g. Hasenfratz und Gross-Klee 1995; Schlichtherle 1997, 2004b). On the other hand, there are several examples of investigated pile-fields in which horizontal wooden elements are either nearly absent or underrepresented within the archaeological record or they are found fragmented and dispersed in the excavated areas, a fact that makes their correlation to other findings and finds one quite challenging study-task (e.g. Hafner 1992).

Taking into consideration these last cases, some essential clarifications related to the employment of horizontal wood in the analysis and study of Anarghiri IXb pile-field should be made. Firstly, the state of preservation, the physical and technical properties, as well as the spatial distribution of some of these elements do not allow their classification to the general category of "structural wood" without reservations. Even if for many of them there are clear indications (e.g. processing traces and excavational context) that they were part of an architectural feature, the fact that they were found in a horizontal position in deposits of a wetland does not necessarily mean that they were initially parts of a roughly levelled constructed surface, such as floor, platform or roof. Finally, regardless of being for any reason discarded during the lifetime of the structures or were deposited after their abandonment or destruction, it is generally accepted that the elements horizontally deposited in waterlogged layers are mostly exposed on the impact of water-level fluctuations (Hafner 1992, 20). It is obvious that this parameter should always be kept in mind as a decisive post-depositional factor for the formation of specific excavational contexts in respect of the spatial, but also the stratigraphic distribution of horizontal wood.

Treatment

In respect of discovery and excavational documentation, the terms "horizontal wood", "horizontal post", "horizontal element" were used by Anarghiri IXb trenches' supervisors to describe almost every wooden element - except vertical posts - that was discovered in a horizontal position in the 10cm-thick arbitrary layers. Especially during the first excavational campaigns, this characterization was attributed without any further distinction even to twigs or woodchips found scattered mainly in the Southeastern Sector of the settlement. During the post-excavational examination of the records and the photographic archive and the processing of the available information, the majority of smaller (<10cm long) and thinner (<3cm in diameter) elements were declassified from this category. Subsequently, 465 elements (12,8% of the total assemblage) were recorded in the Data Base as horizontal wood.

According to the available information **(Fig. 94)**, 80% of horizontal wooden elements discovered in the lowest layers of the habitation were recorded - with the application of the procedures already mentioned - and were discarded. Respectively, only 10,5% of the elements were sampled and discarded, 8,8% were retained in the excavational layers after their recording without any further treatment, while only a few elements (0,65%) were removed from their place of discovery and were transported for conservation to the Aghios Panteleimon laboratory. Compared with the treatment of structural wood in general (21,9% of total sampled), but also with the treatment of vertical posts (22,2% sampled), horizontal elements are even more underrepresented in the excavational samples' archive. This situation could be easily explained considering the limited sampling plan of the first excavational campaigns and the practice of exposing the elements to weather and light conditions for some time after their discovery, circumstances that speeded-up their decay, making them at the end inadequate for sampling.

Vertical/Stratigraphic distribution

Applicating the methodological choice of integrating structural wood in the excavational arbitrary layers' sequence and their absolute elevations, some specific observations can be noted regarding the vertical distribution of horizontal wood **(Fig. 95)**. Within the elevations' zone of 592,51-592,90m a. s. l. 62,2% of these elements were found, a percentage only slightly differentiated compared to the one referring to the total structural wood within the same zone (58,4%), but noteworthy larger compared to the presence of vertical posts (50,6%). The concentration of horizontal elements is even bigger in the shortest zone between 592,51-592,70 a. s. l., where over 1/3 of horizontal wood (35,4%) was discovered **(Fig. 96)**.

This noticeable concentration of horizontal wood in the lowest excavational layers could be up to a point noted as unsurprising considering the more or less favourable conditions for their preservation in the sectors where the excavation reached the natural soil. This observation correlated with the results of the preceding analysis could lead to the assumption that a horizon of nearly 20cm delimited by the elevations mentioned above is actually distinguishable in the settlement's stratigraphic sequence, within which a significant number of horizontal elements are deposited. Still, this setting remains a working hypothesis which - due to the known restrictions related to the extent of the excavation and the lack of comparable cross-checking information deriving from the pending site's stratigraphy reconstruction - cannot be generalized as an overall conclusion in respect to the habitation's history of construction, use or abandonment/destruction. Moreover, the stratigraphic correlation of horizontal wooden elements with neighbouring vertical posts found even in comparable excavational elevations and the verification of their co-existence as structural parts of specific architectural units, constitute one hardly achievable research objective.

Spatial distribution - density

The excavational plan of Anarghiri IXb pile-field contains 465 horizontal wooden elements distributed in an overall excavated area of 11942 m^2 **(Plan 18)**. These data are converted to a density of approx. 0,04 element/m^2, which constitute a low 1/10 compared to the general average regarding structural wood in general (0,3 element/m^2), as well as respectively low compared to the recorded density of vertical posts (0,23 element/m^2). These results are rather foreseeable taking account of the general proportional presence of horizontal wood in Anarghiri IXb assemblage.

Following the previously applied methodological choice of focusing on specific excavational areas in order to examine more closely the spatial distribution of the elements unearthed, the denser concentration of horizontal wood is documented in the Southeast Sector, i.e. 0,17 element/m^2, a rate considerably higher than the general mean, since 28,2% of the total assemblage was discovered in this particular area, where in any case the density of structural wood is remarkably high (see Fig. 18). This observation applies also to the setting documented in the Southern Sector where the density of horizontal wood is 0,11 element/m^2, with 27,75% of the total discovered there (see Fig. 19). The results referring to the rest of the excavated areas under examination show a significantly limited presence of horizontal elements, i.e. 0,004 element/m^2 in Northern Sector (1,9% of total), 0,01 element/m^2 in the Soundings (1,1% of total), while in the Western Sector there is no horizontal element recorded (see Plans 4-6). Lastly, there is a 41,1% of horizontal wooden elements unearthed in several excavated areas beyond those mentioned above with varying density, still with no significant differentiations.

Preservation

The available information regarding the state of preservation of horizontal wooden elements indicates a situation rather comparable to the general status of structural wood of Anarghiri IXb **(Fig. 97)**. Thus, 65,4% of the elements were characterized as "waterlogged" immediately after their discovery, 14,6% as "dry", 1,9% as "eroded" (with no further clarification concerning the type or the extent of the erosion), 0,4% were characterized as "carbonized", while there is a recordable 17,6% of horizontal elements for which there were no specific observations regarding their state of preservation.

Some more intense examination of the excavational records - especially of the photographic archive - demonstrated that the horizontal elements unearthed were found in varying states of preservation in respect of humidity or even emerging decay, depending mostly on the actual depth of their discovery and their stratigraphic proximity to the natural soil. Accordingly, the categorization of these elements as “waterlogged” cannot be in a definitive way supported, considering also the differentiated excavational treatment of structural wood during the rescue excavation already mentioned. Nevertheless, with the exception of the effects resulted on the extent of horizontal wood sampling, the sufficient recording of their physical and technical attributes enables the documentation and commenting of other useful information.

Wood species and anatomic features

Due to the circumstances already analyzed, horizontal wooden elements constitute only a small proportion of sampled wood, namely 6,1% of the total (49 of 805 samples). From these, 47 elements were examined and classified to the already documented species, i.e. 48,9% of elements are oaks (*Quercus sp.*), 36,2% conifers, a recordable 14,8% belong to deciduous trees, namely elms (*Ulmus sp.*), while one sample derived probably from a maple tree (*Acer sp.*) **(Fig. 98)**.

Although the number of samples deriving from horizontal wooden elements is rather small, there is a recordable differentiation of the proportional representation of the various species in comparison to the general statistics and consequently to the vertical posts. The most significant differentiation refers to the increased presence of conifers, whose percentage is doubled compared to their representation in the total of structural wood, characterized by an almost equivalent reduction of the presence of oaks. In addition, it is noteworthy that the proportional representation of deciduous trees in the horizontal wood samples is nearly ten times bigger compared to their presence in the general wood assemblage **(Fig. 98 c)**.

Regarding the age of the trees' included in the sampled horizontal elements, the results of the measurements' analysis show that 66% of trees' stems bear 11-25 annual growth rings, 25,5% bear over 26 rings - still no more than 60 or 70 rings - while 8,5% samples bear less than 10 rings **(Fig. 99)**. The results of the corresponding analysis that focus on the two main groups of wood species show a more balanced presence of young and older oak trees, while conifers' stems bear almost exclusively 11-25 annual growth rings **(Fig. 100-102)**. In addition, the presence of waney edge in sampled horizontal wood is checked in 27 from 47 elements examined (namely 57,44%) **(Fig. 103)**.

The observed variations concerning the presence of trees' species and their age in the sampled horizontal elements compared to the analogous results referring to the total of structural wood should be viewed in a more general perspective that will take into consideration various factors ranging from the possible uses of these elements for structural or other purposes up to their depositional conditions and their specific excavational context. In several assemblages deriving from European prehistoric wetlands, the differentiation between the tree species of the stems found horizontally deposited and the vertical ones are clearly detectable. Usually, these variations are interpreted as a deliberate choice of raw materials bearing specific physical attributes for specialized use in structural parts of the features that are not related to their foundation. Furthermore, the possibility that a number of the horizontally deposited wooden elements cannot be in a definite way related to construction activities, but could be exploited as firewood, or for the manufacture of portable wooden equipment and artefacts, eventually widens the spectrum of the trees' species and ages exploited.

In the case of Anarghiri IXb, the attempts to approach similar issues are connected mainly to the spatial distribution of the identified horizontal elements' species and their correlation to specific excavational contexts that will be respectively commented in the following paragraphs **(Plan 19)**.

Length

The documented length of horizontal wooden elements is one of the indisputable attributes of the data-set since these elements were fully exposed within the excavated arbitrary layers and their dimensions were accurately recorded.

According to the available information, the majority of these elements measure from 21 - 60cm (51,4%), a significant group measure from 61 to ≥221cm (44,7%), while a limited 3,9% of elements are smaller than 20cm **(Fig. 104)**. Considering the various depositional and post-depositional parameters already mentioned, it could be stressed that some of the elements of this last group could be bigger stems that are fragmented and partially preserved. Moreover, it is even probable that a number of these small pieces were woodchips, branches, twigs or firewood characterized by the trenches' supervisors as "horizontal wood" due to their position in the excavational layers.

Diameter

Examining the related information, it can be stressed that the rates of the diameter of horizontal wood show a denser distribution of elements measuring from 5-10cm, i.e. 77,1% of the total, while the analogous percentage regarding structural wood in general is 69,8%. Respectively, only 8,5% of the elements are measured being bigger than 11cm in length and a measurable 14,5% consist of pieces smaller than 4cm, most probably referring to other categories **(Fig. 105)**.

Width/thickness

For 275 horizontal elements, the trenches' supervisors of Anarghiri IXb excavation recorded "width" as one of their attributes. This practice was probably followed due to the fact that these elements, been horizontally deposited and exposed after the removal of the 10cm-thick arbitrary layers, gave an initial impression of being relative flat, broad and thick wood pieces. Still, the closer examination of the photographic archive demonstrated that most of these elements were usually roundwood. This remark seems to be confirmed by the results of the analysis of the recorded "width" values, that resemble more or less to those regarding the diameter of the elements presented above. Thus, 77,8% of the elements are recorded to have a "width" from 5-10cm, 12,4% were 11-20cm wide, while and 9,8% consisted of pieces smaller than 4cm **(Fig. 106)**. Additionally, to this group also belong 20 horizontal elements bearing roughly the same characteristics, whose "thickness" is also measured and recorded ranging from 2-9cm. Indeed, some of these elements that could be classified as been split and processed roundwood, having some measurable width, as well as thickness, will be discussed further on.

Cross-section

The data in the excavational records regarding this specific attribute of horizontal wood indicate that 70,55% of the elements belong to the abundant *Category 1* (roundwood), a rather small 9,25% were classified to *Category 2-7* (splits of various sizes) and nearly 1/5 (19,8%) of them were categorized as "unknown". Focusing to the sampled horizontal elements, the general tendency is once more confirmed (as in every previously examined case), according to which roundwood remain the dominant group of exploited trees, while the presence of splits of several types is only slightly increased **(Fig. 107-109, Plan 20)**.

Woodworking

In the excavational records information about woodworking is available for 58 of 465 horizontal elements, namely only for 12,5% of the total. According to these, 34,5% of the stems belong to the processing *Type 1*, namely bearing one of their ends transformed in a "wedge-shaped" edge. Processing *Type 2* ("pointed-end" edge) is represented in 24,1% of the material, processing *Type 3* was recorded in 32,8% of the elements, while 8,6% of the elements are noted as unidentifiable **(Fig. 110)**.

Horizontal wood: two noticeable excavational contexts

Before focusing on specific excavational areas to comment two exceptional cases and on occasion of the data presented so far, one almost self-evident remark should be stressed, namely that every horizontally deposited and discovered element was not necessarily used as a horizontally placed structural element in any wooden feature. Accordingly, the majority of the horizontal elements that have been processed at one of their ends should have been initially used most probably as vertical posts. Moreover, on some of these trees' stems, one or more branches were intentionally left after cleaning to serve specific structural purposes being driven into the marshy soil (see Fig. 48). In any case, it is certain that these elements were detached from their initial placement and structural function that would have on a wooden feature due to several possible reasons, thus their location within the excavated deposits differs from their actual position. Most frequently, horizontal wooden elements are found scattered within the grid's trenches, without being possible to detect any direct connection with vertical posts or other structural materials. Quite characteristic for this is the discovery of some elaborately processed planks or other splits as isolated finds away from any built space **(Fig. 111)**. Given all these observations, it could be claimed that the location of the majority of horizontal wooden elements was either the outcome of discard or it was resulted by post-depositional processes mainly at the peripheral zone of the habitation.

In the deepest layers of trench 882 c and in a rather good state of preservation a quite interesting group of twenty horizontally deposited wooden elements were unearthed **(Fig. 112)**. These were concentrated in a rather limited area of approx. 4m^2 and were deposited in at least two successive layers with no detectable evidence for any kind of structural unity. The group included two indicative examples of posts having processed lower ends (Type 1 and 2), as well as branches and knots, together with other stems of various sizes bearing similar attributes. Evaluating the characteristics of the elements, as well as their depositional conditions it could be claimed that this setting was resulted by the discard of structural wooden elements, some of them being vertical posts. This intentional action could have been taken place either on occasion of some repair or rebuilding of a neighbouring wooden feature or during a more general rearrangement of the constructed space in the specific area, which might have included the total or partial destruction of a feature. Regarding the spatial organization of the habitation in this area, the presence of two linear posts' alignments some 5-10m to the northwest of the discussed concentration should be noted, without for now any clear indication for the correlation of these contexts.

The excavational setting comprising six horizontally deposited wooden elements discovered in trench 940 c at the southwestern edge of the habitation constitutes one second worth mentioning context **(Fig. 113 a, b)**. The group, found in a total surface of 12m^2 and in the deepest waterlogged layers where no other indications of constructed space (vertical posts) were detected, included three roundwood stems: HW 1593 (138cm long and 11cm in diameter), HW 1604 (175cm long and 13cm in diameter) and HW 1606 (120cm long and 12cm in diameter), as well as the smaller stems HW 1605 (55cm long and 5cm in diameter), HW 1608 (51cm long and 6cm in diameter) and HW 1611 (25cm long and 5cm in diameter). These elements were not forming any structural unit and gave the impression of been discarded, while the presence of two antlers in the same context should also be mentioned.

Yet, in the same depositional context two intriguing wooden artefacts were discovered, initially treated by the excavators as more or less usual horizontal elements. During its excavational exposure, the approx. 160cm-long, 45cm-wide and 4-5cm-thick broken wooden object, was characterized by the excavators as "wooden structure". Yet, the extraction of the object from the deposit and its closer examination pointed to its interpretation as part of a logboat **(Fig. 113 c)**. Some 50cm to the south and nearly 10cm deeper HW 1607 was documented. But after its removal from the layer, it clearly proved to be an elaborated boat-shaped wooden artefact approx. 60cm long, 20cm wide and 5cm high **(Fig. 113 d)**. Bearing all the representative features of an actual boat (prow, stern and main craft) this unique miniature-like artefact is included in a group of relatively rare objects deriving from European wetlands, which are interpreted as vessels, or miniature objects (Leuzinger 2002, 105). Even if the closer examination of this artefact is beyond the objectives of the present study, its co-existence with a fragment of an actual logboat and some rather untypical wooden elements in a context of discard should be stressed.

One last evidence that must be added to this particular context is the ^{14}C date derived from HW 1605 (4683-4501 cal BC). However, the depositional conditions at the peripheral zone of the habitation, as well as the individual characteristics of the whole setting described above, should be taken cautiously into consideration in any attempt to incorporate these findings into the chronological framework of Final Neolithic.

C. Post-hole/post

During the investigation of the 10cm-thick arbitrary layers in specific trenches of Anarghiri IXb grid, 28 excavational elements were attributed to this different type of vertical structural remains. Namely, the easily recognizable circular or oval discolourations within the adjacent archaeological context containing loose earth and decomposed organic material were described and documented as "post-holes", the typical form in which the remains of vertical posts are discovered in dryland settlements **(Fig. 114)**. Still, in the lower end of these post-holes - in a depth that varied from 20-40cm after their first appearance - part of the vertical wooden posts was preserved. According to the excavational records, 11 of 28 posts that were found in the deepest part of these post-holes were extracted from the soil, with their overall length ranging from 26 up to 231cm and diameter from 6-20cm. Regarding the processing of their lowest part, 3 posts belong to *Type 1* ("wedge-shaped" edge), 3 posts to *Type 2* ("pointed" edge) and 1 to *Type 3* ("rounded" edge).

Evaluating the above-mentioned basic attributes of these elements, it becomes rather obvious that their classification is not based on any distinctive property related to material, special attribute or specific use. In contrary, these features, together with numerous posts discovered in Anarghiri IXb, constitute structural parts of architectural entities consisting of vertical posts, differentiated only in respect of preservation's state. Furthermore, it is of particular interest that this setting was documented in noticeable excavational contexts in the Northern and Southern Sector, correlated also with two elongated posts' alignments considered as part of the settlements enclosing system. Therefore, it would be more comprehensible to focus on these special excavational findings within the presentation's and interpretation's framework regarding the wooden structures these features belonged to (see chapter 2.3.2).

D. Post-holes

Practically the same methodological and interpretational remarks apply also for 17 excavational features recognized and recorded as "post-holes", with only one noticeable difference from the category previously mentioned, namely the total absence of wood in their lower end[7]. Regarding their metrics, their depth ranges from 20-70cm and their diameter from 9-22cm, which could correspond up to a point to the dimensions of the decomposed vertical post. It is worth mentioning that, except some isolated and scattered examples, the spatial distribution of the post-holes is in full accordance to this of the post-holes which preserve the wooden post in their lower end. And it is even more intriguing that almost all these post-holes seem to be the remains of vertical structural elements that comprised some of the settlements wooden enclosing structures. Consequently, an attempt will be made for their combinatorial examination with the specific excavational contexts, as well as with the other structural remains of these features.

E. Twigs

This group of 115 wooden elements were discovered during the first two campaigns (2013 - 2014) of Anarghiri IXb rescue excavation and were documented exclusively in the Southeast Sector of the settlement. The examination of the available information regarding their recording in the excavational archive demonstrates that these elements were considered, labelled,

[7] The excavational records and photographic archive of Anarghiri IXb contain also several features characterized as "post-holes" which are discovered during the investigation of the upper layers of the settlement, belonging most probably to residential architectural units. Still, their recording, analysis and interpretation were beyond the research framework and the objectives of this study.

measured and treated by the trenches' supervisors as "horizontal wood" exposed after the removal of the 10cm-thick arbitrary layers. Their characterization as "twigs or branches" was made only in a few descriptive reports referring to the general excavational context of this area **(Fig. 115)**.

The classification of these elements in a distinct category of wooden remains was employed after the examination of the excavational archive, the recording of their attributes into the wooden elements' Data Base and the processing of all the available information. Firstly, it must be stressed that due to their physical properties, as well as the general excavational treatment of structural wood already explained, none of these elements was sampled, since their erosion was rapid immediately after their discovery, a fact that excluded any possibility for further future analysis. Nevertheless, there are a few basic observations on this material to be done, based on their spatial and vertical/stratigraphic distribution, as well as their recorded attributes.

Looking closer into the plan of structural wood unearthed in Southeast Sector (see Fig. 18), it could be stressed that, except the distinguishable vertical posts' alignments directed from southwest towards northeast, the area is dominated by the presence of horizontally deposited elements of various sizes, shapes and forms. Within this rather complicated excavational context, there are some observable concentrations of thinner elements, with a diameter ranging between 2-4cm and length mostly between 30-60cm. Another useful fact related to their depositional condition is that their vertical distribution is considerably denser within the elevations' range of 592,21-592,40 a. s. l, where 51,3% of these elements were found, indicating the possible existence of a depositional horizon within the earliest layers of the habitation. This vertical/stratigraphic distribution of these elements follows the tendency already observed elsewhere within the settlement's stratigraphic sequence, according to which horizontal wooden elements were deposited in lower elevations compared to the appearance of their neighbouring vertical posts.

These last excavational settings pose crucial questions in respect of the initial position of those particular wooden elements, as well as the role they might (or might not), have played in any kind of structural activities of the Neolithic community. The discovery in prehistoric wetlands of similar concentrations consisting of twigs and branches deposited in distinguishable stratigraphic horizons constitute a quite common finding, interpreted in different ways taking account of the specific excavational contexts, as well as any available data referring to the site formation processes and the possible water level fluctuations. There are several examples, in which these groups of material are not directly correlated to some specific wooden structure and their spatial or/and stratigraphic concentrations are interpreted as the result of post-depositional processes that affected drastically their initial state. It is also rather questionable if these twigs or branches are the by-products of human activities of any kind or they are simply the remains of lakeshore vegetation interpolated within the archaeological material (Pillonel 2007, 27-29).

In consequence, the incorporation into the settlement's general overview and the interpretation of the noticeable concentration of twigs and smaller branches documented in the Southeast Sector of Anarghiri IXb excavation, seem to be subject to all the above-mentioned reservations. Even if in this specific area certain vertical posts' alignments belonging to the settlement's earliest enclosing, as well as accessing structures were discovered, an immediate correlation of the twigs to these features is by no means self-evident. Their co-existence with other horizontally deposited elements that could be more securely recognized as structural wood (due to certain processing traces or physical attributes) could be considered as indicative for their initial use, but still not determinant for their definite characterization.

F. Waste/woodchips

Some 166 wood pieces discovered all over the excavated area were initially characterized by the trenches' supervisors as "horizontal wood" and were treated like this, despite their differences in size, physical and technical characteristics in comparison to the rest of horizontally deposited elements. As in the case of twigs/branches, their visible concentration mainly in the Southeast Sector of the excavation was scarcely commented in some arbitrary layers' recording sheets; yet, their attributes and excavational context were more or less adequately recorded together with the surrounding structural wood.

According to the excavational records, none of these elements was sampled, thus the remarks that can be made refer mainly to their macroscopically observable characteristics. Being usually 5-20cm long and only 2-3cm wide, their depositional state was hardly distinguishable from the neighbouring vertical and horizontal elements, especially within the complicated excavational context of the Southeast Sector **(Fig. 116)**. It is self-evident that the investigation of their spatial and stratigraphic distribution is restricted by the same reservations noted with respect to the study of twigs. Moreover, the lack of any usable information regarding the presence of tool-marks on the surface of these elements makes speculative their characterization as "woodchips", i.e. by-products of woodworking activities. In any case, it is quite possible that an indicative idea of this kind of elements can be obtained by the study of the samples collected during 2016 campaign from the Southern Sector, which most probably includes - among other - woodchips.

2.3 Anarghiri IXb wooden structures

Anarghiri IXb pile-field and the qualitative and quantitative attributes of wood assemblage outline some of the general aspects of the structural activities actualized by the Neolithic community mainly during the Late Neolithic I period. Since this view concerns basically the investigated peripheral zone of the habitation, the resulted excavational picture regarding the construction and organization of space bears special characteristics.

After the analytical approach of all the available information, the next objective of the present study is to provide more data regarding specific clusters of wooden elements documented within the aforementioned zone. The classification that follows was in a first level based on the systematization and evaluation of the information about the general archaeological context of the discovery of the wooden elements. Already in the excavational records, except the observations regarding the stratigraphic and spatial distribution and the physical/technical attributes of wooden elements, there were propositions regarding the structural unity of some groups of findings and their occasional characterization as "structure" or "feature". These raw remarks were re-examined and evaluated taking into consideration the processed data derived from the structural wood Data Base and their digitalized documentation using ArcMap applications. Based on the observable spatial distribution and structural continuity of the wooden elements and cross-checking their stratigraphic distribution - keeping always in mind the possible restrictions for its usability in a wetland's layers sequence - concrete groups of wooden elements were attributed to specific structures. As soon as these features were recognized as individual architectonic units, they were ascribed with measurable attributes such as general form, length, width, orientation. Finally, the decisive information regarding their incorporation to the chronological framework of the settlement's development was added by the attribution of the available ^{14}C dates to specific vertical elements.

In respect of the characterization and possible interpretation of the structures recognized, it should be in some degree expectable that at the edge of the settlement the architectural features - if preserved - would have probably served some needs related to socioeconomic activities realized by the Neolithic community at the margins of the main residential zone. Accordingly, the individual features recognized were classified into two major categories, namely the settlement's accessing and enclosing structures. This distinction was made taking into consideration the excavational context and the discovery conditions of each structure, their form, size, orientation, correlation or interpolation to other features, as well as their spatial distribution and position in respect of the habitation’s built space or the neighbouring natural environment's features. Lastly, it is also self-evident that the basic structural characteristics, as well as some interpretational approaches discussed in the next chapters, were juxtaposed with selected comparable examples from European wetlands.

In the following sections, some basic information regarding the individual features' structural wooden elements are codified in a short table before the presentation of their basic attributes and their chronology. In addition, separate lists of wooden elements attributed to each structure are presented in the appendix of the study.

2.3.1 Settlement's accessing structures

2.3.1.1 Trackway 1

Trenches	Trial Trench 3, 839 c-d, 864 b, 865
Elevations' zone	592,26-593,38m a. s. l.
Structural elements	45
Structural wood categories	VP: 44, HW: 1
Treatment	Sampled: 23, discarded: 22

General description: The structure consists of a double posts' row alignment, oriented from southeast-northwest with an approximate length of 36,65m **(Fig. 117, 118)**. Since the excavation did not continue to the neighbouring trenches, there is no clear evidence regarding its continuation to the main habitation space, while it seems quite possible that the structure was extending further to the southeast towards the unexcavated zone. Except for the general information regarding the relatively high moisture of the dark brownish soil within which the posts were deposited, there are no available processed data referring to the excavation context.

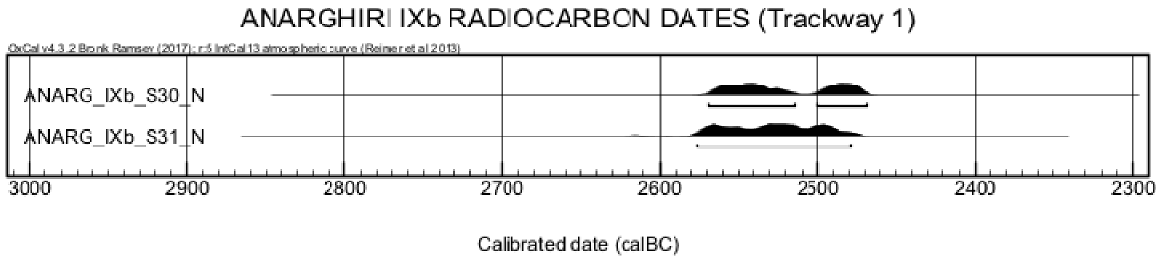
The dominant structural characteristic of the trackway's 45 posts is that they were driven into the soil in a regular way, namely nearly one opposing another. According to this pattern, the width of the feature ranges between 2,34-2,55m. Some scattered horizontal wooden elements found in trenches 839-840 cannot be for certain correlated to the structure, thus the evidence regarding the possible presence and structural function of horizontal elements is practically non-existent.

Structural wood: The state of preservation of the posts unearthed could be considered as moderate since their upper exposed part is almost completely dried out and their middle and lowest part was still preserving some moisture during their discovery. Their length ranges between 60 - 151cm, with an average length of approx. 110cm, which exceeds the general mean documented for the posts of Anarghiri IXb. Their diameter ranges mostly between 9-12cm, while in the excavational records there are no specific remarks regarding the cross-section of the trees' stems used. In respect of woodworking techniques, all 45 vertical posts have been processed at their lower end **(Fig. 119)**. Their majority (26) bear a "pointed-end" edge **(Fig. 119 b**

and d), 13 a "wedge-shaped" edge **(Fig. 119 c),** 2 a "rounded edge", while 4 are processed, but not classifiable. Regarding the species exploited for the construction of the feature, all 23 sampled posts are oaks, mostly deriving from relative old trees, since in 16 of 23 samples more than 30 annual growth rings were measured.

Dating: Two available posts' ^{14}C measurements document the dating of the structure in the mid-26th to mid-25th centuries BC. Except the dating of the structure itself, these measurements are also significant for the documentation of some human activities during the Early Bronze Age at Anarghiri IXb, whose architectural remains, as well as movable finds are for now not documented in the main excavational zone.

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC	%
BE-8648.1.1	ANARG_IXb_S30_N	Post 55	3990	20	27	1-27	2570-2469	95.4
BE-8649.1.1	ANARG_IXb_S31_N	Post 68	4019	20	50	1-50	2577-2479	95.4



2.3.1.2 Trackway 2

Trenches	834 c(?)-d, 859 a, b, d, 860, 907 a, c, 928 a, b, d, 929 c, 947 a, Trial Trench 2, Trial Trench 2-Extension
Elevations' zone	592,02-593,23m a. s. l.
Structural elements	571
Structural wood categories	VP: 545, HW: 18, W: 8
Treatment	Remained into a layer: 255, discarded: 162, sampled and discarded: 82, sampled and remained into a layer: 71, conservated: 1

General description: This is an elongated posts' alignment together with some scattered horizontal wooden elements with a southeast-northwest orientation, measuring approx. 83,6m **(Plan 21 and Fig. 120 a-c)**. The fact that the structure's southeastern part was most probably destroyed by earlier lignite mining activities at the surroundings of Anarghiri IXb, should also be taken into consideration. Even more, the density and layout of structural wood exposed at the northwestern part of the Trackway - in an area that its end would be expected - does not permit any precise estimation about either its final length nor its structural form. Regarding its width, the layout of the vertical posts, as well as their varying density across the trackway's length, indicate a mean width of approx. 2m. Yet, it should be mentioned that the arrangement of the posts attributed to the structure at its northwestern part points to a possible widening of its length that approached 2,60-3m.

In terms of integration of Trackway 2 to the general settlement's layout, it seems that the structure intersects in a specific spot Fence 2 and continues towards northwest. Such an assumption is also reinforced by the evidence regarding the chronology of both structures, that point to the 54th-53rd centuries BC. Accordingly, it is proposed that the two wooden structures are part of the wider spatial organization's plan of the habitation during the earliest Late Neolithic I phase.

Structural wood: The state of preservation of the wooden elements unearthed could be characterized as moderate since their upper exposed part was almost completely dried out and their middle and lowest parts were still preserving some moisture during the excavation **(Fig. 121 a)**. Most of the structural wood is vertical posts, but there are also some horizontal elements that could be considered as structural parts of the trackway, even though their initial position on the structure cannot be securely documented. Moreover, the data presented here refer to the physical and technical characteristics of 234 of 571 structural elements that were extracted from the archaeological deposits and were attributed to Trackway 2.

Examining the data regarding the elevations of the posts' discovery, a denser distribution of vertical elements (i.e. 62,2% of the total) in the elevation's zone between 592.41-592,61m a. s. l. should be noticed, which seems to overlap in some degree the distribution of vertical posts generally recorded (i.e. between 592,61-593m a. s. l.). In respect of the physical attributes of the trackway's elements length of the exposed posts ranges between 31-151cm, with an average length between 51-70cm. The diameter of the stems ranges mostly between 7-10cm, while roundwood is almost exclusively used (78,3%), yet there are some splits of varying cross-section, as well as a few unidentified posts. The excavation records regarding the processing of the posts do not include systematic observations about this technical attribute. Still, there are 31 posts of Type 1 (13,1%), 30 posts of Type 2 (12,7%) and 17 of Type 3 (7,2%).

In respect of trees exploited by the Neolithic builders for the construction of Trackway 2, oak is the dominant species (83,8%) and conifers (10,4%) were placed in a specific spot in the northwestern end of the structure as it will be shown below, while there are some unidentifiable samples (5,8%) (see Plan 9 and 15). Regarding the age of the trees, of 147 samples examined 81 bare 16-35 annual growth rings (55,1%), 51 bare more than 36 (34,7%), while 15 samples (10,2%) bear less than 16 annual growth rings.

At this point, it should be also mentioned that along the course of the trackway, a group of deformed/compressed posts were recorded, which actually constitute the most observable concentration of such elements within the excavational grid (30 compressed wooden elements of 71 recorded in total) (see Plan 14). Their spatial distribution mainly across the southeastern part of the trackway should not be accidental and could be correlated - as it is usually documented for similar finds across European wetlands (see chapter 2.2.6) - to some more or less extended sedimentation episode caused by water fluctuations. Yet, the level of stratigraphic analysis and the lack of information regarding the site formation processes do not permit any secure conclusions.

Except from these general characteristics of Trackway 2, the extent of its exposure, as well as some detailed and systematic observations during the excavation procedures, allow some focused examination of specific aspects of the trackway's construction.

A special category of posts used as vertical elements for the trackway's foundation are the stems on which one or more branches were left after their felling and cleaning. Indications for their presence were recorded at several spots along the structure's course, but a considerable concentration was recorded in its northwestern part. More specifically, 10 of 16 conifers stems documented in sounding 680 were used for the construction of the eastern posts' row bore protruding branches and knots (see Plan 11 and Fig. 47, 48). Although there are no details recorded about the specific arrangement of these posts it could be assumed that their selection and placement was not accidental. Hypothetically, if the branches were placed to remain above ground facing the same direction, they could be used as some kind of substructure for placing light horizontal elements on them. One other possible interpretation would be that the specific posts were driven into the marshy soil and these branches functioned as a mechanical mean to prevent the substructure from further sinking (Brunning 2007, 115). Nevertheless, even if this arrangement is the most clearly documented, the discovery of such posts all over the excavated area - some of them discarded like the concentration in trench 882 c (see chapter 2.2.6) - and their structural function remain ambiguous.

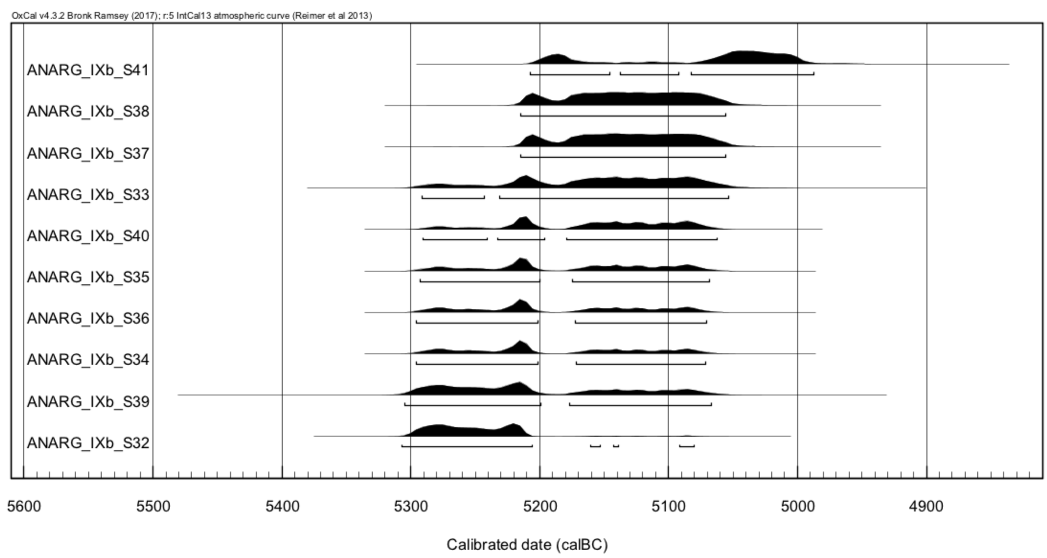
In contrast to the numerous vertical elements related to the trackway's infrastructure, clear indications regarding the possible existence of a wooden-constructed walking surface are missing. Of course, it cannot be totally excluded that some of the sparse horizontal elements found in the surrounding of the most southern part of the trackway could have been used for the construction of its surface. Still, three horizontally deposited elements in trenches 928 a and b bear some interesting attributes that should be mentioned. HW 11917, 11963 and 11964 - all three roundwood 75-85m long and with a diameter of 5-6cm - were discovered virtually at the same elevation (592,59-592,65m a. s. l.), being deposited in the same orientation (west-east) between the double posts' row that formed the trackway's side substructure **(Fig. 121 b)**. Evidently, these individual finds could not be easily considered as definitive evidence for the existence of a wooden walking surface and the type of its structural elements. Yet, in the discussion regarding the form of the trackway that follows in the synthetic part of the present study, the specific context will be taken into consideration and further commented.

One last observation is related to the arrangement and the size of posts at a specific area across the trackway's course. Namely, after approx. 42m - measured from T T 2 up to trench 928 b - of the probably continuous and dense presence of wooden elements, there seems to be a decrease in the placement of vertical posts along its longitudinal axis for the next 1,60m. This differentiation in the density of structural elements seems to be marked by at least two posts, namely VP 11931 and VP 11994 discovered at 593m and 592,87m a. s. l. respectively **(Fig. 121 c)**. These verticals placed almost opposing one another, clearly stand out compared to the neighbouring ones due to their recorded size (107 and 75cm). Yet, it should be stressed that the examination of the aerial view of the trackway indicates that the actual posts' exposed length seems to be bigger than this written down in the excavational record. Since the two posts remained in the layer and were not extracted or sampled, it is difficult to calculate more precisely their actual length or even diameter. The setting of these two posts, probably in combination with the rest of the vertical elements at the specific spot of the trackway, possibly aimed to the creation of some "structural front" before its continuation to the north-west and its intersection with Fence 2. This assumption is one of the topics that will be discussed in the following chapter of the present study, together with some interpretative propositions.

Dating: Ten posts of Trackway 2 selected according to their spatial, as well as their stratigraphic distribution were ^{14}C dated. The calibrated measurements point to a construction phase at the early-53rd century BC. It also seems plausible that some structural interventions took place at the late-53rd century BC, while the trackway was possibly in use until the early or mid-51st century BC, with the exception of one measurement that points to an even later use at the early-50th century BC. Nevertheless, without robust dendrochronological dates, it is rather difficult to distinguish different structural phases. In terms of its integration to the general chronological framework of Greek Neolithic, the structure seems to be founded and used in Late Neolithic I period.

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC	%
BE-8103.1.1	ANARG_IXb_S41	Post 4953	6123	22	26	1-26	5208-4988	95.4
BE-8122.1.1	ANARG_IXb_S37	Post 124	6183	22	22	1-22	5215-5056	95.4
BE-8104.1.1	ANARG_IXb_S38	Post 6208	6182	22	50	1-20	5215-5056	95.4
BE-8102.1.1	ANARG_IXb_S40	Post 4934	6213	23	30	1-15	5291-5063	95.5
BE-8108.1.1	ANARG_IXb_S33	Post 2027	6206	34	28	1-28	5292-5054	95.4
BE-8106.1.1	ANARG_IXb_S35	Post 2040	6219	22	12	1-12	5294-5069	95.4
BE-8107.1.1	ANARG_IXb_S34	Post 2023	6223	22	47	1-47	5296-5072	95.4
BE-8110.1.1	ANARG_IXb_S36	Post 122	6222	22	39	9-39	5296-5071	95.4
BE-8097.1.1	ANARG_IXb_S39	Post 12611	6233	35	66	15-45	5305-5068	95.4
BE-8111.1.1	ANARG_IXb_S32	Post 2011	6247	22	41	1-41	5308-5081	95.5

ANARGHIRI IXb RADIOCARBON DATES (Trackway 2)



2.3.1.3 Trackway 3

Trenches	Anarghiri XI Extension Grid, Trial Trench 1, 944 c, 960 a, b, d
Elevations’ zone	591,33-593,88m a. s. l.
Structural elements	543
Structural wood categories	VP: 486, HW: 57
Treatment	Discarded: 475, remained into a layer: 54, sampled and discarded: 14

General description: The structure constitutes the biggest wooden architectural entity unearthed not only in Anarghiri IXb but also in any other wetland of Amindeon basin. The first evidence for the existence of the trackway came into light in 2013 during the final stages of the rescue excavation of the prehistoric habitation Anarghiri XI and its north-northeastern edge[8] **(Plan 22 and Fig. 122, 123)**. In the trench A-63 of Anarghiri XI extended excavation grid five posts were unearthed, driven into the natural soil of the slope. After documenting the existence of the posts' alignment and its orientation towards the north and to the unexcavated at that time settlement Anarghiri IXb, the removal of the approx. 1,20m thick sterile topsoil took place with mechanical means in an overall area of 2275m^2.

The outcome of this endeavour was the discovery of 543 posts and some scattered horizontally deposited elements constituting two parallel posts' rows in a length of approx. 122m. The relatively irregular placement of the side-posts does not permit an accurate calculation of its width. However, some indicative measurements of distances between opposite posts at several spots point to a mean width of approx. 1,60m. Examining the trackway's course from Anarghiri XI slope to the margins of Anarghiri IXb habitation, a slight turn from north to the northwest is to be mentioned. There is also an observable change regarding the density of the posts used for the trackway's foundation at its northern part, a fact that could be interpreted as a response to special needs for stabilizing the structure more effectively. It could be also proposed that this solution might have been imposed by the ground's inclines or specific soil's composition that necessitated the use of denser foundation's vertical posts alignments.

[8] Across the settlement Anarghiri IXb and in the opposite low mound, the dryland settlement Anarghiri XI is located, with evidence for the presence of several occupations demonstrating intensive human activities from Early Neolithic to Late Bronze Age (Chrysostomou and Giagkoulis 2018).

Structural wood: According to the excavation's records, the elongated posts' alignment named Trackway 3, was the first extended wooden structure unearthed during the rescue excavations of prehistoric settlements in Amindeon Four Lakes region. Due to this fact, recording, documentation and sampling processes were characterized by methodological and practical trials.

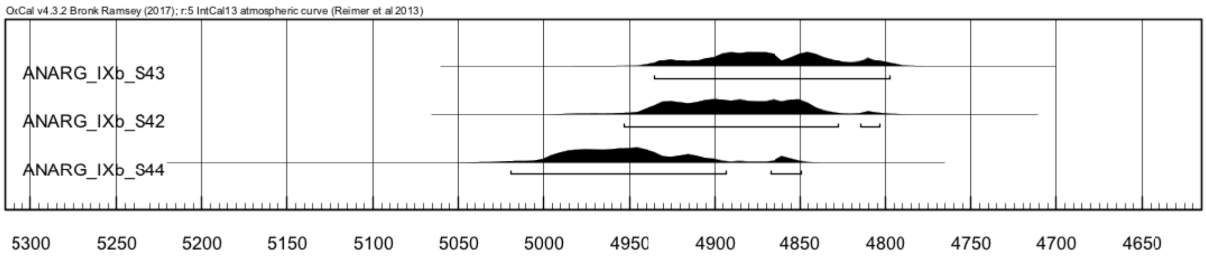
Despite these restrictions, there are some usable data regarding the structural wood of Trackway 3. In respect of the elevations of the posts' discovery, a relatively irregular distribution in several zones ranging between 591,90-593,50m a. s. l. should be expectable considering the course of the trackway, which started from Anarghiri XI northern slope, crossed some 100m over the marshy soil to end up at the periphery of Anarghiri IXb habitation.

Of a total of 543 wooden structural elements attributed to Trackway 3, only 14 were sampled, although the majority of the posts (489 of 543) were extracted from their initial position within the excavation deposits **(Fig. 123 c, d)**. All these elements belong to rather young oak trees since the annual rings measured range between 13-35. The stems used are between 31-50cm long with a diameter ranging from 5-8cm, which seems to be below the frequent diameters (9-12cm) of structural wood documented in the settlement. In the excavation's records, the remarks regarding the cross section of these stems are scarce and refer only to 225 of 543 elements, which almost exclusively belong to roundwood (214 stems), while 11 elements were characterized as splits. Even more fragmentary is the information regarding the processing of the lower end of the posts, since the related data refer only to 41 of 543 elements, of which 16 were attributed to processing Type 1, 18 to Type 2 and 7 posts to Type 3.

Dating: There are three dated posts is pointing to one foundation and possibly use phase during the 50th-49th centuries BC, namely in the Late Neolithic I period. Still, the extent of the feature, the relatively big number of wooden elements attributed, and their spatial distribution could rise the possibilities of different structural episodes or repairs, that are not detectable in the few available dated posts.

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC	%
BE-8098.1.1	ANARG_IXb_S43	Post 20423	5982	22	28	1-28	4936-4799	95.4
BE-8096.1.1	ANARG_IXb_S42	Post 820	6000	22	22	1-22	4954-4804	95.4
BE-8101.1.1	ANARG_IXb_S44	Post 20337	6048	23	13	1-13	5020-4850	95.4

ANARGHIRI IXb RADIOCARBON DATES (Trackway 3)



2.3.1.4 Trackway 3a(?)

Trenches	944 c-d, 960 b
Elevations' zone	592,42-593,89m a. s. l.
Structural elements	120
Structural wood categories	VP: 112, HW: 8
Treatment	Discarded: 88, remained into a layer: 31, sampled and discarded: 1

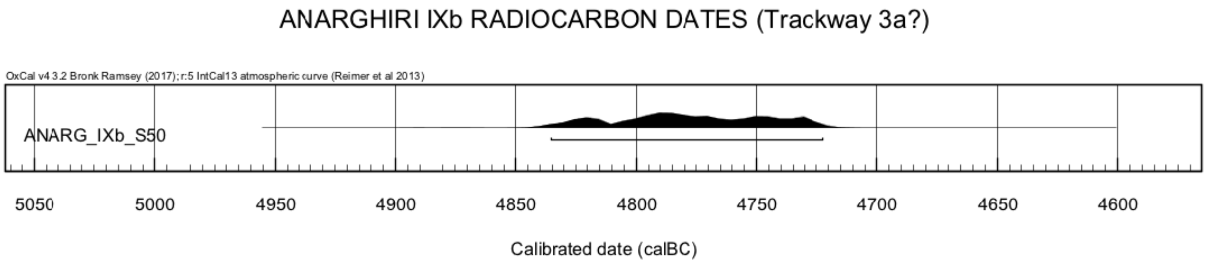
General description: Due to its fragmentary investigation - compared to the Trackway 2 and 3 - the structure is characterized even with some reservation as Trackway 3a(?) **(Fig. 124, 125)**. Namely, the examination of the excavational records and the digital photos archive shown that the group of 120 wooden elements unearthed in trenches 944 c-d and 960 b could be distinguished due to their spatial arrangement, which seems to form a double posts' row running from southeast-northwest for approx. 9,5m almost in parallel to the posts attributed to the adjacent Trackway 3 to the west. It must be also noted that more than half of these elements (73 of 120) were discovered between 592,61-592,80m a. s. l., which compared to the widest stratigraphic distribution of the posts of Trackway 3 at this specific area, could be considered as indicative for an individual structural entity. In addition, even if there is only one available ^{14}C date deriving from the structure's eastern posts' row, this is differentiated in some recordable degree from the date of a neighbouring post that is clearly attributed to Trackway 3.

As for Trackway 2, the evidence about the construction techniques of Trackway 3 regarding the possible form of the walking surface are not direct or easily retrievable. Across the structure's short course exposed there are some scattered horizontally deposited elements, as for example the split HW 918 (100cm long and 13cm wide) or its adjacent roundwood HW 17 (107cm and 8cm wide), whose size, spatial distribution or even position in respect to the adjacent verticals could cautiously be noted as some fragmentary preserved indications for the existence of horizontally arranged elements.

Structural wood: Of 120 wooden elements attributed to Trackway 3a(?), 112 are vertical posts and only 8 horizontal elements. In respect of their physical attributes, most of them were 41-70cm-long roundwood, with a diameter ranging from 5-6cm, while there is no recorded information regarding the processing of their lowest end. Of all those elements, only one post was sampled belonging to a conifer which bore 47 annual growth rings.

Dating: One single post from Trackway 3a(?) was sampled and dated between the late-49th and late-48th centuries BC. As already mentioned, this date seems to differentiate the structure in terms of chronology from the adjacent Trackway 3, from which one post deriving from this specific area is of slightly earlier date (Post 820, 4954-4804 cal BC). This result, correlated to the dates of Trackway 3, could be regarded as an indication that the construction of Trackway 3a(?) could have followed the establishment of Trackway 3. Moreover, this measurement coincides with a time-span that according to the proposed chronological framework of the region belongs to the Late Neolithic II period.

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC	%
BE-8115.1.1	ANARG_IXb_S50	Post 837	5913	22	47	1-25	4836-4723	95.4



2.3.1.5 Trackway 3b(?)

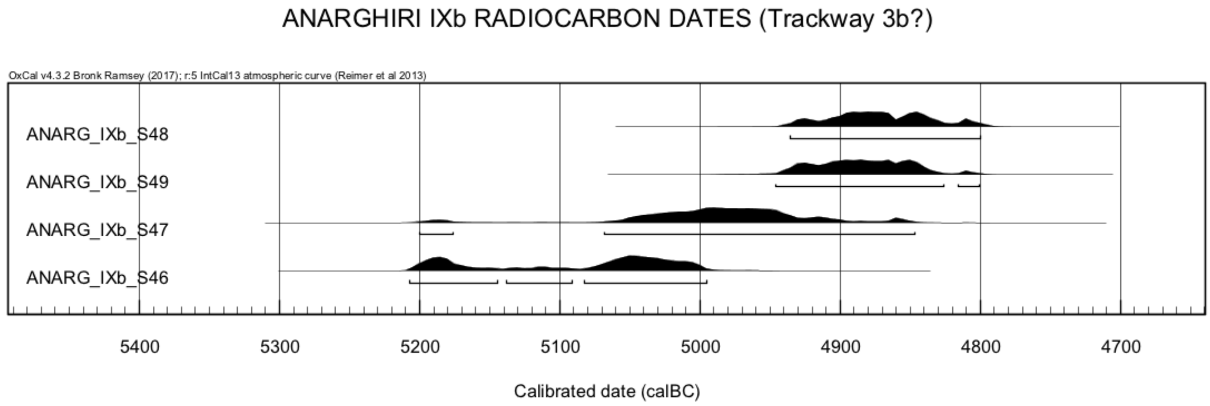
Trenches	904 c
Elevations' zone	592,42-593,05m a. s. l.
Structural elements	33
Structural wood categories	VP: 30, HW: 3
Treatment	Sampled and remained into a layer: 16, remained into a layer: 15, sampled and discarded: 2

General description: The 33 wooden elements attributed to this structure derive from one single excavational trench (904 c), which was not completely investigated to the natural soil **(Fig. 126, 127)**. This most probably double posts' row was exposed in a length of approx. 4m and a maximum width of 1,40m. The alignment was characterized with some reservation as Trackway 3b(?) due to some similarities to the other structures detected at the periphery of the habitation (posts' density, alignment, stratigraphic distribution). Due to their location, it could be assumed that the exposed elements were part of the long Trackway 3, whose structural continuation was followed until some 20m to the southeast. Still, the restricted area of investigation, the lack of evidence for continuation to the north, as well as some slight, but noticeable differentiation in the orientation of the double posts'row do not permit any definite conclusions.

Structural wood: The partial exposure of the 33 wooden elements attributed to this structure does not allow any conclusive observations regarding their physical characteristics, especially with respect to their size. Consequently, the recorded information about their length (smaller than 50cm) or their diameter (between 7-10cm) could be misleading. Still, nearly half of these elements (17) were sampled, of which 16 belonged to oak trees (mostly bearing 16-36 annual growth rings) and one was identified as conifer with 40 annual growth rings.

Dating: The selection of the four posts for ^{14}C followed the notion of their stratigraphic distribution within the elevations' zone of the excavation for testing the possibility to detect different structural phases. Namely, the samples of VP 3038 and 3039 were discovered at 592,53m a. s. l. and those of VP 3015 and 3011 were discovered at 592,93m and 592,98m a. s. l. respectively. Yet, the pairs of posts discovered in the same elevation yielded quite different considerably distant dates. Accordingly, the four dates can be sub-divided in two groups possibly pointing to two different phases of the structure's establishment and/or rebuilding, namely one at the late-53rd century BC and one at the early-50th century BC.

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC	%
BE-8095.1.1	ANARG_IXb_S48	Post 3039	5984	22	32	1-32	4937-4800	95.4
BE-8100.1.1	ANARG_IXb_S49	Post 3011	5996	22	55	1-30	4947-4802	95.4
BE-8113.1.1	ANARG_IXb_S47	Post 3038	6073	37	45	1-45	5201-4848	95.4
BE-8117.1.1	ANARG_IXb_S46	Post 3015	6130	22	19	1-19	5208-4996	95.4



2.3.1.6 Trackway 4(?)

Trenches	Anarghiri XI Extension Grid
Elevations' zone	592,01-594,51m a. s. l.
Structural elements	658
Structural wood categories	VP: 40, HW: 25
Treatment	Discarded: 64, sampled and discarded: 1

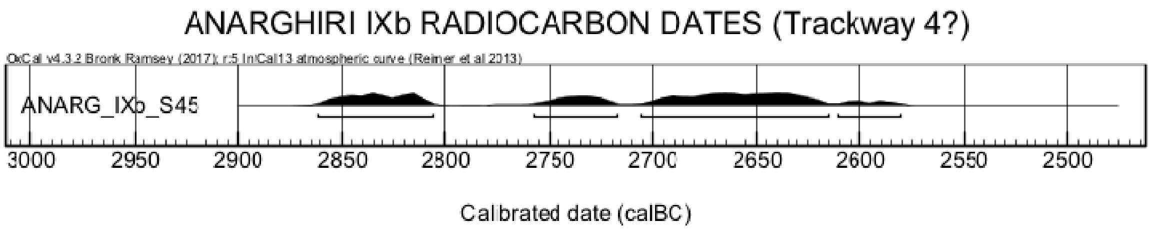
General description: The characterization of the presumably double posts' row as Trackway 4(?) is based on its course from the natural soil of Anarghiri XI slope towards Anarghiri IXb covering a distance of at least 74m **(Fig. 128, 129)**. The alignment runs almost in parallel and nearly 10m away from Trackway 3, a distance that gradually diminishes towards its course to the north, since its most northern exposed part seems to intersect with this of Trackway 3. Yet, the posts' alignment is preserved in a quite fragmentary condition, with significant intervals where no evidence of structural wood was detected.

A find which is not associated with the structural form of the feature was an interesting concentration discovered some 24m from Anarghiri XI slope and nearly 2m to the east of Trackway 4(?) **(Fig. 129 b)**. Examining the excavational digital photos, the concentration comprises animal bones with no observable pattern regarding their deposition in the natural soil. Even though there is for now no available information about this particular context, or the bones deposited, any discussion related to its possible significance will be cautiously attempted in the following chapters.

Structural wood: The fragmented preservation of the feature and the limited number of structural elements allow only a few general observations regarding the use of wood for its construction. All 65 elements were extracted from the natural soil and their basic dimensions were recorded. Of these 40 were vertical posts mostly 21-40cm, with a diameter ranging from 5-10cm, while there are also 25 horizontal wooden elements of considerably smaller size (10-20cm long and 5-7cm in diameter). In respect of the vertical posts' lower end processing, there were ten elements recorded that were attributed to Type 2, three to Type 1 and one element attributed to Type 3.

Dating: The only available date that could be related to Trackway 4(?) derive from a single post at its northern exposed end, an area which is characterized by a relatively increased density of vertical elements, some of them attributed to Trackway 3. Yet, taking into consideration that the available dates from this last feature are of Late Neolithic I, the ^{14}C date of VP 20027 at mid-29th to early-26th centuries BC could demonstrate the chronological differentiation of the two structures. Provided that this dating is secure and accurate enough, it constitutes one of the scant evidence - together with the later established Trackway 1 - documenting at least some structural activity around Anarghiri IXb habitation during the Early Bronze Age.

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC	%
BE-8116.1.1	ANARG_IXb_S45	Post 20027	4119	20	28	1-28	2862-2581	95.4



2.3.2. Settlement's enclosing structures

2.3.2.1 Fence 1

Trenches	499 d, 500 c-d, 538 b
Elevations' zone	592,77-593,36m a. s. l.
Structural elements	37
Structural wood categories	VP: 36, W: 1
Treatment	Discarded: 31, sampled and discarded: 5

General description: One group of posts aligned in two almost parallel posts' rows orientated from southeast-northwest in an approximate distance of 12,65m were characterized as Fence 1 **(Fig. 130, 131)**. Especially those 17 posts discovered in trenches 538 b and 500 d were most probably driven one opposite the other into the natural soil in a distance of 0,80-1m, while the posts at its northwestern course formulate a denser group. Furthermore, one observable characteristic of the posts' arrangement is that almost all of them were found leaning within the excavational layers. More specifically, the vertical elements of the presumable northern "outer" posts' row were orientated from northeast-southwest, while those of the southern "inner" row from northwest-southeast (see Plan 13).

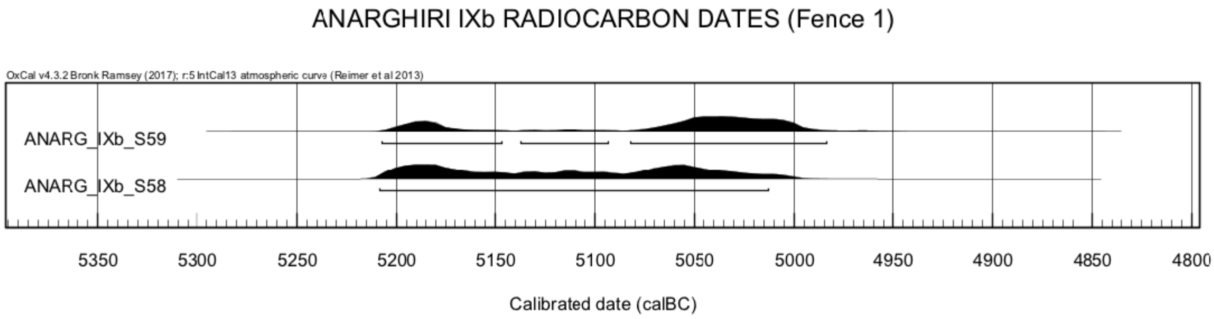
The alignment is elliptic in plan with no obvious continuation in the adjacent trenches, a fact that could not be easily explained by the influence of depositional or post-depositional factors. Subsequently, it can be noted that no structural activity was employed for some 7m to the southwest of the feature, after which the density of the pile-field rises considerably. This area covering approx. 65m^2 could be guardedly characterized - in terms of spatial organization - as an "open space" since no building activities were employed. Nevertheless, the lack of processed information regarding the material discovered within this area i.e. the categories of movable finds and their spatial distribution, the use of this space remains ambiguous.

Structural wood: The posts attributed to Fence 1 were poorly preserved, most of them (28 of 36) discovered within the elevation's zone of 593,01-593,30m a. s. l. Since their majority were removed out of the deposit after the completion of the excavation, there are some usable observations regarding their physical and technical characteristics to be done. The length of the vertical posts usually ranged between 71-90cm, while 5 posts were exceptionally bigger (over 101cm). The diameter of the trees' stems (23 of 37 were roundwood and 8 were splits) mostly ranged from 7-10cm. In respect of woodworking techniques applicated at their lower end, nearly half of the posts were attributed to processing Type 1 ("wedge-shaped" edge), while fewer were of Type 2 ("pointed" edge) and 3 ("rounded" edge). The sampling of structural wood in this specific area was rather limited, thus only five posts were collected. They all belonged to conifers' trees, of which four bear more than 40 annual growth rings.

One last noticeable attribute of eight of Fence’s 1 trees’ stems were the protruding branches that were intentionally left uncleaned after their felling **(Fig. 131 b, c)**. The already discussed possible use of the branches as a mean to prevent the posts from further sinking should not be excluded. However, these posts were located in both posts’ rows and the protruding branches were facing the internal front of the structure. It should be also reminded that most of these posts were leaning towards the fences’ inner space. Though it is quite difficult to draw any secure conclusion, it could be assumed that this arrangement, possibly combined with horizontal elements attached on the posts’ branches, aimed to create a concrete barrier at this specific peripheral zone of the habitation. Yet, the limited extent and fragmentary form of Fence 1 pose more interpretative questions concerning its function to be discussed.

Dating: Two posts selected from Fence 1 - one from each posts' row - provided the ^{14}C dates according to which the structure was probably established at the late-53rd century BC or slightly later, namely during the Late Neolithic I period. Moreover, the almost absolute coinciding of the two measurements could be considered as a plausible verification of the structural unity of this double posts' row.

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC	%
BE-8119.1.1	ANARG_IXb_S59	Post 11824	6121	22	41	1-20	5208-4984	95.4
BE-8091.1.1	ANARG_IXb_S58	Post 11831	6145	23	40	1-30	5209-5014	95.4



2.3.2.2 Fence 2

Trenches	886 c, 907, 908 a, 928 a
Elevations' zone	592,02-593,10m a. s. l.
Structural elements	110
Structural wood categories	VP: 110
Treatment	Discarded: 106, remained into a layer: 4

General description: The unified area of four trenches in the Southeast Sector of the excavation, as well as the recorded data referring to the wooden elements unearthed led to the recognition of an approx. 16,5m-long posts' alignment, which was characterized as Fence 2 **(Fig. 132, 133)**. The feature was running from southeast-northwest, in an area which - according to the general excavation context - seems to constitute the peripheral zone of the Neolithic habitation.

The structure comprised a single posts' row that was detected in trench 907 c and continued towards northeast in a length of approx. 10m. In trenches 908 a and 886 c the density and arrangement of the posts is differentiated by the discovery of two double posts' rows running in parallel to each other in a length of approx. 4,5m. The posts were placed every 0,5-0,7m. and the free space created between the two alignments was approx. 1m wide. Focusing on the eastern one of these two rows, an interesting setting of different wooden elements is to be observed. Namely, in the northern baulk of trench 908 a at least three vertical posts bearing protruding branches seem to be connected structurally by several rows of thin twigs and smaller branches, which possibly formed a wattle **(Fig. 134 a, b)**. This particular combination of vertical posts with horizontal elements would probably be a rather common building technique, yet its discovery even in such a fragmentary state at the specific spot of Fence 2 is of some importance for the reconstruction of the feature's possible form.

The structural continuation of Fence 2 towards the northeast cannot be clearly documented since the vertical posts are missing and a quite confusing concentration of horizontally deposited wooden elements of various size and characteristics was discovered. It could be noted that the general layout of the structure, as well as the density and the arrangement of the posts at this specific area, resemble features that are usually characterized as "palisades" that enclose the habitations, sometimes as being parts of a complex enclosing works' system.

One interesting posts' arrangement which was not at a glance connected to the alignment of Fence 2, could be observed in its southeastern excavated part, some 2m to the east of the spot where Trackway 2 most probably intersects Fence 2. Namely, four trees' stems bearing protruding branches form a short row running southeast-northwest, which together with another four or five posts running south-north seem to create some rectangular feature - named Feature 6 - with approximate dimensions 2,3x2,6m. The arrangement of these posts shows that the feature was probably constructed close - if not attached - to Fence 2. The location of this feature within the general excavational context at this particular excavated area, where the presence of at least two different wooden structures is attested will be discussed in the following chapters.

The wider excavation context documented mainly in trench 886 is characterized by the presence of numerous elements attributed to all the recorded categories of Anarghiri IXb structural wood assemblage. The density of their deposition is by far higher than the mean density of wooden elements documented all over the excavated area of the settlement. The stratigraphic distribution, as well as their spatial arrangement, do not allow any secure correlation to Fence 2, especially regarding their exact position and structural role. Nevertheless, it could be proposed that, the obvious concentration of structural wood at this specific area in proximity to the vertical posts that were aligned to form Fence 2 could not be considered as totally accidental. One possible interpretation of this complex excavational situation regarding the wooden elements could be the destruction of some part of Fence 2 and the uncontrolled deposition of the structural wood in this area. If this is the case, there is no feasible way - according to the so far available excavational information - to conclude whether this possible destruction was deliberate or not.

However, given the fact that the lowest excavation layers representing the earliest habitation's phase of Late Neolithic I period were probably influenced in some degree by water - even during the occupation's period - the aforementioned excavational context could be regarded as the result of depositional or post-depositional processes. This assumption is highly probable since there are several examples from excavated wetlands where concentrations of wooden elements without any particular structural unity and sequence are often unearthed. One similar context recently documented is that of the horizontally deposited elements at the Zürich Parkhaus-Opéra 1 habitation, which were discovered as two distinguishable concentrations attached to the settlement's palisades (Bleicher and Harb 2015, 51).

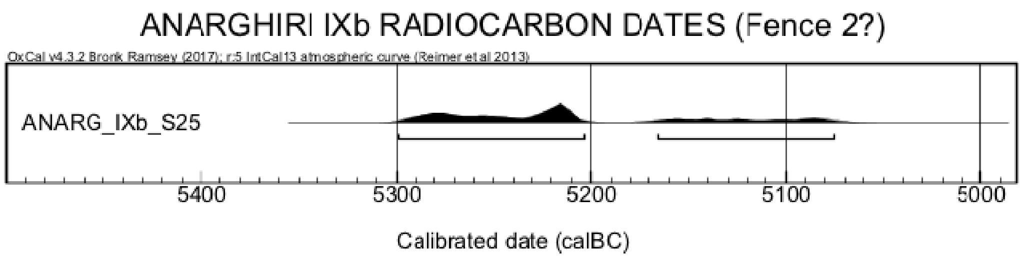
Structural wood: Of 110 posts attributed to Fence 2, 75 were unearthed mainly within the elevations' zone of 592,61-592,91m a. s. l. The examination of the excavational records, as well of the digital photos demonstrated that this elevations' zone at the specific part of the excavated area should be close to the natural soil, thus the posts' lower ends would most probably have reached the marshy ground.

Being investigated during the first rescue excavational campaigns, the total of the vertical elements was extracted from the deposits; yet, none of them was sampled after its final documentation **(Fig. 134 c)**. Most of the trees' stems exploited for the construction of Fence 2 were usually 61 - 80cm long, while there is also a recordable group of smaller stems measuring 31-50cm. Their diameter ranged from 7-10cm, while the recorded information regarding their cross-section point to the almost exclusive use of roundwood. However, information about the processing techniques of the posts' lower end is practically nonexistent, a fact that also poses some reservations about the accuracy of the aforementioned recordings.

Dating: As already mentioned, no wooden elements attributed to Fence 2 were sampled, therefore no direct ^{14}C dates of the posts' alignment are available.

The spatially, as well as stratigraphically closest evidence for the dating of the structure is one measured charcoal originated from trench 908 c. It was collected from an excavational unit located 4m to the east of Fence 2, which contained Late Neolithic I fine black burnished pottery, tools, wooden elements etc. The measurement points to a date of this context at the early-53rd century BC. Nevertheless, considering the general depositional and post-depositional factors influencing the layers' formation processes at the peripheral zone of the habitation, this dating should be cautiously discussed.

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Calibrated Date BC	%
BE-8079.1.1	ANARG_IXb_S25	Charcoal	6230	23	5299-5076	95.4



2.3.2.3 Fence 3

Trenches	833 d, 834 a, c, 857 d, 858 b, c, 881 b
Elevations' zone	592,79-593,35m a. s. l
Structural elements	66
Structural wood categories	VP: 57, PH-P: 6, PH: 2, HW: 1
Treatment	Discarded: 36, remained into a layer: 17, sampled and remained into a layer: 8, sampled and discarded: 5

General description: This single-row post alignment in the Southern Sector of the settlement was unearthed in an overall length of approx. 29,7m directed from southeast-northwest **(Fig. 135-137)**. The excavation in this specific area within the boundaries of the grid's 4x4m trenches resulted in the discontinuous exposure of the feature; moreover, its complete form and initial direction in the settlement's general layout also remain unknown due to the cease of the excavation at this sector before the completion of the investigation of the lowest layers.

According to the excavation's records, the feature's structural elements were not driven into the natural soil of the site, but within earlier anthropogenic layers, that were not investigated. Furthermore, an elongated discolouration in square 834 c discovered in a layer superimposed approx. 20cm above the posts' first excavational appearance could be interpreted as the remains of a foundation ditch, in which the posts were installed. Still, there are no comparable indications in the excavation records of the neighbouring trenches, thus the assumption regarding the existence of a foundation ditch remains hypothetical **(Fig. 136 b, c)**.

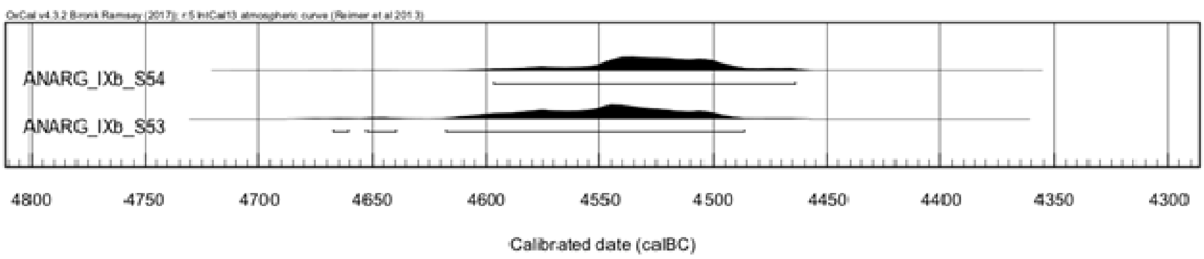
Structural wood: 66 structural elements are attributed to Fence 3, of which 49 were discovered in the elevations' zone of 593,01-593,11m a. s. l. The fact that at specific spots of the feature only the post-holes of the vertical elements were preserved could be interpreted either in terms of structural interventions made by the Neolithic builders (e.g. removal of posts) for reasons archaeologically difficult detectable or in terms of depositional or post-depositional factors that could affect the preservation of these specific vertical posts.

Regarding their physical attributes, the tree stems exploited for the construction of Fence 3 have an average length of 21-40cm and their diameter usually ranges from 7-10cm. Although 59 posts were extracted out of the archaeological deposits, only 13 were sampled, since - according to the excavation's records - most of them were poorly preserved. The microscopic examination of the samples led to the recognition of 10 oak trees' stems bearing from 22 up to 41 annual growth rings, while 3 stems derived from rather young conifers (12-19 annual growth rings). Most of these stems were roundwood (59 of 66), except for 7 splits. The information regarding the processing of their lower end is scarce, namely referring to two processed posts of Type 1 ("wedge-shaped" edge), two of Type 2 ("pointed end" edge) and one of Type 3 ("rounded end" edge).

Dating: The vertical posts selected for ^{14}C dating from Fence 3 yielded two noticeably different results in respect to its possible establishment and use. According to the earliest of these, the structure is to be dated in mid-47th century BC, while the second one points to a later date in early-46th century BC. The fact that these two measurements show such a deviation could be the result of various factors that cannot be evaluated within the framework of the present study. However, there is always the possibility that these dates actually demonstrate two separate structural phases of the fence, an assumption that necessitates further investigation. In any case, the structure could be in general integrated into a period that is not clearly characterized as Late Neolithic II or Final Neolithic, since the chronological framework discussed for Greek Neolithic is for now not in a definite and more precise way established.

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC	%
BE-8118.1.1	ANARG_IXb_S54	Post 5061	5702	22	37	1-37	4597-4464	95.4
BE-8126.1.1	ANARG_IXb_S53	Post 6178	5716	22	22	1-22	4668-4487	95.4

ANARGHIRI IXb RADIOCARBON DATES (Fence 3)



2.3.2.4 Fence 4

Trenches	535 d, 536 c, 574 b, 575 a
Elevations' zone	592,75-593,5m a. s. l.
Structural elements	37
Structural wood categories	VP: 37
Treatment	Remained into a layer: 22, discarded: 9, sampled and discarded: 4, sampled and remained into a layer: 2

General description: The single posts' row characterized as Fence 4 was established at the northern part of the Neolithic habitation, in an area where various evidence related to the construction and organization of space were discovered **(Fig. 138, 139)**. The vertical posts attributed to the feature draw an almost straight line measuring approx. 19,30m directed from northwest-east/southeast. The posts unearthed in trenches 535 d and 536 c associated with the feature were surrounded by other vertical structural elements, which cannot be securely correlated stratigraphically or chronologically with Fence 4. The spatial distribution of structural wood, as well as the general excavation context in trenches 574 b and 575 a are different since the elongated posts' alignment appears to be one single structural intervention in the specific stratigraphic horizon of this area. Its initial form, size and course cannot be described with precision, since the excavation did not uncover the correlated layers in the neighbouring trenches to the southeast.

Examining the surrounding excavation context and plans of the two above-mentioned trenches, it could be supported that the establishment of Fence 4 resulted in the creation of at least one distinguishable "open space" to the southwest, whose width ranges between 4,30-4,60m. This assumption is reinforced by the presence of a second single posts' row, which was characterized as Fence 5, in a distance of 4,5 m to the southwest. As will be discussed below, it is quite possible that these two structures were playing some specific role in the habitation's spatial organization at this peripheral zone.

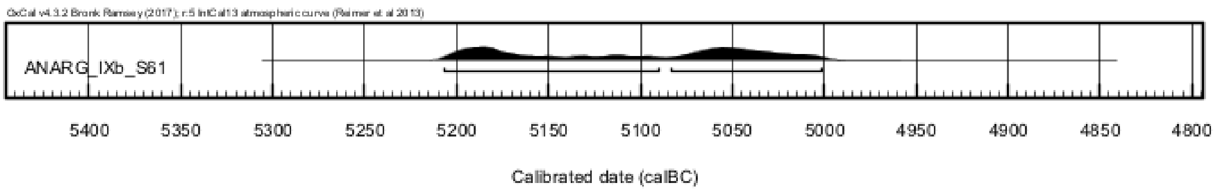
Structural wood: Of the 37 vertical posts attributed to Fence 4, 25 were discovered in the elevations' zone of 592,21-592,50m a. s. l., while most of them remained in the excavation layers.

Therefore, the information regarding their length, diameter and processing techniques refer only to their exposed part. Accordingly, the stems (25 of them belonging to roundwood and only 3 to splits) were 11-40cm long with a diameter ranging from 7-10cm. Moreover, only six posts were sampled and examined microscopically, of which 4 are oaks bearing 17-63 annual growth rings and 2 conifers with 9 and 13 annual growth rings respectively.

Dating: One single ^{14}C measurement deriving from the feature points to a possible dating of its establishment at the late-53rd century BC, namely within the Late Neolithic I period.

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC	%
BE-8087.1.1	ANARG_IXb_S61	Post 10887	6138	22	17	1-17	5208-5002	95.4

ANARGHIRI IXb RADIOCARBON DATES (Fence 4)



2.3.2.5 Fence 5

Trenches	535 d, 574 a, b, d, 575 c
Elevations' zone	592,80-593,9m a. s. l.
Structural elements	44
Structural wood categories	PH-P: 18 VP: 15, PH: 11
Treatment	Remained into a layer: 34, sampled and discarded: 5, discarded: 4, sampled and remained into a layer: 1

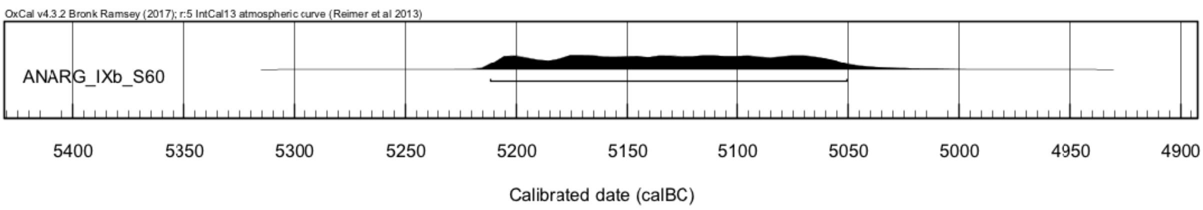
General description: The feature is located at the Northern Sector of the excavated area, running for approx. 24,9m from northwest-southeast **(Fig. 138 and 140)**. The broader excavation context combined with the presence of Fence 4 in approx. 4,5m to the northeast forms one specific spatial arrangement, characterized by two elongated and almost parallel posts' alignments and an intermediate open space. The discovery of the feature in trench 574 a could be considered as special in terms of its stratigraphic correlation with the superimposed layers. The feature was initially recognized as a narrow ditch nearly 60cm deep with a number of post-holes on the remains of later architectural activities at the specific habitation area of the occupation **(Fig. 140 b, c)**. The vertical posts were revealed in a depth of 1,60-1,70m above ground level at the lower end of the post-holes. It is worth mentioning that in the neighbouring trench 574 b only the post-holes of the vertical elements of the structure were preserved. A plausible explanation for this different excavational setting of an obviously uniform architectural feature cannot be easily reached. One possible assumption regarding the absence of the vertical posts could be their deliberate removal by the settlement's inhabitants during some later activity related to rebuilding and re-organization of space on the periphery of the habitation's area.

Structural wood: Fence's 5 structural parts consisted exclusively of vertical elements which were preserved as post-holes, post-holes with posts in their lower end or preserved wooden posts. The fact that their majority (35 of 44) were not extracted from the deposits should be taken into consideration for the evaluation of the available data regarding their physical and technical attributes. Thus, the recorded length varies from 11-50cm and their diameter from 9-12cm, while the information that nearly all stems (43 of 44) were characterized as roundwood should be cautiously mentioned. Four posts were sampled, all of them deriving from oak stems that bear 17-25 annual growth rings.

Dating: One single post from Fence 5 was dated in the late-53rd century BC. This measurement is absolutely comparable to the single dated post from Fence 4, both pointing to a synchronous establishment during the Late Neolithic I period.

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC	%
BE-8123.1.1	ANARG_IXb_S60	Post 10950	6169	22	20	1-20	5212-5051	95.4

ANARGHIRI IXb RADIOCARBON DATES (Fence 5)



2.3.2.6 Fence 6(?)

Trenches	960 c
Elevations' zone	592,55-593,04m a. s. l.
Structural elements	28
Structural wood categories	VP: 26, HW: 2
Treatment	Discarded: 28

General description: The single posts' row unearthed in trench 960c in a length of 5,90m running from southwest-northeast was characterized as Fence 6(?) due to the arrangement of its vertical structural parts, its location at the edge of the settlement's main habitation zone, as well as due to its general orientation and setting that seem to be comparable to the rest of the enclosing structures of the Neolithic habitation **(Fig. 141).** According to the excavational records, it is probable that the northeastern part of the alignment intersects with the structural elements of Trackway 3; yet, the density of the posts and their spatial arrangement do not permit any definite association between the two features.

Since the excavation in this area was not extended and the exposure of the feature was limited to some meters, it is difficult to reconstruct its general direction or plan within the settlement's general layout. Although the first vertical posts of Fence 2 were located in a distance of approx. 31 m from the northwestern excavated end of Fence 6(?), the possibility that the two posts-rows are structural parts of the same architectural entity is existent, but it cannot be securely documented.

Structural wood: All wooden elements attributed to Fence 6(?) mainly found in the elevation's zone 592,71-592,90m a. s. l. were discarded without been sampled. According to the available information, most of the posts were roundwood 61-80cm long, with a diameter ranging from 5-8cm.

Dating: Since there is no dated sample from the structure, no secure estimation for its dating can be made. However, one possible supposition could correlate Fence 6(?) to the adjacent Trackway 3 based in their stratigraphic and spatial interpolation (early-50th century BC) or even the later Trackway 3a(?) (late-49th century BC).

2.3.2.7 Fence 7(?)

Trenches	752 b
Elevations' zone	592,9-593,14m a. s. l.
Structural elements	13
Structural wood categories	VP: 13
Treatment	Discarded: 13

General description: This linear posts' alignment was exposed in a length of approx. 4,70m. The fact that its structural parts were discovered only in trench 752 b, with no indications for continuation to the adjacent trenches in the excavational record, makes the interpretation of the structure questionable **(Fig. 142)**. Nevertheless, despite its fragmentary preservation and elliptical layout, the feature was characterized as Fence 7(?) due to its structural resemblance to the rest of the linear alignments at the periphery of the habitation.

Structural wood: Of 13 vertical posts attributed to Fence 7(?) and found in the elevation's zone 592,9-593,14m a. s. l. none was sampled or extracted from the archaeological deposit, thus the evidence regarding their metrical characteristics remain fragmented. Therefore, their recorded length ranging from 21-30cm and their diameter from 7-10cm should be considered only as indicative for the actual size of the stems used.

Dating: There is no direct and secure evidence to date the structure. According to the existing excavational data, the posts were driven into anthropogenic layers containing Neolithic material of all categories. Moreover, its distance from the rest of the posts' alignments characterized as fences does not permit any correlation with some of them. Subsequently, it could be proposed that the structure was probably established during one of the successive Neolithic habitation's phases documented in the excavated area of Anarghiri IXb.

2.3.2.8 Fence 8(?)

Trenches	881 d
Elevations' zone	592,96-593,43m a. s. l.
Structural elements	16
Structural wood categories	VP: 15, HW: 1
Treatment	Sampled and remained into a layer: 13, remained into a layer: 2, sampled and discarded: 1

General description: Although this alignment is one of the shortest discovered in the excavation of Anarghiri IXb (approx. length 3,80m), the relatively regular arrangement of its vertical structural parts and its direction almost in parallel to Fence 3 led to its characterization as Fence 8(?) **(Fig. 143, 144)**. The examination of the distribution of structural wood unearthed at the neighbouring trenches did not provide any clear evidence for the continuation of the feature towards northeast or southwest, thus its form remains incomplete in terms of architectural planning. This particular setting was also recognized in the aforementioned case of Fence 7(?) with more or less similar excavational characteristics, thus this twice observable situation could be of some importance in terms of spatial organization.

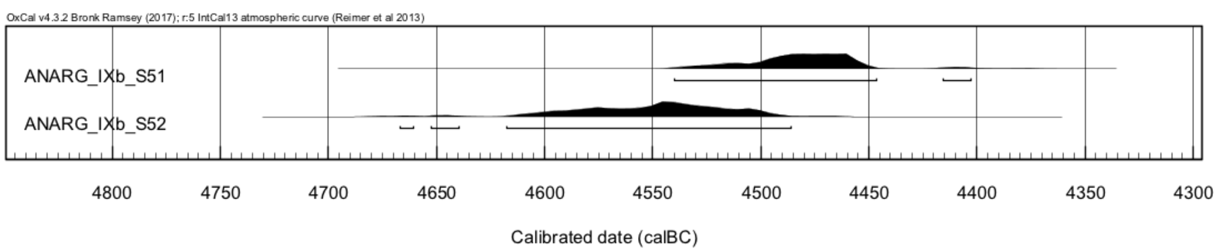
Structural wood: Despite the limited number of wooden elements attributed to the structure (15 posts and 1 horizontal wood), there are some characteristics of the trees' stems exploited that seldom appear in the structural wood assemblage of Anarghiri IXb. More specifically, 11 of 15 vertical oak trees' stems that were driven into anthropogenic deposits were processed at their upper part in such a way that a curved surface was created **(Fig. 145)**. This is a well-documented technique, detected in most of the Neolithic wetlands with good conditions of preservation of structural wood. The most obvious aim for such technical processing of these posts would be the creation of a suitable surface for the installation and joining of horizontal elements for building a more complex structure. Although the excavation was continued for some 70cm below the level of the first appearance of the posts' upper part, there are no recordings in the documentation's database regarding the existence of horizontal elements. Even if the lack of this kind of elements is a common excavational situation in Anarghiri IXb, their initial presence and role to the construction of Fence 8(?) should not be excluded.

The fact that the investigation of trench 881 d was not completed and almost none of the posts was extracted from the excavational layers do not permit definite observations regarding the physical and technical characteristics of the stems exploited for the construction of Fence 8(?). The exposed length of the posts - discovered within the elevations' zone of 593,21-593,40m a. s. l. - ranged from 11-40cm, while their diameter ranged from 9-14cm. Of 14 sampled stems, 13 were identified as oaks bearing 21-51 annual growth rings and one stem was identified as conifer tree with 20 annual growth rings.

Dating: As in the case of the neighbouring Fence 3, the measurements derived from two posts attributed to Fence 8(?) show two possible different time-spans in respect of the structure's establishment and use. The earlier measurement - coinciding absolutely with the one from Fence 3 - points to a possible date at the mid-47th century BC, while the second sample indicates some possibly later intervention at the mid-46th century BC. These dates could be considered as indicative for the existence of some building activities during the end of Late Neolithic II and the beginning of Final Neolithic, a period that at any rate is controversial in terms of precise definition in Greek Neolithic chronological schemes.

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC	%
BE-8112.1.1	ANARG_IXb_S51	Post 4102	5647	22	42	1-40	4541-4404	95.4
BE-8109.1.1	ANARG_IXb_S52	Post 4111	5716	22	51	1-20	4668-4487	95.4

ANARGHIRI IXb RADIOCARBON DATES (Fence 8?)



PART 3

SYNTHESIS

3. 1 Accessing and enclosing structures

The analytical presentation of Anarghiri IXb wood assemblage and the available information regarding the basic attributes of the wooden structures discovered on the periphery of the habitation constituted the essential step in order to draw an overall view of the material under study.

In the following third part of this work the synthetic approach is focused on the accessing and enclosing structures to specify - if possible - their form, their integration into the excavational context, as well as their possible stratigraphic, chronological and spatial correlation. The interpretative discussion is an attempt to match all these attributes with the possible functions proposed for similar structures and complexes found on the perimeter of European prehistoric wetlands. This approach leads to some working hypotheses regarding the diachronic development of the settlement's peripheral zone spatial organization. The integration of Anarghiri IXb into the regional context of northern Greek Neolithic settlements that bear similar characteristics, as well as the comparative discussion referring to the investigated neighbouring wetlands constitute the concluding remarks of the present study.

Taking into consideration that the findings under discussion are exceptional cases of preserved wooden structures discovered in a southern Balkans' wetland, the presentation of some comparable examples from prehistoric Europe will form the necessary framework for further discussion.

3.1.1 Accessing and enclosing structures in prehistoric wetlands

Examining the general geographical dispersion of the existing information regarding the spatial organization of the prehistoric wetlands' peripheral zones - where accessing and enclosing structures were established - it could be stressed there are certain regions where the relevant results are distinctive. This situation seems to be the outcome of several more or less interconnected reasons, such as research history or intensity and special geophysical/hydrological settings (bogs, peats, lacustrine environments). It is also expectable that within specific chronological and cultural frameworks, several differentiated socioeconomic developments and needs should have impacted the wetlands' general layouts. And it is almost self-evident that one decisive factor that led the prehistoric communities to specific planning and structural choices regarding the construction and organization of space would be their pivotal decision to dwell and operate in proximity to water.

Taking into consideration the findings from Anarghiri IXb analyzed in the previous study's sections, it becomes necessary to look closer into some examples of accessing and enclosing structures discovered in prehistoric wetlands. To make this review meaningful, segregation of representative cases among numerous excavational parallels across Europe will be made using specific criteria that will facilitate a comparative discussion with Anarghiri IXb assemblage. Accordingly, the cross-reference examples presented below are chosen by:

a. The closest possible chronological association to Anarghiri IXb structures, considering of course the recordable differences between their variable prehistoric cultural environments.

b. Possible similarities with respect to the general layout.

c. Comparable context(s) in terms of elements' preservation, depositional and/or post-depositional conditions, excavational and documentation processes implemented, resulting in varying methodological and interpretative approaches.

British Islands

Despite its small size, Ireland appears to be an exceptional case regarding the study of wooden structures related to wetlands' accessing or crossing, since it is claimed that the recorded trackways in the island are more than those discovered in total in the rest of Europe (Brunning and McDermott 2013, 360). This could be easily explained due to the relatively high coverage of the island's surface by raised bogs, which were intensively exploited as the main source of turf, a fact that has led even from the 19th century to the recording of wooden trackways, whose planned investigation was realized in the framework of various systematic or rescue excavations projects mainly from the 1980s.

The structures discovered and documented in these last decades cover a relative wide chronological range - the earliest ones dating in the mid-3rd mil. BC - and are manufactured with the implementation of different techniques, developed from the simplest placement of brushwood, branches or twigs on the marshy ground along several hundreds of meters to more complex installations combining well-processed planks, boards and split timbers as horizontal elements joined with vertical posts with the use of various methods (Raftery 1992).

One indicative example in respect of its structural form, being at the same time one of the oldest discovered in Ireland is the Late Neolithic trackway (2850-2500 cal BC) in **Cloonbony, Co. Longford**, exposed in a length of approx. 800m with an estimated original size of about 1km **(Fig. 146)**. The upper surface was made of a double layer of transversely laid alder roundwood stems forming a usable 2m-wide path, while bellow these a layer of wood chips and sand nearly 10cm thick was installed as the track's substructure in order to create an as much as possible dry walking surface. One distinct structural characteristic is the presence of two rows of birch and hazel vertical posts that provided lateral support to the trackway's substructure. According to the stratigraphic context, these vertical elements would not exceed the trackway's upper parts and they may be initially remained driven into the marshy ground. Their excavational picture - as protruding from the horizontal wood - and their state of preservation was explained to have resulted by the impact of post-depositional factors. The supposed arrangement of trackway's different wooden parts probably indicates a structure established on muddy soil, still providing a relative dry walking surface 10-15cm above the bog's level. In respect to its possible function, the width of the trackway could permit even the use of wheeled vehicles. But since there is no such evidence in Ireland during this period, the trackway was most probably used as a footpath (Casparie and Moloney 1992, 69-88; Casparie and Moloney 1994, 61; Raftery 1992, 52, Fig. 3).

In England and Wales, some of the most well-investigated European wetlands are found, especially in respect of accessing and crossing wooden structures excavated and documented. In his overview of the data referring to structural wood exploited for the establishment of this kind of features, Brunning (2007, 188-230) summarizes the available information regarding the integration of 173 documented trackways to the general chronological framework of the region, as well as their geographical distribution in England and Wales. Accordingly, the majority of the structures are of Bronze Age date (86), a relatively big group are of Neolithic date (42), while there is a considerable concentration of features in the peatlands of Somerset, where the Somerset Levels Project was realized for a 15-years long period. Regarding the function of the wooden trackways, some general assumptions are proposed in an attempt to move beyond the obvious interpretation of these structures as a means of communication in wet environments. In this direction, it is stated that some of the features could be used as paleochannel crossings, to provide access to coastal and riverine areas, to join dryland(s) with wetland(s) or to lead to special structures such as platforms used for ritual purposes.

In order to systemize his observations regarding the structural characteristics of prehistoric trackways Brunning distinguishes 14 different types according to the materials used and the construction methods implemented. Namely, these types refer to: brushwood tracks, pegged brushwood tracks, brushwood and timber tracks, hurdle tracks, single hurdles, single and double post rows, brushwood in "V" shaped stake cradle, brushwood in timber cradle, longitudinal log tracks, corduroy tracks, raised plank walkways, narrow plank tracks, wide plank tracks, oak piles and horizontal timbers and brushwood. Furthermore, two more types that combine wood with other materials (wood and stone causeways, wood and gravel tracks) are documented, as well as a few Bronze or Iron Age structures characterized as bridges and jetties (Brunning 2007, 189-266).

From the above-mentioned categorizations, the most interesting remarks that could be useful for the evaluation and interpretation of Anarghiri IXb findings refer to trackways characterized by the presence of double rows of vertical posts (Brunning's Type 6). It is worth mentioning that this type is not distinguished by some extraordinary building technique that would differentiate the structures from the rest of the observable trackways' categories. Thus, the excavational presence exclusively of the vertical retaining posts or pegs that supported the upper parts of the structures is explained either by lack of completely investigated archaeological deposits or by the erosion of the horizontal elements. Subsequently, elongated single or double posts' alignments of roundwood or splits placed in more or less ordinary distances in transversal or longitudinal axis are possibly the remains of more complex structures, that could be distributed within a wide chronological range. It is also stressed that in some cases, the vertical elements - especially those with smaller diameter and length - were used not for bearing the weight of heavy, raised trackways' superstructures, but for pinning the horizontal elements more effectively to the bog (Godwin 1960, 25-26).

The variety - in terms of dating, form, layout, raw materials and environmental context - of trackways and similar architectural units discovered in England and Wales formulate an advantageous data-set for the processing of several interpretative approaches regarding the function of these structures within specific sociocultural contexts. For example, Coles and Coles (1992, 42-43) - excavators of some of the most representative structures of Somerset - commenting the spatiotemporal development of the trackways starting from the earliest and well-known **Sweet Track** up to the Early Iron Age structures, they propose to go beyond the dominant and almost self-evident explanations, pointing to different research topics such as the exploitation of local woodland recourses, human labour around the bog to transport and construct the trackways etc. Taking into consideration the significance of all these variable tasks for the prehistoric communities in economic and social level, the authors arguably state that "…Unlike a posthole, or a stone axe, or a burial, trackways demonstrate dynamism, movement and change" (Coles and Coles 1992, 43).

Some even more alternative propositions regarding the possible function(s) of these accessing-to or crossing-of Somerset's wetlands structures derive from general theoretical views related to the role that especially Early Neolithic trackways played in the development of the local communities in the level of ideology. These approaches attempt to emphasize the dynamic impact of these features as means of transformation of specific places through the perception of cosmological beliefs about water/land or culture/nature by the local Neolithic people in the same sense of Hodder's domus/agrios opposition. Therefore, walking over Sweet Track - a place of thought and contemplation, a "corridor" into the natural world - could be considered as a special sensorial experience for the Neolithic inhabitants or Somerset's wetlands (Bond 2004, 41-42; 2006, 232-234).

These propositions are supposed to be reinforced by the discovery of certain artefacts' assemblages (pottery, animal bones, stone axes etc.) found in close proximity to some of the trackways which can be stratigraphically as well as chronologically correlated. Recent studies claim that in many cases their presence could not be considered as accidental, but on the contrary it was resulted by intentional and structured deposition in the framework of ritual or symbolic performances in certain occasions (Bond 2006, 232). A jadeite axe imported from the Alpine region found in Sweet Track (Coles et al. 1973, 1974; Sheridan et al. 2011, 414) and a controversial wooden curved artefact characterized as "God-dolly" found between the Neolithic tracks Bell A and B in Somerset Levels (Coles 1968, 1975) are considered as some of the most representative finds related to the special function of the trackways.

One last, but equally interesting aspect regarding the construction and use of accessing and crossing wooden structures derive from the study of a similarly significant cluster of prehistoric features in **East Anglian Fenland**. Examining the structural characteristics and the environmental context of some Bronze Age wooden trackways and other corresponding structures - except from the conventional classification in seven different types - Malim (2015) proposes an approach of the trackways' construction processes viewed through a modern perspective, namely in terms of a project's management strategy, which followed certain principles: concept, planning and design, financing, resourcing (raw materials and skilled workers, organizing transport), construction and operation (use and maintenance). The adoption, as well as practical application, of these principles required organized decision making, planning and effective coordination of successive tasks realized by skilled builders, familiarized with wood felling, woodworking, knowledge of stress points and load-bearing points, joining methods, the durability of materials etc. (Malim 2015, 147-148). Of course, it is self-evident that the methodological credibility of this generally interesting approach must be cautiously examined since its application for the study of prehistoric constructions should at least be contextualized and modified according to the specific sociocultural framework of the structure(s) under study.

The Netherlands

Since there are some relative extended areas in the northeastern part of the country covered by raised bogs, the discovery of wooden trackways is more or less expected, although their estimated number (about 40) is rather small compared to the size of the region's wetlands. Some scattered information and fragmentary research are to be found since the 19th century, still their systematic recording, excavation and publication began in the 1960s, mainly by the work of the biologist W. Casparie, who was initially interested in the documentation of the bogs' natural environment and hydrology (Brunning and McDermott 2013, 363; Casparie 1987).

In his overview of the wooden trackways found in the bogs of Netherlands Casparie (1987) summarizes the available information regarding their chronological distribution - a limited number of them dating back to the 3rd mil. BC - and their general structural attributes. It is worth mentioning that according to the author, the relatively small number of trackways discovered in Dutch bogs might be explained by the uncontrollable peat-digging operations that probably destroyed the archaeological remains without any recording. Concerning the function of these structures, it is claimed that many covered only short distances in the bog. Thus, they could not have been part of a wider communication system, but they could be used for accessing specific areas with exploitable raw materials.

The Neolithic **Trackway XXI (Bourtanger Moor)** in the raised bog at Nieuw-Dordrecht constitutes one useful example in respect of its structural characteristics, but mostly due to its excavational picture and context that allow some interesting assumptions to be made **(Fig. 147)**. The trackway's first ^{14}C dates indicated its establishment and use between 2150-2070 BC (Casparie 1982, 142), but the calibration of these measurements documented an earlier dating between 2880-2470 cal BC. Regarding the materials exploited and the methods implemented for its construction, the available data show that the surface of the trackway constituted of transversely laid roundwood and splits of alder, birch, oak and lime trees' stems, while no substructure of woodchips, twigs etc. was documented, as well as no retaining side vertical pegs. With an overall width of approx. 2,70m and an estimated original length of about 1km, it was stressed that the structure would have been suitable for wheeled traffic, an assumption that is enforced by the discovery of a partially preserved oaken disc-wheel close to the starting point of the trackway (Casparie 1982, 128; Casparie and Moloney 1994, 60-61). The discussion about the possible function(s) of the trackway becomes even more interesting, since the structure's ending-point was not found, a fact that makes quite probable the assumption that the trackway was not built as a crossing to the opposite side of the bog. One interpretation about the incomplete form of the trackway discussed by the excavator is that the structure might have been used for accessing an iron-ore in the bog, since iron was used as colouring agent by the Neolithic inhabitants of the neighbouring regions. It is also proposed that the trackway was actually never finished and remained an unsuccessful work because of its builders' miscalculations or bad planning. Moreover, the possibility that two wooden hafts found under the trackway's surface were buried there intentionally is also mentioned, but this fact is not considered by the excavator as concrete evidence for a ritual function of the structure since the two objects could have been mislaid there during the feature's construction. Still, Casparie stresses that (1982, 154). "…nevertheless, the curious mode of construction - a wide trackway for wheeled traffic, that certainly did not lead to any other inhabited area - can be viewed as a possible indication of a non-functional, ritual purpose of the trackway".

Northwestern Germany

This region - and more specifically Lower Saxony - constitutes one extraordinary case for European wetland archaeology regarding the research of trackways due to various reasons.

Firstly, 10% of this area was covered by peatlands until the late 18th century, an environmental setting that justifiably favored the substantial preservation of a great number of trackways, of which about 350 were investigated since the earliest years of prehistoric research (Brunning and McDermott 2013, 363; Heumüller 2016, 452).

After the Second World War, a team of experts deriving from the Staatliches Museum für Naturkunde und Vorgeschichte in Oldenburg realized an extended research project aiming to the documentation of the already known structures, as well as the investigation of several new findings in the broader region of northwestern Germany. Leading figure of this pioneering endeavor was H. Hayen, who conducted several excavations and in his *"Zur Bautechnik und Typologie der vorgeschichtlichen, frügeschichtilchen und mittelalterlichen hölzernen Moorwege und Moorstraßen"* (1957) - a paper regarded as a landmark for the research related to European wooden trackways - made a holistic overview of the topics related to these specific architectural constructions **(Fig. 148)**.

Hayen's approach begins from the fundamental element of these structures i.e. wood and its various forms (branches, twigs, posts, planks/boards and woodchips/waste) used as basic or complementary structural material, with some detailed remarks on various processing, splitting and perforating techniques (Hayen 1957, 89-100). In the next quite informative section, the author organizes his observations regarding the general building techniques of wooden trackways distinguishing their basic structural parts: substructure, surface and coating (ibid., 104-123). He states that in any case, the immediate environmental conditions and the physical properties of the trackways' surrounding ground - mostly marshy and wet - impose the adoption of specific technical solutions for their construction, insulation against humidity, stabilization, accessibility etc. Accordingly, there can be several methods for the placement of trackways' horizontal elements (transversely or longitudinally in respect of their main axis), as well as for their joining with vertical posts of various types and sizes that were used in some cases as supporting and retaining elements or as the main load-bearing parts of raised structures. These observations are followed by interesting remarks regarding the factors that could have a significant impact to the general condition of the wooden structures - mainly of their horizontal structural parts - the state of preservation and consequently to their depositional/excavational picture (ibid., 123-137). These factors could affect the features before, during and after their construction, use or/and abandonment and are related to their exposure to environmental conditions, human interventions, water fluctuations, fire etc.

Hayen also proceeds to a short evaluation of the wood species exploited as a raw material in terms of durability, flexibility, processing and load-bearing capacity, concluding that oak and yew are the most suitable trees for this type of structures, while other species such as pine, birch and alder are less usable. A special reference is made by Hayen to the use and function of vertical elements of various types, wood species, diameter and processing techniques and their structural role in the trackways' final form. The variable attributes of these elements are presented in correlation to the different methods of joining with the horizontal parts of the substructure or the surface of the trackways and their possible depositional conditions after the destruction and/or abandonment of the features (ibid., 127-159).

Probably the most interesting contribution of Hayen's work is the attempt to systemize the whole set of his observations by building a typological classification of the trackways discovered in northwestern Germany's bogs (ibid., 159-181). Before making his propositions, the author refers to comparable approaches commenting the terminology used by earlier researchers to describe and categorize these structures, which were named on a case-by-case basis after their structural characteristics (e.g. brushwood, plank, timber, hurdle, corduroy tracks etc.), their possible use (trackway, pathway, street, bridge, dam etc.) or even their presumed dating (pre-Roman, Roman, Medieval etc.). Hayen chooses to build the final classification accepting as the distinctive criterium the basic structural attributes of the features' surface, i.e structures comprised planks/boards, those comprised various kinds of timbers and trackways with no particular coating of their surface. In a widespread schematic visualization of his propositions (ibid., 171, Fig. 44) Hayen concludes in eight basic types of trackways, of which the structures covered with planks/boards are further divided into several subtypes according to specific technical characteristics referring mainly to the methods of placement and joining of horizontal elements with vertical posts.

The documentation of wooden trackways in northwestern Germany may be considered as one well-established research field since the significant work of H. Hayen is followed-up until today by the activities of Landesmuseum für Natur und Mensch in Oldenburg, supervised by M. Fansa. During the last three decades, several rescue excavations, prospections, but also systematic investigations took place in this region, resulting in not only a more comprehensive documentation of some already known wooden features with the application of modern methods of analysis and dating but also the discovery of new ones. During the 1990s Fansa together with other specialists presented the results of these research initiatives in a series of detailed fieldwork reports and overviews (e.g. Fansa 1992; Fansa und Schneider 1993, 1994, 1996, 1998).

In the framework of the present study, three examples - each one for different reasons - are worth mentioning, selected from a great variety of structures discovered in northwestern Germany after their form, size, technical characteristics and dating.

Trackway XXXXVI (Ip) found in Jethauser Moor, Ldkr. Friesland is a 635m-long and 2,20-3,00m-wide wooden structure established according to the available dendro-dates around 1358 BC (Fansa und Schneider 1998, 5-19). The wood exploited for its construction were approx. 1500 oak timbers, which were processed and transformed into nearly 4000 rectangular or triangular boards (15-52cm wide and 6-10cm thick) placed carefully one next to the other to form a well-elaborated upper surface. The technical characteristic that is of particular interest is the placement of vertical oak posts driven into the sandy soil in irregular distances along both sides of the feature **(Fig. 149 d)**. The authors stress that these posts were used to support and retain the horizontal elements of the trackway and, even if they were found as protruding from the boards due to post-depositional factors, they were initially part of the non-visible substructure. It is also claimed that this is one of the earliest examples of a structure in northwestern Germany that resembles a bridge in terms of construction techniques and form. These general attributes of the feature can provide some useful references regarding the wooden structures of Anarghiri IXb, especially in respect of their possible form.

Normally, the technical and morphological characteristics of **Trackway XLII (Ip) in Wittemoor** would be adequate for placing this structure among the well-preserved findings of the region (ibid., 29-58) **(Fig. 149 a-c)**. Along its overall length of 3,4km there are noticeable differences in construction techniques implemented. More specifically, its southern part - in a distance of 800m - comprised nearly 5000 oaken planks 2,70-3,00m long, 0,20-0,50 wide and 5-8cm thick, most of them perforated at their both edges with vertical retaining pegs installed in the holes. The 2,4km-long middle and northern part of the trackway was made mainly of nearly 25000 alder roundwood trees’ stems 10-15cm in diameter.

Nevertheless, this structure, established according to the available dendro-dates around 135 BC and remained in use for almost 150 years, is considered as an exceptional example among the European trackways due to the discovery of two well-preserved wooden artefacts. More specifically, during the 1966 rescue excavation of the southern part of the trackway and in a spot where the structure was interrupted, two wooden anthropomorphic figurines were unearthed. These two artefacts were positioned on the opposite sides of a perforated plank - the one in its eastern end representing a male and the second in the western end representing a female - while in the neighbouring layers a number of wooden sticks and small stones were also found (Brunning and McDermott 2013, 369-370; Fansa und Schneider 1998, Fig. 19, 20, 27, 29, 30). Arguably, the two figurines were characterized as "Cult-figures" or" Bridge-deities" and were connected to ritual activities performed on the trackway, ascribing to the structure a significant symbolic role for the local Iron Age communities around the Wittemoor bog. Even if these outstanding finds and the specific excavational context are of a much more later date compared to the structures examined in the framework of the present study, their reference could contribute to the discussion of the alternative interpretations regarding the possible role(s) the trackways and similar features could have played in the broader system of beliefs of prehistoric communities.

In terms of size, preservation or structural characteristics, the **Trackway XXXI (Pr)** discovered in Campemoor, Ldkr. Vechta in 1993 does not constitute any particularly exceptional case (Brunning and McDermott 2013, 363; Dieckmann 1998, 67-71; Fansa und Schneider 1996, 61) **(Fig. 149 e)**. Exposed in a length of 300m and a width ranging from 3,5-4m, the feature had the form of a corduroy planked-track made of roundwood pine timbers measuring 10-15cm in diameter. For its substructure 4-5m long logs were used placed along the longitudinal axis, while several vertical birch posts were driven into the marshy soil in specific spots to stabilize the whole construction. The significance of Trackway XXXI (Pr) is claimed to be its age since the ^{14}C calibrated measurements point to a date at 4680±40 BC. Accordingly, the structure is referenced as the earliest wooden trackway in the world, a statement that evidently will be a subject of reconsideration due to the evidence from Anarghiri IXb published in this study.

French Jura

The research history of prehistoric lake-dwellings in this region is almost as early as the emergence of wetland archaeology in the circum-Alpine area in the mid-late 19th century (Pétrequin and Bailly 2004, 37). Although the advances were less substantial in comparison to the neighbouring Swiss or southern Germany research and results, two major prospection and excavation projects have been carried out since the 1970s in the Central Jura Lakes of Clairvaux and Chalain under the general supervision of P. Pétrequin, resulting in some multi-level approaches of the wetlands' habitation phenomenon (e.g. Pétrequin 1986, 1989, 1997, 2000).

Among nearly 30 settlements dating back to the end of 4th mil. BC discovered on the western lakeshore, the site **Chalain 19** is of special interest in respect of the habitation's general layout, but also due to some particular excavational contexts and finds **(Fig. 150 a-c)**. The extent of the investigated zone reached 1390m^2, which according to the exposed structures covered nearly one-third of the settlement's overall built area (Pétrequin et al. 2002, 56). The habitation was initially established at the 32nd century BC and after a period of abandonment, a second occupation's phase followed dating between 3015-2975 BC.

It is most probable that the settlement was founded in an estimated distance of approx. 150m from the littoral zone connected with the dryland with a wooden trackway, with an overall excavated length of 140m and width ranging from 2-2,40m. The trackway comprised two parallel rows of roundwood or split ash vertical posts, while there are excavational indications for the use of horizontal planks with plastered coating for effective stabilization of the feature within the wet environment. Although the preservation of the young ash trees' stems used for the construction of the trackway did not permit any extended dendrochronological analyses, five posts were dated in the 32nd century BC, namely in the same period of the first habitation's phase. A second trackway parallel to the earliest structure was established around the end of 31st-30th centuries BC comprised a double row of vertical oak posts with a width ranging from 2-2,20m (Viellet 2009, 285-297).

Regarding the possible role of these trackways, it is stressed that they could have functioned in two different time-spans: during the construction of the village for facilitating the procurement of raw materials and the transportation of products and at the end of its life, when a possible degradation of the opposite agricultural land could have brought the abandonment of the habitation. Nevertheless, it seems quite difficult to support such a proposition without robust dendrochronological dates (Pétrequin et al. 2002, 61; Viellet 2009, 297).

Some other interpretive perspectives came out by the examination of two special excavational contexts and finds. The first one refers to the discovery of an infant burial at the entrance of the village, exactly below the walking surface of the trackway, which is interpreted by the excavator as one final act that signalized the settlement's abandonment. Furthermore, the bones of a goat, a dog and a wolf found along the trackway's course are supposed to be buried intentionally, an assumption that emphasizes the possible symbolic function and significance of the structure (Pétrequin 2000, 52). The second find, that is arguably taken into consideration in the discussion of the trackway's use is a wooden sledge, found together with a yoke in an open space in front of an isolated house of the settlement's second habitation phase, one of the best preserved and complete European examples of early vehicles suitable for animal traction (Pétrequin et al. 2002, 57-58). Evidently, the wooden trackway would facilitate the use of this kind of traction means speeding-up and making more efficient the transportation of raw materials and products from the surroundings of the settlement into the habitation's zone and vice versa (Pétrequin et al. 2006).

The settlement's peripheral layout is also characterized by the presence of a wooden palisade excavated in a length of approx. 75m, forming a semi-circular enclosing structure in the southwestern part of the habitation. It was built mostly with the exploitation of ash and oak trees, with some of the biggest in diameter oak stems used in the specific part of the structure that intersected the wooden trackway. Moreover, the available dendro-dates show that the structure was repeatedly repaired within its nearly two centuries use-period. It is believed that this structure played a defensive role since its establishment and function coincide with a period in late-4th to early-3rd mil. BC, when some regionally noticeable climatic changes occurred. These possibly resulted in repetitive population and land-use pressures, that could subsequently trigger social tensions between the populations inhabiting the lakeshores and those occupying dryland territories. Supportively to these, two structures fragmentary discovered (probably two double posts' rows) cutting-off transversally the settlement's elongated trackway **(Fig. 150 b)** are interpreted as parts of a more complex defensive system before the settlements main palisade which also included the wooden trackway (Pétrequin and Bailly 2004, 40; Viellet 2009, 285).

One quite comparable example - in terms of dating, as well as of spatial arrangement of the accessing and enclosing peripheral wooden structures - is the partially excavated site **Chalain 2 (Fig. 150 d, e)** located only a few hundred meters further north of Chalain 19 on the western lakeshore. According to the available dendro-dates the settlement was established at c. 3000 BC and developed within three successive habitation phases until c. 2974 BC (Viellet 2009, 305). The settlement was founded approx. 170m away from the littoral zone and therefore was connected with the dryland with a well-constructed wooden trackway, which also continued as a village passage across the main residential space. According to the excavator, the feature comprised two parallel vertical posts' rows (roundwood 8-15cm in diameter), with a width ranging from 1,5-1,70m. A substructure of nearly 4m-long longitudinally placed horizontal logs supported the walking surface made of numerous 2,20m-long transversely arranged planks. Close to this structure, differently directed from the littoral zone towards the settlement, the remains of a second trackway were unearthed, belonging to a different (earlier?) structural phase. The trackway's structural form, as well as its size seem to be suitable not only for' pedestrians but also for animal traction with the use of vehicles (Pétrequin 1997, 32; 2000, 40; Pétrequin et Pétrequin 1988, 138-142).

The well-preserved planked trackway leads to the settlement's peripheral zone, where two successive post-rows have been unearthed, made mainly of oak planks. It seems most probable that these alignments with an estimated height of 1,5m were not built to enclose circularly the whole of the habitation space but were restricted to the entrance of the settlement. The excavator points that, since the settlement was established on the marshy ground, this double posts' alignment could be used to block the transfer of unwanted debris and material from the trackway's main course into the habitation area. Still, the setting of posts in this particular spot, combined to the presence of the planked trackway, would possibly constitute a well-structured access-control point to the settlement (Pétrequin et Pétrequin 1988, 138).

Southern Germany (Lake Federesee - Bavaria)

The significant contribution of the research in southern Germany's lakes and marshes to the birth and development not only of European wetland archaeology but also to the growth and professionalization of archaeological discipline in general, is commonly acknowledged and comprehensively presented in several synthetic works and papers (e.g. Keefer 1992; Schlichtherle

2004a). Therefore, an extended review of the major achievements goes beyond the scopes of the present study. Nevertheless, it is self-evident that during the long-lasting research endeavours, a considerable number of systematically excavated and well-documented settlements' layouts have been recorded, as well as exceptional architectural features related to the access and enclosure of prehistoric habitations, of which some selected examples will be discussed below as cross-references to the findings of Anarghiri IXb.

It could be claimed that the substantial findings of the wetland habitations of Lake Feder (Federsee) and its marshy surroundings during the late 19th and early 20th century - usually well-preserved structural parts of residential constructions - had in a sense monopolized the attention of the pioneering researchers. Thus, the earliest recordings of wooden trackways, dams, bridges and other similar features discovered almost accidentally during construction works or - in some exceptional cases - after organized archaeological prospection in the marshy area of Federsee, were scattered and fragmented. More reliable information regarding the existence of this kind of structures derives from the systematic investigation of some of the most prominent Neolithic habitations of the region. For example, the documented structures in Aichbühl had the form of short wooden passages connecting neighbouring houses' wooden outdoors. There are also some - even not quite definite - indications for the presence of typical planked trackways joining the residential space with the opposite dryland at Riedschachen, Taubried and Dullenried (Heumüller 2016, 372-382).

In the most recent research, the extent of the excavated accessing and enclosing works in prehistoric wetlands, as well as the documentation and analysis of their structural form, are considerably adequate, bringing some distinctive cases into the focus of the related discussion. Thus, the earliest feature of this kind is the trackway that connected the Late Neolithic settlement **Torwiesen II** - founded and inhabited between 3283-3279 BC on the natural island Buchau in the western part of Federsee - with the opposite lakeshore, covering an overall distance of 200-300m (Heumüller 2016, 384-5; Maier et al. 2016; Schlichtherle 2011) **(Fig. 151)**. According to the general excavational context, the trackway constituted the central passage of the village, dividing twelve houses established on the marshy soil of the island in two opposite groups. Across the habitation space, the trackway was built on the ground comprising some approx. 3m-long roundwood horizontal elements and vertical supporting posts placed every 1,5-2m. Its next structural part that led to the open-water area was built as a raised bridge (approx. 1 m above ground level), supported by 3 rows of oak, ash and willow posts (roundwood, as well as splits). The form of the walking surface is only hypothetically reconstructed as made of logs longitudinally placed on the vertical posts, on which horizontal roundwood or planks should have been placed **(Fig. 151 c, d)**. Measuring a few more meters after the settlement's last houses, the 3-4m wide trackway was suddenly interrupted for a distance of 2-3m, an obviously deliberate choice by the builders, interpreted by the excavator as an attempt to control the access to the settlement. It is stressed that at this specific spot planks could be used, that were removed during the night or in case of emergency, posing a gap supposedly difficult to vault (Maier et al. 2016, 97, Fig. 115). Consequently, this setting could function as a defensive arrangement, since it constituted the only access to the village. Furthermore, crossing the trackway from the dryland to the settlement for approx. 300m would alone have been an extra security measure (Schlichtherle 2011, 12). Immediately after this spot and over the open-water area towards the opposite dryland the structure took the form of a lighter-built bridge **(Fig. 151 b)** made of oak splits verticals that supported a walking surface of birch, alder and oak branches with a diameter of 2-5cm. Still, the exact ways in which vertical and horizontal elements were joined to build the bridge's infrastructure remain uncertain.

About 200m to the south of the aforementioned feature and most probably functioning in a similar way, the remains of a different type of structure were discovered (Heumüller 2016, 385-8). The trackway at **Bad Buchau-Bahndamm (Fig. 152 a, b)** dating between 3094-2892 cal BC, had almost the same orientation with the one of Torwiesen II, but at least its investigated parts had the form of a ground-level path. Namely, it comprised two successive layers of horizontal wood measuring a length of approx. 3m placed on the marshy soil, while its ends were supported by two 55cm-long vertical retaining side posts. Half of the structural wood exploited for the construction of the trackway belonged to roundwood and splits made of alder trees, with species such beech, lime and oak also present in smaller proportions and a diameter usually smaller than 10cm.

In approximately the same period (2890-2875 cal BC) the Late Neolithic settlement at **Seekirch-Stockwiesen** was established on the northern shore of Federsee (Heumüller 2016, 390-6; Schlichtherle 2011). The settlement's layout showing significant similarities to Torwiesen II, is considered as typical in respect of the residential structures' spatial arrangement detected in several Late Neolithic habitations of the region, which are accordingly characterized as "Street-village" (*Straßendorf)* of Seekirch Type (Schlichtherle 2004b, 47) **(Fig. 152 c)**. Within the settlement's plan, the dominant structure is the main wooden trackway, which continued its course towards the opposite dryland covering an estimated distance of approx. 140m. In terms of construction techniques implemented, the feature seems to be more complex in comparison to the so far discussed examples. Namely, its substructure comprised a first layer of transversely placed alder roundwood with a diameter ranging from 8-16cm, on which some up to 6m-long oak or birch logs were placed in the longitudinal axis. This substructure was not supported by vertical posts but comprising also smaller horizontal elements and branches formed a kind of wooden "grid", on the upper part of which beech and birch planks with diameter 3-8cm were placed **(Fig. 152 d)**. One more interesting structural detail of the feature documented in a trackway's part away from the settlement's main area comprised intentionally placed turf below the feature's wooden substructure, creating some kind of dam in the open-water area. Lastly, a number of vertical thin stakes close to this setting were interpreted as part of the habitation's palisade (Schlichtherle 2011, 14). All the above-mentioned structural characteristics possibly made this trackway suitable for the use of vehicles for animal traction. The most vivid evidence for such a proposition is the discovery of a fragmented, still securely identifiable wooden wheel in a specific spot of the feature's substructure **(Fig. 152 e)**. This object together with other similar finds from Neolithic settlements of the Federsee region constitute an exceptional assemblage indicating the manufacture and use of wheeled vehicles ("chariots" or "sledges") as means of transportation of products and materials across the wetland (Schlichtherle 2002a, 2002b, 2006).

Although of a rather late chronology compared to the cases presented so far, the Middle and Late Bronze Age settlement **Siedlung Forschner** (c. 1766-1480 BC) is referenced as one useful example due to its notable layout (Torke 2009; Heumüller 2016, 397-8) **(Fig. 153)**. The settlement was located at the southern part of Federsse marsh in a distance of 1,5-2km from the natural island of Buchau and the lakeshore; yet, its actual distance from the dryland during its life-time cannot be accurately estimated. Among several wooden structures that comprised one substantial system of accessing and enclosing works corresponding to three habitation phases, an elongated structure leading to the southeastern edge of the settlement is of particular interest. It consisted of two parallel vertical posts' rows distanced approx. 2,5m and exposed in an overall length of 60m that most probably supported a wooden surface of horizontal elements, of which no evidence was preserved. Of 107 posts attributed to the structure, having an average length of 1,6m, 57 derived from pine, 19 from oak and 13 from alder trees, while other species (ash and beech) were also exploited. Examining the spatial arrangement of the posts and the wood species, as well as the distribution of the processed vertical elements, the excavators detected special structural features at some specific spots of the trackway, which possibly had a particular function. Accordingly, a structural gap of 3,5m somewhere around the middle of the bridge's course was considered as intentional - similar to the one discovered at the Neolithic trackway of Torwiesen II - covered occasionally with planks or some other movable construction. In addition, some few meters to the north the density of the posts, as well as their arrangement led to the recognition of a roofed structure and a wooden tower-like feature on the bridge (Köninger 2016, 227, Fig. 319; Torke 2009, 232-240).

This bridge-like feature was probably part of a broader well-planned and constructed enclosing and accessing complex comprised several different structures. The robust dendro-dates of several posts indicated that these extensive works were realized during the two main building phases of the habitation (1767-171 BC and 1515-1481 BC). In each one of them, a massive wooden wall was built to encircle the residential zone, as well as two to four successive oval posts' alignments characterized as palisades. Discussing the functions of this system, the excavators state that the possible role of the palisades as a mean to prevent the settlement's main habitation zone from unwanted effects caused by water fluctuations could be plausible only for the posts' alignments that are facing the open-water area of the lake. Measuring a supposed height of approx. 3m above the marshy ground the palisades constituted a well-organized defensive system, in combination with the massive wooden walls and the purposefully constructed wooden bridge (Hafner 2010, 367-369; Torke 2009, 264-269).

Moving nearly 100km to the east towards Bavaria, the region's lakes and bogs attracted the interest of the researchers even from the very beginning of wetland archaeology in the circum-Alpine region, resulting the discovery of findings comparable - in terms of preservation, but also of layout and general characteristics - to those of the neighbouring Swiss lakes.

The prehistoric settlement at **Pestenacker** (Gde. Weil, Lkr. Landsberg a. Lech) was discovered in 1934 during the works for the protection of the area from water flooding and after some infrequent trial investigations it was systematically excavated between 1987-2004 (Bauer 1996, 2009; Schönfeld 1995, 2002, 2009a) **(154 a-d)**. The habitation was established at the beginning of the 35th century BC in the marshy area next to a stream with a very specific layout. The houses - founded on a well-prepared isolation’s layer of birch branches - bear the basic structural characteristics of ground-level features with wood as the basic building material. The habitation was accessed from the east by a wooden trackway that most probably crossed-over the neighbouring stream and continued within the main habitation zone as the village's central path. The feature exposed in a length of 18m consisted of two parallel posts' rows approx. 2m wide, with the vertical elements placed in opposite pairs on the longitudinal axis in a distance of approx. 3m, while the horizontal wooden elements (possibly roundwood or planks) were not preserved. According to the dendro-dates, as well as the analysis of the morphological and technical characteristics of the posts, the structure’s earliest building phase (3495-3486 BC) resembled a bridge-like feature made of oak roundwood with a diameter ranging between 15-20cm. This was followed by a second phase (3456-3448 BC) when half-dimensioned or even smaller splits were used, while nearly 60 years after the trackway's establishment (3429-3410 BC) one last rebuilding took place (Bauer 2009, 181-182). At the spot where the trackway met the village's enclosure two groups of vertical posts were interpreted as structural parts of a fence-door or entrance-building. The trackway's continuation within the residential zone exposed in a length of 15m was in better state of preservation and comprised a substructure isolation's layer of birch and oak branches on which half-split oak logs were placed, forming a 3m-wide walking surface. It is also worth mentioning that except this central path, parts of similar features were discovered at the peripheral zone of the habitation, attached to the enclosing posts' alignments (Schönfeld 2002, 25; 2009a, 143-144).

In respect of the habitation’s spatial organization, the successive wooden structures that enclosed the residential zone (or some part of it) constituted the dominant features of the settlement’s general layout. One first posts’ alignment comprised oaken trees’ stems 15-20cm in diameter placed in a distance of 1-1,5m and combined with smaller logs and branches to create a wattle, was constructed at the eastern part of the habitation in 3495 BC being synchronous to the settlement’s establishment **(154 c, d)**. Quite close to this, a second similarly constructed feature was founded between 3486-3483 BC; yet, it is not detectable whether the two features were for some period co-existing. One last post alignment was established in 3485 BC 1,5m away from the second one, which was constantly repaired and remained in use until the last habitation's phases (Bauer 2009, 191-192; Schönfeld 2002, 26).

Regarding the possible role of these structures, two different interpretations were proposed. Bauer (2009, 191) states that these were fences built to prevent the settlement from the neighbouring stream's erosive action, a factor that would have also caused their gradual destruction. On the other hand, Schönfeld (2002, 27-28) stresses that, even if it is difficult to conclude, the comparison of Pestenacker's fences with similar structures discovered in dryland habitations belonging to the Altheim cultural group of mid-4th mil. BC might point to their function as fortifications. Nevertheless, the general layout of the settlement, according which an elongated accessing structure leading to a cluster of houses divided into two sectors by a central path and enclosed by one or more fences, led Schlichtherle (2004b, 47-48) to classify a number of habitations with these attributes in a group named "Pestenacker-Type" settlements.

In 1986 during the construction of a pipeline, only some 500m to the south of Pestenacker, the remains of the Late Neolithic wetland habitation of **Unfriedshausen** (Gde. Geltendorf, Lkr. Landsberg a. Lech) were discovered (Schönfeld 1995, 61-62; 2009b) **(Fig. 154 e)**. The habitation is slightly earlier than Pestenacker (c. 3535-3517 BC); yet, its location next to a stream, as well as its layout are quite comparable. The first habitation phase comprised a small number of poorly preserved houses surrounded by a wooden birch fence - constructed in the same way as those in Pestenacker - that enclosed an overall area of 23x11m. The settlement's second habitation phase bore the same structural characteristics, with two rows of houses and a fence, covering a bigger area (35x18m), while the latest phase was expanded in an area of 35x22m. As in the case of Pestenacker, the dominant feature is the wooden trackway which, as the village's main central path is a 2m-wide structure made of a three-layered substructure of birch logs and branches, while its continuation beyond the residential zone is differently constructed, namely with the use of vertical posts that supported the wooden walking surface. Still, the excavator points that there should not be any particular reason to build a bridge-like raised structure in a rather stable soil, thus the structure should have been built on the ground (Schönfeld 1995, 61-62; 2009b, 163).

Switzerland

It is far beyond the objectives of the present study to review and evaluate the contribution of Swiss wetland archaeology to the nascence, growth and development of the discipline at a European level. And it is almost self-evident that in the course of nearly 170 years of research history and among a wide range of studies on the wetlands' habitation phenomenon, several findings at the peripheral zones of the prehistoric settlements, the shores or the open-water areas of the lakes attracted the interest of the experts (e.g. Eberschweiler 2005; Eberschweiler und Heumüller 2016; Hafner 2002; Hügi 2006; Scherer and Wiemann 2008).

So far, the earliest evidence for the existence of accessing structures derives from the Early Neolithic wetland habitations Egolzwil 4 (c. 3860 cal BC) and Thayngen-Weier II (c. 3715 BC) located at the central and northeastern part of the country (Heumüller 2016, 448). The structure discovered in **Thayngen-Weier II (Fig. 155)** comprised long horizontal logs placed in the longitudinal axis and retained in both sides by vertical posts that formed an approx. 2m-wide walking surface. The excavator claims that there is evidence for the use of the trackway for leading cattle from the dryland to the settlement or vice versa, since the sheds were probably located away from the settlement. The trackway's course from the opposite dryland intersects the habitation's enclosure, namely a fence made of vertically placed birch, hazel and oak planks with a diameter ranging from 3-5cm, a feature that might have reached a height of 2m (Guyan 1967, 22-25). A system of wooden village paths is also present in the successive Thayngen III habitation phase, made of a substructure of longitudinally placed stakes on which lime, poplar, oak and alder horizontal planks were placed that formed an approx. 2m-wide walking surface. The fence attributed to this habitation phase is of different structural form compared to the earlier one, comprised vertical posts up to 14cm in diameter placed every nearly 2m and joined with horizontal elements to form a wattle structure (Guyan 1967, 32-36).

In Lake Zurich - just a few kilometres east of the emblematic site of Meilen where in 1853/4 F. Keller stressed for the first time that the wooden posts exposed on the lakeshore were the remains of prehistoric habitations (Eberschweiler 2004b, 14; Hügi et al. 2004, 17) - the northern and southern shores are separated by a 1,5km-long isthmus. The underwater research during the 1990s and 2000s in the shallow waters between **Hurden and Rapperswil** resulted in the documentation of several hundred wooden elements - mainly vertical posts - belonging to a variety of structures dating from prehistoric to modern times **(Fig. 156 a)**. Although the density of the posts and the overlap of the different features' structural parts draw a rather confusing picture, their closer examination together with the dendrochronological analysis have resulted in the detection of some distinguishable elongated posts' alignments (Eberschweiler 2004b, 18-25; Scherer and Wiemann 2008, 12-17, Fig. 4). More specifically, Structure 3 comprised a double row of 16 posts (dendro-dated between 1578-1577 BC) orientated from southwest to northeast, which formed a 2,60-3,35m-wide feature. Only a few meters to the west and with almost the same orientation, the similar Structure 4 comprised 60 oak posts in a double row with a width ranging from 2,10-2,40m and was established only some years later than the previous one (1573-1563 BC). A third feature distanced nearly 25m to the west and with the same orientation (Structure 6) comprised a dense concentration of vertical oak posts, forming a 4-5m-wide elongated alignment, which according to the available dendro-dates was constructed between 1523-1495 BC. This last structure characterized as "Post-road" (*Pfahlstraße*), as well as the rest Early Bronze Age double posts' rows already mentioned (together with the similar Structures 11, 12 detected in this area), are interpreted by the excavators as trackways founded on the marshy ground. This assumption was based on the irregular placement of relatively small sized vertical posts which probably retained and fixed the horizontal wooden elements (planks or roundwood) of the structures (Eberschweiler 2004b, 21). In contrary, the Early Iron Age Structure 5 dated at 647 BC comprised rows of 5 posts (with a diameter ranging from 12-24cm) placed successively every 7 meters, possibly resembled to a bridge-like construction.

The integration of all these structures - most probably functioning as crossings of the relatively narrow distance between the two lakeshores - to the local natural environment and the Early Bronze Age habitations' network around Lake Zurich is facilitated by the examination of the available information referring to the existence of neighbouring settlements. From a number of detected, but not extensively investigated sites, the habitation characterized as "Island-settlement" (*Inselsiedlung*) at **Rapperswil-Technikum (SG)** is of particular interest (Eberschweiler 2004b, 27; Hügi 2006, 56; Schmidheiny 2010, 105-107) **(Fig. 156 b)**. Located in the shallow-water zone of the northern shore of Lake Zurich, it was established around 1600 BC being in some degree contemporaneous to the wooden trackways discovered a few hundred meters to the southwest. Except the possible, but still not certain correlation to these structures, the settlement is notable due to its general layout, namely the presence of three to five successive enclosing posts' alignments - mainly constructed with ash and alder trees' stems - with which some more partially investigated posts' alignments could be correlated. The posts of these features were grouped to create 1m-thick structures, whose use as a means of prevention from the water's waving or as a protection system is not definitely ascertained.

One of the most recent research projects in Switzerland is the large-scale rescue excavation realized in 2010-2011 at **Zürich-Parkhaus Opéra (Fig. 157)** in the heart of the urban environment of the city (Bleicher and Harb 2015, 2017, 2018). In an investigated area of approx. 3000m^2 and within 17 archaeological layers the remains of eight successive habitation's phases were distinguished, which according to a substantial number of dendro-analyzed wooden samples - selected from a pile-field measuring more than 25000 elements - are dated between 3234-2727 BC. It can be definitely claimed that the prompt publication of the excavational results and the study of the archaeological material constitutes one exceptional example of a state-of-art interdisciplinary approach of a prehistoric wetland.

The detailed analysis of structural wood is one of the basic tools used for the documentation of the successive settlements' general plans and the recognition of the houses' layout and their structural attributes. Given that the habitation was established and developed in some distance from the dryland in a zone that most probably was covered periodically by water, the role of the accessing structures should be important. Thus, even in the earliest Opéra 1 habitation (3234-3226 BC) an elongated double row of poplar posts running in parallel to the shore is interpreted as a 3-4m wide trackway (Bleicher and Harb 2015, 125-127; 2017, 202). The same interpretation is attributed to a partially excavated feature (double row of poplar posts) at the southeastern edge of the excavated area belonging to Opéra 3 habitation (3176-3153 BC) (Bleicher and Harb 2015, 132). During Opéra 6 habitation (2885-2877 BC) and at the zone between the residential area and the dryland, the spatial distribution and alignment of several ash posts are considered as parts of a more complex system of trackways and paths (Bleicher and Harb 2015, 135; 2017, 203).

Except for the aforementioned accessing structures, the spatial organization of the different habitations was also actualized by the construction of several linear posts' alignments arranged in various ways, depending on the settlement's general development. Thus, Opéra 1 habitation - comprised 15 houses arranged in parallel to the dryland - was most probably encircled by a structure made of alder posts that was characterized by the excavators as a palisade. Of particular interest is the linear posts' alignment - comprised dense placed poplar, lime, birch and alder trees' stems - running Opéra 3 habitation from east to west, which was probably a fence built to divide the residential area in two sectors creating a settlement's layout resembling Schlichtherle's Seekirich-Type "Street-village" (Bleicher and Harb 2017, 213-215). Opéra 6 habitation's layout is differentiated significantly compared to this of Opéra 3 since a cluster of irregularly arranged houses is demarcated to its eastern front towards the dryland by an elongated palisade made of poplars interrupted by gaps of 1-3m, which were structurally connected with the system of wooden trackways recognized in this zone.

At the peripheral zones of some of the most intensively investigated wetland prehistoric habitations of western Switzerland, several well-documented structures are related to accessing and enclosing works (Hafner 2002). Indeed, some of the earliest findings in Bielersee, as for example the 70m-long double posts rows leading to the Neolithic settlement of Lüscherz-Fluhstation or the similar structures at Sutz-Lattrigen-Kleine Station, were often referenced in the experts' debate of the first half of the 20th century regarding the existence of "lake-villages" in the open-water zones.

Among the numerous prehistoric habitations investigated the last 30 years in the area of **Sutz-Lattrigen** in Lake Biel (Canton Bern) the settlement located at **Riedstation** is considered as exceptional due to the comprehensively documented layout of the Neolithic habitation dendro-dated between 3393-3388 BC (Hafner 1992) **(Fig. 158 a)**. The two opposite clusters of houses seem to be connected with three 20-26m-long and approx. 2m-wide wooden structures, built in exactly the same year, namely 3390 BC. The features comprised vertical posts 6-12cm in diameter placed every 3,5-4m in the longitudinal axis. The excavator states that these should be the vertical structural remains of trackways slightly-raised above the wet ground that could support horizontal wooden elements of the walking surface (ibid., 46, 56). Three more noticeable double posts' row alignments discovered at the edge of the habitation and the zone that faces the dryland could not have been structural parts of trackways due to the quite small size of the stakes (1-3cm in diameter). The excavator proposed that these alignments could be used as markings of the houses' access (Hafner 1992, 65; 2002, 141).

Only some few kilometres northeast of Sutz-Lattrigen and within the urban landscape of **Nidau-BKW** (Canton Bern) several accessing structures were discovered during a rescue excavations project realized in 1990-1991 (Hafner 2002, 141; Hafner und Suter 2000, 41-43) **(Fig. 158 b)**. Namely, at least seven elongated posts' alignments up to 20m long were unearthed, comprised vertical posts constructed mainly of ash and oak trees' stems of various sizes and arranged as double rows with no horizontal elements preserved. The dendrochronological analysis of several samples led to the robust dating of every single structure between 3185-3006 BC. Except for one trackway dated in 3145 BC that seems to be contemporaneous with some vertical posts probably belonging to a palisade, there is no other evidence regarding the possible correlation of these accessing features to one or more habitations. Lastly, the dense post alignment comprised relatively big vertical oak stems (15-22cm in diameter) found in this area is dendro-dated between 1617-1572 BC. This last structure could have been built as a raised bridge-like feature in contrast to the majority of the trackways mentioned so far, which most possibly were founded on the wet ground or were only slightly raised above it (Hafner 2002, 142).

The tradition in the research of prehistoric wetlands is equally long and significant in the francophone part of Switzerland, largely focused on the shores of Lake Neuchâtel where some of the most extensively investigated and documented prehistoric settlements are located. In the framework of the present study two exceptional cases are discussed in respect of the outstanding layout and the spatial organization of their peripheral zones.

The Neolithic habitation at **Marine-Les Piécettes (NE)** - distanced only 500m from the emblematic site of La Tène on the northeastern shore of Lake Neuchâtel - was investigated during a rescue excavation project between 1998-2002 (Honegger 2001, 2005, 2007, 2012; Honegger und Michel 2002) **(Fig. 159)**. Within an overall excavated area of 3000m^2 and some trial-trenches at the surroundings, numerous wooden structural elements were discovered, several of which were dendrochronologically analyzed pointing to the existence of a habitation dating between 3504-3483 BC. Apparently, the most substantial structure detected was the 110m-long trackway that led from the dryland zone to the periphery and the main residential zone of the habitation, which was probably established at the beginning of the open-water area. The remains of the structure exposed comprised two parallel rows of vertical posts, between which a 20-30cm thick paved floor made of clay, sand and gravel was constructed. The excavator claims that the vertical posts could either be the remains of an older structure with horizontal planks forming the trackway’s walking surface or they were used to mark the course of an alley (Honegger und Michel 2002, 37). The feature meets the habitation's northern edge, where at least three successive palisades were identified, possibly built in different phases and probably used to distinguish some residential sectors. At the spot where the trackway met the last palisade before the settlement's residential core, two large posts were driven into the gradually raised ground, supposedly being structural parts of the village's gate (Honegger 2001, 36; 2005, 189-190).

Even more intriguing is the excavational context and the findings within the eastern sector of the habitation, where immediately after its entrance an artificial mound covering an area of approx. 24x15m and raising 0,90cm above the surrounding ground was detected **(Fig. 159 c, d)**. On this prominent place, a building measuring 8x3m was erected bearing three successive construction and use phases with minor structural differentiations. The scanty equipment and finds related to domestic activities, as well as the position of the building within the habitation's space led the excavator to propose a ritual or other communal function. This assumption is also reinforced by an impression of monumentality that the trackway, the village's gate, together with the artificial mound would attach to the building. This last could be of specific importance not only for the habitation's Neolithic community but could also function in a similar way at the regional level of Lake Neuchâtel (Honegger 2005, 192-193; 2007, 181-182).

Probably the most exceptional case from all those mentioned until now is the layout of the peripheral zone of the prehistoric settlement at **Concise-sous-Colachoz (NE) (Fig. 160)** investigated during the rescue excavations project realized between 1995-2000 (Hafner 2002; Maute-Wolf et al. 2002; Winiger 2006, 2016; Winiger et al. 2004, 2012; Winiger et Hurni 2007; Wolf et al. 1999; Wolf und Hurni 1999). Within an intensively excavated area of approx. 4700m^2 a total of 7949 wooden structural elements were discovered, 4859 of them belonging to oak trees' stems, a fact that facilitated their dendrochronological analysis which led to the recognition of 25 successive habitation's phases dating between c. 4300-1570 BC (Winiger et Hurni 2007, 144).

Nevertheless, the more substantial and dominant features detected are the remains of 20 different elongated structures that obviously connected the habitation(s) established several meters away from the littoral zone with the opposite dryland. In her general overview, Winiger (2006, 122-131) systematizes the available information about the basic structural characteristics of the trackways, integrating them in the regional cultural-chronological framework according to the dates provided by the dendro-analysis. The trackways - probably raised above ground-level - comprised two parallel vertical posts' rows (exposed in lengths ranging from 6 up to 40,6m and widths ranging from 1,5 up to 4m) which most probably supported horizontal elements of the walking surface that were not preserved, while in specific spots the features were stabilized by artificial heaps made with the use of natural gravel. The earliest structure is Trackway 1 established in 3709 BC and remained in use until 3676 BC, while six more structures were successively built and used until 3516 BC, namely within the Middle Neolithic period which is characterized as Late Cortaillod cultural phase.

From the next group of ten trackways dated in successive phases of the Late Neolithic (Trackways 8-17, c. 3270-2513 BC), Trackway 15 **(Fig. 160 b, c)** constitutes one worth mentioning case. Exposed in an overall length of 40,60m and with an average width of approx. 4m, the structure comprised 532 posts (of which 517 were oaks) and was in use - after frequent and continuous repairs - for 382 years (2826-2445 BC), being one of the most enduring accessing works detected so far in the circum-Alpine region (Winiger 2006, 128-129; Wolf und Hurni 1999, 112). Furthermore, the trackway was correlated structurally, as well as chronologically with a system of palisades that most probably encircled the habitation during the successive building phases (Winiger et al. 2004, 43). Still, the function for example of the palisade established in 2484 BC as part of a fortification system is mentioned with some scepticism due the young oak trees' stems exploited, bearing an average diameter of 6cm (Wolf, C. und Hurni 1999, 113).

Lastly, of the three structures dated in Early Bronze Age (1801-1570 BC), Trackway 20 and 22 were leading in two different habitations, characterized by the presence of a respectively oval and rectangular system of successive palisades that enclosed the residential area (Winiger 2006, 129-131).

3.1.2 Anarghiri IXb accessing structures

The general assessment and discussion regarding the accessing structures recognized at the periphery of the prehistoric habitation constitute the next necessary step for the accomplishment of the study's basic objectives. In order to proceed to this approach, some critical structural attributes will be commented and cross-referenced with comparable examples and excavational contexts. Some working hypotheses in respect of the trackways' possible functions will be tested taking into consideration interpretations proposed for similar structures from the European wetlands already highlighted.

3.1.2.1 Form and possible reconstruction(s)

Examining the course and orientation of ***Trackway 2*** at the peripheral zone of the Neolithic habitation (see Plan 21), even if it is quite probable that its southeastern end was founded at the northern slope of the opposite dryland where the multi-layer habitation Anarghiri XI was excavated, the exact starting point of the feature was not detected archaeologically. Considering as indicative those seven of ten ^{14}C measurements that point to an initial phase of construction and use even in the early-53rd century BC (see chapter 2.3.1.2) and combining them with the ^{14}C dated charcoal from this area (ANARG_IXb_S25, 5299-5076 cal BC) correlated to Fence 2, it could be cautiously claimed that the two structures coexisted for some unknown time-span. Accepting this working hypothesis, it should be pointed out that Trackway 2 intersected Fence 2 continuing its course towards the central habitation's area. However, its northwestern end cannot be securely defined, since the excavation at the trenches to the north stopped at the upper layers and did not reach the lowest elevations' zones.

In respect of structural form, the excavational picture of Trackway 2 is that of two almost parallel posts' rows with dense vertical elements driven into the natural soil. It is however quite difficult to determine if this observed pattern derives from specific needs to support the trackway's foundations or it is resulted by structural interventions that were successively made in long-term use of the feature. Looking again into the available ^{14}C measured posts, three of ten are dated slightly later than the first ones - namely in the late-53rd century BC - making more tempting the assumption for the existence of several structural phases. This is a rather usual practice documented already mentioned in the cases of the trackways in Chalain 19, Chalain 2 and Pestenacker. In terms of general excavational picture, the Structure 6 found between

Hurden and Rapperswil (see Fig. 156) comprised small oak posts, could be compared to Trackway 2 though dated in Bronze Age. Nevertheless, the Late Neolithic Trackway 15 from Concise-sous-Colachoz (NE) (see. Fig. 160 a, c) could be justifiably considered as the closest parallel to Trackway 2 due to the fact that the density of its vertical elements seems to be correlated to its long use and the successive repairs in a time-span of nearly 400 years. Yet, with the present level of available information regarding the dating of Trackway 2, any further chronological segregation beyond its general integration into the Late Neolithic I period is not possible.

According to the available information, but also due to the resemblance with characteristic features from European wetlands such as for example the late Neolithic trackways at Cloonbony, Co. Longford (see Fig. 146) and Bad Buchau-Bahndamm (see Fig. 152 a, b). it could be stressed that the role of the vertical posts of Trackway 2 should be to support and retain the structural unity and stability of a feature most probably founded on the marshy ground of Chimaditis wetland. It is highly probable that such a structure comprised horizontally placed wooden elements that formed a walking surface for facilitating the movement on the marshy ground. Since the evidence related to the type of wood used to build this surface is restricted to a few scattered horizontally deposited elements, it is not possible to reconstruct its original characteristics. Yet, given that there are several elongated posts alignments documented which, although they bore no evidence for horizontal wood possibly due to unfavourable preservation's conditions they were characterized as trackways founded on marshy ground (e.g the trackways in Sutz-Lattrigen or those in Nidau-BKW, Fig. 158), a similar structural form for Trackway 2 should be considered as possible.

At this point, one structural attribute of Trackway 2 already presented should be commented in comparison to some of the parallels deriving from European wetlands mentioned above. Namely, it is about the decrease in the density of vertical posts observed along the structure's course some meters before its intersection with Fence 2, which could be also combined with the presence of at least two posts of exceptional size (see Plan 21 and Fig. 121 c). This visible discontinuity of the feature's unity and the subsequent creation of a "structural gap" for nearly 1,6m could be compared to the similar construction choice observed in the Late Neolithic trackway of Torwiesen II (see Fig. 151 c, d) which was interpreted as a mean to control the access to the habitation. The same proposition was also made for the later, Middle Bronze Age trackway that led to the Siedlung Forschner (Fig. 153). Since the practice to control the access to the wetland habitations (e.g. the successive posts' alignments in Chalain 19 and 2, Fig. 150) or even to mark it with exceptional structural elements such as the "gate" at Marine - Les Piécettes (NE) (see Fig. 159) is often documented, the possibility of a similar function of Trackway 2 could constitute one working hypothesis.

In contrast to Trackway 2, the evidence for the exact spot of establishment of ***Trackway 3*** to the south of Anarghiri IXb is quite clear, since the first vertical posts of the structure were driven into the natural soil of the northern slope of Anarghiri XI dryland and its biggest part run across the marshy zone between the two prehistoric habitations (see Plan 22 and Fig. 122, 123). The slight turn towards northwest documented within this zone could be explained by the special conditions of the surrounding ground that could have imposed such a structural choice for stability reasons. The course of Trackway 3 was archaeologically detected - with some intervals of unexcavated areas - going as far as the peripheral zone of Anarghiri IXb, yet without secure indications regarding its continuation to the supposed main residential area which was not investigated.

Established and used during the 50th-49th centuries BC Trackway 3 comprised two parallel rows of relatively short and thin vertical posts driven into the marshy natural soil. The excavational picture and the recorded attributes of the wooden elements most possibly point to a structure founded on the ground with small side posts retaining horizontal elements of unknown type that formed the trackway's walking surface probably washed-out by water or decayed, leaving no detectable traces.

The fragmentary investigation of the posts' alignment characterized as ***Trackway 3a(?)*** did not yield enough evidence for a secure estimation of its course or its structural form. It should be stated that its characterization as a separate structure from its adjacent Trackway 3 to the west is based on the discovery of two parallel posts' rows in a slightly different elevations' zone (see Fig. 124-125). Furthermore, the single dated post VP 837 (4836-4723 cal BC) attributed to Trackway 3a(?) seems to be later than the post VP 820 (4954-4804 cal BC) discovered approximately two meters to the south-west that belongs to the western posts' row of Trackway 3. However, these observed differences between the two spatially attached features do not constitute for the moment any definite proof for their structural or chronological separation, which is proposed in the present study as a working hypothesis with some reservations.

Accordingly, considering the general plan of the habitation's perimeter, it could be assumed that the course and orientation of Trackway 3a(?) would be like those of the neighbouring Trackway 3, most probably leading to the core of the settlement. In respect to its structural form, the density and arrangement of the vertical elements resemble the so far detected practices in Anarghiri IXb, possibly pointing to a ground-level feature with retaining side posts.

Rather similar restrictions stand also for the recognition and the interpretation of ***Trackway 3b(?)*** as an individual feature investigated only in one excavational trench of Southern Sector (see Fig. 126, 127). Except for the obvious presence of two parallel posts' rows running from southeast to northwest resembling almost all the aforementioned alignments, there are no other indicative attributes to make the feature's interpretation more affirmative. Furthermore, it is already stated that the four dates obtained by posts belonging to both posts' rows and from separate elevations' zones point to completely different time-spans for the establishment and use of the structure, namely between the 53rd and 50th centuries BC (see chapter *2.3.1.5*). These results, together with the uncompleted investigation of the posts' alignment in the surrounding trenches, hold back any effort to integrate Trackway 3b(?) into the general discussion of Anarghiri IXb wooden structures.

Despite the fragmentary preservation of a limited number of verticals in comparison to the features discussed so far, the characterization as ***Trackway 4(?)*** of the double posts' row having its starting point at the northern edge of Anarghiri IXb slope and running to the north towards Anarghiri IXb periphery was based almost exclusively on the general layout of the wooden elements discovered in this area (see Fig. 128, 129). The specific arrangement of some 25 vertical posts was clearly distinguishable from the dense alignment to the west within the marshy area between the two habitations, namely Trackway 3. Still, its structural continuity is interrupted for approximately 25m to the north, where there is a dense concentration of wooden elements some of them attributed to the adjacent Trackway 3. Given the ambiguity of the excavational context in the area where the vertical elements of the two features interpolated, the ^{14}C analysis of the post VP 20027 (2862-2581 cal BC) attributed to Trackway 4(?) is used with some reservation for the dating of the clearly distinguishable part of the structure in Early Bronze Age.

On the other hand, the Early Bronze Age ***Trackway 1*** at the Eastern Sector of the excavated area is apparently the most easily recognizable wooden structure of Anarghiri IXb (see Fig. 117-119). Although its starting point and course beyond the archaeologically investigated zone to the east, as well as its exact size remain unknown, the arrangement of the vertical posts and their attributes provide useful information for proposing a relatively reliable reconstruction of its form. The specific pattern of regularly placed vertical posts in the longitudinal, as well as the transversal axis of the structure usually refer to bridge-like constructions already existing in European Late Neolithic wetlands, attested for example in some part of the trackway at Torwiesen II (see Fig. 151 c, d). The Middle Bronze Age bridge in Seidlung Forschner and the extraordinary features built on its course (a "roofed house" and a "tower", Fig. 153 a, c) constitute an exceptional example of this type of constructions. The later structure discovered in the Bavarian region of Rennertshofen-Feldmühle dated between 821-698 BC (Late Hallstatt period) is also noticeable for the quite regularly arranged pairs of posts that supported the planks of the walking surface (Schußmann 2012, Fig. 3, 4, 7).

Regarding the physical and technical characteristics of the stems used for Trackway's 1 building, the exclusive exploitation of oaken roundwood, bigger and older than those usually documented in Anarghiri IXb assemblage should be noted. Furthermore, examining the processed lower end of the posts extracted out of the natural soil certain similarities can be observed in respect of the processed surfaces and the marks produced by the use of specific tools (see Fig. 119). Commenting a similar set of processed verticals deriving from the trackway in Bad Buchau-Wuhrstraße in Lake Federsee (626-625 BC), the excavators claim that the "handwriting" of the prehistoric builder could in a way be recognized (Heumüller und Million 2013, 132; Heumüller 2016, 422).

In the case of Trackway 1, this kind of interpretative propositions requires different approaches and analyses of Anarghiri IXb wood assemblage that are beyond the objectives of the present study. Yet, evaluating the available information it could be proposed that Trackway 1 was a bridge-like feature - at least its investigated part - constructed after the realization of an organized plan starting from the selection of raw material with specific attributes, the careful processing of the vertical elements and their regular placement to support some kind of substructure for a horizontal walking surface, of which no evidence was preserved.

In order to draw a concluding remark regarding the form of Anarghiri IXb accessing structures, the most suitable tool would be Hayen's typological classification of trackways (see Fig. 148). Accordingly, it is proposed that at least Trackway 2 and 3 could have the form described by the author as Type E ("Pfahlsteg"), having as distinctive structural characteristic the presence of side posts retaining the horizontal elements that formulated the trackway's walking surface. Since definite evidence regarding the formation of the horizontal surface is missing, it could be proposed that it was either constructed by placing logs along the longitudinal axis of the structure (as reconstructed in Hayen's Type E) or by using logs or planks transversely arranged (Hayen 1957, Fig. 45, Type 3 and 4), a setting that resembles most of the European examples presented in this study. Regarding the form of the later Trackway 1, the proposition that the structure could be cross-referred to bridge-like features leaves open several options for the reconstruction of its walking surface, the technical solutions adopted for joining the vertical posts with the horizontal elements or even the degree of raising above the marshy soil.

3.1.2.2 Comparative observations

Taking account of the foregoing discussion of specific attributes and working hypotheses regarding the accessing structures discovered in Anarghiri IXb, a few comparative remarks that will potentially facilitate the following interpretational approaches could be noted.

One first distinction between the trackways of the habitation's periphery is their chronological differentiation as it is documented by the available ^{14}C dates **(Plan 23, 24)**. Their closer examination and a trial grouping according to the range of the measurements lead to some assumptions regarding one possible chronological sequence of the trackways' construction and use. Accordingly, it becomes obvious that Trackway 2 is the earliest accessing structure of Anarghiri IXb established and used in the time-span between the early-53rd and the mid-51st centuries BC, namely within Late Neolithic I period. Two dates deriving from Trackway 3b(?) seem to coincide with the results of the dated posts from Trackway 2, yet the sketchy picture of this specific structure should be taken into consideration if such a correlation is to be proposed. The three available dates between the early-50th and the late-49th centuries BC related to Trackway 3 show that the feature's establishment and use might have followed Trackway 2 within an advanced phase of Late Neolithic I period. With the reservations already discussed, two more dates from Trackway 3b(?) are recorded in the same time-span. The only available date from Trackway 3a(?) points to its establishment and use between the late-49th and the late-48th centuries BC, namely Late Neolithic II, a period that is ambiguously recorded in the ^{14}C of Anarghiri IXb dates' series.

Following a quite clear gap in the habitation's chronological sequence, the next available measurement - keeping mind the reservations already stressed - derives from Trackway 4(?) pointing to its construction and use between mid-29th and early-26th centuries BC, namely within Early Bronze Age period. The latest accessing structure documented in Anarghiri IXb eastern periphery is Trackway 1, with two seemingly coinciding measurements demonstrating its dating between the mid-26th and mid-25th centuries BC.

In respect of the construction techniques implemented and the possible form of the structures, the extent of the excavation, the state of preservation, as well as the availability of utilizable information and data allow some comparative observations referring to Trackways 2, 3 and 1. Consequently, in terms of layout and direction, the two earliest trackways seem to follow more or less one general plan that most probably served similar purposes at the peripheral zone of the settlement. Yet, given the chronological sequence described above, as well as the spatial distribution of its structural elements, Trackway 3 is noticeably translocated towards southwest compared to the earlier Trackway 2. This shift could be related to some re-organization of the Late Neolithic habitation's residential space that resulted in corresponding changes to the entrance point(s) and the main accessing structure. It is also possible that this shift was imposed by environmental changes that affected the habitation's surrounding waterscape forming different conditions in respect of ground's stability at these specific zones.

Except from this differentiation between the two trackways related to the peripheral spatial organization of the Late Neolithic I habitation, there are some attributes of the features' form and structural elements that could be remarked. For example, according to the spatial distribution of the vertical retaining posts that form the two parallel alignments of Trackway 2, the average distance between them is estimated to be approx. 2m, with a possible widening at its northwestern excavated end. Measuring the same attribute of Trackway 3 an average distance of 1,60m between the two posts' rows is recorded. Moreover, most of the posts comprised Trackway 2 - evidently their preserved part - were 51-70cm long (with some noticeable exceptions that are bigger than 1m), deriving from trees' stems with a diameter ranging between 9-12cm. In contrast, the vertical elements discovered across the course of Trackway 3 are rather small, usually preserved in a length of 31-50cm and deriving from stems 5-8cm in diameter. Comparing these specific characteristics of the two features, it could be claimed that Trackway 2 was probably a more solid and load-bearing structure than Trackway 3, though both could be reconstructed as features build on the marshy area between Anarghiri XI and Anarghiri IXb sites. As already discussed in occasion of the location of the two chronologically successive trackways, the observed structural differences could be explained as the outcome of changes in spatial organization or the impact of environmental factors. Moreover, the use of trees' stems of differential physical properties for the construction of the two features could also bring into discussion alternative approaches such as possible changes regarding the availability of raw materials or different practices for wood procurement or woodland management implemented by the Late Neolithic I community of Anarghiri IXb.

Even if the location of Trackway 1 at the eastern periphery of the settlement is in general comparable to the spatial distribution of the Neolithic trackways discovered in this area, its structural form makes the feature clearly distinguishable from the others. Yet, any attempt to include Trackway 1 into the comparative discussion of Anarghiri IXb accessing structures should take into consideration that the establishment of this bridge-like Early Bronze Age feature was an endeavour planned and realized in a quite different chronological and sociocultural context than this of the earlier Neolithic ones. In consequence, the purposefully selected trees' stems, their advanced processing and transformation into vertical supporting posts and their regular placement constitute some unique characteristics that will be commented in the general interpretative discussion that follows.

3.1.2.3 Interpretative discussion

As already has been made clear in occasion of the presentation of selected examples deriving from prehistoric wetlands across several European regions, the discovery of wooden trackways and the attempt to understand and reconstruct their form is followed by interesting interpretative discussions regarding their possible function(s) at the marginal zones of the habitations, as well as within the wider surrounding environment. The formulated propositions are mostly based on observations concerning structural attributes of the features such as their dimensions, the raw materials exploited etc. and are combined with information about their location within built spaces or their spatial relationship with specific features of the landscape (lakeshore, rivers, bogs etc.). Moreover, some specific excavational contexts, as well as individual finds trigger discussions and interpretations that are processed in a more theoretical level.

To proceed in an equivalent discussion concerning the accessing wooden structures of Anarghiri IXb, all the available data presented so far will be used to test some working hypotheses cross-referenced with the interpretations that are most frequently proposed for the findings from European prehistoric wetlands.

The location of Anarghiri IXb trackways at the south-southeastern edge of the habitation leads to one first self-evident supposition that the structures were built mainly as crossings to the opposite dryland. This proposition is more obvious and well-documented mostly in the case of Trackway 3 and 4(?) since it has already been mentioned that their southernmost vertical posts were driven into the natural soil of the opposite slope. It could be stressed that, even if the starting points of Trackways 1 and 2 were not detected archaeologically - since they were probably located within the uninvestigated part of the lignite mining zone - and their role as crossings is not definetely documented, their main function within Chimaditis wetland should not be entirely different.

Taking account of the structural attributes, as well as the spatial distribution of these features already remarked, it should be noted that there are several issues open to discussion related to the plausible function of the trackways as crossings. As for example the fact that there is no usable information so far about the natural characteristics of the area that separated Anarghiri IXb from the opposite dryland low slope in respect of soil humidity or even water coverage and its possible diachronic alterations during the Neolithic and/or Early Bronze Age. It was already assumed - according to the physical and technical characteristics of the Late Neolithic I Trackways' 2 and 3 - that the features were established on a more or less marshy ground; still, this working hypothesis remains open for further control. Accordingly, it could be claimed that the bridge-like form of the Early Bronze Age Trackway 1 should have been imposed by increased water level during at least some specific time-span.

One even more intriguing research topic related to the role of Anarghiri IXb trackways as crossings is the possibility that these - or at least some of them - could have been correlated to one or more occupation phases detected at the opposite dryland named Anarghiri XI. Although the study of this multi-layered settlement is pending, there are indications for the existence of Middle and Late Neolithic building activities (houses, oval enclosing ditches, foundation trenches etc.) close to the northern slope of the natural low mound, as well as an extended Early Bronze Age habitation with three chronologically successive enclosing ditches (Chrysostomou and

Giagkoulis 2018, 220). Such an intensive human presence in close proximity to Anarghiri IXb wetland habitation could pose certain conjectures for contemporaneous activities in both settlements that necessitate further comparative investigation in various levels, having as first priority the examination of the possible chronological correlation(s) of the habitation phases documented at both sites.

In any case, it could be claimed that crossing a stretch of marshy ground of about 100-120m from Anarghiri IXb habitation to the opposite dryland and vice versa should have been part of the every-day life of the Neolithic community. The transportation of products and raw materials from the surrounding resources and from specific areas that would have been related with off-site productive activities was most obviously facilitated by the use of the trackways, although it is highly probable that some of these needs would have also been satisfied by the use of water routes within and around Chimaditis wetland.

Beyond the human presence attested at the adjacent Anarghiri XI dryland low mound, a relatively high number of prehistoric settlements were recently documented in Amindeon Basin, especially on the shores of Lake Chimaditis. Even if their exact dating is for now pending, it is highly probable that some of these habitations (e.g. Limonchori II, Anarghiri III) co-existed at least during the Late Neolithic period (Chrysostomou and Giagkoulis 2016; Chrysostomou et al. 2015). Accordingly, the interactions between the habitations' communities in several socioeconomic and ideological levels are rather expectable. In such a regional network, the wooden trackways would have played a significant role in facilitating the communication and mobility of people, products, materials and ideas within Chimaditis wetland. Of course, the extent of their investigation at the edge of Anarghiri IXb settlement, as well as the lack of any other evidence for the presence of similar structures in the region do not permit the formulation of assumptions about the possible existence of an actual trackways' network within Chimaditis wetland, such as those that are frequently discovered in northern European bogs.

One supplementary aspect regarding the role that the trackways could have played during the establishment of the wetland habitations is already presented in the discussion of Chalain 19 trackway (see chapter *3.1.1*). Namely, it refers to the possibility that the trackway was founded at the same time with the first residential structures of the habitation in order to facilitate the transportation of the raw materials required for the building of the village. Such an idea would have been in general one logical assumption for the earliest Trackway 2 of Anarghiri IXb whose establishment is dated during the early-53rd century BC. Yet, this remark remains only a working hypothesis, which could be controlled only by robust dendrochronological dates deriving from the samples of the trackway, as well as from dated posts from the main habitation's area.

The general discussion regarding the use of accessing structures as footpaths by pedestrians or even as tracks on which load-bearing animals could also move attracts the interest of several wetland archaeology researchers. These notions are challenged by specific structural attributes of the wooden features or by the discovery of some extraordinary finds (see chapter *3.1.1*). For integrating Anarghiri IXb trackways into this discussion certain data should be taken into consideration and tested. The dimensions - namely the recorded width ranging from 160-200cm - of the Late Neolithic I Trackways 2 and 3, as well as the relatively small size and the arrangement of the vertical posts that probably retained horizontal wooden elements resemble structures that could support mainly the movement of pedestrians. Yet, these structural attributes might not be considered as prohibitive for the movement of livestock on the trackway's walking surface.

This last remark brings forth the discussion regarding the employment of animal traction by the European Neolithic communities for the realization of several tasks such as agricultural land ploughing or transportation of products and raw materials. It is noticeable that some of the most significant evidence indicating these developments derive from wetland habitations of central Europe, namely a considerable number of wooden sledges, yokes, chariot-like vehicles as well as wheels dating from the second half of the 4th mil. BC (e.g. Čufar et al. 2013; Pétrequin et al. 2006; Schlichtherle 2002b, 2006). However, according to the current state of research, but also considering the lack of any corresponding find and the early dating of Anarghiri IXb habitation in comparison to the European wetlands, the discussion about the possibility of wheeled transportation in the region is rather inapplicable. Yet, the existence in the neighbouring Late Neolithic wetland habitation in Dispilio of zoomorphic figurines depicting animals (probably bovids) bearing storage vessels on their backs (Chourmouziadis 2002, 250) could be regarded as indirect information about the use of animals for transportation of products and materials. Such a practice - if applicated also in the wetlands of Chimaditis - would be significantly facilitated by the establishment and use of the wooden trackways. As a final remark at this point, it should be mentioned that the structural characteristics of the bridge-like

Trackway 1, together with its later date in the mid-3rd mil. BC formulate a different framework for the discussion about animal traction, even for the possible use of wheeled vehicles.

One alternative interpretative approach of the accessing structures and their possible role is based on the recognition of the fact that the trackways were not individual or isolated features that crossed a marsh, but they usually constituted structural parts of the built environment at the peripheral zone of some habitation. It has been already demonstrated that in most of these cases the trackways intersected fences, palisades or other irregularly arranged posts that formed distinguishable limits at the habitations' edges. Furthermore, to these settings one should be also add the discontinuities observed in respect of some trackways' architectural entity with structural gaps formatted by the absence of vertical or horizontal elements (in Torwiesen II or in Siedlung Forschner), the construction of further strengthening features (in Siedlung Forschner) or the installation of transversely arranged vertical elements at specific spots along the feature's course (in Chalain 2, 19 and in Marine-Les Piécettes). Consequently, the interpretations emerging from the evaluation of these structural characteristics and general spatial arrangements theorize that the trackways were not used only to facilitate movement, communication or transportation, but also meant to control or even forbid access to a settlement. Moreover, some authors stress that the combination of palisades and trackways constituted a well-organized and solid complex, attributing to these settings a clearly defensive function (Pétrequin and Bailly 2004, 40; Viellet 2009, 285).

It is already supported that possibly during some time-span of Late Neolithic I period, Trackway 2 intersected Fence 2 at Anarghiri IXb peripheral zone. In addition, notable posts' settings and features comprised vertical elements with specific physical attributes and arrangement (see chapters 2.3.1.2, 2.3.2.2 and Fig. 121 c, 133) could be cross-referenced with some of the aforementioned European wetlands' layouts. Even so, such a comparison does not necessarily impose the adoption of the corresponding interpretations that attribute a defensive function to the specific complexes of palisades and trackways. These views that clearly imply the existence of tensions and disputes between neighbouring communities could be generally discussed at a theoretical level. However, in the case of Anarghiri IXb such notions are hardly testifiable, since the current state of research regarding the prehistoric habitation in Amindeon Basin does not allow further focusing on socioeconomic or ideological factors that could cause conflicts. In this framework, the adoption of a more flexible explanation is needed, which on one hand takes account of the observed setting at Anarghiri IXb southern periphery and at the same time does not invalidate any other notions regarding the function of the trackways as means of communication and mobility of people and ideas. Namely, the possibility that the specific arrangements were used to manipulate the movement of livestock that entered the habitation or to prevent its uncontrolled runoff from the settlement. Nevertheless, even this working hypothesis presupposes that at least some animals were kept within the settlement's boundaries, an idea that obviously demands further documentation and investigation.

Although most of the wooden accessing structures of Anarghiri IXb were fragmentary unearthed, the dimensions of their exposed parts, their planned placement at the periphery of the habitation and the quantity and quality of the trees' stems exploited for their construction and possible repairs, are worthwhile elements that refer to the realization of successive - according to the documented chronological differentiations - building programs. Evaluating these characteristics, it could be claimed that the general planning, building, as well as maintenance or repair of the trackways most probably constituted communal labour-intensive endeavours. As works of some extraordinary scale - compared maybe to the construction of residential or other architectural units of smaller dimensions - they might require a higher degree of accurate decision-making in respect of tasks organization and collaborative implementation and adequacy in raw materials provenance and management. It would be plausible that all these different parameters that formulated the framework for the successful realization of the trackways' building projects could have played some role in the development of dynamic relationships between the members of the Neolithic community of Anarghiri IXb. For example, it should not be excluded that some inhabitants would have been familiarized with the management of the local woodland, wood species' exploitation for specific purposes or some particular technical tasks regarding the trackways' building. At one next level of the interpretative discussion it could be further explored, whether these developing personal skills gradually led to some degree of craft specialization, a research topic that evidently necessitates documented input from several studies regarding Anarghiri IXb material culture.

Discussing the working hypothesis that the some of Anarghiri IXb trackways were part of a more or less extended network of similar structures across Chimaditis wetland, it could be supposed that their planning and construction might have required the active involvement of neighbouring communities. The implementation of such an off-site extraordinary project most probably demanded negotiations and arrangement of issues regarding, for example, territorial access and control, procurement of raw materials and management of the corresponding recourses, segregation of tasks etc. Therefore, it would be expected that the interactions occurred between the neighbouring communities in occasion of the trackways' construction would be rather dynamic, with open possibilities that in some cases might have also led to conflicts. Nevertheless, this theoretical discussion could be carried out only by the input of information and data regarding the spatiotemporal development of prehistoric habitation in Amindeon Basin.

The exceptional position of trackways either as isolated constructions that simply crossed a wetland landscape or as structural parts of the built peripheral zone of a settlement yields specific results regarding the quantity and quality of finds that represent various human activities. Given that these artefacts' assemblages or individual finds are discovered out of the typical excavational contexts of residential units or open spaces of a habitation, they are addressed with particular attention and in some cases lead to interesting interpretative suggestions. The finds related to the Early Neolithic Sweet Track in Somerset (jadeite axe, wooden "God-dolly"), the infant burial under the trackway at the entrance of Late Neolithic Chalain 19 and the later male and female wooden figurines from the Iron Age Trackway XLII (Ip) in Wittemoor are some of the cases most frequently referenced as indications for the function of the trackways as places attributed with symbolic significance. These kinds of interpretations are based on excavational observations that consider these finds as intentionally deposited at specific spots of the trackways during or after the performance of ritual actions and correlate their special meaning with cosmological beliefs regarding the transition from the world of land to the one dominated by water (Bond 2004, 2006; Brunning and McDermott 2013).

A discussion orientated to similar interpretative directions regarding Anarghiri IXb trackways is hardly feasible since the systematic analysis of the total of the excavated area, as well as the study of the movable finds, are pending. Therefore, the unprocessed information detected in the excavational records and the digital photos' archive regarding the discovery across the course of the accessing structures of pottery, stone and bone tools, animal bones etc. cannot for now be considered as contributory to a demanding theoretical discussion about the possible symbolic aspects of the trackways' construction and use. In the framework of the current study, a few short comments on two structures and their possible association with specific finds could constitute one elementary proposition for further examination.

The excavational records documenting the investigation of the main part of Trackway 3 exposed in the marshy ground between Anarghiri IXb and Anarghiri XI regularly included information about the discovery of hand-made, coarse Neolithic pottery in the surrounding deposits of the vertical posts, without any specific concentrations - at least not noticeable during the excavation. Among some scattered movable finds, six polished stone tools - namely two relatively small axes, three adzes and one chisel - were recorded being distributed at different spots across the trackway’s course. If these finds would be brought into the discussion about the possible function of Trackway 3 in the ideological level, a focused examination of their excavational context should be made to investigate the probabilities of their intentional deposition across the trackway's course, complemented by specialized analyses of the tools' physical and technical characteristics. However, the more conventional approach would consider these artefacts as being simply discarded after their use - as were the rest of the movable finds discovered - during the construction or repair of such an exceptional structure.

Very similar to this discussion would have been the evaluation of the animal bones’ concentration discovered close to the eastern posts’ row of Trackway 4(?) (see Fig. 129). According to one elementary examination of the excavational context, it seems possible that these bones were buried in a shallow pit without any visible arrangement. The current state of research makes quite disputable any notion about the actual purpose of this deposition, especially since the determinant issue of the chronological correlation of the bones’ concentration with the Early Bronze Age Trackway 4(?) is unclear. Yet, even if these two settings will prove to be synchronous, the interpretation of this context as a result of some ritual action would be hardly supported without further documentation, as well as theoretical elaboration.

3.1.3 Anarghiri IXb enclosing structures

As it is already has been made clear, a second dominant characteristic of the built space at the settlement's peripheral zone is the linear posts' alignments characterized as fences. The overview of their basic structural attributes and their comparative presentation aims to approach their possible structural form, as well as to formulate an adequate basis for further interpretative discussion. Moreover, the attempt to follow their diachronic development and spatial arrangement - in combination with the accessing structures previously analyzed - constitute a decisive step towards the formation of some working hypotheses regarding the excavated zone's layout.

3.1.3.1 Form and possible reconstruction(s)

The general excavational picture of Northern Sector is of particular interest due to the presence of vertical posts with specific physical and technical characteristics, as well as a spatial distribution that could be claimed as the characteristic attributive of this area (see chapter 2.2.6. A and Fig. 20, 84). Within this context, the posts' alignment characterized as ***Fence 1*** was literally detected at one last grid's trench at the northeastern edge of the investigated area (see Fig. 130, 131). Some crucial attributes of this cluster of verticals already presented - exploitation of conifers, common orientation, protruding branches and the two practically synchronous dates - suggest an intentional arrangement of those elements at least for some 13m from southeast to northwest. It would be no exaggeration to claim that they are almost always present at the peripheral zone of most European Neolithic wetlands posts' alignments of variable density and structural form.

Nevertheless, in the case of Fence 1, its fragmentary layout that poses certain questions regarding the form and size of the structure should be further remarked. Assuming as a working hypothesis that parts of the structure were not preserved due to post-depositional processes or were dismantled during some reorganization of space at the specific habitation's area, then it could be subsequently claimed that we have to do with a fragmentarily preserved wooden structure of Anarghiri IXb pile-field, one more or less expectable discontinuity in the excavational record of a prehistoric wetland. The second possibility would be that the recorded layout of Fence 1 corresponds to the initial structural form and size of the feature, thus any interpretational approach should consider Fence 1 as a complete architectural entity. Taking into account the location of the feature at the northeastern peripheral zone of the settlement and its orientation, it could be proposed that it was built at the late-53rd century BC or slightly later as a mean to enclose or to arrange part of the marginal space of the Late Neolithic I habitation. And perhaps it is of some significance that, although there is a noticeable concentration of vertical posts to the southwest of the structure - after a gap of approx. 7,5m - the nearest evidence for structural activity contemporaneous to Fence 1 is the dated posts from Fence 4 and 5. Yet, the functionality of a structure with an extension and posts' arrangement such as those of Fence 1 remains open to discussion.

In contrast to Fence 1, the elongated parallel posts' rows discovered at the Northern Sector running from northwest to southeast for 20-25m recognized as ***Fence 4*** and ***Fence 5*** show some recordable structural continuity across their exposed parts (see Fig. 138-140). Since the information about the properties of the trees' stems used for their construction is fragmentary, the potentials to reconstruct specific technical characteristics of the two structures (e.g. height of the posts or possible use of horizontal wooden elements) are limited. Yet, the dense and regular arrangement of the vertical posts for a rather long distance and in a certain direction should have created two distinguishable built barriers in this area of the habitation, which according to the available dates were synchronous and coexisting with Fence 1.

Some more specific remarks about the surrounding excavational context of the two alignments could add useful information in the attempt to draw the habitation's general outline at this peripheral zone. As already mentioned, at the neighbouring northern trenches the density and the general layout of vertical posts do not facilitate their structural correlation and the recognition of any well-defined architectural feature, except from the possible correlation of some extraordinary posts already discussed (see chapter 2.2.6 and Fig. 84). Furthermore, the available dates from two vertical posts (see General Plan 1, VP 11463 and 11476) most probably point to some later architectural activities during Late Neolithic II or Final Neolithic compared to the Late Neolithic I Fences 4 and 5. Of course, the possibility that some of the vertical elements recorded in the area between the two fences belonged to synchronous structures should not be excluded. However, at the incompletely excavated area to the south of Fence 5 (Trenches 574 b and 575 a) the remains of intense architectural activity were unearthed (wooden posts, structural clay etc.), which according to two dated posts (see General Plan 1, VP 10897 and PH-P 2932) could be correlated chronologically to Fences 4 and 5.

Resuming these observations, it seems highly possible that Fence 4 and 5, being probably established and used in the same time-span within Late Neolithic I period, constituted distinctive components of a system of posts alignments at the habitation's northeastern peripheral zone. Such complex systems of successive posts' rows are well documented in European Neolithic habitations already referenced in the present study (e.g. Chalain 2, Marine-Les Piécettes, Concise-sous-Colachoz). Yet, the extent of the excavation does not permit any secure estimation about the continuation of Fences 4 and 5 or about the possibility that the two alignments were enclosing some part or parts of the Late Neolithic I habitation.

Although the investigated length of ***Fence 2*** was smaller compared to the previous posts' alignments and the excavational context rather complicated due to the presence of numerous wooden elements irregularly deposited at the specific area of Southeast Sector, some of the feature's attributes could be further remarked (see Fig. 132-134). Namely, the arrangement of the vertical elements running from southwest-northeast seems to have constituted a solid wooden structure, which was even more compact at its northeastern excavated end where the posts were doubled. Moreover, if the discovery at this specific spot of possibly interconnected vertical elements with horizontal twigs or branches creating a wattle formation (see. Fig. 134 b) is an indication of a generally applied building technique - documented for example at Pestenacker or Thayngen III (see Fig. 155) - then the fence's structural integrity should be even bigger. It must be also stressed that within the adjacent area several horizontally deposited wooden elements bearing branches were discovered which could constitute structural parts of the feature (see Plan 11). To this general picture of a densely built structure, the setting of leaning posts with branches characterized as Feature 6 should be added, a posts' arrangement discovered at a spot close to the fence's possible intersection with Trackway 2.

Considering all the above-mentioned remarks, it could be claimed that the technical characteristics and the general context of Fence 2 point to a structure that resembles - more than any other similar feature discovered in Anarghiri IXb - to denser and more solid alignments that enclose Neolithic wetlands. But all the same, the characterization of the structure as "palisade" was considered as immoderate since it refers to even more compact features comprised successive rows of vertical elements. Moreover, a specific meaning is usually attributed to this term which points to a defensive function of the structures, an interpretative proposition that could not be adopted for Fence 2 without further documentation, but still it could be discussed in a theoretical level.

Regarding the two fragmentary exposed linear posts' alignments ***Fence 6(?)*** and ***Fence 7(?)***, the restricted extent of investigation, the lack of ^{14}C dates and the relatively limited available information about the wooden elements used for their construction do not facilitate any comprehensive discussion regarding their structural form (see Fig. 141, 142). Their cautious characterization as fences was made taking account of their location at the peripheral zone of the habitation, as well as the density and arrangement of the vertical posts. Still, in contrast to the supposedly "isolated" Fence 7(?) at the eastern edge of the habitation, regarding Fence 6(?) it could be assumed as a working hypothesis that the intersection of some of its verticals with the course of Trackway 3 is not completely accidental and that the two structures could coexist at the southern margins of the habitation.

In terms of exposure, ***Fence 3*** constitutes the longest linear posts' alignment discovered within the main excavational area of Anarghiri IXb running from southwest-northeast for approx. 30m. It seems that the structure comprised a single row of posts (mainly roundwood oak stems) with no evidence for denser concentrations of verticals or indications for the use of horizontal elements. The possibility that the posts were placed within a foundation ditch - as recorded in trench 834 c - remains open, but not easily demonstrable since the structure was established on earlier deposits that were not fully investigated.

Turning the attention to the excavational picture of the Southern Sector to discuss the integration of Fence 3 into the general habitation's outline, on the surface it could be claimed that its orientation is comparable to Fence 2. Yet, its stratigraphic context and even most significantly the two dated posts in a time-span between the 47th and 46th centuries BC within the Late Neolithic II or the begging of the Final Neolithic demonstrate that the two features most probably did not coexist. An interesting working hypothesis for further discussion would be that Fence 3 was established at the southeastern edge of the latest habitation's phase as an enclosing structure.

The discussion regarding the structural form of the neighbouring short linear posts' alignment characterized as ***Fence 8(?)*** - an absolutely contemporaneous structure with Fence 3 according to the two available ^{14}C dates - is defined by the presence of posts with processed upper-end that could have supported horizontal structural elements. Evidently, it is difficult to estimate the degree to which this technical solution was applied, as well as to reconstruct the form of the feature. It is also questionable whether the exposed layout of the fence corresponds to its actual form or it is about one more fragmentarily preserved structure.

3.1.3.2 Comparative observations

Evaluating the most indicative attributes of the settlements enclosing structures', it could be generally stressed that there are recordable similarities, but also differentiations that could lead to further clarifications necessary for the attempt to discuss the spatial organization and the possible use(s) of the features discovered at the periphery of Anarghiri IXb.

Except their spatial proximity and arrangement at the northeastern edge of the habitation, the posts' alignments characterized as Fence 4 and 5 seem to coincide in respect of dating according to the available measurements **(Plan 25 and 26)**. It is also quite probable that the two features coexisted with Fence 1 for some time-span during Late Neolithic I period. According to their orientation Fence 4 and 5 were obviously planned to function as a dual complex directed from northwest to southeast, as far as their investigated part allows such an observation. Furthermore, the relatively dense placement of the vertical posts possibly demonstrates the intention of the builders to construct a rather concrete boundary with discussable function(s). Examining the form of the neighbouring Fence 1 it could be claimed that the probably comparable plan to create a discernible limit was realized by different means, that is by building a double posts' row with leaning vertical tree's stems (mainly conifers) bearing also protruding branches. Although in terms of direction and general arrangement Fence 1 seems to work for purposes similar to Fence 4 and 5, its fragmentary layout poses some already remarked reservations regarding its use and functionality.

The available dates and the special arrangement of Fence 3 and Fence 8(?) could be considered as suggestive for their attribution to a planned building project at the southern excavated area of the Neolithic habitation. Compared to the previously commented features, their obvious differentiation in terms of location and orientation are mainly emphasized by their chronological integration into the Late Neolithic II or the beginning Final Neolithic period. Accordingly, the two nearly attached structures should have functioned in a rather different building plan than this of Fences 1, 4 and 5, both not clearly recordable in Anarghiri IXb excavational assemblage. Yet, in terms of structural form, it seems that the arrangement of Fence 3 and 8(?) posts was probably meant to create a rather dense boundary. Moreover, in the case of Fence 8(?) this purpose would have been achieved using horizontal elements placed on the vertical ones. Nevertheless, the extent of the investigation of both structures, their incomplete layout, as well as the general excavational context of this area do not permit further accurate remarks.

Since for Fence 6(?) and 7(?), there are no available dates, it is quite difficult to include them sufficiently in any comparative discussion concerning their chronological integration into the habitation's layout development. As already mentioned, the only assumption that could be made for Fence 6(?) concerns its spatial relationship - maybe intersection - with Trackway 3 dating between the early-50th and the late-49th centuries BC. Yet, all the restrictions regarding the extent of the feature's investigation and the density of vertical elements at this specific excavational context should be keept in mind. Similarly, the fragmented layout of the alignment characterized as Fence 7 and its spatial isolation from the rest of the wooden structures at the eastern peripheral zone of Anarghiri IXb hold back its inclusion into the settlement's building plan and development. Yet, one rather daring assumption would be to look into the general spatial distribution of the vertical posts at the southern and eastern excavated area and observe that the hypothetical continuation of the course of Fence 3 to the northeast could have met the linear posts' alignment of Fence 7(?) (see Plan 6, 8). Although this tempting proposition could be reinforced by the fact that the vertical posts of Fence 3 and Fence 7(?) were discovered in comparable stratigraphic zones (592,79 - 593,35m and 592,9 - 593,14m a. s. l. respectively), the uninvestigated 38,5m that separate the two features make difficult the definite documentation of the assumption that these two actually formed one single elongated posts' alignment.

The main characteristics and the adjacent general excavational context of Fence 2 seem to constitute a slightly different structural setting at the southeastern edge of Anarghiri IXb Neolithic habitation compared to the aforementioned peripheral posts' alignments. It could be claimed that the orientation and direction of Fence 2 are generally compatible with the spatial arrangements that should have been implemented at the margins of the settlement. Although the same could be also stressed for the rest of the peripheral structures, the form of Fence 2 in respect of the increased vertical posts' density, the possible presence of horizontal elements and the probable existence of complementary features - like the double posts' row to its northeastern end or the Feature 6 - differentiate to some degree the building plan of the specific structure, resembling more to the solid posts' arrangements usually characterized as palisades. The possible intersection of Fence 2 with Trackway 2 provides one more occasion to discuss further interpretative options. Still, at this point it should be emphasized that since there are no available dated structural elements from the alignment and although the closest ^{14}C date derives from a relatively secure adjacent excavational context, the dating of Fence 2 at the early-53rd century BC is cautiously adopted for the discussion that follows.

3.1.3.3 Interpretative discussion

Before any attempt to discuss the possible function of the linear posts' alignments discovered at the peripheral zone of Anarghiri IXb, there are some necessary clarifications that should be made and taken into consideration. As it is already stressed during the presentation of the structural attributes of these features, the term "fence" was prefered instead of "palisade" that is commonly used to describe more dense posts' concentrations, which in many cases are constructed as solid wattle and daub walls. These characterizations seem to be used on a case-by-case basis also in studies regarding European prehistoric wetlands, as for example is reflected by the use of term "*Dorfzaun*" by some of the German-speaking researchers (e.g. Bauer 2009; Guyan 1967), while others refer to the corresponding discussions to "*Palisaden, Verteidigungssysteme*" (Hafner 2010; Torke 2009). In any case, the distinction of the two types of enclosing structures is not quite clear, with the use of term "fence" usually adopted for features made of thinner posts that enclose smaller areas (Meyer 2002, 69-70).

One second crucial remark regarding in general Anarghiri IXb fences is that all of them were only fragmentary exposed as rectilinear posts' alignments mainly at the northern and south-southeastern periphery of the habitation. Moreover, none of these alignments has yielded any recordable evidence for curvature or angled arrangement of the vertical elements across its course, structural characteristics that would constitute relatively reliable indications of continuous elipdsoid or circular features. Accordingly, it is not definitely documented whether these features were actually enclosing the central habitation's area during the Late Neolithic or they were segregating specific parts of the habitation in different ways. Nevertheless, the characterization of these fences generally as "enclosing structures" was a methodological choice of the present study made basically for facilitating the particularized description of their characteristics, without any predefined notion about their structural form or any absolute interpretative proposition.

Despite these reservations, some attributes of Anarghiri IXb peripheral structures’, as well as their spatial arrangement offer certain opportunities to approach their possible function(s) with cross-references to specific examples from European wetlands. Furthermore, some remarks on selected topics of the general discussion referring to the ways and purposes of enclosing the prehistoric habitations will be noted.

Accepting as a working hypothesis that during certain time-spans within Late Neolithic I Anarghiri IXb habitation (or parts of it) was encircled or demarcated by the more or less continuous wooden Fences 1, 2, 4 and 5, then the presence and the corresponding function of a system comprised - at least at its northern part - two successive features should be discussed. It must be also pointed out that the particular arrangement of double posts' row of Fence 1, as well as the firmest construction of Fence 2, constituted some technical applications probably corresponding to similar purposes.

Arguing on the premise that Anarghiri IXb peripheral structures are comparable to enclosing systems of prehistoric wetlands already selectively mentioned, some of the debated interpretations are to be further commented. In the first place, there are the generally accepted notions that these works functioned in quite “practical” ways i.e. as means of protection from wild animals, as means to prevent the uncontrolled movement of the settlement’s livestock or as features that would reduce the impact of wind or water within the main residential zone (Bauer 2009, 191; Bleicher und Harb 2015, 121-138; Hafner 2010; Hasenfratz and Gross-Klee 1995, 222; Meyer 2002, 70). According to the general characteristics and the spatial arrangement of Anarghiri IXb fences, none of these functions should be excluded, yet under some preconditions. For example, future study of the habitation's rich archaeozoological assemblage or even more specialized analyses regarding the presence of animal dung in the sampled soil of the lowest layers would help to test the assumption for livestock breeding within the settlement’s residential zone that could necessitate the construction of an enclosure as a protective measure. Moreover, even if the suggestion that these fences could have functioned as some kind of breakwater seems reasonable, the lack of documented data regarding the exact location of the habitation within the local prehistoric waterscape and the degree of water’s impact does not permit the drawing of any definite conclusion. But all the same, the concentration of twigs and branches at the edges of Fence 2 already remarked could be considered as an indication that the feature could work effectively, prohibiting in some degree the intrusion of unwanted dirt or waste from the settlement's surroundings into the main residential zone.

Moving one step beyond these basic explanatory notions regarding the function of enclosing works, some more elaborated approaches are detected which investigate the possible significance of these structures at different levels of the Neolithic communities' social life and ideology. For the examination of the corresponding views at first it should be noted that, among the great variety of enclosing structures already mentioned the wooden palisades would constitute - maybe together with stone walls - the most solid and visually clear means for the delimitation of space. The increased needs for raw materials and the great labour investment for the construction and the consequent maintenance of these sizeable works imposed accurate planning and effective decision-making, which altogether could have functioned as factors that strengthened the communal bonds of a settlements' inhabitants (Bickle and Kalogiropoulou 2017, 11; Borić et al. 2018, 337; Chatzitoulousis et al. 2014, 376; Pappa 2018, 211-212). On the other hand, the cases in which this kind of structures were used for the segregation of areas within a habitation's boundaries have triggered interesting debates regarding their function as means of organization of spaces and activities in the framework of an egalitarian socioeconomic productive model or as indications for social differentiation gradually emerging between the individual households (Chourmouziadis 1979; Kotsakis 1999, 2006, 2009).

In the same interpretative direction and considering the enclosing structures as socially significant for the formation and reproduction of communal identities between the inhabitants of a Neolithic settlement, it is further claimed that these works being established at the peripheral zones of the residential space were also functioning as physical or even symbolic delimitations of the communities' boundaries signalizing specific messages to neighbouring groups. These would have been related to some kind of "legal establishment" of the community's "rights" on land and recourses in the surroundings of the habitation (Alušík 2017, 195; Chapman and Gaydarska 2006, 20-21; Meyer 2002, 70; Neustupný 2007, 3).

Given that these propositions are discussed in a more or less theoretical level, any similar assumptions regarding Anarghiri IXb Late Neolithic enclosing structures would remain of limited interpretative value, since for now, there’s no available information about the settlement's spatial organization or the possible interactions of the community with their synchronous neighbouring groups of Amindeon Basin. Taking account of the arrangement and the density of the structures - which possibly formed an enclosing system - it is to be claimed that the possible objectives to demarcate physically or even symbolically the habitation’s residential space would have been achieved, at least in terms of structural adequacy. Moreover, for some of these features - namely Fence 8(?) and Fence 7(?) in case that their fragmentary layout corresponds to their initial size - it could be supposed that they indicate attempts to segregate internal spaces within the main habitation’s zone. The most recent and characteristic example of such an arrangement is the linear posts’ alignment detected in Phase 3 of Zürich-Parkhaus Opéra habitation running from east to west, which was probably a fence built to divide the residential area in two sectors with recordable differentiations regarding the distribution of raw materials and tools among the residential units (Bleicher and Harb 2018, 1219). As for the specific structures of Anarghiri IXb it should be also stressed that, at least Fence 8(?) constituted a later structural intervention dated in Late Neolithic II/Final Neolithic, a period during which the spatial organization of the settlement had changed in comparison to the earlier Late Neolithic I habitation. In a general framework of possible transformations in various socioeconomic levels, the segregation of residential or open spaces should not be excluded, even if for now such a notion is hardly demonstrable.

Above all the interpretative discussions cited previously, the most debatable suggestions are those associating the enclosing structures with the occurrence of violence, conflicts or even wars between the Neolithic communities across Europe. In this direction, almost every type of feature discovered at the periphery of the habitations (wooden palisades, walls and fences, stone walls and ramparts, ditches, systems of pits etc.) are considered as parts of fortifications' systems. Moreover, these structures combined with distinctive movable finds (arrowheads, stone, antler and bronze maces and axes, daggers, clay sling bullets) and/or osteoarchaeological evidence for injuries on human skeletons are regarded as one of the indicative criteria for the documentation of prehistoric conflicts (Armit et al. 2007; Christensen 2004; Ivanova 2008, 110-122; Parkinson and Duffy 2007, 112-116).

It is rather expectable that the substantial preservation of enclosing works at several European prehistoric wetlands would constitute an attractive data assemblage for the investigation of this topic. Yet, the turn that the corresponding discussion took during the interwar period occasioned mostly by the findings in southern Germany could be referenced as a typical example for the decisive influence of the researchers' ideological background and the era's general sociopolitical atmosphere on the archaeological interpretations. Therefore, even the terms used by H. Reinerth - the dominant figure of German wetland archaeology of this period - to describe settlements' layouts and enclosing structures (e.g. *"Wasserburg Buchau"*, *"Deutsches Troja"* ,*"Wehrpalisade"* etc.) demonstrate in the most vivid way his ideas regarding the virtues of the prehistoric Germanic people and their abilities in building effective defensive systems since the Neolithic period (Arnold 1996; Keefer 1992; Schöbel 2008). This almost obsessive approach of the archaeological material and especially of the findings related to the habitations' enclosing works were immediately contested by the early post-war German-speaking researchers, whose interpretations were usually orientated in different directions (Hafner 2010, 359-360). However, there are several recent works which, taking account of scientific-based environmental and comparative material culture studies, as well as particular excavational contexts, clearly attribute defensive functions to the habitations' enclosing structures (Pétrequin and Bailly 2004, 39-40; Torke 2009, 264-269; Viellet 2009, 285).

As already mentioned, the discussion in Greek prehistoric research concerning the purposes of enclosing prehistoric settlements by various means is as old as the first excavations of Thessalian tells at the end of the 19th century. During all these years the notions about the defensive function of the ditches, palisades, wooden and stone wall or pits that surround several Neolithic habitations are present in various studies investigating settlements' layouts and possible spatial organization patterns. Corresponding to the general theoretical trends, these features are discussed together with artefacts that resemble weaponry, skeletal remains, as well as objects with a supposed prestigious significance that would constitute evidence for possible tensions and conflicts between neighbouring communities (Aslanis 1990; 2008; Kokkinidou and Nikolaidou 2004; Runnels et al. 2009). Moreover, there are some more recent views that connect the establishment of enclosing structures with the need of the Neolithic communities to protect and even defend rights or access to natural resources and raw materials declaring power and control with defensive systems in the peripheral zones of their habitations (Alušík 2017, 195).

The pursuit for comparable evidence in the archaeological assemblage of Anarghiri IXb that could support any argumentation on the possible defensive use of the enclosing structures would provide for now no debatable results. In addition, even though the recording of several Neolithic habitations within the Chimaditis wetland or the broader region of Amindeon Basin has documented an actual network of neighbouring communities, the level and form of their interactions are still unapproachable. Looking once more back to Anarghiri IXb fences, their fragmentary investigation and their structural attributes do not permit an easy and definite assumption regarding the possibility of being constructed mainly as defensive works. Of course, this discussion can be directed differently, if the structural form of Fence 2 and the particular alignment characterized as Feature 6 at the southeastern edge of the habitation are emphasized. One more corroborative argument would be the adoption of the idea already discussed that the fences were structurally and spatially combined to form a complex and effective defensive system. And at the same time, even the choice of a local Neolithic community to inhabit a waterscape could be considered as indicative for its intentions to obtain additional safety from potential threats.

On the other hand, it could be claimed that all the aforementioned arguments, if viewed from different perspectives, could also be supportive for the interpretative suggestions already stated regarding the function of Anarghiri IXb as means of protection from wind and water influence, of livestock's movement control or segregation of space. In consequence, the discussion about the possible defensive use of these structures cannot conclude to any definite propositions. In this case, perhaps the most fitting remark would be the statement on occasion of the discussion of Dimini walls and their possible defensive use made by Runnels et al. (2009, 176): "…*We have no hope of settling this issue here, which is at heart one of theoretical perspective, almost a matter of faith…*".

3.2 Anarghiri IXb: working hypotheses about the settlement's general layout

The comparative observations, as well as the interpretative discussion regarding the accessing and enclosing structures of the habitation can be employed for proceeding to some concluding working hypotheses regarding the diachronic development of the settlement's spatial organization, mainly of its peripheral zone. The combinatorial examination of the available dates forms the basic framework for this approach.

Consequently, it could be supported that Trackway 2 together with Fence 4 and 5 constitute the earliest recognizable structures established at the marginal zone of the habitation during the Late Neolithic I, while in the same period the fragmented posts' alignment characterized as Fence 1 is dated **(Plan 27 and 28).** Although the dating of Fence 2 is nor directly based on the radiocarbon analysis of some of its structural parts, but on a neighbouring comparable sample, the feature is considered as coexisting with Trackway 2 within Late Neolithic I due to the adjacency and possible structural complementarity of the two features already discussed. Examining the ^{14}C dates' ranges deriving from these structures, it could be noticed that the latest measurements hardly exceed the 51st century BC, a fact that might indicate a possible *terminus ante quem* regarding their use. Almost immediately after this chronological point at the early-50th century BC the establishment of Trackway 3 is documented, together with one possible repair of Trackway 3b(?), supposing that this was an individual accessing structure established also in Late Neolithic I. It is worth mentioning that during this last period no recordable evidence for the presence of synchronous enclosing structure is documented. The chronologically undetermined Fence 6(?) could constitute such a feature considering its possible spatial correlation to Trackway 3. Yet, its fragmentary investigation and the lack of datable structural wood do not facilitate for the moment any further processing of this working hypothesis.

One single available ^{14}C measurement from Trackway 3a(?) pointing to its establishment and use between the late-49th and the late-48th centuries BC is one of the scant dates that indicate some particular structural activity during Late Neolithic II, a period that in any case is ambiguously recorded in the ^{14}C dates' series of Anarghiri IXb. Therefore, without any other usable information from the pending studies of stratigraphy and of the movable finds, the documentation of a distinguishable extended occupation's phase during this period is for now not possible.

The dating of Fence 3 and Fence 8(?) within the three succeeding 47th-44th centuries BC seems to document in a more tangible way the existence of structural activity in Anarghiri IXb at the end of Late Neolithic II and the beginning of Final Neolithic period. This supposition is further strengthened by one recordable series of ^{14}C dated charcoals deriving mainly from the upper excavational layers of the central investigated area of the site. Especially the size and orientation of Fence 3 most probably refers to an enclosing or space-segregating feature which, except its clear chronological differentiation from the earlier documented structures, it is further distinguished in terms of location at the edge of the central habitation zone. Nevertheless, in contrast to the earlier Late Neolithic I period in which trackways and fences probably coexisted at the peripheral zone of the settlement, no posts' alignment that could be considered as accessing structure was attributed to this later period. It is self-evident that this lack of corresponding wooden structural remains should not respectively be interpreted as an absence of this kind of features, given the unexcavated zones at the site's perimeter.

Fence 3 and 8(?) are some of the last observable evidence for building activities in Anarghiri IXb at the beginning of Final Neolithic, after which a recordable gap in the dates' sequence is observed, which is explained either by the possible abandonment of the site or due to undetected archaeological layers. As already mentioned, Trackway 4(?) and 1 constitute for now the only datable information pointing to some activity at least at the settlement's marginal zone during the Early Bronze Age.

Taking account of all the preceding data, as well as of the assumptive propositions regarding the wooden structures of Anarghiri IXb and keeping at the same time in mind the restrictions posed to the present study by the results of the rescue excavation and the current state of the material’s study, some final working hypotheses about the possible diachronic alterations of the settlement’s layout and extent could be drawn.

The supposition that the accessing and enclosing structures discovered in specific areas of the settlement’s periphery coexisted for some time-spans during Late Neolithic I period could lead to the partial description of the habitation’s outline **(Plan 29)**. Accordingly, it can be claimed that Fence 4 and 5 constituted the possible northern demarcation of the residential space, with the synchronous Fence 1 playing some unknown, still complementary role to this system. The two posts dated also in Late Neolithic I found in close proximity to Fence 5 are a slight indication of building activities that could support this proposition. Moving towards southeast and attributing the same conclusive value to two more posts dated in the 53rd-51st centuries BC sampled from a concentration of wooden elements at the eastern edge of the excavation, the next spatial limitation to be recognized is Fence 2. It is already proposed that the intersection of Fence 2 with Trackway 2 should have created a rather distinctive structural complex at the habitation's margins, that according to the general excavational picture could constitute - at least for some specific period - the main accessing point to the settlement from the opposite dryland. Furthermore, the continuation of Trackway's 2 course towards northwest was most probably leading to the core of the uninvestigated residential zone of the earliest Late Neolithic I occupation. Positive indications regarding the existence of building activity are the four dated posts deriving from the area that Trackway 2 (as well as Trackway 3) was leading to, namely two of them constituting the earliest evidence of human activity in the site dated from the early-55th to the late-54 centuries BC.

The establishment of Trackway 3 in a different area some few meters to the west after the possible abandonment of Trackway 2 could be considered as an indication for the possible dislocation of the main accessing point to the Late Neolithic I habitation. The reasons for such a development are for now undetectable, with a general spatial rearrangement of the building activities remaining one open possibility. Still, it could be stated as a working hypothesis that, even if no recognizable enclosing structure can be correlated to Trackway 3 (except from the undated Fence 6?), the feature should have led to the occupation's peripheral zone.

The reconstruction of the possible extent of the Late Neolithic I habitation becomes more hypothetical examining the southwestern edge of the excavated zone due to the scarcity of recognizable wooden structures. The outermost available indications regarding the existence of building activities dated in this period are two posts deriving from the concentration of vertical elements with no obvious spatial arrangement discovered at the Southwestern Sector of the excavation. From this marginal area of the site and towards the northwestern part of the excavation, no working hypothesis regarding the possible limitations of the Late Neolithic I occupation can be further discussed.

Even more impracticable would be an attempt to detect the possible extent or limits of the Late Neolithic II habitation, inasmuch as any building or other activity actually existed in Anarghiri IXb during this period. Only slightly better is the possibility to approach these issues regarding the successive occupation that might have been developed at the end of Late

Neolithic II and the early Final Neolithic mainly due to the presence of Fence 3. Assuming that the elongated posts' alignment constitutes one more or less continuous structure, it would be considered as the main delimitating feature of the habitation at its southeastern edge. Except from two posts at the Northern Sector dated in this period that could be considered as indicative for the possible extent of the building zone, for now there are no other usable data to discuss further the habitation's limits to the west or south.

Remarking the settlement's general plan with the representation of the working hypothesis about its outline it could be claimed that at least a spatial shift towards west-northwest of the habitation's zone during Late Neolithic II/Final Neolithic period could be proposed. It is not feasible for now to describe the possible reasons for this alteration, which could be related to environmental changes of the surrounding waterscape or to rearrangements of built space due to general socioeconomic developments. In any case, it should be also considered that the later building activities were realized within an area of accumulated anthropogenic deposits that possibly affected the form, as well as the extent of the structural interventions. Moreover, there can be no easily documented assumption whether this spatial shift of the habitation's zone resulted in also an alteration to its size since no secure estimations are possible without the accurate specification of the settlement's limits during both periods.

It is rather obvious that the interpretative approach of the development of synchronic, as well diachronic spatial organization of Anarghiri IXb constitutes one highly demanding research task, that goes beyond the objectives of the present study. Yet, there are some specific excavational contexts and wooden elements' clusters whose further investigation within a different methodological framework could lead to some more refined observations regarding the habitation's general layout, a perspective that will be discussed in the study's general concluding remarks.

3.3 Anarghiri IXb in the context of northern Greek and southern Balkan Neolithic

The synthetic approach of the available information and the interpretative discussion regarding Anarghiri IXb lakeside settlement put forth one basic profile of the habitation, at least in respect of its general chronological integration and some characteristics of its peripheral zone's spatial organization. In the following paragraphs, an attempt will be made to discuss these specific attributes of Anarghiri IXb within the broader context of northern Greek and southern Balkan Neolithic.

One first step of this comparative approach comprises the correlation of Anarghiri IXb with its immediate neighbouring settlements of Amindeon Basin. According to the so far published information (Chrysostomou and Giagkoulis 2016, 2018; Chrysostomou et al. 2015) the earliest Late Neolithic I habitation could be chronologically correlated with some of the settlements discovered and partially investigated within the area covered by Chimaditis wetland. **Limnochori II** located some 3km to the southwest of Anarghiri IXb, is assumed to be the earliest attempt of the local farmers to settle in immediate spatial relationship to water, since it is proposed that the lowest waterlogged layers - in which numerous vertical and horizontal wooden elements were unearthed - are dated in the last centuries of Middle Neolithic period (c. 5500-5400 BC). During the subsequent Late Neolithic I the habitation occupied an extended strip of land along the littoral zone, while for the lakeshore structures discovered in the upper archaeological deposits it is proposed that they are dated in an advanced phase of Late Neolithic I (c. 5000-4800 BC). During Late Neolithic II/Final Neolithic the habitation was reduced to a dryland low mound formed by successive anthropogenic deposits, a picture that seems to coincide with the diachronic development of Anarghiri IXb. In the lowest waterlogged layers of **Anarghiri III**, a settlement detected some few hundred meters to the east of Limnochori II, the well-preserved elements of a floor, several vertical posts and two burnt layers containing structural clay and numerous artefacts are reconstructed as parts of a typical two-storey stilted house integrated chronologically in Late Neolithic I. Similarly to Anarghiri IXb and Limnochori II, the settlement became a dryland habitation during the successive Final Neolithic period. Lastly, the settlement **Rodonas II** located in a marshy area 2 km north of Anarghiri IXb was established at Late Neolithic I period (probably at the beginning of 5th millennium BC) and was characterized by the presence of a layer containing well-preserved organic materials.

Although the initial estimation for the dating of **Anarghiri IXa** earliest habitation phase at the late-6th mil. BC does not facilitate any direct comparative remarks, its location only some 100m to the northeast of the marginal zone of Anarghiri IXb, as well as the discovery of 1513 vertical wooden posts in the lowest layers of an excavated area of approx. 4300m^2 constitute some raw data that should be noted. In the central area of the excavation a destruction layer was investigated that belonged to a two-storey stilted house dating between 3949-3766 cal BC within the Final Neolithic, which contained several clay structures and numerous household artefacts. Fragmented Bronze Age findings were unearthed all over the excavated area of the settlement, in which the exceptional architectural feature is the wooden ellipsoid fence that seems to encircle at least the western and southern part of the habitation provisionally dated in the late-Early or the early-Middle Bronze Age (Chrysostomou and Giagkoulis 2018, 208-212).

The Late Neolithic II/Final Neolithic habitation phases of Anarghiri IXb can be correlated chronologically with **Limnochori III**, a settlement established according to the excavator on the northern shore of Chimaditis at around 4500 BC and abandoned around 4000 BC due to an extended fire. Some interesting observations regarding the spatial organization of the habitation are noticed, namely that the excavated houses were arranged in rows on a single raised platform thereby facilitating the movement from one dwelling to the other, while round hearths and ovens organized in groups within the dwellings were documented.

Commenting these general propositions, it should be stressed that these are based exclusively on preliminary data referring to some of the investigated habitations at the margins of Amindeon Lignite Mining zone. It is already stated that the network of prehistoric habitations of the Four Lakes region includes several sites that are simply discovered and provisionally dated. Their exact spatial distribution, the specification of their limits, their placement into a reconstructed prehistoric wetland environment and the documentation of their dating by ^{14}C or dendrochronological analysis would constitute a more reliable database for the integration of Anarghiri IXb in the regional occupation’s diachronic scheme.

One next level of comparative discussion of Anarghiri IXb findings would be their reference to the prehistoric habitations investigated in the wetlands of the southern Balkan cross-border region. Starting from the neighbouring lakeside settlement of **Dispilio** nearly 40km to the west of Anarghiri IXb, it could be stressed that both settlements were probably established at the end of Middle Neolithic and the begging of Late Neolithic I period. Looking at the available ^{14}C dates’ tables (i.e. Facorelis et al. 2014, Table 1 and Plans 3, 4 of the present study) it could be noticed that the earliest dates of 55th century BC from Anarghiri IXb are limited maybe due to the lack of samples from the core of the settlement, while in Dispilio there are several measurements that document comprehensively the existence of this early phase in the excavated part of the site. It could be also claimed that while Late Neolithic I period is documented as a distinctive phase in both sites, 48th and 47th centuries BC that correspond to Late Neolithic II are represented only by few measurements. Moreover, the dated samples from Anarghiri IXb show that the habitation was probably abandoned shortly after 44th-43rd centuries BC. To the contrary, in Dispilio the Final Neolithic habitation seems to continue until the mid-4th mil. BC, when the settlement was probably abandoned for approximately a thousand years succeeded by an Early Bronze Age habitation in the late-3rd mil. BC. At this point, it should be reminded that the only recordable evidence for human activity in Anarghiri IXb in early and mid-3rd mil. BC derives from the dated posts of Trackway 1 and 4(?).

Beyond their probable chronological correlation, the two neighbouring settlements seem to share some comparable characteristics in respect of the diachronic development of the habitation's form. According to the studies conducted so far, Dispilio was established as a lake-shore habitation, that was gradually transformed to a shore-marsh and later to a dryland settlement, a proposition that is presumably illustrated in the specific building choices made by the prehistoric community and it is also reflected in the site formation’s processes (Karkanas et al 2010). Although the study of Anarghiri IXb excavational layers' characteristics and the stratigraphic sequence is pending, the preliminary remarks already stressed draw a comparable picture regarding the probable gradual development of the settlement from a lakeshore Late Neolithic to a dryland Final Neolithic habitation.

However, the noticeable differences in the investigation’s projects of the two habitations do not permit for now any further comparative remarks. Namely, only some few usable information regarding the central residential area of Anarghiri IXb Late Neolithic I habitation are available in contrast to the abundant material of all kinds unearthed in Dispilio, even if no specific structure's layout is for now recognized. Respectively, little is known about the possible extent and limits of the earliest settlement in Dispilio, as well as the spatial organization of its peripheral zone, which constituted some of the detectable characteristics of Anarghiri IXb discussed in the framework of the present study.

The comparison with the Albanian cross-border region could be focused on the correlation of Anarghiri IXb with the wetlands investigated in Korça Basin; yet, there are obvious difficulties to proceed in this approach due, one hand to the scarcity of ^{14}C dates from the Albanian sites and on the other hand due to the lack of usable information about the pottery assemblage of Anarghiri IXb. Subsequently, the supposed Middle Neolithic dating of the lowest layers of **Dunavec** (based on characteristic pottery) cannot be easily correlated to the earliest Anarghiri IXb ^{14}C dates, given also the existent deviations in the use of the terms Early, Middle and Late Neolithic between Greek and Albanian prehistorians. Moreover, the only comparison to the well-known, but still not fully published settlement of **Maliq** would refer to the possible chronological correlation of the uppermost Final Neolithic layers of Anarghiri IXb with the habitation of Maliq II, from which one single ^{14}C measurement dates the specific layer in the second half of the 5th mil. BC (Oberweiler et al. 2018, 186).

The attempt to compare Late and Final Neolithic habitation of Anarghiri IXb with **Sovjan** is almost impossible since according to the stratigraphic sequence documented in its excavated area, there seems to be an interruption in the habitation after the first Early Neolithic phase for more than 2000 years, namely from the mid-6th until the mid-4th mil. BC. Still, at this point, it should be stressed that the geographically closest example of a prehistoric accessing structure comparable to those of Anarghiri IXb is the partially excavated trackway found to the north of the elongated apsidal house of Sovjan, even if it is of Middle Bronze Age chronology in the first half of the 2nd mil. BC.

Lastly, most probable seems to be the chronological correlation of Anarghiri IXb with the habitation investigated in **Kallamas** at the western Albanian shore of Lake Great Prespa, since the four available ^{14}C dates point to two habitation's phases, namely between 5400-5200 cal BC and 4800-4500 cal BC.

The current state of research and study, as well as the lack of ^{14}C dates from the wetlands investigated on the shores of Lake Ohrid in North Macedonia, make difficult any direct chronological correlation with Anarghiri IXb. Yet, using the general chronological framework accepted for the dating of Neolithic cultures in the neighbouring country, it could be claimed that the two Late Neolithic settlements **"Ustie na Drim"** and **"Ohridati–Penelope"** could be related to Anarghiri IXb ^{14}C dated later habitation's phases. Nevertheless, in terms of absolute chronology, this comparison is for now not easily documented. Yet, it should be further evaluated if one single post from Ohridati dated in the mid-6th mil. BC could provide some different perspective on this discussion. It is also self-evident that the Late Bronze and Iron Age underwater settlements in **Vrbnik** and **"Bay of Bones-Plocha Michov Grad"** cannot be integrated into the comparative discussion referring to Anarghiri IXb.

The attribution of specific characteristics regarding the construction and organization of space at the peripheral zone of Late and Final Neolithic Anarghiri IXb proposed in this study permit the inclusion of the settlement into a distinctive group of sites. Namely, in a constantly growing cluster of habitations, in the perimeter of which extended works for the demarcation of space are more frequently discovered in excavations at the adjacent regions of western and central Macedonia. In this final comparative discussion, the selection of the highlighted examples is made mainly in terms of chronological correlation with Anarghiri IXb findings.

Among several architectural features discovered in the extended dryland settlement of **Avgi** located at a hilly area approx. 10km south of Lake Kastoria and dated from Middle Neolithic up to the Late Neolithic II (c. 5650-4500 cal BC), two ditches were detected by geomagnetic prospections at the western edge of the habitation (Stratouli 2007, 597; Tsokas et al. 2007). The outermost Ditch A was an 11m-wide and 3m-deep U-shaped cutting running from south towards north with a turn to the east. According to the excavator, the feature was dug to demarcate actually and symbolically the built space, as a mean to prevent the habitation from the erosive impact of accumulated natural debris and soil or to serve as a water tank for the lowest parts of the settlement. Some 10m to the east the shallower and narrower Ditch B was detected containing bigger quantities of pottery, artefacts and coarse stones compared to Ditch A. This second feature could be related to an above-ground structure built for the protection of the settlement, yet its chronological correlation to Ditch A remains for now open. Nevertheless, both structures most probably belong to the latest habitation phase Avgi III dated in the Late Neolithic II period (Stratouli 2013).

Subsequently, if the initial dating of these enclosing works is confirmed, it can be stressed that the two ditches could be attributed in the same chronological framework with Fence 3 and 8(?) from Anarghiri IXb at Late Neolithic II/Final Neolithic. In addition, beyond any other interpretative approach, the correlation of Ditch A with possible practical needs imposed by environmental factors such as water and debris in a dryland habitation would be interesting to be collated with similar functions of a palisade in a wetland. Furthermore, according to the available evidence from both settlements, it seems probable that these features constituted structural interventions in the framework of possible wider spatial rearrangements during the advanced stages of the habitations' phase, whose extent and specific form remain for now undetectable.

The similarities of Anarghiri IXb in respect of excavational conditions, location in environmental setting and most probably chronological integration with two of the investigated settlements in Kitrini Limni region of Kozani Prefecture constitute one interesting framework for discussing some aspects of the spatial organization. Namely, the last 20 years the construction of the modern Egnatia Highway, as well as the intensification and expansion of the activities of the Public Power Corporation S.A. – Hellas in one huge lignite mining zone to the south of Ptolemais necessitated the realization of large-scale rescue excavations at the perimeter of the recently drained marsh of Kitrini Limni.

The rescue excavation of the low mound known as **Toumba Kremastis Koiladas** located at the southeastern edge of Kitrini Limni basin covered approx. 0,7 of a total area of 8 hectares in which surface archaeological material was distributed (Hondrogianni – Metoki 2001, 2009, 2015). The remains discovered within the investigated zone comprised 462 pits of various sizes and possible functions, as well as 23 cremations dated according to a series of ^{14}C measurements in Late Neolithic I period (c. 5340-4930 cal BC). The assumption that the excavated area corresponds to the marginal zone of the habitation is supported not only by the absence of remains related to domestic architecture but mainly by the presence of a system of 6 or 7 ditches of various dimensions. Of them, Ditch B is the biggest one measuring 74m in length with a west-east direction and a curved part directed from north-south, while parallel to that to the north Ditches C and C1 were dug. One interesting notion stated by the excavator is that, since each ditch was most probably constructed in successive phases, these works should not be considered as products of a uniform communal construction plan but they could be related with activities associated to individual houses employed in different periods. Nevertheless, the excavator claims that specific practical functions, such as the provision of clayish soil, water draining, demarcation of space, as well as burial use, should be further discussed (Hondrogianni – Metoki 2009, 626-627).

Kleitos I is cross-referenced in this discussion due to some interesting similarities with Anarghiri IXb findings in respect of special arrangement, as well as the form of the enclosing works discovered (Ziota 2014a, 2014b; Ziota et al. 2013a, 2013b). The settlement located in the southeastern perimeter of Kitrini Limni covering an area of approx. 2 hectares is dated - according to the pottery assemblage - in the late-6th to the early-5th mil. BC, namely within the Late Neolithic I period. Within the central residential area, the remains of ten relatively large rectangular buildings were discovered in a loose spatial arrangement with varying open spaces between them. In almost all over the peripheral zone of the settlement parts of an organized enclosing system were discovered which were probably encircling the oval-shaped residential zone having practical or even symbolic functions. Except for the southern area, the outer boundary of this system was defined by a 3-4m wide and 1,5m deep ditch, while two narrower and shallower ditches constituted a second delimitation's line towards the central zone of the habitation. Furthermore, on both sides of the northwestern part of the outer ditch two wooden palisades were constructed with vertical elements placed into narrow foundation ditches, while two other palisades were discovered at the eastern part of the excavated area. Lastly, an approx. 45m-long narrow ditch was excavated in the central area of the settlement with a north-south direction, which except its possible use as a water draining channel, was probably dug to form an internal boundary within the residential area since almost all the houses were built to the west of the ditch.

Comparing the findings from Kitrini Limni basin with the picture drawn regarding the outline of Anarghiri IXb habitation, the probable contemporaneity of the three settlements within Late Neolithic I period forms the basic presupposition for any comparative remarks. In terms of spatial organization, it could be claimed that in all cases the Neolithic communities chose to delimitate their residential space - for variable reasons already discussed - with rather concrete and recognizable means. In this framework, it should be noticed that, while this general decision was realized in Anarghiri IXb by the construction of Fence 2, 4, 5 and possibly Fence 1, in Toumba Kremastis Koildas the widely-used system of successive ditches was employed. Yet, this arrangement in the case of Kleitos I is further reinforced - at least in some of its parts - by the presence of the wooden palisades that create an above-ground, solid barrier. Moreover, it can be stressed that the construction projects in those habitations were realized in environmental settings that were in some degree influenced by the presence of water - in case of Anarghiri IXb even more decisively - a fact that should have affected the planning of the interventions, their form, the materials exploited as well as the technical solutions employed. And it is also arguable that all these data referring to spatial demarcation constitute manifestations of specific socioeconomic and ideological interactions developed not only in intra-settlement level but also between the neighbouring communities of both Amindeon and Kitrini Limni basins.

Examining the data deriving from habitations synchronous to Late Neolithic Anarghiri IXb in the region of Central Macedonia, it could be noticed that the presence of enclosing works constitutes a rather common practice, even though they are usually fragmentarily investigated. For example, at the well-known Early Neolithic settlement of **Nea Nicomedia**, parts of two successive ditches at the habitation's southern periphery were recorded dating in Late Neolithic (Rodden and Wardle 1996, 52). Furthermore, in the rescue excavation of the Middle and Late Neolithic settlement of **Stavroupoli Thessalonikis**, the 12-14m wide and 4m deep Ditch B was one of the two fragmentarily enclosing works of the settlement, probably related to the second habitation's phase (Grammenos and Kotsos 2004, 17; Kotsos 2013). Parts of a circuit stone wall and a ditch - both of Late Neolithic dating - were also documented at the southeastern area of the Neolithic settlement of **Paliambela** in Pieria Prefecture, which formed some kind of spatial limitations (Halstead and Kotsakis 2002).

The extent of the excavation of the Late Neolithic settlement **Makriyalos** in Pieria and the variable archaeological assemblage discovered and studied provide significant information for the discussion of the habitation's spatial organization, especially in respect of the demarcation of its peripheral zone (e.g. Pappa 2007, 2008, 2018; Pappa and Bessios 1999; Pappa et al. 2013). According to the available ^{14}C dates, Makriyalos I was founded and inhabited during early Late Neolithic (5500/5400-5000 BC), while a second habitation's phase dating in advanced Late Neolithic (4900-4600/4500 BC) was identified. Two ditches constituted the dominant features on the eastern perimeter of the first habitation comprised groups of pits and pit-dwellings sparsely distributed in an estimated area of 28 hectares. Ditch A was initially formed by a continuous row of deep pits, while in a second structural phase it was dug anew as a 4,5m-widte and 3,5m-deep V-shaped channel. In parallel to this and in a distance of approx. 10m to the east the shallower and narrower Ditch B formed a second outer limit, while Ditch C that was fragmentarily excavated within the core of the habitation would have been used as an internal space's demarcation feature. The later settlement Makriyalos II was smaller in size, but with denser constructed space comprising pit houses and apsidal structures, while the habitation was probably enclosed by ditches which were not investigated. The interpretative discussion regarding Markiyalos' I ditches have as starting point the rejection of a possible defensive function due to the large extent of the habitation that makes these features rather ineffective in terms of protection. The excavators stress that these communal works aimed to delimitate the settlement's boundaries, as well as to serve practical needs such as control of access of people and livestock, water storage and refuse of debris. Furthermore, the discovery of burials and scattered human bones points also to the use of the ditches as means to demarcate the community's space in a symbolic level (Pappa 2007, 261; 2008, 362).

The diverse environmental context, the significantly smaller size and generally the different type of habitation of Anarghiri IXb do not allow any specified comparisons with Makriyalos' findings. For now, the only noticeable remark would refer to the confirmation of the inclusion of the settlement into the interregional list of habitations that during Late Neolithic I bear certain evidence for the delimitation of their space. In particular, the seemingly constant choice of the Neolithic communities not to confine the demarcation's constructional interventions to single features (ditch, wall or palisade), but to realize plans of organized systems of interrelated works such as Anarghiri IXb successive fences or the ditches of Makriyalos, constitutes one topic open for further investigation.

3.4 General conclusions and future research potentials

The schematized description of Anarghiri IXb settlement's general profile, although based on some provisional stratigraphic remarks made on selected excavational areas and the general information included in the excavation's records and photos' archive, constitute one preliminary presentation of the Neolithic lakeside habitation as one of the newly investigated settlements during the realization of the Rescue Excavations Project of Florina Ephorate of Antiquities in Amindeon Basin. Furthermore, the considerably high number of 79 ^{14}C dates deriving from different excavational layers, contexts, as well as structural entities constitute a reliable basis for building the general chronological framework of the habitation's diachronic development. The documentation of some building activities since the earliest phases of Late Neolithic I in 55th-54th centuries BC and their intensification at least on the periphery of the settlement in the succeeding 53rd-49th centuries BC could be correlated with the excavational context of a habitation influenced by the presence of water. The form and preservation of the building remains, as well as of the movable finds discovered in the upper excavational layers constitute indications for the gradual development of the settlement into a dryland habitation in the succeeding 48th-44th centuries BC until Final Neolithic, although the existence of a continuous Late Neolithic II habitation's phase remains questionable.

Consisting one of the main objectives of the present study, the documentation of all the available data regarding the Anarghiri IXb pile-field in an *ad-hoc* structured database allowed their processing to become systematized information regarding the structural wood discovered in the lowest layers mainly on the peripheral zone of the Late Neolithic I habitation. Despite the variable state of preservation of the wooden elements during their excavational exposure due to the impact of several factors, their basic physical and technical attributes combined with specific observations regarding their stratigraphic and horizontal distribution permitted their categorization and analytical presentation.

Vertical posts constitute the abundant elements of Anarghiri IXb pile-field, bearing variable metric characteristics, despite the almost exclusive exploitation of relatively young oak trees (80% of samples) and the relatively limited presence of conifers (20% of samples). Their irregular spatial distribution - except those attributed to specific wooden structures - show some similarities to typical wetlands' pile-fields, posing at the same time certain restrictions to the recognition of specific features' layouts. Furthermore, there are recordable processing techniques employed for the transformation of the trees' stems to effective structural parts for the construction and support of the habitation's buildings. The detection of some exceptional cases of vertical posts in respect of size (e.g. the vertical posts of Northern Sector), physical attributes (e.g. posts bearing branches) and possible structural entity (e.g. features in soundings of the northern area) constituted observable occasions for the discussion of various methodological, as well as interpretative notions.

The second distinguishable category of wooden elements of Anarghiri IXb pile-filed are those found horizontally deposited within the lowest layers. Their stratigraphic and spatial distribution, as well as their physical and technical characteristics normally did not facilitate their correlation to specific features, a fact that is caused by the detachment of these elements from their initial position, by the impact of depositional and post-depositional factors or by the possible discard of these elements after their use. A few particular excavational contexts, as for example the concentrations of horizontal elements in Southern and Southeastern Sectors offered some opportunities for further elaboration of these notions. Some similar methodological and interpretative restrictions regarding the scattered presence of smaller branches, twigs or woodchips within the excavated area of Anarghiri IXb were also discussed.

Since the investigation of the earliest layers of the habitation was mainly focused on the peripheral zone of the site, the most prominent outcome of the pile-field's analytical approach was the recognition, description and dating of some accessing and enclosing wooden structures that for now constitute exceptional findings for southern Balkan prehistoric research. Accordingly, the Late Neolithic I Trackway 2 (early 53rd-late 51st centuries BC) and Trackway 3 (50th-49th centuries BC) most probably constituted the main crossings that joined the habitation with the opposite dryland covering a distance of 80-120m. Although the arrangement of the vertical structural elements and the lack of horizontal wood do not facilitate the exact reconstruction of their form, their comparison to similar structures discovered in European wetlands led to the supposition that they were ground-level features comprising a walking surface of horizontal elements retained and supported by vertical posts. Two similar, still partially investigated double posts' row alignments were characterized with specific reservations as Trackway 3a(?) and Trackway 3b(?), without excluding the possibility that they constituted structural parts or successive repairs of Trackway 3. The dating of Trackway 1 in the Early Bronze Age (mid-26th to mid-25th centuries BC) most probably explains its obvious structural differences compared to the earliest features, namely the elaborately processed vertical posts arranged to form a bridge-like crossing. In addition, the slightly earliest remains of the fragmentary double posts' row characterized as Trackway 4(?) dated at mid-29th to early-26th centuries BC are cautiously integrated into the general discussion regarding Anarghiri IXb accessing structures.

The spatial organization of at least the northern and southeastern margins of the Late Neolithic I habitation was seemingly determined by the presence of Fence 2, 4 and 5, possibly complemented by the ambiguous double posts' row characterized as Fence 1. The general structural characteristics, as well as the arrangement of these features dated between 53rd-49th centuries BC led to the supposition that they were parts of the settlement's delimitation system. The possibility of general rearrangements of the habitation's space during Late Neolithic II/Final Neolithic could be supported by the shifting of the enclosing system towards the central area of the settlement indicated by the location of Fence 3 and 8(?), while Fence 6(?) and 7(?) constitute fragmentarily investigated alignments that cannot be easily integrated into the discussion regarding the habitation’s spatial organization.

Considering the chronological framework, the form and the arrangement of Anarghiri IXb peripheral wooden structures, it was claimed that these constituted a complex system built to demarcate the settlement’s limits and to provide access to its inhabitants to the broader region of Chimaditis wetland. Beyond this almost self-evident interpretative supposition, the comparative discussion of these structures with cross-references to similar settings discovered in European wetlands led to the examination of various notions regarding alternative functions of this system. Among them, the old but still debated defensive role and the conventional ideas about the supportive function of the structures to the so-called practical needs (protection from water and wind, control of access) are to be mentioned. Moreover, approaches that attribute to these features functions such as the symbolic demarcation of the communal space or the passage from the world of water to this of the land could be also incorporated into the general interpretative discussion.

All the aforementioned data, propositions as well as working hypotheses regarding aspects of Anarghiri IXb peripheral zone’s spatial organization provide some preliminary information for the integration of Anarghiri IXb into the chronological and cultural framework of Late Neolithic period of the cross-border area and the neighbouring regions of western and central

Macedonia. The rarity of investigated prehistoric wetlands in southern Balkans and the sparsity of information regarding their spatial organization do not permit any specific comparative remarks of Anarghiri IXb with other sites except the possible contemporaneity with some of them. Nevertheless, the form and arrangement of the habitation's enclosing structures provide evidence for its inclusion into the gradually growing group of Late Neolithic settlements of the broader region whose residential space was delimitated by similar works approached with various and interesting interpretative propositions.

As is customary, in these last lines it will be stressed that the completion of this study leaves several issues open for further research and discussion. At any rate, the fact that the systematic study and publication of the archaeological material unearthed from Anarghiri IXb during the rescue excavations of 2013-2016 are - with some few exceptions - pending, is one critical factor that for now affects significantly any attempt for further examination of the settlement's spatial organization.

Nevertheless, the wooden samples collected from Anarghiri IXb pile-field constitute one quite significant assemblage bearing promising potentials for the realization of a modern dendroarchaeological study. Except for the self-evident importance of such a development for the introduction of dendrochronology as a state-of-art methodology in prehistoric research of southern Balkans, such a perspective would produce useful results for decoding Anarghiri IXb pile-filed.

Accordingly, the potential to obtain robust dates from the sampled posts could lead to the determination of features' layouts that for now remain undetectable within specific areas of Anarghiri IXb where the density of vertical elements is high. In a similar direction, some of the assumptions made in this the study regarding the presence of recognizable posts' alignments and features could be tested in a more comprehensive way. Even more specifically, the dendrochronological analysis of the available samples from Anarghiri IXb fences and trackways would lead to some refined dates and conclusions regarding their construction, as well as possible repair(s) or re-building. In addition, the clarification of the structures' dating could be used to test some of the proposed interpretations or even to open windows for new discussions. In a more general research framework, the dendroarchaeological analysis of this material would contribute to the approach of issues related to the woodlands' management strategies employed by the Neolithic community and would serve as a complementary tool for the reconstruction of the local environment.

Lastly, provided that the study of specific categories of Anarghiri IXb archaeological material, the analysis of the excavated area and the final reconstruction of the settlement's stratigraphy will produce some results, new potentials for integrating the peripheral structures into the general spatial context of the habitation would emerge.

BIBLIOGRAPHY

Andreou, S., Fotiadis, M. and Kotsakis, K. 2001. The Neolithic and Bronze Age of Northern Greece. In: T. Cullen, ed. *Aegean Prehistory, A Review.* Boston: Archaeological Institute of America, pp. 259–597.

Alušík, T. 2017. Community Interaction and (Intended) Land Use in Neolithic Greece: The Testimony of the Defensive Architecture. In: A. Sarris, E. Kalogiropoulou, T. Kalayci, and L. Karimali, eds. *Communities, Landscapes and Interaction in Neolithic Greece. Proceedings of the International Conference, Rethymno 29-30 May 2015*. Michigan: International Monographies in Prehistory, pp. 187–57.

Anthony, D. and Chi, J. 2010 eds. *The Lost World of Old Europe: The Danube Valley, 5000–3500 BC*. Princeton: Princeton University Press.

Armit, I., Knüsel, C., Robb, J. and Schulting, R. 2007. Warfare and violence in prehistoric Europe: An introduction. In: T. Pollard and I. Banks, eds. *War and Sacrifice. Studies in the Archaeology of Conflict.* Leiden/Boston: Brill, pp. 1–12.

Arnold, B. 1996. The past as propaganda: totalitarian archaeology in Nazi Germany. *Antiquity*, 64: 464–478.

Aslanis, I. 1990. Befestigungsanlagen in Nordgriechenland von dem Chalkolithikum bis zum Beginn der frühen Bronzezeit. In: D. Srejović and N. Tasić, eds. *Vinca and its world: International Symposium. The Danubian region from 6000 to 3000 B.C. Belgrade, Smederevska Palanka, October 1988*. Beograd: Serbian Academy of Sciences and Arts, pp. 183–188.

Aslanis, I. 2008. Frühe Fortifikationssysteme in Griechenland. In: H. Erkanal, H. Hauptmann, V. Şahoğlu and R. Tuncel, eds. *The Aegean in the Neolithic, Chalcolithic and the Early Bronze Age. Proceedings of the International Symposium October 13th-19th 1997, Urla-Izmir (Turkey).* Ankara: Ankara University Press, pp.35–43.

Bauer, S. 1996. Waldnutzung im Jungneolithikum am Beispiel. Pestenacker/Oberbayern. *Alt-Thüringen*, 30: 116–162.

Bauer, S. 2009. Die Feuchtbodensiedlung Pestenacker – Holzkonstruktionen, Siedelphasen und Waldnutzung während der Altheimer Kultur. In: L. Husty, M. Rind und K. Schmotz, Hrsg. *Zwischen Münchshöfen und Windberg: Gedenkschrift für Karl Böhm*. Rahden/Westf: Marie Leidorf Verlag, pp. 177–203.

Bickle, P. and Kalogiropoulou, E. 2017. ‘Very like the Neolithic’: the everyday and settlement in the European Neolithic. In: P. Bickle, V. Cummings, D. Hofmann and J. Pollard, eds. *The Neolithic of Europe. Papers in Honour of Alasdair Whittle.* Oxford and Philadelphia: Oxbow Books, pp. 7–23.

Billamboz, A. 2005. 20 Jahre Dendroarchäologie in den Pfahlbausiedlungen Südwestdeutschlands - Bilanz und Perspektiven. In: P. Della Casa and M. Trachsel, eds. *WES'04: Wetland economies and societies: proceedings of the international conference, Zurich, 10-13 March 2004.* Zürich: Chronos, pp. 47–56.

Billamboz, A. 2006. Dendroarchäologische Untersuchungen in den neolithischen Ufersiedlungen von Hornstaad-Hörnle. In: B. Dieckmann, A. Harwath und L. Hoffstadt, Hrsg. *Siedlungsarchäologie im Alpenvorland IX: Hornstaad-Hörnle IA. Die Befunde einer jungneolithischen Pfahlbausiedlung am westlichen Bodensee.* Stuttgart: Kommissionsverlag – Konrad Theiss Verlag, pp. 297–414.

Billamboz, A. 2011. Applying dendrotypology to large timber series. In: P. Fraiture, ed. *Tree Rings, Art, Archaeology. Proceedings of the Conference in Brussels, Royal Institute for Cultural Heritage, 10-12 February 2010, Scientia Artis 7*. Brussels: IRPA/KIK, pp. 177–188.

Billamboz, A. 2013. Dendrochronology in wetland archaeology. In: F. Menotti and A. O’ Sullivan, eds. *The Oxford Handbook of Wetland Archaeology*. Oxford: Oxford University Press, pp. 617–632.

Billamboz, A. 2014a. Dendrotypology as a key approach of former woodland and settlement developments. Examples from the prehistoric pile dwellings on Lake Constance (Germany). In: A. Di Filippo, G. Piovesan, M. Romagnoli, G. Helle, and H. Gärtner, eds. *TRACE - Tree Rings in Archaeology, Climatology and Ecology*. *Scientific Technical Report 14/05, Volume 12.* Potsdam: German Research Centre for Geosciences, pp. 6–11.

Billamboz, A. 2014b. Timber from Old and Young Trees: Dendrotypology as the Backbone of the Dendroarchaeological Investigations of Prehistoric Fish Traps and Pile Dwellings in South-West Germany. *Journal of Wetland Archaeology*, 14: 48–57.

Billamboz, A., Köninger, J., Schlichtherle H. und Torke W. 2009. *Siedlungsarchäologie im Alpenvorland XI: Die früh- und mittelbronzezeitliche „Siedlung Forschner“ im Federseemoor. Befunde und Dendrochronologie.* Stuttgart: Theiss Verlag.

Bleicher, N. 2009a. Stabilität und Dynamik von Dörfern und Siedlungsgemeinschaften aus dendroarchäologischer Sicht. *Jahrbuch Archäologie Schweiz*, 92: 239–246.

Bleicher, N. 2009b. *Altes Holz im neuen Licht. Archäologische und dendrochronologische Untersuchungen an spätneolithischen Feuchtbodensiedlungen in Oberschwaben. Materialhefte zur Archäologie in Baden-Württtemberg 88*. Stuttgart: Theiss Verlag.

Bleicher, N. 2014. Dendrochronological analyses of wood samples from a Late Bronze to early Iron Age site at Lake Luokesa, Lithuania. *Vegetation History and Archaeobotany*, 23: 355–365.

Bleicher, N. und Harb, C. Hrsg. 2015. *Zürich-Parkhaus Opéra. Eine neolithische Feuchtbodenfundstelle. Band 1: Befunde, Schichten und Dendroarchäologie. Monographien der Kantonsarchäologie Zürich 48*. Zürich und Egg: Fotorotar AG.

Bleicher, N. und Harb, C. Hrsg. 2017. *Zürich-Parkhaus Opéra. Eine neolithische Feuchtbodenfundstelle. Band 3: Naturwissenschaftliche Analysen und Synthese. Monographien der Kantonsarchäologie Zürich 50*. Zürich und Egg: Fotorotar AG.

Bleicher, N. and Harb, C. 2018. Settlement and social organization in the late fourth millennium BC in Central Europe: the waterlogged site of Zurich-Parkhaus Opéra. *Antiquity*, 92 (365): 1210–1230.

Bond, C. 2004. The Sweat Track, Somerset: A place mediating culture and spirituality? In: T. Insoll, ed. *Belief in the Past. The Proceedings of the 2002 Manchester Conference on Archaeology and Religion. BAR International Series 1212*. Oxford: Archaeopress, pp. 37–50.

Bond, C. 2006. *Prehistoric Settlement in Somerset Landscapes, Material Culture and Communities 4300 to 700 cal. BC (Vol. I-II)*. Unpublished PhD Thesis, The University of Winchester.

Borić, D., Hanks, B., Šljivar, D., Kočić, M., Bulatović, J., Griffiths, S., Doonan, R. and Jacanović, D. 2018. Enclosing the Neolithic World. A Vinča Culture Enclosed and Fortified Settlement in the Balkans. *Current Anthropology*, 59(3): 336–346.

Bosch, A., Chinchilla J. e Tarrús, J. eds. 2000. *El Poblat lacustre neolític de La Draga: excavacions de 1990 a 1998*. Girona: Palahi AG.

Bottema, S. 1974. *Late Quaternary vegetation history of Northwestern Greece*. Unpublished PhD Thesis, Rijksuniversiteitte Groningen.

Bottema, S. 1982. Palynological investigations in Greece with special reference to pollen as an indicator of human activity. *Palaeohistoria*, 24: 257–288.

Brunning, R. 2007. *Structural Wood in Prehistoric England and Wales.* Unpublished PhD Thesis, University of Exeter.

Brunning, R. and McDermott, C. 2013. Trackways and Roads Across the Wetlands. In: F. Menotti and A. O' Sullivan, eds. *The Oxford Handbook of Wetland Archaeology*. Oxford: Oxford University Press, pp. 359–384.

Casparie, W. 1982. The neolithic wooden trackway XXI (Bou) in the raised bog at Nieuw – Dordrecht (the Netherlands). *Palaeohistoria,* 24: 115–164.

Casparie, W. 1987. Bog trackways in the Netherlands. *Palaeohistoria*, 29: 35–65.

Casparie, W. und Moloney, A. 1992. Niederschlagsklima und Bautechnik neolithischer hölzerner Moorwege. *Archäologische Mitteilungen aus Nordwestdeutschland*, 15: 69–88.

Casparie, W. and Moloney, A. 1994. Neolithic wooden trackways and bog hydrology. *Journal of Paleolimnology*, 12: 49–64.

Chapman, J. and Gaydarska, B. 2006. Does enclosure make a difference? A view from the Balkans. In: A. Harding, S. Sievers and N. Venclová, eds. *Enclosing the Past: Inside and Outside in Prehistory, Sheffield Archaeological Monographs 15.* Sheffield: J.R. Collins Publications, pp. 20–43.

Chatzitoulousis, S. 2006. *Το ξύλο ως αρχαιολογικό υλικό στην προϊστορία: το παράδειγμα του νεολιθικού λιμναίου οικισμού στο Δισπηλιό Καστοριάς.* Unpublished PhD Thesis, Aristotle University of Thessaloniki.

Chatzitoulousis, S. 2008. Τα υδατοκορεσμένα ξύλα από το Νεολιθικό λιμναίο οικισμό στο Δισπηλιό Καστοριάς. *Εγνατία*, 12: 65–85.

Chatzitoulousis, S., Sianos, T., Stavridopoulos, G. and Touloumis, K. 2014. Περίκλειστος κόσμος. Μια συζήτηση για τους περιβόλους στην προϊστορική Μακεδονία με αφορμή το Δισπηλιό Καστοριάς. In: E. Stefani, N. Merousis and A. Dimoula, eds. *A century of research in Prehistoric Macedonia. International Conference Proceedings, Archaeological Museum of Thessaloniki (22–24 November 2012)*. Thessaloniki: Archaeological Museum of Thessaloniki, pp. 373–380.

Chourmouziadi, A. and Giagkoulis, T. 2001. Μπροστά στην στρωματογραφία ενός λιμναίου οικισμού. Μπορούν 2088 πάσσαλοι να στηρίξουν μία αξιόπιστη θεωρία; In: *Πρακτικά Διεθνούς Συμποσίου στη Μνήμη του Δ. Ρ. Θεοχάρη: Η Προϊστορική Έρευνα στην Ελλάδα και οι Προοπτικές της: Θεωρητικοί και μεθοδολογικοί προβληματισμοί.* Thessaloniki: University Studio Press, pp. 431–438.

Chourmouziadi, A. and Giagkoulis, T. 2002. Προβλήματα και μέθοδοι προσέγγισης του χώρου. In: G.H. Chourmouziadis, ed. *Δισπηλιό. 7500 χρόνια μετά.* Thessaloniki: University Studio Press, pp. 37–74.

Chourmouziadi, A. and Giagkoulis, T. 2004. Dispilio 2002: Εικόνες ενός (από)δομημένου χώρου. In: Υπουργείο Πολιτισμού και Αθλητισμού/Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης. *Το Αρχαιολογικό Έργο στη Μακεδονία και Θράκη το 2002 (ΑΕΜΘ 16).* Thessaloniki: Altintzis, pp. 641–648.

Chourmouziadis, G.H. 1971. Δύο νέαι εγκαταστάσεις της αρχαιοτέρας Νεολιθικής εις την Δυτ. Θεσσαλίαν. *Αρχαιολογικά Ανάλεκτα εξ Αθηνών*, IV(2): 167–175.

Chourmouziadis, G.H. 1979. *Το Νεολιθικό Διμήνι.* Βόλος: Εταιρεία Θεσσαλικών Ερευνών.

Chourmouziadis, G.H. 2008. *Dispilio. Notes on a visit.* Athens: KAPON Editions.

Chourmouziadis, G.H. ed. 2002. *Δισπηλιό. 7500 χρόνια μετά.* Thessaloniki: University Studio Press.

Chourmouziadis, G. and Sofronidou, M. 2007. Dispilio near Kastoria: the prehistoric lake settlement. In: P. Valavanis, ed. *Great Moments in Greek Archaeology*. Los Angeles: J. Paul Getty Museum, pp. 272–283.

Christensen, J. 2004. Warfare in the European Neolithic. *Acta Archaeologica*, 75: 129–156.

Chrysostomou, P. in press. Ο Πολιτισμός των Τεσσάρων Λιμνών. Νέα στοιχεία για τη διαχρονική ανθρώπινη παρουσία στο Λεκανοπέδιο Αμυνταίου Φλώρινας. In: Υπουργείο Πολιτισμού και Αθλητισμού/Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης. *Το Αρχαιολογικό Έργο στη Μακεδονία και Θράκη το 2012 (ΑΕΜΘ 26).* Thessaloniki: Zitis.

Chrysostomou, P. and Giagkoulis, T. 2016. Land und Seeufersiedlungen der "Kultur der Vier Seen", Griechenland. Neue archäologische Einblicke in den prähistorischen Siedlungen im Amindeon-Becken. *Plattform*, 23/24: 4–9.

Chrysostomou, P. and Giagkoulis, T. 2018. Εντός και εκτός ορίων: όψεις της χωροοργάνωσης στους προϊστορικούς οικισμούς Ανάργυροι IXa και Ανάργυροι XI στο Λεκανοπέδιο Αμυνταίου. In G. Karamitrou-Mentesidou, ed. *Το Αρχαιολογικό Έργο στην Άνω Μακεδονία. Γ' Επιστημονική Συνάντηση, Νοέμβριος 2013. Τόμος Α'.* Aiani: Archaeological Museum, pp. 207–228.

Chrysostomou, P., Giagkoulis, T. and Mäder, A. 2015. The "Culture of Four Lakes". Prehistoric lakeside settlements (6th-2nd mil. BC) in the Amindeon Basin, Western Macedonia, Greece. *Archäologie der Schweiz*, 38(3): 24–32.

Chrysostomou, P. Giagkoulis, T., Kyriakou, A. and Naidou, E. in press. Ελληνο-ελβετικό πρόγραμμα συνεργασίας: «Διάσωση, συντήρηση και τεκμηρίωση ξύλινων αντικειμένων από τους προϊστορικούς λιμναίους οικισμούς του Λεκανοπεδίου Αμυνταίου Φλώρινας». In: Υπουργείο Πολιτισμού και Αθλητισμού/Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης. *Το Αρχαιολογικό Έργο στη Μακεδονία και Θράκη το 2014 (ΑΕΜΘ 28).* Thessaloniki: Zitis.

Coles, J. 1968. A Neolithic God-dolly from Somerset, England. *Antiquity*, 42: 275–277.

Coles, J. 1975. Ancient Trackways of the Somerset Levels. *Archaeology*, 28(3): 148–156.

Coles, J. 1998. Prologue: Wetland Worlds and the Past Preserved. In: K. Bernick, ed. *Hidden Dimensions: The Cultural Significance of Wetland Archaeology*. Vancouver: University of British Columbia Press, pp. 3–23.

Coles, J. 2006. Ancient wood, woodworking and wooden houses. *euroREA, Journal for (Re)construction and Experiment in Archaeology*, 3: 50–57.

Coles, B. and Coles, J. 1992. Passages of Time. *Archäologische Mitteilungen aus Nordwestdeutschland*, 15: 29–44.

Coles, J., Hibbert, F. and Orme, B. 1973. Prehistoric roads and tracks in Somerset, England 3. The Sweet Track. *Proceedings of Prehistoric Society*, 39: 256–293.

Coles, J., Orme, B., Bishop, A., and Woolley, A. 1974. A Jade Axe from the Somerset Levels. *Antiquity*, 48: 216–20.

Čufar, K., Velušček, A. and B. Kromer, 2013. Two decades of dendrochronology in the pile dwellings of the Ljubljankso barje, Slovenia. In: N. Bleicher, H. Schlichtherle, P. Gassmann und N.

Martinelli, Hrsg. *Dendro-Chronologie, -Typologie, -Ökologie. Festschrift André Billamboz zum 65. Geburtstag.* Freiburg im Breisgau: Janus Verlag, pp. 35–40.

Dieckmann, U. 1998. *Paläoökologische Untersuchungen zur Entwicklung von Natur- und Kulturlandschaft am Nordrand des Wiehengebirges. Abhandlungen aus dem Westfälischen Museum für Naturkunde 60. Jahrgang Heft 4.* Münster: Landschaftsverband Westfalen-Lippe.

Dieckmann, B., Harwath, A. und Hoffstadt, J. Hrsg. 2006. *Siedlungsarchäologie im Alpenvorland IX: Hornstaad-Hörnle IA. Die Befunde einer jungneolithischen Pfahlbausiedlung am westlichen Bodensee*. Stuttgart: Kommissionsverlag – Konrad Theiss Verlag.

Dufraisse, A. et Leuzinger, U. 2009. Collecte du bois de feu dans le village néolithique d'Arbon/Bleiche 3 (Lac de Constance, Suisse): gestion du bois et déterminismes. *Bulletin de la Société préhistorique française*, 106(4): 785–802.

Eberli, U. Hrsg. 2010. *Die horgenzeitliche Siedlung Pfäffikon-Burg. Monographien der Kantonsarchäologie Zürich 40/1*. Zürich und Egg: Fotorotar AG.

Ebersbach, R. 2010a. Seeufersiedlungen und Architektursoziologie – ein Anwendungsversuch. In: P. Trebsche, N. Müller-Scheeßel und S. Reinhold, Hrsg. *Der gebaute Raum. Bausteine einer Architektursoziologie vormoderner Gesellschaften. Tübinger Archäologische Taschenbücher, Band 7.* Münster: Waxmann, pp. 193–212.

Ebersbach, R. 2010b. Vom Entstehen und Vergehen – Überlegungen zur Dynamik von Feuchtbodenhäusern und -siedlungen. In: I. Matuschik und C. Strahm, Hrsg. *Vernetzungen. Aspekte siedlungsarchäologischer Forschung. Festschrift für Helmut Schlichtherle zum 60. Geburtstag*. Freiburg im Breisgau: Lavori Verlag, pp. 41–50.

Ebersbach, R., 2013. Households and settlements: architecture and living spaces. In: F. Menotti and A. O' Sullivan, eds. *The Oxford Handbook of Wetland Archaeology*. Oxford: Oxford University Press, pp. 283–301.

Ebersbach, R., Ruckstuhl, B. und Bleciher N. 2015. *Zürich «Mozartstrasse». Neolithische und bronzezeitliche Ufersiedlungen, Band 5: Die neolithischen Befunde und die Dendroarchäologie Monographien der Kantonsarchäologie Zürich 47*. Zürich und Egg: Fotorotar AG.

Eberschweiler, B. Hrsg. 2004a. *Bronzezeitliches Schwemmgut vom "Chollerpark" in Steinhausen (Kanton Zug). Bemerkenswerte Holzfunde vom nördlichen Zugersee sowie weitere* *bronzezeitliche Hölzer von Fundplätzen an Gewässern der Zentral- und Ostschweiz, Antiqua 37*. Basel: Schweizerische Gesellschaft für Ur- und Frühgeschichte.

Eberschweiler, B. 2004b. Ur- und frühgeschichtliche Verkehrswege über den Zürichsee: erste Ergebnisse aus den taucharchäologischen Untersuchungen beim Seedamm. *Mitteilungen des historischen Vereins des Kantons Schwyz*, 96: 11–32.

Eberschweiler, B. 2005. Ur- und frühgeschichtliche Verkehrswege über den Zürichsee. In: P. Della Casa and M. Trachsel, eds. *WES'04: Wetland economies and societies: proceedings of the international conference, Zurich, 10-13 March 2004*. Zürich: Chronos, pp. 195–200.

Eberschweiler, B. und Heumüller, M. 2016. Durchs Moor und übers Wasser. Wege und Brücken. In: Archäologisches Landemuseum Baden-Württemberg und Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart, Hrsg. *4000 Jahre Pfahlbauten*. Ostfildern: Jan Thorbecke Verlag, pp. 394–394.

Facorelis, Y., Sofronidou, M. and Chourmouziadis, G.H. 2014. Radiocarbon dating of the Neolithic lakeside settlement of Dispilio, Kastoria Northern Greece. *Radiocarbon,* 56(2): 511–528.

Fansa, M. 1992. Moorarchäologie in Niedersachsen. Eine Einführung. *Archäologische Mitteilungen aus Nordwestdeutschland*, 15: 5–21.

Fansa, M. und Schneider, R. 1993. Die Bohlenwege bei Ockenhausen/Oltmannsfehn, Gemeinde Uplengen, Ldkr. Leer (Ostfriesland). *Archäologische Mitteilungen aus Nordwestdeutschland*, 16: 23–43.

Fansa, M. und Schneider, R. 1994. Steinzeitlicher Pfahlweg XV (Le) im Meerhusener Moor zwischen Aurich Tannhausen, Ldkr. Aurich, im Südosten und dem Ewigen Moor, Ldkr. Wittmund. *Archäologische Mitteilungen aus Nordwestdeutschland*, 17: 15–37.

Fansa, M. und Schneider, R. 1996. Die Moorwege im Großen Moor und im Aschener - Brägeler Moor. *Archäologische Mitteilungen aus Nordwestdeutschland*, 19: 5–66.

Fansa, M. und Schneider, R. 1998. Vier hölzerne Moorbrücken im Bereich der Städte Varel und Oldenburg (Old.) und der Landkreise Friesland, Oldenburg und Wesermarsch. *Archäologische Mitteilungen aus Nordwestdeutschland*, 21: 5–64.

Florina Prefecture ed. 2002. *Η Φλώρινα και η περιοχή της*. Florina: Florina Prefecture.

Francuz, J. 2018. Zur Entwicklung der Dendrochronologie am Bielersee 1978–2014. In: Archäologischer Dienst des Kantons Bern, Hrsg. *Archäologie Bern 2018: Jahrbuch des Archäologischen Dienstes des Kantons Bern*. Bern: Archäologischer Dienst des Kantons Bern, pp. 242–267.

Francuz, J. and Suter, P. 2010. Dendrochronologie: Datierung – Dorfgeschichte – Waldnutzung der Ufersiedlung Sutz-Lattrigen-Rütte am Bilersee. In: I. Matuschik und C. Strahm, Hrsg. *Vernetzungen. Aspekte siedlungsarchäologischer Forschung. Festschrift für Helmut Schlichtherle zum 60. Geburtstag*. Freiburg im Breisgau: Lavori Verlag, pp. 179–206.

Furger, A. 1980. *Die neolithischen Ufersiedlungen von Twann, Band 7. Die Siedlungsreste der Horgener Kultur*. Bern: Verlag Paul Haupt.

Gassner, S., Gobet, E., Schwörer, C., Van Leeuwen, J., Vogel, H., Giagkoulis, T., Makri, S., Grosjean, M., Panajiotidis, S., Hafner A. and Tinner W. in press. 20,000 years of interactions between climate, vegetation and land-use in Northern Greece. *Vegetation History and Archaeobotany* [submitted on 31 May 2018].

Gerasimidis, A. and Athanasiadis, N. 1995. Woodland history of northern Greece from the mid Holocene to recent time based on evidence from peat pollen profiles. *Vegetation History and Archaeobotany*, 4: 109–116.

Giagkoulis, T. in press. On the Edge: The Pile-field of the Lakeside Settlement Anarghiri IXb (Amindeon, Western Macedonia, Greece) and the Non-Residential Wooden Structures on the Periphery of the Prehistoric Occupation. In E. Dolbunova, A. Hafner, A. Mazurkevich and E. Pranckenaite, eds. *Settling watery landscapes in Europe: archaeology of pile-settlements of Neolithic-Bronze Age, Proceedings of 22nd Annual Meeting of the European Association of Archaeologists, Vilnius, 31st August - 4th September 2016*.

Giagkoulis, T. in press. Ξύλινες πασσαλόπηκτες κατασκευές από το νεολιθικό λιμναίο οικισμό Ανάργυροι IXb της περιοχής Αμυνταίου Φλώρινας. In: Υπουργείο Πολιτισμού και Αθλητισμού/Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης. *Το Αρχαιολογικό Έργο στη Μακεδονία και Θράκη το 2017 (ΑΕΜΘ 31)*. Thessaloniki: Zitis.

Godwin, H. 1960. Prehistoric wforemenooden trackways of the Somerset Levels: their construction, age and relation to climatic change. *Proceedings of Prehistoric Society*, 26: 1–36.

Gori, M. 2015. *Along the Rivers and Through the Mountains. A revised chrono-cultural framework for the south-western Balkans during the late 3rd and early 2nd millennium BCE. Universitätsforschungen zur prähistorischen Archäologie, Band 268*. Bonn: Verlag Dr. Rudolf Habelt GmbH.

Grammenos, D. and Kotsos, S. 2004. *Σωστικές ανασκαφές στο νεολιθικό οικισμό Σταυρούπολης Θεσσαλονίκης*: *μέρος ΙΙ (1998-2003). Δημοσιεύματα του Αρχαιολογικού Ινστιτούτου Βόρειας Ελλάδας, Αρ. 6*. Thessaloniki: Altintzis.

Guyan, W. 1967. Die jungsteinzeitlichen Moordörfer im Weier bei Thayngen. *Zeitschrift für schweizerische Archäologie und Kunstgeschichte*, 25(1): 1–39.

Hafner, A. 1992. *Lattrigen VI Riedstation. Siedlungsplan und Baugeschichte. Ufersiedlungen am Bielersee 4*. Bern: Staatlicher Lehrmittelverlag.

Hafner, A. 2002. Prähistorische Weganlagen der Westschweiz – Beispiele vom Bieler und Neuenburger See. In: J. Köninger, M. Mainberger, H. Schlichtherle und M. Vosteen, Hrsg. *Schlitten, Schleife, Rad und Wagen. Zur Frage früher Transportmittel nördlich der Alpen. Hemmenhofener Skripte 3*. Freiburg im Breisgau: Janus Verlag, pp. 139–142.

Hafner, A. 2010. Ufersiedlungen mit Palisaden am Bielersee. Hinweise auf Verteidigungssysteme in neolithischen und bronzezeitlichen Pfahlbauten. In: I. Matuschik und C. Strahm, Hrsg. *Vernetzungen. Aspekte siedlungsarchäologischer Forschung. Festschrift für Helmut Schlichtherle zum 60. Geburtstag*. Freiburg im Breisgau: Lavori Verlag, pp. 357–376.

Hafner, A. und Suter, P. 2000. *-3400 v.Chr. Die Entwicklung der Bauerngesellschaften im 4. Jahrtausend v.Chr. am Bielersee aufgrund der Rettungsgrabungen von Nidau und Sutz-Lattrigen. Ufersiedlungen am Bielersee 7*. Bern: Verlag Paul Haupt.

Hafner, A., Heitz, C. and Stapfer, R. 2014. Pile-dwellings of the Neolithic and the Bronze Age in Switzerland. Long-term research and future tasks. In: C. von Carnap-Bornheim, ed. *Quo vadis? Status and Future Perspectives of Long-Term Excavations in Europe. Schriften des Archäologischen Landesmuseum Schleswig: Vol. 10*. Neumünster/Hamburg: Wachholtz Verlag, pp. 59–83.

Hafner, A. Stapfer, R. und Francuz, J. 2016. Die Bucht von Sutz-Lattrigen. Vom Neolithikum bid in die Bronzezeit. In: Archäologisches Landemuseum Baden-Württemberg und Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart, Hrsg. *4000 Jahre Pfahlbauten*. Ostfildern: Jan Thorbecke Verlag, pp. 116–118.

Halstead, P. and Kotsakis, K. 2002. Paliambela. In: D. Blackman, ed. *Archaeology in Greece*. *Archaeological Reports*, 48: 80.

Hasenfratz, A. und Gross-Klee, E. 1995. Siedlungswesen und Hausbau. In: W. Stöckli, U. Niffeler. und E. Gross-Klee, Hrsg. *Die Schweiz vom Paläolithikum bis zum frühen Mittelalter. Band II Neolithikum.* Basel: Verlag Schweizerische Gesellschaft für Ur- und Frühgeschichte, pp. 195–229.

Hayen, H. 1957. Zur Bautechnik und Typologie der vorgeschichtlichen, frügeschichtilchen und mittelalterlichen hölzernen Moorwege und Moorstraßen. *Oldenburger Jahrbuch*, 56(2): 83–170.

Heumüller, M. 2016. Die vorgeschichtlichen Wege des Federseemoores. In: Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart, Hrsg. *Siedlungsarchäologie im Alpenvorland XIII. Die früh- und mittelbronzezeitliche „Siedlung Forschner" im Federseemoor. Naturwissenschaftliche Untersuchungen. Bohlenwege, Einbäume und weitere botanische Beiträge*. Darmstadt: Konrad Theiss Verlag, pp. 361–473.

Heurtley, W. 1939. *Prehistoric Macedonia. An archaeological reconnaissance of Greek Macedonia (West of the Struma) in the Neolithic, Bronze and Early Iron Ages*. Cambridge: Cambridge University Press.

Hofmann, D. 2013. Living by the Lake. Domestic Architecture in the Alpine Foreland. In: D. Hofmann and J. Smyth, eds. *Tracking the Neolithic House in Europe. Sedentism, Architecture and Practice*. London: Springer, pp. 197–227.

Hofmann, D., Ebersbach, R., Doppler, T. and Whittle, A. 2016. The Life and Times of the House: Multi-Scalar Perspectives on Settlement from the Neolithic of the Northern Alpine Foreland. *European Journal of Archaeology*, 19(4): 596–630.

Hondrogianni – Metoki, A. 2001. Εγνατία οδός, ανασκαφή στην προϊστορική θέση «Τούμπα Κρεμαστής-Κοιλάδας», Νομού Κοζάνης. In: Υπουργείο Πολιτισμού και Αθλητισμού/Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης. *Το Αρχαιολογικό Έργο στη Μακεδονία και Θράκη το 1999 (ΑΕΜΘ 13).* Thessaloniki: Altintzis, pp. 399–414.

Hondrogianni – Metoki, A. 2009. *Μη οικιστικές χρήσεις χώρου στους νεολιθικούς οικισμούς. Το παράδειγμα της Τούμπας Κρεμαστής Κοιλάδας*. Unpublished PhD Thesis, Aristotle University of Thessaloniki.

Hondrogianni – Metoki, A. 2015. Ο νεολιθικός οικισμός της «Τούμπας Κρεμαστής Κοιλάδας» (Μέρος Ε'). *Archaeology & Arts* [accessed 26 November 2018]. Available at: http://www.archaiologia.gr/blog/2015/11/02/ο-νεολιθικός-οικισμός-της-τούμπας-κρ-5/.

Honegger, M. 2001. Marin NE-Les Piécettes au Néolitique: une station littorale d' exception. *Jahrbuch der Schweizerischen Gesellschaft für Ur- und Frühgeschichte*, 84: 29–42.

Honegger, M. 2005. Les villages littoraux du Néolithique: égalité et autarcie ou complémentarité et mise en réseau? In: P. Della Casa and M. Trachsel, eds. *WES'04: Wetland economies and societies: proceedings of the international conference, Zurich, 10-13 March 2004*. Zürich: Chronos, pp. 185–194.

Honegger, M. 2007. Le site de Marin/Les Piécettes (Neuchâtel, Suisse) et la question des sanctuaires néolithiques: potentiel et limite de l'approche archéologique. In: M. Besse, ed. *Sociétés néolithiques: des faits archéologiques aux fonctionnements socio-économiques. Actes du 27e colloque interrégional sur le Néolithique, Neuchâtel, 1 et 2 octobre 2005*. Lausanne: Cahiers d' Archéologie Romande, pp. 175–183.

Honegger, M. 2012. Analyse spatiale du site de La Tène/Les-Piécettes (Neuchâtel, Suisse). In: M. Honneger et C. Mordant éds. *L'Homme au bord de l'eau. Archéologie des zones littorales du Néolithique à la Protohistoire (actes du 135e Congrès national des sociétés historiques et scientiiques «Paysages», Neuchâtel, 6-11 avril 2010, session de Pré- et Protohistoire)*. Lausanne et Paris: Cahiers d' Archéologie Romande, pp. 205–224.

Honegger, M. und Michel, R. 2002. Neue Aspekte der Cortaillod-Kultur im Neuenburgerland. *Archäologie der Schweiz*, 25(2): 31–39.

Hügi, U. 2006. Prähistorische Dörfer, alte Brücken: gut erhalten, beinahe verschwunden... Die Arbeiten der Zürcher Tauchequipe in den Jahren 2005/2006, Bericht VIII. *Nachrichtenblatt Arbeitskreis Unterwasserarchäologie*, 13: 53–57.

Hügi, U., Eberschweiler, B., Graf, M., Michel, K. and Schindler M.P. 2004. Prähistorische Ufersiedlungen und Verkehrswege an Zürich- und Obersee. *Archäologie der Schweiz*, 27(2): 16–29.

Huisman, D.J. and Klaassen, R. 2009. Wood. In: D.J. Huisman ed. *Degradation of archaeological remains*. Den Haag: Sdu Uitgevers, pp. 17-32.

Ivanova, M. 2008. *Befestigte Siedlungen auf dem Balkan, in der Ägäis und in Westanatolien, ca. 5000-2000 v. Chr. Tübinger Schriften zur Ur- und Frühgeschichtlichen Archäologie 8*. Münster: Waxmann.

Kaeser, M.- A. 2008. De l'archétype villageois aux réseaux territoriaux. La dendrochronologie et le temps oublié des habitats littoraux. In: A. Lehoerff, dir. *Construire le temps. Histoire et méthodes des chronologies et calendriers des derniers millénaires avant notre ère en Europe occidentale. Actes du XXXe colloque international de Halma-Ipel, 7-9 décembre 2006, Lille.* Glux-en - Glenne: Bibracte, pp. 209–219.

Karkanas, P., Pavlopoulos, K., Kouli, K., Ntinou, M., Tsartsidou, G., Facorellis, Y., and Tsourou, T. 2011. Palaeoenvironments and Site Formation Processes at the Neolithic Lakeside Settlement of Dispilio, Kastoria, Northern Greece. *Geoarchaeology: An International Journal*, 26(1): 83–117.

Keefer, E. 1992. Hrsg. *Die Suche nach der Vergangenheit. 120 Jahre Archaologie am Federsee. Katalog zur Ausstellung.* Stuttgart: Württembergisches Landesmuseum Stuttgart.

Keramopoulos, A. 1939, Ανασκαφαί και έρευναι εν τη Δυτική Μακεδονία υπό Άντ. Δ. Κεραμοπούλλο. *Πρακτικά της εν Αθήναις Αρχαιολογικής Εταιρείας του έτους 1938*, 53–66.

Keramopoulos, A. 1941, Ανασκαφή εν Καστορία υπό Άντ. Δ. Κεραμοπούλλο. *Πρακτικά της εν Αθήναις Αρχαιολογικής Εταιρείας του έτους 1940*, 22–23.

Kloosterboer-van Hoeve, M., Steenbrink, J. and Brinkhuis, H. 2001. A short-term cooling event, 4025 million years ago, in the Ptolemais Basin, northern Greece. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 173: 61–73.

Köninger, J. 2006. *Die frühbronzezeitlichen Ufersiedlungen von Bodman-Schachen I – Befunden und Funde aus Tauchsondagen 1982-1984 und 1986. Siedlungsarchäologie im Alpenvorland VIII.* Stuttgart: Kommissionsverlag - Konrad Theiss Verlag.

Köninger, J. 2016. Verkehrsgünstig und befestigt. Bronzezeitliche Pfahlbauten rund um die Alpen. In: Archäologisches Landemuseum Baden-Württemberg und Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart, Hrsg. *4000 Jahre Pfahlbauten.* Ostfildern: Jan Thorbecke Verlag, pp. 216–227.

Kokkinidou, D. and Nikolaidou, M. 2004. Neolithic enclosures in Greek Macedonia: violent and non-violent aspects of territorial demarcation. In: J. Carman and A. Harding, eds. *Ancient warfare: archaeological perspectives, 2nd ed.* Sutton: Phoenix Mill, pp. 89–99.

Kokkinidou, D. and Trantalidou, K. 1991. Neolithic and Bronze Age settlement in western Macedonia. *The Annual of British School of Archaeology at Athens*, 86: 93–106.

Korkuti, M. 1995. *Neolithikum und Chalkolithikum in Albanien.* Mainz: Phillip von Zabern Verlag.

Kotsakis, K. 1999. What tells can tell: social space and settlement in the Greek Neolithic. In: P. Halstead, ed. *Neolithic Society in Greece*. Sheffield: Sheffield University Press, pp. 66–76.

Kotsakis, K. 2006. Settlement of discord: Sesklo and the emerging household. In: N. Tasić and C. Grozdanov, eds. *Homage to Milutin Garašanin.* Belgrade: Serbian Academy of Sciences and Arts/Macedonian Academy of Sciences and Arts, pp. 207–220.

Kotsakis, K. 2009. The Neolithic settlement: space of production and ideology. In: A.P. Lagopoulos, ed. *A History of the Greek City*. Oxford: BAR International Series, pp. 29–39.

Kotsos, S. 2013. *Νέες ανασκαφικές έρευνες στη Νεολιθική Μακεδονία (μέρος Α'). Ο νεολιθικός οικισμός της Σταυρούπολης Θεσσαλονίκης*. *Archaeology & Arts* [accessed 26 November 2018]. Available at: http://www.archaiologia.gr/blog/2013/08/26/νέες-ανασκαφικές-έρευνες-στη-νεολιθι/.

Kouli, K. 2015. Plant landscape and land use at the Neolithic lake settlement of Dispilió (Macedonia, northern Greece). *Plant Biosystems - An International Journal Dealing with all Aspects of Plant Biology: Official Journal of the Societa Botanica Italiana* [accessed 28 September 2018]. Available at: http://dx.doi.org/10.1080/11263504.2014.992998.

Krapf, T. 2015. Pfahlbauten im Bronzezeitlichen Albanien. *Association Suisse d'Archéologie Classique Bulletin*, 2015: 51–56.

Kuzman, P. 2008. *Die Knochenbucht, Ploca Michov Grad. Prähistorische Palafitta-Siedlung*. Skopje: Amt zum Schutz des Kulturerbes.

Kuzman, P. 2009a. Pile house settlements on Ohrid Lake. In: P. Kuzman, J. Tričkovska and Z. Pavlov, eds. *Ohrid World Heritage Site.* Skopje: Cultural Heritage Protection Office, pp. 16–21.

Kuzman, P. 2009b. Penelope: prehistoric settlement. In: P. Kuzman, J. Tričkovska and Z. Pavlov, eds. *Ohrid World Heritage Site.* Skopje: Cultural Heritage Protection Office, pp. 22–25.

Lazaridis, D. 1977. Ανασκαφαί και έρευναι εις Αμφίπολιν. *Πρακτικά Αρχαιολογικής Εταιρείας Αθηνών*, 132(A): 39–42.

Lazaridis, D. 1978. Ανασκαφαί και έρευναι εις Αμφίπολιν. *Πρακτικά Αρχαιολογικής Εταιρείας Αθηνών*, 132: 51–53.

Lera, P. et Touchais, G. 2002. Sovjan (Albanie). *Bulletin de correspondence hellénique*, 126(2): 627–645.

Lera, P. et Touchais, G. 2003. Sovjan (Albanie). *Bulletin de correspondence hellénique*, 127(2): 578–609.

Lera, P. et Touchais, G. 2004. Sovjan (Albanie). *Bulletin de correspondence hellénique*, 128-129(2.1): 1096–1147.

Lera, P., Prendi, F. et Touchais, G. 1997. Sovjan (Albanie). *Bulletin de correspondence hellénique*, 121(2): 871–879.

Lera, P., Prendi, F. et Touchais, G. 2000. Sovjan (Albanie). *Bulletin de correspondence hellénique*, 124(2): 631–642.

Lera, P., Touchais, G., Oberweiler, C. et Gori, M. 2009. Bassin de Korçë, Kallamas. *Bulletin de correspondence hellénique*, 133(2): 689–724.

Lera, P., Touchais, G., Oberweiler, C., Cheval, C., Gori, M. et Përzhita, L. 2010. Bassin de Korçë, Kallamas. *Bulletin de correspondence hellénique*, 134(2): 617–647.

Lera, P., Touchais, G., Oberweiler, C. et collaborateurs. 2015. Bassin de Korçë, Kallamas. *Bulletin de correspondence hellénique*, 136-137(2): 687–722.

Leuzinger, U. 2000. *Die jungsteinzeitliche Seeufersiedlung Arbon Bleiche 3. Befunde. Archäologie im Thurgau 9.* Frauenfeld: Huber.

Leuzinger, U. 2002. Holzartefakte. In: A. De Capitani, S. Deschler-Erb et al Hrsg. *Die jungsteinzeitliche Seeufersiedlung Aarbon - Bleiche 3: Funde.* Frauenfeld: Amt für Archäologie des Kantons Thurgau, pp. 76–114.

Leuzinger, U. 2007. *Pfyn Breitenloo. Die jungsteinzeitliche Pfahlbausiedlung. Archäologie im Thurgau Band 14*. Frauenfeld: Huber.

Limmer, B. 2016. Kleine Wohnhäuser mit Alpenblick. Wohnen und Leben in Südbwestbayern vor 5500 Jahren. In: Archäologisches Landemuseum Baden-Württemberg und Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart, Hrsg. *4000 Jahre Pfahlbauten*. Ostfildern: Jan Thorbecke Verlag, pp. 122–125.

López-Bultó, O. and Piqué Huerta, R. in press. Wood Procurement at the Early Neolithic site of La Draga (Banyoles, Barcelona). *Journal of Wetland Archaeology* (2018) [accessed 10 May 2018]. Available at: https://doi.org/10.1080/14732971.2018.1466415.

Lundström-Baudais, K., Passard, F. et P. Pétrequin. 1989. Plan des villages, matériaux de construction et architecture. In: P. Pétrequin, ed. *Les sites littoraux néolithiques de Clairvaux-les-Lacs (Jura) II: Le Néolithique moyen*. Paris: Editions de la Maison des Sciences de l'Homme, pp. 107–136.

Maier, U., Schlichtherle, H. und Vogt, R. 2016. Ein Straßendorf am Federsee. Bad Buchau-Torwiesen II. In: Archäologisches Landemuseum Baden-Württemberg und Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart, Hrsg. *4000 Jahre Pfahlbauten*. Ostfildern: Jan Thorbecke Verlag, pp. 96–102.

Mainberger, M. 1998. *Das Moordorf von Reute*. Staufen: Selbstverlag.

Makridis, Th. 1937. Χαλκά Μακεδονικά του Μουσείου Μπενάκη. *Αρχαιολογική Εφημερίς*, 76: 512–521.

Malim, T. 2015. Roads, Routes and Ceremonies: The Fenland Superhighway. In: A. Vianello, ed. *Rivers in Prehistory*. Oxford: Archaeopress, pp. 137–150.

Maniatis, Y., Malamidou, D., Koukouli-Chryssanthaki, H. and Facorellis, Y. 2010. Radiocarbon dating of the Amphipolis bridge in Northern Greece, maintained and functioned for 2500 years. *Radiocarbon*, 52(1): 41–63.

Marinova, E. and Ntinou, M. in press. Neolithic woodland management and land-use in south-eastern Europe: The anthracological evidence from Northern Greece and Bulgaria. *Quaternary International* (2017) [accessed 22 April 2017]. Available at: http://dx.doi.org/10.1016/j.quaint.2017.04.004.

Martinelli, N. 2005. Dendrocronologia e Archeologia: situazione e prospettive della ricerca in Italia. In: P. Attema, A. Nijboer, and A. Zifferero, eds. *Communities and settlements from the Neolithic to the Early Medieval period, Proceedings of the 6th Conference of Italian Archaeology, Groningen, Papers in Italian Archaeology VI. BAR International Series 1452(1).* Oxford: Archaeopress, pp. 437–448.

Martinelli, N. 2013. Dendro-typology in Italy: the case studies of the pile-dwelling villages Lucone D (Brescia) and Sabbione (Varese). In: N. Bleicher, H. Schlichtherle, P. Gassmann und N. Martinelli, Hrsg. *Dendro-Chronologie, -Typologie, -Ökologie. Festschrift André Billamboz zum 65. Geburtstag.* Freiburg im Breisgau: Janus Verlag, pp. 117–124.

Maute-Wolf, M., Quinn, D., Winiger, A., Wolf, C. et Burri, E. 2002. La station littorale de Concise (VD): premiers résultats deux ans après al fin des fouilles. *Archäologie der Schweiz*, 25(4): 2–15.

Menotti, F. 2001. The *Pfahlbauproblem* and the history of lake-dwelling research in the Alps. *Oxford Journal of Archaeology*, 20(4): 319–328.

Menotti, F. 2012. *Wetland Archaeology and Beyond. Theory and Practice*. Oxford: Oxford University Press.

Menotti, F. and Pranckenaite, E. 2008. Lake-dwelling building techniques in prehistory: driving wooden piles into lacustrine sediments. *euroREA, Journal for (Re)construction and Experiment in Archaeology*, 5: 3–7.

Meyer, M. 2002. Palisaded enclosures in the German Neolithic. In: A. Gibson, ed. *Behind Wooden Walls: Neolithic Palisaded Enclosures in Europe. BAR International Series 1013.* Oxford: Archaeopress, pp. 59–92.

Mischka, D., Dörfler, W. Grootes, P. Heinrich, D., Müller, J. und Nelle, O. 2007. Die neolithische Feuchtbodensiedlung Bad Oldesloe-Wolkenwehe LA 154. Vorbericht zu den Untersuchungen 2006. In: C. Von Carnap-Bornheim, J. Müller und U. Müller, Hrsg. *Offa. Berichte und Mitteilungen zur Urgeschichte, Frühgeschichte und Mittelalterarchäologie, Band 61/62 (2004/05).* Neumünster: Wachholtz Verlag, pp. 25–63.

Moutsopoulos, N. 1998. Oppidum celetrum: ο Λιμναίος οικισμός του Δισπηλιού Καστοριάς. *Μακεδονικά*, 31: 1–30.

Naumov, G. 2016a. Among wetlands and lakes: the network of Neolithic communities in Pelagonia and Lake Ohrid, Republic of Macedonia. In: K. Bavcarov and R. Gleser, eds. *Southeast Europe and Anatolia in prehistory. Essays in honor of Vassil Nikolov on his 65th anniversary. Universitätsforschungen zur prähistorischen Archäologie, Band 293*. Bonn: Dr. Rudolf Habelt Verlag, pp. 175–187.

Naumov, G. 2016b. Prähistorische Pfahlbauten im Ohrid-See, Republik Mazedonien. *Plattform*, 23/24: 10–20.

Neustupný, E. 2007. Enclosures and fortifications in Central Europe. In: A. Harding, S. Sievers, and N. Venclová, eds. *Enclosing the Past: Inside and Outside in Prehistory, Sheffield Archaeological Monographs 15*. Sheffield: J.R. Collins Publications, pp. 1–4.

Ntinou, M. 2014. Η φυσική βλάστηση και οι προϊστορικές κοινότητες της Μακεδονίας. Μια σύνθεση των πληροφοριών της ανθρακολογικής έρευνας. In: E. Stefani, N. Merousis and A. Dimoula, eds. *Εκατό χρόνια έρευνας στην προϊστορική Μακεδονία 1912-2012. Πρακτικά Διεθνούς Συνεδρίου, Αρχαιολογικό Μουσείο Θεσσαλονίκης 22-24 Νοεμβρίου 2012*. Thessaloniki: Zitis, pp. 409–417.

Oberweiler, C., Touchais, G. and Lera, P. 2016. Prähistorische Siedlungen im Seeuferbereich von Korça, Albanien. *Plattform*, 23/24: 22–31.

Oberweiler, C., Touchais, G. and Lera, P. 2018. Synchronisation of the Albanian and North Aegean Late Neolithic periods: New data from the lakeside dwelling of Kallamas (Albania). In: S. Dietz, F. Mavridis, Ž. Tankosić and T. Takaoğlu, eds. *Communities in Transition. The Circum-Aegean Area During the 5th and 4th Millennia BC*. Oxford and Philadelphia: Oxbow Books, pp. 187–194.

Out, W. 2017. Wood usage at Dutch Neolithic wetland sites. *Quaternary International*, 436: 64–82.

Out, W., Vermeeren, C. and Hänninen, K. 2013. Branch age and diameter: useful criteria for recognizing woodland management in the present and past? *Journal of Archaeological Science*, 40: 4083–4097.

Pappa, M. 2007. Neolithic societies: recent evidence from Northern Greece. In: H. Todorova, M. Stefanovich and G. Ivanov, eds. *The Struma/Strymon River Valley in Prehistory. In the steps of Harvey Gaul, Vol. 2*. Sofia: Gerda Henkel Stiftung, pp. 257–272.

Pappa, M. 2008. *Οργάνωση του χώρου και οικιστικά στοιχεία στους νεολιθικούς οικισμούς της Κεντρικής Μακεδονίας Δ.Ε.Θ. - Θέρμη - Μακρύγιαλος*. Unpublished PhD Thesis, Aristotle University of Thessaloniki.

Pappa, M. 2018. Transformations of space in the Late Neolithic settlements of Northern Greece: Review of the evidence from Makriyalos and Thermi. In: S. Dietz, F. Mavridis, Ž. Tankosić and T. Takaoğlu, eds. *Communities in Transition. The Circum-Aegean Area During the 5th and 4th Millennia BC*. Oxford and Philadelphia: Oxbow Books, pp. 211–216.

Pappa, M. and Besios, M. 1999. The Makriyalos Project: Rescue Excavations at the Neolithic Site of Makriyalos, Pieria, Northern Greece. In: P. Halstead, ed. *Neolithic Society in Greece*. Sheffield: Sheffield University Press, pp. 108–120.

Pappa, M., Halstead, P., Kotsakis, K., Bogaard, A., Fraser, R., Isaakidou, V., Mainland, I., Mylona, D., Skourtopoulou, K., Triantaphyllou, S., Tsoraki, C., Urem-Kotsou, D., Valamoti, S. M. and Veropoulidou, R. 2013. The Neolithic site of Makriyalos, northern Greece. A reconstruction of the social and economic structure of the settlement through a comparative study of the finds. In S. Voutsaki and S. M. Valamoti, eds. *Pharos Supplement 1. Diet, Economy and Society in the Ancient Greek World. Towards a Better Integration of Archaeology and Science. Proceedings of the International Conference held at the Netherlands Institute at Athens on 22-24 March 2010.* Leuven-Paris-Walpole, MA: Peeters, pp. 77–88.

Papadimitriou, N. and Tsirtsoni, Z. eds. 2010. *Η Ελλάδα στο ευρύτερο πολιτισμικό πλαίσιο των Βαλκανίων κατά την 5η και 4η χιλιετία π.Χ.* Αθήνα: Μουσείο Κυκλαδικής Τέχνης, Ίδρυμα Ν.Π. Γουλανδρή.

Parkinson, W. and Duffy, P. 2007. Fortifications and Enclosures in European Prehistory: A Cross-Cultural Perspective. *Journal of Archaeological Research*, 15(2): 97–141.

Passard, F. 1986. Plan de villages et architecture des maisons. Essai d' interpretation. In: P. Pétrequin, ed. *Les sites littoraux néolithiques de Clairvaux-les-Lacs (Jura). I Problématique générale, l'exemple de la station III*. Paris: Editions de la Maison des Sciences de l'Homme, pp. 263–288.

Pétrequin, P. 1988. L'architecture lacustre du Néolithique moyen II au Nord-Ouest des Alpes: les contraintes du milieu, de l'organisation sociale et des modes de faire-valoir agricoles. *Bulletin de la Société préhistorique française*, 80(10-12): 367–389.

Pétrequin, P. ed. 1986. *Les sites littoraux néolithiques de Clairvaux-les-Lacs (Jura). I Problématique générale, l'exemple de la station III*. Paris: Editions de la Maison des Sciences de l'Homme.

Pétrequin, P. ed. 1989. *Les sites littoraux néolithiques de Clairvaux-les-Lacs (Jura) II: Le Néolithique moyen*. Paris: Editions de la Maison des Sciences de l'Homme.

Pétrequin, P. ed. 1997. *Les sites littoraux néolithiques de Clairvaux-les-Lacs et de Chalain (Jura) III: Chalain station 3, 3200-2900 av. J.-C, Volume 1*. Paris: Editions de la Maison des Sciences de l'Homme.

Pétrequin, P. dir. 2000. *Lac de Chalain. Quatre millénaires d' habitat lacustre mis en question.* Doucier: Centre de Recherche de la Vallée de l'Ain.

Pétrequin, P. and Bailly, M. 2004. Lake-dwelling research in France. From climate to demography. In: F. Menotti, ed. *Living on the lake in prehistoric Europe. 150 years of lake-dwelling research.* London and New York: Routledge, pp. 36–49.

Pétrequin, A. M. et Pétrequin, P. 1988. *Le Néolithique des lacs. Préhistoire des lacs de Chalain et de Clairvaux (4000-2000 av. J.-C.* Paris: Editions Errance.

Pétrequin, P., Arbogast, R.-M., Viellet, A., Pétrequin, A.-M. und Maréchal, D. 2002. Eine neolithische Stangenschleife vom Ende des 31. Jhs. v. Chr. in Chalain (Fontenu, Jura, Frankreich). In: J. Köninger, M. Mainberger, H. Schlichtherle und M. Vosteen, Hrsg. *Schlitten, Schleife, Rad und Wagen. Zur Frage früher Transportmittel nördlich der Alpen. Hemmenhofener Skripte 3.* Freiburg im Breisgau: Janus Verlag, pp. 55–65.

Pétrequin, P., Arbogast, R.-M., Pétrequin, A.-M. 2006. *Premiers chariots, premiers araires. La diffusion de la traction animale en Europe pendant les IV^e^ et III^e^ millénaires avant notre ère.* Paris: CNRS.

Pétrequin, P., Pétrequin, A.-M., Arbogast, R.-M., Maréchal, D. et Viellet, A. 2006. Travois et jougs néolithiques du lac de Chalain à Fontenu (Jura, France). In: P. Pétrequin, R.-M. Arbogast, A.-M. Pétrequin et al., eds. *Premiers chariots, premiers araires. La diffusion de la traction animale en Europe pendant les IV^e^ et III^e^ millénaires avant notre ère.* Paris: CNRS, pp. 86–105.

Petrou, M. 2008. *Development of methodology for the in situ preservation of wetland archaeological sites in Greece.* Unpublished PhD Thesis, Aristotle University of Bradford.

Pillonel, D. 2007. *Hauterive-Champréveyres 14. Technologie et usage du bois au Bronze final. Archéologie neuchâteloise 37.* Neuchâtel: Office et musée cantonal d'archéologie de Neuchâtel.

Prendi, F. 1966. La civilisation préhistorique de Maliq. *Studia Albanica*, 3: 255–280.

Raftery, B. 1992. Irische Bohlenwege. *Archäologische Mitteilungen aus Nordwestdeutschland*, 15: 49–68.

Rodden, R. and Wardle, K. eds. 1996. *Nea Nikomedeia I. The excavation of an Early Neolithic village in northern Greece 1961-1964. The excavation and the ceramic assemblage. Supplementary Volume No. 25. The British School of Athens.* Oxford and Northampton: Alden Press.

Rujak, Z. 2014. Preliminarni rezultati od arheoloshkite istrazuvania na palafitnata nashelba vo Dojranskoto Ezero na lokalitetot Mrdaja od preodnitot period pomegu bronzenoto I zeleznoto vreme. In: Zavod za zashtita na spomenicite na kulturata i muzej – Strumica, ed. *Zbornik na trudovi vo spomen na Emilija Petkovska.* Strumica: Zavod za zashtita na spomenicite na kulturata i muzej, pp. 27–39.

Runnels, C., Payne, C., Rifkind, N., White, C., Wolff, N. and LeBlanc, S. 2009. Warfare in Neolithic Thessaly: A Case Study. *Hesperia*, 78: 165–194.

Ruoff, U. 2004. Lake-dwelling studies in Switzerland since 'Meilen 1854'. In: F. Menotti, ed. *Living on the lake in prehistoric Europe. 150 years of lake-dwelling research*. London and New York: Routledge, pp. 9–21.

Sarris, A., Kalogiropoulou, E., Kalayci, T. and Karimali, L. eds. 2017. *Communities, Landscapes and Interaction in Neolithic Greece. Proceedings of the International Conference, Rethymno 29-30 May 2015.* Michigan: International Monographies in Prehistory.

Scherer, Th. und Wiemann, Ph. 2008. Freienbach SZ-Hurgen Rosshorn: Ur- und frühgeschichtliche Wege und Brücken über den Zürichsee. *Jahrbuch Archäologie Schweiz*, 91: 7–38.

Schlichtherle, H. 1997. Neolithische und bronzezeitliche Häuser in den Feuchtbodensiedlungen Südwestdeutschlands. In: H. Beck and H. Steuer, Hrsg. *Haus und Hof in ur- und frühgeschichtlicher Zeit: Gedenkschrift für Herbert Jankuhn*. Göttingen: Vandenhoeck and Ruprecht, pp. 86–136.

Schlichtherle, H. 2002a. Prähistorische Siedlungen, Bohlenwege und Fischfanganlagen Fortschritte der archäologischen Federseeforschung. *Denkmalpflege in Baden-Württemberg,* 31: 115–121.

Schlichtherle, H. 2002b. Die jungsteinzeitlichen Radfunde vom Federsee und ihre kulturgeschichtliche Bedeutung. In: J. Köninger, M. Mainberger, H. Schlichtherle und M. Vosteen, Hrsg. *Schlitten, Schleife, Rad und Wagen. Zur Frage früher Transportmittel nördlich der Alpen. Hemmenhofener Skripte 3*. Freiburg im Breisgau: Janus Verlag, pp. 9–34.

Schlichtherle, H. 2004a. Lake-dwellings in southwestern Germany. History of research and contemporary perspectives. In: F. Menotti, ed. *Living on the lake in prehistoric Europe. 150 years of lake-dwelling research.* London and New York: Routledge, pp. 22–35.

Schlichtherle, H. 2004b. Grosse Häuser - kleine Häuser: Archäologische Befunde zum Siedlungswandel am neolithischen Federsee. In: Landesdenkmalamt Baden-Württemberg, Hrsg. *Ökonomischer und ökologischer Wandel am vorgeschichtlichen Federsee: Archäologische und naturwissenschaftliche Untersuchungen*. Freiburg im Breisgau: Janus Verlag, pp. 13–55.

Schlichtherle, H. 2006. Chemins, roues et chariots: Innovations de la fin du Néolithique dans le sud-ouest de l'Allemagne. In: P. Pétrequin, R.-M. Arbogast, A.-M. Pétrequin et al., eds. *Premiers chariots, premiers araires. La diffusion de la traction animale en Europe pendant les IV^e et III ^e millénaires avant notre ère.* Paris: CNRS, pp. 165–178.

Schlichtherle, H. 2011. Bohlenweg, Dammweg, Brücke. Endneolithische Siedlungszugänge am Federsee. In: Bayerische Gesellschaft für Unterwasserarchäologie, Hrsg. *Archäologie der Brücken*. Regensburg: Friedrich Pustet Verlag, pp. 10–15.

Schlichtherle, H., Vogt, R., Maier, U., Herbig, C., Schmidt, E., Ismail-Meyer, K., Kühn, M., Wick, L. und Dufraisse, A. Hrsg. 2011. *Die endneolithische Moorsiedlung Bad Buchau-Torwiesen II am Federsee. Band I, Naturwissenschaftliche Untersuchungen. Hemmenhofener Skripte 9*. Freiburg im Breisgau: Janus Verlag.

Schmidheiny, M. 2010, Die frühbronzezeitliche Inselsiedlung Rapperswil-Jona SG-Technikum. *Jahrbuch Archäologie Schweiz*, 93: 101–122.

Schmidheiny, M. 2011, *Zürich «Mozartstrasse». Neolithische und bronzezeitliche Ufersiedlungen, Band 4. Die frühbronzezeitliche Besiedlung. Monographien der Kantonsarchäologie Zürich 42*. Zürich und Egg: Fotorotar AG.

Schöbel, G. 2008. Hans Reinerth (1900–1990) – Karriere und Irrwege eines Siebenbürger Sachsen in der Wissenschaft während der Weimarer Zeit und des Totalitarismus in Mittel- und Osteuropa. *Acta Siculica*, (2008): 145–188.

Schönfeld, G. 1995. Feuchtbodensiedlungen der Altheimer Gruppe. In: Landesdenkmalamt Baden-Württemberg und Kommission für Unterwasserarchäologie im Verband der Landesarchäologen in der Bundesrepublik Deutschland, Hrsg. *Archäologie unter Wasser 1. Forschungen und Berichte zur Unterwasserarchäologie zwischen Alpenrand-Seen und Nordmeer (Archäologische Informationen aus Baden-Württemberg, Heft. 33)*. Stuttgart: Landesdenkmalamt Baden-Württemberg, pp. 58–63.

Schönfeld, G. 2002. Holzarchitektur der altheimzeitlichen Feuchtbodensiedlung von Pestenacker. *Bericht der Bayerischen Bodendenkmalpflege*, 41/42, 2000/01: 21–38.

Schönfeld, G. 2009a. Die altheimzeitliche Feuchtbodensiedlung von Pestenacker. *Bericht der Bayerischen Bodendenkmalpflege,* 50: 137–156.

Schönfeld, G. 2009b. Ein jungsteinzeitliches Filialsiedlungssystem im Talgrund des Loosbachs bei Unfriedshausen. *Bericht der Bayerischen Bodendenkmalpflege,* 50: 157–168.

Schußmann, M. 2012. Die hallstattzeitliche Sumpfbrücke bei Rennertshofen-Feldmühle im Wellheimer Tal. *Bericht der Bayerischen Bodendenkmalpflege,* 52: 125–136.

Schweingruber, F. 1993. *Trees and Wood in Dendrochronology. Morphological, Anatomical, and Tree-Ring Analytical Characteristics of Trees Frequently Used in Dendrochronology*. Berlin: Springer Verlag.

Sheridan, J. A., Pailler, Y., Pétrequin, P. and Errera, M. 2011. Old friends, new friends, a long-lost friend and false friends: tales from Project JADE. In: V. Davis and M. Edmonds, eds. *Stone Axe Studies III*. Oxford: Oxbow Books, pp. 411–426.

Seifert, M., Jacomet, S. und Schibler, J. Hrsg. 1996. *Die spätbronzezeitlichen Ufersiedlungen von Zug-Sumpf 1: Die Dorfgeschichte*. Zug: Kantonales Museum für Urgeschichte Zug.

Skoulikidis, N.T, Bertahas, I., and Koussouris, T. 1998. The environmental state of freshwater resources in Greece (rivers and lakes). *Environmental Geology*, 36(1): 1–17.

Stratouli, G. 2007. Μεταξύ πηλών, πλίνθων και πασσάλων, μαγνητικών σημάτων και αρχαιολογικών ερωτημάτων: τάφροι οριοθέτησης και θεμελίωσης στο νεολιθικό οικισμό

Αυγής Καστοριάς. In: Υπουργείο Πολιτισμού και Αθλητισμού/Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης, *Το Αρχαιολογικό Έργο στη Μακεδονία και Θράκη το 2005 (ΑΕΜΘ 19).* Thessaloniki: Altintzis, pp. 595–606.

Stratouli, G. 2013. Νέες ανασκαφικές έρευνες στη Νεολιθική Μακεδονία (μέρος Δ'): Νεολιθικός οικισμός Αυγής Καστορίας: μία αγροτική κοινωνία της 6ης και 5ης χιλιετίας σε μετάβαση. *Archaeology & Arts* [accessed 25 November 2018]. Available at: http://www.archaiologia.gr/blog/2013/ 10/07/νέες-ανασκαφικές-έρευνες-στη-νεολιθι-4.

Strobel, M. 2016. Im Spannungsfeld von Innovation und Ideologie. Die Pfahlbauforschung zwischen 1919 und 1945. In: Archäologisches Landemuseum Baden-Württemberg und Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart, Hrsg. *4000 Jahre Pfahlbauten.* Ostfildern: Jan Thorbecke Verlag, pp. 31–34.

Syropoulou, E. 2010. *Παλυνολογική έρευνα σε αρχαιολογική τομή της περιοχής Λιμνοχωρίου Ν. Φλώρινας*. Unpublished Msc Thesis, Aristotle University of Thessaloniki.

Taylor, M. 1992. Flag Fen: the wood. *Antiquity*, 66(251): 476–498.

Taylor, M. 2001. The wood. In: F. Pryor ed. 2001. *The Flag Fen Basin. Archaeology and environment of a Fenland landscape.* London: English Heritage, pp. 167–228.

Todoroska, V. 2010. Palafitno naogalište Vrbnik-Struga. *Macedoniae Acta Archaeologica*, 19: 147–156.

Todoroska, V. 2016. Palafitna naselba "Ustie na Drim". In: L. Fidanoski and G. Naumov, eds. *Neolitot vo Makedonija. Novo soznanija i perspektivi.* Skopje: Center for Prehistoric Research, pp. 41–53.

Todoroska, V. 2017. Archaeological research at the underwater archaeological site Vrbnik in Lake Ohrid. *Arheološki Informator*, 1: 17–22.

Torke, W. 2009. Die Siedlung Forschner im siedlungsarchäologischen Kontext des nördlichen Alpenvorlandes. In: A. Billamboz, J. Köninger, H. Schlichtherle und W. Torke. *Siedlungsarchäologie im Alpenvorland XI: Die früh- und mittelbronzezeitliche „Siedlung Forschner" im Federseemoor. Befunde und Dendrochronologie.* Stuttgart: Theiss Verlag, pp. 71–360.

Touchais, G., Lera, P., Oberweiler, C. et collaborateurs 2004. L'habitat protohistorique lacustre de Sovjan (Albanie): dix ans de recherches franco-albanaises (1993-2003). In: P. Della Casa and

M. Trachsel, eds. *WES'04: Wetland economies and societies: proceedings of the international conference, Zurich, 10-13 March 2004*. Zürich: Chronos, pp. 255–258.

Trantalidou, K. 1989. Προϊστορικοί οικισμοί στις λεκάνες της Φλώρινας και του Αμυνταίου (Δυτική Μακεδονία). In: Ίδρυμα Μελετών Χερσονήσου του Αίμου, ed. *Αρχαία Μακεδονία V*. Thessaloniki: Institute for Balkan Studies, pp. 1593–1622.

Tsokas G., Vargemezis G., Stambolidis, A. and Stratouli, G. 2007. Πρώτα συμπεράσματα της γεωφυσικής διασκόπησης στον νεολιθικό οικισμό της Αυγής Καστοριάς. In: Υπουργείο Πολιτισμού και Αθλητισμού/Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης, *Το Αρχαιολογικό Έργο στη Μακεδονία και Θράκη το 2005 (ΑΕΜΘ 19)*. Thessaloniki: Altintzis, pp. 323–332.

Van de Noort, R. and O'Sullivan, A. 2006. *Rethinking Wetland Archaeology*. London: Duckworth.

Viellet, A. 2009. Apport des études dendrochronologiques à la connaissance des sites lacustres néolithiques de Chalain et Clairvaux (Jura). Clairvaux II-IIbis, Chalain 19 et Chalain 2. *Gallia Préhistoire*, 51: 273–318.

Viellet, A. et Pétrequin, P. 2015. Datation du N.M.B. de Clairvaux: radiocarbone, dendrochronologie et fluctuation du niveau des lacs. In: P. Pétrequin et A. M. Pétrequin, eds. *Clairvaux et le «Néolithique Moyen Bourguignon», Tome I*. Besançon: Presses universitaires de Franche-Comté, pp. 85–96.

Vogt, E. Hrsg. 1977. *Schriften zum Neolithikum: Chronologie und Pfahlbaufrage*. Frauenfeld: Huber.

Westphal, T., Tegel, W., Heußner, K.-U., Lera, P. und Rittershofer, K.-F. 2010. Erste dendrochronologische Datierungen historischer Hölzer in Albanien. *Archäologischer Anzeiger*, 2. Halbband: 75–95.

Whittle, A. 2018. *The times of their lives. Hunting history in the archaeology of Neolithic Europe.* Oxford and Philadelphia: Oxbow Books.

Winiger, A. 2006. Les Chemins d'accèss des villages néolithiques et bronze ancient de Consise (lac de Neuchâtel, Vaud, Suisse). In: P. Pétrequin, R.-M. Arbogast, A.-M. Pétrequin et al., eds. *Premiers chariots, premiers araires. La diffusion de la traction animale en Europe pendant les IV^e^ et III ^e^millénaires avant notre ère.* Paris: CNRS, pp. 121–132.

Winiger, A. 2016. Einheitlich und durchgeplant. Architektonische Entwicklungen in der Seeufersiedlungen von Concise-Sous Colachoz. In: Archäologisches Landemuseum Baden-Württemberg und Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart, Hrsg. *4000 Jahre Pfahlbauten*. Ostfildern: Jan Thorbecke Verlag, pp. 232–234.

Winiger, A., Burri, E. et Quinn, D. 2004. Le village. In: G. Kaenel et P. Crotti, ed. *Les Lacustres. 150 ans d'archéologie entre Vaud et Fribourg*. Lausanne: Musée cantonal d'archéologie et d'histoire, pp. 35–48.

Winiger, A. et Burri-Wyser, E. 2014. L'apport des fouilles de Concise (VD, CH) à la chronologie, la typologie et l'architecture du Bronze ancien recent (entre 1801 et 1570 av. J.-C.). In: I. Sénépart, F. Leandri, J. Cauliez, T. Perrin et É. Thirault, dir. *Chronologie de la Préhistoire récente dans le Sud de la France. Acquis 1992-2012. Actualité de la recherche. Actes des 10e Rencontres Méridionales de Préhistoire Récente, Porticcio, 18 au 20 octobre 2012*. Toulouse: Archives d'Écologie Préhistorique, pp. 239–255.

Winiger, A., Burri-Wyser, E. et Chiquet, P. 2012. Analyse spatiale et modes de fonctionnement villageois entre 3570 et 3516 av. J.-C. À Concise (Vaud, Suisse). In: M. Honneger et C. Mordant éds. *L'Homme au bord de l'eau. Archéologie des zones littorales du Néolithique à la Protohistoire (actes du 135e Congrès national des sociétés historiques et scientiiques «Paysages», Neuchâtel, 6-11 avril 2010, session de Pré- et Protohistoire)*. Lausanne et Paris: Cahiers d' Archéologie Romande, pp. 225–237.

Winiger, A. et Hurni, J-P. 2007. Datations et reconstitutions architecturales d'un village du Néolithique moyen (E4A) entre 3645 et 3636 av. J.-C. à Concise (Vaud, Suisse). In: M. Besse, ed. *Sociétés néolithiques: des faits archéologiques aux fonctionnements socio-économiques. Actes du 27e colloque interrégional sur le Néolithique, Neuchâtel, 1 et 2 octobre 2005.* Lausanne: Cahiers d' Archéologie Romande, pp. 143–151.

Wolf, C. und Hurni, J-P. 1999. Neues zur Architektur des west schweizerischen Endneolithikums: erste Auswertungsergebnisse der Befunde in den Seeufersiedlungen von Concise-sous-Colachoz (VD) am Neuenburgersee. *Plattform*, 7/8: 107–117.

Wolf, C., Burri, E., Hering, P., Kurz, M., Maute-Wolf, M., Quinn, D. et Winiger, A. 1999. Les sites lacustres néolithiques et bronzes de Concise VD-sous-Colachoz: premiers résultats et implications sur le Bronze ancien regional. *Jahrbuch der Schweizerischen Gesellschaft für Ur- und Frühgeschichte*, 82: 7–38.

Ziota, C. 2014a. Ο οικισμός του Κλείτου Κοζάνης στο ευρύτερο φυσικό και ανθρωπογενές περιβάλλον της Νεότερης και Τελικής Νεολιθικής περιόδου. In: E. Stefani, N. Merousis and A. Dimoula, eds. *Εκατό χρόνια έρευνας στην προϊστορική Μακεδονία 1912-2012. Πρακτικά Διεθνούς Συνεδρίου, Αρχαιολογικό Μουσείο Θεσσαλονίκης 22-24 Νοεμβρίου 2012*. Thessaloniki: Zitis, pp. 323–336.

Ziota, C. 2014b. Η ανασκαφή στον Κλείτο Κοζάνης το 2010. In: Υπουργείο Πολιτισμού και Αθλητισμού/Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης. *Το Αρχαιολογικό Έργο στη Μακεδονία και Θράκη το 2010 (ΑΕΜΘ 24).* Thessaloniki: Zitis, pp. 53–62.

Ziota, C., Hondroyianni-Metoki, A. and Maggouretsiou E. 2013a. Recent prehistoric research in the Kitrini Limni area of the Kozani prefecture. In: G. Karamitrou-Mentesidou, ed. *The archaeological work in Upper Macedonia 2, 2011. Aiani-Heidelberg*. Aiani: Archaeological Museum, pp. 57–81.

Ziota, C., Hondroyianni-Metoki, A. and E. Maggouretsiou. 2013b. Η αρχαιολογική έρευνα στον Κλείτο Κοζάνης το 2009. In: Υπουργείο Πολιτισμού και Αθλητισμού/Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης. *Το Αρχαιολογικό Έργο στη Μακεδονία και Θράκη το 2009 (ΑΕΜΘ 23).* Thessaloniki: Zitis, pp. 37–52.

APPENDIX

The Appendix comprises lists of structural wood attributed to the accessing and enclosing structures discovered in Anarghiri IXb. The original data presented derive from the Data-Base created for the needs of the study and correspond to attributive information regarding the exact location, the basic physical and technical characteristics and the available ^{14}C dates of the specific wooden elements. It must be stressed that woodchips, twigs and branches are not included in these lists, since their correlation to the features and their direct structural role were not definitely specified.

TRACKWAY 1 STRUCTURAL WOOD LIST															
SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
51	T T 3	Post	Sampled and discarded	297951,6685	4499892,49	593,21	114		1	8	2		45	Oak	
52	T T 3	Post	Sampled and discarded	297953,0301	4499891,432	593,21	137		1	12	2		40	Oak	
53	T T 3	Post	Sampled and discarded	297954,3883	4499890,301	593,16	120		1	9	2		17	Oak	
54	T T 3	Post	Sampled and discarded	297955,556	4499889,499	593,25	112		1	8	2		15	Oak	
55	T T 3	Post	Sampled and discarded	297956,88	4499888,43	593,17	124		1	12	2		27	Oak	2570-2469
56	T T 3	Post	Sampled and discarded	297958,3143	4499887,394	593,11	117		1	9	2		26	Oak	
57	T T 3	Post	Sampled and discarded	297959,8668	4499886,367	593,22	150		1	12	1		56	Oak	
58	T T 3	Post	Sampled and discarded	297961,112	4499885,314	593,29	149		1	12	2		57	Oak	
59	T T 3	Post	Sampled and discarded	297962,4457	4499884,161	592,88	83		1	13	2				
60	T T 3	Post	Sampled and discarded	297963,6065	4499883,171	593,23	156		1	12	2	<5	52	Oak	
61	T T 3	Post	Sampled and discarded	297964,7763	4499882,254	593,24	154		1	15	2	<3	61	Oak	-
62	T T 3	Post	Sampled and discarded	297966,1137	4499881,277	592,93	138		1	13	1	<5	68	Oak	
63	T T 3	Post	Sampled and discarded	297950,3846	4499890,921	593,07	113		2	7	2				
64	T T 3	Post	Sampled and discarded	297951,6238	4499889,772	593,1	104		1	9	2		19	Oak	
65	T T 3	Post	Sampled and discarded	297953,0031	4499888,726	593,13	112		1	8	2	?	45	Oak	
66	T T 3	Post	Sampled and discarded	297953,9989	4499887,832	593,17	119		1	9	2		34	Oak	
67	T T 3	Post	Sampled and discarded	297956,526	4499885,918	592,96	49		1	9	2				

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
68	T T 3	Post	Sampled and discarded	297957,7594	4499884,745	592,93	96		1	12	2		50	Oak	2577-2479
69	T T 3	Post	Sampled and discarded	297959,2396	4499883,927	593,28	94		1	10	2		45	Oak	
70	T T 3	Post	Sampled and discarded	297960,4504	4499883,017	593,18	125		2	12	2				
71	T T 3	Post	Sampled and discarded	297961,4701	4499881,801	593,27	137		1	13	1	<3	65	Oak	
72	T T 3	Post	Sampled and discarded	297962,9566	4499880,68	593,28	154		1	13	2		40	Oak	
73	T T 3	Post	Sampled and discarded	297964,3216	4499879,536	593,12	114		1	13	2		48	Oak	
74	865	Post	Sampled and discarded	297950,4431	4499893,565	593,2	100		1	10	2	<2	40	Oak	
75	865	Post	Discarded	297949,3813	4499894,575	593,22	129		1	11	2				
83	865	Post	Sampled and discarded	297949,2915	4499891,804	593,15	87		1	9	1		25	Oak	
84	865	Post	Sampled and discarded	297948,0041	4499892,79	593,18	113		1	9	1		20	Oak	
86	865	Post	Sampled and discarded	297945,5912	4499894,359	592,96	110		1	9	1		30	Oak	
4561	865	Post	Discarded	297948,548	4499895,324	593,23	129		1	11	2				
4562	865	Post	Discarded	297947,4074	4499896,037	593,22	97		1	9	1				
4563	865	Post	Discarded	297946,1588	4499897,026	593,23	130		1	9	2				
4564	865	Post	Discarded	297945,1919	4499898,133	593,21	83		1	6	2				
4565	865	Post	Discarded	297944,5271	4499895,719	593,11	87		1	6	2				
4566	865	Horizontal wood	Discarded	297948,5298	4499894,671	592,73	61	10	1	18					
4568	865	Post	Discarded	297946,8916	4499893,632	592,96	63		1	10					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
4602	864	Post	Discarded	297942,0936	4499897,882	593,23	93		1	8	1				
4604	864	Post	Discarded	297943,9395	4499899,322	592,26	139		1	12	2				
4605	864	Post	Discarded	297940,7398	4499899,294	593,22	94		1	11	1				
5751	839	Post	Discarded	297938,2211	4499901,304	593,21	104		1	10	2				
5754	839	Post	Discarded	297938,3652	4499904,026	592,93	90		1	7					
5756	839	Post	Discarded	297937,1003	4499902,486	593,38	98		1	8	1				
5757	839	Post	Discarded	297940,8496	4499902,177	593,16	84		1	8	1				
5758	839	Post	Discarded	297942,3259	4499900,793	593,25	125		1	7	1				
5759	839	Post	Discarded	297939,4553	4499900,31	593,16	96		1	6	2				
5760	839	Post	Discarded	297939,5568	4499903,022	593,16	96		1	12					

TRACKWAY 2 STRUCTURAL WOOD LIST															
SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
91	T T 2	Post	Sampled and discarded	297928,278	4499840,929	592,79	106		3	11	?	<2	18	Oak	
92	T T 2	Post	Sampled and discarded	297928,52	4499841,008	592,92	74		8	10			18	Oak	
93	T T 2	Post	Sampled and discarded	297930,702	4499841,695	592,87	73		1	11	3		20	Oak	
95	T T 2	Post	Discarded	297926,347	4499846,831	592,55	36		1	7					
96	T T 2	Post	Sampled and discarded	297927,796	4499845,029	593	95		3	13	1		53	Oak	
98	T T 2	Horizontal wood	Discarded	297926,898	4499847,679	592,38	35	10	8						
101	T T 2	Horizontal wood	Discarded	297928,344	4499849,287	592,43	35	7	8						
103	T T 2	Horizontal wood	Discarded	297928,573	4499845,198	592,67	57	10	1	4					
104	T T 2	Post	Sampled and discarded	297925,105	4499846,149	592,76	64		1	7	3		24	Oak	
105	T T 2	Post	Discarded	297924,671	4499846,545	592,79	70		1	7					
106	T T 2	Post	Sampled and discarded	297924,485	4499846,115	592,92	102		2	12			75	Oak	
107	T T 2	Post	Sampled and discarded	297927,544	4499845,185	592,71	65		1	11			17	Oak	
108	T T 2	Post	Sampled and discarded	297927,721	4499844,69	592,74	66		1	9	3	Yes	18	Oak	
109	T T 2	Post	Discarded	297925,54	4499846,95	592,49	33		1	6					
110	T T 2	Post	Sampled and discarded	297925,525	4499847,204	592,55	53		1	8	3		15	Oak	
111	T T 2	Post	Sampled and discarded	297925,455	4499847,292	592,72	64		1	12			11	Oak	
112	T T 2	Post	Discarded	297926,633	4499846,38	592,65	45		1	10					
113	T T 2	Post	Sampled and discarded	297926,162	4499846,931	593	45		1	10			17	Oak	

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
114	T T 2	Post	Sampled and discarded	297931,265	4499840,613	592,72	46		1	10					
115	T T 2	Post	Sampled and discarded	297931,538	4499840,714	592,89	74		1	9	3		11	Oak	
117	T T 2	Post	Sampled and discarded	297927,409	4499843,27	592,63	60		1	9	1		21	Oak	
119	T T 2	Post	Discarded	297928,023	4499842,813	592,84	60		1	11					
120	T T 2	Post	Discarded	297928,414	4499844,493	592,65	34		1	6					
121	T T 2	Post	Sampled and discarded	297926,352	4499846,223	592,72	88		1	13			35	Oak	
122	T T 2	Post	Sampled and discarded	297926,213	4499846,199	592,74	88		1	11	1	Yes	39	Oak	5296-5071
124	T T 2	Post	Sampled and discarded	297925,269	4499845,072	592,83	110		2	16	1	<5	22	Oak	5215-5056
126	T T 2	Post	Discarded	297931,257	4499840,477	592,89	25		1	6					
127	T T 2	Horizontal wood	Discarded	297929,866	4499839,354	592,9	28		8	4					
128	T T 2	Post	Sampled and discarded	297925,521	4499845,541	592,91	90		1	9	2		50	Oak	
129	T T 2	Post	Discarded	297929,817	4499839,692	592,73	50		1	11					
130	T T 2	Post	Sampled and discarded	297929,126	4499840,461	592,88	52		1	8	2		15	Oak	
131	T T 2	Post	Discarded	297929,634	4499840,641	592,93	60		1	6	2				
132	T T 2	Post	Sampled and discarded	297931,073	4499840,523	592,7	53		1	7	2		20	Oak	
133	T T 2	Post	Discarded	297927,09	4499845,598	592,71	28		8	8					
134	T T 2	Post	Discarded	297929,244	4499839,911	592,95	27		1	8					
135	T T 2	Post	Discarded	297930,144	4499839,702	592,73	36		1	5	2				

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
137	T T 2	Post	Sampled and discarded	297927,58	4499844,708	592,86	61		2	10	2	Yes	28	Oak	
139	T T 2	Post	Discarded	297925,97	4499845,013	592,76	45		1	6	2				
140	T T 2	Post	Discarded	297928,562	4499842,038	592,68	26		1	7					
141	T T 2	Post	Discarded	297928,665	4499841,94	592,71	42		1	8					
142	T T 2	Post	Sampled and discarded	297925,491	4499845,269	592,78	56		5	7					
143	T T 2	Post	Sampled and discarded	297925,528	4499845,051	592,73	53		1	10		<3	27	Oak	
144	T T 2	Post	Discarded	297925,463	4499845,147	592,78	56		1	8					
147	T T 2	Post	Sampled and discarded	297928,691	4499843,268	592,75	67		5	9	2	Yes	30	Oak	
148	T T 2	Post	Sampled and discarded	297929,025	4499843,949	592,75	81		1	10	2		16	Oak	
150	T T 2	Post	Discarded	297928,447	4499841,601	592,77	45		1	6					
151	T T 2	Post	Sampled and discarded	297927,489	4499842,748	592,82	65		1	10		Yes	40	Oak	
152	T T 2	Post	Sampled and discarded	297928,246	4499841,496	592,75	56		1	5			8	Oak	
153	T T 2	Post	Sampled and discarded	297930,3	4499840,027	592,87	59		1	10	?		20	Oak	
154	T T 2	Post	Discarded	297930,071	4499840,109	592,79	31		1	6					
156	T T 2	Post	Discarded	297931,251	4499840,944	592,76	46		1	8					
157	T T 2	Post	Sampled and discarded	297930,59	4499841,085	592,87	66		3	12			25	Oak	
158	T T 2	Post	Sampled and discarded	297930,295	4499841,111	592,7	67		1	11		Yes	28	Oak	
159	T T 2	Post	Sampled and discarded	297930,547	4499840,968	592,89	92		1	11			20	Oak	

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
160	T T 2	Post	Sampled and discarded	297929,227	4499842,794	592,74	58		1	7	2				
161	T T 2	Post	Discarded	297928,595	4499841,088	592,98	43		1	6	2				
162	T T 2	Post	Sampled and discarded	297929,611	4499842,221	592,87	102		1	13	1		18	Oak	
163	T T 2	Post	Sampled and discarded	297929,479	4499842,516	592,76	83		1	13		<3	55	Oak	
164	T T 2	Post	Discarded	297929,819	4499842,734	592,76	37		1	7	2				
166	T T 2	Post	Discarded	297929,81	4499842,593	592,62	57		1	7					
167	T T 2	Post	Sampled and discarded	297929,636	4499842,442	592,65	94		1	10		Yes	12	Oak	
168	T T 2	Post	Sampled and discarded	297929,665	4499842,759	592,64	69		1	10	1		10	Oak	
169	T T 2	Post	Discarded	297929,359	4499842,532	592,7	60		1	7					
170	T T 2	Post	Discarded	297928,389	4499844,134	592,58	67		1	10					
171	T T 2	Post	Discarded	297928,307	4499843,935	592,65	60		1	6	2				
172	T T 2	Post	Remained in layer	297928,495	4499843,792	592,77	90		1	14					
173	T T 2	Post	Sampled and remained in layer	297928,15	4499843,813	592,65	49		1	8		Yes	20	Oak	
174	T T 2	Post	Discarded	297928,321	4499843,83	592,65	45		1	6					
175	T T 2	Post	Discarded	297928,687	4499843,794	592,78	71		1	8					
176	T T 2	Post	Sampled and discarded	297928,939	4499843,878	592,76	101		1	11	?	<5	75	Oak	
177	T T 2	Post	Discarded	297929,105	4499843,772	592,68	84		1	6	2				
178	T T 2	Post	Discarded	297929,168	4499843,171	592,68	33		1	6					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
179	T T 2	Post	Remained in layer	297928,609	4499843,756	592,69	59		1	8					
180	T T 2	Post	Sampled and discarded	297928,998	4499843,677	592,62	53		1	8			14	Oak	
182	T T 2	Post	Discarded	297930,659	4499841,543	592,65	53		2	8	1				
183	T T 2	Post	Discarded	297930,823	4499841,354	592,63	40		1	9					
184	T T 2	Post	Sampled and discarded	297930,253	4499840,791	592,66	73		1	14		Yes	35	Oak	
185	T T 2	Post	Sampled and discarded	297929,509	4499840,275	592,65	61		1	13			14	Oak	
186	T T 2	Post	Sampled and discarded	297929,657	4499839,343	592,7	54		1	6	?		7	Oak	
187	T T 2	Post	Sampled and discarded	297928,021	4499841,83	592,7	72		1	10	3	<2	22	Oak	
188	T T 2	Post	Discarded	297928,204	4499841,924	592,7	52		1	7					
189	T T 2	Post	Discarded	297928,298	4499841,74	592,7	69		1	8					
190	T T 2	Post	Discarded	297928,439	4499841,731	592,7	31		1	6					
191	T T 2	Post	Discarded	297927,726	4499842,701	592,65	31		1	5					
192	T T 2	Post	Discarded	297926,294	4499844,504	592,88	63		8	9					
193	T T 2	Post	Sampled and remained in layer	297925,568	4499845,33	592,75	75		1	7	?	Yes	26	Oak	
195	T T 2	Post	Sampled and discarded	297925,529	4499844,765	592,75	103		2	12	3		19	Oak	
196	T T 2	Post	Discarded	297926,261	4499844,077	592,8	102		1	12	3				
1939	929	Post	Discarded	297914,356	4499861,738	592,8	65		1	8					
1940	929	Post	Remained in layer	297914,326	4499861,633	592,83	68		1	8					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
1941	929	Post	Remained in layer	297914,378	4499861,562	592,85	60		1	7					
1942	929	Post	Remained in layer	297914,295	4499861,438	592,85	70		1	10					
1943	929	Post	Remained in layer	297914,315	4499861,36	592,8	55		1	6					
1944	929	Post	Remained in layer	297914,733	4499861,536	592,81	60		1	10					
1945	929	Post	Remained in layer	297914,821	4499861,289	592,87	80		1	13					
1946	929	Post	Remained in layer	297914,766	4499861,177	592,84	70		1	11					
1947	929	Post	Remained in layer	297914,644	4499861,088	592,86	65		1	8					
1948	929	Post	Remained in layer	297914,844	4499861,026	592,8	50		1	8					
1949	929	Post	Remained in layer	297914,947	4499860,861	592,87	55		1	12					
1950	929	Post	Remained in layer	297914,691	4499860,831	592,86	75		1	13					
1951	929	Post	Remained in layer	297915,097	4499860,685	592,83	60		1	5					
1952	929	Post	Remained in layer	297915,277	4499860,317	592,81	60		1	5					
1953	929	Post	Remained in layer	297914,487	4499861,061	592,72	40		1	7					
1954	929	Post	Remained in layer	297914,601	4499861,422	592,76	55		1	8					
1955	929	Post	Remained in layer	297914,392	4499860,681	592,8	65		1	9					
1956	929	Post	Remained in layer	297914,9	4499860,763	592,74	55		1	6					
1957	929	Post	Remained in layer	297914,266	4499861,721	592,74	50		1	6					
1959	929	Post	Remained in layer	297913,667	4499860,319	592,8	55		8	5					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
1960	929	Post	Remained in layer	297914,14	4499860,464	592,74	55		1	9					
1961	929	Post	Remained in layer	297913,94	4499860,487	592,74	45		8	5					
1962	929	Post	Remained in layer	297913,536	4499860,912	592,8	70		1	12					
1963	929	Post	Remained in layer	297913,265	4499860,813	592,86	75		1	10					
1964	929	Post	Remained in layer	297913,414	4499861,108	592,73	50		1	8					
1965	929	Post	Remained in layer	297914,189	4499861,094	592,78	55		8	6					
1966	929	Post	Remained in layer	297914,039	4499861,368	592,75	60		1	10					
1967	929	Post	Remained in layer	297913,983	4499861,608	592,72	50		1	6					
1968	929	Post	Remained in layer	297913,85	4499861,695	592,72	55		8	6					
1969	929	Post	Remained in layer	297914,033	4499862,066	592,8	60		1	8					
1970	929	Post	Remained in layer	297914,042	4499861,815	592,7	65		1	7					
1971	929	Post	Remained in layer	297913,646	4499862,035	592,68	64		1	11					
1972	929	Post	Remained in layer	297913,996	4499862,437	592,77	70		1	10					
1973	929	Post	Remained in layer	297913,763	4499862,302	592,79	65		1	12					
1974	929	Post	Remained in layer	297913,546	4499862,457	592,74	56		1	8					
1975	929	Post	Remained in layer	297913,37	4499862,611	592,8	55		1	8					
1976	929	Post	Remained in layer	297913,303	4499863,193	592,8	45		8	5					
1977	929	Post	Remained in layer	297913,796	4499862,031	592,71	70		8	6					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
1978	929	Post	Remained in layer	297913,768	4499862,552	592,68	45		1	5					
1979	929	Post	Remained in layer	297913,482	4499862,288	592,7	60		8	5					
2001	928	Post	Discarded	297912,047	4499862,639	592,86	60		1	8					
2002	928	Post	Sampled and discarded	297912,778	4499860,976	592,78	70		6	10		Yes	54	Oak	
2003	928	Post	Discarded	297912,393	4499861,366	593,02	43		1	12					
2004	928	Post	Discarded	297912,557	4499863,916	592,92	50		1	15					
2005	928	Post	Discarded	297912,708	4499863,218	592,86	35		6	9	2				
2006	928	Post	Discarded	297911,944	4499862,713	592,96	78		1	11	3				
2007	928	Post	Discarded	297912,484	4499860,602	592,87	49		1	8					
2008	928	Post	Discarded	297911,648	4499861,486	592,13	48		6	20	1				
2009	928	Post	Discarded	297911,298	4499862,161	592,93	85		1	10	2				
2010	928	Post	Sampled and discarded	297910,223	4499863,72	593,06	85		1	11	1	Yes	86	Oak	
2011	928	Post	Sampled and discarded	297910,773	4499862,831	593,01	124		2	11	1	Yes	41	Oak	5308-5081
2012	928	Post	Discarded	297913,12	4499863,464	592,8	60		1	9					
2013	928	Post	Discarded	297912,038	4499861,533	592,8	31		3	7	1				
2014	928	Post	Discarded	297909,641	4499864,347	593,01	50		1	11					
2015	928	Post	Discarded	297910,077	4499864,086	592,86	50		8	5					
2016	928	Post	Discarded	297911,274	4499862,715	592,83	50		8	7					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
2017	928	Post	Sampled and discarded	297910,556	4499864,13	592,46	112		1	11	2	Yes	52	Oak	
2018	928	Post	Discarded	297910,754	4499863,958	592,41	40		8	8					
2019	928	Post	Discarded	297910,571	4499863,783	592,89	29		1	9					
2021	928	Post	Discarded	297910,924	4499863,814	592,47	33		2	7	1				
2022	928	Post	Discarded	297910,608	4499863,378	592,83	70		1	8					
2023	928	Post	Sampled and discarded	297910,779	4499863,09	592,37	117		1	10	2	Yes	47	Oak	5296-5072
2025	928	Post	Discarded	297911,104	4499863,14	592,47	72		1	7	2				
2026	928	Post	Discarded	297911,004	4499862,773	592,83	63		1	8	2				
2027	928	Post	Sampled and discarded	297911,347	4499862,881	592,86	105		1	14	3	<3	28	Oak	5292-5054
2028	928	Post	Sampled and discarded	297911,423	4499863,191	592,83	82		1	8	3	Yes	26	Oak	
2029	928	Post	Discarded	297911,593	4499863,07	592,4	40		1	10					
2031	928	Post	Discarded	297912,056	4499862,198	592,46	23		1	6					
2032	928	Post	Sampled and discarded	297911,689	4499861,928	592,85	117		1	12	2	Yes	56	Oak	
2033	928	Post	Discarded	297911,529	4499861,644	592,35	100		3	10	1				
2034	928	Post	Sampled and discarded	297911,492	4499861,321	592,3	150		1	10	3	Yes	27	Oak	
2035	928	Post	Discarded	297912,252	4499861,53	592,84	43		1	10					
2036	928	Post	Discarded	297912,932	4499861,171	592,46	50		1	10	2				
2038	928	Post	Sampled and discarded	297912,892	4499860,277	592,28	118		1	7	3	Yes	41	Oak	

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
2040	928	Post	Sampled and discarded	297913,122	4499860,476	592,29	91		1	7	2		12	Oak	5294-5069
2041	928	Post	Discarded	297912,279	4499862,772	592,19	42		1	7	2				
2042	928	Post	Discarded	297912,711	4499861,641	592,44	35		8	9					
2044	928	Post	Remained in layer	297912,497	4499863,47	592,15	30		8	8					
2045	928	Post	Remained in layer	297913,191	4499863,211	592,1	25		8	9					
2046	928	Post	Remained in layer	297913,268	4499863,41	592,1	30		8	9					
2047	928	Post	Remained in layer	297912,879	4499863,843	592,1	30		8	7					
2048	928	Post	Discarded	297912,68	4499861,538	592,44	30		8	8					
2049	928	Post	Discarded	297912,197	4499861,828	592,86	60		8	12					
2050	928	Post	Discarded	297911,149	4499863,347	592,47	25		8	7					
2051	928	Post	Discarded	297911,839	4499862,306	592,46	38		1	9	2				
2053	928	Post	Discarded	297911,895	4499864,074	592,46	30		1	7					
2054	928	Post	Discarded	297912,385	4499864,068	592,83	45		8	9					
2055	928	Post	Discarded	297912,51	4499863,63	592,88	75		1	14					
2056	928	Post	Discarded	297913,239	4499862,538	592,57	40		8	10					
2675	907	Post	Discarded	297905,463	4499875,819	592,66	80		1	12					
2676	907	Post	Discarded	297905,224	4499876,208	592,8	95		1	11					
2677	907	Post	Discarded	297905,134	4499876,392	592,51	65		1	9					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
2678	907	Post	Discarded	297905,018	4499876,484	592,75	65		1	10					
2679	907	Post	Discarded	297905,034	4499876,623	592,77	80		1	13					
2680	907	Post	Discarded	297905,183	4499876,577	592,3	50		1	12					
2681	907	Post	Discarded	297905,035	4499876,78	592,77	80		1	10					
2691	907	Post	Discarded	297905,824	4499871,581	593,21	65		1	10					
2696	907	Post	Discarded	297907,104	4499872,127	593,04	100		1	16					
2700	907	Post	Discarded	297907,338	4499871,771	593,05	90		1	12	1				
2701	907	Post	Discarded	297907,589	4499871,818	593,07	100		1	12					
2705	907	Post	Discarded	297906,047	4499874,209	592,02	100		1	11					
2708	907	Post	Discarded	297906,036	4499871,113	592,98	90		1	12					
2710	907	Post	Discarded	297906,306	4499871,444	592,92	90		1	15	?				
2742	907	Post	Discarded	297906,468	4499870,652	592,83	80		1	16					
2754	907	Post	Discarded	297906,573	4499873,254	592,68	50		1	12					
2755	907	Post	Discarded	297906,426	4499873,302	592,72	47		1	10					
2756	907	Post	Discarded	297906,517	4499872,976	592,79	65		1	10					
2757	907	Post	Discarded	297905,55	4499875,364	592,93	50		1	13					
2758	907	Post	Discarded	297906,163	4499875,016	592,83	50		1	7					
2759	907	Post	Discarded	297906,026	4499874,614	592,83	50		1	10					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
2767	907	Post	Discarded	297906,363	4499874	592,35	46		1	7	?				
2768	907	Post	Discarded	297905,815	4499874,189	592,54	50		1	10	?				
3951	884	Post	Sampled and remained in layer	297896,748	4499890,657	584,79	77		5	11		Yes	46	Oak	
4851	860	Post	Sampled and discarded	297895,029	4499898,697	585	126		1	14	1				
4852	860	Post	Sampled and discarded	297895,216	4499898,518	584,97	134		1	11	1	Yes	50	Conifer	
4853	860	Post	Sampled and discarded	297895,671	4499898,274	584,9	124		1	11	2	<3	38	Conifer	
4854	860	Post	Sampled and discarded	297895,976	4499898,027	584,83	111		1	13	2	?	18	Conifer	
4855	860	Post	Sampled and remained in layer	297895,99	4499897,432	584,86	130		1	12		?	24	Conifer	
4856	860	Post	Sampled and discarded	297896,036	4499897,239	584,87	117		1	9	1	?	37	Conifer	
4857	860	Post	Sampled and discarded	297896,16	4499896,733	584,86	120		1	11	1		27	Conifer	
4858	860	Post	Sampled and discarded	297896,407	4499896,491	584,85	121		1	10	1		50	Conifer	
4859	860	Post	Sampled and discarded	297896,545	4499896,214	584,84	105		1	12	1	Yes	75	Conifer	
4860	860	Post	Sampled and discarded	297896,576	4499895,986	584,84	125		1	9	1		29	Conifer	
4861	860	Post	Sampled and remained in layer	297896,752	4499895,604	584,89	113		1	11		Yes	53	Conifer	
4862	860	Post	Sampled and discarded	297897,323	4499895,463	584,86	118		1	9	1	Yes	32	Conifer	
4863	860	Post	Sampled and discarded	297897,74	4499893,732	584,79	120		1	12	1		42	Conifer	
4864	860	Post	Sampled and discarded	297895,057	4499892,858	584,7	50		1	10					
4865	860	Post	Sampled and remained in layer	297895,24	4499892,646	584,76	103		1	13		?	41	Oak	

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
4866	860	Post	Sampled and remained in layer	297895,012	4499892,502	584,74	96		1	12		Yes	17	Oak	
4867	860	Post	Sampled and remained in layer	297897,477	4499892,734	584,98	102		1	15		Yes	96	Oak	
4868	860	Post	Sampled and remained in layer	297897,621	4499892,436	584,45	37		1	13		?	25	Oak	
4869	860	Post	Sampled and discarded	297899,059	4499894,342	584,47	37		1	5					
4870	860	Post	Sampled and discarded	297897,43	4499893,891	584,83	91		1	9	1		50	Conifer	
4871	860	Post	Sampled and remained in layer	297898,068	4499891,349	584,33	41		1	12		?	40	Oak	
4872	860	Post	Sampled and remained in layer	297898,246	4499891,189	584,2	70		1	11		Yes	80	Oak	
4873	860	Post	Sampled and remained in layer	297897,125	297897,1252	584,76	110		1	14		Yes	27	Oak	
4874	860	Post	Sampled and remained in layer	297897,265	4499893,651	584,42	42		1	11		Yes	17	Oak	
4879	860	Post	Sampled and remained in layer	297895,753	4499891,496	584,57	85		1	13		<3	27	Oak	
4880	860	Post	Sampled and discarded	297894,781	4499893,151	584,77	83		5	11	3	?	90	Oak	
4881	860	Post	Sampled and discarded	297894,94	4499893,304	584,62	70		1	11	1				
4882	860	Post	Sampled and discarded	297895,483	4499893,882	584,58	59		1	6	1		35	Oak	
4883	860	Post	Discarded	297895,339	4499894,646	584,71	74		1	11	1				
4884	860	Post	Sampled and remained in layer	297895,814	4499894,742	584,55	71		1	10		Yes	31	Oak	
4885	860	Post	Sampled and remained in layer	297896,009	4499894,68	584,64	80		1	11			21	Oak	
4886	860	Post	Sampled and remained in layer	297895,319	4499892,924	584,46	60		1	10		Yes	40	Oak	
4887	860	Post	Sampled and discarded	297894,287	4499892,387	584,78	57		1	13	1		34	Oak	

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
4888	860	Post	Discarded	297894,44	4499893,969	584,6	75		1	9					
4889	860	Post	Sampled and remained in layer	297894,561	4499894,052	584,63	94		1	11		Yes	22	Oak	
4890	860	Post	Sampled and remained in layer	297894,298	4499894,228	584,65	87		1	12		Yes	55	Oak	
4891	860	Post	Sampled and remained in layer	297894,556	4499894,436	584,74	100		1	10		Yes	24	Oak	
4892	860	Post	Sampled and remained in layer	297894,094	4499894,894	584,68	96		1	9		Yes	22	Oak	
4894	860	Post	Sampled and remained in layer	297896,371	4499895,238	584,68	98		1	12			55	Oak	
4895	860	Post	Sampled and remained in layer	297895,92	4499895,235	584,61	120		1	12		Yes	70	Oak	
4897	860	Post	Sampled and remained in layer	297895,728	4499895,698	584,66	119		1	10		Yes	17	Oak	
4898	860	Post	Sampled and remained in layer	297895,208	4499895,617	584,66	66		1	13		Yes	22	Oak	
4899	860	Post	Sampled and remained in layer	297894,972	4499895,73	584,61	90		1	10			35	Oak	
4900	860	Post	Sampled and remained in layer	297894,846	4499895,789	584,54	71		1	8		Yes	17	Oak	
4901	860	Post	Sampled and remained in layer	297894,579	4499895,692	584,6	92		1	12		Yes	19	Oak	
4902	860	Post	Sampled and remained in layer	297894,501	4499894,772	584,68	90		1	10			41	Oak	
4903	860	Post	Sampled and discarded	297895,655	4499896,403	584,57	95		1	10	2	<2	27	Oak	
4904	860	Post	Sampled and remained in layer	297895,846	4499896,479	584,75	78		1	12		?	60	Oak	
4906	860	Post	Sampled and discarded	297894,57	4499897,127	584,64	90		1	10	3	Yes	24	Oak	
4907	860	Post	Sampled and remained in layer	297894,689	4499897,428	584,4	61		1	9			17	Oak	
4908	860	Post	Sampled and discarded	297894,854	4499897,929	584,77	150		1	13	2	<3	73	Oak	

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
4909	860	Post	Sampled and remained in layer	297895,453	4499898,247	584,89	100		1	10			28	Conifer	
4910	860	Post	Sampled and remained in layer	297893,645	4499895,824	584,31	72		1	11		Yes	23	Oak	
4934	859	Post	Sampled and remained in layer	297888,432	4499898,524	593,02	71		1	16		<5	30	Oak	5291-5063
4935	859	Post	Remained in layer	297887,787	4499898,492	593,02	70		1	11			30	Oak	
4948	859	Post	Remained in layer	297891,431	4499898,68	593,12	48		1	12					
4949	859	Post	Sampled and remained in layer	297888,81	4499897,239	592,92	58		1	13		?	40	Oak	
4951	859	Post	Remained in layer	297891,834	4499899,634	593,15	50		1	12					
4952	859	Post	Remained in layer	297890,675	4499893,694	593,08	28		1	7					
4953	859	Post	Sampled and remained in layer	297891,429	4499892,412	593,08	30		1	10		<3	26	Oak	5208-4988
4954	859	Post	Sampled and remained in layer	297887,679	4499899,79	592,92	50		1	10		?	18	Oak	
4955	859	Post	Sampled and remained in layer	297887,939	4499899,297	592,92	53		2	11		?	23	Oak	
4957	859	Post	Remained in layer	297890,385	4499894,376	592,93	20		1	7					
4959	859	Post	Remained in layer	297891,204	4499892,866	592,92	23		1	7					
4960	859	Post	Remained in layer	297891,592	4499891,776	592,98	21		1	8					
4963	859	Post	Remained in layer	297890,887	4499893,391	592,96	20		1	8					
4964	859	Post	Remained in layer	297890,589	4499894,094	592,88	50		1	5					
4965	859	Post	Remained in layer	297891,969	4499899,476	592,87	24		1	8					
4966	859	Post	Sampled and discarded	297892,727	4499898,433	593,02	26		1	12					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
4971	859	Post	Remained in layer	297887,382	4499899,826	592,82	40		1	12					
4980	859	Post	Remained in layer	297892,075	4499899,182	592,8	20		1	8					
6199	834	Post	Sampled and remained in layer	297890,761	4499904,191	593,08	48		1	7			17	Oak	
6200	834	Post	Sampled and remained in layer	297890,938	4499903,414	593,11	50		1	12			27	Oak	
6201	834	Post	Sampled and remained in layer	297890,999	4499902,868	593,07	37		1	10		<2	50	Oak	
6202	834	Post	Sampled and remained in layer	297891,305	4499902,833	593,1	40		1	13			30	Oak	
6203	834	Post	Sampled and remained in layer	297891,584	4499902,825	593,07	47		1	11			45	Oak	
6204	834	Post	Remained in layer	297890,417	4499901,979	593,09	40		1	12					
6205	834	Post	Remained in layer	297890,568	4499901,717	593,08	38		1	9					
6206	834	Post	Remained in layer	297891,013	4499901,553	593,08	38		1	9					
6207	834	Post	Sampled and remained in layer	297891,72	4499901,571	593,08	38		1	7		<5	27	Oak	
6208	834	Post	Remained in layer	297892,001	4499901,119	593,23	53		1	20		<5	50	Oak	5215-5056
6209	834	Post	Sampled and remained in layer	297892,757	4499901,697	593,06	36		2	9			22	Oak	
11900	928	Post	Discarded	297907,559	4499869,387	592,62	80		1	10					
11901	928	Post	Discarded	297905,501	4499869,073	592,74	40		1	6					
11902	928	Post	Remained in layer	297907,531	4499868,257	592,28	26		1	9					
11903	928	Post	Remained in layer	297907,626	4499867,897	592,31	26		1	9					
11904	928	Post	Remained in layer	297908,081	4499868,384	592,15	15		1	11					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
11905	928	Post	Remained in layer	297908,244	4499867,435	592,06	6		1	7					
11906	928	Post	Discarded	297908,06	4499867,626	592,68	50		1	8					
11907	928	Post	Discarded	297908,273	4499868,299	592,7	50		1	8					
11908	928	Post	Discarded	297907,939	4499867,87	592,64	50		1	10					
11909	928	Post	Discarded	297907,734	4499868,348	592,74	50		8	7					
11910	928	Post	Discarded	297907,958	4499868,198	592,62	50		8	7					
11911	928	Post	Discarded	297908,375	4499868,069	592,8	50		1	8					
11912	928	Post	Discarded	297908,238	4499867,844	592,63	75		1	8					
11913	928	Post	Remained in layer	297908,042	4499868,74	592,49	50		1	10					
11914	928	Post	Remained in layer	297907,428	4499869,036	592,6	50		1	7					
11915	928	Post	Remained in layer	297907,503	4499868,648	592,46	50		8	7					
11916	928	Horizontal wood	Discarded	297905,797	4499869,173	592,8	57	5	8	5					
11917	928	Horizontal wood	Discarded	297908,291	4499869,45	592,59	86	5	8	5					
11920	928	Post	Remained in layer	297907,094	4499869,741	592,76	85		1	11					
11921	928	Post	Remained in layer	297907,175	4499869,636	592,75	75		1	8					
11922	928	Post	Remained in layer	297907,262	4499869,708	592,77	80		1	8					
11923	928	Post	Remained in layer	297907,439	4499869,799	592,73	85		1	8	?				
11924	928	Post	Remained in layer	297907,65	4499869,993	592,49	60		1	9					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
11925	928	Post	Remained in layer	297908,191	4499870,21	592,68	75		1	11					
11926	928	Post	Remained in layer	297908,314	4499870,133	592,66	65		1	12					
11927	928	Post	Remained in layer	297908,417	4499870,047	592,76	65		1	8					
11930	928	Post	Discarded	297910,301	4499867,525	593,08	70		1	8					
11931	928	Post	Remained in layer	297911,279	4499865,328	593	107		1	14	?				
11932	928	Horizontal wood	Discarded	297910,429	4499870,068	593,15	267		1	16	1				
11933	928	Post	Discarded	297909,497	4499868,66	592,86	86		1	9	?				
11934	928	Post	Discarded	297910,921	4499865,87	592,83	50		1	12					
11935	928	Post	Discarded	297911,064	4499865,863	592,85	90		1	10					
11936	928	Post	Discarded	297911,083	4499866,084	592,81	50		8	8					
11937	928	Post	Discarded	297910,763	4499866,09	592,76	50		8	8					
11938	928	Post	Discarded	297910,744	4499865,961	592,76	50		8	8					
11939	928	Post	Discarded	297911,519	4499865,388	592,71	105		1	11					
11940	928	Post	Discarded	297911,021	4499866,411	592,78	40		8	5					
11941	928	Post	Discarded	297909,892	4499867,874	592,72	34		1	8					
11942	928	Post	Discarded	297911,091	4499865,52	592,67	40		8	8					
11943	928	Post	Discarded	297910,868	4499865,654	592,69	70		1	11					
11944	928	Post	Discarded	297911,201	4499866,158	592,69	35		1	6					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
11945	928	Post	Discarded	297911,262	4499865,567	592,59	40		8	8					
11946	928	Post	Discarded	297911,776	4499865,297	592,56	37		1	13					
11947	928	Post	Discarded	297910,979	4499866,34	592,58	44		1	5					
11948	928	Post	Discarded	297910,776	4499866,35	592,58	45		1	9					
11949	928	Post	Discarded	297910,573	4499866,563	592,58	50		8	8					
11950	928	Post	Remained in layer	297909,865	4499865,354	592,59	30		1	8					
11951	928	Post	Discarded	297910,07	4499865,378	592,56	56		1	7					
11952	928	Post	Discarded	297909,652	4499865,741	592,46	33		1	6					
11953	928	Post	Discarded	297908,68	4499866,482	593	20		1	9	?				
11954	928	Post	Remained in layer	297908,645	4499866,659	592,97	75		1	6					
11955	928	Post	Remained in layer	297908,498	4499866,962	592,6	50		1	7					
11956	928	Post	Remained in layer	297909,105	4499868,954	592,65	60		1	10					
11957	928	Post	Remained in layer	297909,061	4499866,578	592,9	70		1	7					
11958	928	Post	Remained in layer	297909,034	4499866,822	592,7	60		1	7					
11959	928	Post	Remained in layer	297908,929	4499869,263	592,65	50		1	12	?				
11960	928	Post	Remained in layer	297908,821	4499866,857	592,23	22		1	7					
11961	928	Post	Remained in layer	297909,103	4499867,177	592,19	14		1	7					
11962	928	Post	Remained in layer	297909,127	4499869,405	592,5	45		1	7					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
11963	928	Horizontal wood	Discarded	297909,287	4499867,447	592,6	85	8	1	8					
11964	928	Horizontal wood	Discarded	297908,955	4499867,871	592,65	75	9	1	9					
11965	928	Post	Remained in layer	297908,554	4499869,894	593,07	80		1	9					
11966	928	Post	Remained in layer	297908,716	4499869,762	592,96	60		1	7					
11967	928	Post	Remained in layer	297908,718	4499869,515	593	60		1	12					
11968	928	Post	Remained in layer	297908,495	4499869,446	592,95	75		1	10					
11969	928	Post	Discarded	297913,211	4499862,417	592,58	35		8	7					
11970	928	Post	Discarded	297913,189	4499862,132	592,38	25		8	8					
11971	928	Post	Discarded	297913	4499861,741	592,35	40		8	7					
11972	928	Post	Discarded	297909,521	4499864,749	593,23	100		1	7					
11973	928	Post	Discarded	297909,782	4499864,94	592,96	70		1	8					
11974	928	Post	Remained in layer	297912,208	4499864,326	592,75	50		1	5					
11975	928	Post	Discarded	297912,172	4499864,566	592,72	60		1	8					
11976	928	Post	Discarded	297911,994	4499864,492	592,86	70		1	11					
11977	928	Post	Discarded	297912,013	4499864,648	592,74	55		1	6					
11978	928	Post	Discarded	297911,832	4499864,826	592,86	45		1	5					
11979	928	Post	Discarded	297911,794	4499864,585	592,64	65		1	6					
11980	928	Post	Remained in layer	297911,732	4499864,738	592,7	60		1	8					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
11981	928	Post	Remained in layer	297911,655	4499864,867	592,66	70		1	9					
11982	928	Post	Remained in layer	297911,573	4499864,938	592,85	65		1	9					
11983	928	Post	Remained in layer	297911,636	4499864,595	592,85	70		1	8					
11984	928	Post	Remained in layer	297911,366	4499864,764	592,79	50		1	6					
11985	928	Post	Remained in layer	297910,446	4499864,656	592,76	55		1	8					
11986	928	Post	Remained in layer	297910,186	4499864,442	592,77	55		1	8					
11987	928	Post	Remained in layer	297910,492	4499865,144	592,77	60		1	9					
11988	928	Post	Remained in layer	297909,986	4499865,016	592,83	40		1	5					
11989	928	Post	Remained in layer	297909,938	4499864,871	592,84	60	9	7	9					
11990	928	Post	Remained in layer	297909,973	4499864,515	592,74	55		1	6					
11991	928	Post	Remained in layer	297909,931	4499864,618	592,87	45		1	5					
11992	928	Post	Remained in layer	297909,838	4499864,773	592,82	50		1	6					
11993	928	Post	Remained in layer	297909,87	4499864,475	592,85	70		1	7					
11994	928	Post	Remained in layer	297909,71	4499864,644	592,87	75		1	11					
11995	928	Post	Remained in layer	297909,617	4499864,803	592,88	65		1	7					
11996	928	Post	Remained in layer	297909,653	4499865,31	592,75	50		1	7					
11997	928	Post	Remained in layer	297910,166	4499864,706	592,7	50		1	7					
11998	928	Post	Remained in layer	297909,34	4499865,188	592,7	50		1	6					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
11999	928	Post	Remained in layer	297912,222	4499864,962	592,68	45		1	5					
12000	928	Post	Remained in layer	297911,56	4499865,215	592,73	60		1	7					
12001	947	Post	Remained in layer	297914,851	4499858,201	593,09	60		8	8					
12002	947	Post	Remained in layer	297914,932	4499857,672	593,09	60		1	12					
12003	947	Post	Remained in layer	297915,753	4499856,55	593,05	60		1	8					
12004	947	Post	Remained in layer	297914,502	4499858,296	593	60		1	10					
12005	947	Post	Remained in layer	297914,423	4499858,984	593	60		8	10					
12006	947	Post	Remained in layer	297914,293	4499859,096	592,94	65		8	10					
12007	947	Post	Remained in layer	297915,904	4499859,003	592,94	65		1	10					
12008	947	Post	Remained in layer	297915,775	4499858,813	592,94	75		1	12					
12009	947	Post	Remained in layer	297916,26	4499858,847	593	60		1	7					
12010	947	Post	Remained in layer	297915,394	4499858,419	592,94	90		1	12					
12011	947	Post	Remained in layer	297916,509	4499857,993	592,95	75		1	10					
12012	947	Post	Remained in layer	297916,835	4499858,063	592,98	70		1	10					
12013	947	Post	Remained in layer	297917,011	4499857,936	592,96	75		1	9					
12014	947	Post	Remained in layer	297915,56	4499857,394	592,95	80		1	11					
12015	947	Post	Remained in layer	297915,447	4499856,775	592,95	70		1	10					
12016	947	Post	Remained in layer	297916,221	4499856,905	592,95	80		1	13					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
12017	947	Post	Remained in layer	297917,202	4499857,3	592,63	60		1	12					
12018	947	Post	Remained in layer	297917,473	4499856,805	592,54	40		1	7					
12019	947	Post	Remained in layer	297917,575	4499856,391	592,63	65		1	10					
12020	947	Post	Remained in layer	297917,497	4499856,038	592,61	46		8	6					
12021	947	Post	Remained in layer	297917,89	4499855,899	592,95	70		8	7					
12022	947	Post	Remained in layer	297918,039	4499856,095	592,95	70		1	8					
12023	947	Post	Remained in layer	297915,856	4499856,508	592,96	60		8	7					
12024	947	Post	Remained in layer	297914,714	4499857,905	592,86	65		1	9					
12025	947	Post	Remained in layer	297915,996	4499859,048	592,89	74		8	8					
12026	947	Post	Remained in layer	297915,944	4499859,13	592,89	70		1	9					
12027	947	Post	Remained in layer	297915,843	4499859,174	592,89	65		8	7					
12028	947	Post	Remained in layer	297914,386	4499858,132	592,85	50		8	6					
12029	947	Post	Remained in layer	297914,243	4499858,713	592,83	68		1	12					
12030	947	Post	Remained in layer	297914,559	4499858,951	592,83	70		8	10					
12031	947	Post	Remained in layer	297914,929	4499857,878	592,89	90		1	13					
12032	947	Post	Remained in layer	297915,033	4499858,029	592,87	60		1	7					
12033	947	Post	Remained in layer	297915,047	4499857,812	592,83	60		1	10					
12034	947	Post	Remained in layer	297915,21	4499857,418	592,84	70		1	8					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
12035	947	Post	Remained in layer	297915,492	4499857,163	592,85	55		8	6					
12036	947	Post	Remained in layer	297915,628	4499857,261	592,85	70		1	9					
12037	947	Post	Remained in layer	297916,615	4499858,196	592,86	71		8	10					
12038	947	Post	Remained in layer	297914,699	4499858,313	592,8	65		1	8					
12039	947	Post	Remained in layer	297914,702	4499858,464	592,82	67		1	10					
12040	947	Post	Remained in layer	297914,529	4499858,461	592,8	65		1	8					
12041	947	Post	Remained in layer	297914,44	4499858,512	592,81	66		1	9					
12042	947	Post	Remained in layer	297914,607	4499858,22	592,84	60		1	6					
12043	947	Post	Remained in layer	297915,192	4499857,291	592,76	61		1	10					
12044	947	Post	Remained in layer	297915,133	4499857,592	592,76	61		1	10					
12045	947	Post	Remained in layer	297915,392	4499858,166	592,8	50		8	8					
12046	947	Post	Remained in layer	297914,988	4499856,982	592,8	70		1	10					
12048	947	Post	Remained in layer	297915,652	4499856,303	592,8	65		1	8					
12049	947	Post	Remained in layer	297915,693	4499856,149	592,8	65		1	8					
12050	947	Post	Remained in layer	297915,925	4499856,33	592,8	65		1	6					
12051	947	Post	Remained in layer	297916,381	4499857,826	592,8	65		1	10					
12052	947	Post	Remained in layer	297916,706	4499857,718	592,8	70		1	9					
12053	947	Post	Remained in layer	297916,831	4499857,525	592,8	60		1	7					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
12054	947	Post	Remained in layer	297917,278	4499857,628	592,82	80		1	14					
12055	947	Post	Remained in layer	297916,368	4499858,641	592,85	65		1	8					
12056	947	Post	Remained in layer	297916,198	4499859,12	592,83	68		8	7					
12057	947	Post	Remained in layer	297916,266	4499858,941	592,75	6		1	9					
12058	947	Post	Discarded	297915,748	4499859,164	592,78	63		1	10					
12059	947	Post	Remained in layer	297917,681	4499858,957	592,78	70		1	11					
12060	947	Post	Remained in layer	297914,489	4499859,201	592,8	65		8	10					
12061	947	Post	Remained in layer	297914,955	4499858,203	592,78	63		1	7					
12062	947	Post	Remained in layer	297914,712	4499857,754	592,78	70		8	8					
12063	947	Post	Remained in layer	297915,269	4499857,067	592,78	63		1	9					
12064	947	Post	Remained in layer	297915,942	4499857,434	592,77	62		1	10					
12065	947	Post	Remained in layer	297915,76	4499858,244	592,77	60		8	8					
12066	947	Post	Remained in layer	297914,727	4499858,923	592,77	42		8	6					
12067	947	Post	Remained in layer	297916,746	4499855,229	592,77	62		1	10					
12068	947	Post	Remained in layer	297917,633	4499855,586	592,8	70		1	11					
12069	947	Post	Remained in layer	297917,786	4499855,754	592,78	70		1	8					
12070	947	Post	Remained in layer	297917,599	4499855,985	592,75	60		1	9					
12071	947	Post	Remained in layer	297917,866	4499855,348	592,74	70		1	10					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
12072	947	Post	Remained in layer	297916,58	4499858,828	592,58	60		1	8					
12073	947	Post	Remained in layer	297916,953	4499857,466	592,6	45		1	7					
12074	947	Post	Remained in layer	297914,575	4499857,895	592,67	50		1	6					
12075	947	Post	Remained in layer	297915,036	4499857,196	592,7	50		1	7					
12076	947	Post	Remained in layer	297915,658	4499856,91	592,7	55		8	7					
12077	947	Post	Remained in layer	297915,208	4499856,875	592,68	53		1	6					
12078	947	Post	Remained in layer	297917,991	4499855,958	592,78	63		8	7					
12079	947	Post	Remained in layer	297917,418	4499856,088	592,58	50		1	8					
12080	947	Post	Remained in layer	297916,103	4499858,772	592,75	6		1	10					
12081	947	Post	Remained in layer	297915,795	4499856,096	592,59	50		1	6					
12082	947	Post	Remained in layer	297915,786	4499855,806	592,6	45		1	7					
12083	947	Post	Remained in layer	297916,027	4499855,918	592,58	50		1	6					
12084	947	Post	Remained in layer	297915,93	4499856,225	592,6	50		1	6					
12085	947	Post	Remained in layer	297917,002	4499857,225	592,7	60		1	10					
12086	947	Post	Remained in layer	297917,407	4499856,89	592,54	40		1	6					
12087	947	Post	Remained in layer	297917,417	4499856,648	592,53	40		1	6					
12088	947	Post	Remained in layer	297917,142	4499856,62	592,54	40		1	6					
12089	947	Post	Remained in layer	297916,44	4499856,476	592,57	40		8	7					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
12090	947	Post	Remained in layer	297916,141	4499856,028	592,54	40		1	9					
12091	947	Post	Remained in layer	297916,634	4499856,284	592,52	40		1	10					
12092	947	Post	Remained in layer	297916,388	4499855,754	592,5	55		1	8					
12093	947	Post	Remained in layer	297916,503	4499855,683	592,51	56		1	6					
12094	947	Post	Remained in layer	297916,09	4499855,395	592,49	50		1	6					
12095	947	Post	Remained in layer	297915,642	4499855,747	592,5	55		1	7					
12096	947	Post	Remained in layer	297916,492	4499855,472	592,49	34		1	9					
12097	947	Post	Remained in layer	297917,268	4499855,313	592,52	40		1	10					
12098	947	Horizontal wood	Remained in layer	297915,625	4499856,185	592,52	35	4	2	4					
12099	947	Horizontal wood	Remained in layer	297915,635	4499856,426	592,51	65	6	2	6					
12100	947	Post	Remained in layer	297917,654	4499856,513	592,57	42		1	8					
12101	947	Post	Remained in layer	297916,263	4499859,043	592,67	52		1	8					
12102	947	Post	Remained in layer	297915,764	4499856,215	592,76	61		8	6					
12103	947	Post	Remained in layer	297914,179	4499857,46	592,47	4		1	6					
12104	947	Post	Remained in layer	297917,222	4499856,68	592,51	40		1	6					
12105	947	Post	Remained in layer	297917,312	4499856,836	592,52	37		1	7					
12106	947	Post	Remained in layer	297917,221	4499855,403	592,52	40		1	9					
12107	947	Post	Remained in layer	297916,24	4499855,212	592,57	42		1	10					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
12108	947	Post	Remained in layer	297916,548	4499855,189	592,6	50		1	8					
12109	947	Post	Remained in layer	297916,458	4499855,193	592,66	51		1	8					
12110	947	Post	Remained in layer	297917,263	4499855,19	592,6	50		1	9					
12200	T T 2 EXT	Post	Remained in layer	297929,264	4499838,258	592,74	60		8	9					
12201	T T 2 EXT	Post	Remained in layer	297930,759	4499838,673	592,51	60		8	9					
12202	T T 2 EXT	Post	Remained in layer	297931,663	4499840,482	592,79	60		8	9					
12203	T T 2 EXT	Post	Remained in layer	297932,103	4499840,175	592,81	60		8	9					
12204	T T 2 EXT	Post	Remained in layer	297938,309	4499835,9	593,03	60		8	9					
12205	T T 2 EXT	Post	Remained in layer	297931,28	4499837,999	592,86	60		8	9					
12206	T T 2 EXT	Post	Remained in layer	297931,526	4499836,834	592,87	60		8	9					
12207	T T 2 EXT	Post	Remained in layer	297932,512	4499835,703	592,76	60		1	9					
12208	T T 2 EXT	Post	Remained in layer	297934,873	4499834,896	592,77	60		8	9					
12209	T T 2 EXT	Post	Remained in layer	297937,106	4499834,388	592,85	60		8	9					
12210	T T 2 EXT	Post	Remained in layer	297935,125	4499833,922	592,77	60		8	9					
12211	T T 2 EXT	Post	Remained in layer	297934,656	4499832,253	592,69	60		8	9					
12212	T T 2 EXT	Post	Remained in layer	297932,079	4499839,624	592,78	60		8	9					
12213	T T 2 EXT	Post	Remained in layer	297936,07	4499835,806	592,65	60		8	9					
12214	T T 2 EXT	Post	Remained in layer	297934,131	4499835,443	592,65	60		8	9					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
12215	T T 2 EXT	Post	Remained in layer	297934,292	4499835,716	592,62	60		8	9					
12216	T T 2 EXT	Post	Remained in layer	297935,364	4499835,855	592,62	60		8	9					
12217	T T 2 EXT	Post	Remained in layer	297934,742	4499835,047	592,7	60		8	9					
12218	T T 2 EXT	Post	Remained in layer	297934,375	4499834,859	592,65	60		8	9					
12219	T T 2 EXT	Post	Remained in layer	297936,303	4499835,081	592,7	60		8	9					
12220	T T 2 EXT	Post	Remained in layer	297937,277	4499832,746	592,62	60		8	9					
12221	T T 2 EXT	Horizontal wood	Remained in layer	297927,949	4499837,403	592,95	70	7	1	7					
12223	T T 2 EXT	Horizontal wood	Remained in layer	297933,594	4499840,73	592,81	220	10	8	10					
12224	T T 2 EXT	Horizontal wood	Remained in layer	297934,414	4499838,729	592,77	50		1	7					
12225	T T 2 EXT	Horizontal wood	Remained in layer	297935,488	4499836,956	592,91	285		8	10					
12226	T T 2 EXT	Horizontal wood	Remained in layer	297938,19	4499838,147	592,95	160		8	8					
12229	T T 2 EXT	Horizontal wood	Remained in layer	297933,94	4499833,69	592,64	120		8	9					
12230	T T 2	Post	Discarded	297927,956	4499839,85	592,62	60		8	7					
12231	T T 2	Post	Discarded	297929,247	4499841,108	592,7	60		8	7					
12232	T T 2	Post	Discarded	297931,411	4499840,758	592,69	60		8	8					
12233	T T 2	Post	Discarded	297930,95	4499841,133	592,61	60		8	8					
12234	T T 2	Post	Discarded	297931,035	4499841,34	592,62	60		8	7					
12235	T T 2	Post	Discarded	297931,039	4499840,409	592,66	60		8	8					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
12236	T T 2	Post	Discarded	297930,444	4499839,892	592,71	40		1	5					
12611	834	Post	Sampled and remained in layer	297888,267	4499901,32	593,06	57		1	14			66	Oak	5305-5068
12612	834	Post	Sampled and discarded	297888,369	4499901,439	593,01	67		1	17	1		25	Oak	
12613	834	Post	Sampled and discarded	297887,48	4499903,052	593,04	70		5	10			33	Oak	
12615	834	Post	Sampled and remained in layer	297891,768	4499902,844	593,08	38		1	9			13	Oak	
12616	834	Post	Remained in layer	297891,044	4499900,835	593,01	31		1	10					
12617	834	Post	Remained in layer	297891,3	4499900,846	593	30		1	11					
12618	834	Post	Sampled and remained in layer	297892,797	4499901,167	593,01	31		1	9			18	Oak	
12622	834	Post	Sampled and remained in layer	297886,01	4499902,498	593,05	50		1	8			14	Oak	
12624	834	Post	Sampled and remained in layer	297886,86	4499901,654	593,05	46		1	10			34	Oak	
12625	834	Post	Sampled and remained in layer	297888,75	4499902,009	592,99	40		2	12			25	Oak	
12626	834	Post	Sampled and remained in layer	297886,721	4499901,377	592,99	50		1	10		<3	16	Oak	
12627	834	Post	Sampled and remained in layer	297888,492	4499901,279	592,93	40		1	14			34	Oak	
12628	834	Post	Sampled and remained in layer	297887,588	4499903,164	592,9	35		1	14			16	Oak	
12629	834	Post	Sampled and remained in layer	297887,583	4499903,772	592,89	40		1	10		Yes	25	Oak	
12630	834	Post	Sampled and remained in layer	297892,049	4499902,196	592,99	30		5	11			55	Oak	
12631	834	Post	Remained in layer	297892,625	4499901,456	592,99	29		1	11					
12635	834	Post	Sampled and remained in layer	297887,012	4499901,028	592,83	35		1	12			21	Oak	

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
12640	834	Post	Remained in layer	297890,713	4499901,43	592,8	10		1	8					
12641	834	Post	Remained in layer	297892,807	4499900,758	592,9	20		1	10					
12642	834	Post	Remained in layer	297893,14	4499901,076	593,1	40		1	10					
12644	834	Post	Remained in layer	297890,68	4499904,795	593,1	40		1	10					
12647	834	Post	Sampled and remained in layer	297888,867	4499900,853	592,79	45		1	14			21	Oak	
12651	859	Post	Sampled and remained in layer	297891,084	4499893,169	592,88	22		1	6			9	Oak	
13051	860	Post	Sampled and discarded	297893,536	4499895,449	584,53	138		7	12	3	Yes	75	Oak	
13052	860	Post	Sampled and remained in layer	297893,925	4499897,354	584,63	101		1	6		Yes	7	Oak	
13053	860	Horizontal wood	Sampled and discarded	297895,048	4499900,019	584,62	123		1	5					
13054	860	Post	Sampled and discarded	297894,441	4499897,865	584,58	122		7	13	3	Yes	79	Oak	
13055	860	Post	Sampled and discarded	297895,019	4499898,908	584,85	136		1	11	1	Yes	40	Conifer	
13056	860	Post	Sampled and remained in layer	297894,979	4499898,545	584,83	120		1	12		<2	53	Oak	
13057	860	Post	Sampled and remained in layer	297893,911	4499897,865	584,63	113		1	10		<3	50	Oak	
13058	860	Post	Sampled and remained in layer	297893,499	4499897,686	584,92	100		1	10		?	34	Oak	
13059	860	Post	Sampled and remained in layer	297893,039	4499896,974	584,5	100		1	13		<3	46	Oak	
13060	860	Post	Sampled and remained in layer	297893,264	4499896,682	584,49	93		1	10		Yes	22	Oak	
13061	860	Post	Sampled and remained in layer	297892,94	4499896,578	584,49	125		1	10		Yes	52	Oak	
13062	860	Post	Sampled and remained in layer	297893,267	4499897,407	584,41	105		1	10		<3	23	Oak	

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
13063	860	Post	Conservated	297893,259	4499896,278	584,51	136		1	15	2	Yes	100	Oak	
13064	860	Post	Sampled and remained in layer	297893,509	4499897,354	584,44	93		1	11		<3	37	Oak	
13065	860	Post	Sampled and remained in layer	297894,111	4499898,449	584,7	114		1	12			26	Oak	
13066	860	Post	Sampled and remained in layer	297894,493	4499898,501	584,68	95		1	13		Yes	35	Oak	
13067	860	Post	Sampled and remained in layer	297894,715	4499899,16	584,95	121		1	12		<3	53	Conifer	

TRACKWAY 3 STRUCTURAL WOOD LIST															
SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
253	T T 1	Post	Discarded	297903,408	4499827,522	592,34	34		8	6					
254	T T 1	Horizontal wood	Discarded	297903,375	4499829,365	592,34	72	10	1	10	1				
255	T T 1	Post	Discarded	297901,328	4499829,834	592,68	46	17	2	8	2				
256	T T 1	Post	Discarded	297902,037	4499830,011	592,54	43		1	9					
257	T T 1	Post	Discarded	297904,204	4499825,967	592,52	50		8	4					
266	T T 1	Post	Discarded	297900,855	4499826,182	592,54	30		1	7					
267	T T 1	Post	Discarded	297900,403	4499829,1	592,51	32		8	5					
268	T T 1	Post	Discarded	297900,325	4499828,251	592,62	70		1	9					
269	T T 1	Post	Discarded	297901,224	4499827,971	592,42	30		8	12					
270	T T 1	Post	Discarded	297901,096	4499828,325	592,34	20		8	7					
271	T T 1	Post	Discarded	297901,378	4499828,221	592,77	80		1	8	2				
272	T T 1	Post	Discarded	297902,02	4499827,687	592,48	41		1	9					
273	T T 1	Post	Discarded	297902,005	4499826,457	592,55	65		8	6					
274	T T 1	Post	Discarded	297901,675	4499827,308	592,54	86		1	10					
275	T T 1	Horizontal wood	Discarded	297901,389	4499825,975	592,66	42		1	5	1				
276	T T 1	Post	Discarded	297902,442	4499826,368	592,51	30		8	4					
277	T T 1	Post	Discarded	297902,553	4499826,259	592,42	27		1	7					
278	T T 1	Post	Discarded	297902,807	4499829,026	592,35	27		8	8					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
279	T T 1	Horizontal wood	Discarded	297903,823	4499826,549	592,41	45		1	7	1				
280	T T 1	Horizontal wood	Discarded	297903,402	4499826,971	592,38	64		1	7					
281	T T 1	Horizontal wood	Discarded	297902,832	4499828,452	592,36	47	9	1	9					
282	T T 1	Horizontal wood	Discarded	297902,799	4499827,85	592,35	50	8	1	8					
284	T T 1	Post	Discarded	297903,056	4499828,685	592,29	27		1	7					
287	T T 1	Post	Discarded	297902,536	4499829,307	592,53	33		1	9					
288	T T 1	Post	Discarded	297902,165	4499829,423	592,24	24		8	8					
289	T T 1	Post	Discarded	297902,22	4499829,526	592,49	31		1	9					
292	T T 1	Post	Discarded	297901,926	4499830,061	592,26	35		8	8					
294	T T 1	Post	Discarded	297902,13	4499830,01	592,21	35		1	8					
296	T T 1	Post	Discarded	297904,8	4499826,312	592,55	46		1	7					
297	T T 1	Post	Discarded	297902,052	4499827,299	592,38	44		1	6					
301	T T 1	Post	Discarded	297902,095	4499824,807	592,44	50		8	7					
302	T T 1	Post	Discarded	297902,58	4499823,66	592,51	50		8	7					
305	T T 1	Post	Discarded	297902,962	4499825,568	592,59	50		8	6					
306	T T 1	Post	Discarded	297903,583	4499824,926	592,72	50		8	4					
307	T T 1	Post	Discarded	297904,184	4499824,275	592,59	50		8	6					
308	T T 1	Post	Discarded	297905,117	4499825,228	592,37	50		1	8					
309	T T 1	Post	Discarded	297904,992	4499825,3	592,41	50		8	4					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
310	T T 1	Post	Discarded	297905,179	4499825,008	592,36	50		8	6					
802	960	Post	Discarded	297885,201	4499850,439	593,06	78		1	9					
804	960	Post	Discarded	297886,234	4499850,155	593,13	96		1	10					
805	960	Post	Discarded	297885,986	4499850,251	593,08	57		1	9					
807	960	Post	Discarded	297886,515	4499850,178	593,11	90		1	8					
808	960	Post	Discarded	297885,767	4499850,716	592,63	28		8	12					
811	960	Post	Discarded	297887,65	4499848,231	592,83	48		1	9					
812	960	Post	Remained in layer	297887,386	4499848,077	592,84	48		8	12					
813	960	Post	Discarded	297886,523	4499847,496	593,03	67		1	6					
814	960	Horizontal wood	Discarded	297885,85	4499846,091	593,02	85	7	1	8	2				
818	960	Post	Discarded	297888,947	4499845,5	593,16	75		1	10					
819	960	Post	Discarded	297889,038	4499845,108	592,45	39		1	7					
820	960	Post	Sampled and discarded	297889,222	4499845,253	592,56	41		1	9		<3	22	Oak	4954-4804
821	960	Post	Discarded	297889,282	4499845,692	592,67	48		1	12	1				
822	960	Post	Discarded	297889,126	4499845,456	592,63	25		1	8					
825	960	Post	Discarded	297891,784	4499842,648	593	52		1	10					
826	960	Post	Discarded	297890,51	4499842,153	593,18	75		1	8					
827	960	Post	Discarded	297889,797	4499843,33	593,3	82		1	9	2				
828	960	Post	Discarded	297891,693	4499843,116	593,2	24		1	8					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
829	960	Post	Discarded	297890,812	4499841,346	593,23	79		1	8					
830	960	Post	Sampled and discarded	297889,037	4499848,939	592,75	60		1	11		?	22	Oak	
831	960	Post	Discarded	297888,528	4499846,41	592,39	52	12	2	12	3				
832	960	Post	Sampled and discarded	297888,692	4499846,126	592,62	55		1	8		Yes	34	Oak	
833	960	Post	Discarded	297887,892	4499847,318	592,5	53	13	2	13	3				
834	960	Post	Discarded	297888,275	4499846,716	592,39	30		8	8					
835	960	Post	Discarded	297887,983	4499846,212	592,63	52	10	2	10	3				
836	960	Post	Sampled and discarded	297889,336	4499845,871	592,79	61		1	8		Yes	23	Oak	
851	960	Post	Discarded	297887,163	4499848,812	592,88	60		1	6					
852	960	Post	Discarded	297886,192	4499848,324	592,95	60		1	6					
853	960	Post	Discarded	297887,801	4499848,717	592,83	60		1	8					
857	960	Post	Discarded	297886,797	4499849,831	592,82	50		1	10					
858	960	Post	Discarded	297886,906	4499849,338	592,75	60		8	8					
861	960	Post	Discarded	297887,875	4499848,425	592,65	50		1	6					
862	960	Post	Discarded	297887,79	4499847,386	592,69	55		1	8					
863	960	Post	Discarded	297887,654	4499847,09	592,66	55		1	6					
864	960	Post	Discarded	297886,557	4499849,826	592,61	50		1	7					
866	960	Post	Discarded	297887,84	4499849,526	592,6	45		8	8					
867	960	Post	Discarded	297887,961	4499850,435	592,68	60		1	8					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
873	960	Post	Discarded	297889,257	4499848,093	593,08	50		8	6					
875	960	Post	Discarded	297888,992	4499846,149	593,02	65		1	8					
893	960	Post	Discarded	297889,298	4499848,562	592,75	70		1	12					
894	960	Post	Discarded	297889,096	4499847,617	592,82	65		8	11					
897	960	Post	Discarded	297889,86	4499847,349	592,83	70		8	8					
907	960	Post	Discarded	297889,965	4499846,236	592,8	60		1	7					
1441	944	Post	Remained in layer	297887,27	4499853,002	593,44	120		1	12					
1442	944	Post	Remained in layer	297884,691	4499851,771	593,34	100		1	7					
1443	944	Post	Remained in layer	297884,225	4499852,382	593,17	80		1	8					
1445	944	Post	Remained in layer	297884,711	4499852,611	593,15	75		8	8					
1446	944	Post	Remained in layer	297885,836	4499854,899	593,01	50		1	5					
1447	944	Post	Remained in layer	297886,326	4499853,244	592,97	60		1	9					
1448	944	Post	Remained in layer	297886,732	4499853,074	592,98	65		1	6					
1449	944	Post	Remained in layer	297886,01	4499854,311	592,88	75		1	10					
1451	944	Post	Remained in layer	297886,556	4499852,838	592,95	40		1	6					
1452	944	Post	Remained in layer	297886,732	4499853,514	592,87	70		8	10					
1453	944	Post	Remained in layer	297886,402	4499853,532	592,9	75		1	9					
1454	944	Post	Remained in layer	297887,592	4499850,914	592,94	65		1	8					
1455	944	Post	Remained in layer	297886,912	4499851,8	592,96	65		8	6					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
1456	944	Post	Remained in layer	297886,626	4499852,376	592,96	68		1	7					
1457	944	Post	Remained in layer	297886,507	4499852,429	592,97	80		1	10					
1458	944	Post	Remained in layer	297886,311	4499852,184	592,93	65		8	7					
1460	944	Post	Remained in layer	297886,163	4499850,892	592,84	50		8	6					
1461	944	Post	Remained in layer	297886,689	4499852,065	592,83	60		8	5					
1462	944	Post	Remained in layer	297886,464	4499852,846	592,83	45		8	5					
1463	944	Post	Remained in layer	297886,284	4499852,901	592,8	65		1	8					
1474	944	Post	Remained in layer	297886,682	4499852,655	592,78	65		8	8					
1475	944	Post	Remained in layer	297886,559	4499853,818	592,77	55		8	8					
1476	944	Post	Remained in layer	297886,235	4499853,636	592,77	55		8	6					
1477	944	Post	Remained in layer	297886,279	4499853,405	592,79	65		8	8					
1478	944	Post	Remained in layer	297886,226	4499853,256	592,79	45		8	5					
1479	944	Post	Discarded	297884,746	4499854,12	592,74	55		8	9					
1480	944	Post	Remained in layer	297885,355	4499852,806	592,68	45		8	10					
1481	944	Post	Remained in layer	297884,842	4499853,118	592,74	50		8	6					
1482	944	Post	Remained in layer	297885,255	4499852,348	592,71	60		8	7					
1483	944	Post	Remained in layer	297885,079	4499852,112	592,67	45		8	6					
1484	944	Post	Remained in layer	297885,228	4499852,039	592,72	55		8	8					
1485	944	Post	Remained in layer	297885,065	4499851,912	592,75	50		8	6					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
1487	944	Post	Remained in layer	297887,875	4499851,017	592,69	50		8	8					
1488	944	Post	Remained in layer	297886,808	4499852,492	592,79	40		8	5					
1489	944	Post	Remained in layer	297886,813	4499852,272	592,77	60		8	9					
1490	944	Post	Remained in layer	297887,131	4499851,724	592,74	45		8	6					
1491	944	Post	Remained in layer	297887,199	4499851,663	592,73	65		8	7					
1492	944	Post	Remained in layer	297885,424	4499851,464	592,69	40		8	5					
1493	944	Post	Remained in layer	297885,352	4499851,386	592,67	55		8	7					
1494	944	Post	Remained in layer	297887,239	4499851,232	592,76	45		8	5					
1495	944	Post	Remained in layer	297887,345	4499851,049	592,74	45		8	5					
1496	944	Post	Remained in layer	297885,501	4499852,182	592,75	60		8	6					
1497	944	Post	Remained in layer	297886,749	4499852,093	592,79	65		8	7					
1498	944	Post	Remained in layer	297885,529	4499851,662	592,71	45		8	5					
1500	944	Post	Remained in layer	297885,99	4499854,722	592,63	40		8	5					
1501	944	Post	Remained in layer	297884,889	4499853,837	592,59	40		8	7					
1502	944	Post	Remained in layer	297884,732	4499853,55	592,57	50		8	5					
1504	944	Post	Remained in layer	297884,716	4499854,924	592,49	45		8	6					
1506	944	Post	Remained in layer	297886,566	4499854,138	592,23	25		8	6					
1507	944	Horizontal wood	Remained in layer	297884,317	4499854,097	592,87	110	8	1	8	2				
1508	944	Horizontal wood	Remained in layer	297885,153	4499854,674	592,97	44	5	1	5					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
1511	944	Horizontal wood	Remained in layer	297885,32	4499851,823	592,86	30	5	1	5					
1514	944	Horizontal wood	Remained in layer	297884,601	4499852,438	592,6	43	5	1	5					
1944	944	Post	Remained in layer	297886,385	4499854,062	593,14	70		1	8					
11398	960	Post	Discarded	297890,932	4499845,684	592,69	36		1	11					
12240	T T 1	Post	Discarded	297903,671	4499825,154	592,33	50		8	4					
12241	T T 1	Post	Discarded	297903,663	4499824,322	592,42	50		1	7					
12242	T T 1	Post	Discarded	297903,7	4499824,46	592,45	50		8	8					
12243	T T 1	Post	Discarded	297904,352	4499825,424	592,43	50		8	4					
12244	T T 1	Post	Discarded	297904,232	4499825,432	592,41	50		8	7					
12245	T T 1	Post	Discarded	297904,119	4499825,816	592,27	50		8	4					
12246	T T 1	Post	Discarded	297905,275	4499824,844	592,41	50		8	6					
12248	T T 1	Post	Discarded	297906,001	4499823,996	592,51	50		8	9					
12249	T T 1	Post	Discarded	297906,006	4499823,001	592,7	50		8	9					
12250	T T 1	Post	Discarded	297903,002	4499822,004	592,5	50		8	9					
12251	T T 1	Post	Discarded	297899,998	4499821,011	592,45	50		8	9					
12252	T T 1	Post	Discarded	297907,009	4499823,001	592,51	50		8	9					
12253	T T 1	Post	Discarded	297907,009	4499822,001	592,51	50		8	9					
12254	T T 1	Post	Discarded	297907,002	4499821	592,64	50		8	9					
12255	T T 1	Post	Discarded	297907,007	4499820	592,52	50		8	9					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
12256	T T 1	Post	Discarded	297902,008	4499816,992	592,47	50		8	9					
12257	T T 1	Post	Discarded	297907,005	4499818,995	592,5	50		8	9					
12258	T T 1	Post	Discarded	297908,996	4499819,012	592,62	50		8	9					
12259	T T 1	Post	Discarded	297908,006	4499818,003	592,53	50		8	9					
12260	T T 1	Post	Discarded	297908,998	4499818,004	592,67	50		8	9					
12264	T T 1	Post	Discarded	297911,002	4499815,999	592,5	50		8	9					
12265	T T 1	Post	Discarded	297908,997	4499816,995	592,59	50		8	9					
12266	T T 1	Post	Discarded	297904,992	4499816,008	592,45	50		8	9					
12267	T T 1	Post	Discarded	297904,005	4499813,995	592,34	50		8	9					
12268	T T 1	Post	Discarded	297904,999	4499812,992	592,4	50		8	9					
12269	T T 1	Post	Discarded	297910,998	4499814,994	592,34	50		8	9					
12270	T T 1	Post	Discarded	297910,004	4499813,996	592,3	50		8	9					
12271	T T 1	Post	Discarded	297911,999	4499815,003	592,41	50		8	9					
12273	T T 1	Post	Discarded	297912	4499814,002	592,54	50		8	9					
12274	T T 1	Post	Discarded	297911,003	4499812,999	592,45	50		8	9					
12279	T T 1	Post	Discarded	297914,003	4499812,004	592,46	50		8	9					
12280	T T 1	Post	Discarded	297913,005	4499810,999	592,53	50		8	9					
12281	T T 1	Post	Discarded	297912,998	4499809,999	592,49	50		8	9					
12283	T T 1	Post	Discarded	297914,998	4499810,018	592,59	50		8	9					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
12284	T T 1	Horizontal wood	Discarded	297902,555	4499825,851	592,62	87		1	9					
12285	T T 1	Horizontal wood	Discarded	297902,366	4499826,73	592,53	45		1	5					
12286	T T 1	Horizontal wood	Discarded	297902,182	4499826,444	592,66	33	10	1	10					
12287	T T 1	Horizontal wood	Discarded	297900,334	4499829,383	592,66	54	8	1	8					
12288	T T 1	Horizontal wood	Discarded	297900,939	4499829,672	592,67	45	9	1	9					
12289	T T 1	Horizontal wood	Discarded	297901,868	4499829,781	592,65	42	8	1	8					
12290	T T 1	Horizontal wood	Discarded	297902,989	4499828,4	592,64	30	7	1	7					
12291	T T 1	Horizontal wood	Discarded	297903,258	4499827,192	592,64	25	8	1	8					
12292	T T 1	Horizontal wood	Discarded	297903,988	4499825,524	592,65	54	7	1	7					
12293	T T 1	Horizontal wood	Discarded	297898,469	4499822,921	592,64	39	6	1	6					
12294	T T 1	Horizontal wood	Discarded	297902,313	4499824,124	592,65	85	7	1	7					
12295	T T 1	Horizontal wood	Discarded	297902,983	4499823,843	592,65	35	5	1	5					
12296	T T 1	Horizontal wood	Discarded	297902,806	4499824,747	592,65	60	7	1	7					
12297	T T 1	Horizontal wood	Discarded	297902,4	4499825,291	592,37	110	8	1	8					
12298	T T 1	Horizontal wood	Discarded	297903,381	4499825,928	592,41	54	6	1	6					
12315	960	Post	Discarded	297889,378	4499845,94	592,62	65		8	7					
12329	960	Post	Discarded	297888,206	4499847,608	592,62	34		8	6					
12332	960	Post	Discarded	297888,742	4499847,445	592,33	29		8	7					
12333	960	Post	Discarded	297888,336	4499848,055	592,52	35		8	8					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
12335	960	Post	Discarded	297888,557	4499848,96	592,5	40		8	9					
12336	960	Post	Discarded	297888,287	4499849,406	592,4	34		8	11					
12337	960	Post	Discarded	297888,444	4499849,683	592,33	36		8	8					
12338	960	Post	Discarded	297888,946	4499849,545	592,36	29		8	6					
12339	960	Post	Discarded	297888,142	4499849,62	592,5	35		8	7					
12340	960	Post	Discarded	297888,166	4499850,174	592,48	35		8	6					
12381	960	Post	Discarded	297889,416	4499844,149	593,26	60		1	5					
12383	960	Post	Discarded	297890,978	4499844,653	592,95	65		1	6					
12386	960	Post	Discarded	297889,236	4499843,713	592,73	50		1	5					
12387	960	Post	Discarded	297891,498	4499843,34	592,6	45		1	5					
12389	960	Post	Discarded	297889,536	4499843,726	592,63	55		1	7					
12392	960	Post	Discarded	297889,174	4499845,748	592,87	59		1	11					
12393	960	Post	Discarded	297890,373	4499845,318	592,55	40		1	13					
12394	960	Post	Discarded	297890,265	4499845,389	592,51	33		1	12					
12395	960	Post	Discarded	297890,44	4499845,615	592,6	32		1	8					
12396	960	Post	Discarded	297891,05	4499844,972	593,32	108		1	9					
12397	960	Post	Discarded	297891,073	4499844,87	593,03	81		1	10					
20000	A64	Post	Sampled and discarded	297916,474	4499808,176	592,13	73		8	9			30	Oak	
20001	A64	Post	Discarded	297916,513	4499807,372	592,85	95		8	9					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20002	A64	Post	Discarded	297915,006	4499807,299	593,1	20		8	6					
20003	A64	Post	Discarded	297916,001	4499806,459	592,86	18		8	4					
20004	A64	Post	Discarded	297915,862	4499806,388	592,92	25		8	6					
20005	A64	Post	Discarded	297915,588	4499807,115	592,92	45		8	5					
20007	A64	Post	Discarded	297918,277	4499804,81	592,53	34		8	7					
20020	A64	Post	Discarded	297919,443	4499804,757	593,04	50		8	6					
20021	A64	Post	Discarded	297918,762	4499805,527	592,69	63		1	8					
20022	A64	Post	Discarded	297919,671	4499803,912	592,63	24		8	6					
20023	A64	Post	Discarded	297918,813	4499804,938	592,82	28		8	5					
20024	A64	Post	Discarded	297918,93	4499805,132	592,49	60		1	9					
20025	A64	Post	Discarded	297918,477	4499805,392	592,78	36		8	4					
20029	A64	Horizontal wood	Discarded	297918,391	4499806,179	593,38	135	12	1	12	2				
20030	A64	Post	Discarded	297917,904	4499805,711	592,17	59		8	8					
20031	A64	Post	Discarded	297917,866	4499805,808	592,7	42		8	6					
20033	A64	Post	Discarded	297917,56	4499805,921	592,48	44		8	8	1				
20034	A64	Post	Discarded	297917,164	4499805,285	591,8	110		1	9					
20036	A64	Post	Discarded	297916,445	4499805,498	592,22	90		1	11					
20037	A64	Post	Discarded	297916,509	4499806,213	592,98	80		1	6					
20038	A64	Horizontal wood	Discarded	297916,283	4499805,845	592,72	40	5	1	5					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20039	A64	Post	Discarded	297916,295	4499805,37	592,6	30		8	5					
20040	A64	Post	Discarded	297916,213	4499805,727	592,66	27		8	4					
20041	A64	Post	Discarded	297916,004	4499805,898	592,61	48		8	4					
20042	A64	Post	Discarded	297916,005	4499806,18	592,7	33		8	5	1				
20043	A64	Post	Discarded	297915,954	4499806,234	592,11	91		8	8					
20044	A64	Post	Discarded	297916,24	4499806,678	592,37	47		8	4					
20052	A64	Post	Discarded	297917,682	4499806,379	592,55	49		8	4					
20053	A64	Post	Discarded	297917,741	4499806,772	592,37	40		8	5					
20055	A64	Post	Discarded	297917,165	4499806,714	592,57	32		8	4					
20058	A64	Post	Discarded	297917,197	4499807,335	592,42	48		8	5					
20060	A64	Horizontal wood	Discarded	297915,698	4499807,427	592,89	22	6	8	6					
20061	A64	Post	Discarded	297915,745	4499807,43	592,3	50		8	7					
20062	A64	Horizontal wood	Discarded	297914,949	4499807,995	592,3	47	6	8	6	2				
20063	A64	Post	Discarded	297915,761	4499809,119	592,34	60		8	8					
20064	A64	Horizontal wood	Discarded	297916,037	4499808,862	592,69	60	5	8	5					
20065	A64	Post	Sampled and discarded	297915,98	4499808,391	592,08	77		1	7	2	<2	14	Oak	
20067	A64	Post	Discarded	297916,64	4499807,925	592,51	40		8	5					
20068	A64	Post	Discarded	297916,203	4499808,262	592,8	80		8	7					
20069	A64	Post	Discarded	297916,601	4499805,255	591,78	50		8	12					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20070	A64	Post	Discarded	297916,349	4499808,457	592,65	24		8	8					
20080	A52	Post	Discarded	297922,87	4499795,635	592,95	58		8	7	2				
20081	A52	Post	Discarded	297922,352	4499796,398	592,67	16		2	3					
20083	A52	Post	Discarded	297921,767	4499797,365	592,7	34		8	4					
20084	A52	Horizontal wood	Discarded	297922,166	4499798,378	592,82	31	5	2	5					
20085	A52	Post	Discarded	297920,866	4499799,798	592,72	61		8	6					
20087	A52	Horizontal wood	Discarded	297922,853	4499799,046	592,9	24	5	8	5					
20088	A52	Horizontal wood	Discarded	297922,971	4499799,113	592,9	20		8	4					
20090	A52	Post	Discarded	297924,316	4499796,823	592,89	40		8	4					
20096	A52	Post	Discarded	297923,645	4499798,271	592	52		8	5					
20099	A52	Post	Discarded	297923,808	4499797,157	592,39	45		8	5					
20100	A52	Post	Discarded	297923,927	4499797,357	592,8	33		8	4					
20103	A52	Horizontal wood	Discarded	297922,607	4499798,75	592,9	27		8	5					
20107	A52	Post	Discarded	297923,091	4499797,146	592,63	12		2	4					
20108	A52	Post	Discarded	297923,557	4499797,726	592,88	26		8	10					
20110	A52	Post	Discarded	297923,119	4499796,406	592,55	30		8	5					
20112	A52	Post	Discarded	297922,803	4499796,593	592,16	66		1	7	3				
20113	A52	Post	Discarded	297924,039	4499796,659	592,7	33		8	6					
20114	A52	Post	Discarded	297922,755	4499796,04	592,42	48		8	3					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20115	A52	Post	Discarded	297922,478	4499799,205	592,64	26		8	7					
20116	A52	Post	Discarded	297922,147	4499799,392	592,55	22		8	4					
20117	A52	Post	Discarded	297922,101	4499799,667	592,68	20		2	8					
20119	A52	Post	Discarded	297924,244	4499797,056	592,49	35		8	5					
20122	A52	Post	Discarded	297922,279	4499796,854	592,76	49		1	8					
20130	A52	Post	Discarded	297921,082	4499798,655	592,77	32	4	7	10					
20132	A52	Post	Discarded	297920,626	4499798,673	592,77	35		8	4					
20133	A52	Post	Discarded	297920,885	4499799,014	592,8	51		7	8					
20134	A52	Post	Discarded	297920,738	4499799,338	592,8	31		1	10					
20136	A52	Horizontal wood	Discarded	297920,928	4499800,313	592,61	23		8	8					
20137	A52	Horizontal wood	Discarded	297921,307	4499800,539	592,59	26		8	5					
20138	A52	Post	Discarded	297921,337	4499799,94	592,44	26		8	3					
20139	A52	Horizontal wood	Discarded	297921,494	4499800,195	592,81	29		8	5					
20141	A52	Post	Discarded	297921,699	4499799,93	592,81	31		8	5					
20144	A52	Post	Discarded	297921,896	4499799,942	592,67	18		2	7	3				
20145	A52	Post	Discarded	297922,009	4499799,763	592,55	22		8	5					
20146	A52	Post	Discarded	297921,885	4499800,284	592,56	26		8	3					
20147	A52	Post	Discarded	297921,775	4499800,392	592,61	23		8	3					
20148	A52	Horizontal wood	Discarded	297921,413	4499800,666	592,84	28		8	5					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20149	A50	Post	Discarded	297926,786	4499792,31	592,74	16		8	3					
20150	A50	Horizontal wood	Discarded	297927,593	4499792,911	592,73	34		8	6					
20151	A50	Post	Discarded	297927,515	4499793,137	592,38	40		8	6					
20152	A50	Horizontal wood	Discarded	297926,657	4499793,168	592,89	54		8	8					
20153	A50	Post	Discarded	297925,671	4499792,283	592,84	50		1	12	?				
20155	A50	Post	Discarded	297925,379	4499792,384	592,85	27		8	4					
20156	A50	Post	Discarded	297925,19	4499792,2	592,88	48		1	6					
20157	A50	Post	Discarded	297926,029	4499792,843	592,8	34		8	12					
20158	A50	Horizontal wood	Discarded	297925,728	4499793,024	592,82	51		8	6					
20159	A50	Post	Discarded	297924,792	4499792,822	592,84	62		8	6					
20161	A50	Post	Discarded	297924,179	4499793,982	592,93	66		1	8					
20163	A50	Post	Discarded	297923,75	4499795,044	592,86	44		8	7					
20165	A50	Post	Discarded	297924,215	4499795,217	592,74	32		8	5					
20166	A50	Post	Discarded	297924,698	4499795,803	592,94	61		1	5	?				
20182	A50	Post	Discarded	297925,97	4499795,274	592,65	34		8	5					
20184	A50	Post	Discarded	297925,004	4499796,1	592,9	51		8	10					
20185	A50	Post	Discarded	297924,806	4499795,603	592,8	19		8	6					
20186	A50	Post	Discarded	297924,895	4499795,449	592,7	14		8	5					
20189	A50	Post	Discarded	297924,411	4499796,291	592,8	40		8	4					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20192	A50	Post	Discarded	297925,517	4499794,66	592,71	20		8	5					
20194	A50	Post	Discarded	297925,916	4499793,64	592,73	52		1	7					
20195	A50	Post	Discarded	297926,277	4499793,565	592,73	34		8	4					
20196	A50	Horizontal wood	Discarded	297924,324	4499793,349	592,84	50		8	6					
20197	A50	Horizontal wood	Discarded	297925,245	4499793,594	592,7	20		8	6					
20198	A50	Horizontal wood	Discarded	297925,1	4499793,272	592,81	28		8	3					
20199	A50	Horizontal wood	Discarded	297924,406	4499794,103	592,84	57		8	5					
20200	A50	Post	Discarded	297924,201	4499794,679	592,58	21		8	4					
20201	A50	Post	Discarded	297923,685	4499794,656	592,93	20		1	12					
20202	A50	Post	Discarded	297923,63	4499794,825	592,95	68		1	7					
20203	A50	Post	Discarded	297923,861	4499795,662	592,74	36		8	5					
20204	A50	Post	Discarded	297925,695	4499795,574	592,36	21		8	4					
20206	A50	Post	Discarded	297924,698	4499792,474	592,69	32		8	5					
20208	A50	Post	Discarded	297925,62	4499793,108	592,23	37		8	4					
20210	A50	Post	Discarded	297926,361	4499792,736	592,41	43		8	5					
20211	A50	Post	Discarded	297924,398	4499792,944	592,73	44		8	5					
20212	A50	Post	Discarded	297925,602	4499792,045	592,85	24		8	4					
20213	A47	Post	Discarded	297931,553	4499783,362	592,83	49		8	5					
20214	A47	Post	Discarded	297931,323	4499783,959	592,39	46		1	9					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20215	A47	Post	Discarded	297930,894	4499784,415	592,48	38		8	6					
20216	A47	Post	Discarded	297930,746	4499785,004	592,36	40		8	6					
20217	A47	Post	Discarded	297930,454	4499785,151	592,47	30		8	6					
20218	A47	Post	Discarded	297929,984	4499785,028	592,53	24		8	5					
20219	A47	Post	Discarded	297930,39	4499786,065	592,37	35		8	5					
20220	A47	Post	Discarded	297929,794	4499786,567	592,35	39		8	5	?				
20221	A47	Post	Discarded	297929,83	4499786,715	592,46	31		8	6					
20222	A47	Post	Discarded	297929,619	4499787,487	592,43	28		8	5					
20223	A47	Post	Discarded	297929,162	4499788,329	592,8	42		8	5					
20227	A47	Post	Discarded	297927,477	4499790,377	592,46	50		8	5					
20228	A47	Post	Discarded	297927,404	4499791,015	592,59	34		8	5					
20229	A47	Horizontal wood	Discarded	297927,049	4499791,678	592,9	31		1	5					
20231	A47	Post	Discarded	297926,465	4499791,064	592,83	26		1	9					
20232	A47	Post	Discarded	297926,538	4499789,911	592,4	59		1	8					
20233	A47	Horizontal wood	Discarded	297926,78	4499789,629	593,11	64		1	8					
20235	A47	Post	Discarded	297928,403	4499786,246	592,36	26		8	4					
20238	A47	Post	Discarded	297929,292	4499787,295	592,48	18		8	5					
20239	A47	Post	Discarded	297927,299	4499788,321	592,49	26		8	4					
20241	A47	Post	Discarded	297926,679	4499789,969	592,37	76		1	7					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20242	A47	Post	Discarded	297927,286	4499790,349	592,61	30		1	16					
20243	A47	Post	Discarded	297927,002	4499788,457	592,5	30		1	3					
20244	A47	Post	Discarded	297928,3	4499789,089	592,63	13		8	3					
20246	A47	Post	Discarded	297926,815	4499789,284	592,18	55		8	5					
20247	A47	Post	Discarded	297926,926	4499789,212	592,51	20		8	4					
20248	A47	Post	Discarded	297927,703	4499786,787	592,35	19		8	5					
20249	A47	Post	Discarded	297927,644	4499787,115	592,36	22		8	4					
20251	A47	Post	Discarded	297927,855	4499787,635	592,38	25		1	8					
20252	A47	Post	Discarded	297927,786	4499787,801	592,65	68		1	7	?				
20253	A47	Post	Discarded	297927,662	4499789,863	592,43	25		8	5					
20254	A47	Post	Discarded	297927,331	4499791,391	592,41	34		8	4					
20257	A47	Horizontal wood	Discarded	297926,727	4499791,922	592,9	26		8	4					
20258	A47	Horizontal wood	Discarded	297928,673	4499785,931	592,64	20		8	4					
20259	A47	Post	Discarded	297928,715	4499785,75	592,34	26		8	5					
20260	A47	Post	Discarded	297928,74	4499788,28	592,43	23		8	4					
20261	A47	Post	Discarded	297927,449	4499791,19	592,56	24		8	4					
20262	A47	Post	Discarded	297927,193	4499790,789	592,61	22		8	5					
20263	A47	Post	Discarded	297931,162	4499783,86	592,27	37		8	7					
20264	A47	Post	Discarded	297927,681	4499790,448	592,54	20		8	5					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20270	A46	Post	Discarded	297930,305	4499781,67	592,02	76		1	7	?				
20271	A46	Post	Discarded	297931,202	4499782,378	592,6	24		1	4					
20272	A46	Post	Discarded	297931,084	4499782,831	592,3	52		8	6	?				
20275	A46	Post	Discarded	297929,763	4499782,667	592,04	86		1	8	?				
20277	A46	Post	Discarded	297929,476	4499784,011	592,61	13		8	4					
20278	A46	Post	Discarded	297929,012	4499784,292	592,38	34		8	3					
20279	A46	Post	Discarded	297928,71	4499784,622	592,87	58		8	5					
20280	A46	Post	Discarded	297929,26	4499784,574	592,01	70		8	6					
20281	A46	Post	Discarded	297928,966	4499784,802	592,52	26		8	3					
20282	A46	Post	Discarded	297928,303	4499786,017	592,7	70		8	5					
20285	A46	Post	Discarded	297928,625	4499785,522	592,2	42		8	3					
20287	A46	Post	Discarded	297930,042	4499783,134	591,55	117		1	11					
20288	A46	Post	Discarded	297928,24	4499785,978	592,43	30		8	6					
20315	A63	Post	Discarded	297940,412	4499745,542	593,88	25		1	7					
20316	A63	Post	Sampled and discarded	297941,953	4499747,226	593,34	66		1	10	2		18	Oak	
20317	A63	Post	Discarded	297941,954	4499748,985	592,93	72		1	6	3				
20318	A63	Post	Discarded	297942,129	4499749,089	593,32	32		1	5					
20319	A63	Post	Discarded	297942,595	4499748,361	593,09	60		8	4					
20325	A12	Post	Discarded	297937,851	4499757,087	592,85	11		8	4					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20326	A12	Post	Discarded	297939,622	4499758,461	592,71	32		1	9					
20327	A12	Post	Discarded	297938,855	4499757,291	592,57	45		8	5	1				
20328	A12	Post	Discarded	297939,45	4499759,211	592,79	22		8	4					
20329	A12	Post	Discarded	297938,377	4499758,75	592,46	51		8	9	1				
20332	A12	Post	Discarded	297938,352	4499760,249	592,33	71		1	6	1				
20333	A12	Post	Discarded	297938,28	4499755,785	592,83	24		8	5					
20334	A12	Post	Discarded	297938,46	4499756,324	593,01	78		1	6	1				
20337	A12	Post	Sampled and discarded	297939,517	4499756,719	592,98	31		1	8	1		13	Oak	5020-4850
20338	A12	Post	Discarded	297939,491	4499756,991	592,93	31		8	4					
20340	A12	Post	Discarded	297940,335	4499756,088	592,77	30		8	3					
20341	A12	Horizontal wood	Discarded	297940,316	4499755,576	593,08	28		1	4					
20342	A12	Post	Discarded	297940,683	4499754,803	593,05	27		8	4					
20343	A12	Post	Discarded	297940,446	4499755,1	592,93	11		8	7					
20346	A12	Post	Discarded	297939,254	4499758,483	592,96	24		8	5					
20347	A12	Horizontal wood	Discarded	297939,431	4499758,42	593	30		8	5					
20348	A12	Post	Discarded	297938,07	4499758,621	592,88	31		8	5					
20349	A12	Post	Discarded	297937,874	4499758,331	592,96	45		8	6					
20353	A12	Post	Discarded	297937,005	4499757,549	592,45	40		8	9					
20355	A12	Post	Discarded	297938,395	4499759,097	592,54	34		1	7					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20356	A12	Post	Discarded	297938,451	4499759,295	592,63	20		8	6					
20357	A12	Post	Discarded	297938,199	4499759,882	592,56	21		8	6					
20359	A12	Post	Discarded	297938,924	4499756,998	592,65	18		8	4					
20360	A12	Post	Discarded	297939,473	4499756,5	592,31	31		8	5					
20361	A12	Post	Discarded	297941,006	4499757,498	592,61	27		8	4					
20362	A12	Post	Discarded	297942,006	4499756,244	593,19	15		8	5					
20363	A12	Post	Discarded	297940,992	4499754,62	592,9	56		1	8					
20364	A12	Post	Discarded	297939,95	4499754,977	592,45	42		8	6					
20365	A12	Post	Discarded	297939,431	4499755,801	592,66	21		8	5					
20366	A12	Post	Discarded	297939,089	4499756,14	592,24	71		8	6					
20367	A12	Post	Discarded	297940,542	4499754,201	592,24	17		8	5					
20368	A12	Post	Discarded	297940,587	4499753,853	592,32	93		1	8					
20369	A12	Post	Discarded	297940,367	4499753,855	593,02	19		8	4					
20370	A12	Post	Discarded	297940,556	4499753,097	593,07	41		8	4					
20371	A12	Post	Discarded	297939,739	4499752,866	592,64	22		8	3					
20372	A12	Post	Discarded	297941,054	4499752,393	592,79	30		8	3					
20374	A12	Post	Discarded	297940,856	4499750,815	593,15	31		8	5					
20375	A12	Post	Discarded	297941,189	4499750,318	592,88	37		8	6					
20376	A12	Post	Discarded	297941,279	4499749,793	592,84	36		8	6					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20380	A12	Post	Discarded	297941,941	4499750,764	592,67	18		8	5					
20381	A12	Post	Discarded	297942,113	4499751,033	592,81	57		1	9	?				
20382	A12	Post	Discarded	297941,731	4499751,793	592,73	38		8	5					
20384	A12	Post	Discarded	297942,648	4499750,494	592,92	46		8	5					
20385	A12	Post	Discarded	297937,535	4499758,643	592,82	35		8	4					
20386	A12	Post	Discarded	297941,06	4499749,254	592,78	16		8	4					
20388	A12	Post	Discarded	297939,486	4499755,843	592,42	40		1	8	?				
20389	A12	Post	Discarded	297940,188	4499748,748	593,25	53		1	6	1				
20390	A25	Post	Discarded	297937,443	4499760,266	592,41	51		1	7					
20391	A25	Post	Discarded	297937,021	4499760,117	592,37	56		1	9					
20392	A25	Post	Discarded	297936,865	4499760,827	592,26	69		1	7	2				
20393	A25	Post	Discarded	297937,433	4499761,25	592,7	23		1	5					
20394	A25	Post	Discarded	297936,733	4499761,657	592,58	34		1	8	1				
20396	A25	Post	Discarded	297936,647	4499761,155	592,24	51		1	9	2				
20397	A25	Post	Discarded	297936,52	4499762,774	592,23	57		1	6	2				
20398	A25	Post	Discarded	297936,596	4499762,873	592,15	62		8	8					
20399	A25	Post	Discarded	297936,179	4499762,956	592,27	41		8	6					
20400	A25	Post	Discarded	297937,817	4499761,138	592,39	42		1	11					
20401	A25	Post	Discarded	297938,035	4499761,104	592,71	18		8	4					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20403	A25	Post	Sampled and discarded	297936,117	4499758,152	591,95	93		1	11	2		32	Oak	
20404	A25	Horizontal wood	Discarded	297936,382	4499758,175	592,85	87		1	3					
20405	A25	Post	Discarded	297936,206	4499762,822	592,35	57		1	7					
20406	A25	Post	Discarded	297936,13	4499762,982	592,43	46		8	4					
20407	A26	Horizontal wood	Sampled and discarded	297939,29	4499763,013	592,79	8		1	3			21	Oak	
20408	A26	Post	Discarded	297939,301	4499762,417	592,73	18		8	4					
20409	A26	Post	Discarded	297937,921	4499763,17	592,35	54		1	7					
20410	A26	Post	Discarded	297937,727	4499762,748	592,56	33		8	6					
20411	A26	Post	Discarded	297936,162	4499764,122	592,44	47		1	7					
20413	A26	Post	Discarded	297936,28	4499764,156	592,56	35		8	5					
20414	A26	Post	Discarded	297936,294	4499764,457	592	95		8	8					
20416	A26	Post	Discarded	297937,266	4499764,29	592,46	35		8	5					
20417	A26	Post	Discarded	297937,098	4499764,33	592,36	43		1	8	?				
20418	A26	Post	Discarded	297937,237	4499764,532	592,4	36		8	5					
20420	A26	Post	Discarded	297936,373	4499768,606	592,35	86		1	8	?				
20422	A26	Post	Discarded	297935,173	4499768,086	592,53	53		1	6					
20423	A26	Post	Sampled and discarded	297934,474	4499769,423	592,18	87		1	9	?		28	Oak	4936-4799
20424	A26	Post	Discarded	297934,567	4499769,626	592,81	20		8	6					
20425	A26	Post	Discarded	297935,737	4499769,616	592,46	63		1	9	?				

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20426	A26	Post	Discarded	297935,835	4499769,527	592,69	38		1	14					
20427	A26	Post	Discarded	297934,772	4499769,581	592,79	26		1	7					
20428	A26	Post	Sampled and discarded	297935,894	4499766,401	592,5	58		1	7		<2	33	Oak	
20429	A26	Post	Discarded	297935,519	4499766,026	592,11	90		1	11	?				
20431	A26	Post	Discarded	297937,911	4499761,562	592,52	44		8	4					
20432	A26	Horizontal wood	Discarded	297937,885	4499762,088	592,87	30		8	5					
20433	A26	Post	Discarded	297937,577	4499763,333	592,54	19		8	4					
20434	A26	Post	Discarded	297937,059	4499765,944	592,14	57		1	6					
20435	A26	Post	Discarded	297937,042	4499766,277	592,23	28		1	8					
20436	A26	Post	Discarded	297937,31	4499766,535	591,33	38		1	7					
20437	A26	Post	Discarded	297937,44	4499766,901	591,77	83		1	7	?				
20438	A26	Post	Discarded	297936,378	4499765,622	592,19	52		8	4					
20439	A26	Post	Discarded	297936,154	4499766,015	592,27	46		1	8					
20440	A26	Post	Discarded	297935,824	4499766,434	592,61	15		8	6					
20441	A26	Post	Discarded	297936,065	4499766,398	592,21	52		1	8	?				
20442	A26	Post	Discarded	297935,611	4499766,918	592,58	19		8	4					
20443	A26	Post	Discarded	297935,722	4499767,226	592,09	52		1	9	?				
20444	A26	Post	Discarded	297935,679	4499767,425	592,05	68		1	10	?				
20445	A26	Post	Discarded	297936,758	4499768,045	592,11	40		8	6					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20446	A26	Post	Sampled and discarded	297935,113	4499768,209	592,12	65		1	9	?		26	Oak	
20447	A26	Post	Discarded	297936,405	4499769,445	592,4	62		1	9					
20448	A26	Post	Discarded	297936,429	4499769,765	592,4	36		8	6					
20449	A26	Post	Discarded	297936,053	4499769,755	592,12	65		1	9					
20450	A26	Post	Discarded	297935,846	4499769,937	592,41	42		8	5					
20451	A26	Post	Discarded	297935,795	4499770,111	592,3	48		8	6					
20452	A26	Post	Discarded	297936,185	4499770,341	592,3	55		1	7					
20454	A26	Post	Discarded	297935,782	4499771,026	592,51	85		1	6	?				
20455	A26	Post	Discarded	297934,594	4499769,562	592,51	37		8	7	?				
20456	A26	Post	Discarded	297934,716	4499769,307	592,62	20		1	7					
20457	A26	Post	Discarded	297935,173	4499771,382	592,25	60		8	6					
20458	A26	Post	Discarded	297934,431	4499770,459	592,55	35		1	10					
20459	A39	Post	Discarded	297935,184	4499771,935	593	96		1	9	?				
20460	A39	Post	Discarded	297934,87	4499771,913	592,13	81		1	9	2				
20461	A39	Post	Discarded	297934,784	4499771,965	592,42	55		1	9					
20462	A39	Horizontal wood	Discarded	297934,219	4499772,008	592,96	38	4	1	5					
20463	A39	Post	Sampled and discarded	297933,457	4499771,735	592,08	98		1	8	2		19	Oak	
20464	A39	Post	Discarded	297934,102	4499772,783	592,65	35		8	4	3				
20465	A39	Post	Discarded	297934,918	4499773,523	592,08	93		1	8					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20466	A39	Post	Discarded	297933,61	4499772,623	592,88	15		8	5					
20469	A39	Post	Discarded	297934,03	4499775,317	592,53	51		1	7					
20470	A39	Post	Discarded	297934,689	4499772,734	592,83	24		1	7					
20471	A39	Post	Discarded	297933,909	4499775,598	592,51	49		1	10	?				
20472	A39	Post	Discarded	297931,576	4499777,521	592,5	54		1	7	1				
20473	A39	Post	Discarded	297931,842	4499776,588	592,49	36		1	7					
20474	A39	Post	Discarded	297933,782	4499776,035	592,44	57		8	6					
20475	A39	Post	Discarded	297933,611	4499776,027	592,61	42		8	5					
20476	A39	Post	Discarded	297931,776	4499776,75	592,89	46		8	6					
20477	A39	Post	Discarded	297931,27	4499777,944	592,28	75		8	6	?				
20478	A39	Post	Discarded	297931,713	4499776,991	592,37	51		1	8					
20479	A39	Post	Discarded	297930,834	4499780,202	592,66	75		1	8					
20480	A39	Post	Discarded	297930,912	4499779,222	592,8	25		1	9					
20483	A39	Post	Discarded	297932,079	4499776,262	592,31	58		8	5					
20484	A39	Post	Discarded	297931,761	4499776,919	592,58	32		8	4					
20485	A39	Post	Discarded	297933,967	4499770,956	592,5	23		8	6					
20486	A39	Post	Discarded	297933,959	4499771,556	592,31	55		1	10					
20487	A39	Post	Discarded	297933,831	4499771,664	592,43	31		8	4					
20489	A39	Post	Discarded	297934,425	4499772,075	592,28	21		8	5					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20490	A39	Post	Discarded	297933,447	4499772,2	592,44	34		8	4					
20491	A39	Post	Discarded	297933,189	4499772,873	592,19	47		1	7	2				
20492	A39	Post	Discarded	297933,367	4499773,015	592,47	26		8	4					
20493	A39	Post	Discarded	297934,799	4499773,071	592,98	77		1	7					
20494	A39	Post	Discarded	297935,037	4499773,358	592,64	23		8	5					
20495	A39	Post	Discarded	297934,275	4499774,085	592,44	39		8	4					
20496	A39	Post	Discarded	297934,115	4499774,472	592,42	40		1	9					
20497	A39	Post	Discarded	297932,668	4499774,691	592,17	70		1	8					
20498	A39	Post	Discarded	297932,425	4499775,456	592,31	29		8	5					
20499	A39	Post	Discarded	297932,312	4499775,667	592,71	31		8	6					
20500	A39	Post	Discarded	297932,299	4499775,437	592,43	26		8	5					
20501	A39	Post	Discarded	297932,246	4499776,444	592,31	41		1	8					
20502	A39	Post	Discarded	297933,069	4499777,308	592,43	30		8	5					
20503	A39	Post	Discarded	297932,948	4499778,199	592,55	14		8	5					
20504	A39	Post	Discarded	297932,765	4499778,4	592,25	36		8	6					
20505	A39	Post	Discarded	297932,601	4499778,924	592,11	65		1	8					
20506	A39	Post	Discarded	297932,45	4499779,173	592,56	21		8	5					
20507	A39	Horizontal wood	Discarded	297932,495	4499779,281	592,64	50	7	1	7					
20508	A39	Post	Discarded	297931,703	4499777,88	592,76	29		8	5					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20509	A39	Post	Discarded	297931,357	4499778,277	592,49	28		8	5					
20510	A39	Post	Discarded	297931,471	4499778,431	592,25	50		1	8					
20511	A39	Post	Discarded	297931,276	4499778,702	592,11	70		1	8	1				
20512	A39	Post	Discarded	297930,904	4499778,962	592,41	50		1	7					
20513	A39	Post	Discarded	297931,291	4499779,305	592,26	65		1	8					
20514	A39	Post	Discarded	297930,945	4499780,488	592,27	52		1	5	2				
20515	A39	Post	Discarded	297930,781	4499780,434	591,87	87		1	11	1				
20517	A39	Post	Discarded	297932,32	4499780,034	592,14	38		8	6					
20518	A39	Post	Discarded	297932,341	4499780,182	592,16	45		1	8					
20519	A39	Post	Discarded	297931,988	4499781,1	592,21	37		1	9					
20521	A39	Post	Discarded	297931,954	4499781,347	592,38	32		8	5					
20522	A39	Post	Discarded	297931,677	4499781,997	591,99	84		1	8					

TRACKWAY 3a(?) STRUCTURAL WOOD LIST															
SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
837	960	Post	Sampled and discarded	297891,1155	4499849,291	593,19	98		1	17			47	Conifer	4836-4723
838	960	Post	Discarded	297891,1937	4499849,999	592,45	54		8	7					
845	960	Post	Discarded	297890,8002	4499846,907	592,97	50		1	12					
847	960	Post	Discarded	297890,6071	4499846,772	593,09	52		1	12					
869	960	Post	Discarded	297890,0593	4499849,035	593,25	60		1	6					
870	960	Post	Discarded	297890,0482	4499848,966	593,24	50		1	7					
871	960	Post	Discarded	297890,149	4499849,023	593,17	60		1	6					
872	960	Post	Discarded	297889,9343	4499848,388	593,06	60		1	7					
874	960	Post	Discarded	297890,1405	4499846,492	593,13	70		1	8					
876	960	Post	Discarded	297890,4511	4499846,085	592,95	45		1	5					
877	960	Post	Discarded	297889,9168	4499848,498	593,01	80		1	9					
878	960	Post	Discarded	297891,655	4499846,237	592,95	60		1	7					
879	960	Post	Discarded	297890,3381	4499845,958	592,9	85		1	9					
880	960	Post	Discarded	297890,0606	4499847,365	593,89	60		8	6					
881	960	Post	Discarded	297889,876	4499847,599	592,88	75		8	8					
882	960	Horizontal wood	Discarded	297890,0799	4499847,922	592,87	82	11	1	11					
883	960	Horizontal wood	Discarded	297890,3326	4499847,511	592,87	60	6	1	6					
885	960	Post	Discarded	297889,5367	4499848,067	592,93	65		1	7					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
886	960	Post	Discarded	297891,4574	4499847,642	592,86	60		8	6					
887	960	Post	Discarded	297889,5769	4499848,506	592,9	70		1	8					
888	960	Post	Discarded	297891,2727	4499849,167	592,95	85		1	10					
889	960	Horizontal wood	Discarded	297889,3189	4499846,799	592,82	46	5	1	5					
890	960	Post	Discarded	297889,8392	4499848,6	592,83	85		1	15					
891	960	Post	Discarded	297889,4843	4499848,828	592,82	75		1	10					
892	960	Post	Discarded	297889,2047	4499848,845	592,77	75		1	10					
895	960	Post	Discarded	297890,0391	4499848,595	592,76	55		8	7					
896	960	Post	Discarded	297890,0422	4499848,295	592,83	60		1	8					
898	960	Post	Discarded	297891,7456	4499848,856	592,83	75		8	8					
899	960	Post	Discarded	297889,7641	4499847,387	592,79	65		8	8					
900	960	Post	Discarded	297889,6386	4499848,144	592,75	65		8	9					
901	960	Post	Discarded	297889,6844	4499847,963	592,75	80		1	15					
902	960	Post	Discarded	297891,3226	4499847,865	592,76	70		8	9					
903	960	Post	Discarded	297891,6309	4499847,358	592,75	50		8	7					
904	960	Post	Discarded	297891,6163	4499847,158	592,75	50		8	7					
905	960	Post	Discarded	297890,3561	4499847,598	592,83	40		8	5					
906	960	Post	Discarded	297890,041	4499846,085	592,77	50		8	6					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
908	960	Post	Discarded	297890,2055	4499847,141	592,8	60		1	8					
909	960	Post	Discarded	297890,1209	4499846,943	592,78	60		8	6					
910	960	Post	Discarded	297890,4701	4499846,905	592,76	60		8	6					
911	960	Post	Discarded	297890,7429	4499846,589	592,83	65		8	7					
912	960	Post	Discarded	297890,3219	4499846,118	592,83	50		8	5					
913	960	Post	Discarded	297890,7592	4499845,998	592,79	55		8	6					
914	960	Post	Discarded	297889,6528	4499849,625	592,68	60		8	7					
915	960	Post	Discarded	297889,5991	4499849,466	592,73	70		8	8					
916	960	Post	Discarded	297889,4947	4499849,708	592,73	75		1	8					
917	960	Horizontal wood	Discarded	297890,3364	4499848,901	592,64	107	8	1	8	1				
918	960	Horizontal wood	Discarded	297890,968	4499848,871	592,67	100	13	7		3				
919	960	Horizontal wood	Discarded	297890,9443	4499848,173	592,68	38	10	1	10					
920	960	Horizontal wood	Discarded	297891,1592	4499847,024	592,65	37	6	7	6					
921	960	Post	Discarded	297889,3557	4499849,751	592,68	50		8	6					
922	960	Post	Discarded	297889,8586	4499849,01	592,72	70		8	7					
923	960	Post	Discarded	297889,6462	4499848,905	592,68	60		8	5					
924	960	Post	Discarded	297888,9506	4499849,683	592,76	60		8	5					
925	960	Post	Discarded	297891,3955	4499848,424	592,71	65		1	9					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
926	960	Post	Discarded	297891,5343	4499848,371	592,67	70		8	8					
927	960	Post	Discarded	297891,6476	4499848,078	592,65	65		8	7					
928	960	Post	Discarded	297891,6284	4499848,549	592,73	60		8	6					
929	960	Post	Discarded	297891,431	4499848,663	592,67	65		1	7					
930	960	Post	Discarded	297891,277	4499848,894	592,64	50		8	8					
931	960	Post	Discarded	297891,0318	4499849,133	592,72	70		8	7					
932	960	Post	Discarded	297891,6054	4499846,689	592,66	65		8	7					
933	960	Post	Discarded	297891,4517	4499846,532	592,72	60		8	6					
934	960	Post	Discarded	297891,3525	4499846,564	592,66	40		8	4					
935	960	Post	Discarded	297891,786	4499847,575	592,67	65		8	6					
936	960	Post	Discarded	297891,7446	4499847,516	592,67	60		8	6					
937	960	Post	Discarded	297891,8831	4499847,952	592,67	40		8	5					
941	960	Post	Discarded	297890,3675	4499847,227	592,71	60		8	6					
942	960	Post	Discarded	297890,0756	4499846,714	592,74	60		8	5					
943	960	Post	Discarded	297889,7726	4499847,021	592,69	60		8	5					
944	960	Post	Discarded	297889,8473	4499846,789	592,68	60		8	5					
945	960	Post	Discarded	297889,6401	4499849,075	592,67	55		8	5					
946	960	Post	Discarded	297889,8461	4499848,9	592,65	65		1	10					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
947	960	Post	Discarded	297890,8809	4499849,526	592,64	60		8	6					
948	960	Post	Discarded	297890,7072	4499849,449	592,6	50		1	5					
1450	944	Post	Remained in layer	297887,5343	4499854,036	592,96	65		1	7					
1459	944	Post	Remained in layer	297888,0312	4499853,397	593,03	60		1	5					
1464	944	Post	Remained in layer	297887,5025	4499854,858	592,81	60		1	7					
1465	944	Post	Remained in layer	297887,7947	4499854,05	592,71	50		8	5					
1466	944	Post	Remained in layer	297887,9214	4499853,907	592,69	45		8	5					
1467	944	Post	Remained in layer	297887,9694	4499853,816	592,75	50		8	5					
1468	944	Post	Remained in layer	297888,0319	4499853,494	592,72	60		8	5					
1469	944	Post	Remained in layer	297887,7706	4499853,44	592,76	60		8	9					
1470	944	Post	Remained in layer	297888,0129	4499853,204	592,73	60		8	5					
1471	944	Post	Remained in layer	297887,8692	4499852,948	592,77	45		1	7					
1472	944	Post	Remained in layer	297886,0558	4499854,55	592,72	60		8	7					
1473	944	Post	Remained in layer	297886,322	4499854,814	592,76	55		8	6					
1486	944	Post	Remained in layer	297887,7621	4499852,21	592,77	40		8	5					
1499	944	Post	Remained in layer	297887,6315	4499854,344	592,66	40		8	6					
1519	944	Post	Remained in layer	297889,047	4499854,052	593,44	100		1	8					
1520	944	Post	Remained in layer	297890,2293	4499852,923	593,13	65		8	6					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
1521	944	Post	Remained in layer	297890,717	4499851,952	593,14	70		1	10					
1522	944	Post	Remained in layer	297889,5081	4499853,31	592,65	50		8	8					
1523	944	Post	Remained in layer	297889,4711	4499850,85	592,7	60		8	6					
1524	944	Post	Remained in layer	297889,9274	4499851,98	592,54	40		1	8					
1525	944	Post	Remained in layer	297889,4454	4499854,062	592,55	40		8	7					
1526	944	Post	Remained in layer	297889,1002	4499853,839	592,56	45		8	6					
1527	944	Post	Remained in layer	297889,0763	4499853,67	592,52	40		8	6					
1528	944	Post	Remained in layer	297889,2881	4499853,315	592,55	45		8	10					
1529	944	Post	Remained in layer	297889,5532	4499852,669	592,54	50		8	6					
1530	944	Post	Remained in layer	297889,7547	4499851,434	592,57	55		8	9					
1531	944	Post	Remained in layer	297889,2949	4499853,175	592,42	30		1	5					
1532	944	Post	Remained in layer	297888,554	4499852,712	592,65	50		8	7					
1533	944	Post	Remained in layer	297888,3441	4499852,287	592,72	65		8	6					
1534	944	Post	Remained in layer	297888,8649	4499851,884	592,5	35		8	6					
1535	944	Horizontal wood	Remained in layer	297890,1708	4499854,395	592,65	96	10	1	10					
12311	960	Post	Discarded	297890,9217	4499848,265	592,62	50		8	5					
12312	960	Post	Discarded	297891,7113	4499848,237	592,63	50		8	5					
12313	960	Post	Discarded	297891,6941	4499847,927	592,61	50		8	6					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
12314	960	Post	Discarded	297890,7956	4499845,797	592,57	45		8	6					
12316	960	Post	Discarded	297891,4286	4499847,263	592,63	70		8	8					
12317	960	Post	Discarded	297891,6279	4499846,798	592,63	55		8	8					
12318	960	Post	Discarded	297891,2648	4499848,827	592,64	45		8	5					
12319	960	Post	Discarded	297889,5829	4499848,766	592,69	50		8	5					
12320	960	Post	Discarded	297889,8141	4499848,38	592,79	75		8	5					
12321	960	Post	Discarded	297889,8506	4499848,23	592,67	40		8	5					
12322	960	Post	Discarded	297890,3574	4499846,787	592,76	50		8	4					
12323	960	Post	Discarded	297890,4269	4499846,766	592,74	65		8	6					
12324	960	Post	Discarded	297889,5091	4499848,167	592,78	70		8	8					
12325	960	Post	Discarded	297889,3884	4499848,14	592,74	65		8	7					
12327	960	Post	Discarded	297891,4386	4499850,459	592,92	40		8	4					

TRACKWAY 3b(?) STRUCTURAL WOOD LIST															
SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
3009	904	Post	Sampled and remained in layer	297877,956	4499873,379	593,05	70		1	7			26	Oak	
3011	904	Post	Sampled and remained in layer	297875,335	4499872,132	592,98	52		1	9		<5	55	Oak	4947-4802
3013	904	Post	Sampled and remained in layer	297877,357	4499874,409	592,88	49		1	7			21	Oak	
3014	904	Post	Sampled and remained in layer	297877,485	4499872,197	592,93	59		1	13		<3	22	Oak	
3015	904	Post	Sampled and remained in layer	297878,321	4499871,607	592,93	49		1	12		<3	19	Oak	5208-4996
3016	904	Post	Sampled and remained in layer	297877,65	4499872,003	592,88	46		1	10		<3	33	Oak	
3018	904	Post	Remained in layer	297875,81	4499873,466	592,64	30		1	6					
3019	904	Post	Sampled and remained in layer	297875,951	4499872,964	592,63	27		1	6		1	27	Oak	
3020	904	Post	Remained in layer	297876,026	4499873,164	592,63	20		1	7					
3021	904	Post	Sampled and remained in layer	297875,191	4499872,322	592,73	64		1	7	1		40	Conifer	
3023	904	Post	Remained in layer	297877,09	4499873,259	592,74	21		1	5					
3024	904	Post	Sampled and remained in layer	297876,207	4499871,6	592,73	23		1	7		<3	23	Oak	
3025	904	Post	Remained in layer	297876,359	4499871,412	592,74	20		1	9					
3026	904	Post	Discarded	297876,347	4499871,159	592,76	37		1	9					
3027	904	Post	Remained in layer	297878,35	4499871,485	592,72	26		1	8					
3028	904	Post	Remained in layer	297877,402	4499871,898	592,62	20		1	8					
3029	904	Post	Sampled and remained in layer	297877,694	4499871,617	592,64	20		1	8		1	23	Oak	
3031	904	Post	Sampled and remained in layer	297877,091	4499872,032	592,53	20		1	6		1	20	Oak	

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
3032	904	Post	Remained in layer	297877,027	4499872,141	592,51	20		1	7					
3033	904	Post	Sampled and remained in layer	297876,67	4499872,733	592,61	25		1	8		1	90	Oak	
3034	904	Post	Remained in layer	297876,208	4499874,6	592,58	20		1	7					
3035	904	Horizontal wood	Remained in layer	297875,992	4499872,177	592,53	46	12	8	12					
3036	904	Horizontal wood	Remained in layer	297874,999	4499872,85	592,53	77		8	10					
3037	904	Post	Sampled and remained in layer	297877,951	4499871,664	592,58	41		5	7	1		29	Oak	
3038	904	Post	Sampled and remained in layer	297875,738	4499871,945	592,53	22		1	8		<3	45	Oak	5201-4848
3039	904	Post	Sampled and remained in layer	297877,603	4499871,784	592,53	35		1	8		<3	32	Oak	4937-4800
3047	904	Post	Remained in layer	297876,416	4499872,604	592,51	20		1	7					
3050	904	Post	Remained in layer	297875,349	4499873,577	592,91	20		1	6					
3051	904	Post	Remained in layer	297875,192	4499872,19	592,72	20		1	6					
3052	904	Post	Remained in layer	297876	4499872,85	592,63	20		1	5					
3053	904	Post	Remained in layer	297876,516	4499871,361	592,53	20		1	6					
3054	904	Post	Sampled and discarded	297876,593	4499871,241	592,53	20		1	6		?	15	Oak	
3059	904	Horizontal wood	Sampled and discarded	297877,344	4499874,487	592,42	41		1	5		?	25	Oak	

TRACKWAY 4(?) STRUCTURAL WOOD LIST															
SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
12261	T T 1	Post	Discarded	297910,9965	4499818,005	592,76	50		8	9					
12262	T T 1	Post	Discarded	297912,0027	4499818,002	592,62	50		8	9					
12263	T T 1	Post	Discarded	297913,0077	4499817,001	592,6	50		8	9					
12272	T T 1	Post	Discarded	297912,9978	4499814,997	592,55	50		8	9					
12275	T T 1	Post	Discarded	297914,0044	4499813,994	592,74	50		8	9					
12276	T T 1	Post	Discarded	297916,0018	4499814	592,65	50		8	9					
12277	T T 1	Post	Discarded	297917,0107	4499813,995	592,64	50		8	9					
12278	T T 1	Post	Discarded	297914,9997	4499812,004	592,87	50		8	9					
12282	T T 1	Post	Discarded	297916,0046	4499811,995	592,83	50		8	9					
20008	A64	Horizontal wood	Discarded	297922,0562	4499804,064	592,85	32		1	2					
20009	A64	Horizontal wood	Discarded	297921,9606	4499804,142	592,88	20	4	8	4					
20010	A64	Horizontal wood	Discarded	297922,356	4499803,813	592,9	32	5	1	5					
20014	A64	Post	Discarded	297920,8494	4499803,862	593,04	55		8	5					
20015	A64	Horizontal wood	Discarded	297921,0857	4499806,546	592,64	17	2	8	4					
20017	A64	Horizontal wood	Discarded	297920,5781	4499806,018	592,75	22	3	2	3					
20018	A64	Post	Discarded	297919,9662	4499805,204	592,56	67		1	7					
20027	A64	Post	Sampled and discarded	297919,0801	4499806,474	592,44	79		1	10	2	0	21	Oak	2862-2581
20028	A64	Horizontal wood	Discarded	297919,427	4499807,273	593	18	6	8	6					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20045	A64	Post	Discarded	297918,038	4499808,266	592,58	36		8	4					
20049	A64	Post	Discarded	297916,6499	4499809,691	592,64	24		8	5	2				
20051	A64	Post	Discarded	297918,4838	4499807,458	592,39	77		1	5	2				
20089	A52	Horizontal wood	Discarded	297923,5329	4499799,409	592,92	50		8	5					
20091	A52	Horizontal wood	Discarded	297926,2703	4499799,127	592,74	31		8	4					
20093	A52	Horizontal wood	Discarded	297925,2049	4499799,935	592,8	23		8	4					
20097	A52	Horizontal wood	Discarded	297924,3499	4499798,767	592,94	53		2	10					
20098	A52	Horizontal wood	Discarded	297924,8111	4499798,068	592,9	34		8	5					
20101	A52	Horizontal wood	Discarded	297925,5597	4499798,683	592,84	30		8	5					
20124	A52	Horizontal wood	Discarded	297924,1419	4499798,298	592,82	20	6	2	6					
20125	A52	Horizontal wood	Discarded	297924,084	4499798,658	592,88	17		8	3					
20126	A52	Horizontal wood	Discarded	297924,1785	4499798,5	592,89	16	5	2	5					
20127	A52	Horizontal wood	Discarded	297924,8344	4499797,715	592,9	30		8	3					
20128	A52	Horizontal wood	Discarded	297925,1611	4499797,751	592,92	30		8	4					
20168	A50	Horizontal wood	Discarded	297925,0582	4499797,274	592,81	35		8	3					
20170	A50	Post	Discarded	297925,3948	4499797,556	592,82	30		8	3					
20172	A50	Horizontal wood	Discarded	297925,7556	4499798,491	592,83	26		8	5					
20173	A50	Horizontal wood	Discarded	297926,3725	4499798,991	592,84	26		8	3					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20174	A50	Horizontal wood	Discarded	297926,9319	4499799,042	592,84	21		8	3					
20177	A50	Horizontal wood	Discarded	297926,6218	4499797,836	592,86	31		8	5					
20179	A50	Post	Discarded	297926,6421	4499797,452	592,93	60		1	7	?				
20180	A50	Horizontal wood	Discarded	297925,9748	4499797,161	592,85	20		8	3					
20256	A47	Horizontal wood	Discarded	297932,8542	4499784,826	592,9	32		8	3					
20289	A42	Post	Discarded	297938,7037	4499776,419	592,36	58		1	8	2				
20290	A42	Post	Discarded	297939,9029	4499777,188	592,79	53		1	6	2				
20291	A42	Post	Discarded	297939,5704	4499778,349	592,72	28		8	6	?				
20292	A42	Post	Discarded	297939,4458	4499778,775	592,37	50		1	14	?				
20293	A42	Post	Discarded	297940,1069	4499781,963	592,28	34		8	7	?				
20294	A42	Post	Discarded	297936,1184	4499782,015	592,72	10		8	6					
20295	A41	Post	Discarded	297944,3299	4499769,322	592,3	52		1	11	1				
20296	A41	Horizontal wood	Discarded	297940,6772	4499774,742	592,48	93	10	1	10	1				
20297	A41	Post	Discarded	297939,5641	4499775,769	592,51	36		8	5	3				
20298	A41	Post	Discarded	297945,7001	4499770,394	592,46	37		1	5	2				
20299	A41	Post	Discarded	297944,6718	4499771,122	592,12	50		8	6	2				
20300	A41	Post	Discarded	297943,8599	4499770,152	592,47	60		1	7	2				
20301	A41	Post	Discarded	297943,642	4499772,079	592,71	35		8	5	1				

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
20302	A41	Post	Discarded	297943,1012	4499771,409	592,85	27		8	5					
20303	A41	Post	Discarded	297942,6707	4499771,843	592,91	53		1	7					
20304	A41	Post	Discarded	297943,0146	4499773,472	592,81	60		8	5	2				
20305	A41	Post	Discarded	297940,6093	4499774,995	592,3	18		8	6	2				
20306	A41	Post	Discarded	297940,7902	4499776,503	592,01	54		8	9					
20309	A13	Post	Discarded	297950,1091	4499761,162	593,16	26		8	6					
20310	A13	Post	Discarded	297950,5856	4499760,476	593,5	54		1	8	?				
20311	A75	Post	Discarded	297953,1355	4499758,859	594,51	12		8	4					
20312	A75	Post	Discarded	297952,6398	4499757,829	594,01	40		8	3					
20313	A75	Post	Discarded	297949,5633	4499757,676	593,87	40		8	3					
20314	A75	Post	Discarded	297951,3932	4499759,43	593,33	12		8	3					

FENCE 1 STRUCTURAL WOOD LIST															
SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
11254	538	Post	Discarded	297936,034	4499998,157	593,18	83		1	7					
11255	538	Post	Discarded	297935,054	4499997,623	593,13	70		1	9					
11256	538	Post	Discarded	297934,853	4499998,185	593,11	76		7	8					
11257	538	Post	Discarded	297936,32	4499997,674	593,04	65		1	5					
11259	538	Post	Discarded	297933,674	4499998,668	592,95	85		7	8					
11260	538	Post	Discarded	297934,631	4499998,667	592,98	84		1	7	1				
11261	538	Post	Discarded	297935,668	4499998,617	592,99	85		8	8					
11262	538	Post	Discarded	297933,797	4499998,807	593,36	105		1	12	?				
11263	538	Post	Discarded	297932,886	4499999,693	593,08	41		8	6					
11264	538	Post	Discarded	297934,578	4499999,576	593,17	53		8	4					
11265	538	Post	Discarded	297934,927	4499999,388	593,23	82		2	10	1				
11266	538	Post	Discarded	297935,504	4499998,953	593,23	60		8	6					
11267	538	Post	Discarded	297935,221	4499999,245	593,01	54		8	7					
11466	499	Post	Discarded	297923,984	4500003,722	593,12	77		1	8	1				
11467	499	Post	Discarded	297925,114	4500003,872	593,2	65		1	9	1				
11468	499	Post	Discarded	297926,194	4500004,102	593,11	73		1	7	2				
11469	499	Post	Discarded	297925,504	4500003,402	593,15	76		1	10					
11470	499	Post	Sampled and discarded	297926,314	4500003,242	593,18	92		1	10	1				

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
11817	500	Post	Discarded	297930,103	4500003,616	593,31	81		2	10	1				
11818	500	Post	Sampled and discarded	297931,283	4500002,536	593,31	116		1	12	3		52	Conifer	
11819	500	Post	Sampled and discarded	297930,713	4500002,986	593,18	92		1	7	2				
11820	500	Post	Discarded	297929,563	4500003,466	593,25	90		1	9					
11821	500	Post	Sampled and discarded	297930,863	4500002,186	593,16	77		1	8	2				
11822	500	Post	Sampled and discarded	297929,623	4500002,656	593,2	113		1	8	2				
11823	500	Post	Sampled and discarded	297929,033	4500002,576	593,16	107		1	10	1				
11824	500	Post	Sampled and discarded	297931,353	4500001,326	593,18	90		1	8	1		41	Conifer	5208-4984
11825	500	Post	Sampled and discarded	297927,503	4500002,506	593,09	112		3	7	1		52	Conifer	
11826	500	Post	Discarded	297929,823	4500003,546	593,08	58		1	10	1				
11827	500	Post	Discarded	297929,113	4500003,986	593,06	65		1	11					
11828	500	Post	Discarded	297930,333	4500002,216	592,96	65		1	8	1				
11829	500	Post	Discarded	297928,803	4500003,176	592,77	49		1	5	1				
11830	500	Post	Sampled and discarded	297932,841	4500002,151	593,25	83		5	10	1	?	25	Conifer	
11831	500	Post	Sampled and discarded	297932,681	4500001,801	593,22	84		5	10	1		40	Conifer	5209-5014
11832	500	Post	Sampled and discarded	297932,471	4500000,311	593,11	80		5	8	2				
11833	500	Post	Discarded	297933,031	4500001,391	593,03	35		1	6					
11834	500	Post	Discarded	297933,721	4500000,621	593,05	25		1	3					

FENCE 2 STRUCTURAL WOOD LIST															
SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
2503	908	Post	Discarded	297917,2459	4499879,064	592,95	100		1	10					
2505	908	Post	Discarded	297916,3897	4499878,711	593,05	110		1	10	?				
2506	908	Post	Discarded	297916,1738	4499878,926	592,94	85		1	8					
2507	908	Post	Discarded	297916,8397	4499879,213	592,93	100		8	10					
2508	908	Post	Discarded	297916,4795	4499878,774	592,94	110		1	7					
2509	908	Post	Discarded	297916,4237	4499879,207	592,95	110		1	8					
2510	908	Post	Discarded	297915,5432	4499879,113	592,94	80		1	7					
2511	908	Post	Discarded	297916,0291	4499878,9	592,94	110		1	9					
2512	908	Post	Discarded	297915,3388	4499878,826	593,01	90		1	5					
2513	908	Post	Discarded	297915,9315	4499878,348	592,94	80		1	6					
2514	908	Post	Discarded	297915,0802	4499879,263	592,91	75		1	8					
2515	908	Post	Discarded	297914,8241	4499879,046	592,93	90		1	6					
2516	908	Post	Discarded	297914,5984	4499878,768	593,06	110		1	7					
2517	908	Post	Discarded	297916,6711	4499879,408	592,96	100		1	6					
2524	908	Post	Discarded	297918,0475	4499879,887	592,9	80		1	11					
2525	908	Post	Discarded	297917,1326	4499879,741	592,24	80		1	12					
2527	908	Post	Discarded	297915,581	4499880,002	593,04	80		1	7					
2528	908	Post	Discarded	297915,3711	4499879,807	593,05	90		1	8					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
2529	908	Post	Discarded	297915,7881	4499879,417	592,02	75		1	5					
2530	908	Post	Discarded	297915,2409	4499879,512	593	85		1	13					
2531	908	Post	Discarded	297914,8943	4499879,686	593,03	70		1	5					
2532	908	Post	Discarded	297917,76	4499879,566	592,81	80		1	11					
2533	908	Post	Discarded	297917,2852	4499879,896	592,79	80		1	11					
2534	908	Post	Discarded	297916,2184	4499879,952	592,84	80		1	7					
2535	908	Post	Discarded	297915,9482	4499879,72	592,79	70		1	6					
2544	908	Post	Discarded	297913,8242	4499876,947	592,81	75		1	8					
2545	908	Post	Discarded	297913,632	4499877,341	592,81	65		1	8					
2546	908	Post	Discarded	297913,6169	4499877,555	592,78	70		1	9					
2547	908	Post	Discarded	297913,699	4499878,064	592,81	60		1	10					
2548	908	Post	Discarded	297913,9069	4499878,208	592,84	80		1	8					
2549	908	Post	Discarded	297913,9128	4499878,397	592,81	75		1	9					
2550	908	Post	Discarded	297914,3456	4499878,536	592,95	80		1	10					
2605	908	Post	Discarded	297916,6554	4499879,011	592,95	120		1	12					
2660	907	Post	Discarded	297911,6815	4499876,701	592,66	39		1	6	2				
2661	907	Post	Discarded	297912,6862	4499877,58	592,71	30		1	7	3				
2662	907	Post	Discarded	297912,532	4499877,319	592,81	30		1	7	3				

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
2663	907	Post	Discarded	297912,3883	4499877,195	592,69	33		1	7	3				
2664	907	Post	Discarded	297912,13	4499877,04	592,71	32		1	6	3				
2665	907	Post	Discarded	297912,1682	4499876,976	592,67	38		1	8	1				
2666	907	Post	Discarded	297911,9687	4499876,811	592,87	31		2	7	1				
2686	907	Post	Discarded	297910,649	4499875,377	592,68	40		1	8					
2702	907	Post	Discarded	297911,3099	4499876,031	592,65	50		1	7					
2703	907	Post	Discarded	297911,0713	4499875,919	592,66	45		1	10					
2704	907	Post	Discarded	297909,723	4499875,581	592,78	65		1	10					
2707	907	Post	Discarded	297911,552	4499876,402	592,68	50		1	12					
2719	907	Post	Discarded	297911,9008	4499876,858	592,3	35		1	6					
2731	907	Post	Discarded	297906,1994	4499871,568	592,83	64		1	9					
2732	907	Post	Discarded	297906,0585	4499871,496	592,81	35		2	6					
2733	907	Post	Discarded	297905,9275	4499871,451	592,87	122		1	13					
2734	907	Post	Discarded	297905,8749	4499871,318	592,82	80		1	9					
2735	907	Post	Discarded	297905,8472	4499871,195	592,86	65		1	8					
2738	907	Post	Discarded	297907,7932	4499871,109	592,76	42		1	11					
2739	907	Post	Discarded	297907,9588	4499872,567	592,76	38		1	9					
2740	907	Post	Discarded	297907,7364	4499872,331	592,75	67		1	10					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
2741	907	Post	Discarded	297907,5826	4499872,168	592,76	65		1	7					
2744	907	Post	Discarded	297907,05	4499870,479	592,79	34		1	10					
2745	907	Post	Discarded	297905,4925	4499870,696	592,89	44		1	6					
2746	907	Post	Discarded	297908,18	4499872,757	592,66	40		1	7					
2747	907	Post	Discarded	297908,3664	4499872,937	592,72	50		1	8					
2749	907	Post	Discarded	297907,6984	4499872,616	592,7	68		1	6					
2763	907	Post	Discarded	297907,0092	4499871,739	592,57	57		1	7					
2764	907	Post	Discarded	297907,1947	4499871,768	592,5	73		1	6	?				
2765	907	Post	Discarded	297907,6459	4499872,032	592,47	63		1	10					
2774	907	Post	Discarded	297909,5262	4499872,71	592,81	76		1	8					
2775	907	Post	Discarded	297909,5633	4499874,196	592,86	60		1	5					
2777	907	Post	Discarded	297908,5574	4499872,625	593,07	40		1	6					
2779	907	Post	Discarded	297908,7504	4499872,171	592,52	50		1	8					
2780	907	Post	Discarded	297908,7379	4499873,468	592,65	40		1	8					
2782	907	Post	Discarded	297909,3255	4499873,777	592,36	40		1	8					
2784	907	Post	Discarded	297912,5617	4499875,04	592,8	75		1	11					
2785	907	Post	Discarded	297911,8061	4499875,284	592,92	55		1	9					
2786	907	Post	Discarded	297910,6665	4499874,981	592,86	70		1	14					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
2787	907	Post	Discarded	297910,5418	4499875,148	592,81	60		1	12					
2788	907	Post	Discarded	297910,267	4499874,994	592,77	80		1	12					
2789	907	Post	Discarded	297911,27	4499874,977	592,64	70		1	11					
2790	907	Post	Discarded	297910,3755	4499874,861	592,59	70		1	10					
2791	907	Post	Discarded	297910,2553	4499874,73	592,61	60		1	12					
2792	907	Post	Discarded	297909,9791	4499874,475	592,76	80		1	12					
2793	907	Post	Discarded	297910,0203	4499874,692	592,41	45		1	10					
2795	907	Post	Discarded	297910,0873	4499874,539	592,39	50		1	7					
2796	907	Post	Discarded	297909,5937	4499874,45	592,86	80		1	10					
2797	907	Post	Discarded	297909,8152	4499874,392	592,86	75		1	9					
2798	907	Post	Discarded	297909,2272	4499874,455	592,54	50		1	10					
2800	907	Post	Discarded	297908,9144	4499874,87	592,61	33		1	7					
3697	886	Post	Discarded	297918,5694	4499880,647	592,85	94		1	9	3				
3698	886	Post	Discarded	297918,3887	4499880,26	592,85	70		1	9	?				
3700	886	Post	Discarded	297915,8592	4499880,392	592,75	43		1	6					
3701	886	Post	Discarded	297917,0472	4499881,388	592,75	40		1	7					
3702	886	Post	Discarded	297916,4889	4499880,358	592,75	76		1	9					
3712	886	Post	Discarded	297916,1533	4499880,835	592,65	38		1	8					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
3717	886	Post	Discarded	297917,2463	4499881,716	592,55	25		1	6					
3718	886	Post	Discarded	297917,5739	4499882,075	592,45	50		1	6					
3719	886	Post	Discarded	297917,2488	4499882,183	592,45	40		1	5					
3727	886	Post	Discarded	297916,7771	4499881,51	592,35	40		1	5					
3728	886	Post	Discarded	297916,9018	4499881,754	592,35	40		1	7	3				
3729	886	Post	Discarded	297916,8934	4499881,024	592,35	40		1	7					
3730	886	Post	Discarded	297916,4092	4499881,17	592,35	54		1	7	3				
3734	886	Post	Discarded	297916,7231	4499880,701	592,35	50		1	5	3				
11880	907	Post	Discarded	297910,5531	4499873,336	592,56	44		1	7					
11881	907	Post	Discarded	297910,3761	4499873,844	592,53	59		1	10	?				
11882	907	Post	Discarded	297909,8385	4499874,076	592,65	58		1	6					
11883	907	Post	Discarded	297910,1323	4499873,755	592,45	27		1	5					
11884	907	Post	Discarded	297910,5924	4499873,881	592,52	50		1	7	?				
11885	907	Post	Discarded	297910,6858	4499873,988	592,4	36		1	11					
11886	907	Post	Discarded	297910,3633	4499873,286	592,75	80		1	7					
11894	907	Post	Discarded	297912,3722	4499874,894	593	80		1	10					
11918	928	Post	Remained in layer	297906,1812	4499869,966	593,1	66		1	9					
11919	928	Post	Remained in layer	297906,1597	4499870,209	592,61	85		1	6					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
11928	928	Post	Remained in layer	297905,5138	4499869,736	592,56	65		1	13					
11929	928	Post	Remained in layer	297905,5101	4499870,417	592,3	40		1	8					

FENCE 3 STRUCTURAL WOOD LIST															
SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
4116	881	Post	Discarded	297870,781	4499889,948	593,22	36		1	9					
4122	881	Post	Discarded	297870,954	4499890,055	593,21	36		1	9					
4123	881	Post	Discarded	297871,078	4499890,163	593,17	36		1	9					
4127	881	Post	Sampled and discarded	297870,598	4499889,801	593,09	28		1	10		<3	10	Oak	
4128	881	Post	Sampled and discarded	297870,672	4499889,742	593,07	41	12	2	4	1		34	Oak	
4129	881	Post	Discarded	297870,438	4499889,712	593,09	33		1	8					
4130	881	Post	Remained in layer	297870,115	4499889,523	593,09	45		1	13					
4132	881	Post	Discarded	297869,907	4499889,373	592,99	23		1	8					
4133	881	Post	Sampled and discarded	297870,444	4499890,208	592,95	34		1	5			19	Conifer	
4983	858	Post	Sampled and remained in layer	297882,467	4499899,138	593,29	27		1	7		?	18	Conifer	
4985	858	Post	Sampled and remained in layer	297883,24	4499898,362	593,35	50		1	15			41	Oak	
4987	858	Post	Remained in layer	297882,111	4499899,756	593,17	32		1	11					
4988	858	Post	Remained in layer	297881,46	4499897,587	593,14	38		1	13					
4989	858	Post	Sampled and remained in layer	297880,229	4499896,669	593,19	33		1	15			30	Oak	
5000	858	Post	Discarded	297875,311	4499893,663	593,02	15		1	12	1				
5001	858	Post	Remained in layer	297875,034	4499893,533	593,03	26		1	10					
5002	858	Post	Discarded	297875,656	4499893,92	593,02	14		1	8					
5003	858	Post	Discarded	297875,784	4499894,102	593	13		1	8					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
5004	858	Post	Discarded	297876,15	4499894,304	593,03	16		1	8					
5005	858	Post	Discarded	297876,266	4499894,474	593,04	17		1	5					
5006	858	Post	Discarded	297876,577	4499894,65	593,06	19		1	8					
5007	858	Post	Discarded	297876,749	4499894,762	593,02	18		1	8					
5008	858	Post	Discarded	297877,122	4499895,036	592,97	10		1	8					
5009	858	Post	Remained in layer	297882,02	4499899,456	593,07	22		1	8					
5011	858	Post	Sampled and remained in layer	297882,521	4499899,967	593,33	50		1	18			40	Oak	
5012	858	Post	Remained in layer	297882,232	4499899,971	593,05	20		1	10					
5016	858	Post	Remained in layer	297881,001	4499897,382	593,12	27		1	7					
5017	858	Post	Remained in layer	297883,076	4499898,45	592,98	20		1	14					
5018	858	Post	Remained in layer	297882,699	4499899,263	592,97	20		1	10					
5061	857	Posthole-post	Sampled and discarded	297873,887	4499892,86	593,15	54		1	17	3		37	Oak	4597-4464
5062	857	Posthole		297873,717	4499892,407	593,15	50		1	12					
5063	857	Posthole-post	Discarded	297873,495	4499892,181	593,15	30		1	12					
5064	857	Posthole-post	Discarded	297872,847	4499891,711	593,15	30		1	13					
5065	857	Posthole-post	Discarded	297872,45	4499891,481	593,15	26		5	13					
5066	857	Post	Discarded	297872,616	4499891,531	593,15	60		3	7					
6163	834	Horizontal wood	Discarded	297891,696	4499908,492	593,31	52	10	1	10					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
6175	834	Post	Sampled and remained in layer	297887,026	4499904,222	593,13	54		1	9			41	Oak	
6176	834	Post	Discarded	297887,282	4499904,368	593,09	40		1	8					
6177	834	Post	Remained in layer	297887,856	4499904,756	593,09	41		5	10					
6178	834	Post	Sampled and remained in layer	297887,577	4499904,567	593,09	50		1	13		<5	22	Oak	4668-4487
6179	834	Post	Discarded	297887,689	4499904,498	593,09	50		1	7					
6180	834	Post	Sampled and discarded	297885,356	4499902,477	593,11	45		1	13			25	Oak	
6181	834	Posthole-post	Discarded	297886,572	4499903,752	593,09	48		1	13	1				
6182	834	Posthole-post	Discarded	297886,745	4499903,921	593,09	52		1	16					
6183	834	Posthole	Discarded	297886,895	4499904,077	593,09	30		1	12					
6184	834	Post	Discarded	297886,206	4499903,361	593,09	49		1	8					
6185	834	Post	Discarded	297885,977	4499903,192	593,09	50		1	9					
6186	834	Post	Discarded	297885,615	4499902,881	593,09	49		1	10					
6187	834	Post	Discarded	297890,674	4499907,448	593,08	26		1	10					
6188	834	Post	Discarded	297891,088	4499907,748	593,13	30		2	18					
6189	834	Post	Remained in layer	297891,314	4499907,881	593,05	27		1	11					
6190	834	Post	Discarded	297891,466	4499907,999	593,03	26		1	14					
6191	834	Post	Discarded	297891,678	4499908,145	593,1	30	13	7		2				
6192	834	Post	Sampled and remained in layer	297891,978	4499908,105	593,08	50		5	10	2		12	Conifer	

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
6193	834	Post	Discarded	297891,872	4499908,363	593,11	31		1	10					
6194	834	Post	Discarded	297892,064	4499908,457	593,13	31		1	11					
6195	834	Post	Discarded	297892,26	4499908,553	593,07	30		1	10					
6196	834	Post	Discarded	297892,449	4499908,71	593,11	32		1	13					
6213	833	Post	Sampled and remained in layer	297884,032	4499901,378	593,21	52		1	14			26	Oak	
6225	833	Post	Remained in layer	297883,492	4499900,978	592,94	25		1	16					
6226	833	Post	Remained in layer	297884,141	4499901,654	593,03	40		1	20					
12636	834	Post	Discarded	297886,373	4499903,618	592,79	20		1	10					
12637	834	Post	Remained in layer	297885,167	4499902,329	592,99	40		1	10					
12645	834	Post	Discarded	297886,587	4499903,476	592,79	20		1	8					
12701	834	Post	Remained in layer	297889,005	4499905,854	593,09	30		1	8					
12702	834	Post	Remained in layer	297889,247	4499906,225	593,04	30		1	8					

FENCE 4 STRUCTURAL WOOD LIST															
SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
10881	575	Post	Remained in layer	297920,355	4499986,096	593,39	40		1	7					
10882	575	Post	Remained in layer	297920,125	4499986,266	593,38	40		1	9					
10883	575	Post	Remained in layer	297919,742	4499986,481	593,41	40		1	8					
10884	575	Post	Remained in layer	297918,714	4499986,81	593,46	40		1	10					
10885	575	Post	Remained in layer	297919,149	4499986,118	593,05	25		1	12					
10886	575	Post	Sampled and discarded	297919,344	4499986,724	593,42	22		5	5	1		44	Oak	
10887	575	Post	Sampled and discarded	297918,946	4499986,873	593,44	68		1	8	1	<3	17	Oak	5208-5002
10888	575	Post	Remained in layer	297918,325	4499987,137	593,44	40		1	10					
10889	575	Post	Remained in layer	297917,31	4499987,795	593,46	40		1	10					
10913	575	Post	Remained in layer	297921,022	4499985,57	593,21	20		1	10					
10914	575	Post	Remained in layer	297917,784	4499987,519	593,45	40		1	10					
10915	575	Post	Remained in layer	297920,584	4499985,937	593,45	40		1	10					
10916	575	Post	Remained in layer	297920,772	4499985,79	593,45	40		1	11					
10918	575	Post	Remained in layer	297916,408	4499988,291	593,35	20		8	8					
10919	575	Post	Remained in layer	297916,665	4499988,143	593,35	20		8	6					
10920	575	Post	Remained in layer	297917,023	4499987,929	593,35	20		8	8					
10921	575	Post	Remained in layer	297917,672	4499987,589	593,25	40		1	10					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
10953	574	Post	Remained in layer	297914,982	4499989,016	593,5	20		8	5					
10955	574	Post	Remained in layer	297916,018	4499988,426	593,5	20		1	10					
10982	574	Post	Remained in layer	297914,426	4499989,182	593,4	20		8	8					
10983	574	Post	Remained in layer	297914,62	4499989,097	593,4	20		8	8					
10984	574	Post	Remained in layer	297915,178	4499988,851	593,4	20		8	8					
10985	574	Post	Remained in layer	297915,325	4499988,766	593,4	20		8	10					
10986	574	Post	Remained in layer	297915,693	4499988,582	593,4	20		8	7					
11373	535	Post	Discarded	297905,758	4499993,137	593,15	40		1	10					
11374	535	Post	Sampled and discarded	297906,068	4499992,717	592,95	95		2	22	3	?	63	Oak	
11376	535	Post	Sampled and discarded	297904,532	4499993,906	592,75	84		4	16	?		31	Oak	
11608	536	Post	Sampled and remained in layer	297908,256	4499992,451	593,18	100		1	7			9	Conifer	
11609	536	Post	Sampled and remained in layer	297907,806	4499992,491	593,24	121		1	7			13	Conifer	
11610	536	Post	Discarded	297907,206	4499992,671	593,28	31		1	10					
11622	536	Post	Discarded	297908,246	4499992,411	592,98	31		1	9	1				
11623	536	Post	Discarded	297908,156	4499992,421	593,16	25		1	8					
11624	536	Post	Discarded	297907,836	4499992,471	592,98	48		1	12					
11853	535	Post	Discarded	297903,908	4499994,467	593,15	20		1	8					
11854	535	Post	Discarded	297905,078	4499993,507	593,15	20		1	9					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
11855	535	Post	Discarded	297903,968	4499994,177	592,91	16		1	9					
11859	535	Post	Discarded	297904,033	4499994,031	592,92	17		1	8					

FENCE 5 STRUCTURAL WOOD LIST															
SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
10898	575	Posthole-post	Sampled and discarded	297917,275	4499982,087	593,2	57		5	6	1		17	Oak	
10900	575	Post	Sampled and discarded	297918,256	4499981,146	592,8	45		5	8	1	?	25	Oak	
10941	574	Posthole-post	Remained in layer	297910,917	4499985,858	593,2	35		1	8					
10942	574	Posthole-post	Remained in layer	297910,831	4499985,753	593,3	45		1	12					
10943	574	Posthole-post	Remained in layer	297910,532	4499985,897	593,3	40		1	8					
10944	574	Posthole-post	Remained in layer	297910,286	4499986,01	593,3	40		1	10					
10945	574	Posthole-post	Remained in layer	297910,065	4499986,082	593,3	35		1	8					
10946	574	Posthole-post	Remained in layer	297909,834	4499986,22	593,3	40		1	14					
10947	574	Posthole-post	Sampled and discarded	297909,598	4499986,358	593,3	97		5	10	1	1	17	Oak	
10948	574	Posthole-post	Remained in layer	297909,256	4499986,534	593,3	40		1	12					
10949	574	Posthole-post	Remained in layer	297909,046	4499986,597	593,3	35		1	8					
10950	574	Posthole-post	Sampled and discarded	297909,433	4499986,44	593,3	100		1	11	2	<3	20	Oak	5212-5051
10951	574	Post	Remained in layer	297912,27	4499985,701	592,8	101		1	9	2				
10965	574	Posthole	Remained in layer	297915,335	4499983,924	593,9	30		1	14					
10967	574	Posthole-post	Remained in layer	297911,352	4499985,589	593,9	50		1	11					
10968	574	Posthole-post	Remained in layer	297911,299	4499985,404	593,9	50		1	11					
10969	574	Posthole-post	Remained in layer	297911,119	4499985,62	593,3	40		1	10					
10970	574	Posthole-post	Remained in layer	297911,592	4499985,534	593,9	50		1	9					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
10971	574	Posthole-post	Remained in layer	297911,731	4499985,449	593,9	50		1	10					
10972	574	Posthole-post	Remained in layer	297911,973	4499985,39	593,9	50		1	11					
10973	574	Posthole	Remained in layer	297912,218	4499985,23	593,9	50		1	12					
10974	574	Posthole	Remained in layer	297912,449	4499985,112	593,9	55		1	20					
10975	574	Posthole	Remained in layer	297912,774	4499985,008	593,9	50		1	9					
10976	574	Posthole	Remained in layer	297912,975	4499984,834	593,9	50		1	12					
10977	574	Posthole	Remained in layer	297913,25	4499984,732	593,7	30		1	11					
10978	574	Posthole	Remained in layer	297913,542	4499984,573	593,9	50		1	13					
10979	574	Posthole	Remained in layer	297913,978	4499984,361	593,9	50		1	15					
10980	574	Posthole	Remained in layer	297914,732	4499984,076	593,9	30		1	17					
10981	574	Posthole-post	Remained in layer	297915,94	4499983,171	593,3	40		1	10					
10987	574	Posthole	Remained in layer	297915,766	4499983,679	593,9	30		1	15					
10993	574	Post	Remained in layer	297915,041	4499983,855	593,1	20		1	6					
10994	574	Post	Remained in layer	297915,643	4499984,045	593,1	20		1	5					
11707	535	Post	Discarded	297897,289	4499994,492	593,2	30		1	9					
11708	535	Post	Discarded	297897,809	4499994,212	593,1	29		1	10					
11709	535	Post	Discarded	297899,239	4499992,942	593,1	26		1	15					
11710	535	Post	Discarded	297898,009	4499993,682	593,1	20		1	14					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
11841	535	Post	Remained in layer	297897,379	4499994,332	592,9	20		1	10					
11842	535	Post	Remained in layer	297897,459	4499994,132	592,8	19		1	11					
11843	535	Post	Remained in layer	297898,109	4499993,582	592,8	17		1	8					
11844	535	Post	Remained in layer	297898,759	4499993,462	592,8	17		1	8					
11848	535	Post	Remained in layer	297899,479	4499992,542	592,9	20		1	12					
11849	535	Post	Remained in layer	297900,249	4499992,182	592,8	19		1	4					
11851	535	Post	Remained in layer	297901,009	4499991,882	592,9	20		1	12					
12453	535	Posthole	Remained in layer	297901,611	4499991,745	592,9	45		1	16					

FENCE 6(?) STRUCTURAL WOOD LIST														
SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
816	960	Post	Discarded	297887,025	4499845,444	592,99	83		1	7					
817	960	Horizontal wood	Discarded	297887,347	4499844,796	593,04	63	8	8	8					
12342	960	Horizontal wood	Discarded	297887,304	4499844,193	593,04	84	7	1	7					
12343	960	Post	Discarded	297885,588	4499843,397	592,86	60		1	5					
12344	960	Post	Discarded	297885,315	4499843,303	592,88	80		1	8					
12346	960	Post	Discarded	297884,595	4499842,87	592,84	60		1	6					
12347	960	Post	Discarded	297884,942	4499843,698	592,93	70		1	7					
12349	960	Post	Discarded	297887,167	4499844,661	592,84	65		1	7					
12350	960	Post	Discarded	297887,193	4499844,49	592,8	65		1	6					
12351	960	Post	Discarded	297887,444	4499844,514	592,75	45		1	5					
12352	960	Post	Discarded	297886,195	4499844,153	592,76	55		1	6					
12353	960	Post	Discarded	297886,087	4499843,786	592,8	75		1	10					
12354	960	Post	Discarded	297885,741	4499843,523	592,81	65		8	6					
12355	960	Post	Discarded	297885,706	4499843,734	592,77	60		1	7					
12356	960	Post	Discarded	297885,868	4499844,261	592,75	45		1	8					
12357	960	Post	Discarded	297884,517	4499843,456	592,74	50		1	6					
12358	960	Post	Discarded	297884,878	4499842,973	592,73	60		8	6					
12359	960	Post	Discarded	297884,467	4499842,503	592,74	65		1	7					

SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
12360	960	Post	Discarded	297884,166	4499842,46	592,85	70		1	7					
12361	960	Post	Discarded	297883,774	4499842,121	592,88	75		1	10					
12369	960	Post	Discarded	297886,91	4499844,864	592,59	40		1	5					
12370	960	Post	Discarded	297883,811	4499843,791	592,55	40		1	6					
12371	960	Post	Discarded	297887,834	4499844,943	592,77	40		1	4					
12372	960	Post	Discarded	297887,438	4499845,125	592,63	50		1	9					
12376	960	Post	Discarded	297883,152	4499841,453	592,85	45		1	6					
12377	960	Post	Discarded	297883,399	4499842,197	592,82	61		1	10					
12378	960	Post	Discarded	297883,185	4499843,753	592,62	34		1	4					
12379	960	Post	Discarded	297882,862	4499841,104	593,01	60		1	6					

FENCE 7(?) STRUCTURAL WOOD LIST															
SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
8600	752	Post	Remained in layer	297923,929	4499938,973	593	40		1	7					
8601	752	Post	Remained in layer	297923,353	4499938,129	593,1	50		1	12					
8602	752	Post	Remained in layer	297923,08	4499937,666	592,9	40		1	9					
8603	752	Post	Remained in layer	297922,949	4499937,474	592,9	30		1	8					
8604	752	Post	Remained in layer	297922,53	4499936,948	592,9	30		1	7					
8605	752	Post	Remained in layer	297922,383	4499936,76	592,9	30		1	7					
8606	752	Post	Remained in layer	297922,126	4499936,458	592,9	30		1	7					
8608	752	Post	Remained in layer	297921,654	4499936,037	592,9	30		1	10					
8609	752	Post	Remained in layer	297921,424	4499935,699	592,9	30		1	10					
8610	752	Post	Remained in layer	297921,291	4499935,598	592,9	30		1	7					
8611	752	Post	Remained in layer	297921,135	4499935,5	592,9	30		1	10					
8612	752	Post	Remained in layer	297921,013	4499935,278	592,9	30		1	10					
8707	752	Post	Remained in layer	297921,88	4499936,239	592,9	30		1	8					

FENCE 8(?) STRUCTURAL WOOD LIST															
SERIAL NUMBER	SQUARE	CATEGORY	TREATMENT	X	Y	Z	LENGTH (cm)	WIDTH (cm)	CROSS SECTION CATEGORY	DIAMETER (cm)	LOWER PART WOODWORKING TYPE	WANEY EDGE	RINGS N	SPECIES	^{14}C DATES cal BC
4101	881	Post	Sampled and remained in layer	297872,341	4499885,221	593,4	39		1	13			45	Oak	
4102	881	Post	Sampled and remained in layer	297872,176	4499884,987	593,4	31		1	13		<5	42	Oak	4541-4404
4103	881	Post	Sampled and remained in layer	297872,017	4499884,777	593,3	31		1	7			27	Oak	
4104	881	Post	Sampled and remained in layer	297871,816	4499884,547	593,3	25		1	15			46	Oak	
4105	881	Post	Sampled and remained in layer	297871,087	4499883,731	593,3	28		1	15			36	Oak	
4107	881	Post	Sampled and remained in layer	297871,636	4499884,28	593,3	33		1	15		<5	25	Oak	
4108	881	Post	Sampled and remained in layer	297871,363	4499884,043	593,3	36		1	11			21	Oak	
4109	881	Post	Remained in layer	297870,932	4499883,625	593,3	23		1	10					
4110	881	Post	Sampled and remained in layer	297870,853	4499883,491	593,2	36		1	11			32	Oak	
4111	881	Post	Sampled and remained in layer	297870,149	4499882,935	593,3	29		1	14		<3	51	Oak	4668-4487
4112	881	Post	Remained in layer	297870,423	4499883,159	593,2	15		1	14					
4113	881	Post	Sampled and remained in layer	297870,033	4499882,795	593,3	18		1	10	3		23	Oak	
4114	881	Post	Sampled and remained in layer	297869,852	4499882,539	593,2	18		1	8			27	Oak	
4115	881	Post	Sampled and remained in layer	297869,763	4499882,339	593,3	17		1	11			40	Oak	
4117	881	Post	Sampled and remained in layer	297870,574	4499883,342	593,2	21		1	9	3		27	Oak	
4142	881	Horizontal wood	Sampled and discarded	297870,722	4499883,904	593	44		1	4			20	Conifer	

THE PILE-FIELD AND THE WOODEN STRUCTURES OF THE NEOLITHIC LAKESIDE SETTLEMENT ANARGHIRI IXb WESTERN MACEDONIA, GREECE

Volume II: Figures

Inauguraldissertation

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vorgelegt von

Tryfon Giagkoulis

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und

Prof. em. Dr. Kostas Kotsakis, Department of History and Archaeology,

Aristotle University of Thessaloniki

The photographs from the excavation of the Neolithic lakeside settlement Anarghiri IXb derive from the Rescue Excavations Project archive and are used by courtesy of Florina Ephorate of Antiquities after the author's petition. The tables, graphs, digital plans and graphics are created by the author. The photographs and plans that derive from archaeological publications are used after the citation of the corresponding sources.

Fig. 1 General map of Greece and Amindeon Basin in the Region of Western Macedonia.

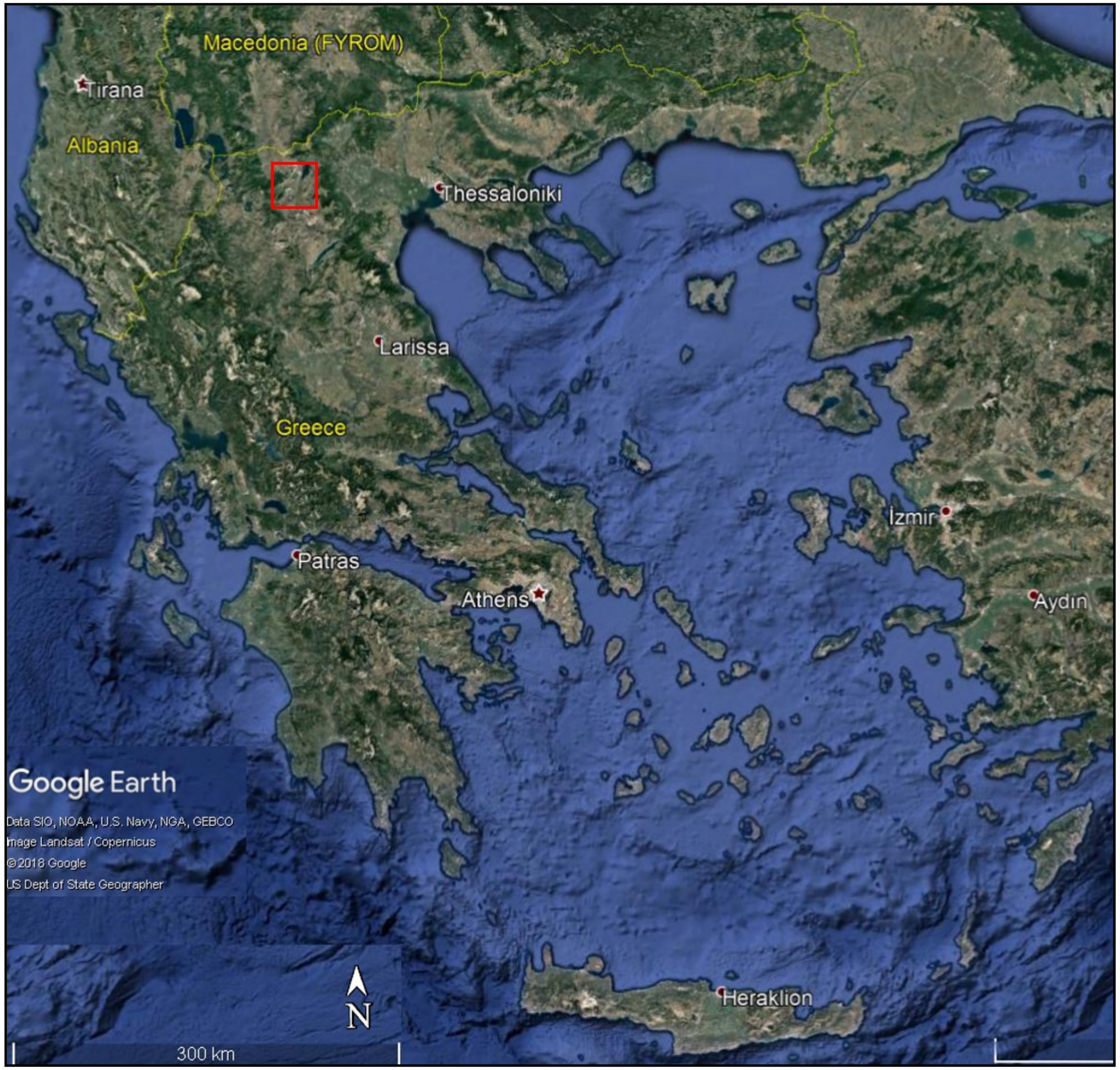


Fig. 2 Amindeon Basin, the Four Lakes and the location of Anarghiri IXb.

Fig. 3 Lake Chimaditis and its surroundings today (left) and in 1945 (right) (Petrou 2008).

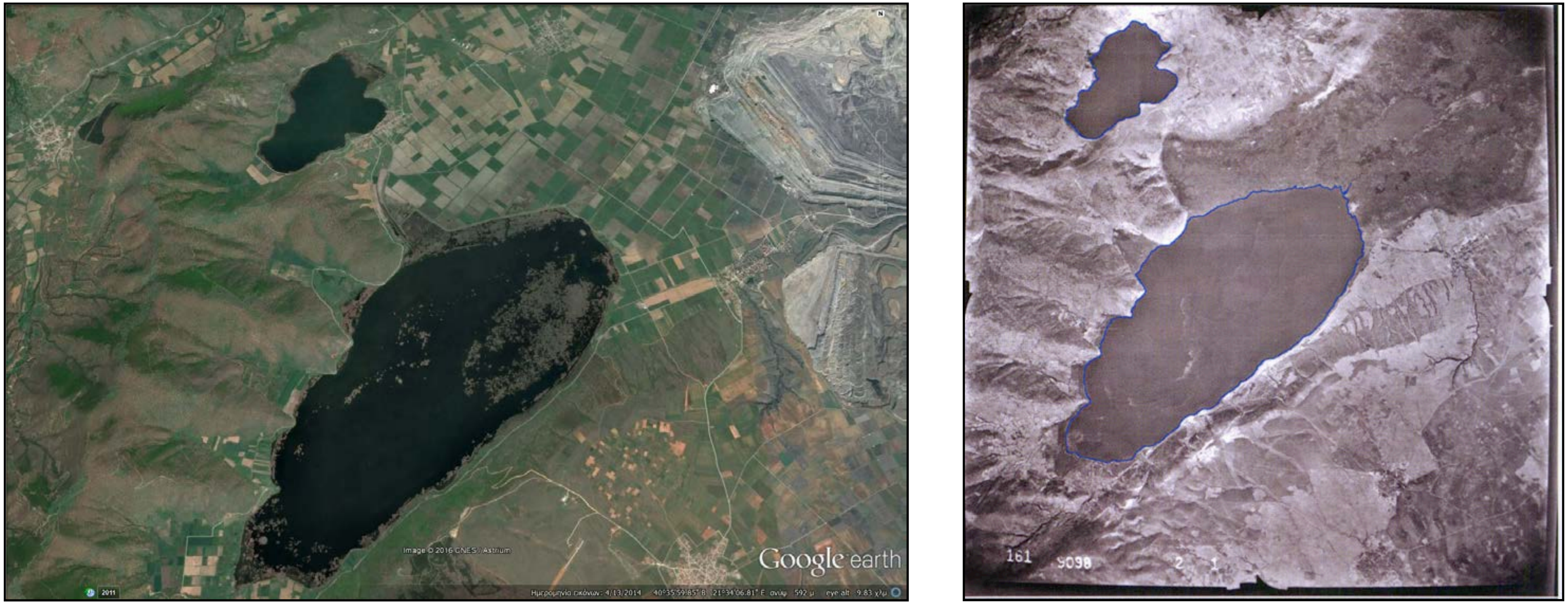


Fig. 4 The prehistoric wetlands investigated during the Rescue Excavations Project of Florina Ephorate of Antiquities (after Chrysostomou et al. 2015).

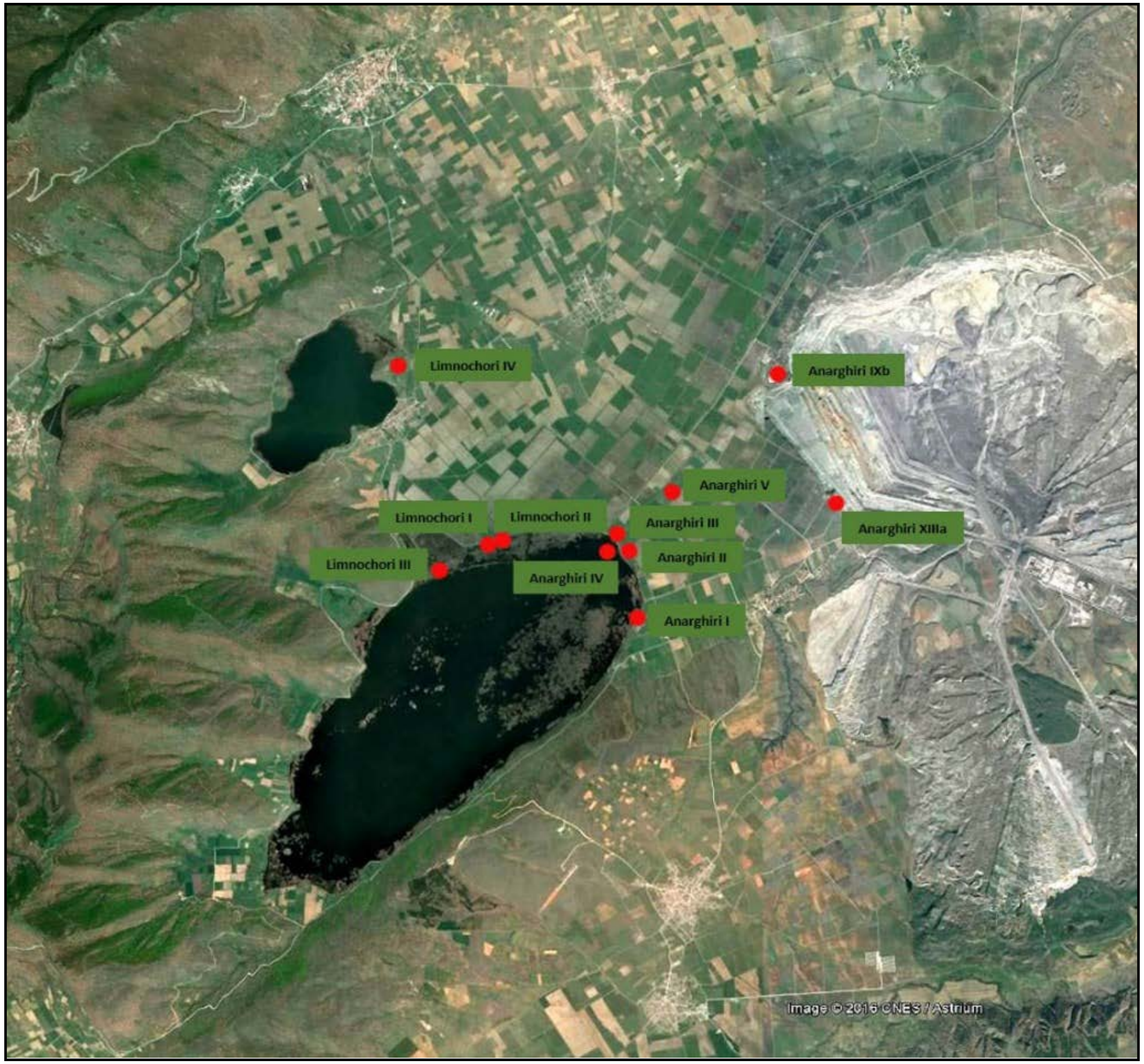


Fig. 5 Anarghiri IXb excavation at the edge of Amindeon Lignite Mining Zone (2016).

Fig. 6 Aerial view of the excavation (2015).

Fig. 7 Excavated areas and surfaces of Anarghiri IXb.

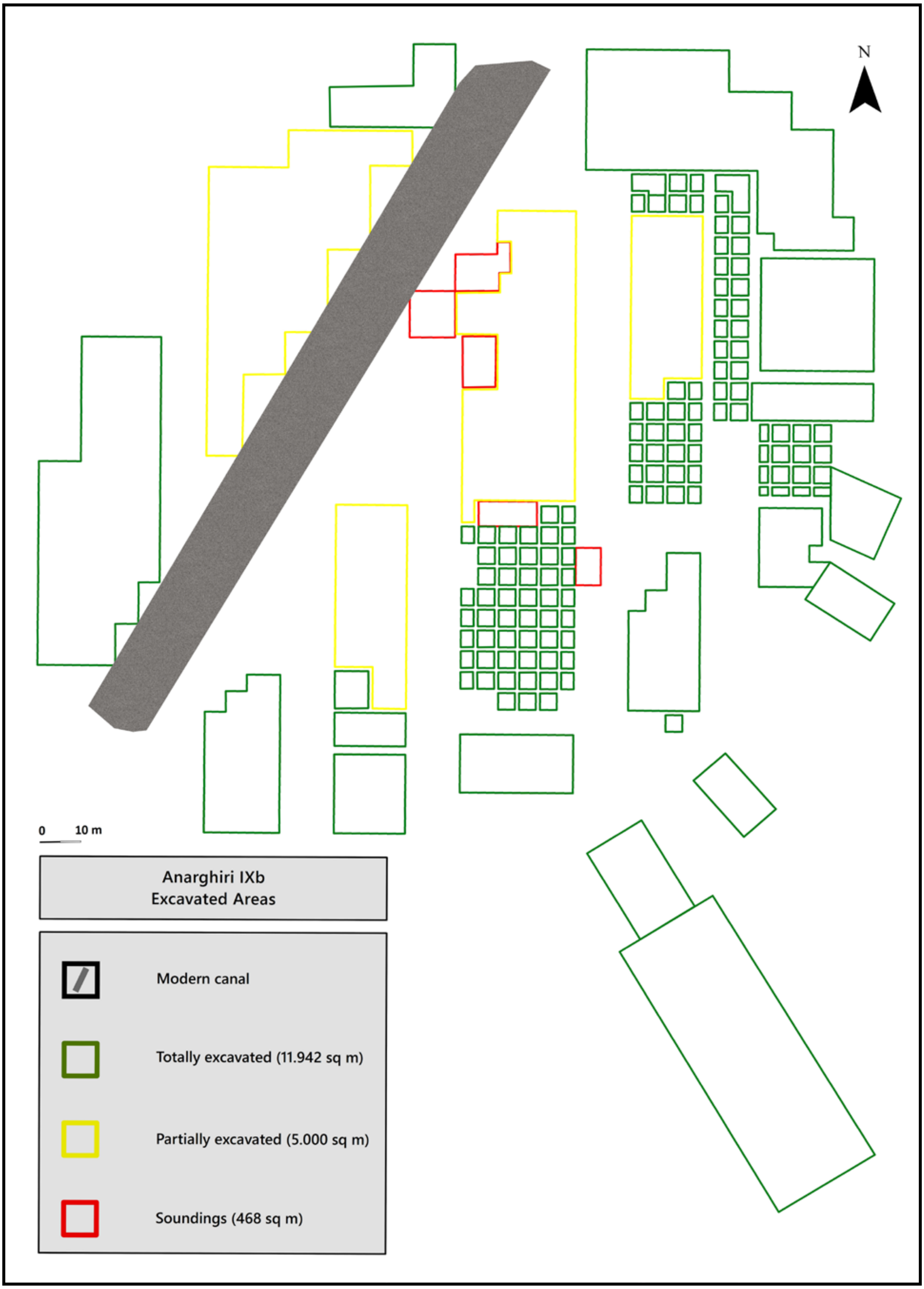


Fig. 8 Selected trenches whose profiles' stratigraphic sequence was analyzed.

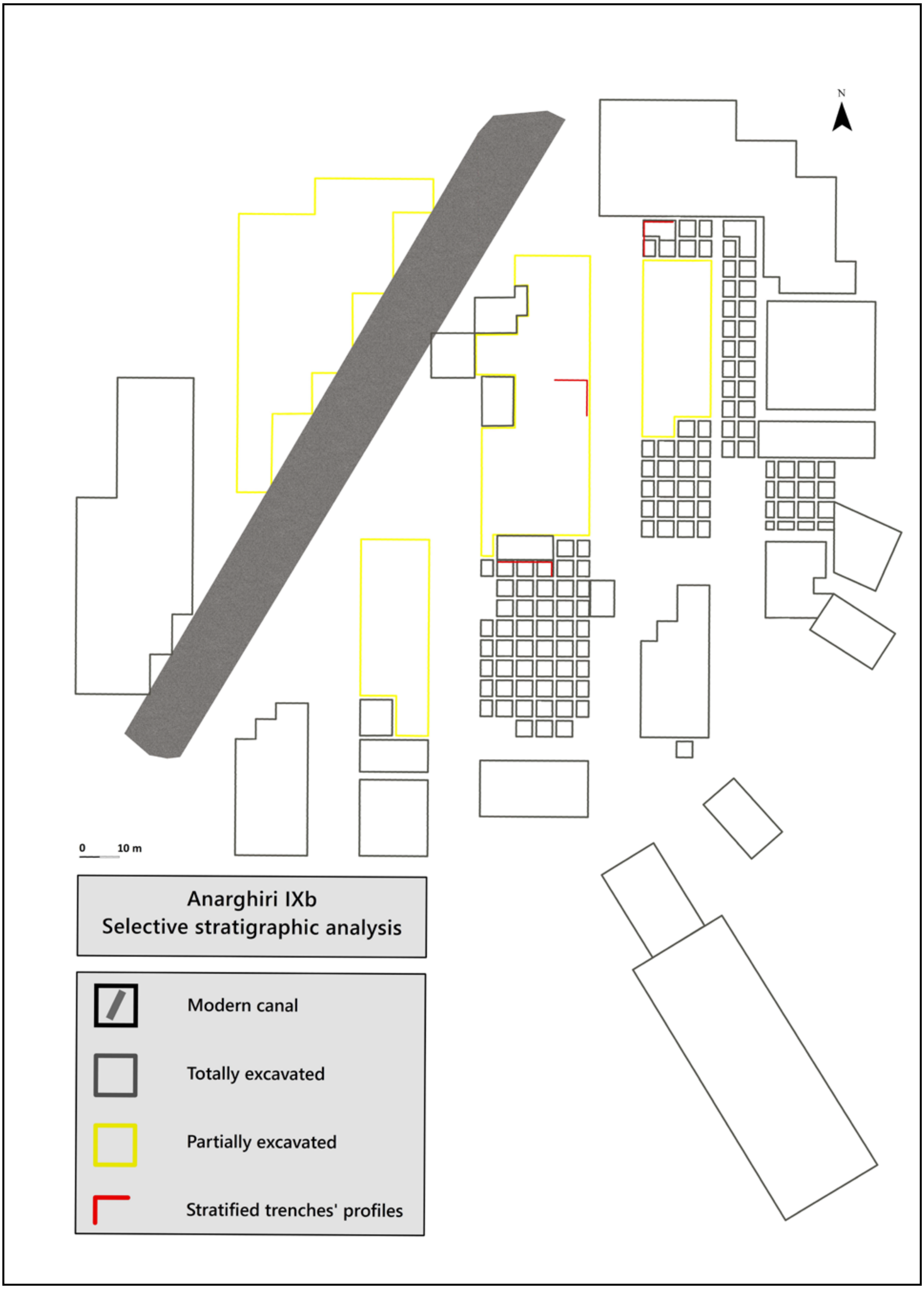
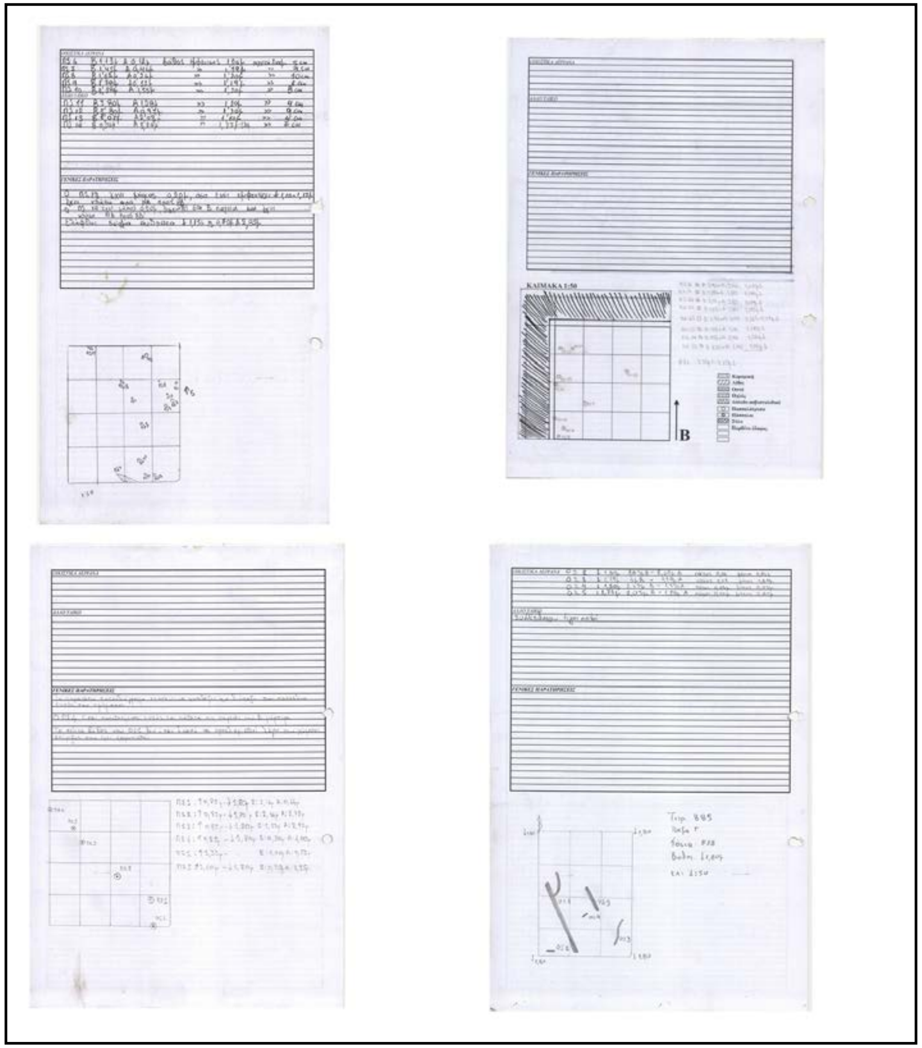
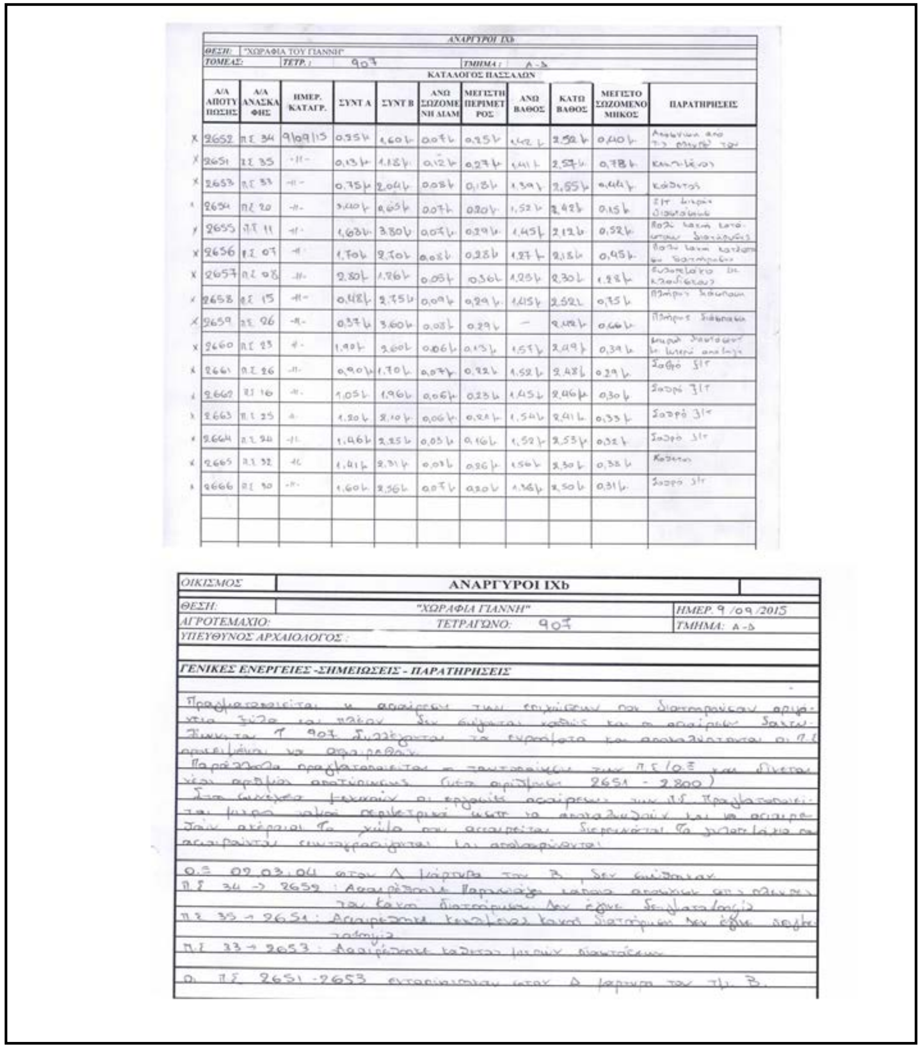


Fig. 9 Recording of structural wood in the rescue excavation of Anarghiri IXb **a.** Daily 10cm-thick arbitrary layer record sheets with information regarding structural wood **b.** Structural wood recording sheet.



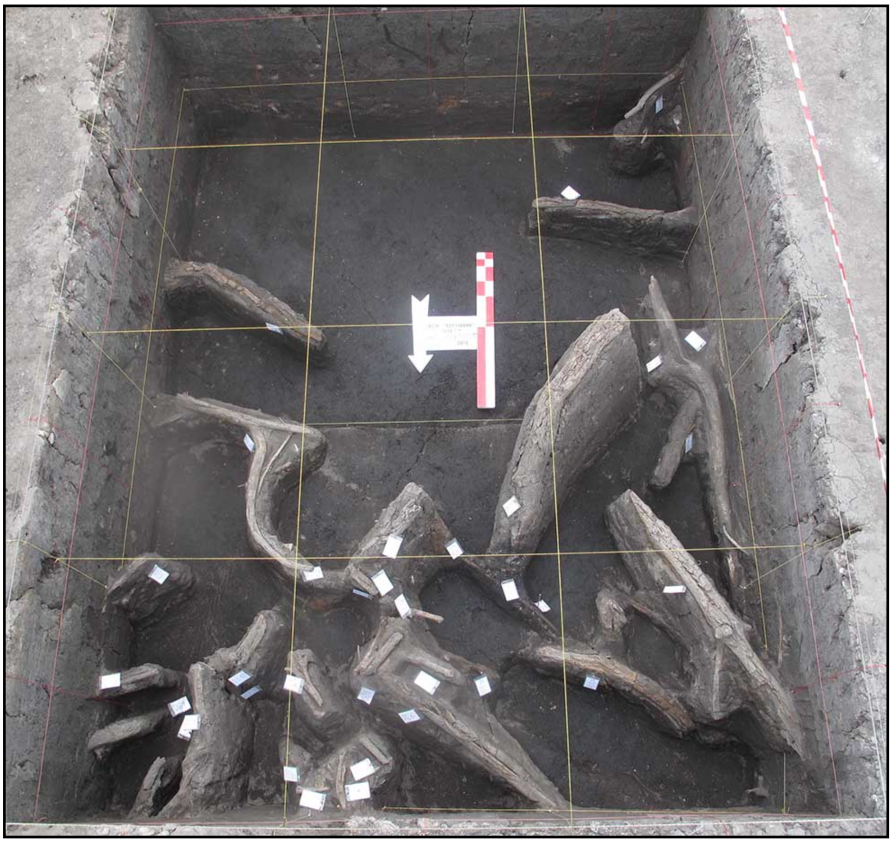
a



b

Fig. 10 Excavational treatment of structural wood **a.** Exposed vertical posts **b.** Exposed horizontal wood.

a

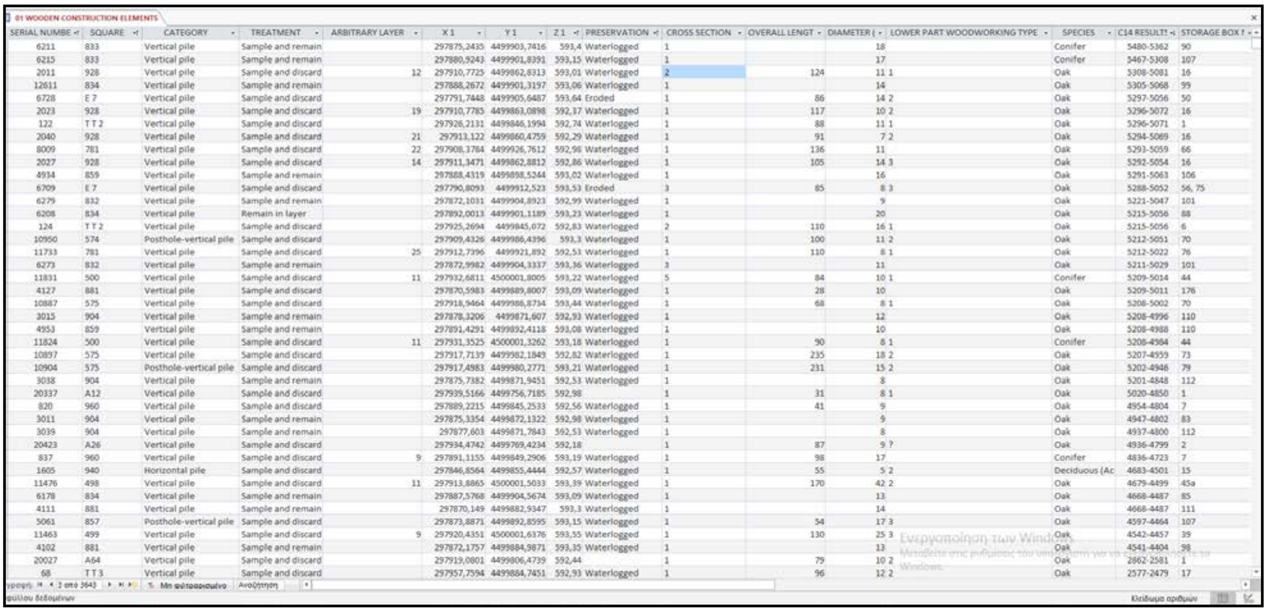


b

Fig. 11 Excavational treatment of structural wood. Exposed clusters of vertical posts and horizontal wooden elements.

Fig. 12 Sampling of structural wood during 2016 campaign.

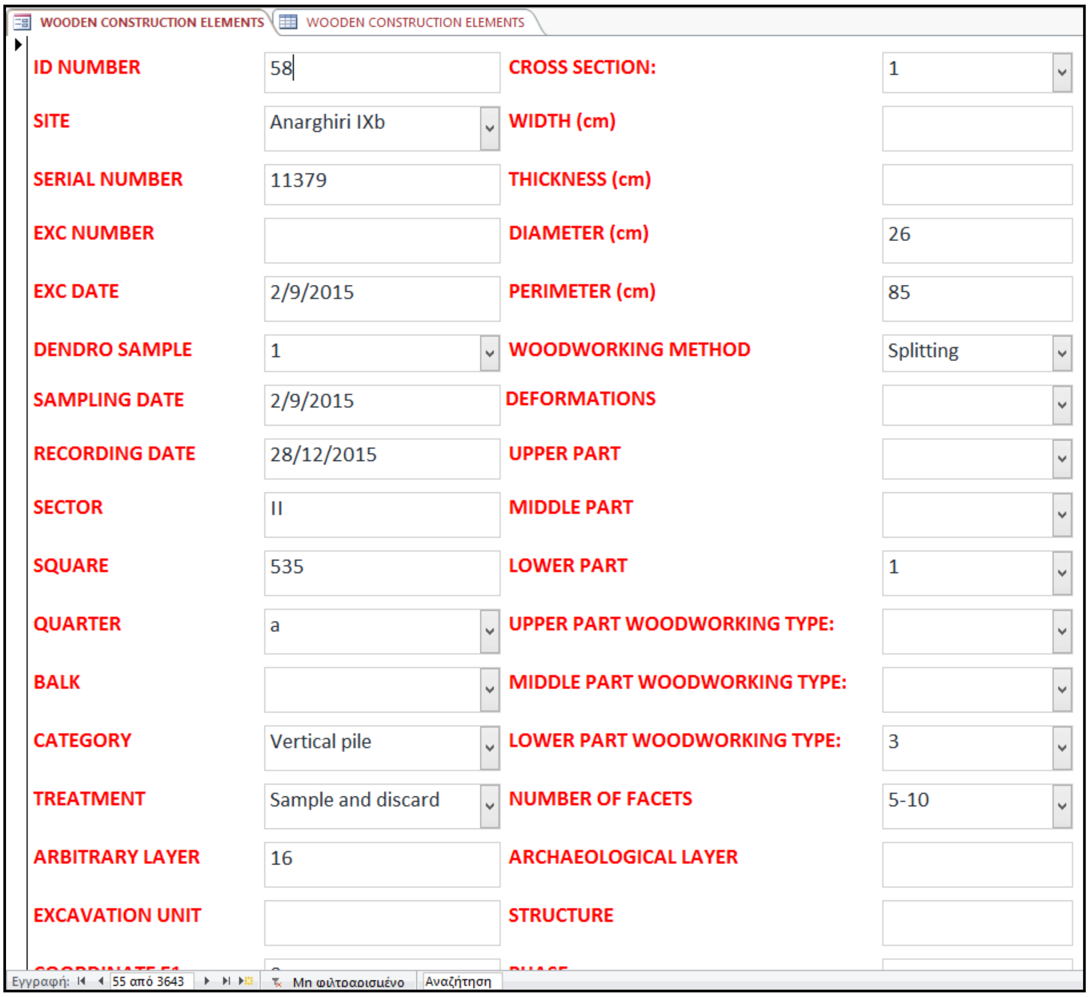
Fig. 13 Structural wood Data Base **a.** Indicative table's fields **b.** Indicative form's fields.



01 WOODEN CONSTRUCTION ELEMENTS

SERIAL NUMBE	SQUARE	CATEGORY	TREATMENT	ARBITRARY LAYER	X 1	Y 1	Z 1	PRESERVATION	CROSS SECTION	OVERALL LENGT	DIAMETER (	LOWER PART WOODWORKING TYPE	SPECIES	C14 RESULTS	STORAGE BOX N
6211	833	Vertical pile	Sample and remain		297875,2435	4499903,7416	593,4	Waterlogged	1		18		Conifer	5480-5362	90
6215	833	Vertical pile	Sample and remain		297880,9243	4499901,8391	593,15	Waterlogged	1		17		Conifer	5467-5308	107
2011	928	Vertical pile	Sample and discard	12	297910,7725	4499862,8313	593,01	Waterlogged	2	124	11	1	Oak	5308-5081	16
12611	834	Vertical pile	Sample and remain		297888,2672	4499901,3197	593,06	Waterlogged	1		14		Oak	5305-5068	99
6728	E 7	Vertical pile	Sample and discard		297791,7448	4499905,6487	593,64	Eroded	1	86	14	2	Oak	5297-5056	50
2023	928	Vertical pile	Sample and discard	19	297910,7785	4499863,0898	592,37	Waterlogged	1	117	10	2	Oak	5296-5072	16
122	T T 2	Vertical pile	Sample and discard		297926,2131	4499846,1994	592,74	Waterlogged	1	88	11	1	Oak	5296-5071	1
2040	928	Vertical pile	Sample and discard	21	297913,122	4499860,4759	592,29	Waterlogged	1	91	7	2	Oak	5294-5069	16
8009	781	Vertical pile	Sample and discard	22	297908,3784	4499926,7612	592,98	Waterlogged	1	136	11		Oak	5293-5059	66
2027	928	Vertical pile	Sample and discard	14	297911,3471	4499862,8812	592,86	Waterlogged	1	105	14	3	Oak	5292-5054	16
4934	859	Vertical pile	Sample and remain		297888,4319	4499898,5244	593,02	Waterlogged	1		16		Oak	5291-5063	106
6709	E 7	Vertical pile	Sample and discard		297790,8093	4499912,523	593,53	Eroded	3	85	8	3	Oak	5288-5052	56, 75
6279	832	Vertical pile	Sample and remain		297872,1031	4499904,8923	592,99	Waterlogged	1		9		Oak	5221-5047	101
6208	834	Vertical pile	Remain in layer		297892,0013	4499901,1189	593,23	Waterlogged	1		20		Oak	5215-5056	88
124	T T 2	Vertical pile	Sample and discard		297925,2694	4499845,072	592,83	Waterlogged	2	110	16	1	Oak	5215-5056	6
10950	574	Posthole-vertical pile	Sample and discard		297909,4326	4499986,4396	593,3	Waterlogged	1	100	11	2	Oak	5212-5051	70
11733	781	Vertical pile	Sample and discard	25	297912,7396	4499921,892	592,53	Waterlogged	1	110	8	1	Oak	5212-5022	76
6273	832	Vertical pile	Sample and remain		297872,9982	4499904,3337	593,36	Waterlogged	3		11		Oak	5211-5029	101
11831	500	Vertical pile	Sample and discard	11	297932,6811	4500001,8005	593,22	Waterlogged	5	84	10	1	Conifer	5209-5014	44
4127	881	Vertical pile	Sample and discard		297870,5983	4499889,8007	593,09	Waterlogged	1	28	10		Oak	5209-5011	176
10887	575	Vertical pile	Sample and discard		297918,9464	4499986,8734	593,44	Waterlogged	1	68	8	1	Oak	5208-5002	70
3015	904	Vertical pile	Sample and remain		297878,3206	4499871,607	592,93	Waterlogged	1		12		Oak	5208-4996	110
4953	859	Vertical pile	Sample and remain		297891,4291	4499892,4118	593,08	Waterlogged	1		10		Oak	5208-4988	110
11824	500	Vertical pile	Sample and discard	11	297931,3525	4500001,3262	593,18	Waterlogged	1	90	8	1	Conifer	5208-4984	44
10897	575	Vertical pile	Sample and discard		297917,7139	4499982,1849	592,82	Waterlogged	1	235	18	2	Oak	5207-4959	73
10904	575	Posthole-vertical pile	Sample and discard		297917,4983	4499980,2771	593,21	Waterlogged	1	231	15	2	Oak	5202-4946	79
3038	904	Vertical pile	Sample and remain		297875,7382	4499871,9451	592,53	Waterlogged	1		8		Oak	5201-4848	112
20337	A12	Vertical pile	Sample and discard		297939,5166	4499756,7185	592,98		1	31	8	1	Oak	5020-4850	1
820	960	Vertical pile	Sample and discard		297889,2215	4499845,2533	592,56	Waterlogged	1	41	9		Oak	4954-4804	7
3011	904	Vertical pile	Sample and remain		297875,3354	4499872,1322	592,98	Waterlogged	1		9		Oak	4947-4802	83
3039	904	Vertical pile	Sample and remain		297877,603	4499871,7843	592,53	Waterlogged	1		8		Oak	4937-4800	112
20423	A26	Vertical pile	Sample and discard		297934,4742	4499769,4234	592,18		1	87	9	?	Oak	4936-4799	2
837	960	Vertical pile	Sample and discard	9	297891,1155	4499849,2906	593,19	Waterlogged	1	98	17		Conifer	4836-4723	7
1605	940	Horizontal pile	Sample and discard		297846,8564	4499855,4444	592,57	Waterlogged	1	55	5	2	Deciduous (Ac	4683-4501	15
11476	498	Vertical pile	Sample and discard	11	297913,8865	4500001,5033	593,39	Waterlogged	1	170	42	2	Oak	4679-4499	45a
6178	834	Vertical pile	Sample and remain		297887,5768	4499904,5674	593,09	Waterlogged	1		13		Oak	4668-4487	85
4111	881	Vertical pile	Sample and remain		297870,149	4499882,9347	593,3	Waterlogged	1		14		Oak	4668-4487	111
5061	857	Posthole-vertical pile	Sample and discard		297873,8871	4499892,8595	593,15	Waterlogged	1	54	17	3	Oak	4597-4464	107
11463	499	Vertical pile	Sample and discard	9	297920,4351	4500001,6376	593,55	Waterlogged	1	130	25	3	Oak	4542-4457	39
4102	881	Vertical pile	Sample and remain		297872,1757	4499884,9871	593,35	Waterlogged	1		13		Oak	4541-4404	98
20027	A64	Vertical pile	Sample and discard		297919,0801	4499806,4739	592,44		1	79	10	2	Oak	2862-2581	1
68	T T 3	Vertical pile	Sample and discard		297957,7594	4499884,7451	592,93	Waterlogged	1	96	12	2	Oak	2577-2479	17

a



WOODEN CONSTRUCTION ELEMENTS | WOODEN CONSTRUCTION ELEMENTS

ID NUMBER	58	CROSS SECTION:	1
SITE	Anarghiri IXb	WIDTH (cm)	
SERIAL NUMBER	11379	THICKNESS (cm)	
EXC NUMBER		DIAMETER (cm)	26
EXC DATE	2/9/2015	PERIMETER (cm)	85
DENDRO SAMPLE	1	WOODWORKING METHOD	Splitting
SAMPLING DATE	2/9/2015	DEFORMATIONS	
RECORDING DATE	28/12/2015	UPPER PART	
SECTOR	II	MIDDLE PART	
SQUARE	535	LOWER PART	1
QUARTER	a	UPPER PART WOODWORKING TYPE:	
BALK		MIDDLE PART WOODWORKING TYPE:	
CATEGORY	Vertical pile	LOWER PART WOODWORKING TYPE:	3
TREATMENT	Sample and discard	NUMBER OF FACETS	5-10
ARBITRARY LAYER	16	ARCHAEOLOGICAL LAYER	
EXCAVATION UNIT		STRUCTURE	

Εγγραφή: 55 από 3643 Μη φιλτραρισμένο Αναζήτηση

b

Fig. 14 ARC GIS Software and the Anarghiri IXb Arc Map file.

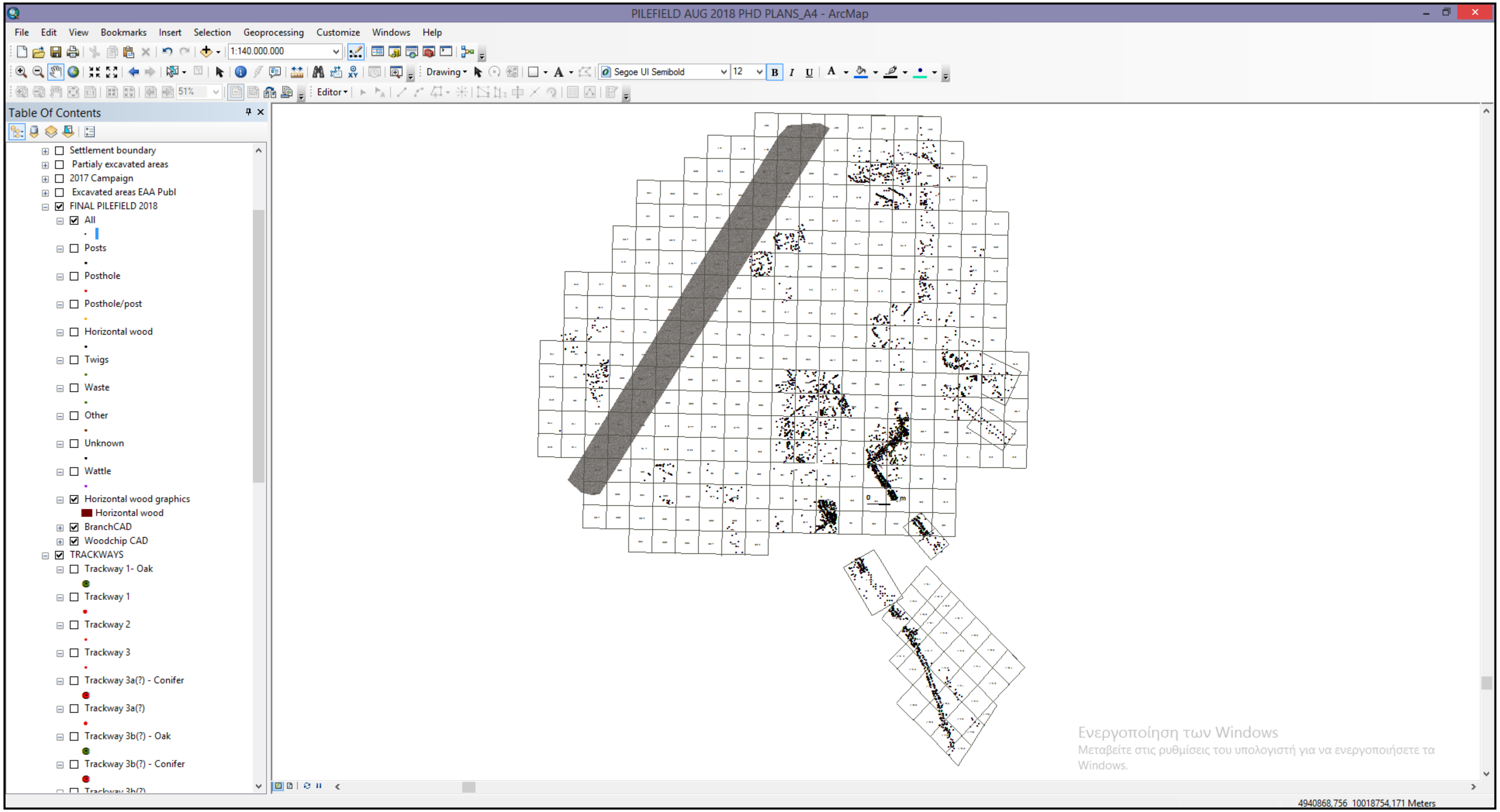
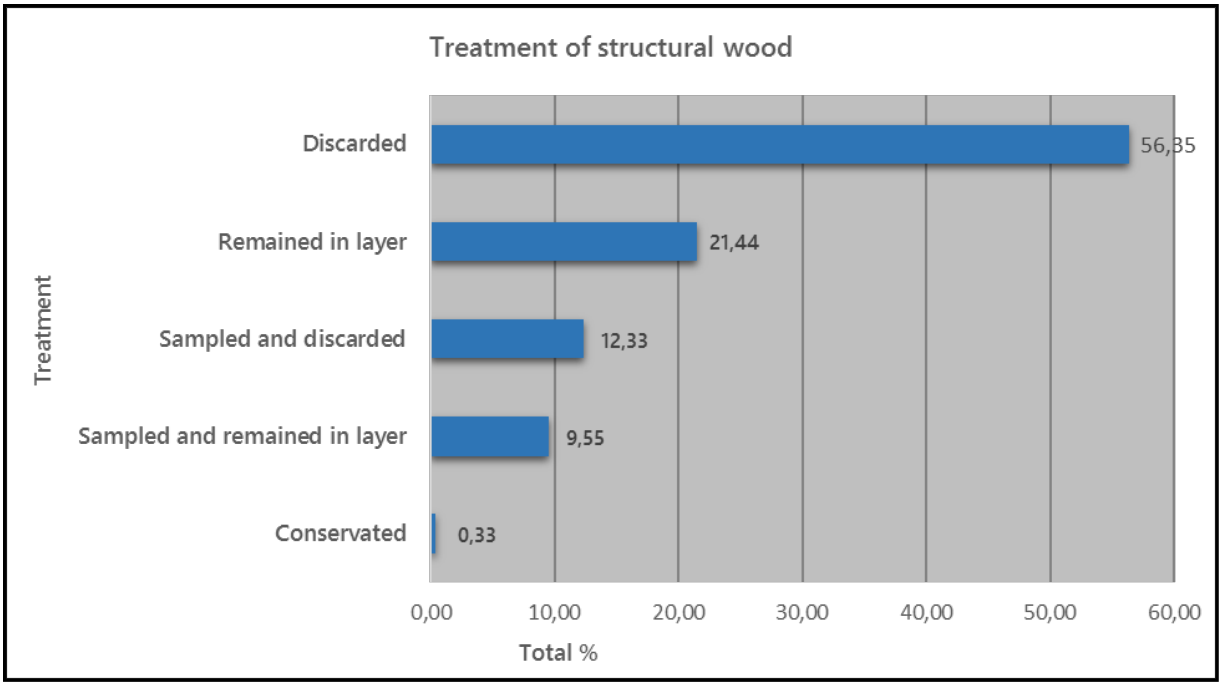


Fig. 15 Treatment of structural wood in the rescue excavation of Anarghiri IXb **a.** Overall number of recorded elements **b.** Rates in %.

Treatment	n Elements
Discarded	2053
Remained in layer	781
Sampled and discarded	449
Sampled and remained in layer	348
Conservated	12
Total	**3643**

a

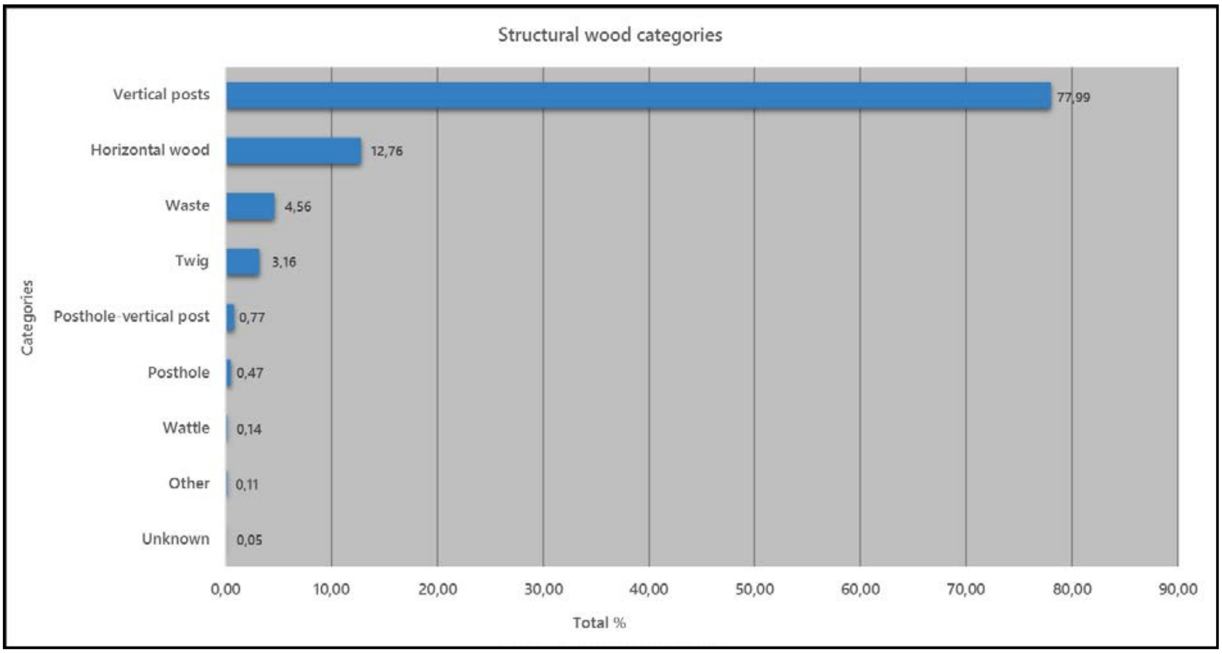


b

Fig. 16 The categories of structural wood recorded during the excavation of Anarghiri IXb **a.** Overall number of elements **b.** Rates in %.

Category	**n Elements**
Vertical posts	2841
Horizontal wood	465
Waste	166
Twig	115
Posthole-vertical post	28
Posthole	17
Wattle	5
Other	4
Unknown	2
Total	**3643**

a

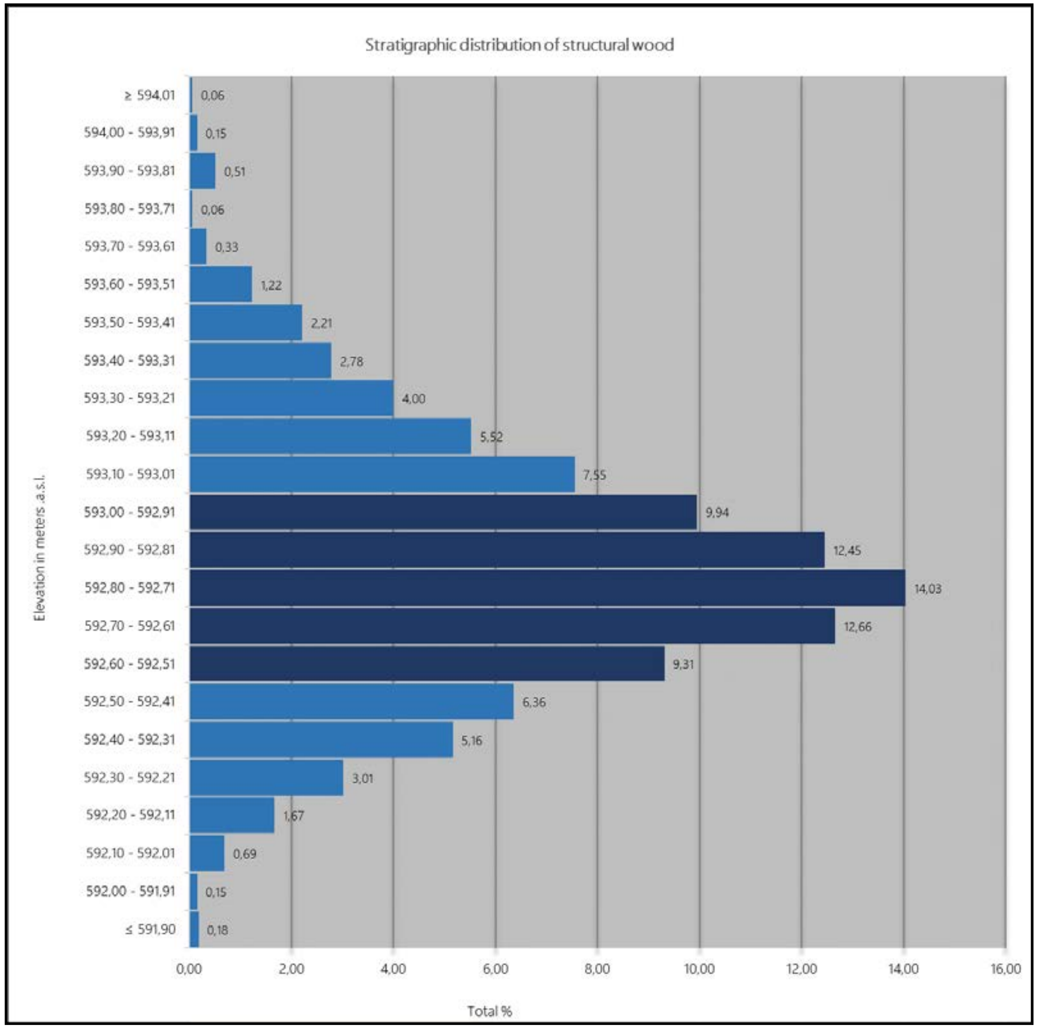


b

Fig. 17 The vertical distribution of structural wood of 2013-2016 excavation's campaigns **a.** Overall number of recorded elements **b.** Rates in %.

Elevation (In meters above sea level)	**n Elements**
≥ 594,01	2
594,00 - 593,91	5
593,90 - 593,81	17
593,80 - 593,71	2
593,70 - 593,61	11
593,60 - 593,51	41
593,50 - 593,41	74
593,40 - 593,31	93
593,30 - 593,21	134
593,20 - 593,11	185
593,10 - 593,01	253
593,00 - 592,91	333
592,90 - 592,81	417
592,80 - 592,71	470
592,70 - 592,61	424
592,60 - 592,51	312
592,50 - 592,41	213
592,40 - 592,31	173
592,30 - 592,21	101
592,20 - 592,11	56
592,10 - 592,01	23
592,00 - 591,91	5
≤ 591,90	6
Total	**3350**

a



b

Fig. 18 The distribution of structural wood in Southeast Sector of Anarghiri IXb excavation.

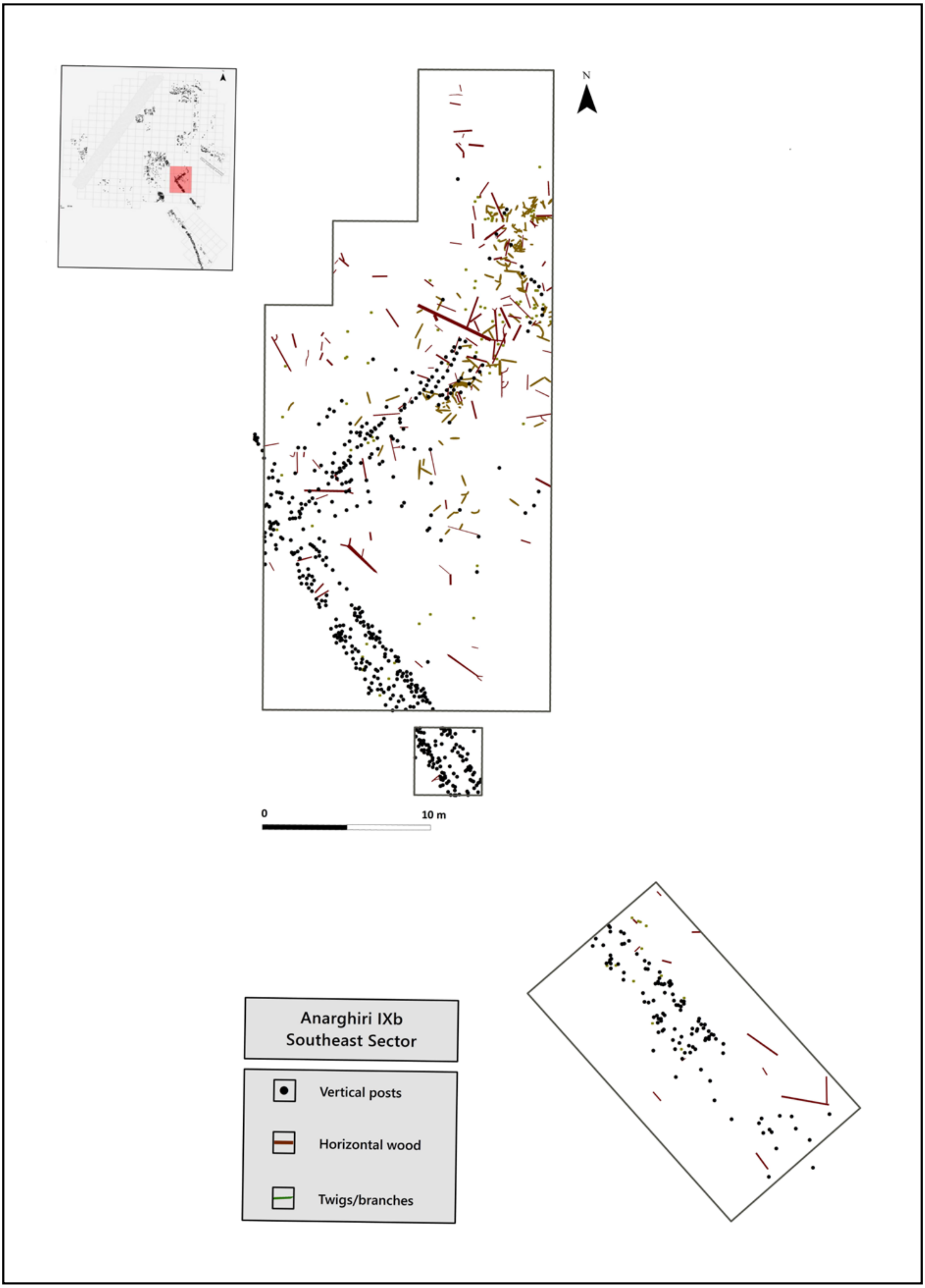


Fig. 19 The distribution of structural wood in Southern Sector of Anarghiri IXb excavation.

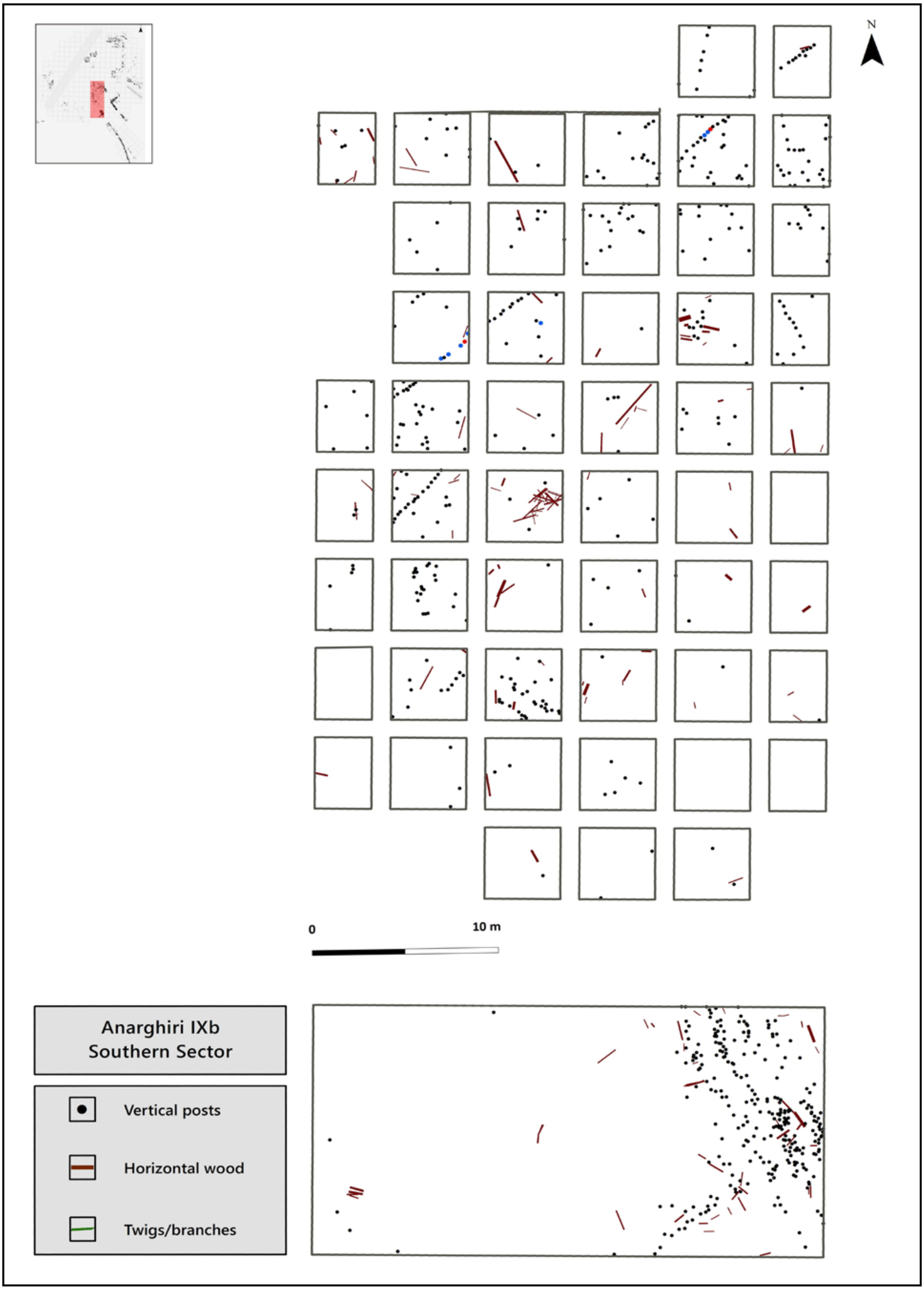


Fig. 20 The distribution of structural wood in Northern Sector of Anarghiri IXb excavation.

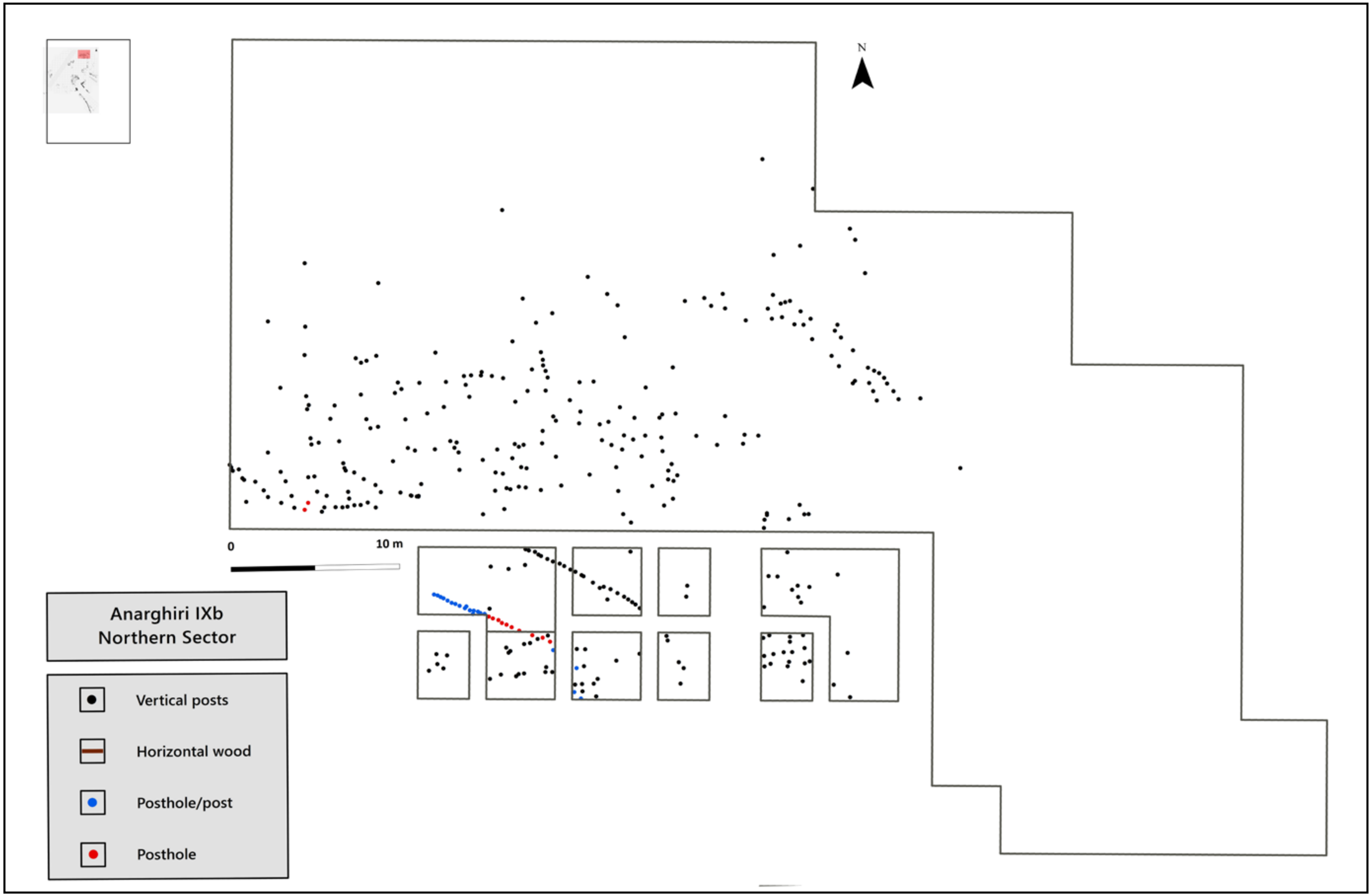


Fig. 21 The distribution of structural wood in Western Sector of Anarghiri IXb excavation.

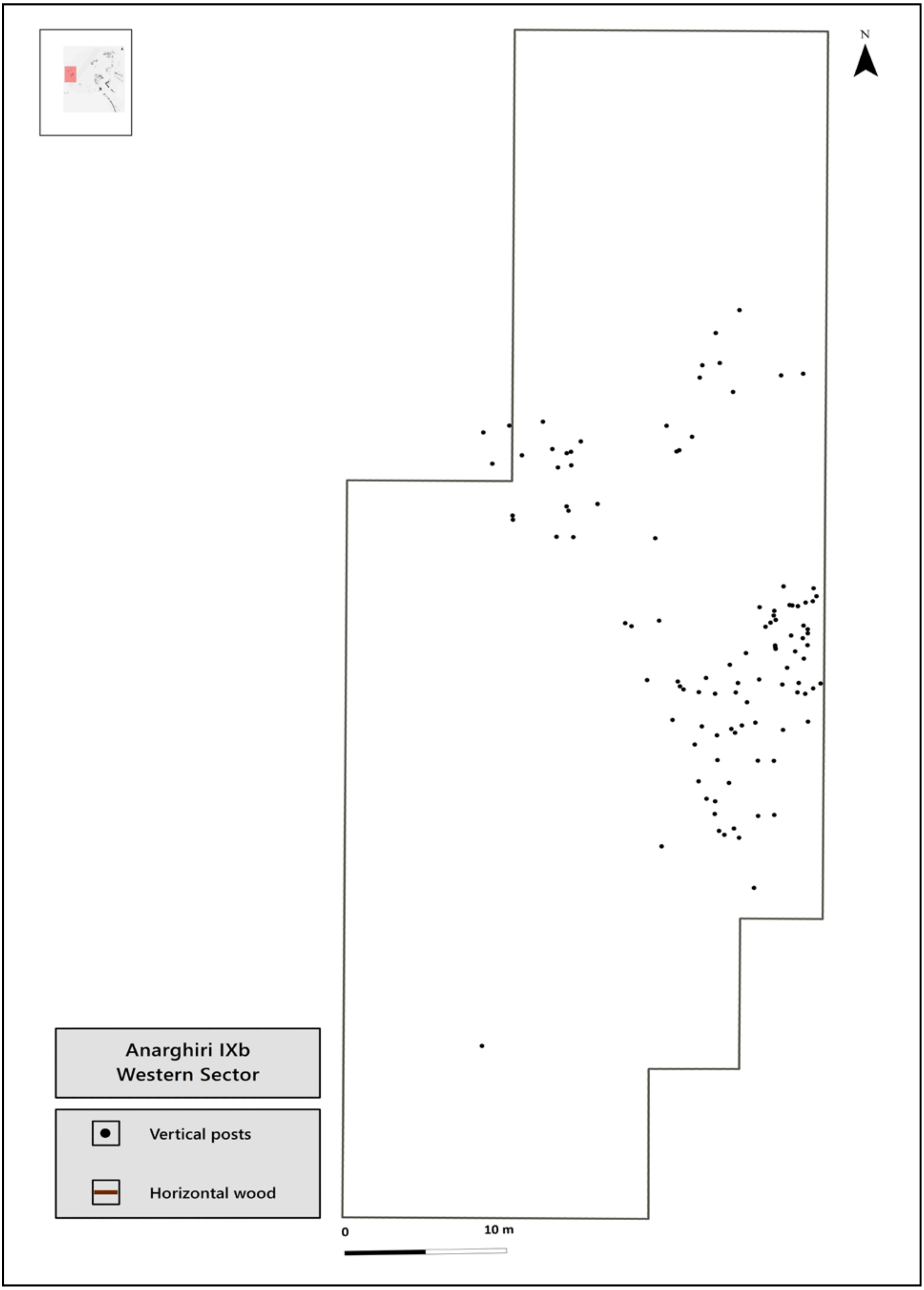


Fig. 22 The distribution of structural wood in 2017 Soundings of Anarghiri IXb excavation.

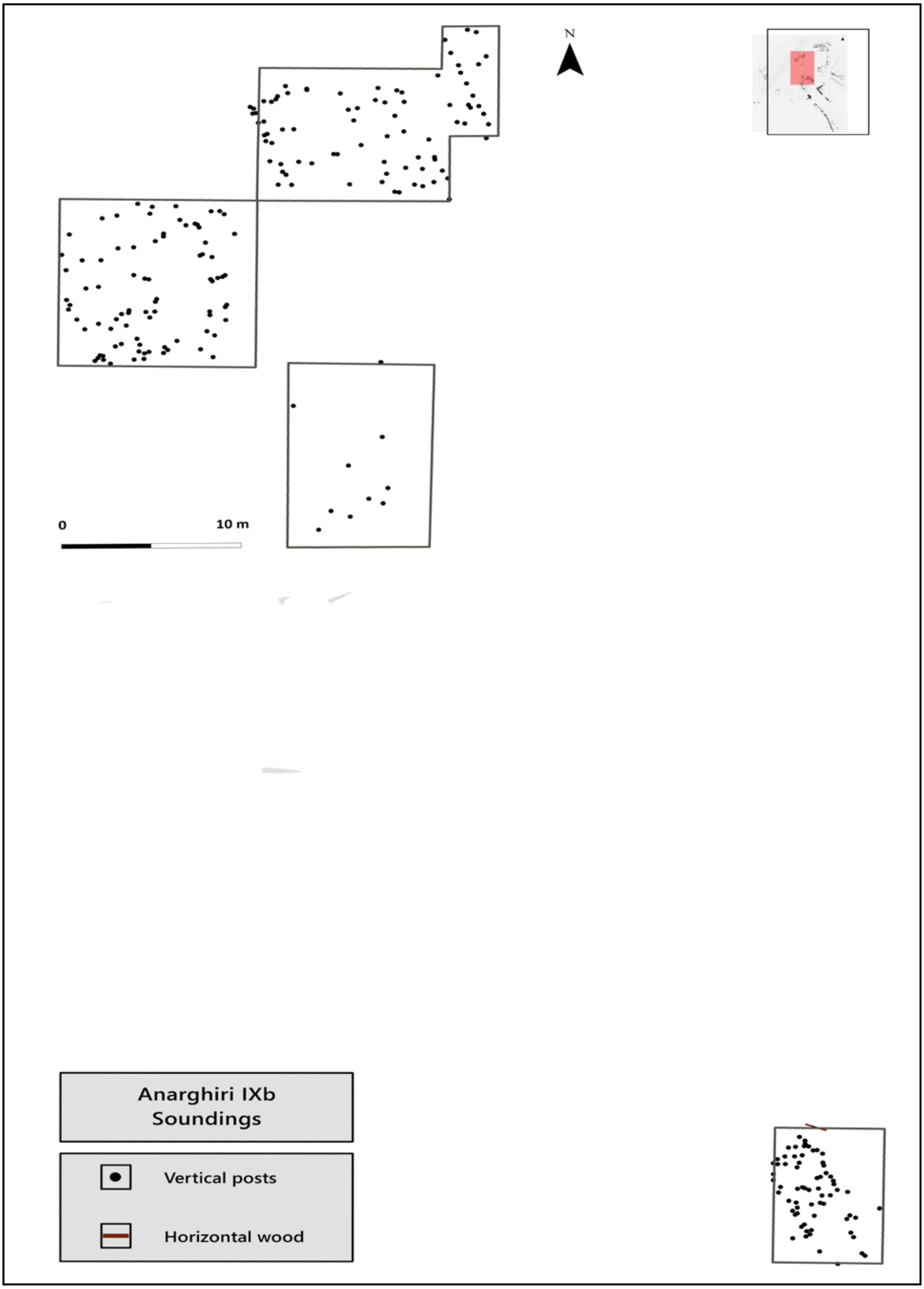
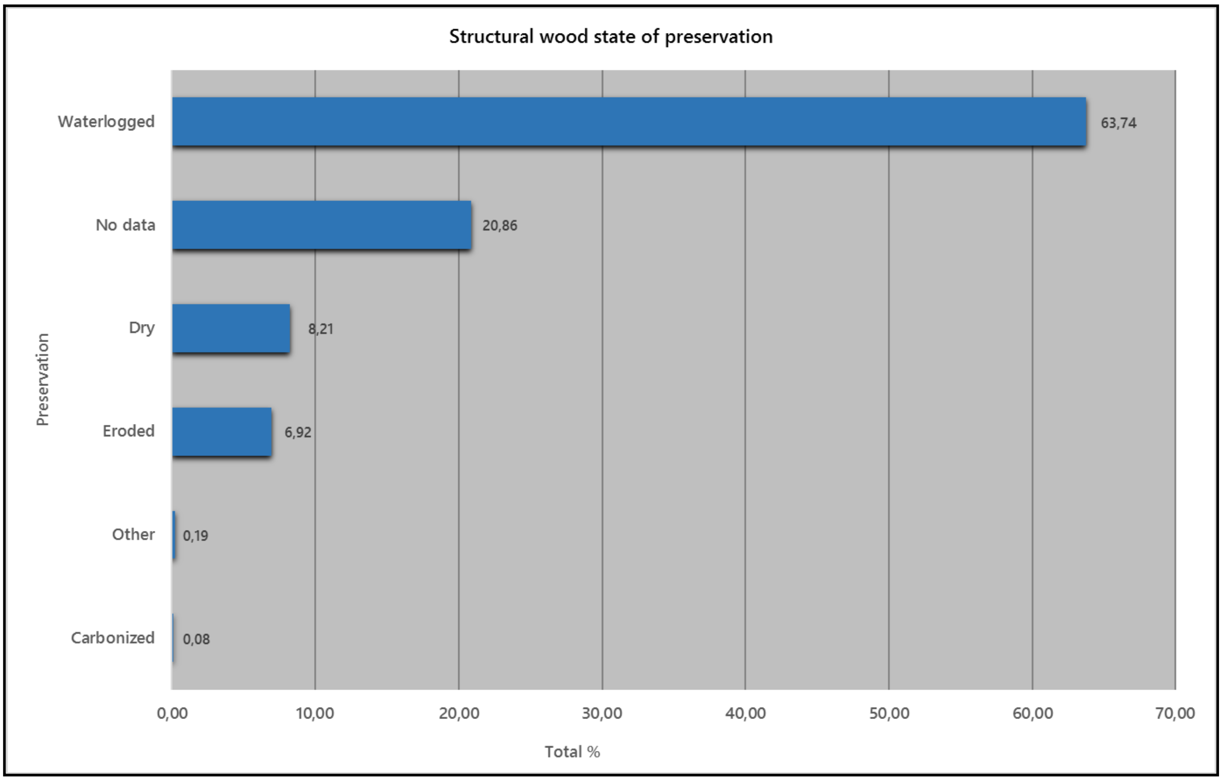


Fig. 23 The state of preservation of structural wood from Anarghiri IXb **a.** Overall number of recorded elements **b.** Rates in %.

State of preservation	n Elements
Waterlogged	2322
No data	760
Dry	299
Eroded	252
Other	7
Carbonized	3
Total	**3643**

a

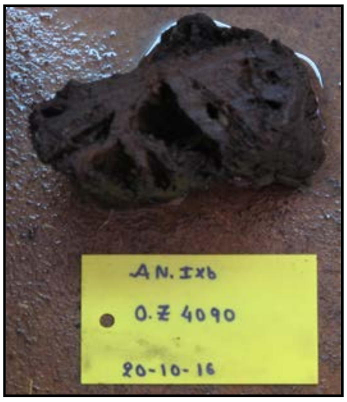


b

Fig. 24 State of preservation of structural wood **a.** During their excavation **b.** After the exposure for some days to weather conditions **c, d** Eroded wood.

a

b

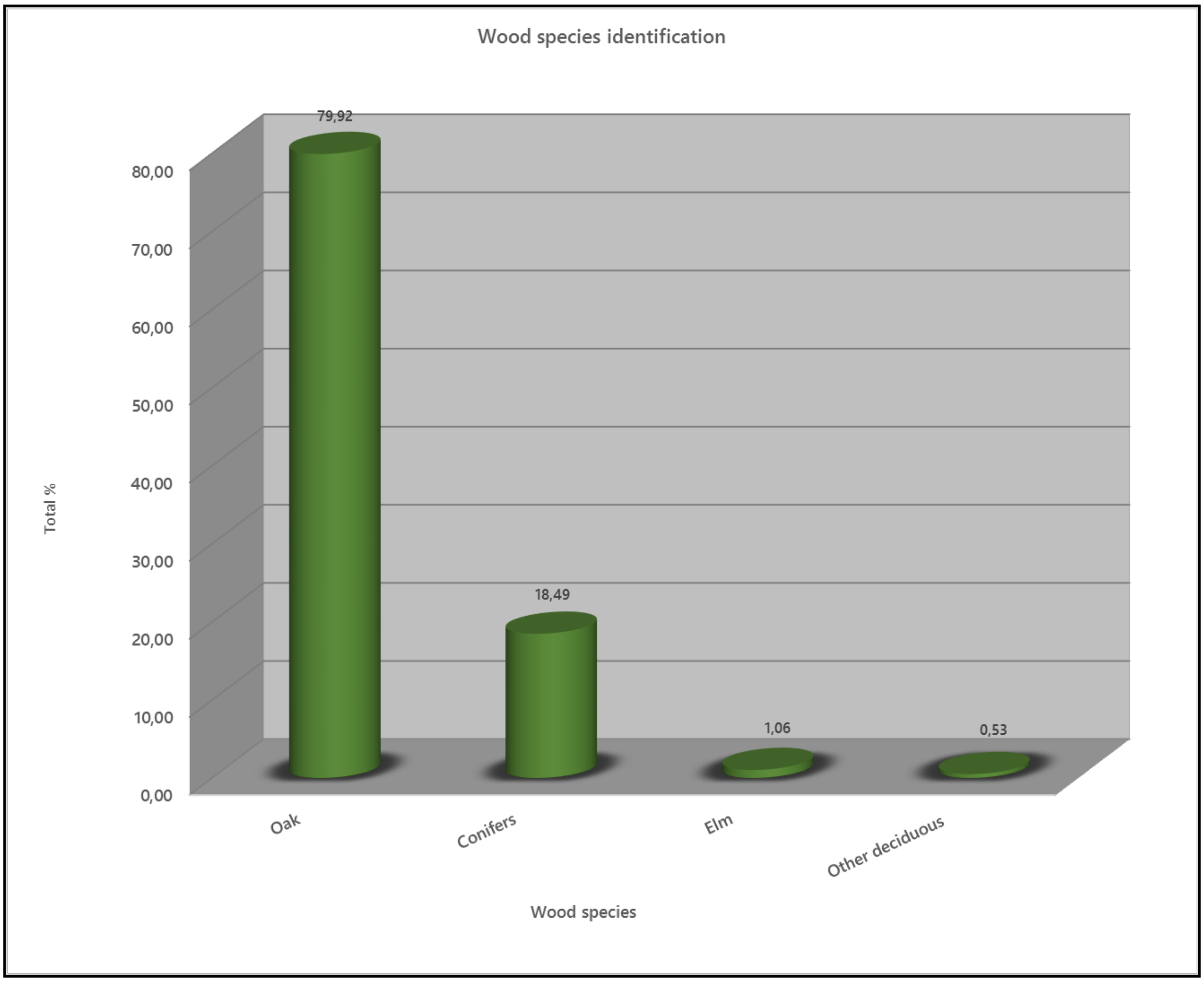


c **d**

Fig. 25 Wood species identification of Anarghiri IXb structural wood **a.** Overall number of identified elements **b.** Rates in %.

Wood species	**n Elements**
Oak	605
Conifers	140
Elm	8
Deciduous	4
Total	**757**

a

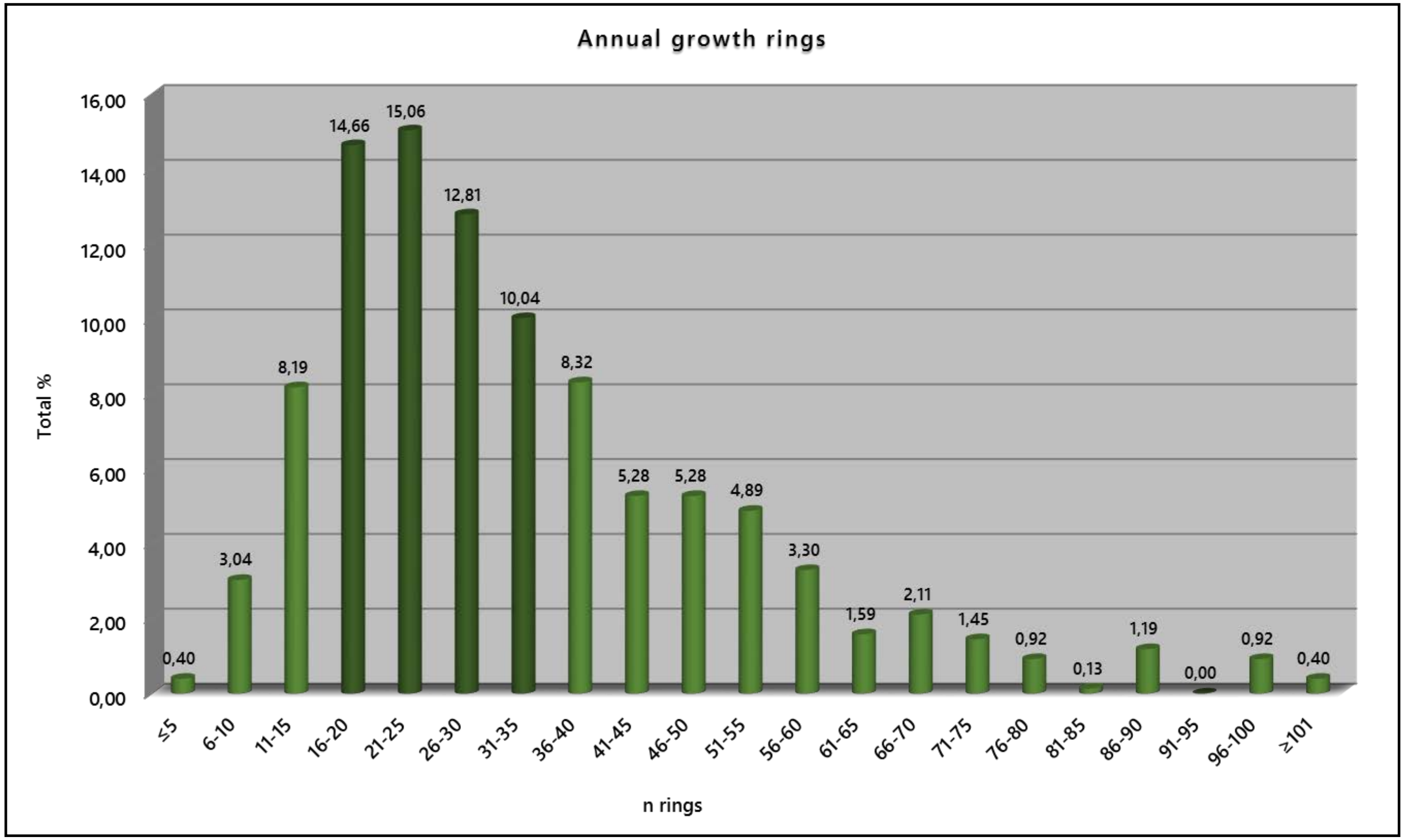


b

Fig. 26 Annual growth rings measured in sampled structural wood **a.** Overall number of measured annual rings **b.** Rates in %.

Annual growth rings	n Elements
≤5	3
6-10	23
11-15	62
16-20	111
21-25	114
26-30	97
31-35	76
36-40	63
41-45	40
46-50	40
51-55	37
56-60	25
61-65	12
66-70	16
71-75	11
76-80	7
81-85	1
86-90	9
91-95	0
96-100	7
≥101	3
Total	**757**

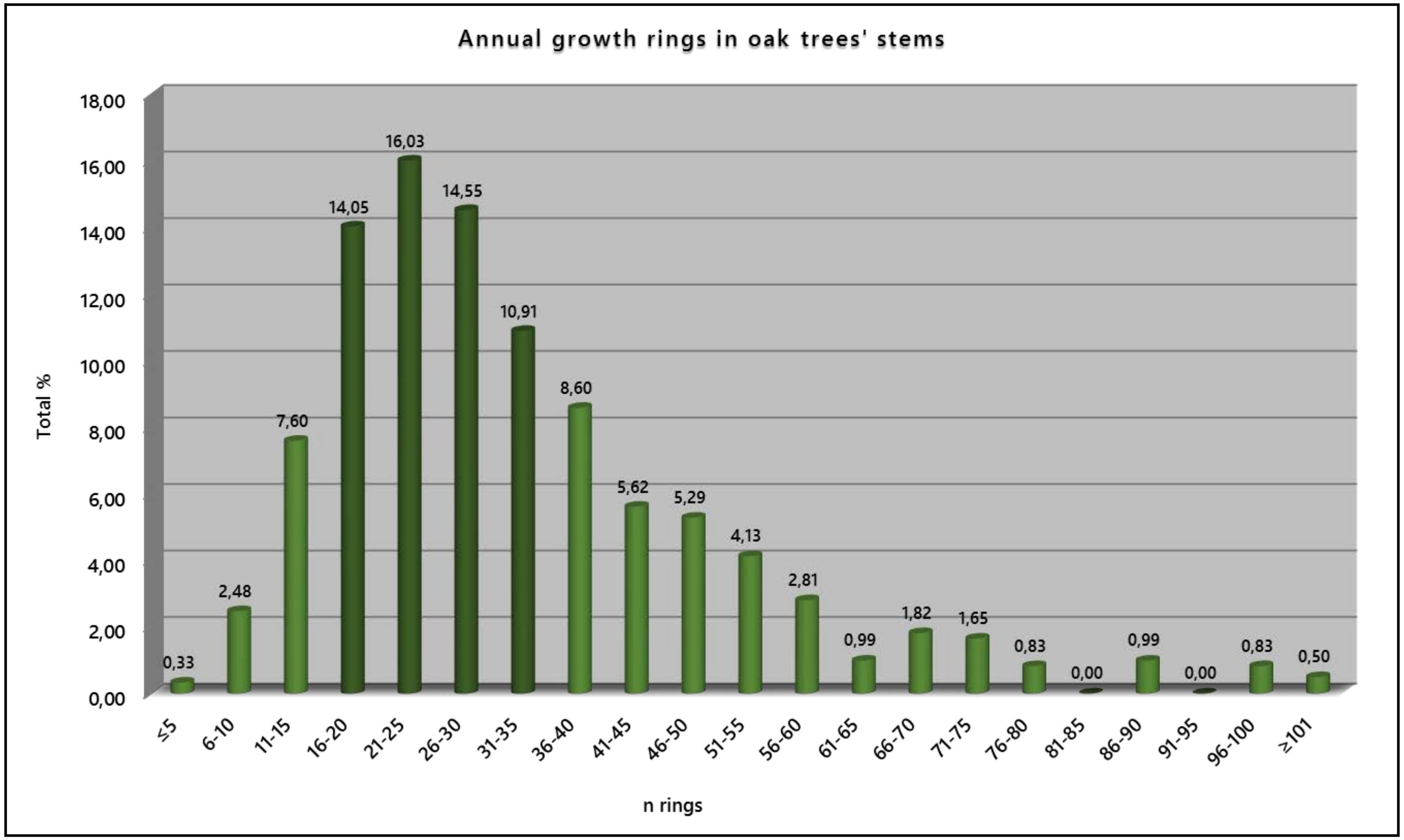
a



b

Fig. 27 Annual growth rings measured in oak trees' stems **a.** Overall number of measured annual rings in oak tree stems **b.** Rates in %.

Annual growth rings (Oaks)	n Elements
≤5	2
6-10	15
11-15	46
16-20	85
21-25	97
26-30	88
31-35	66
36-40	52
41-45	34
46-50	32
51-55	25
56-60	17
61-65	6
66-70	11
71-75	10
76-80	5
81-85	0
86-90	6
91-95	0
96-100	5
≥101	3
Total	**605**



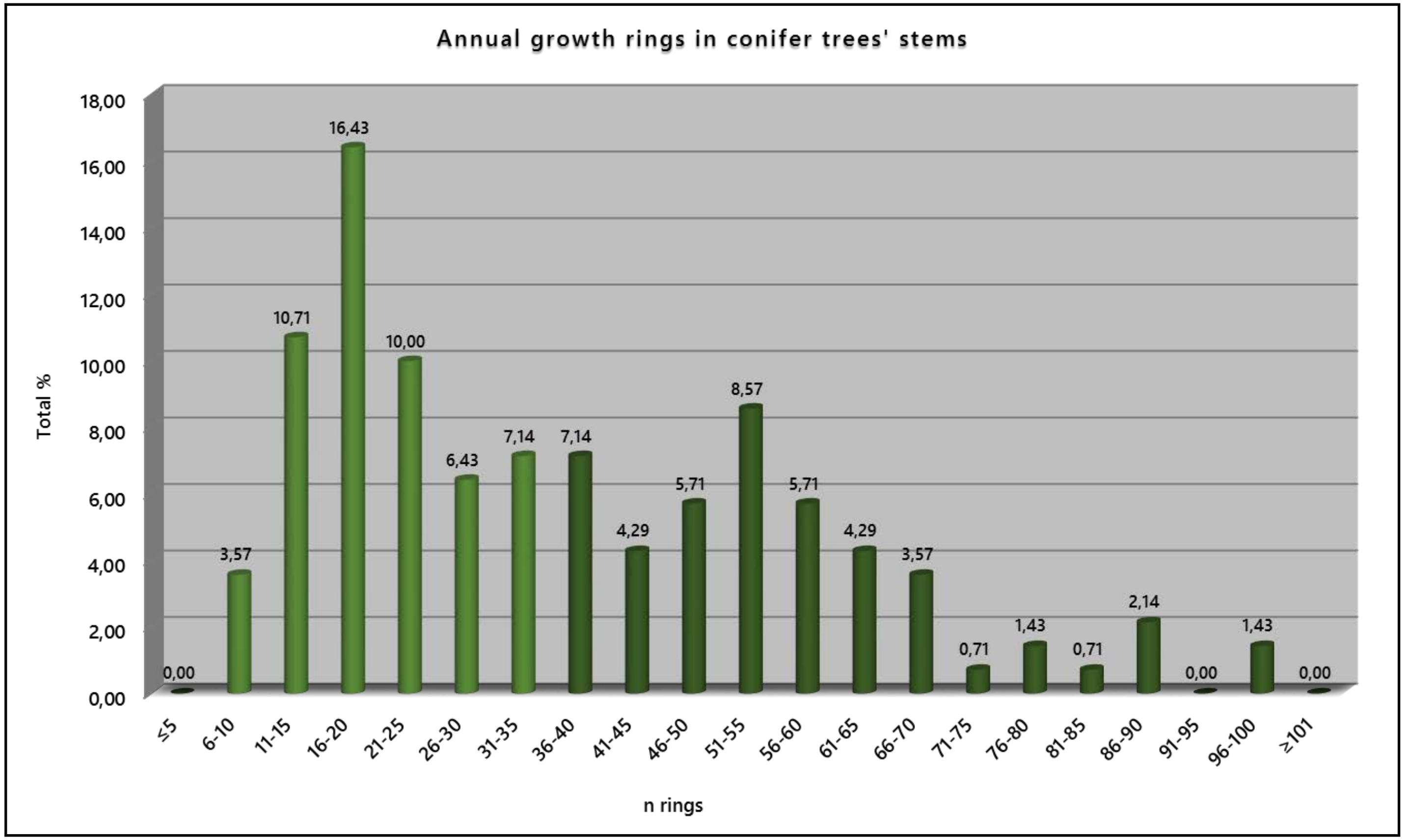
a

b

Fig. 28 Annual growth rings measured in conifer trees' stems **a.** Overall number of measured annual rings in conifer trees' stems **b.** Rates in %.

Annual growth rings (Conifers)	n Elements
≤5	0
6-10	5
11-15	15
16-20	23
21-25	14
26-30	9
31-35	10
36-40	10
41-45	6
46-50	8
51-55	12
56-60	8
61-65	6
66-70	5
71-75	1
76-80	2
81-85	1
86-90	3
91-95	0
96-100	2
≥101	0
Total	**140**

a



b

Fig. 29 Comparative chart with rates of annual growth rings measured in oak and conifer trees' stems.

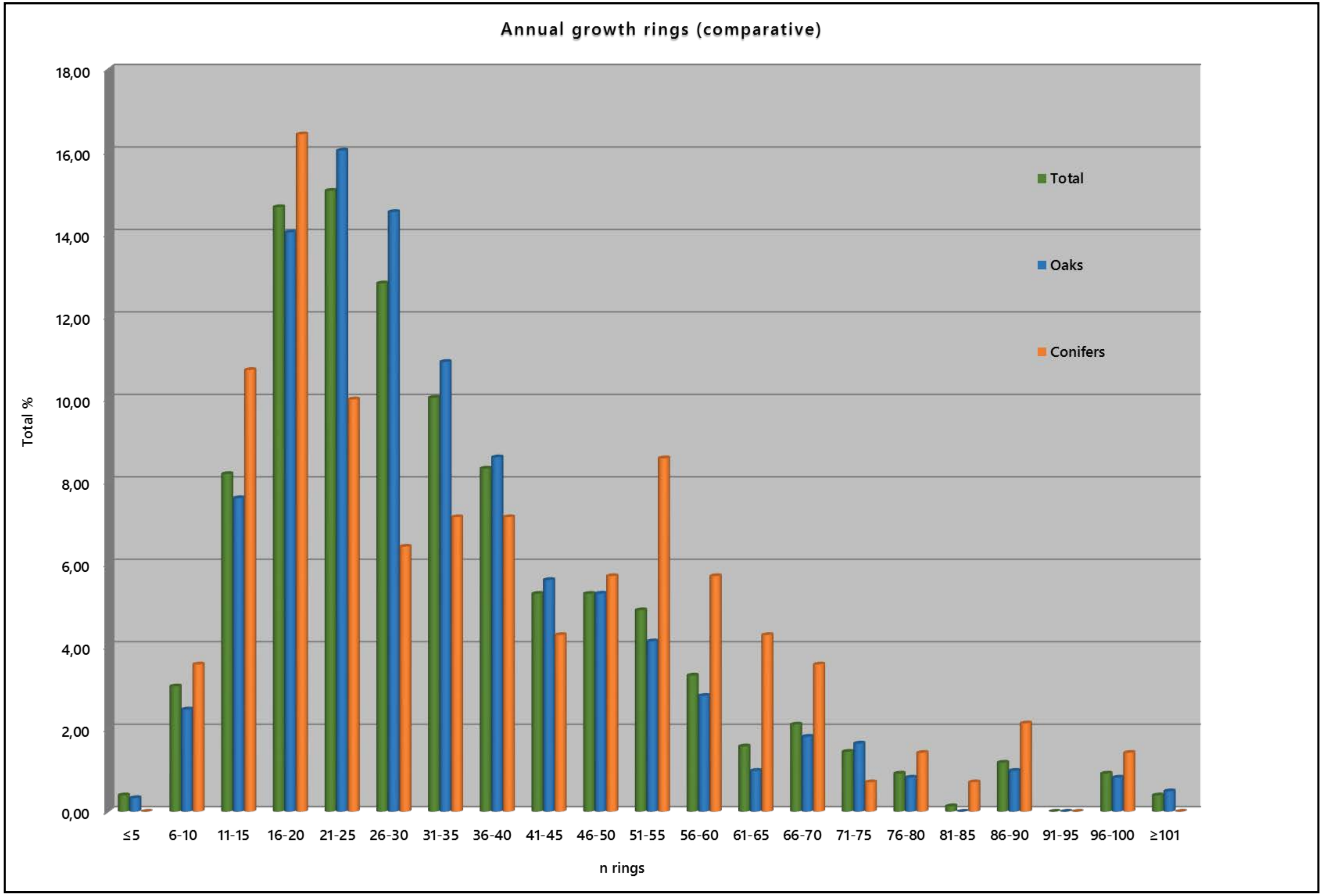
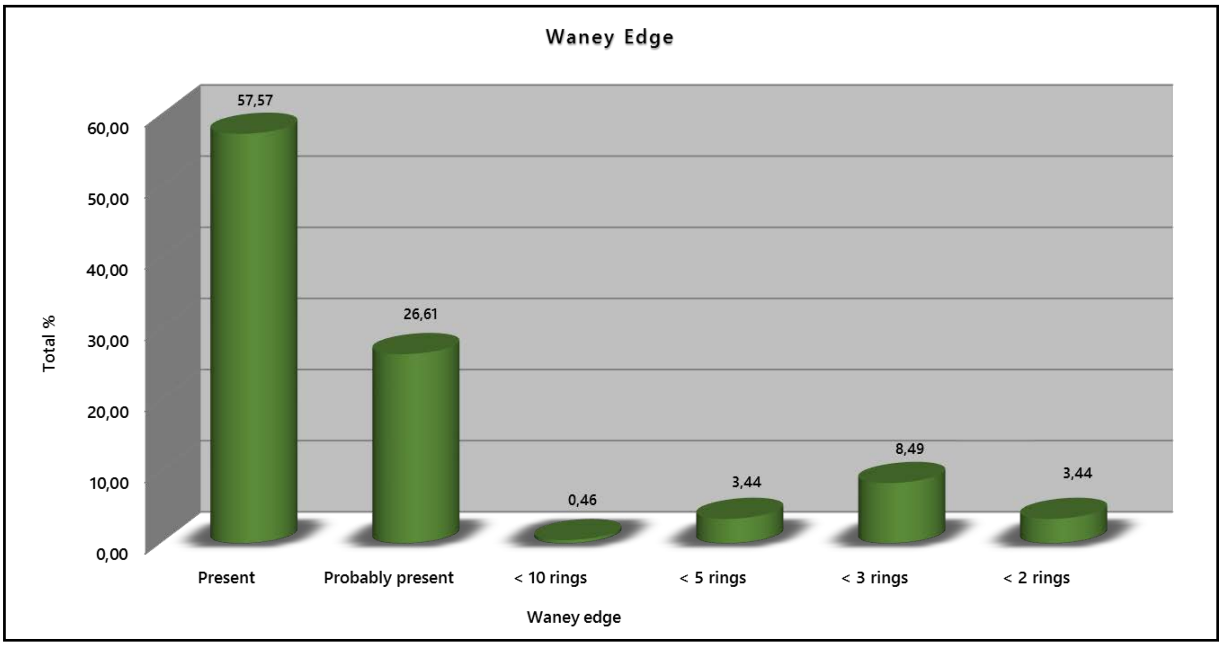


Fig. 30 Trees' stems that bear evidence for the presence of waney edge **a.** Overall number of measured samples **b.** Rates in %.

Waney edge	**n Elements**
Present	251
Probably present	116
< 10 rings	2
< 5 rings	15
< 3 rings	37
< 2 rings	15
Total	**436**

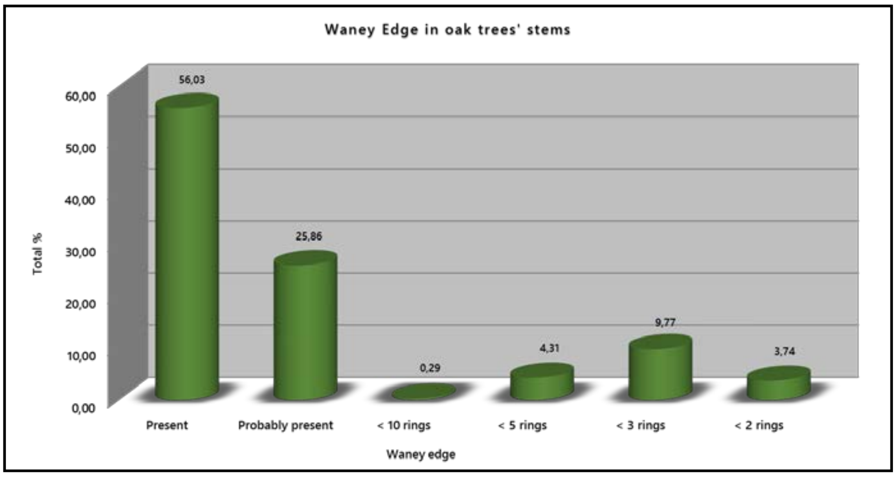
a



b

Fig. 31 Oak trees' stems that bear evidence for the presence of waney edge **a.** Overall number of measured samples **b.** Rates in %.

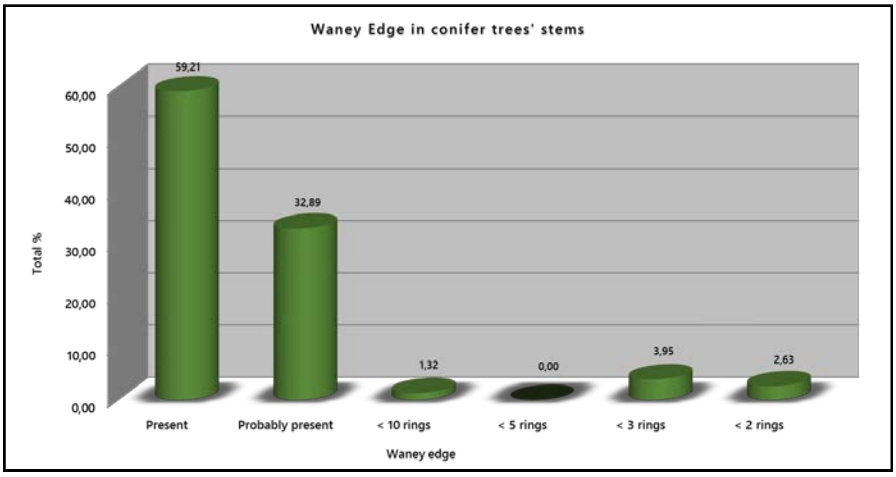
Waney edge (Oaks)	n Elements
Present	195
Probably present	90
< 10 rings	1
< 5 rings	15
< 3 rings	34
< 2 rings	13
Total	**348**



a b

Fig. 32 Conifer trees' stems that bear evidence for the presence of waney edge **a.** Overall number of measured samples **b.** Rates in %.

Waney edge (Conifers)	n Elements
Present	45
Probably present	25
< 10 rings	1
< 5 rings	0
< 3 rings	3
< 2 rings	2
Total	**76**



a b

Fig. 33 Comparative chart with rates of waney edge detected in oak and conifer trees' stems.

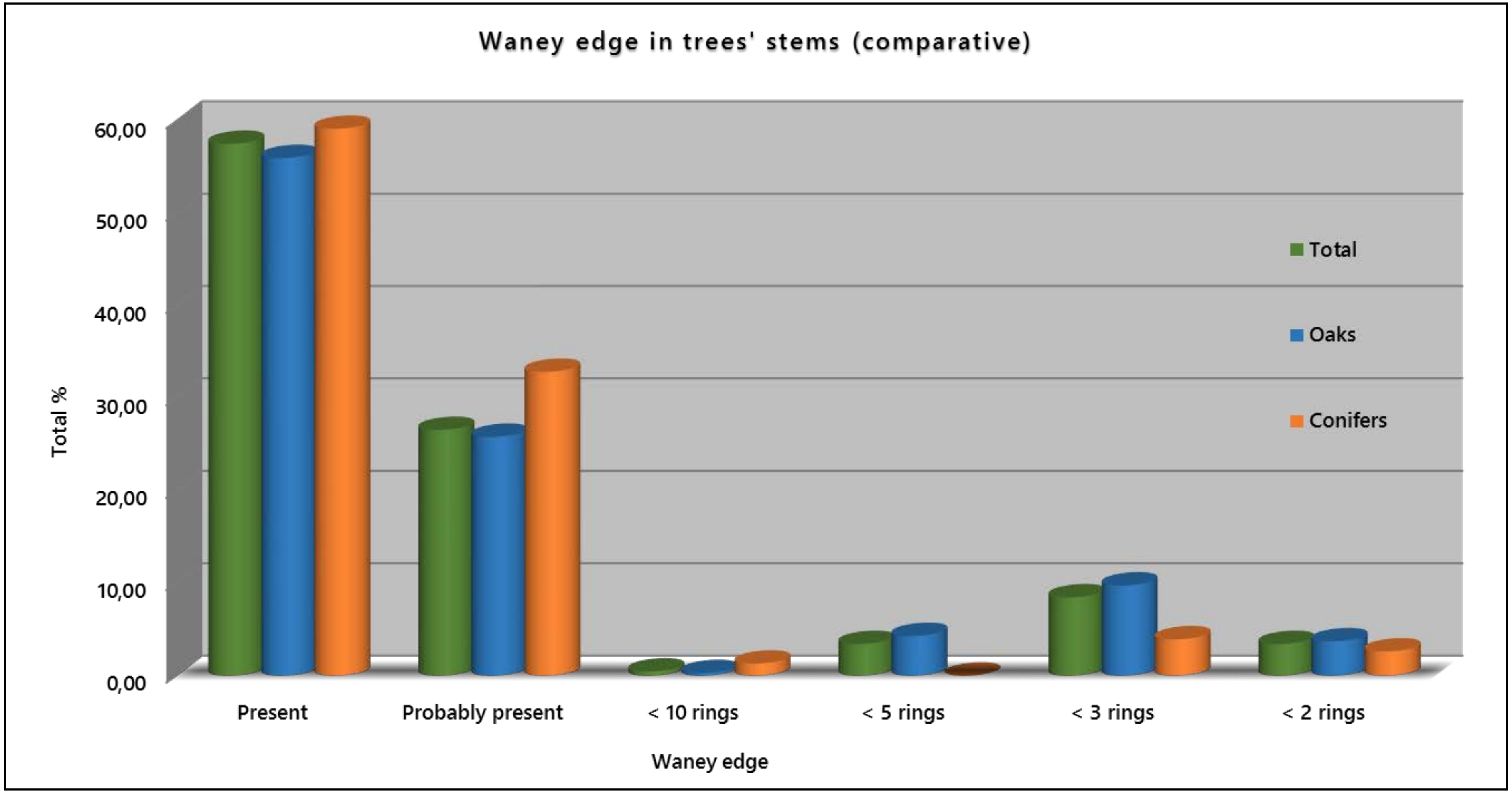
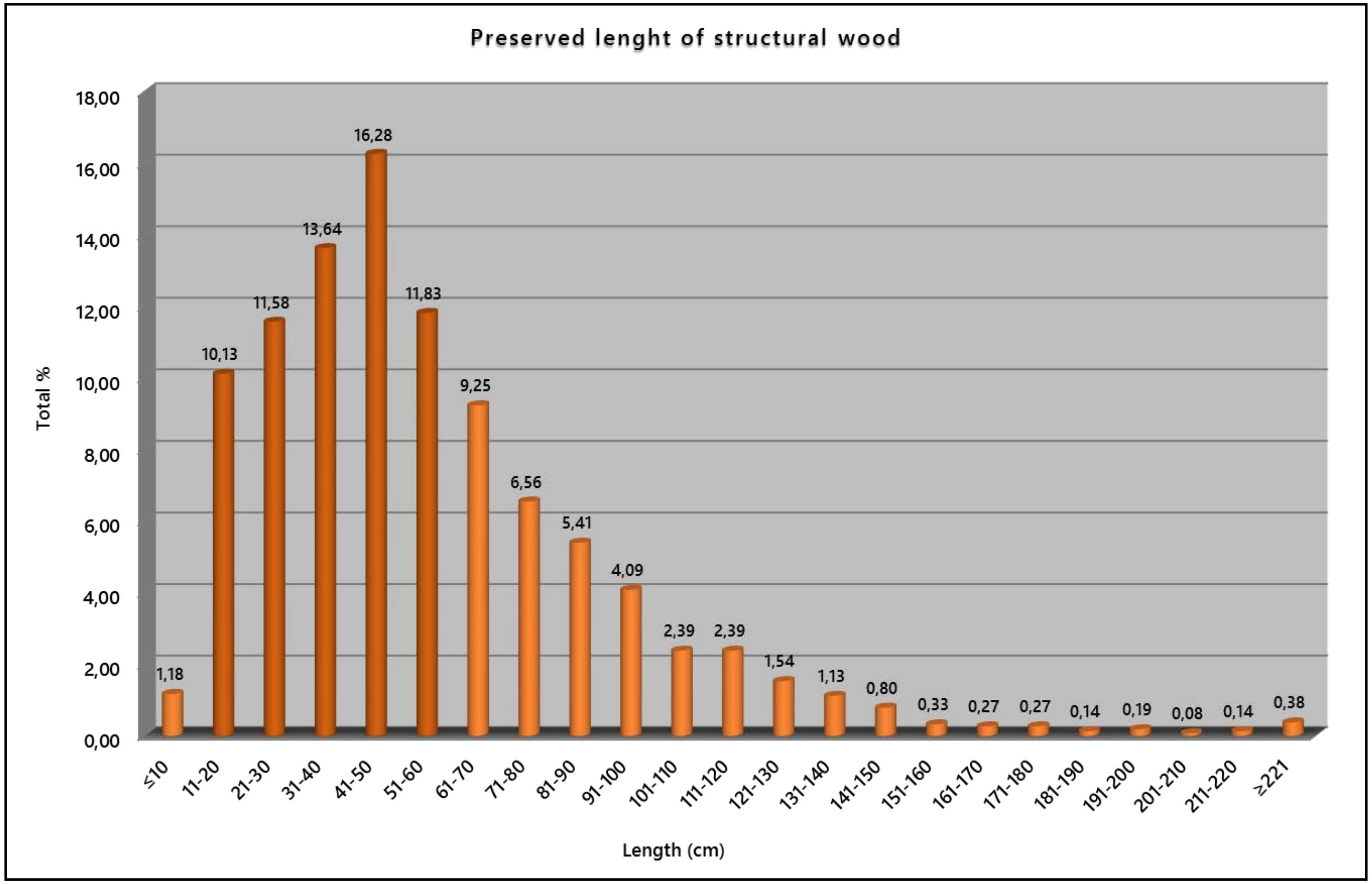


Fig. 34 Preserved length of structural wood from Anarghiri IXb **a.** Overall number of elements **b.** Rates in %.

Length (cm)	n Elements
≤10	43
11-20	369
21-30	422
31-40	497
41-50	593
51-60	431
61-70	337
71-80	239
81-90	197
91-100	149
101-110	87
111-120	87
121-130	56
131-140	41
141-150	29
151-160	12
161-170	10
171-180	10
181-190	5
191-200	7
201-210	3
211-220	5
≥221	14
Total	**3643**

a

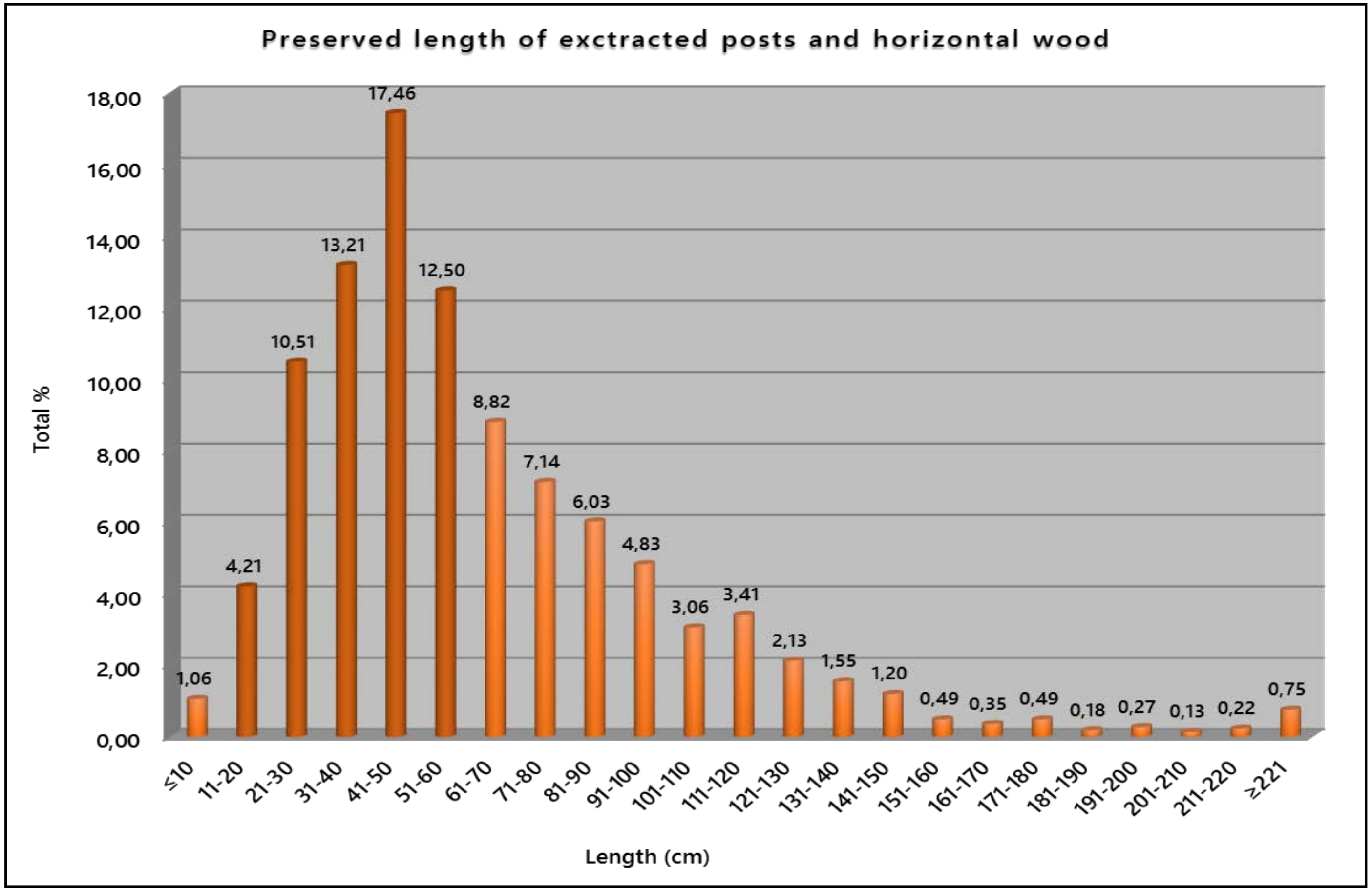


b

Fig. 35 Preserved length of posts and horizontal wood extracted from the layers of Anarghiri IXb **a.** Overall number of elements **b.** Rates in %.

Length (cm)	n Elements
≤10	24
11-20	95
21-30	237
31-40	298
41-50	394
51-60	282
61-70	199
71-80	161
81-90	136
91-100	109
101-110	69
111-120	77
121-130	48
131-140	35
141-150	27
151-160	11
161-170	8
171-180	11
181-190	4
191-200	6
201-210	3
211-220	5
≥221	17
Total	**2256**

a



b

Fig. 36 Comparative chart with rates of preserved length of extracted posts and horizontal wood.

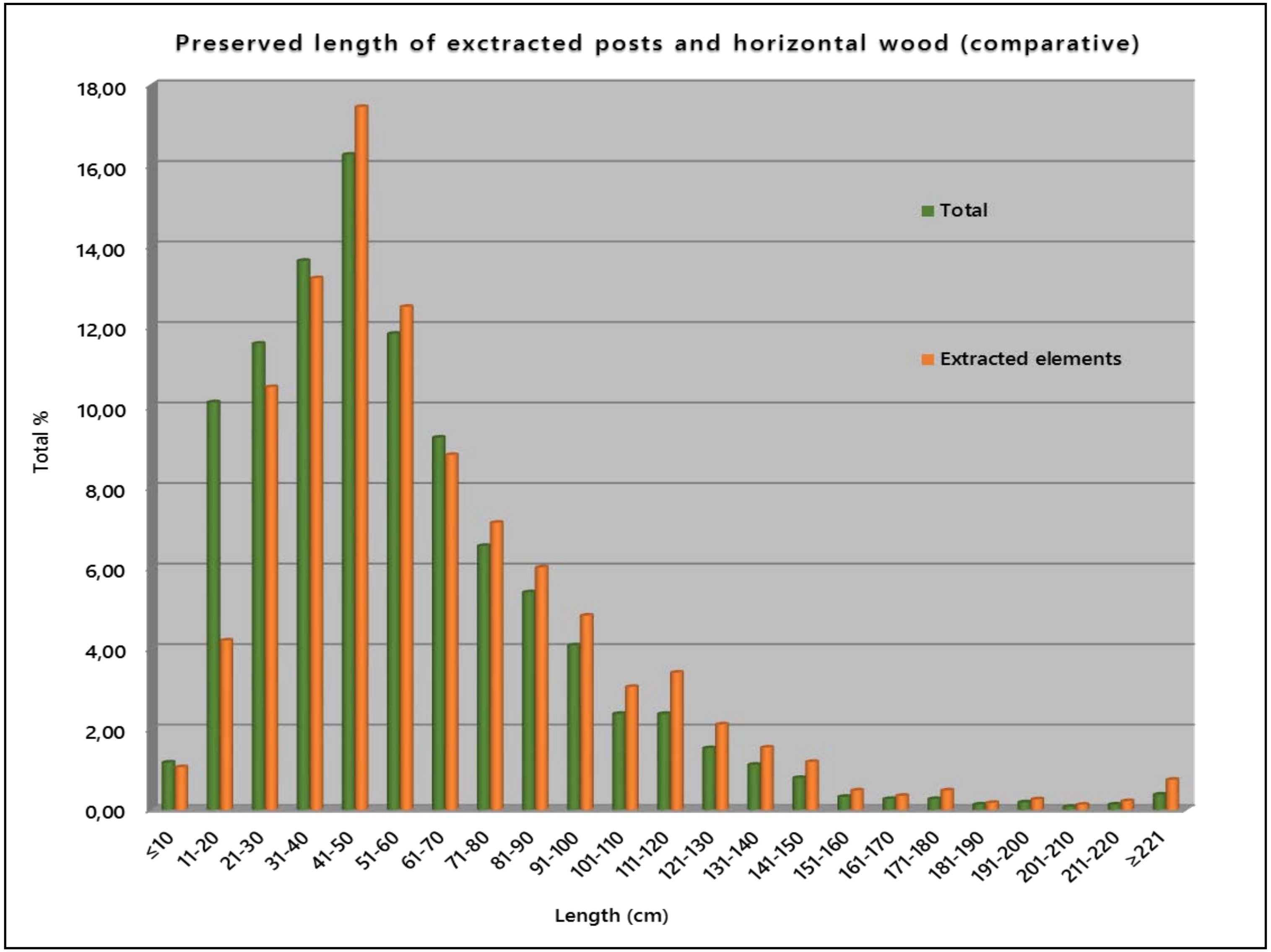
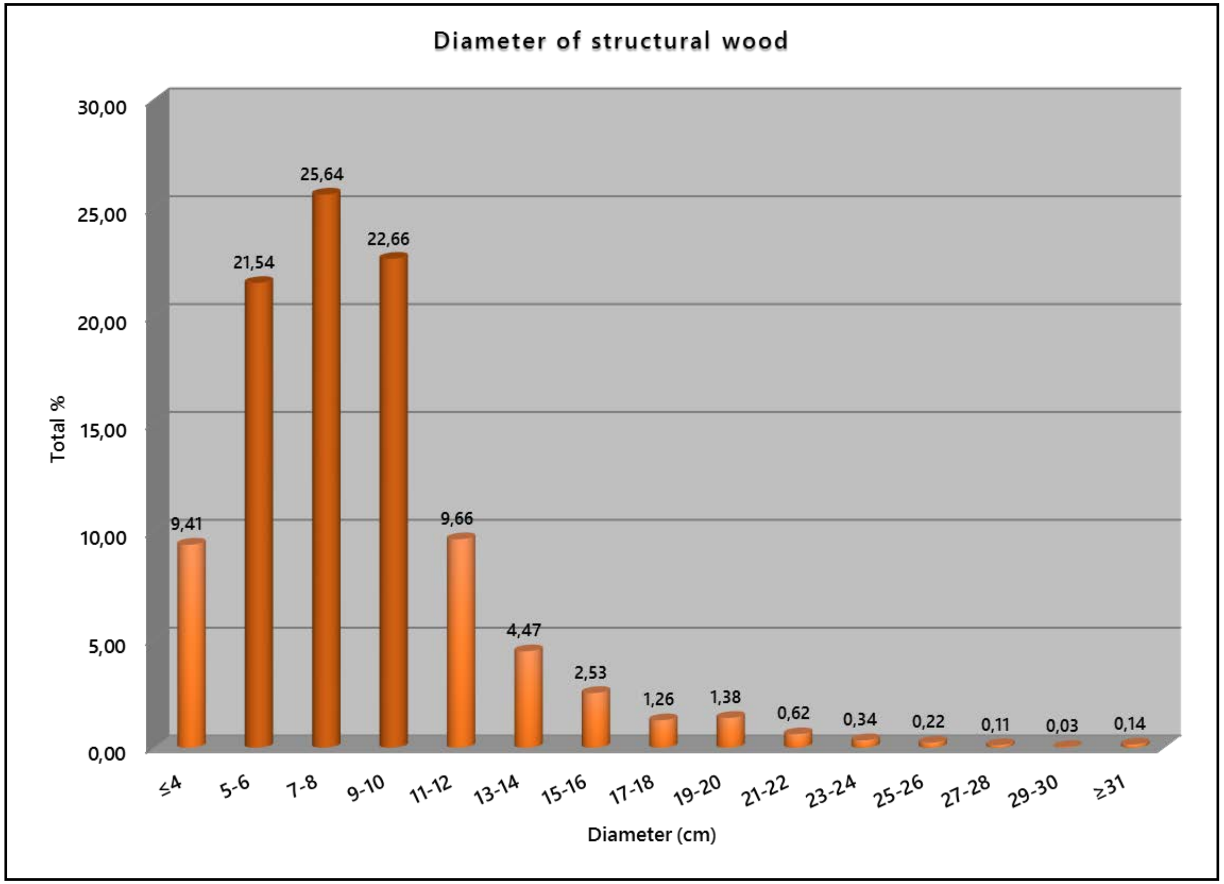


Fig. 37 Stems' diameter of structural wood from Anarghiri IXb **a.** Overall number of elements **b.** Rates in %.

Diameter (cm)	n Elements
≤4	335
5-6	767
7-8	913
9-10	807
11-12	344
13-14	159
15-16	90
17-18	45
19-20	49
21-22	22
23-24	12
25-26	8
27-28	4
29-30	1
≥31	5
Total	**3561**

a

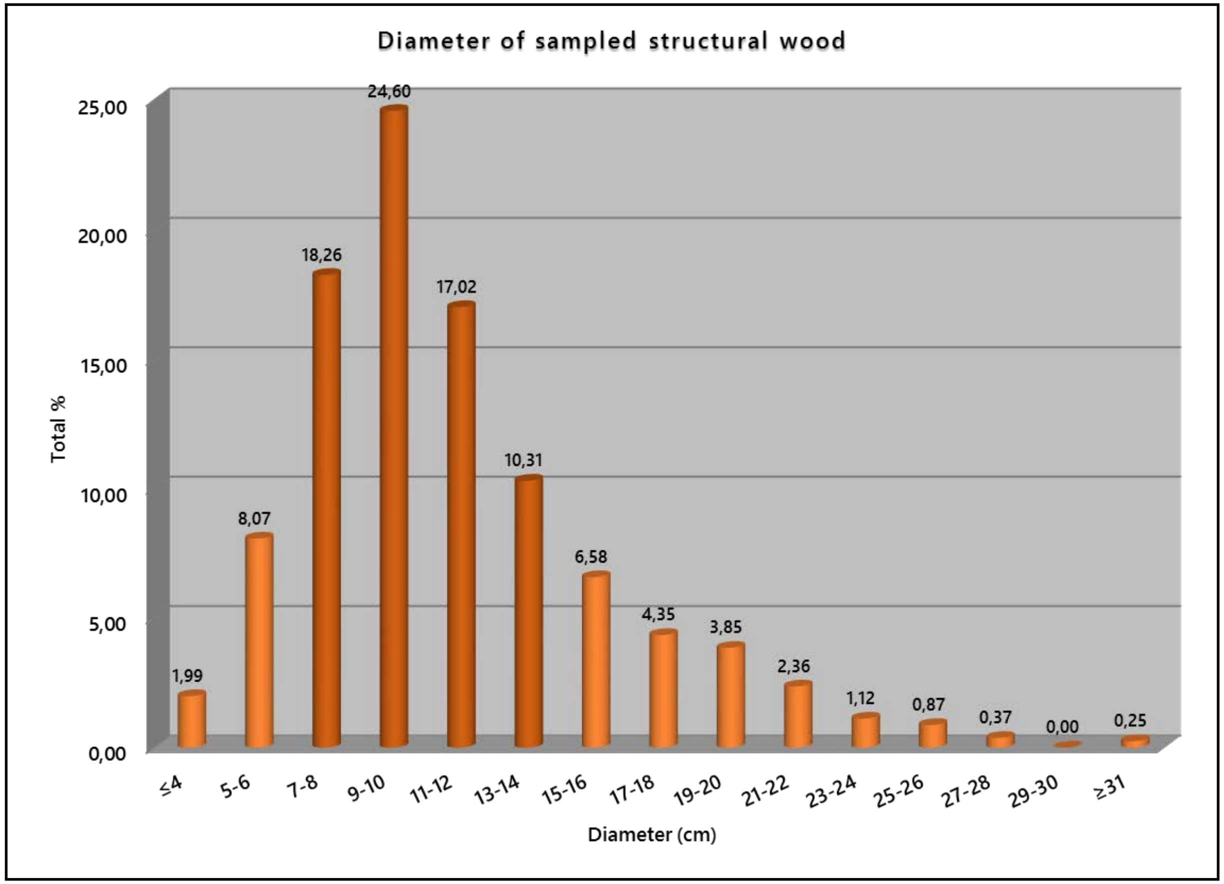


b

Fig. 38 Stems' diameter of sampled structural wood from Anarghiri IXb **a.** Overall number of elements **b.** Rates in %.

Diameter (cm)	n Elements
≤4	16
5-6	65
7-8	147
9-10	198
11-12	137
13-14	83
15-16	53
17-18	35
19-20	31
21-22	19
23-24	9
25-26	7
27-28	3
29-30	0
≥31	2
Total	**805**

a



b

Fig. 39 Comparative chart with rates of diameter of structural wood (total and sampled).

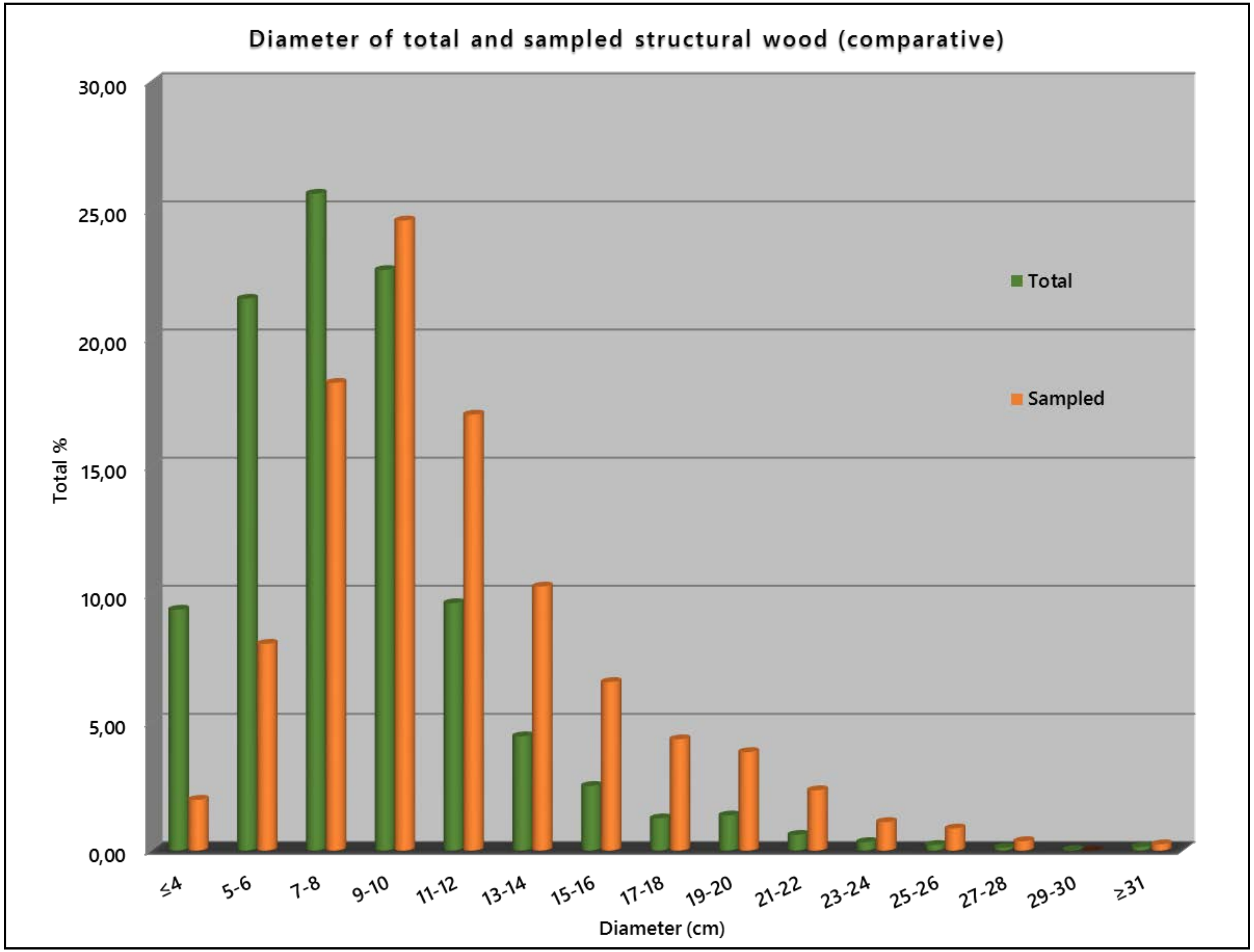


Fig. 40 Trees' stems cross-section *Category 1*.

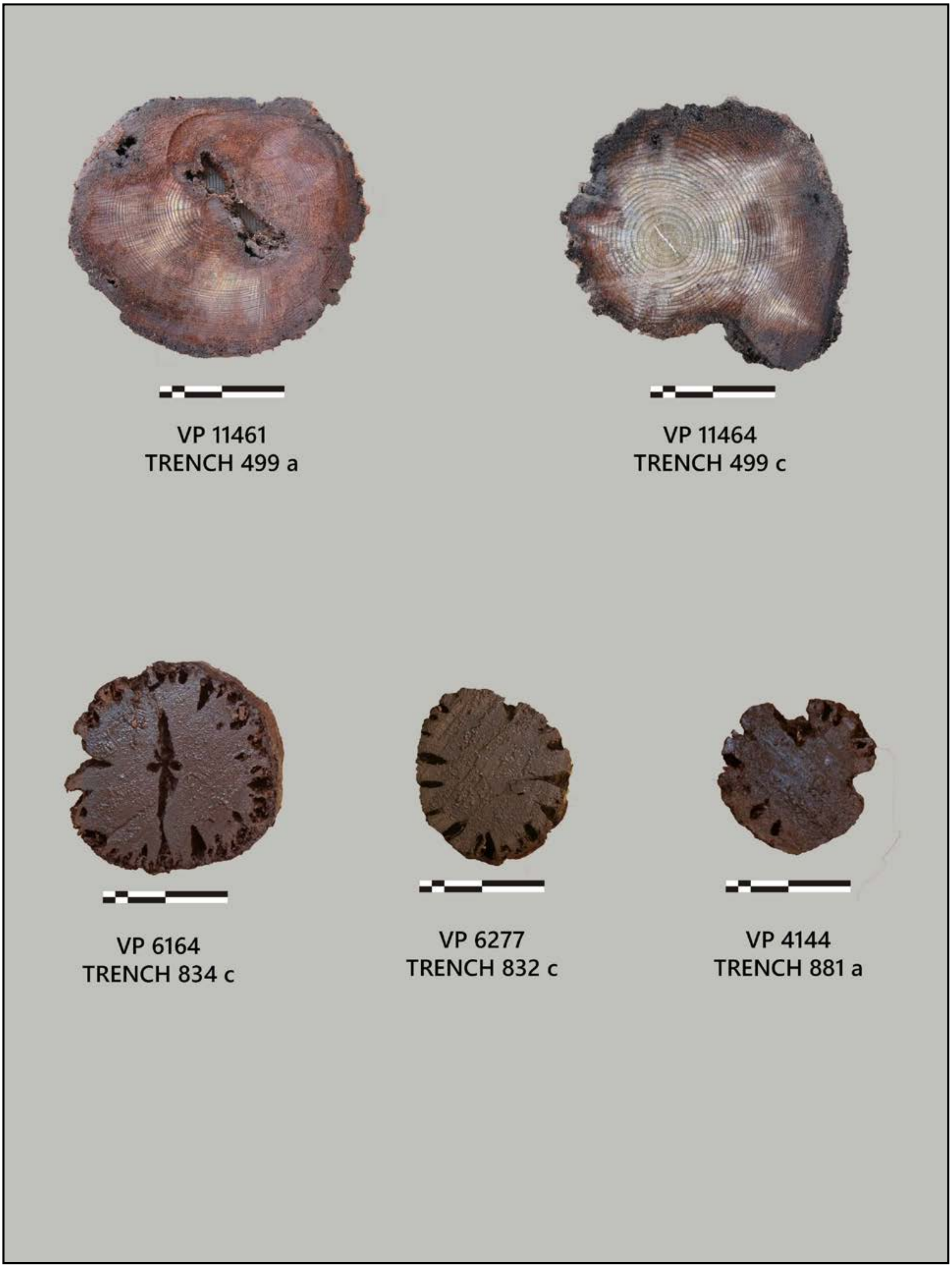


Fig. 41 Trees' stems cross-section *Category 2* (VP 11666, VP 3044) and *Category 3* (VP 8476, VP 6709).

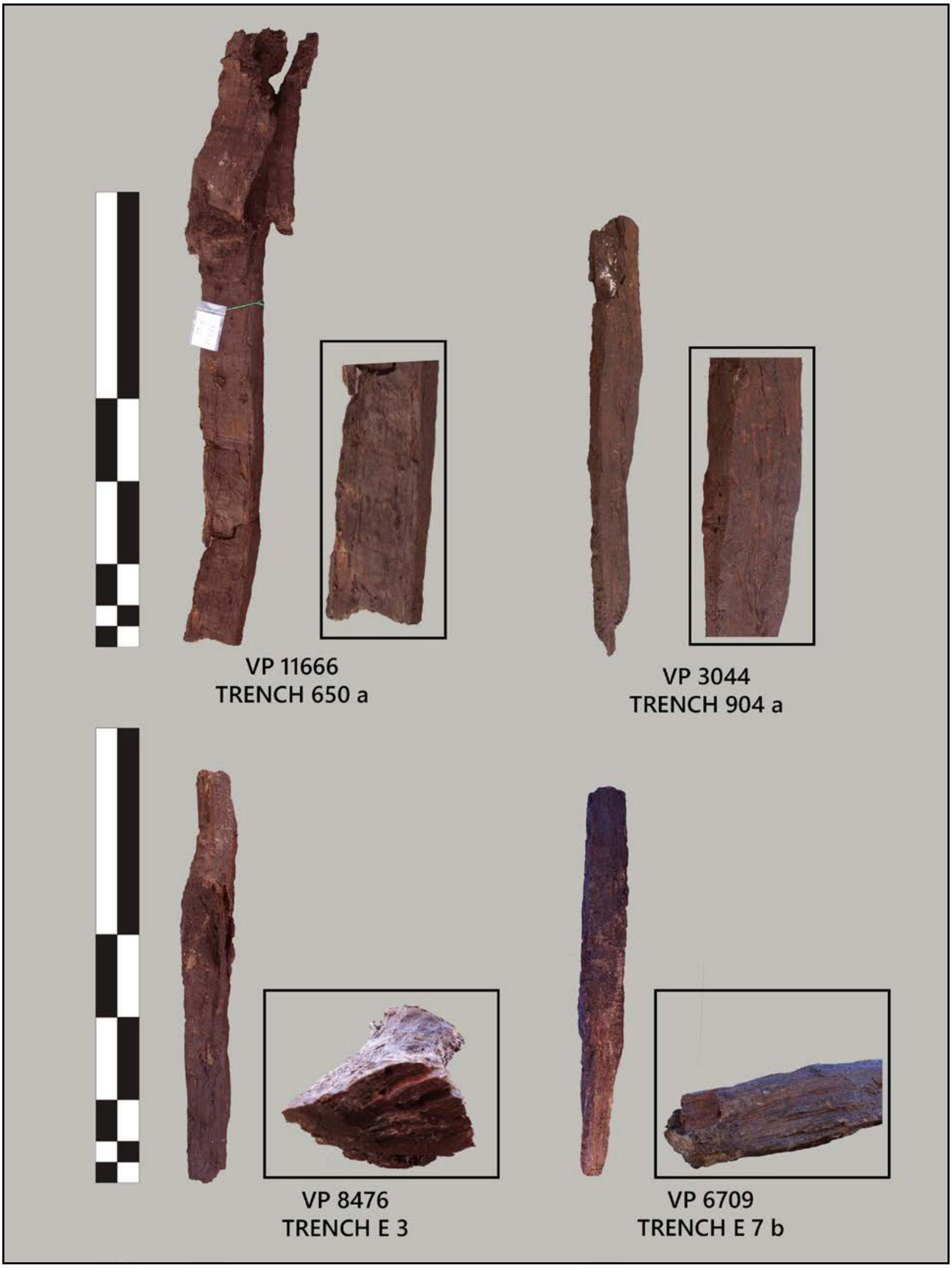


Fig. 42 Trees' stems cross-section *Category 4* (VP 11375, VP 11376) and *Category 5* (VP 12401, VP 4972).

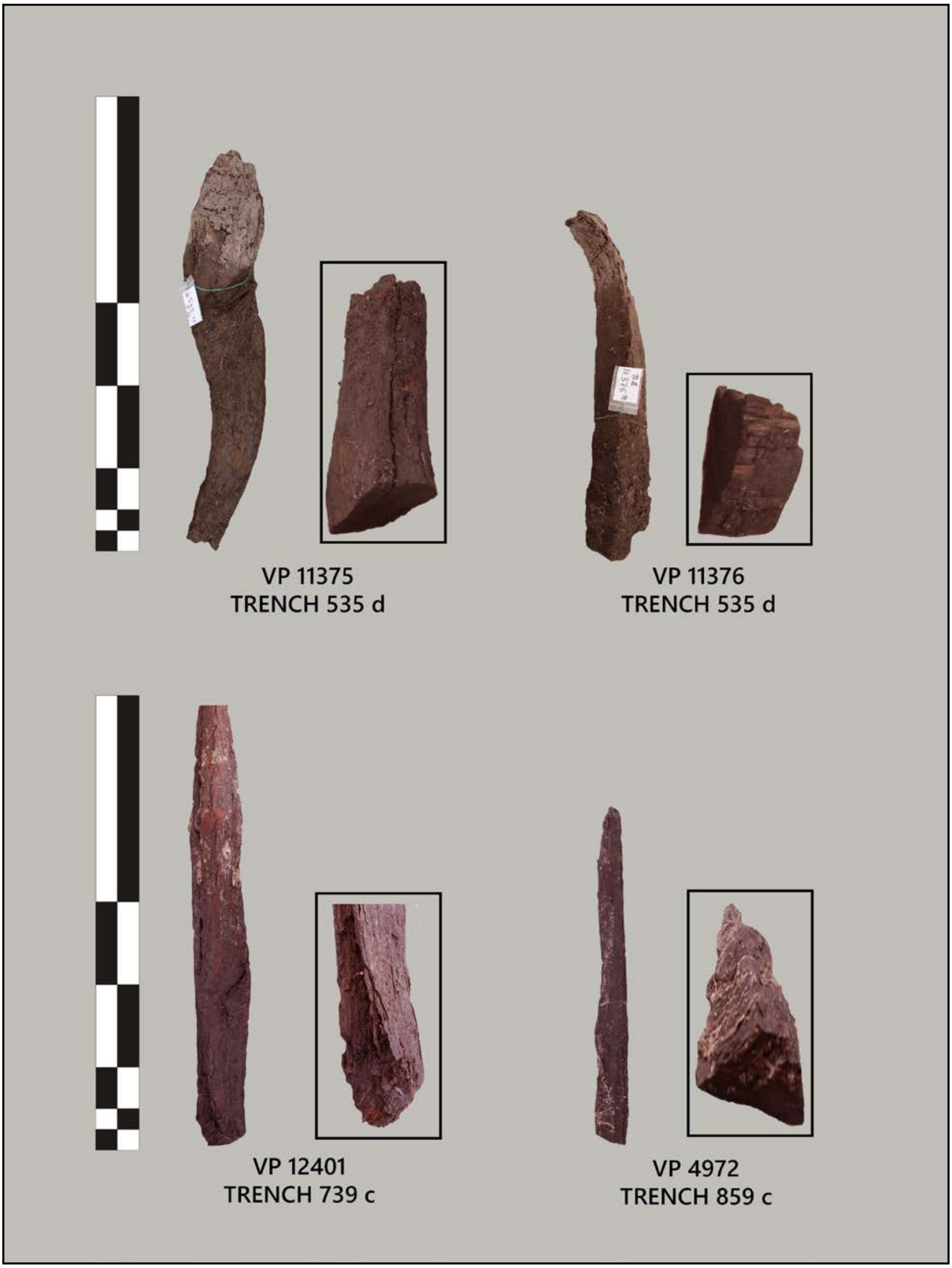


Fig. 43 Trees' stems cross-section *Category 7*.

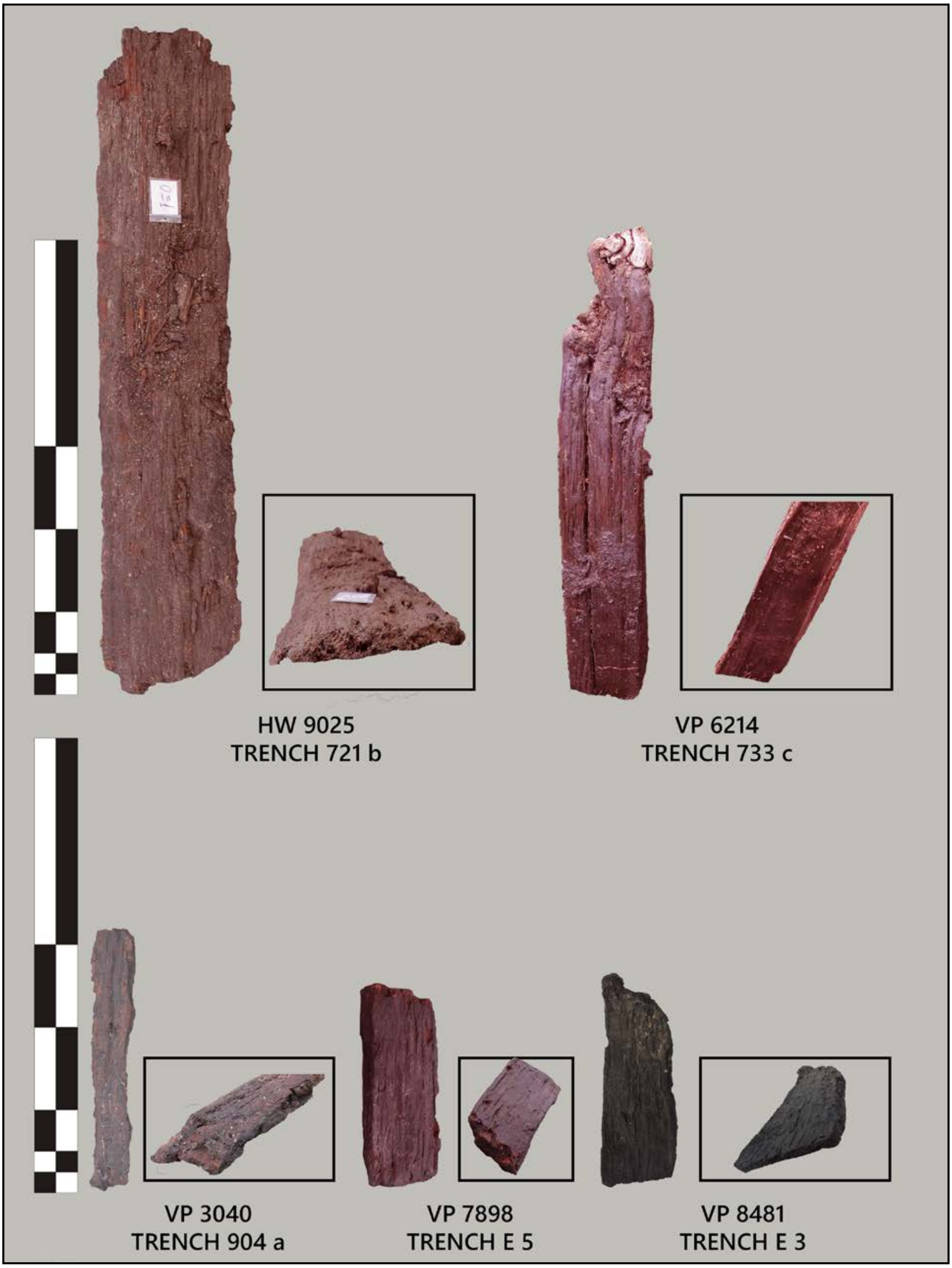
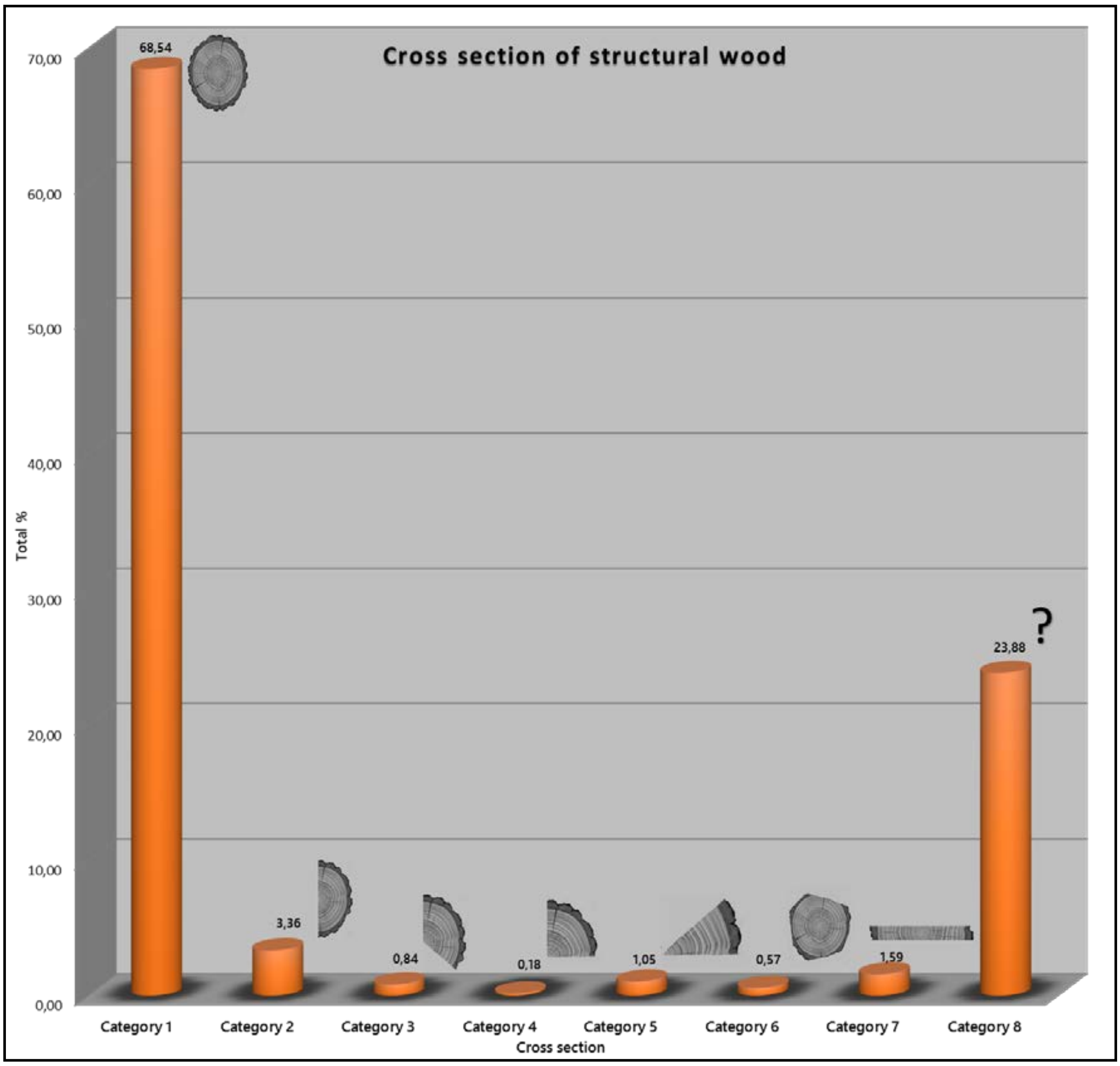


Fig.44 Trees' stems cross section categories **a.** Overall number of elements **b.** Rates in %.

Cross section	**n Elements**
Category 1	2285
Category 2	112
Category 3	28
Category 4	6
Category 5	35
Category 6	19
Category 7	53
Category 8	796
Total	**3334**

a

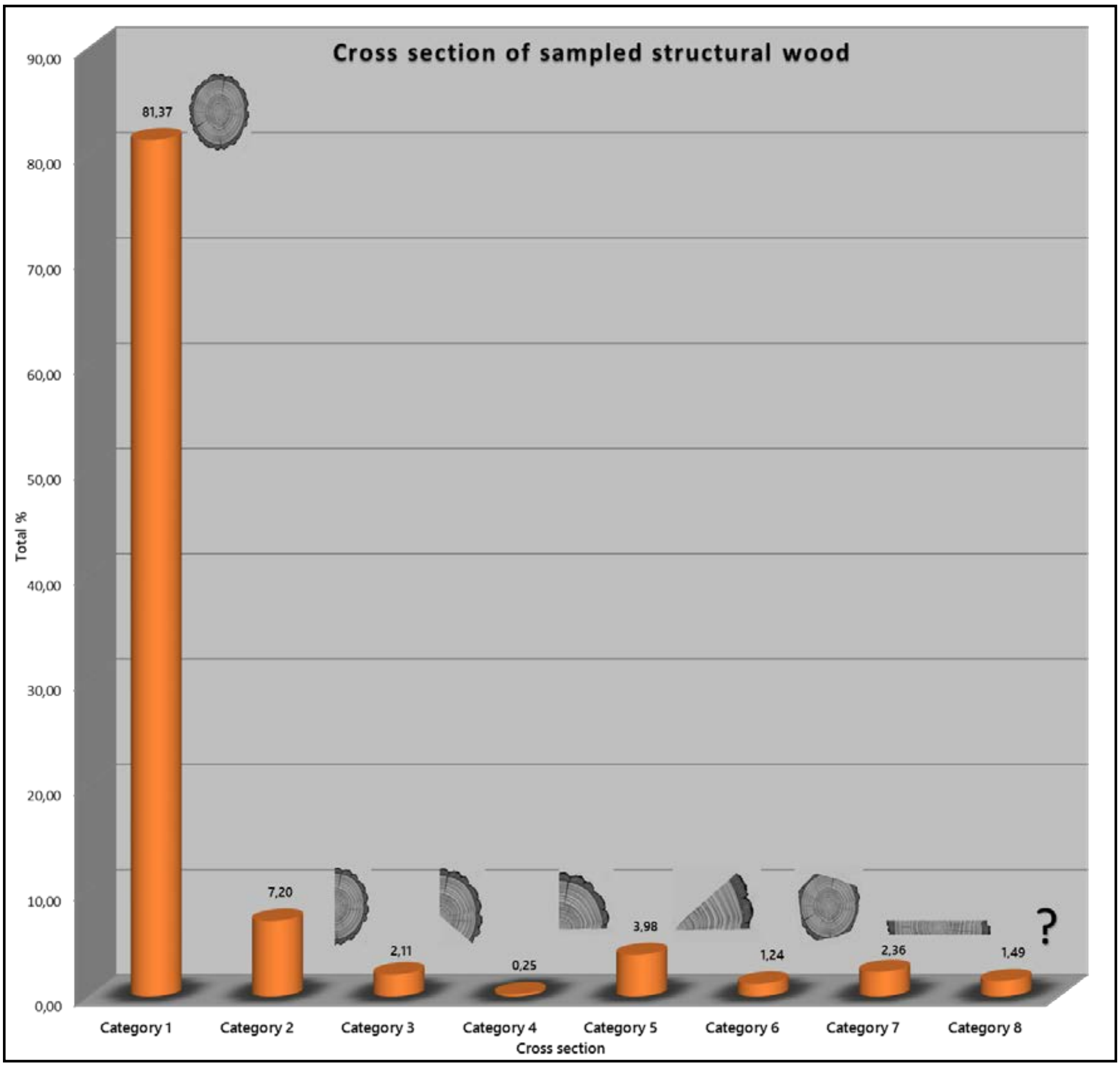


b

Fig. 45 Trees' stems cross section categories of sampled wood **a.** Overall number of sampled elements **b.** Rates in %.

Cross section	**n Elements**
Category 1	655
Category 2	58
Category 3	17
Category 4	2
Category 5	32
Category 6	10
Category 7	19
Category 8	12
Total	**805**

a



b

Fig. 46 Comparative chart with rates of cross section of structural wood (total and sampled).

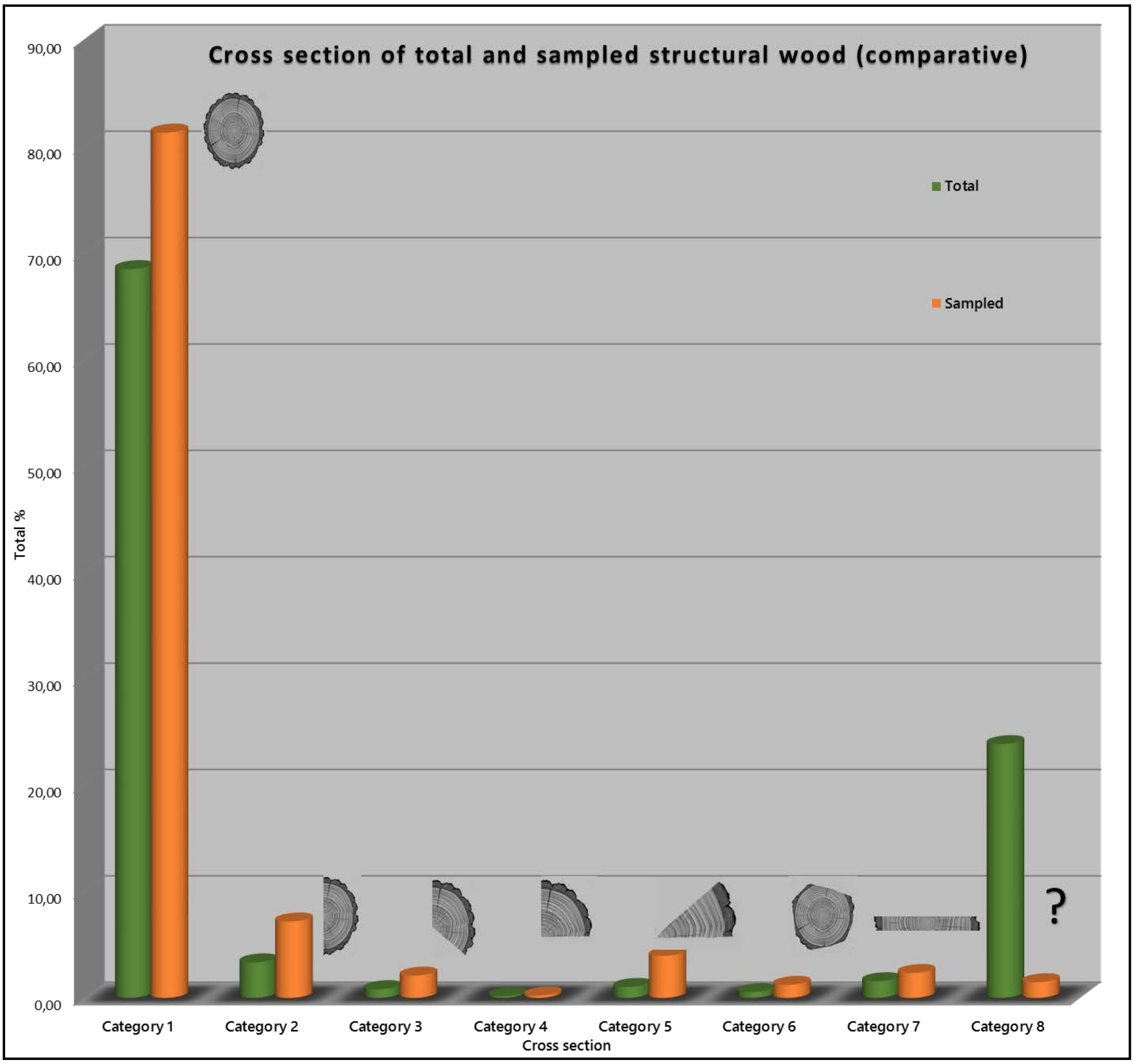


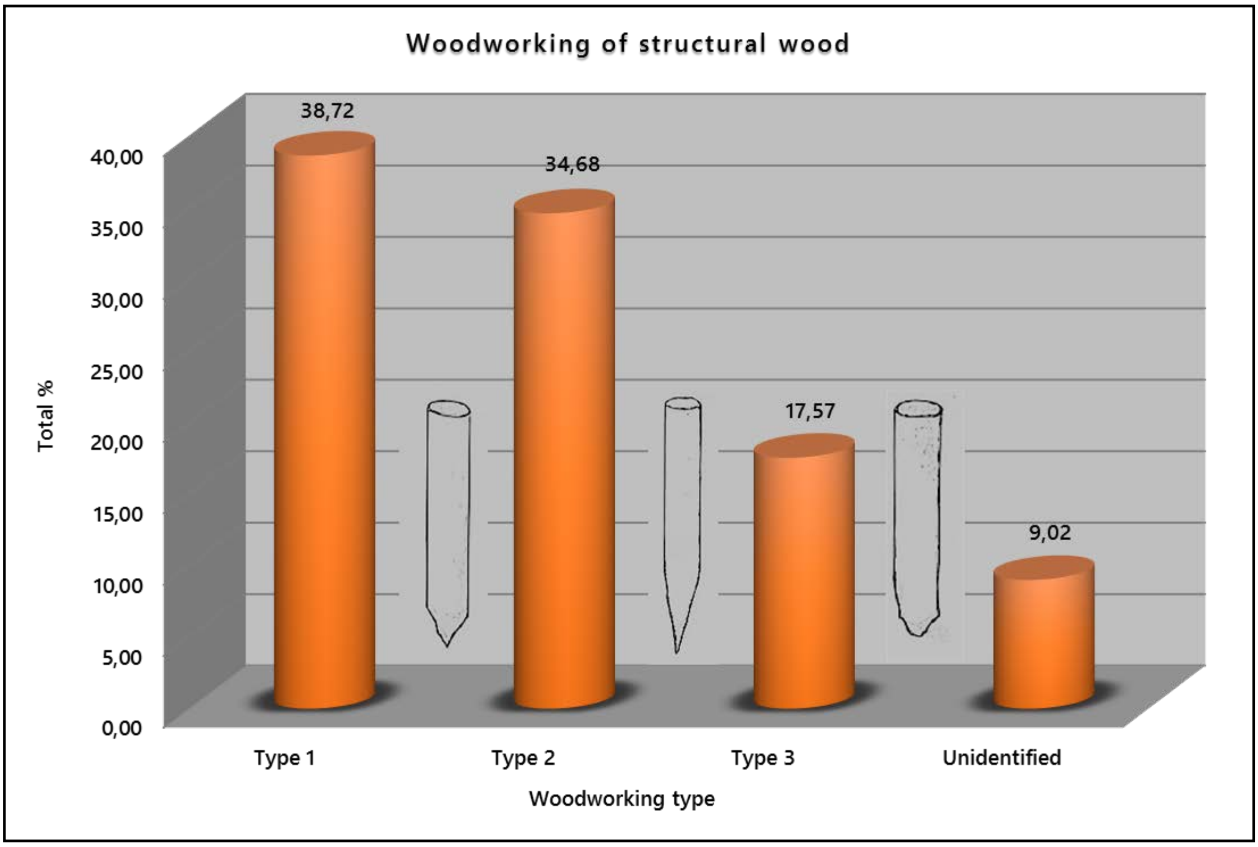
Fig. 47 Vertical posts with protruding branches.

Fig. 48 Horizontal wood with branches.

Fig. 49 Woodworking categories of structural wood **a.** Overall number of elements **b.** Rates in %.

Woodworking categories	n Elements
Type 1	249
Type 2	223
Type 3	113
Unidentified	58
Total	**643**

a



b

Fig. 50 Vertical posts of woodworking *Type 1*.

Fig 51 Vertical posts of woodworking *Type 1*.

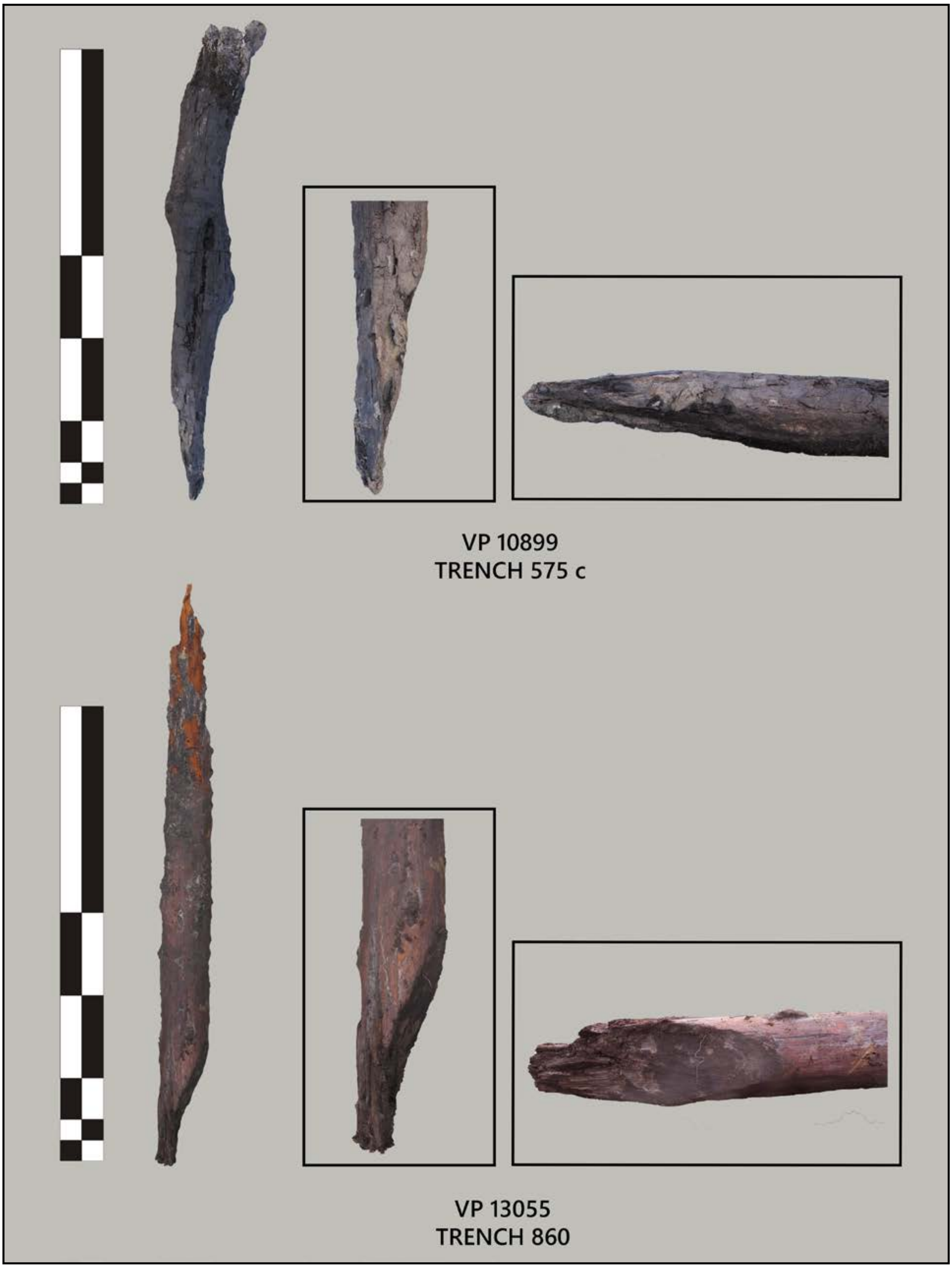


Fig 52 Vertical posts of woodworking *Type 1*.

Fig 53 Vertical posts of woodworking *Type 2*.

Fig 54 Vertical posts of woodworking *Type 2*.

Fig 55 Vertical posts of woodworking *Type 3*.

VP 6712
TRENCH E 7 b

VP 6701
TRENCH E 7 b

Fig 56 Vertical posts of woodworking *Type 3*.

Fig. 57 Wooden elements with "U-shaped" upper end, possibly "fork-branching" tree trunks.

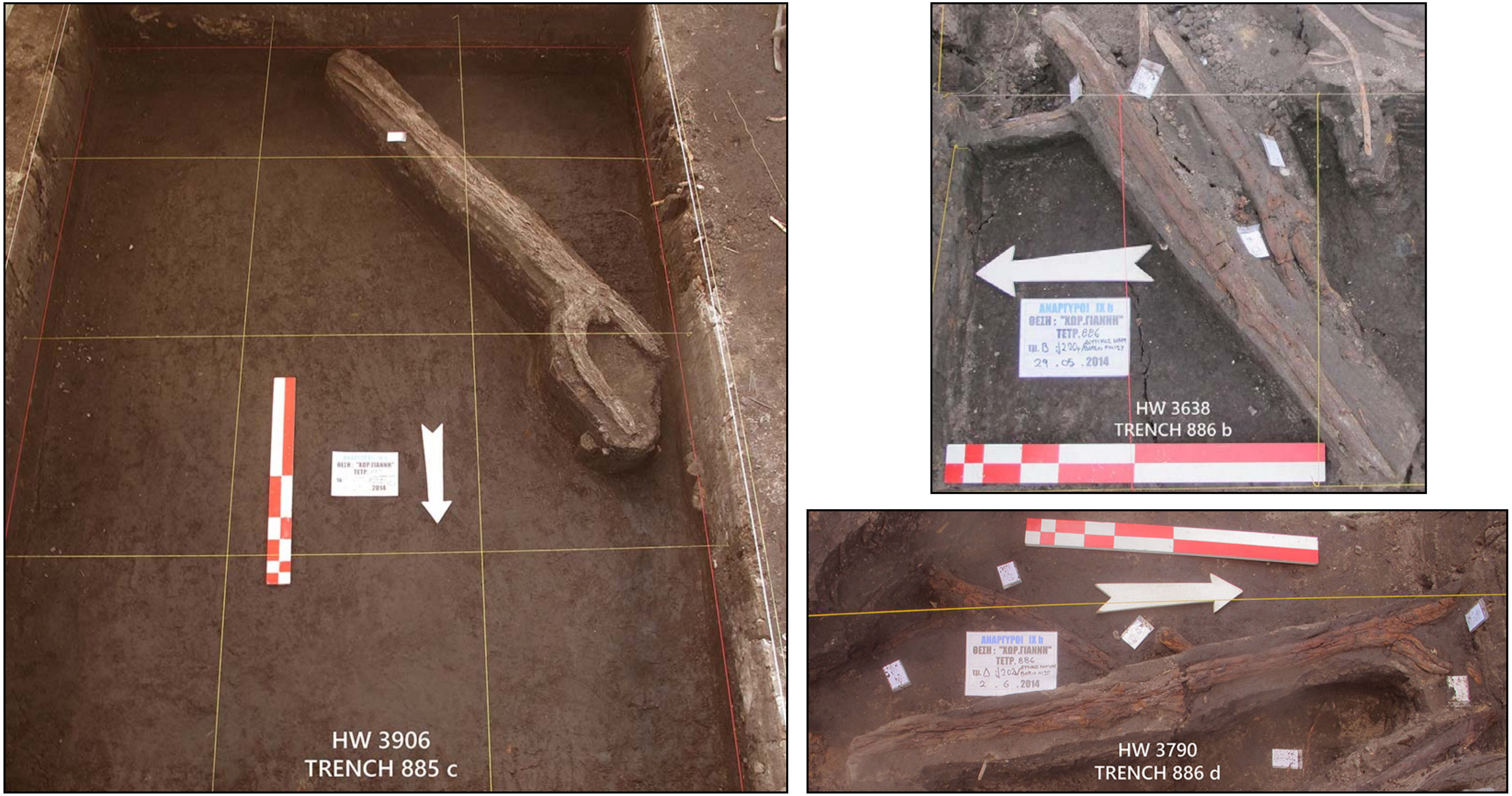
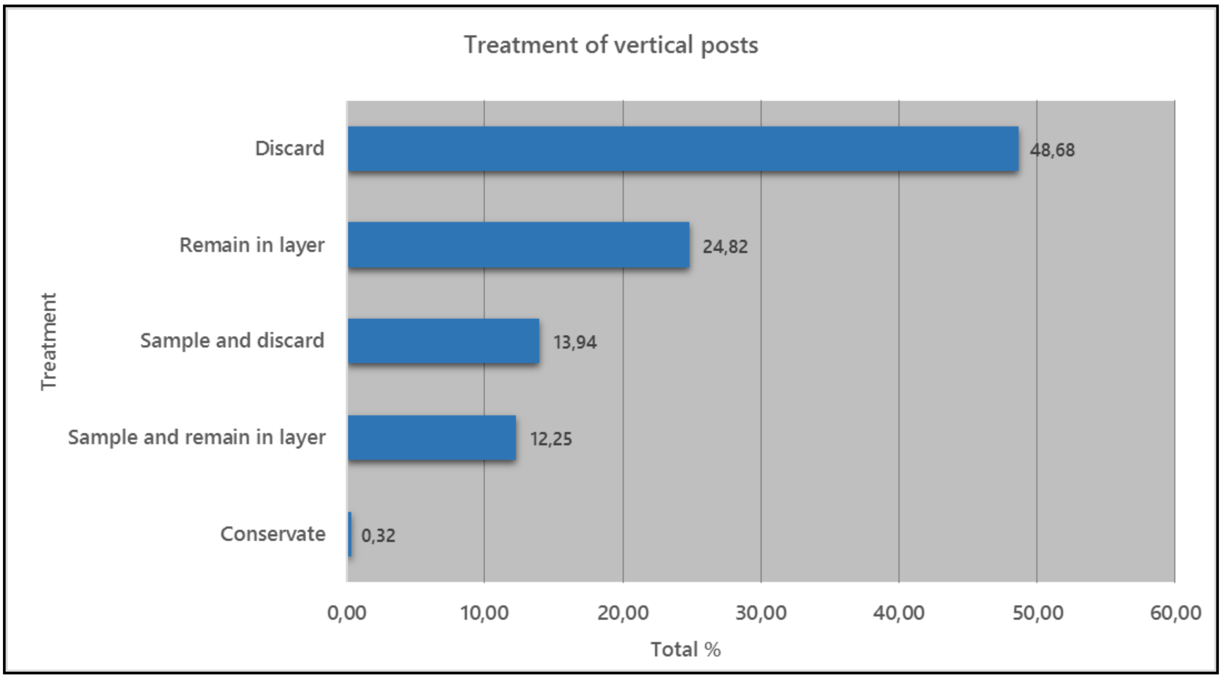


Fig. 58 Vertical posts with processed "U-shaped" upper end.

Fig. 59 Treatment of vertical posts in the rescue excavation of Anarghiri IXb **a.** Overall number of recorded posts **b.** Rates in %.

Treatment	**n Elements**
Discarded	1383
Remained in layer	705
Sampled and discarded	396
Sampled and remained in layer	348
Conservated	9
Total	**2841**

a

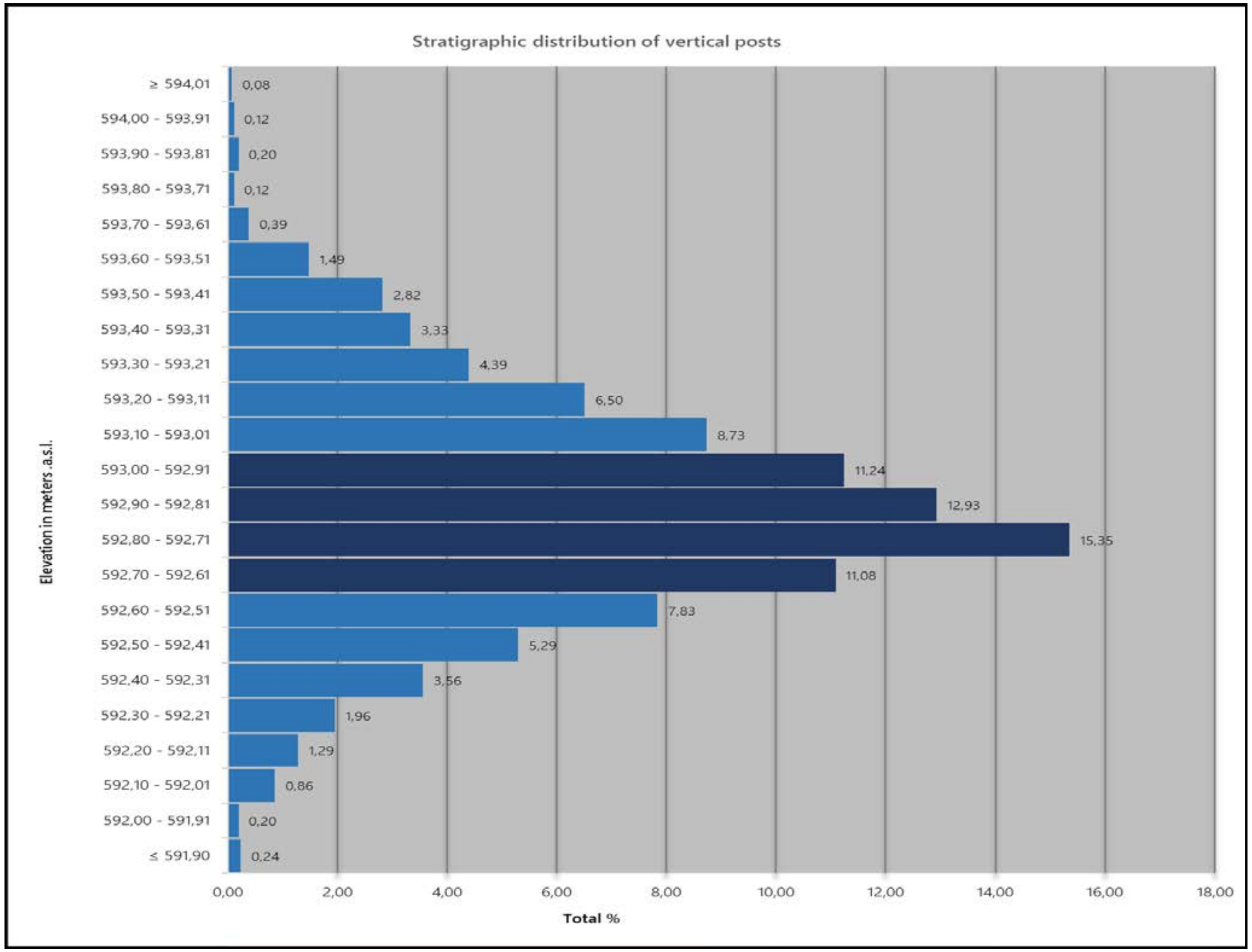


b

Fig. 60 The stratigraphic distribution of vertical posts of 2013-2016 excavation's campaigns **a.** Overall number of recorded posts **b.** Rates in %.

Elevation (In meters above sea level)	n Elements
≥ 594,01	2
594,00 - 593,91	3
593,90 - 593,81	5
593,80 - 593,71	3
593,70 - 593,61	10
593,60 - 593,51	38
593,50 - 593,41	72
593,40 - 593,31	85
593,30 - 593,21	112
593,20 - 593,11	166
593,10 - 593,01	223
593,00 - 592,91	287
592,90 - 592,81	330
592,80 - 592,71	392
592,70 - 592,61	283
592,60 - 592,51	200
592,50 - 592,41	135
592,40 - 592,31	91
592,30 - 592,21	50
592,20 - 592,11	33
592,10 - 592,01	22
592,00 - 591,91	5
≤ 591,90	6
Total	**2553**

a

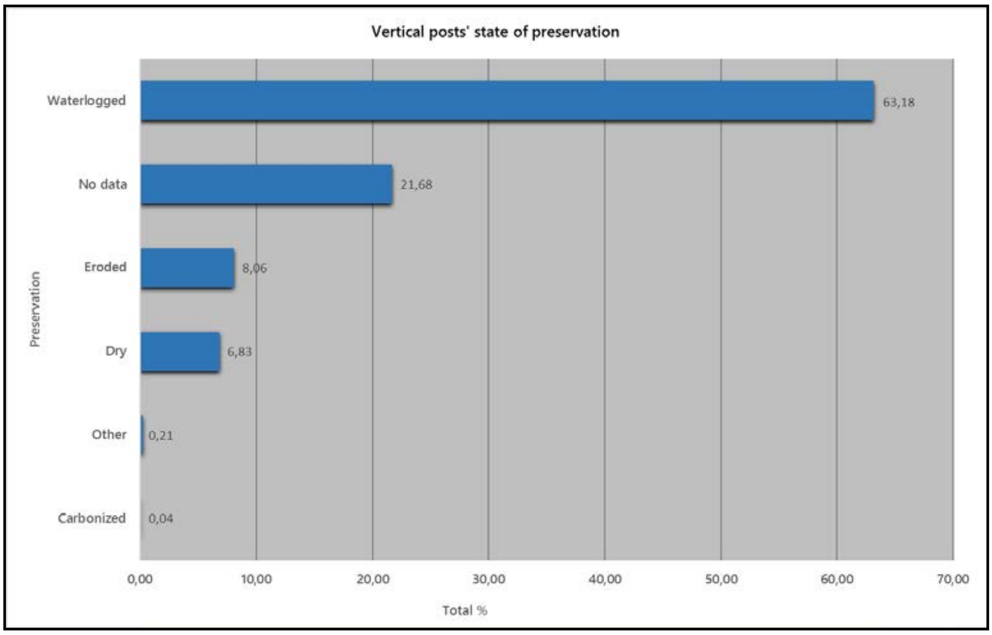


b

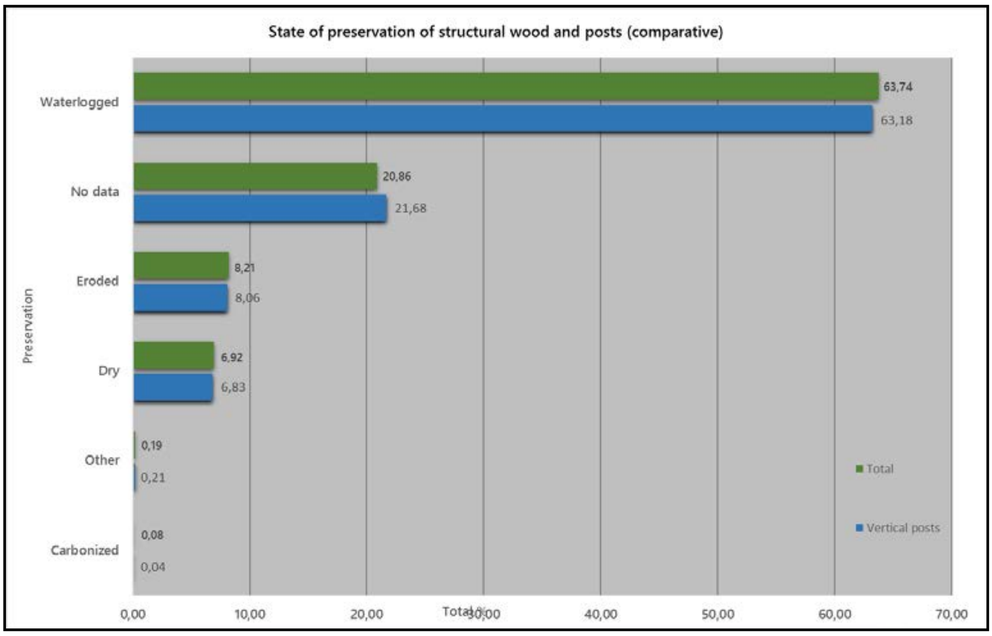
Fig. 61 The state of preservation of structural wood from Anarghiri IXb **a.** Overall number of recorded elements **b.** Rates in % **c.** Comparative chart of structural wood and posts' state of preservation.

State of preservation	**n Elements**
Waterlogged	1795
No data	616
Eroded	229
Dry	194
Other	6
Carbonized	1
Total	**2841**

a



b



c

Fig. 62 a. Western Sector general view of posts and surrounding natural soil **b.** Examples of eroded and dry posts.

a

b

Fig. 63 Posts from the Northern Sector during their exposure and sampling.

Fig. 64 Examples of compressed posts.

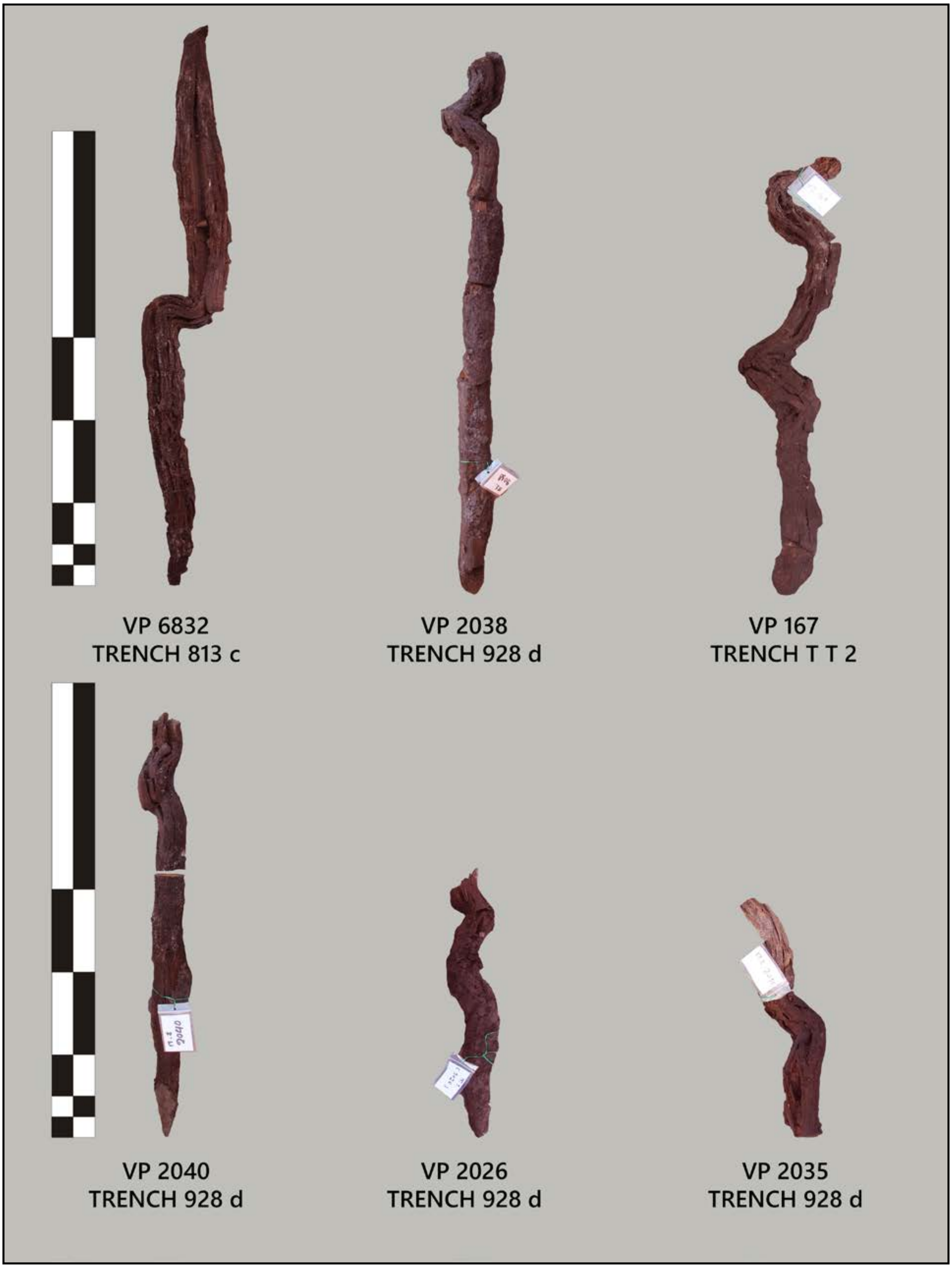
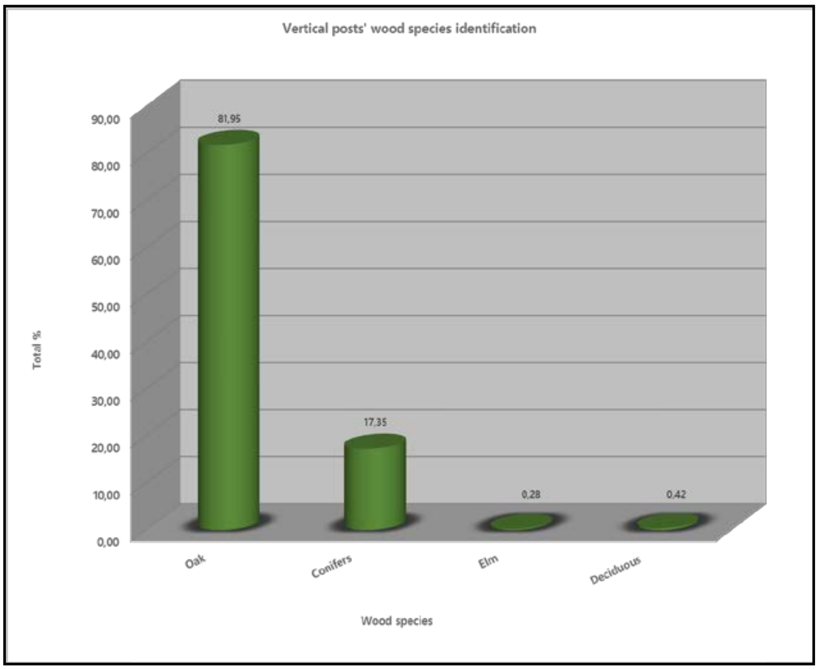


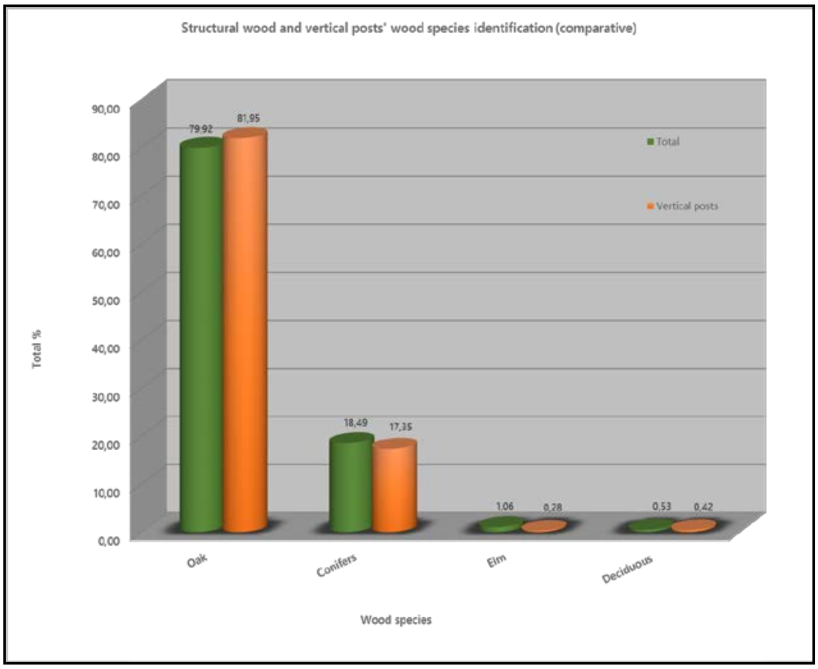
Fig. 65 Wood species identification of vertical posts **a.** Overall number of identified posts **b.** Rates in % **c.** Comparative chart of structural wood and posts' wood species identification.

Wood species	**n Elements**
Oak	581
Conifers	123
Deciduous	3
Elm	2
Total	**709**

a



b

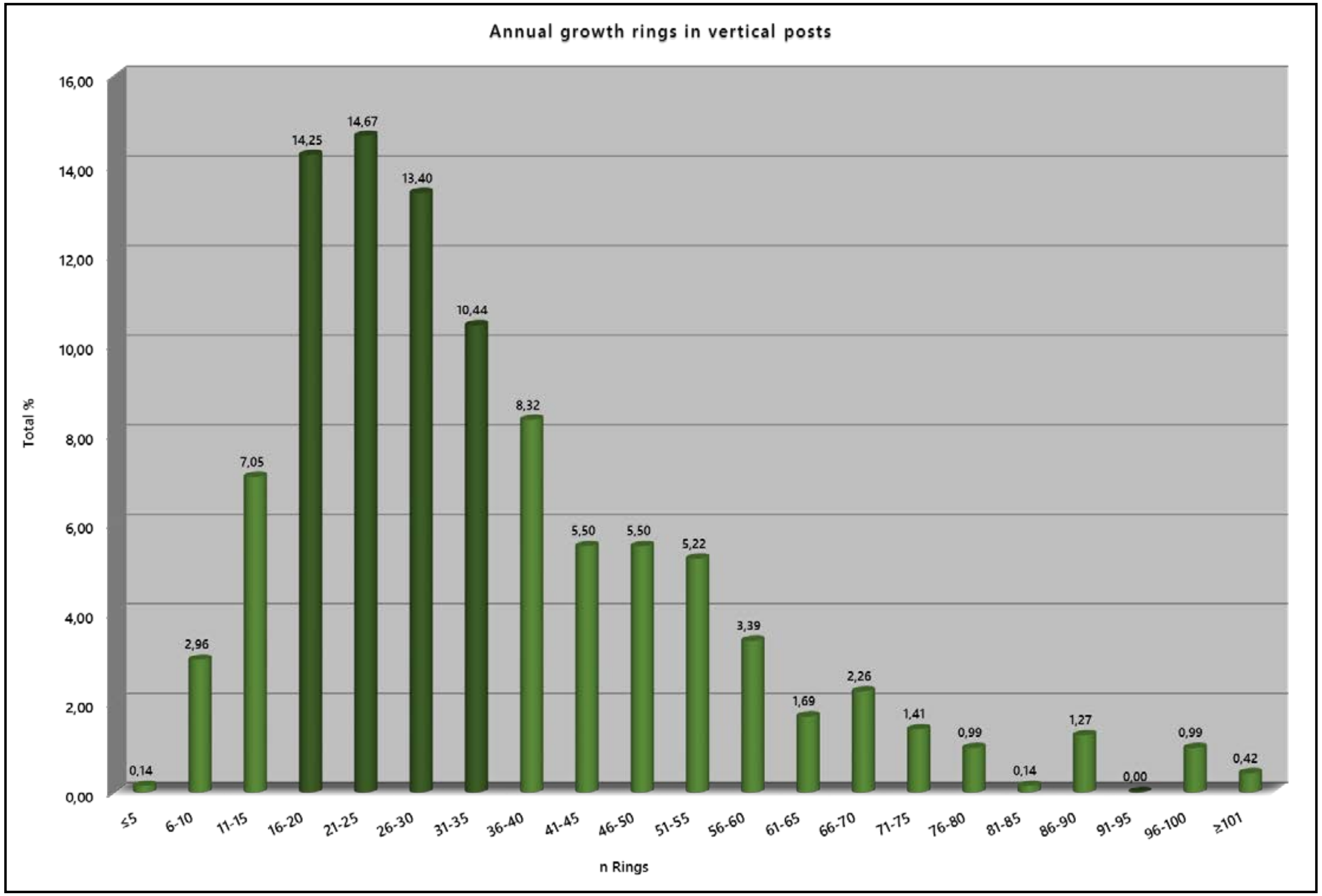


c

Fig. 66 Annual growth rings measured in sampled vertical posts **a.** Overall number of measured annual rings **b.** Rates in %.

Annual growth rings	n Elements
≤5	1
6-10	21
11-15	50
16-20	101
21-25	104
26-30	95
31-35	74
36-40	59
41-45	39
46-50	39
51-55	37
56-60	24
61-65	12
66-70	16
71-75	10
76-80	7
81-85	1
86-90	9
91-95	0
96-100	7
≥101	3
Total	**709**

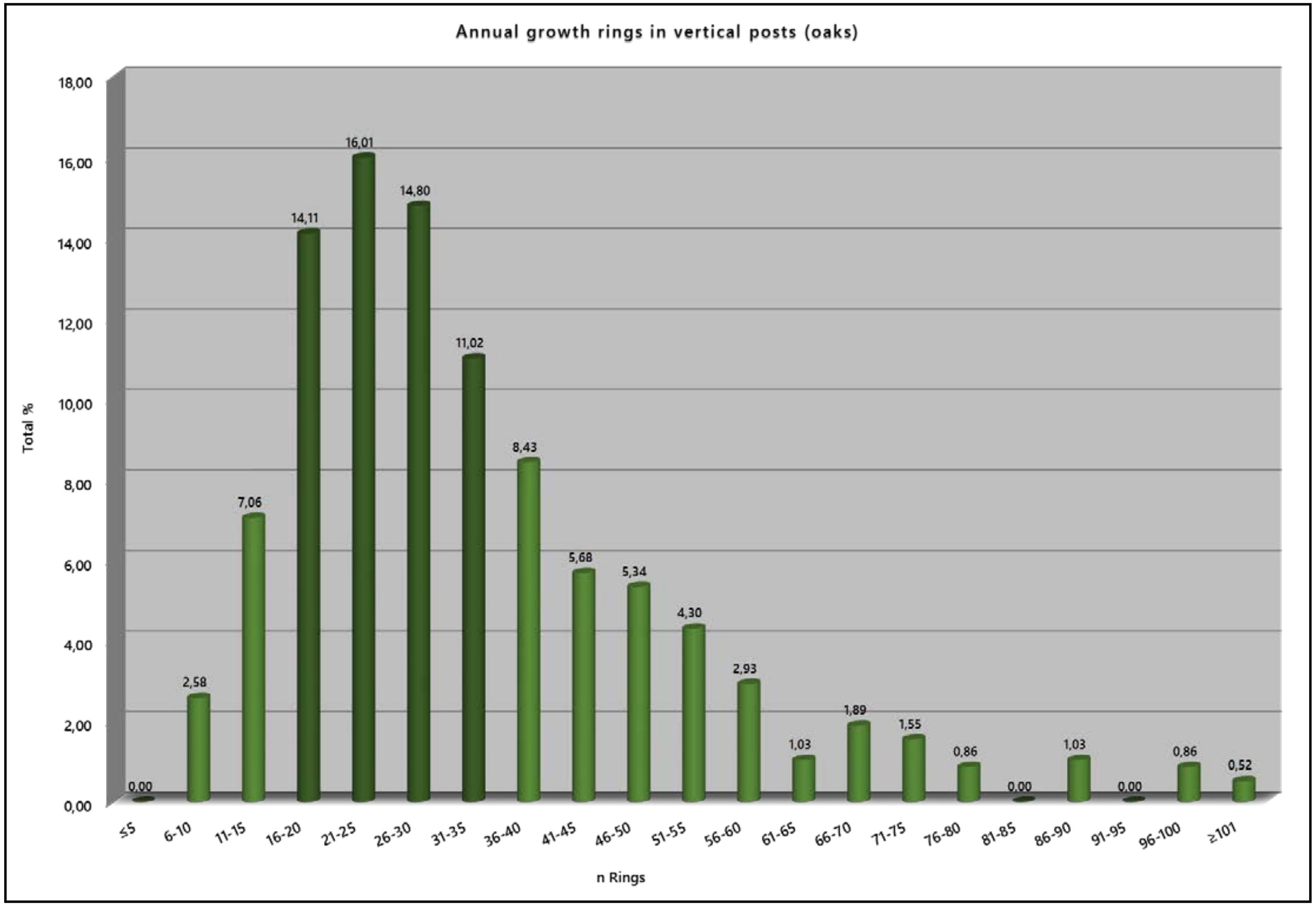
a



b

Fig. 67 Annual growth rings measured in oak trees' stems of vertical posts **a.** Overall number of measured annual rings **b.** Rates in %.

Annual growth rings (Oaks)	**n Elements**
≤5	0
6-10	15
11-15	41
16-20	82
21-25	93
26-30	86
31-35	64
36-40	49
41-45	33
46-50	31
51-55	25
56-60	17
61-65	6
66-70	11
71-75	9
76-80	5
81-85	0
86-90	6
91-95	0
96-100	5
≥101	3
Total	**581**

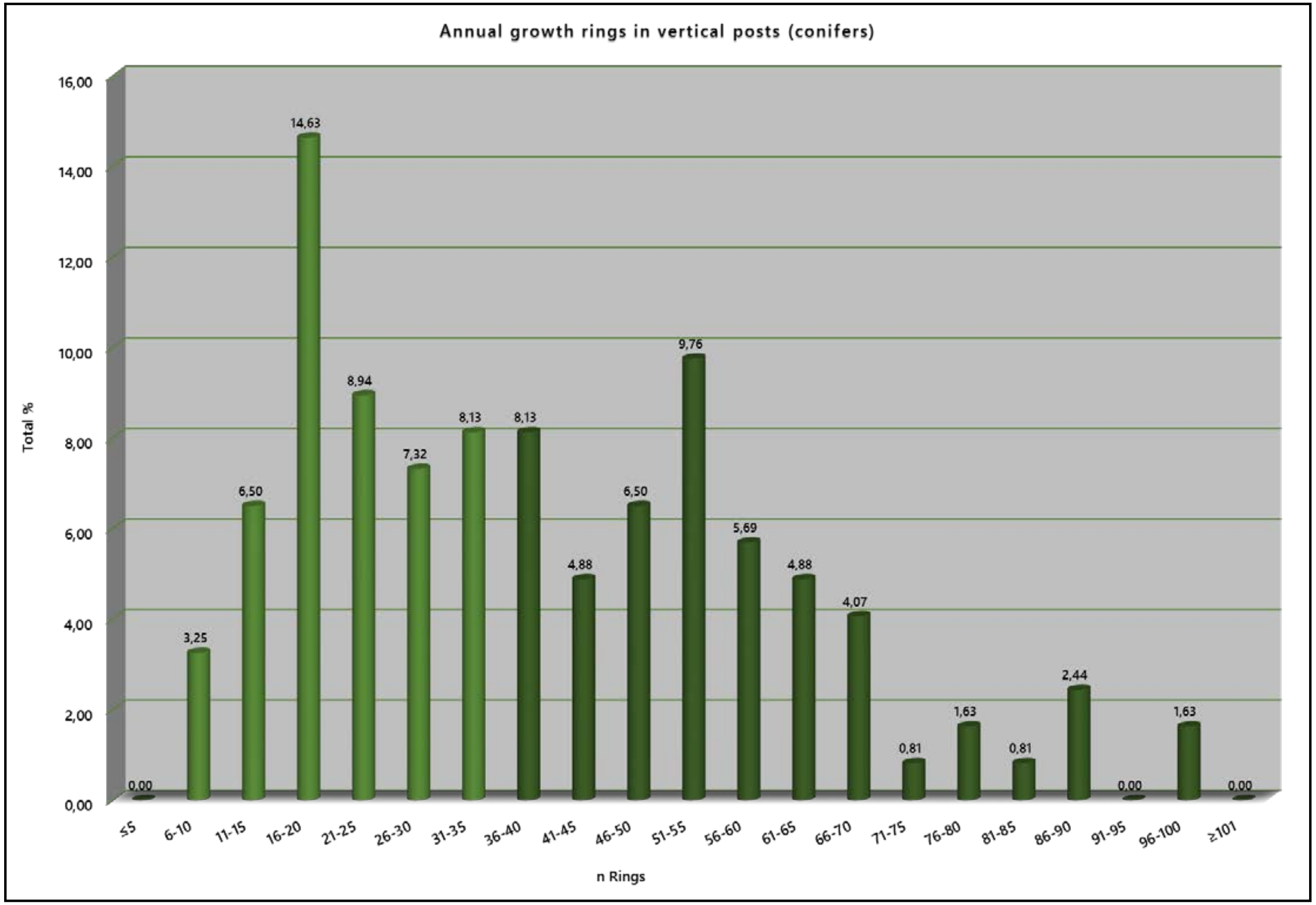


a **b**

Fig. 68 Annual growth rings measured in conifer trees' stems of vertical posts **a.** Overall number of measured annual rings **b.** Rates in %.

Annual growth rings (Conifers)	**n Elements**
≤5	0
6-10	5
11-15	15
16-20	23
21-25	14
26-30	9
31-35	10
36-40	10
41-45	6
46-50	8
51-55	12
56-60	8
61-65	6
66-70	5
71-75	1
76-80	2
81-85	1
86-90	3
91-95	0
96-100	2
≥101	0
Total	**123**

a



b

Fig. 69 Comparative chart with rates of annual growth rings measured in oak and conifer trees' stems of vertical posts.

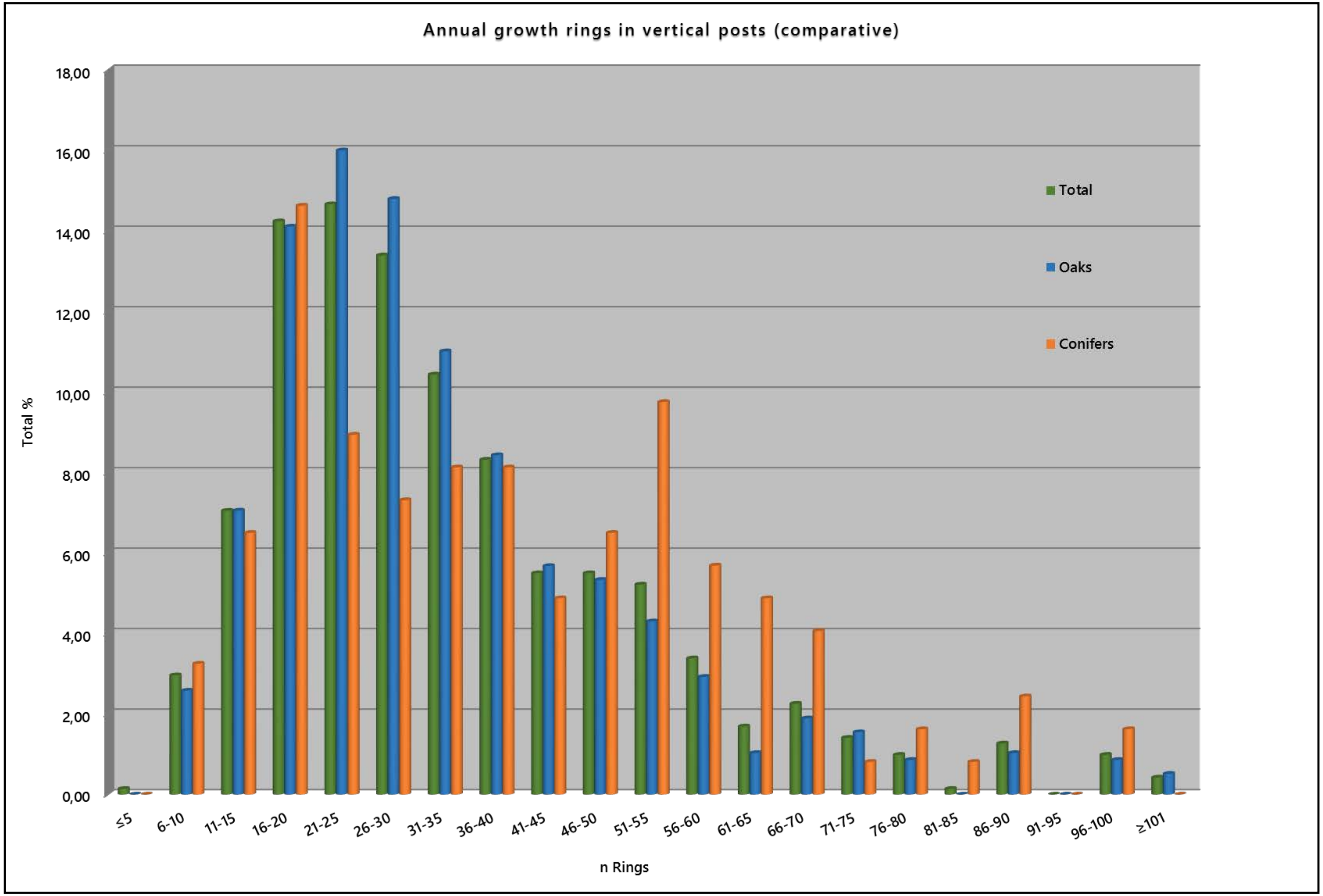
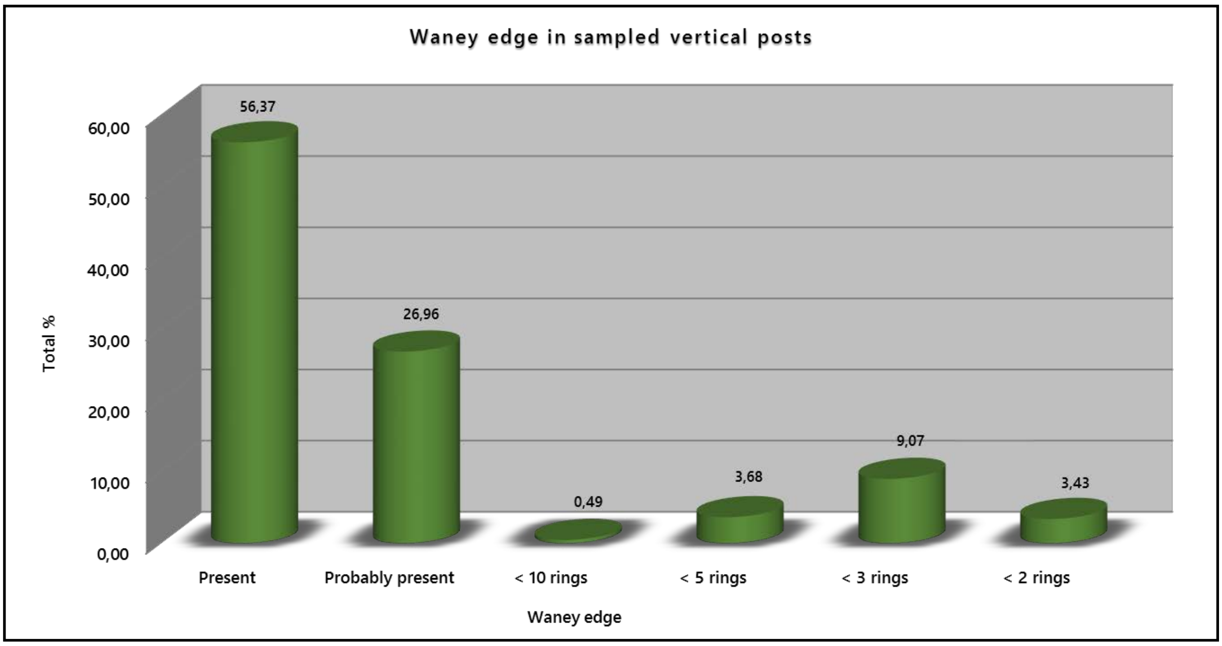


Fig. 70 Sampled vertical posts that bear evidence for the presence of waney edge **a.** Overall number of measured samples **b.** Rates in %.

Waney edge	**n Elements**
Present	230
Probably present	110
< 10 rings	2
< 5 rings	15
< 3 rings	37
< 2 rings	14
Total	**408**

a

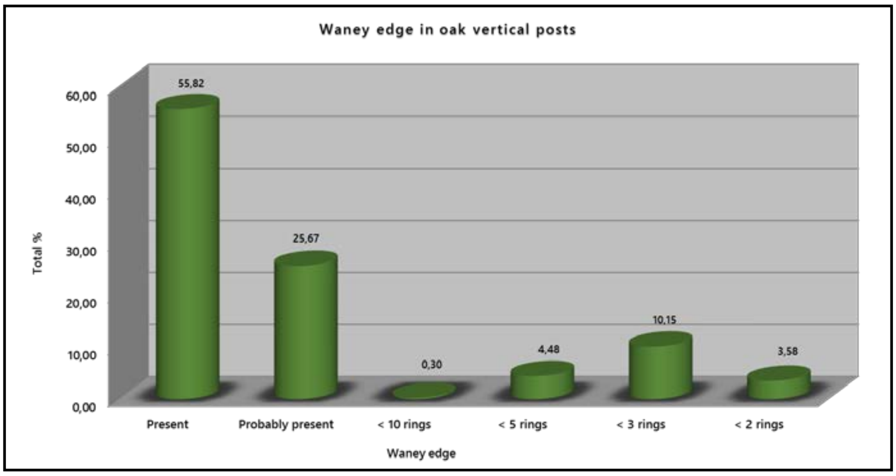


b

Fig. 71 Sampled vertical oak posts that bear evidence for the presence of waney edge **a.** Overall number of measured samples **b.** Rates in %.

Waney edge (Oaks)	n Elements
Present	187
Probably present	86
< 10 rings	1
< 5 rings	15
< 3 rings	34
< 2 rings	12
Total	**335**

a

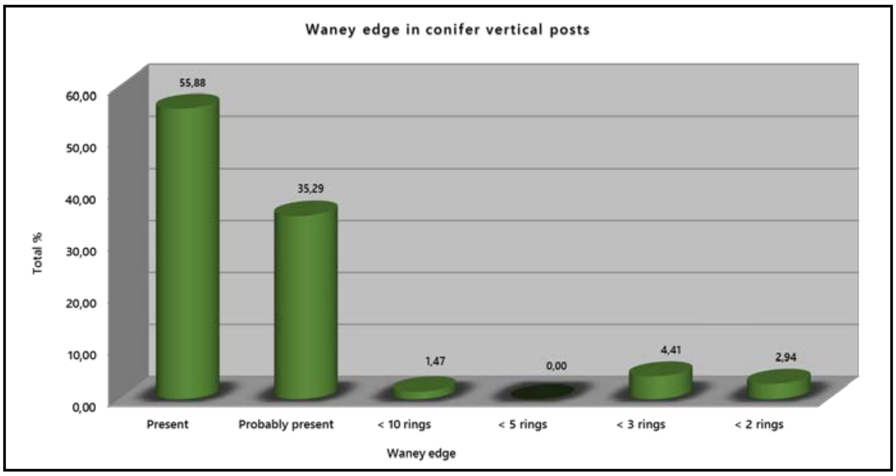


b

Fig. 72 Sampled vertical conifer posts that bear evidence for the presence of waney edge **a.** Overall number of measured samples **b.** Rates in %.

Waney edge (Conifers)	n Elements
Present	38
Probably present	24
< 10 rings	1
< 5 rings	0
< 3 rings	3
< 2 rings	2
Total	**68**

a



b

Fig. 73 Comparative chart with rates of waney edge detected in vertical oaks and conifers posts.

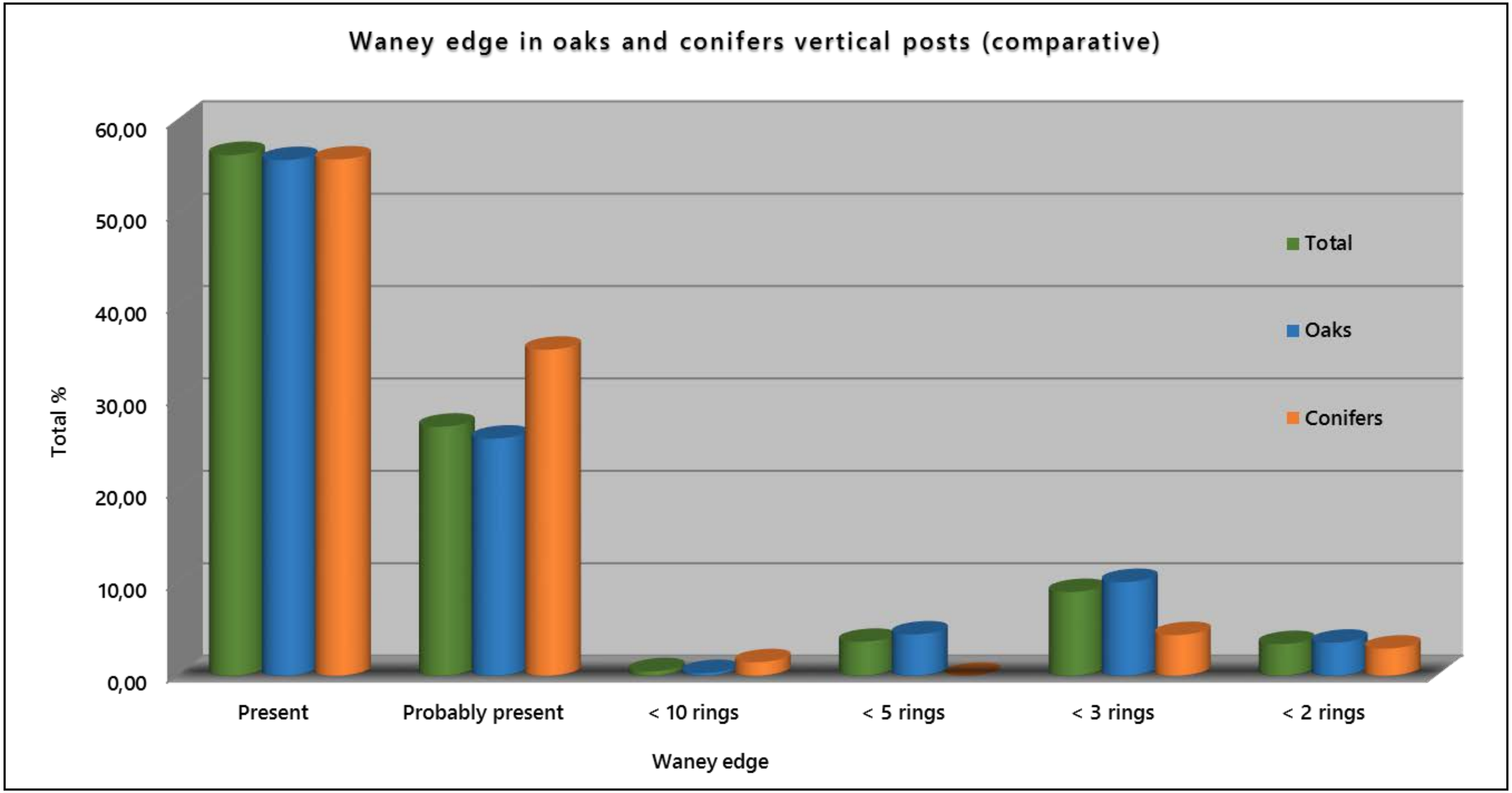
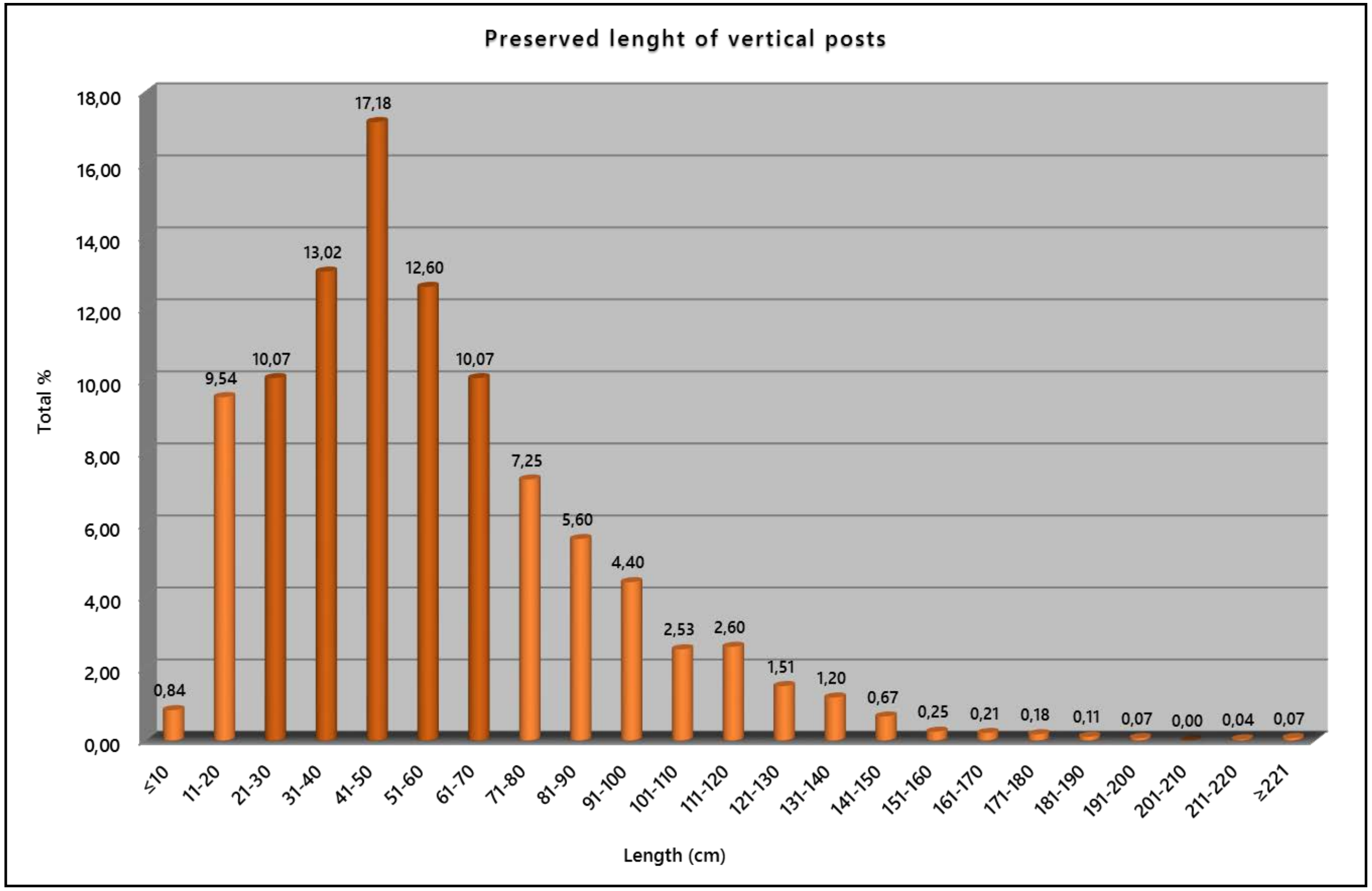


Fig. 74 Preserved length of vertical posts from Anarghiri IXb **a.** Overall number of elements **b.** Rates in %.

Length (cm)	n Elements
≤10	24
11-20	271
21-30	286
31-40	370
41-50	488
51-60	358
61-70	286
71-80	206
81-90	159
91-100	125
101-110	72
111-120	74
121-130	43
131-140	34
141-150	19
151-160	7
161-170	6
171-180	5
181-190	3
191-200	2
201-210	0
211-220	1
≥221	2
Total	**2841**

a

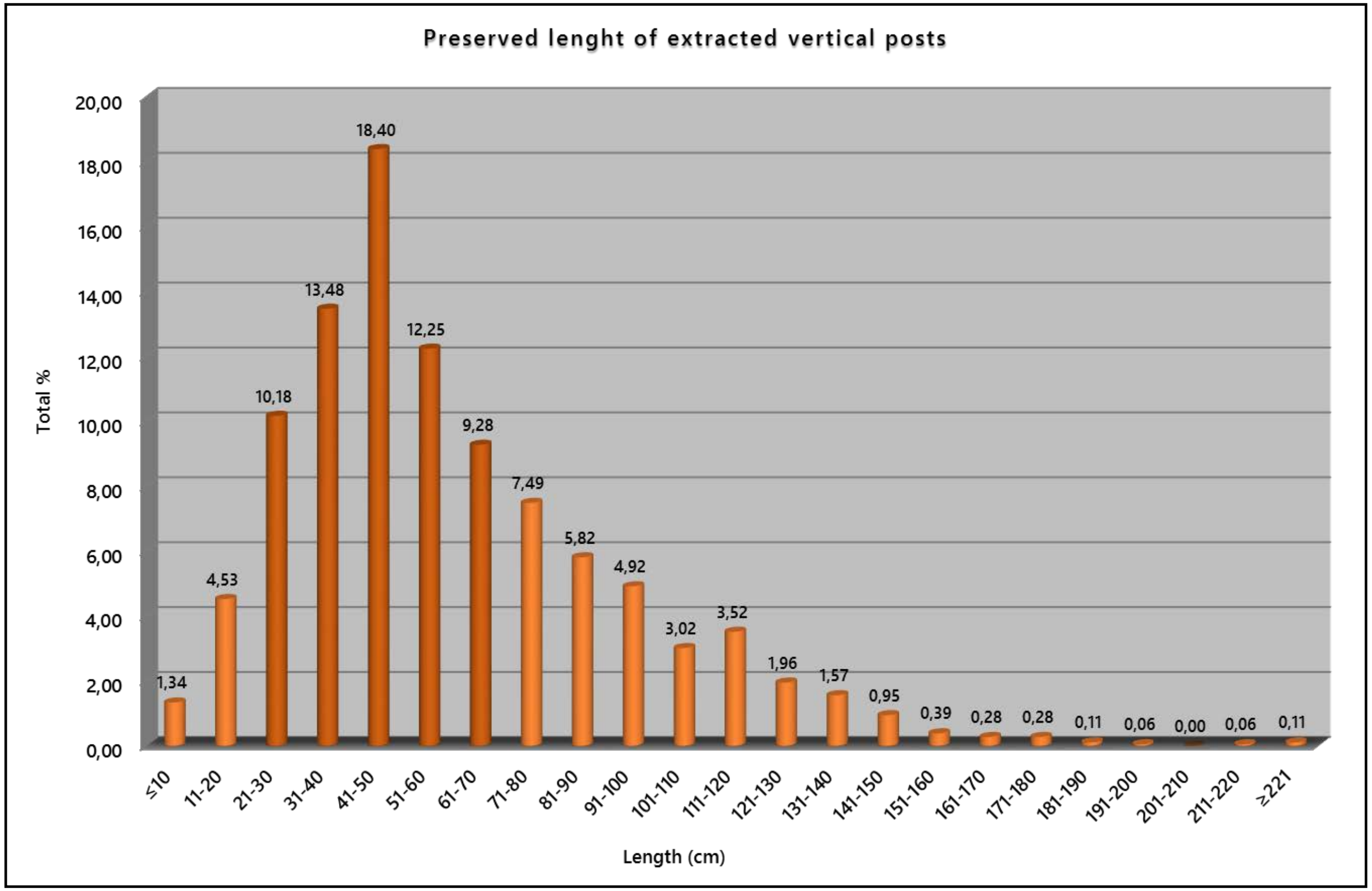


b

Fig. 75 Preserved length of posts extracted from the layers of Anarghiri IXb **a.** Overall number of elements **b.** Rates in %.

Length (cm)	n Elements
≤10	24
11-20	81
21-30	182
31-40	241
41-50	329
51-60	219
61-70	166
71-80	134
81-90	104
91-100	88
101-110	54
111-120	63
121-130	35
131-140	28
141-150	17
151-160	7
161-170	5
171-180	5
181-190	2
191-200	1
201-210	0
211-220	1
≥221	2
Total	**1788**

a



b

Fig. 76 Comparative chart with rates of preserved length of total and extracted posts.

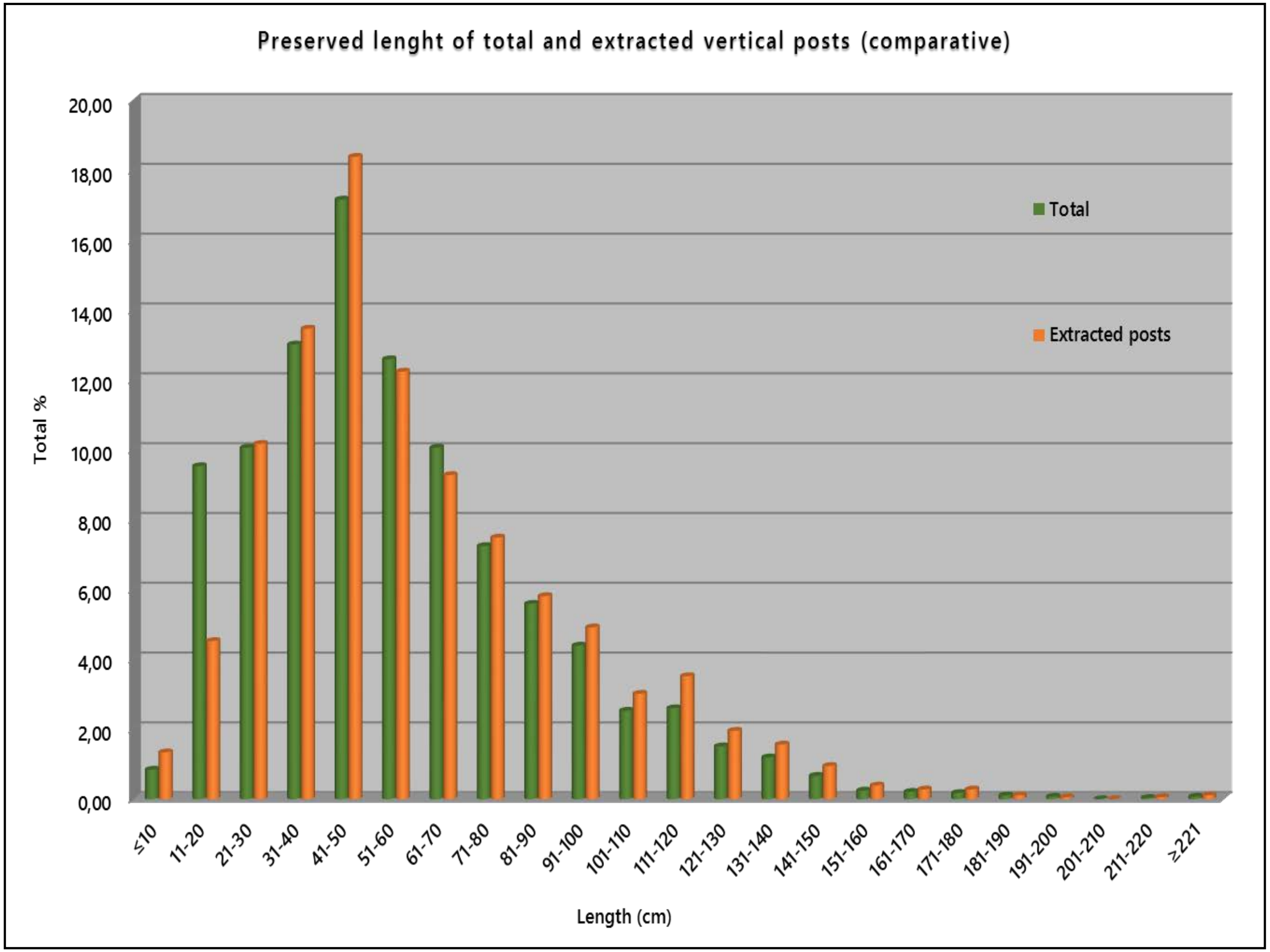
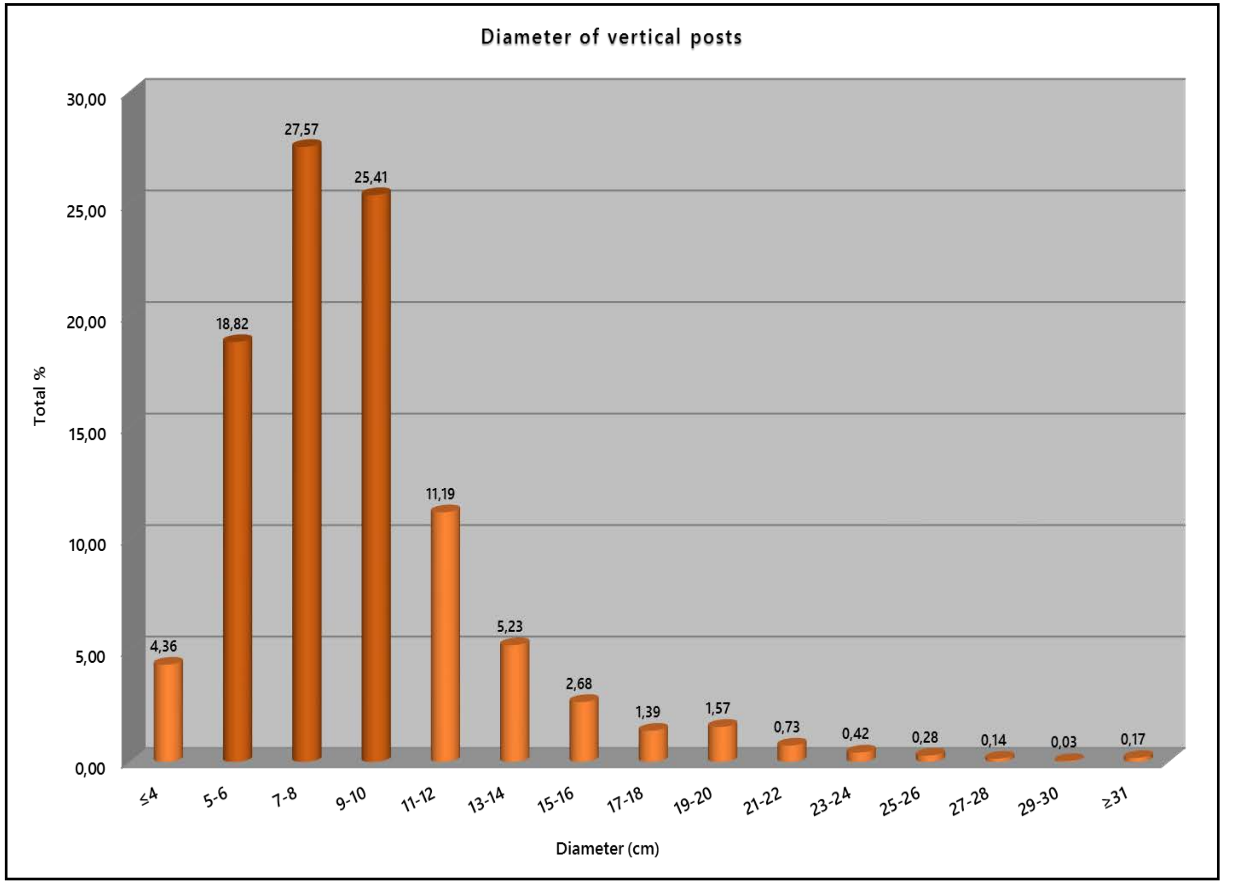


Fig. 77 Stems' diameter of vertical posts **a.** Overall number of elements **b.** Rates in %.

Diameter (cm)	n Elements
≤4	125
5-6	540
7-8	791
9-10	729
11-12	321
13-14	150
15-16	77
17-18	40
19-20	45
21-22	21
23-24	12
25-26	8
27-28	4
29-30	1
≥31	5
Total	**2869**

a

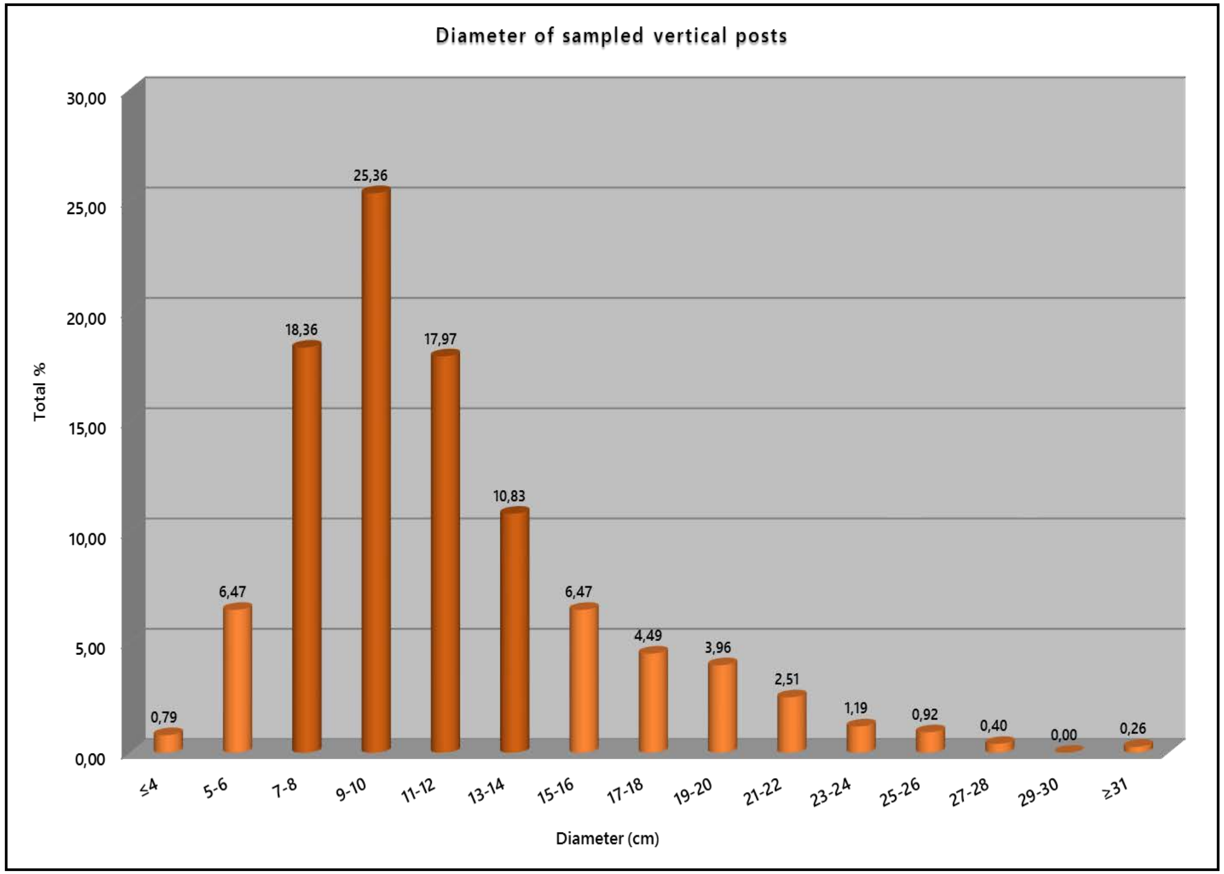


b

Fig. 78 Stems' diameter of sampled vertical posts **a.** Overall number of elements **b.** Rates in %.

Diameter (cm)	n Elements
≤4	6
5-6	49
7-8	139
9-10	192
11-12	136
13-14	82
15-16	49
17-18	34
19-20	30
21-22	19
23-24	9
25-26	7
27-28	3
29-30	0
≥31	2
Total	**757**

a



b

Fig. 79 Comparative chart with rates of diameter of vertical posts (total and sampled).

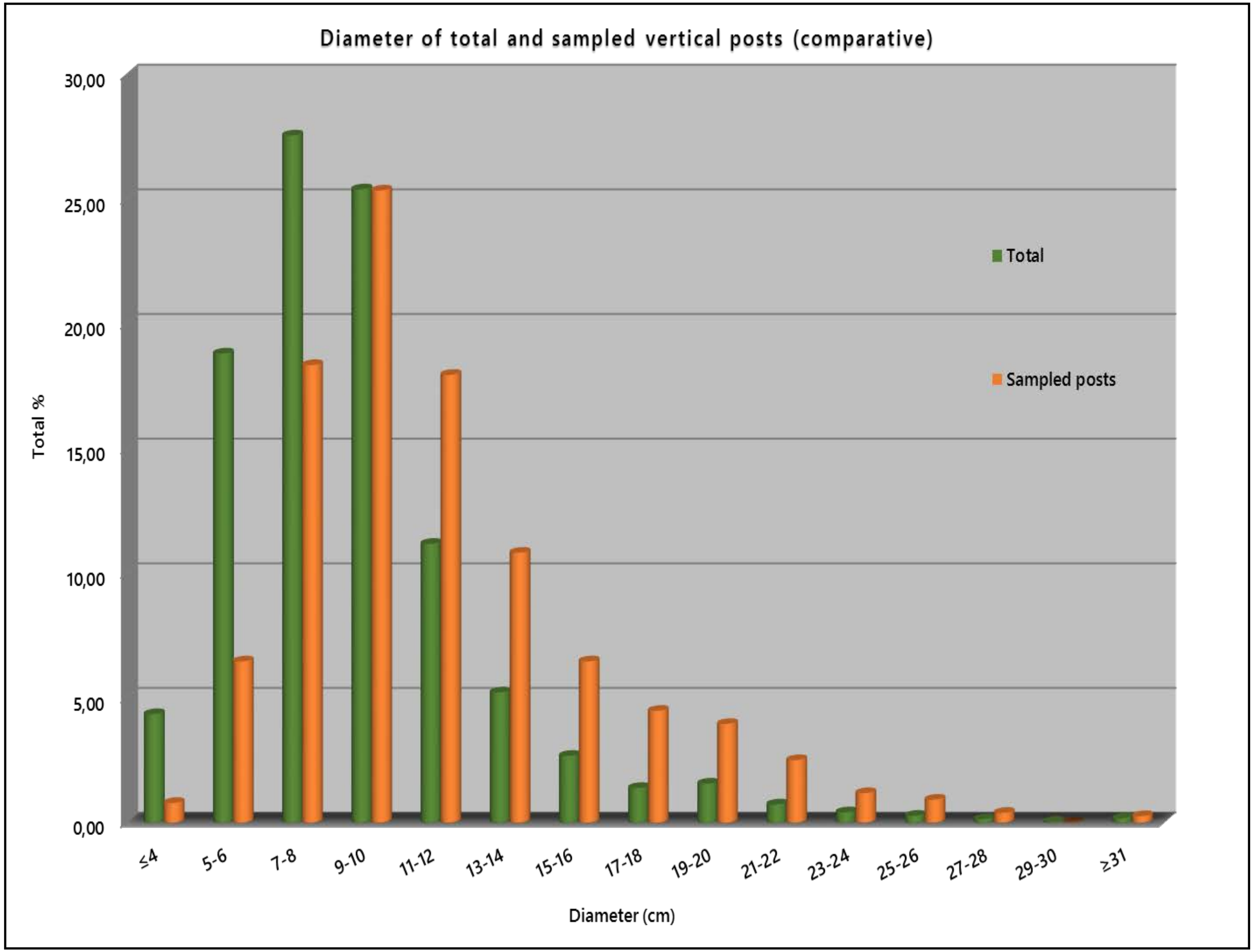
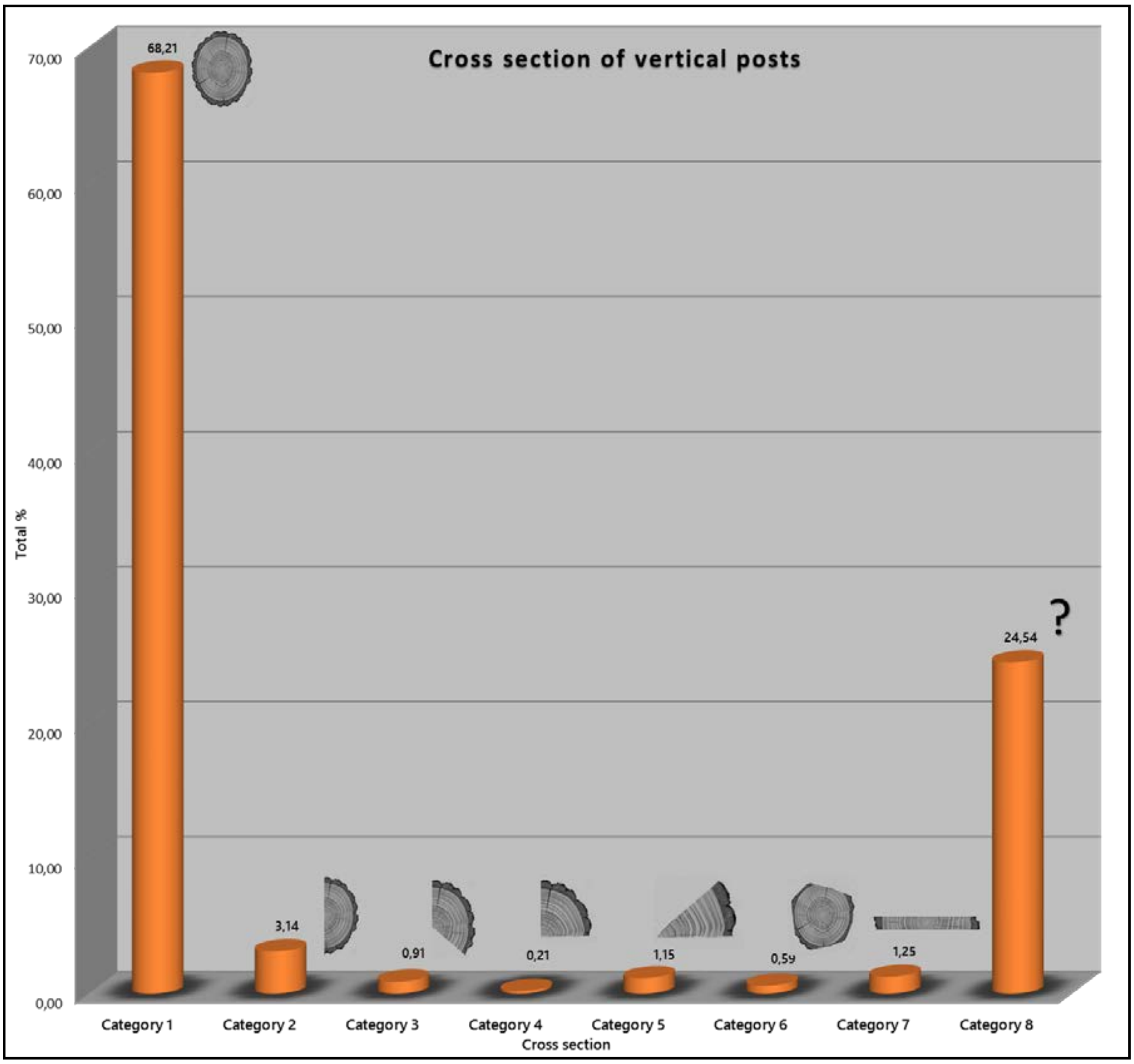


Fig. 80 Trees' stems cross section of vertical posts **a.** Overall number of elements **b.** Rates in %.

Cross section	**n Elements**
Category 1	1957
Category 2	90
Category 3	26
Category 4	6
Category 5	33
Category 6	17
Category 7	36
Category 8	704
Total	**2869**

a

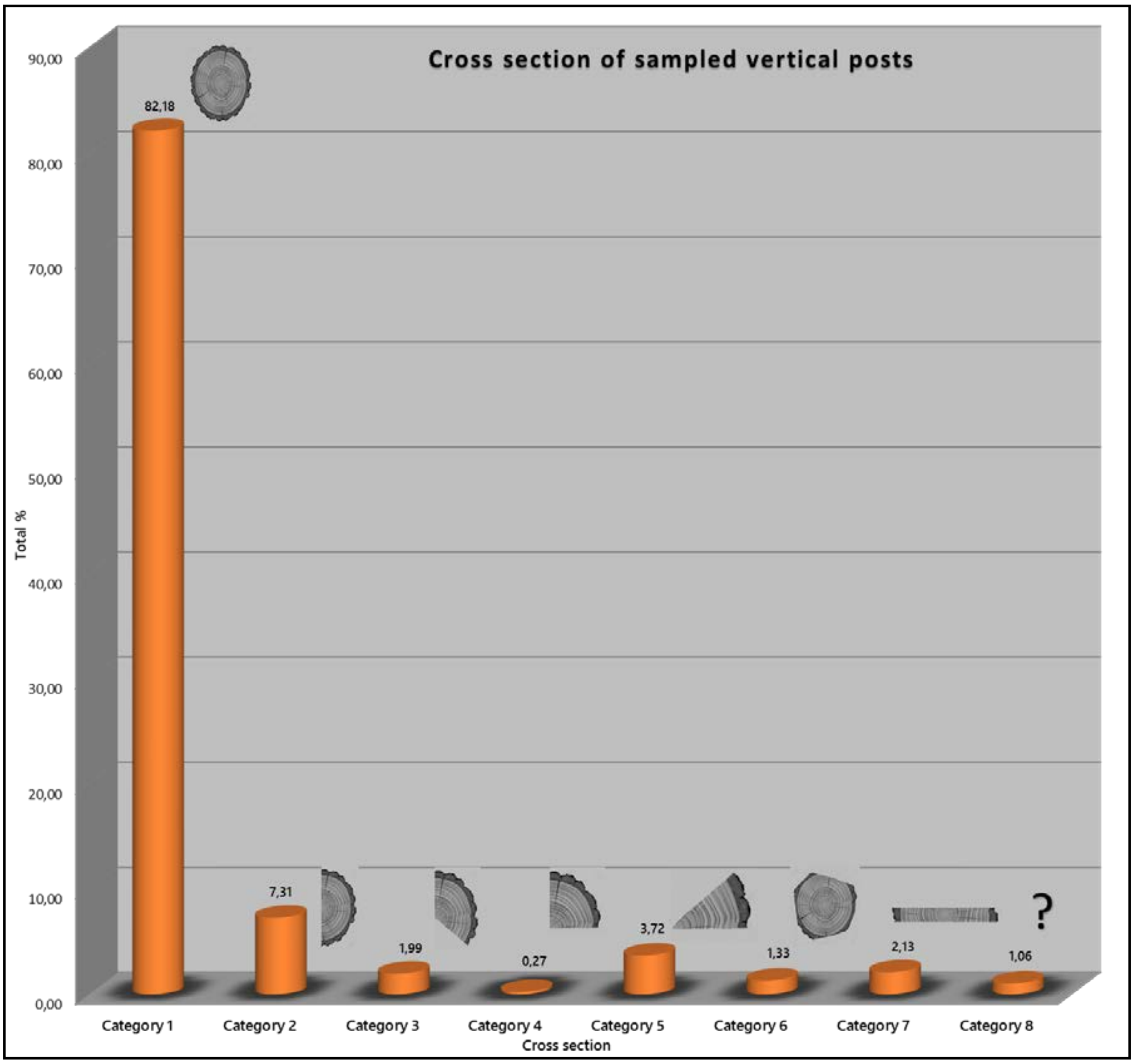


b

Fig. 81 Trees' stems cross section categories of sampled vertical posts **a.** Overall number of sampled elements **b.** Rates in %.

Cross section	n Elements
Category 1	618
Category 2	55
Category 3	15
Category 4	2
Category 5	28
Category 6	10
Category 7	16
Category 8	8
Total	**752**

a



b

Fig. 82 Comparative chart with rates of cross section of vertical posts (total and sampled).

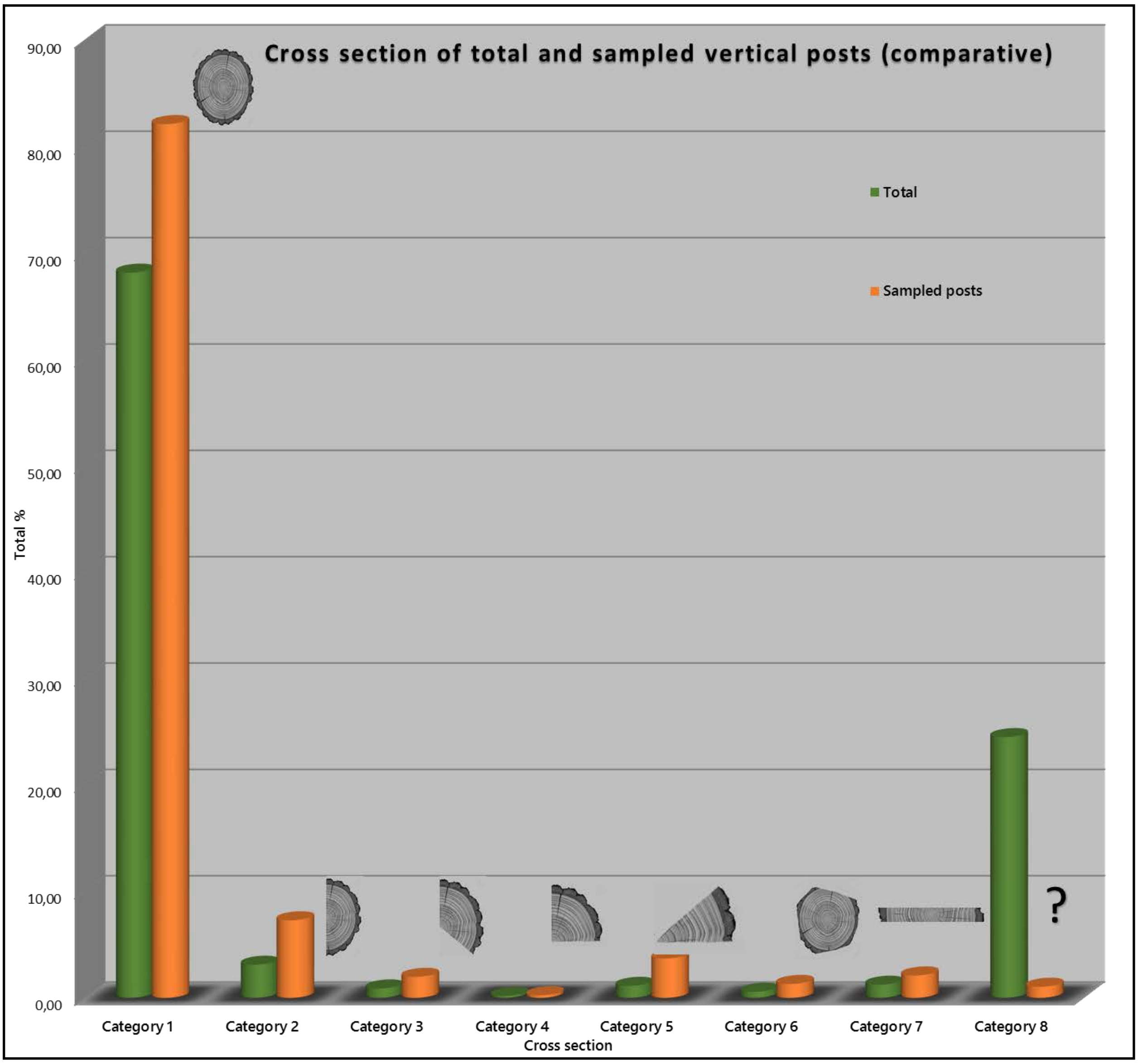
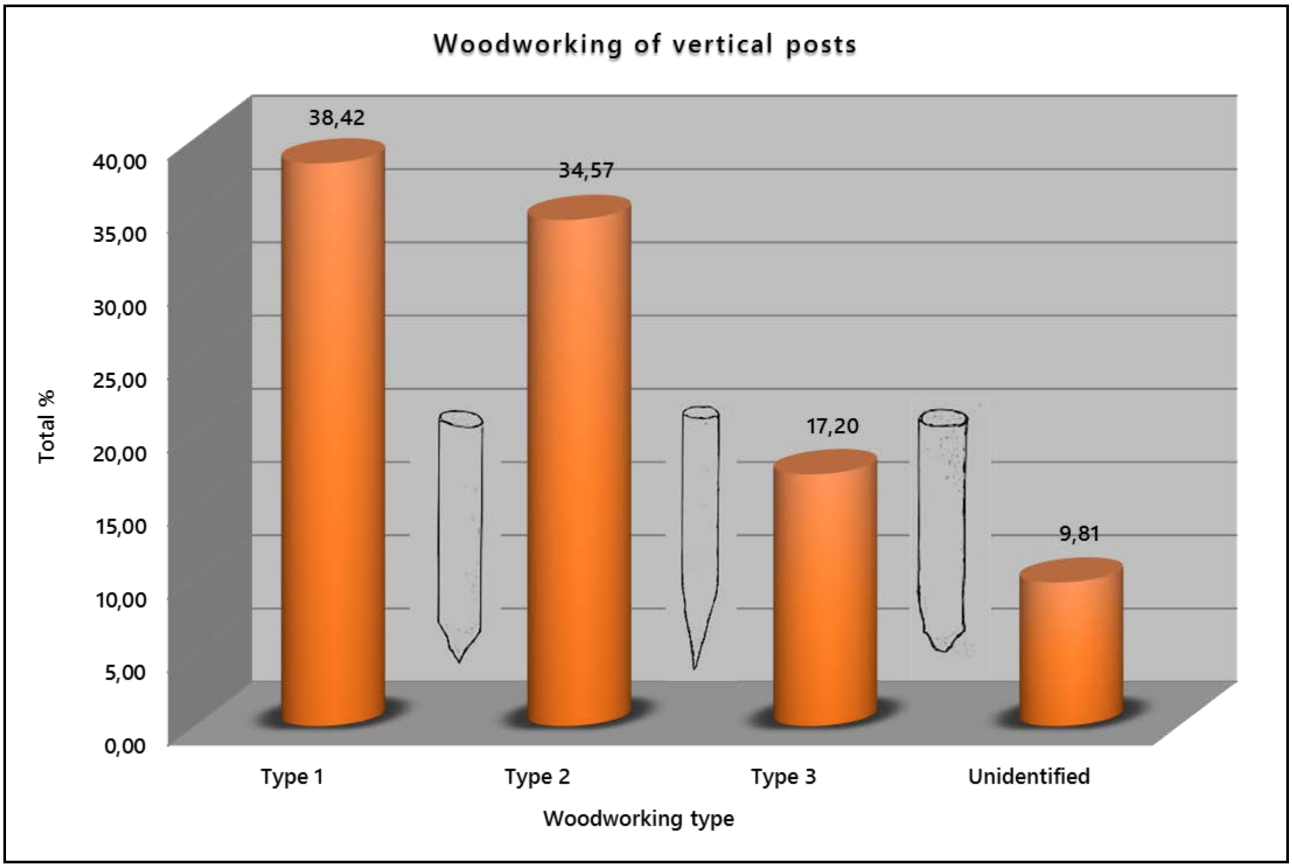


Fig. 83 Woodworking types of vertical posts **a.** Overall number of elements **b.** Rates in %.

Woodworking type	**n Elements**
Type 1	239
Type 2	215
Type 3	107
Unidentified	61
Total	**622**

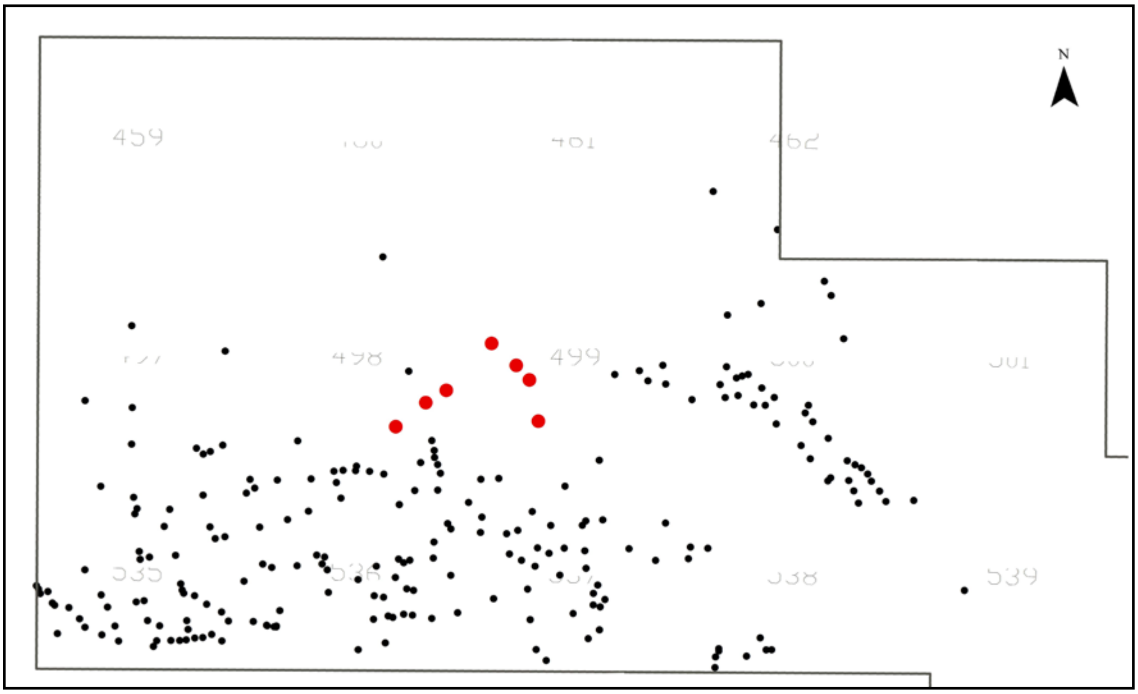
a



b

Fig. 84 a. Five extraordinary posts from Northern Sector **b.** Their spatial distribution.

a



b

Fig. 85 The “fork-like” VP 11480 during its discovery.

Fig. 86 Posts and possible features in Soundings 644/680.

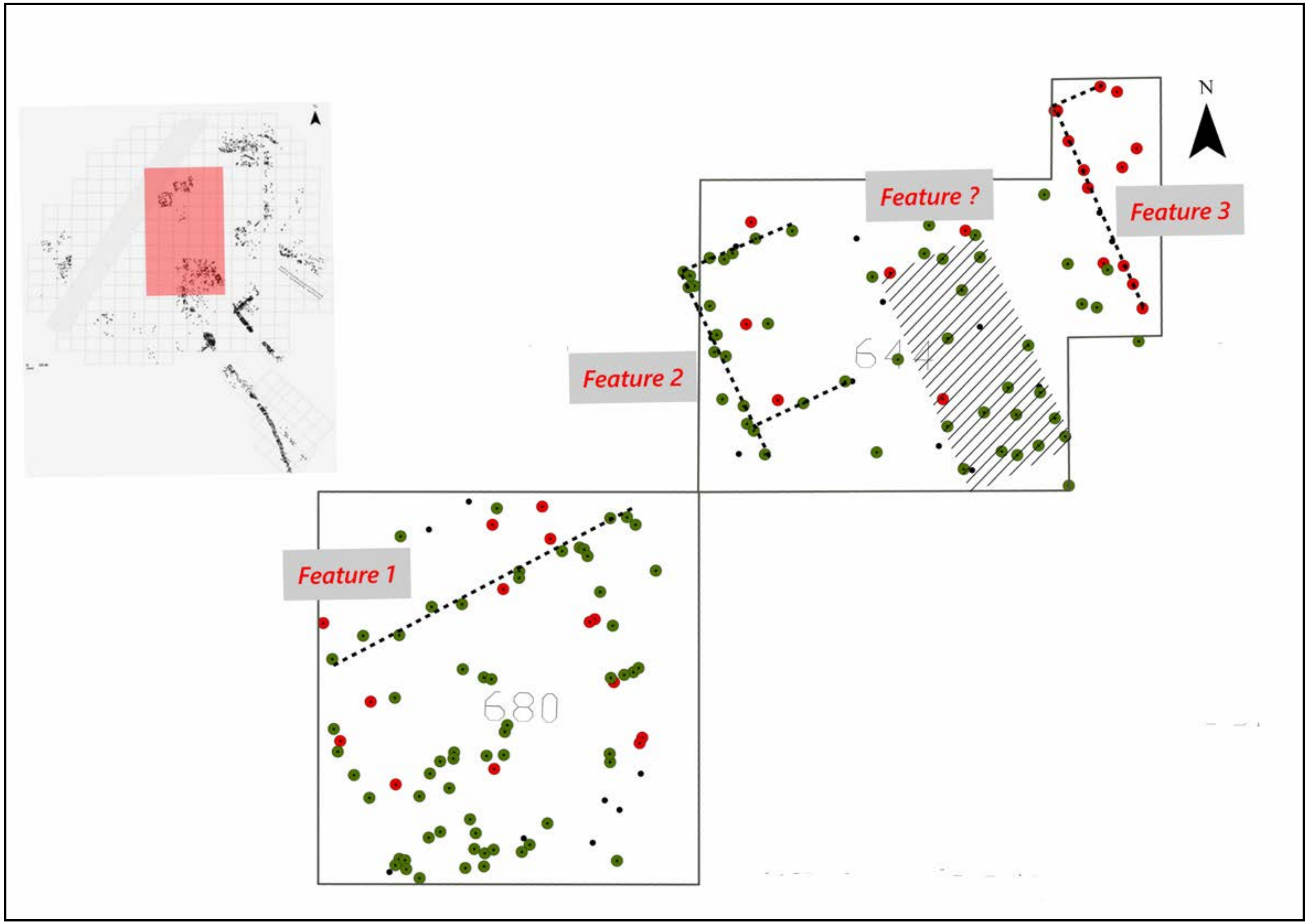


Fig. 87 General views of *Feature 4* **a.** Trench 721 a **b.** The southern end of *Feature 4* in trench 721 c **c.** Trench 721 a **d.** Detail of organic material **e.** Vertical post with adjacent splits.

Fig. 88 Plan of *Feature 4* with posts over 25cm in diameter.

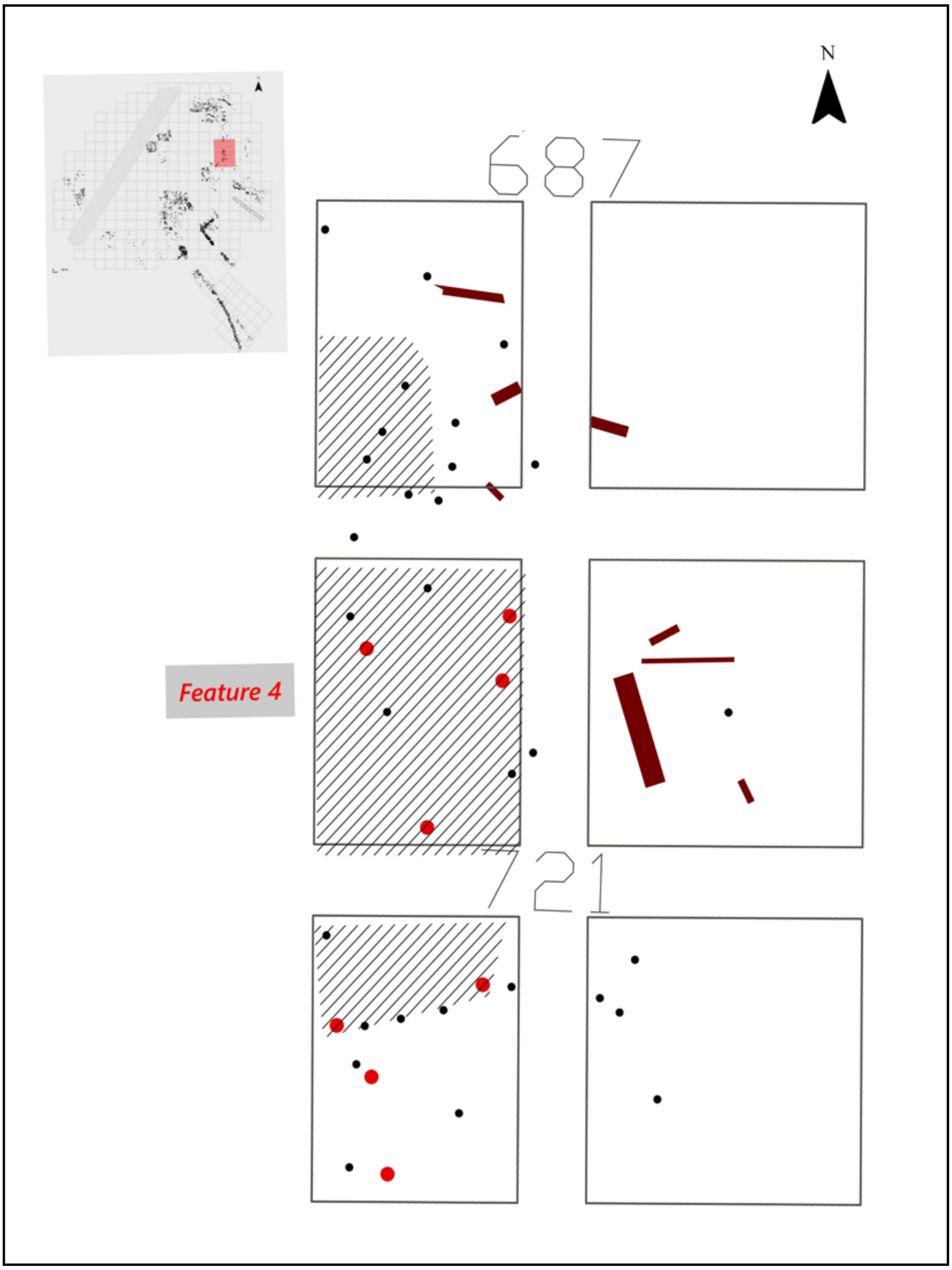


Fig. 89 General views of *Feature 5* **a.** Trench 833 d **b.** Trench 832 d **c.** Detail of organic material **d.** Vertical post (split) protruding from organic layer.

Fig. 90 Plan of *Feature 5* and dated posts in trenches 832 d, 833 c, d.

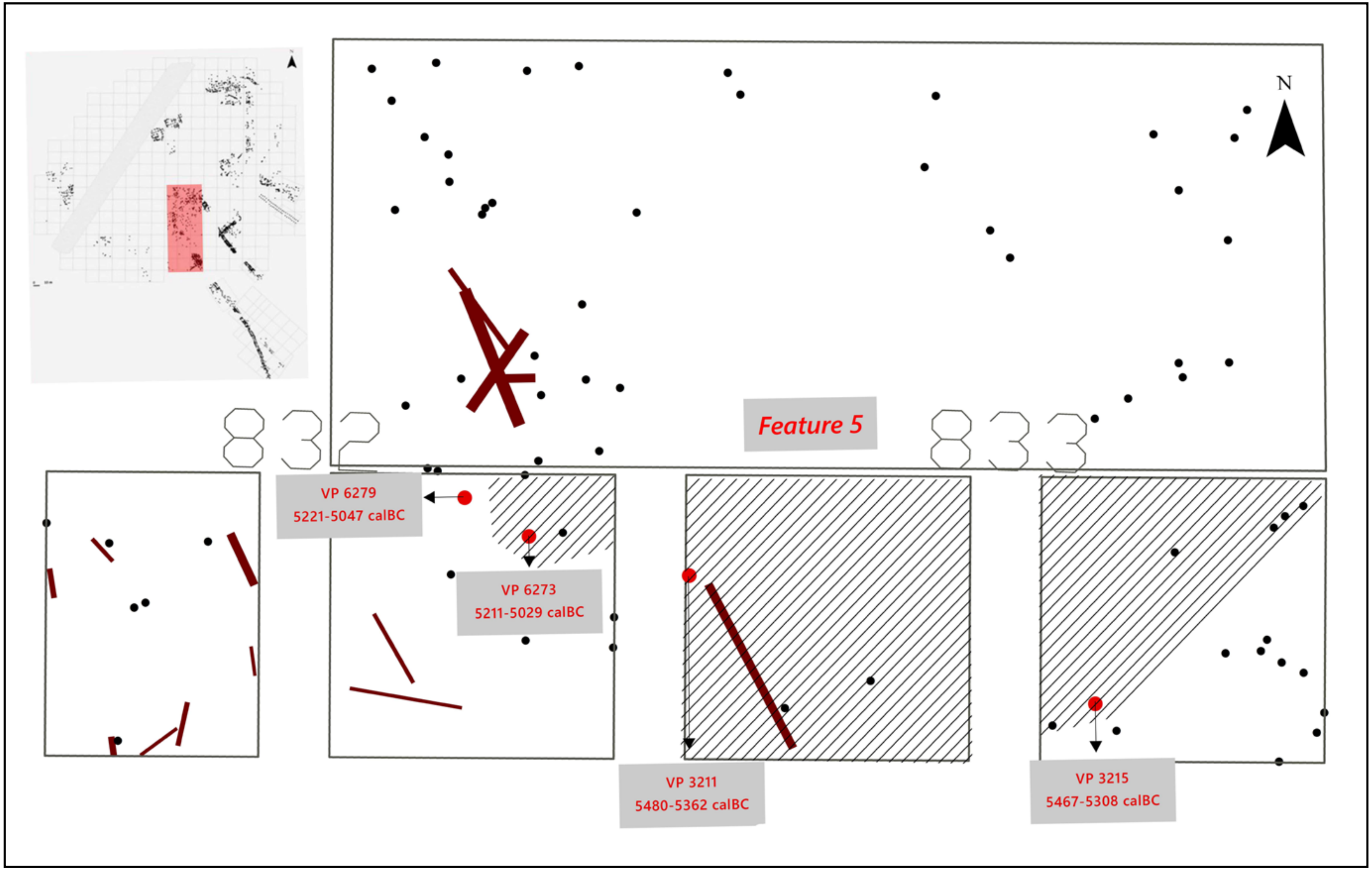


Fig. 91 Post 9262 from sounding 715.

Fig. 92 Post with processed end (handle?) from sounding 716.

Fig. 93 Post with processed at the lower end from sounding at Anarghiri III Late Neolithic I lakeside settlement (Petrou 2008).

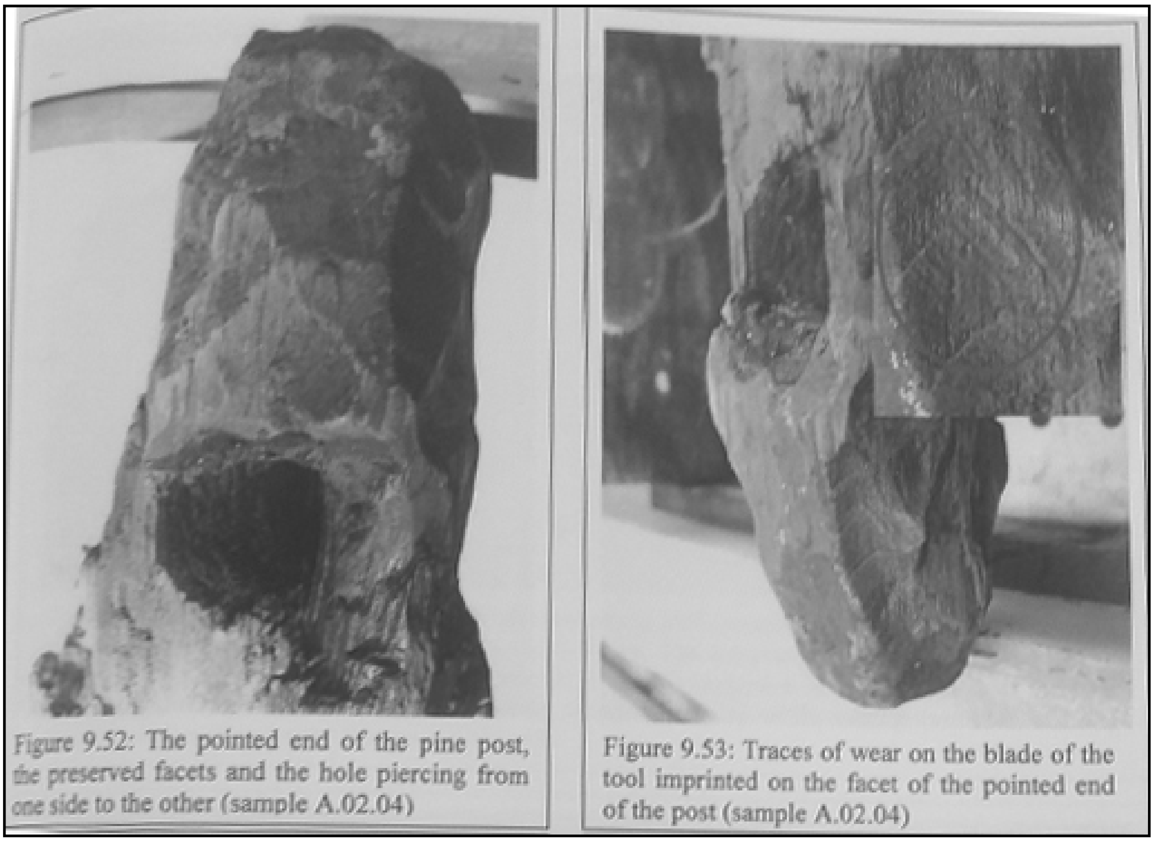


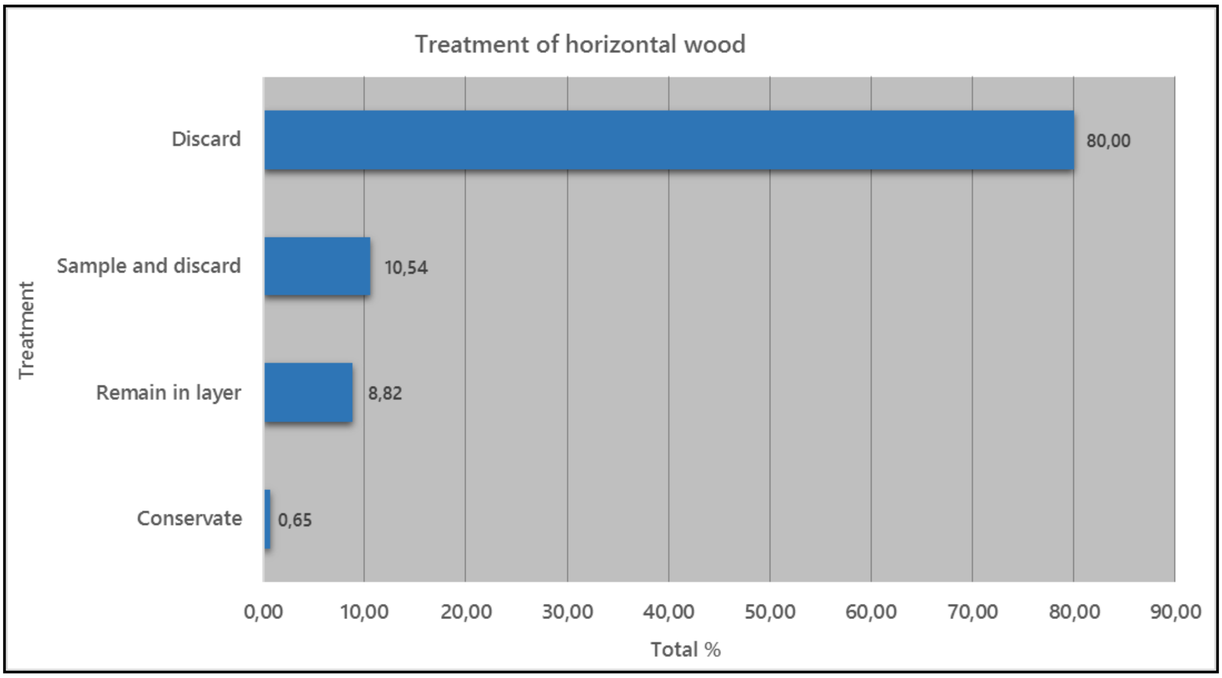
Figure 9.52: The pointed end of the pine post, the preserved facets and the hole piercing from one side to the other (sample A.02.04)

Figure 9.53: Traces of wear on the blade of the tool imprinted on the facet of the pointed end of the post (sample A.02.04)

Fig. 94 Treatment of horizontal wood in the rescue excavation of Anarghiri IXb **a.** Overall number of recorded posts **b.** Rates in %.

Treatment	n Elements
Discard	372
Sample and discard	49
Remain in layer	41
Conservate	3
Total	**465**

a

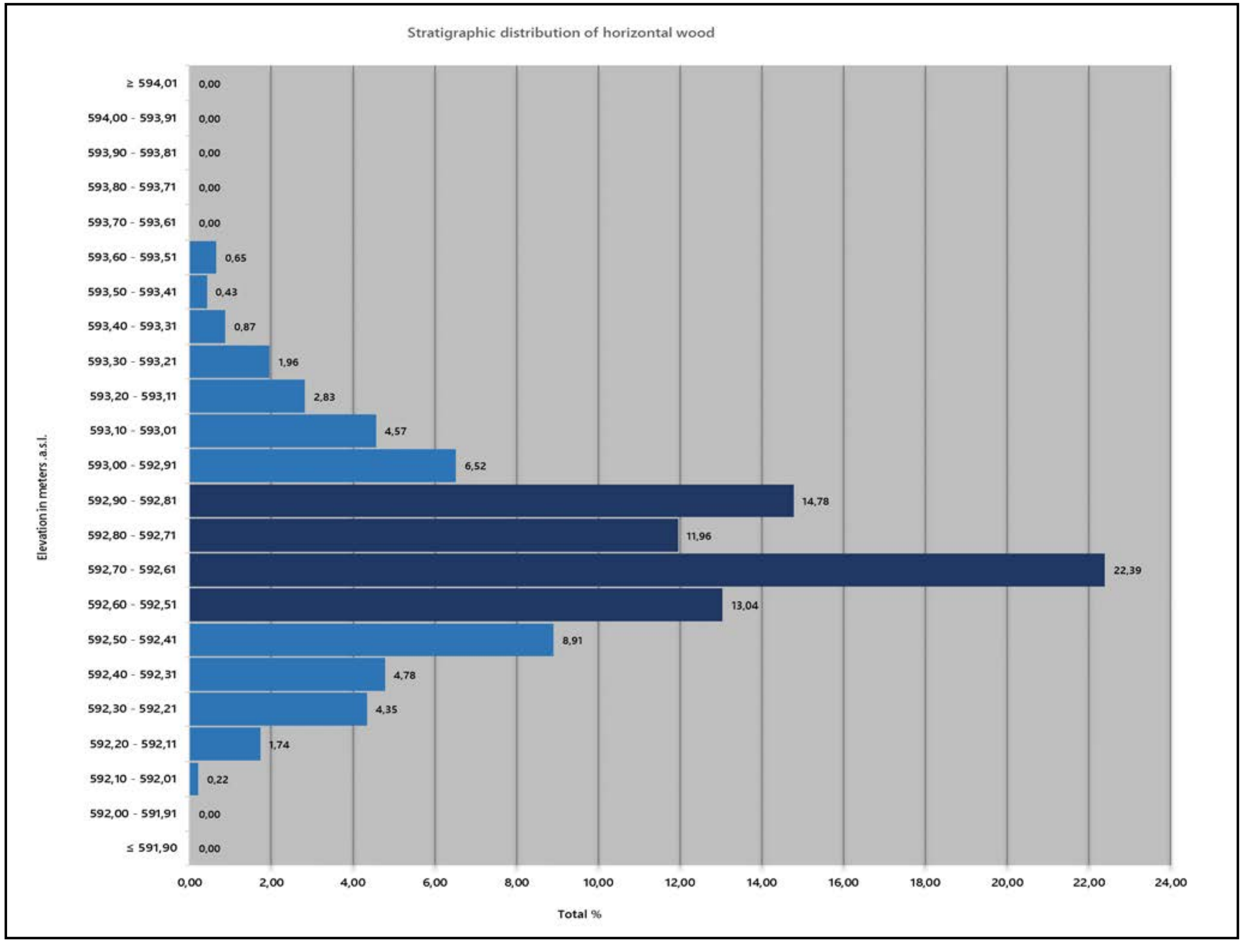


b

Fig. 95 The stratigraphic distribution of horizontal wood of 2013-2016 excavation's campaigns **a.** Overall number of recorded elements **b.** Rates in %.

Elevation (In meters above sea level)	**n Elements**
≥ 594,01	0
594,00 - 593,91	0
593,90 - 593,81	0
593,80 - 593,71	0
593,70 - 593,61	0
593,60 - 593,51	3
593,50 - 593,41	2
593,40 - 593,31	4
593,30 - 593,21	9
593,20 - 593,11	13
593,10 - 593,01	21
593,00 - 592,91	30
592,90 - 592,81	68
592,80 - 592,71	55
592,70 - 592,61	103
592,60 - 592,51	60
592,50 - 592,41	41
592,40 - 592,31	22
592,30 - 592,21	20
592,20 - 592,11	8
592,10 - 592,01	1
592,00 - 591,91	0
≤ 591,90	0
Total	**460**

a



b

Fig. 96 The stratigraphic distribution of structural wood, posts and horizontal wood (comparative).

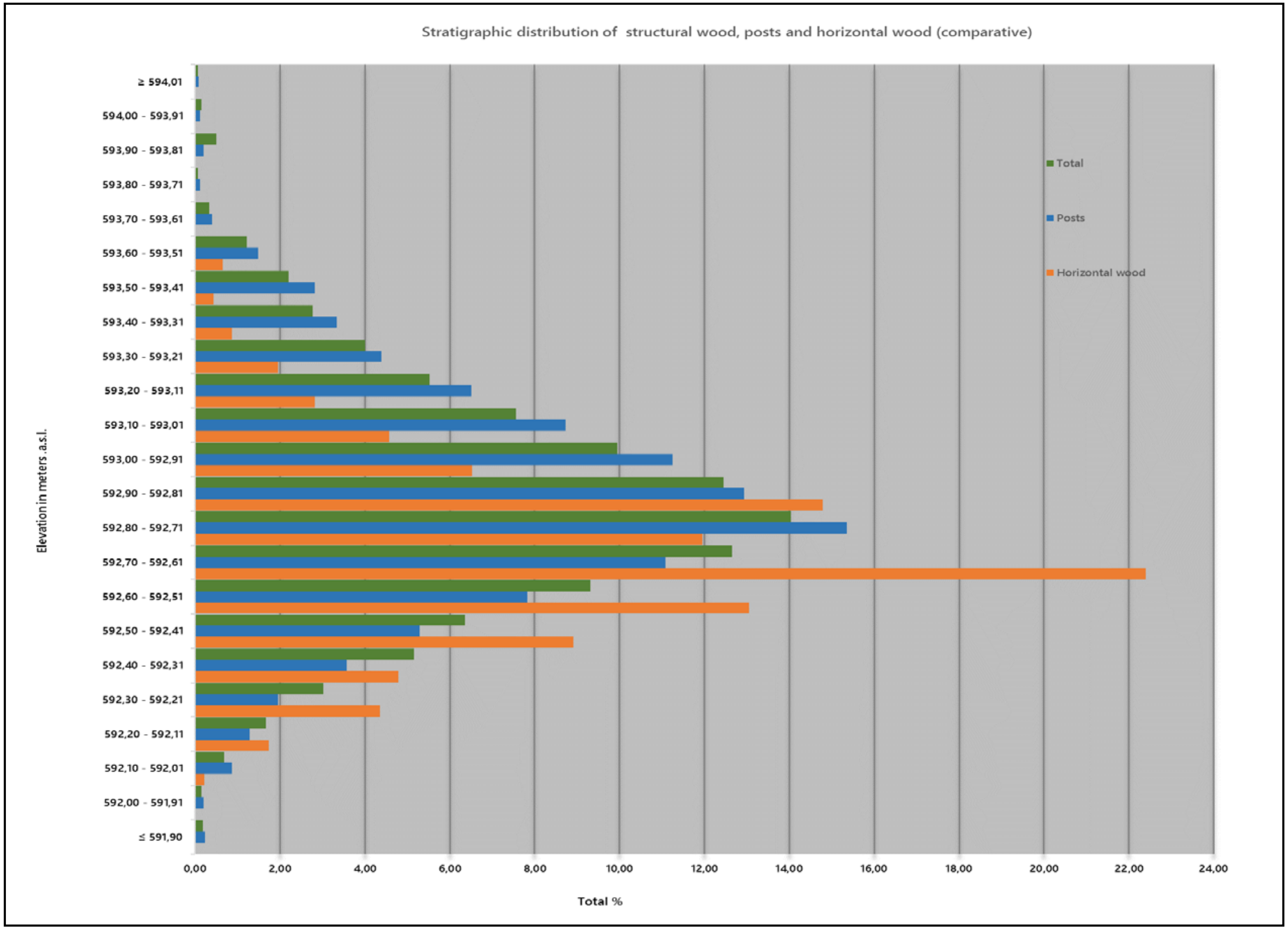
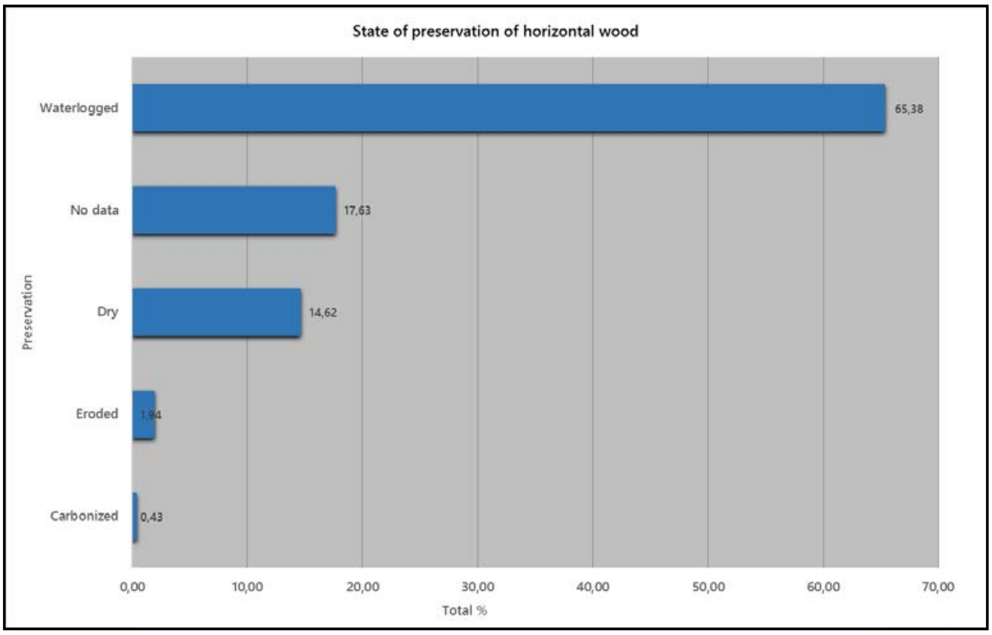


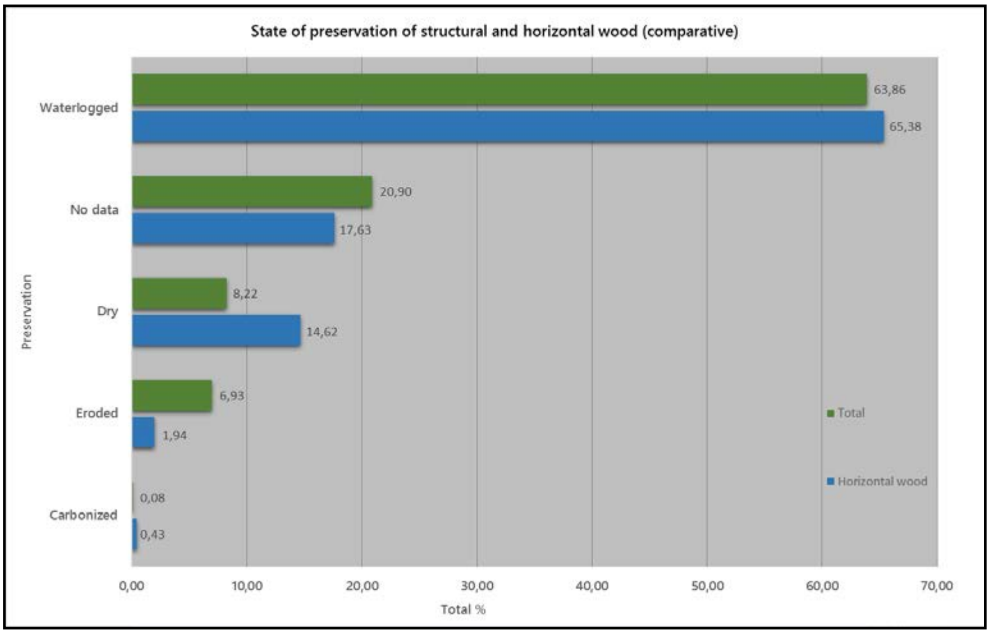
Fig. 97 The state of preservation of horizontal wood **a.** Overall number of recorded elements **b.** Rates in % **c.** Comparative chart of structural wood and horizontal wood state of preservation.

State of preservation	**n Elements**
Waterlogged	304
No data	82
Dry	68
Eroded	9
Carbonized	2
Total	**465**

a



b

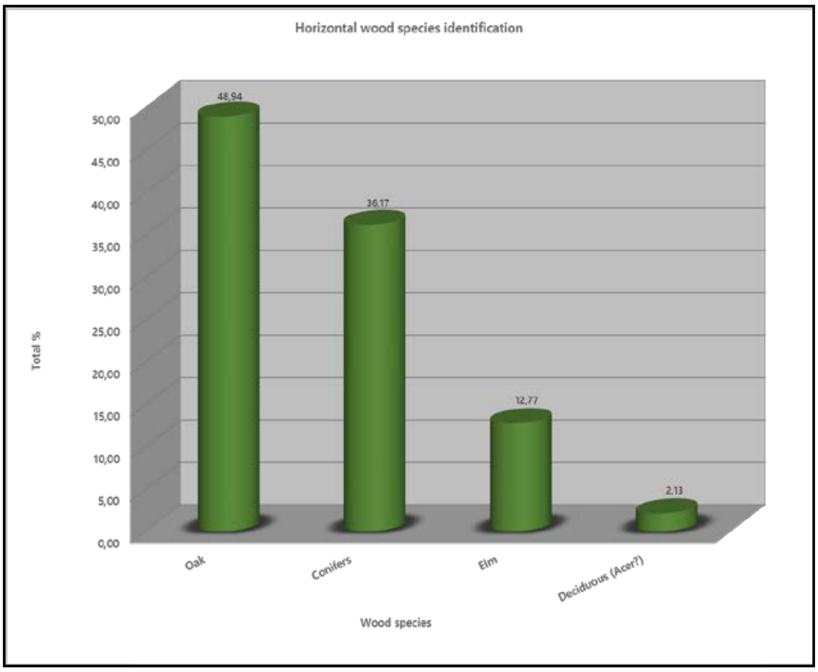


c

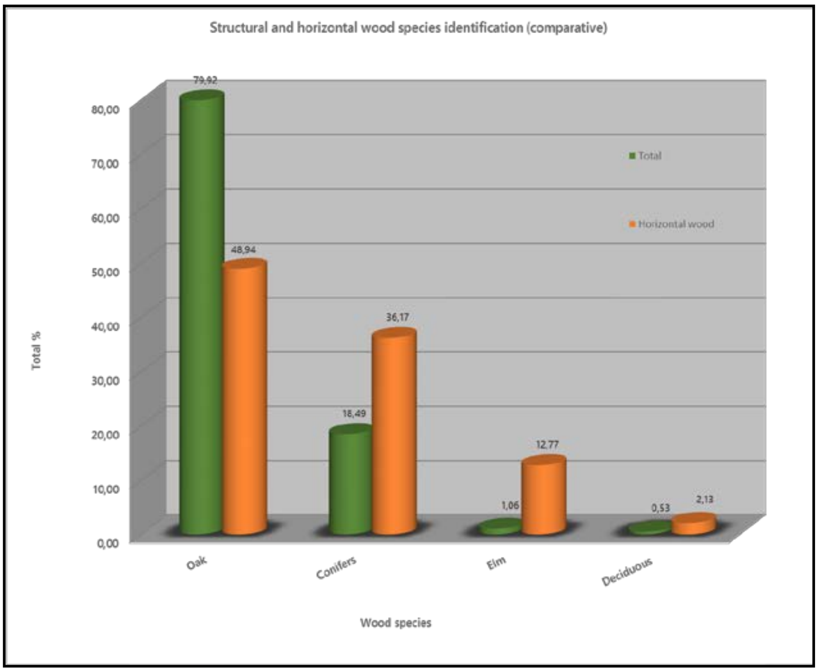
Fig. 98 Wood species identification of horizontal wood **a.** Overall number of identified horizontal elements **b.** Rates in % **c.** Comparative chart of structural wood and horizontal wood species identification.

Wood species	n Elements
Oak	23
Conifers	17
Elm	6
Deciduous (Acer?)	1
Total	**47**

a



b

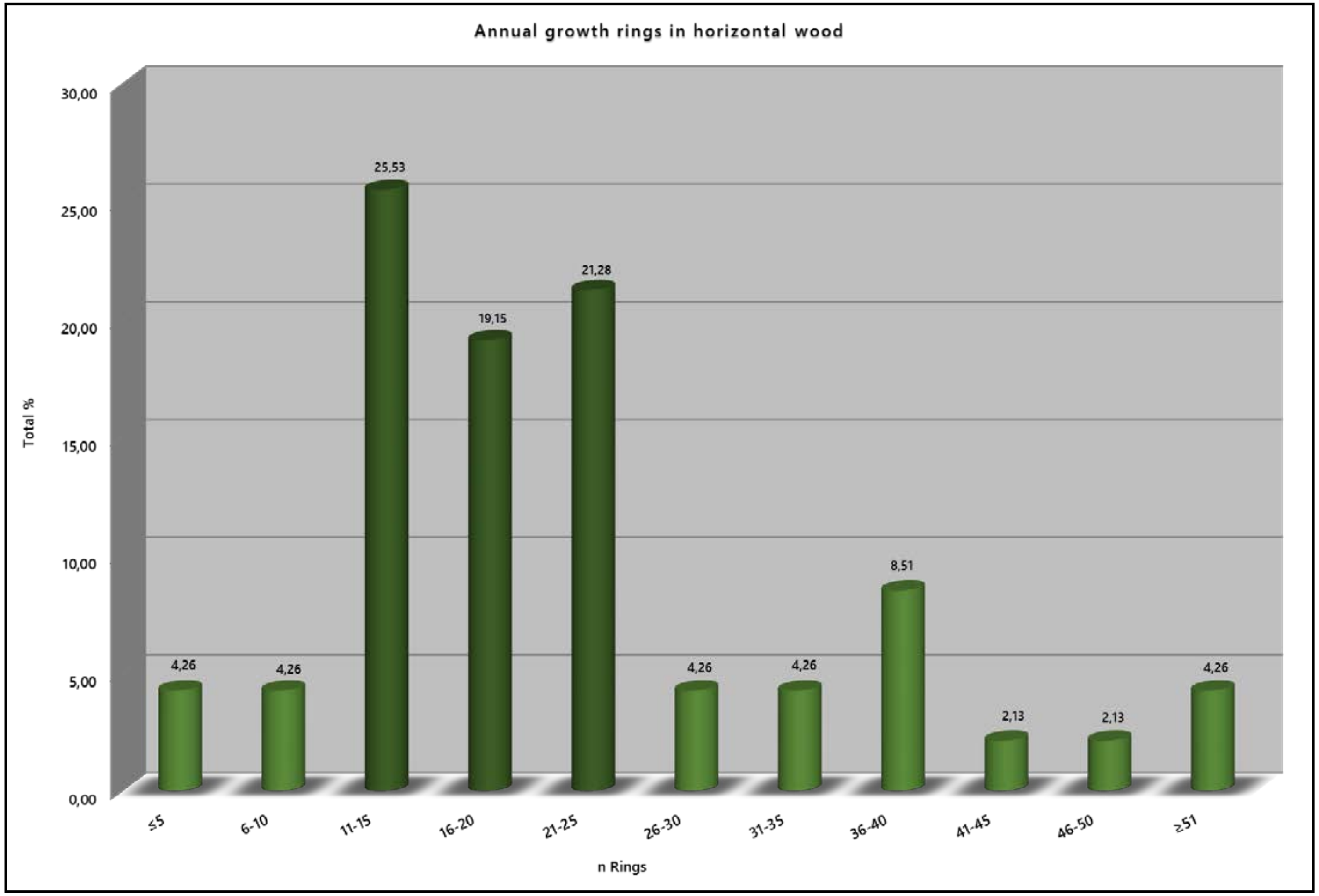


c

Fig. 99 Annual growth rings measured in sampled horizontal wood **a.** Overall number of measured annual rings **b.** Rates in %.

Annual growth rings	n Elements
≤5	2
6-10	2
11-15	12
16-20	9
21-25	10
26-30	2
31-35	2
36-40	4
41-45	1
46-50	1
≥51	2
Total	**47**

a

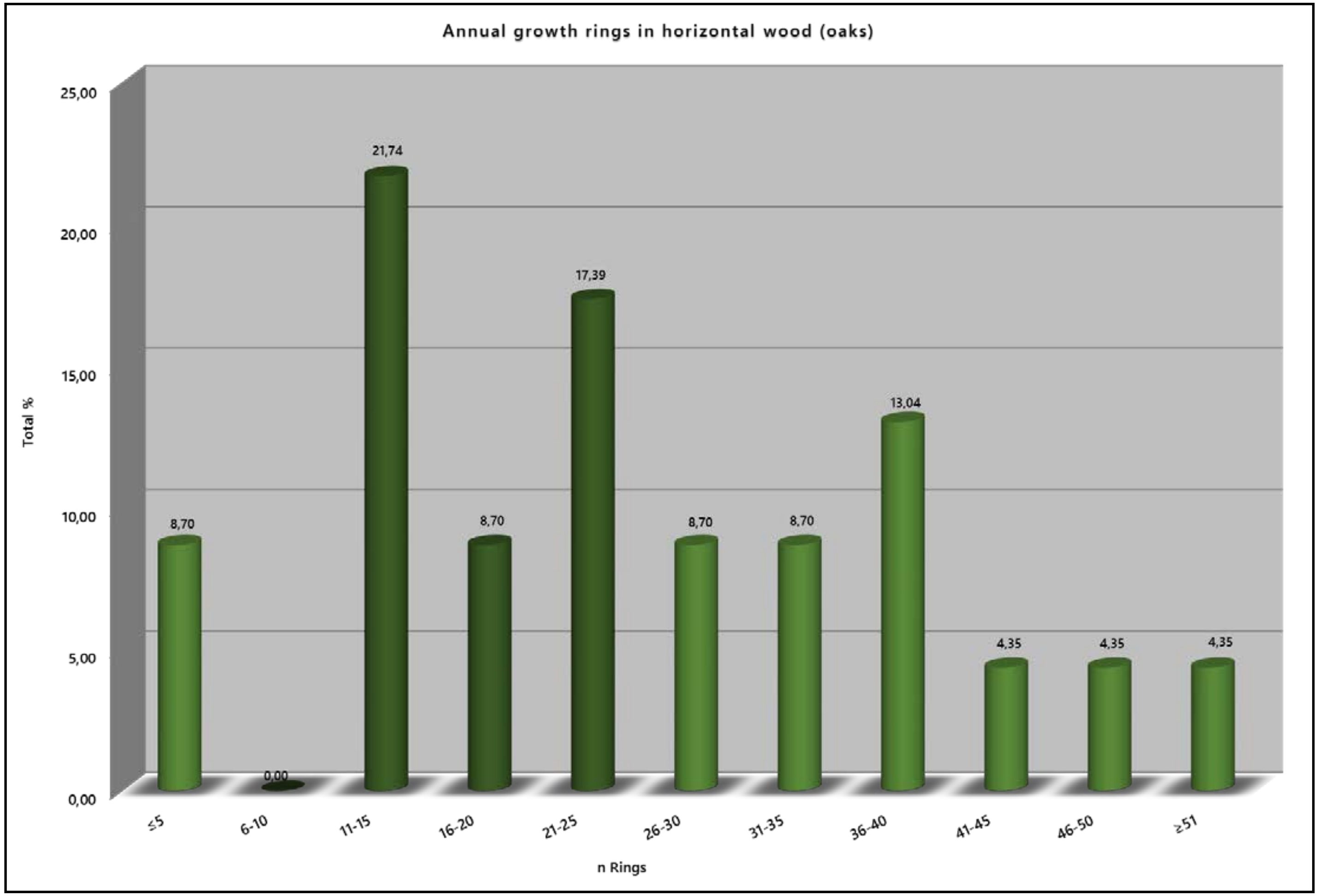


b

Fig. 100 Annual growth rings measured in oak trees' stems of horizontal wood **a.** Overall number of measured annual rings **b.** Rates in %.

Annual growth rings (Oaks)	n Elements
≤5	2
6-10	0
11-15	5
16-20	2
21-25	4
26-30	2
31-35	2
36-40	3
41-45	1
46-50	1
≥51	1
Total	**23**

a

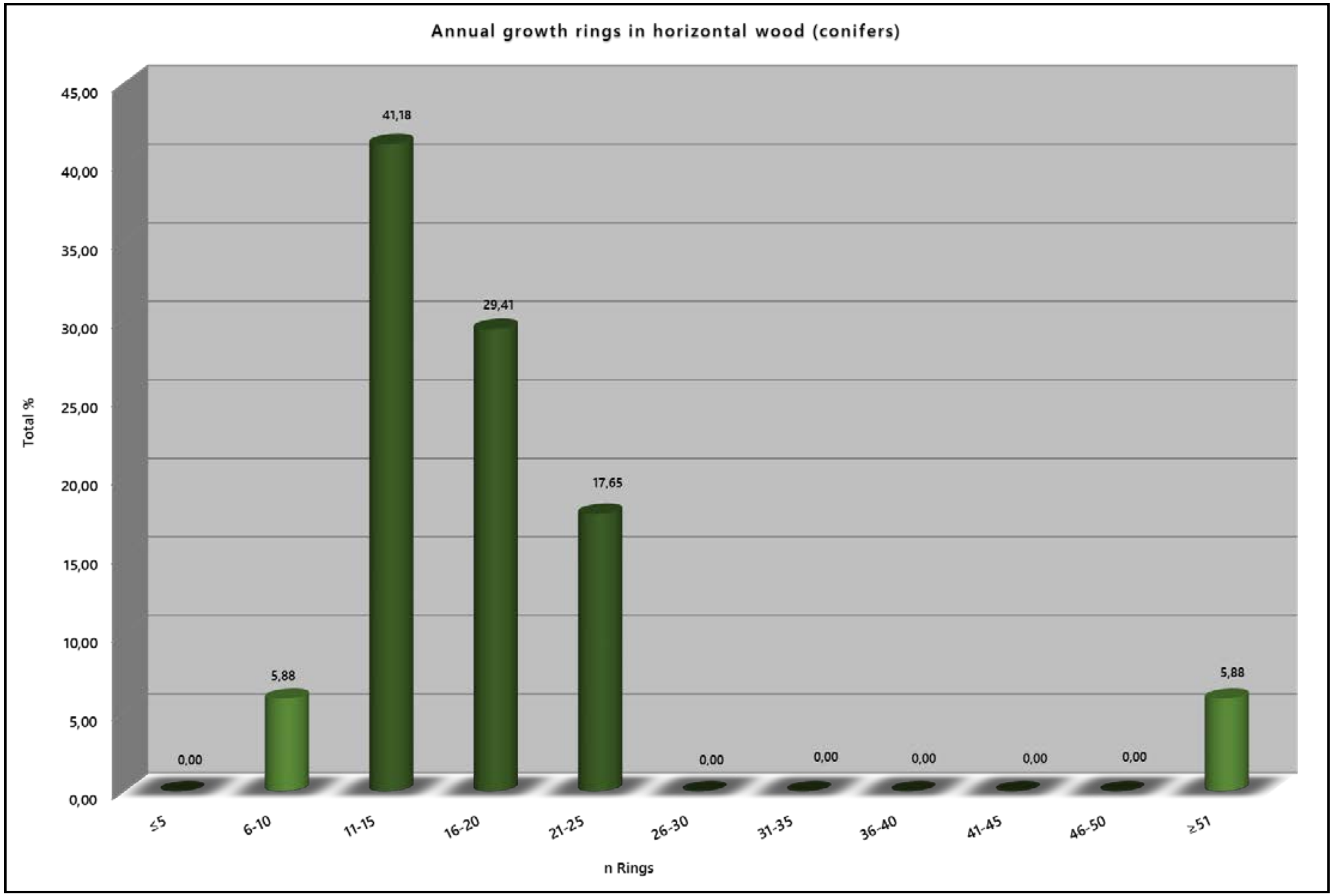


b

Fig. 101 Annual growth rings measured in conifer trees' stems of horizontal wood **a.** Overall number of measured annual rings **b.** Rates in %.

Annual growth rings (Conifers)	**n Elements**
≤5	0
6-10	1
11-15	7
16-20	5
21-25	3
26-30	0
31-35	0
36-40	0
41-45	0
46-50	0
≥51	1
Total	**17**

a



b

Fig. 102 Comparative chart with rates of annual growth rings measured in oak and conifer trees' stems of horizontal wood.

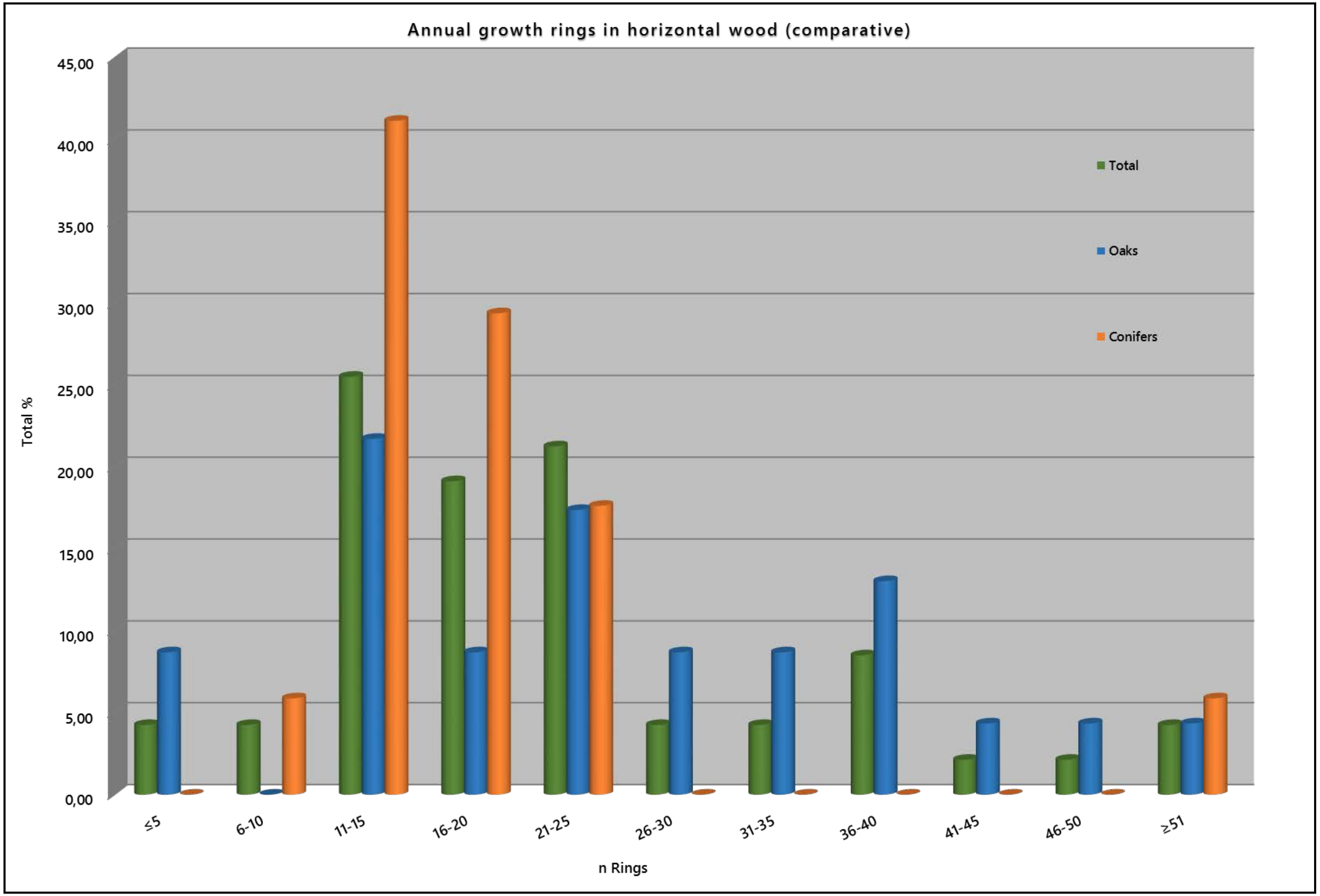
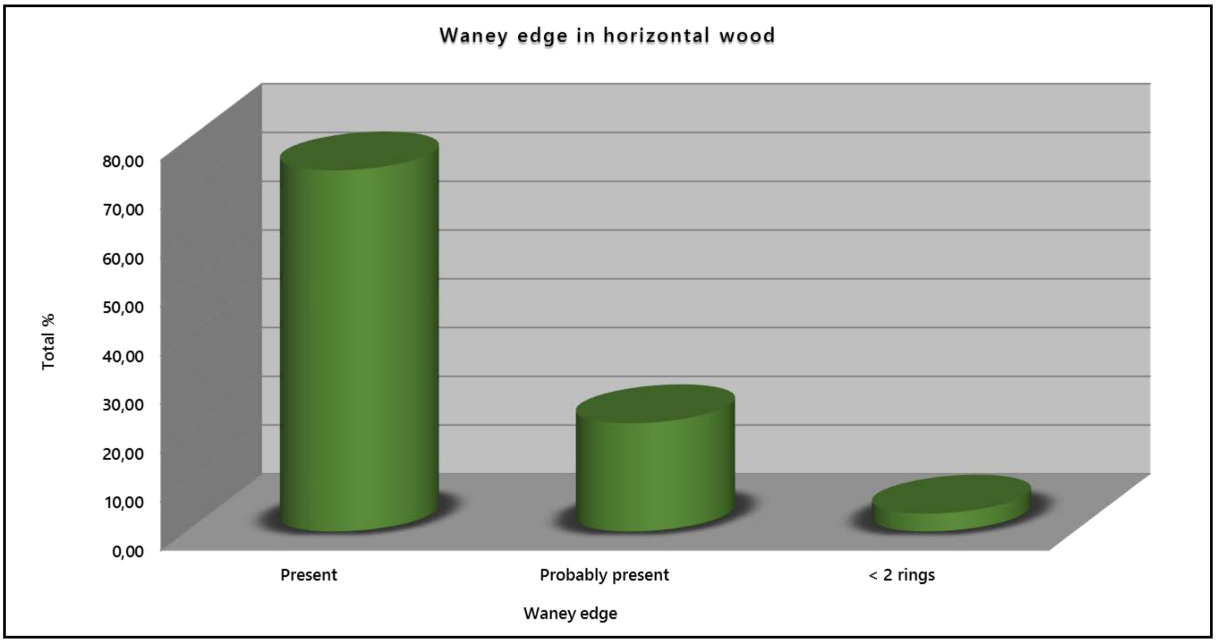


Fig. 103 Sampled horizontal wood that bear evidence for the presence of waney edge **a.** Overall number of measured samples **b.** Rates in %.

Waney edge	n Elements
Present	20
Probably present	6
< 2 rings	1
Total	**27**

a

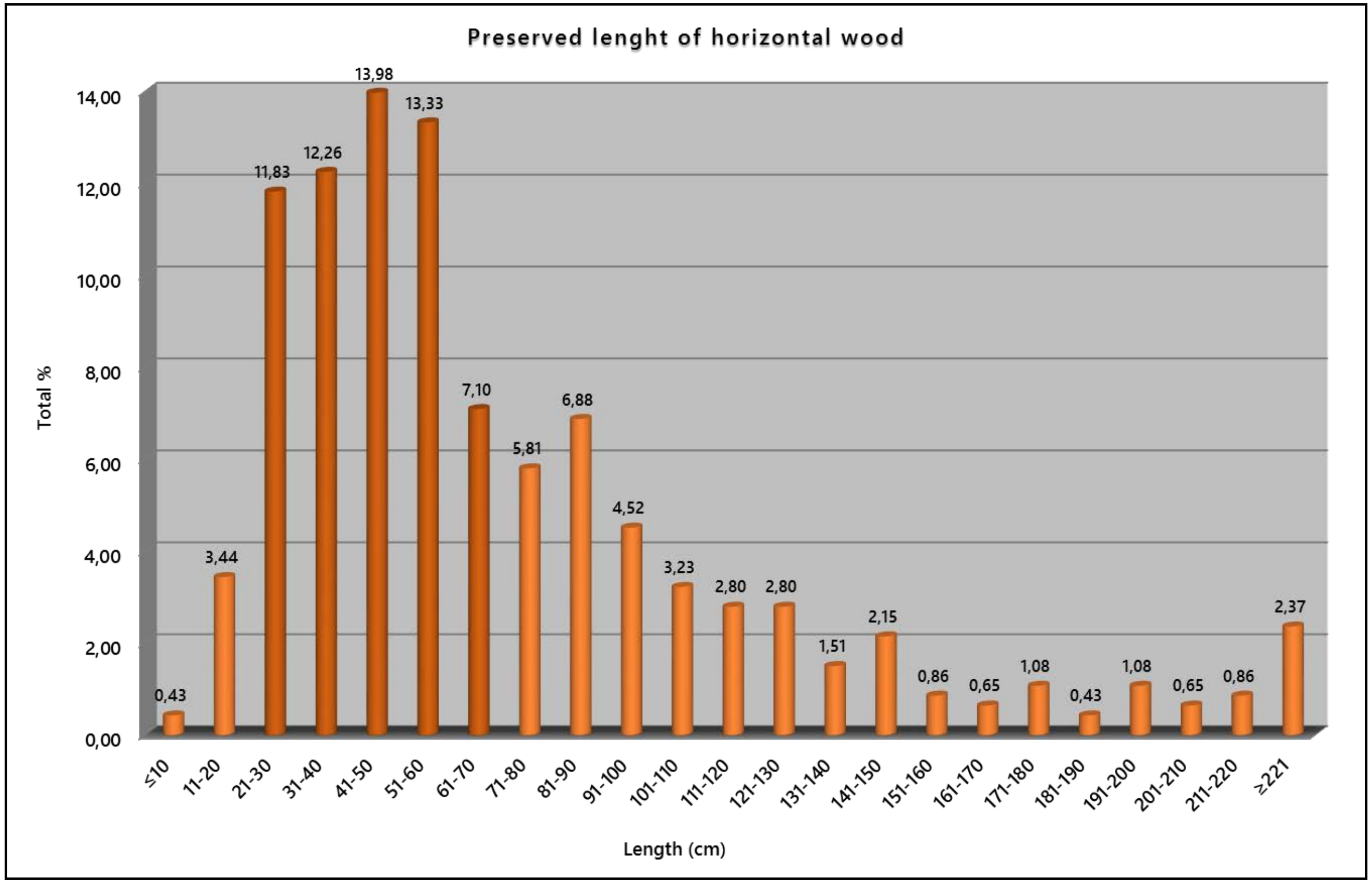


b

Fig 104 Preserved length of horizontal wood **a.** Overall number of elements **b.** Rates in %.

Length (cm)	n Elements
≤10	2
11-20	16
21-30	55
31-40	57
41-50	65
51-60	62
61-70	33
71-80	27
81-90	32
91-100	21
101-110	15
111-120	13
121-130	13
131-140	7
141-150	10
151-160	4
161-170	3
171-180	5
181-190	2
191-200	5
201-210	3
211-220	4
≥221	11
Total	**465**

a

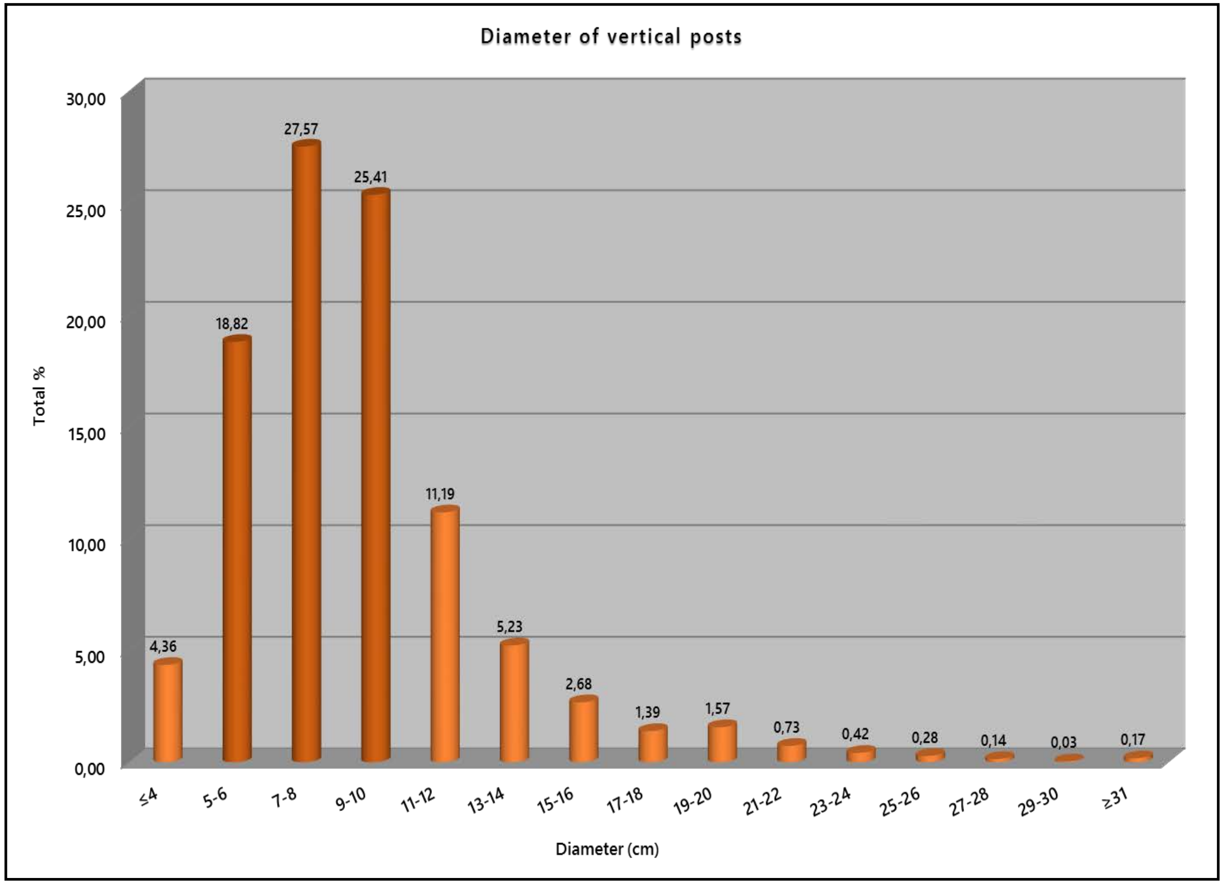


b

Fig. 105 Stems' diameter of horizontal wood **a.** Overall number of elements **b.** Rates in %.

Diameter (cm)	n Elements
≤4	65
5-6	174
7-8	100
9-10	72
11-12	18
13-14	6
15-16	9
17-18	3
19-20	2
Total	**449**

a

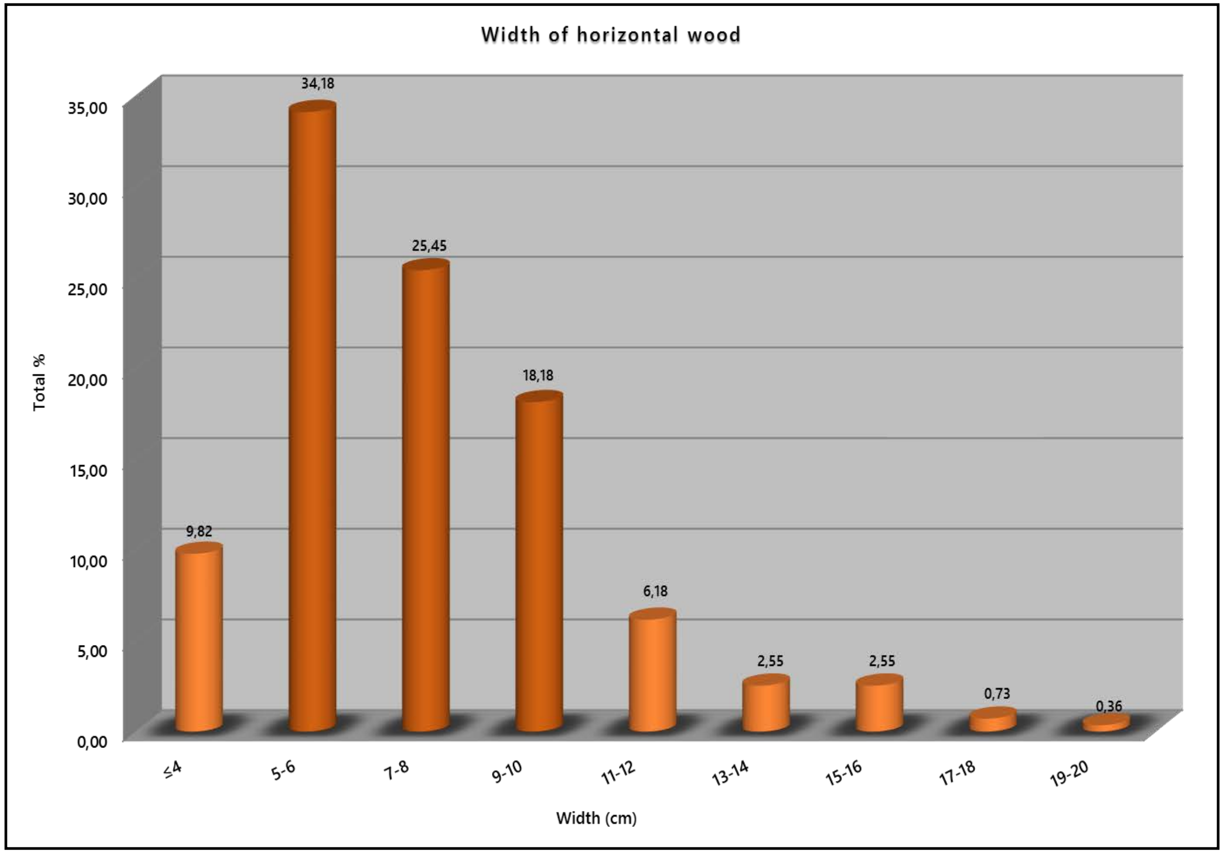


b

Fig. 106 Stems' width of horizontal wood **a.** Overall number of elements **b.** Rates in %.

Width (cm)	n Elements
≤4	27
5-6	94
7-8	70
9-10	50
11-12	17
13-14	7
15-16	7
17-18	2
19-20	1
Total	**275**

a

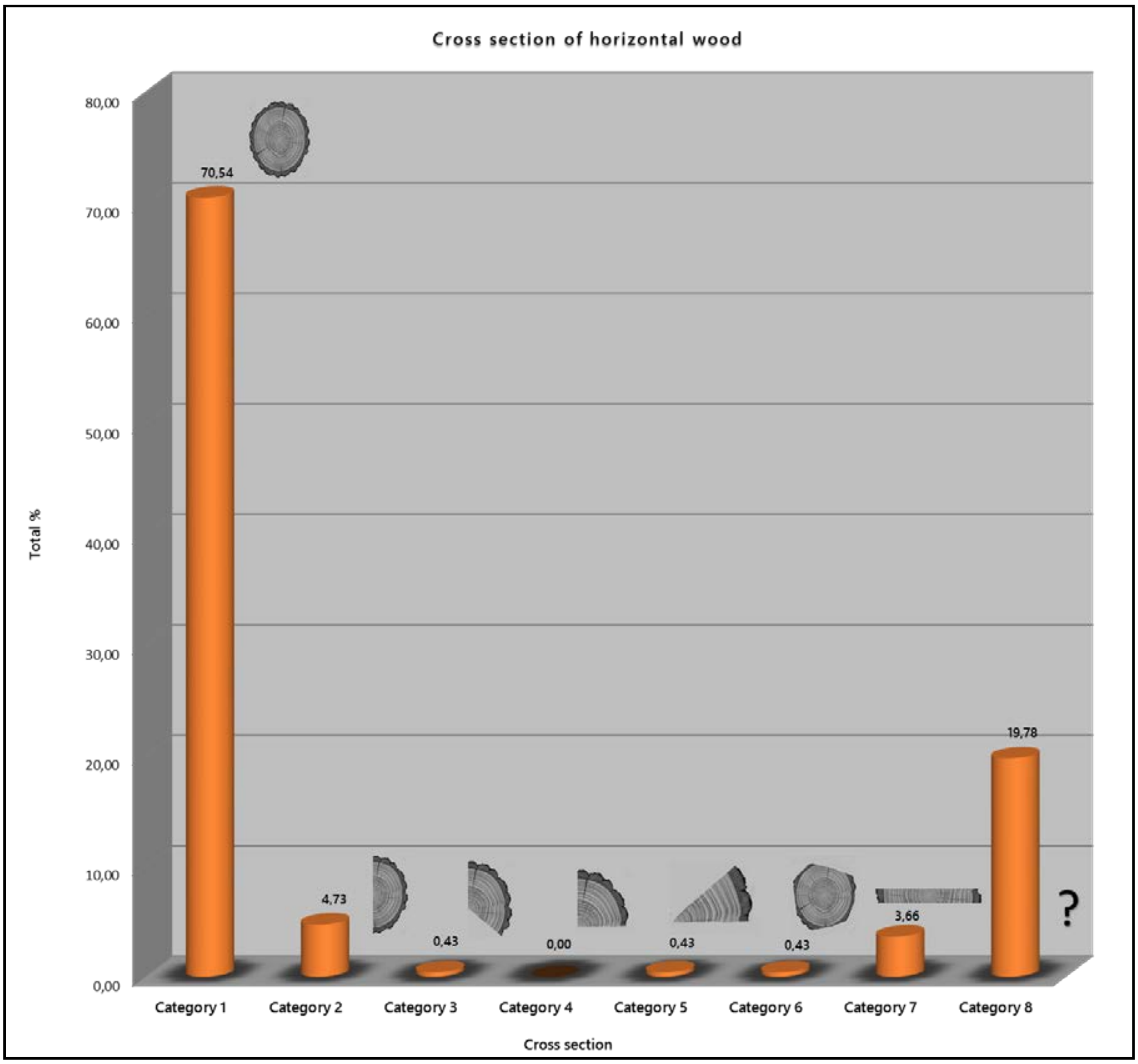


b

Fig. 107 Trees' stems cross section of horizontal wood **a.** Overall number of elements **b.** Rates in %.

Cross section	n Elements
Category 1	328
Category 2	22
Category 3	2
Category 4	0
Category 5	2
Category 6	2
Category 7	17
Category 8	92
Total	**465**

a

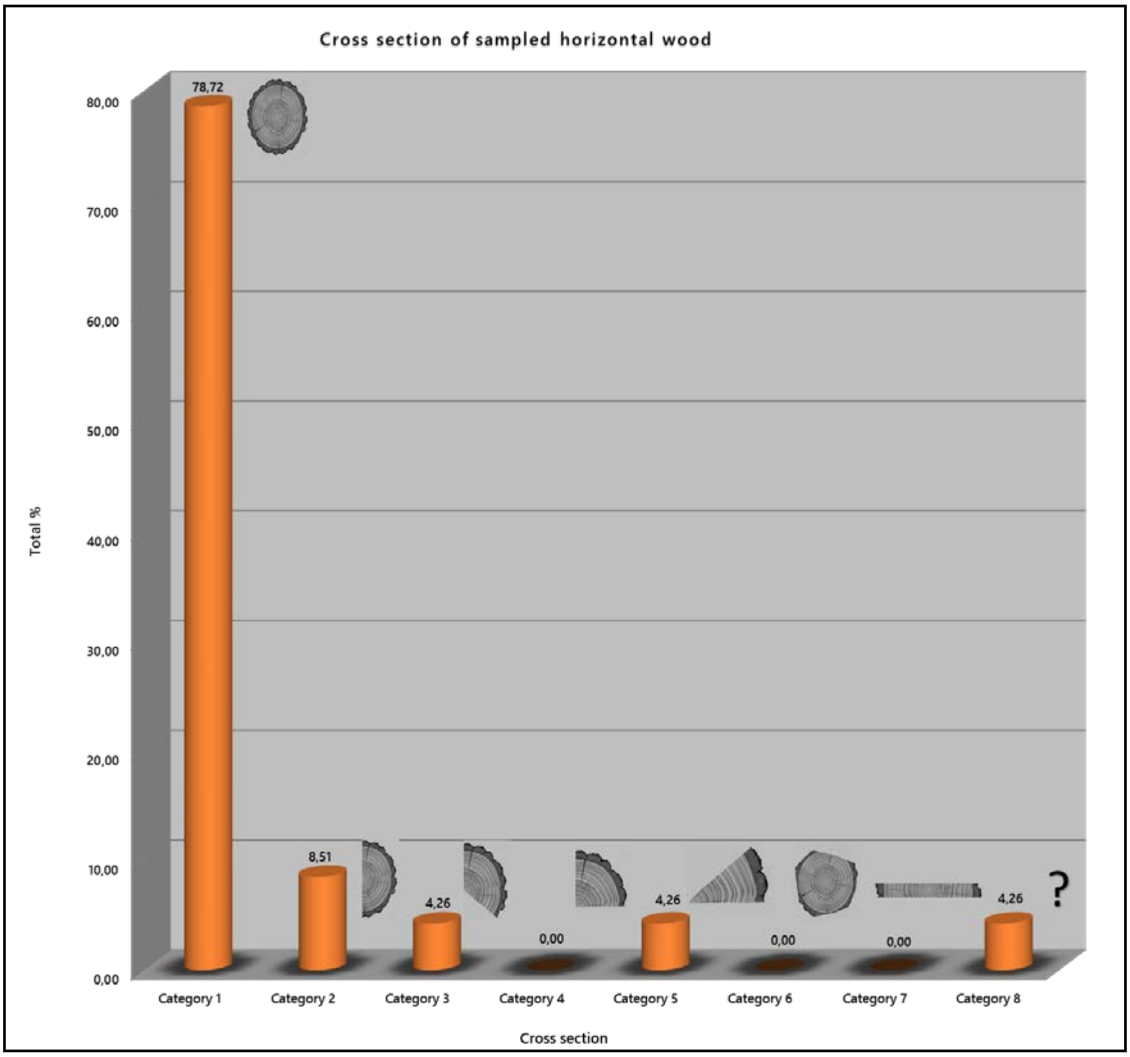


b

Fig. 108 Trees' stems cross section categories of sampled horizontal wood **a.** Overall number of sampled elements **b.** Rates in %.

Cross section	n Elements
Category 1	37
Category 2	4
Category 3	2
Category 4	0
Category 5	2
Category 6	0
Category 7	0
Category 8	2
Total	**47**

a



b

Fig. 109 Comparative chart with rates of cross section of horizontal wood (total and sampled).

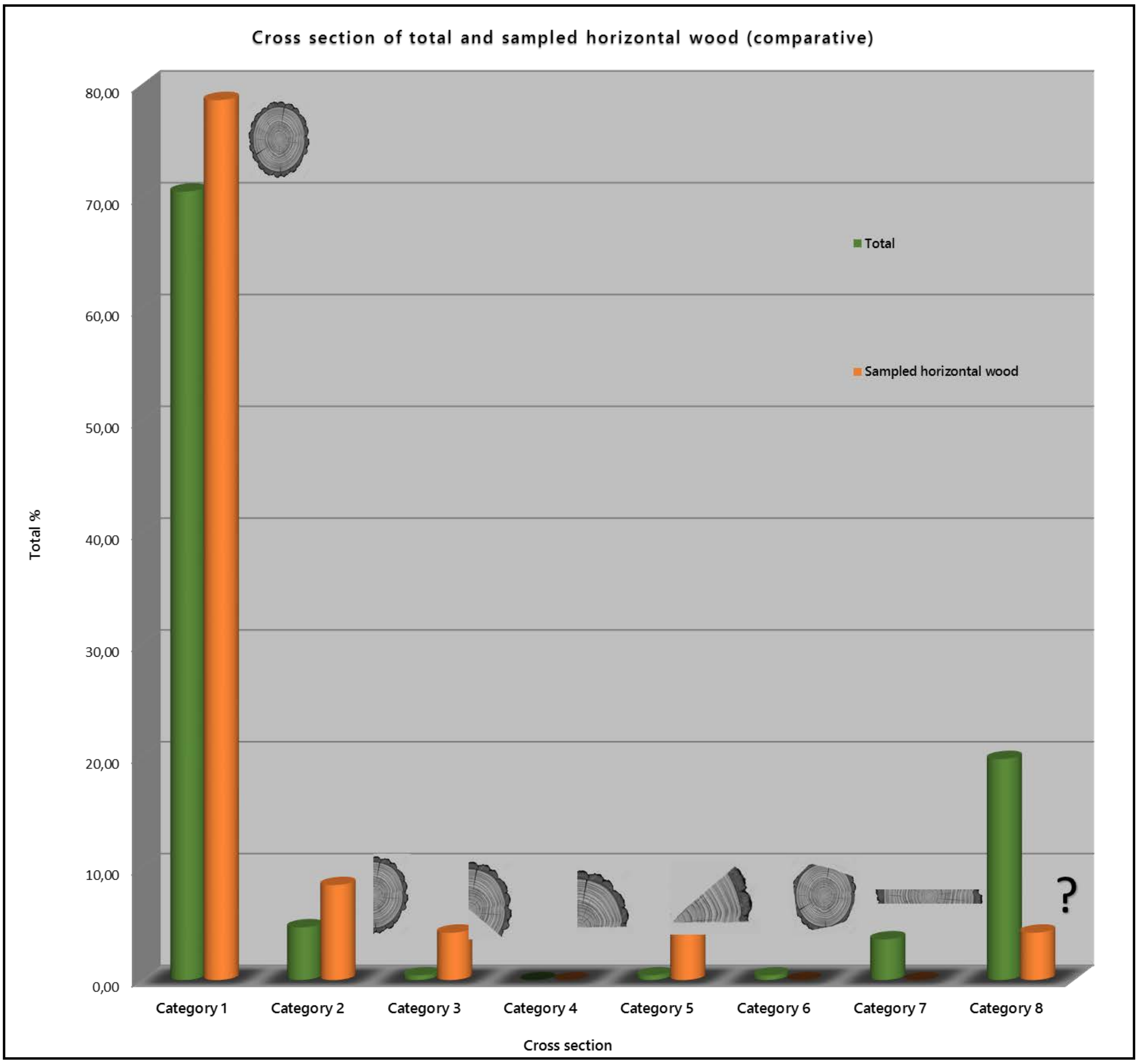
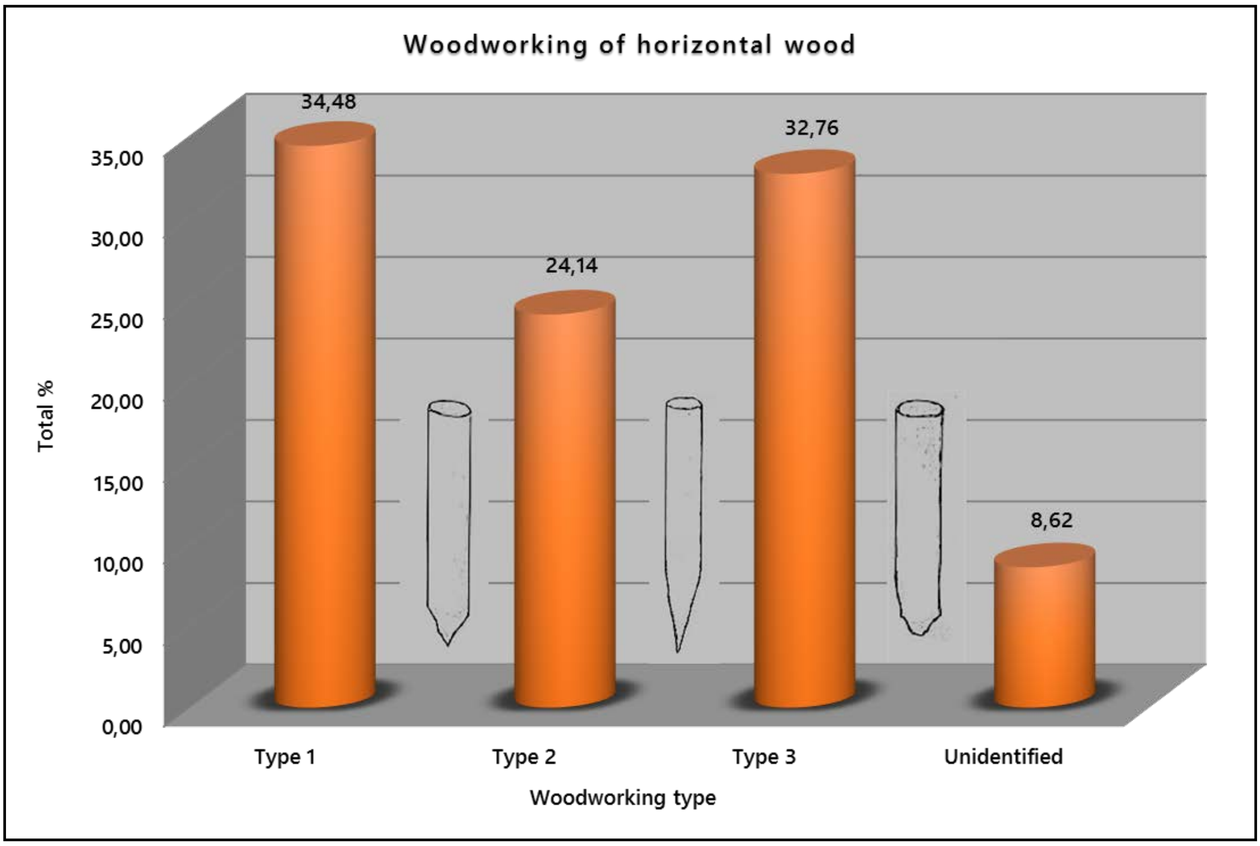


Fig. 110 Woodworking types of horizontal wood **a.** Overall number of elements **b.** Rates in %.

Woodworking type	n Elements
Type 1	20
Type 2	14
Type 3	19
Unidentified	5
Total	**58**

a



b

Fig. 111 Scattered horizontal wooden elements at the periphery of the habitation.

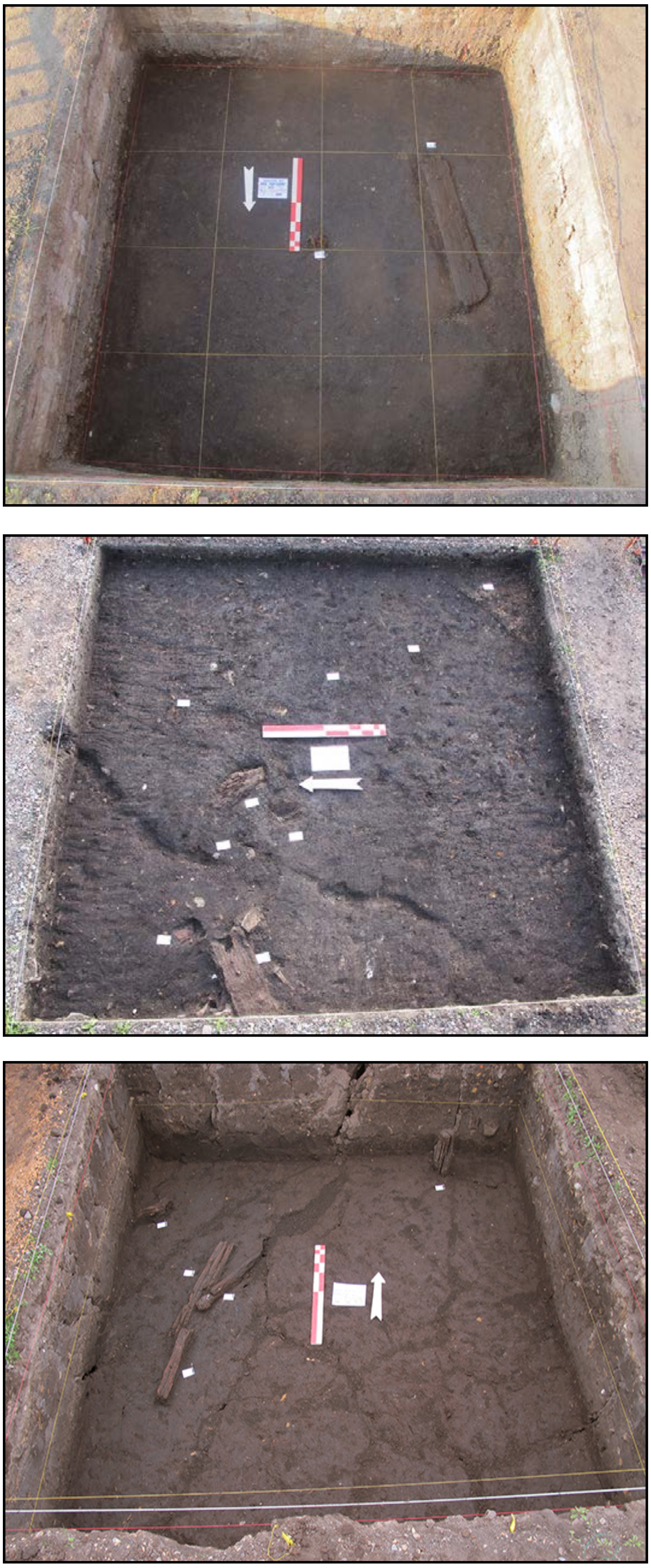


Fig. 112 Concentration of horizontal wooden elements in trench 882 c.

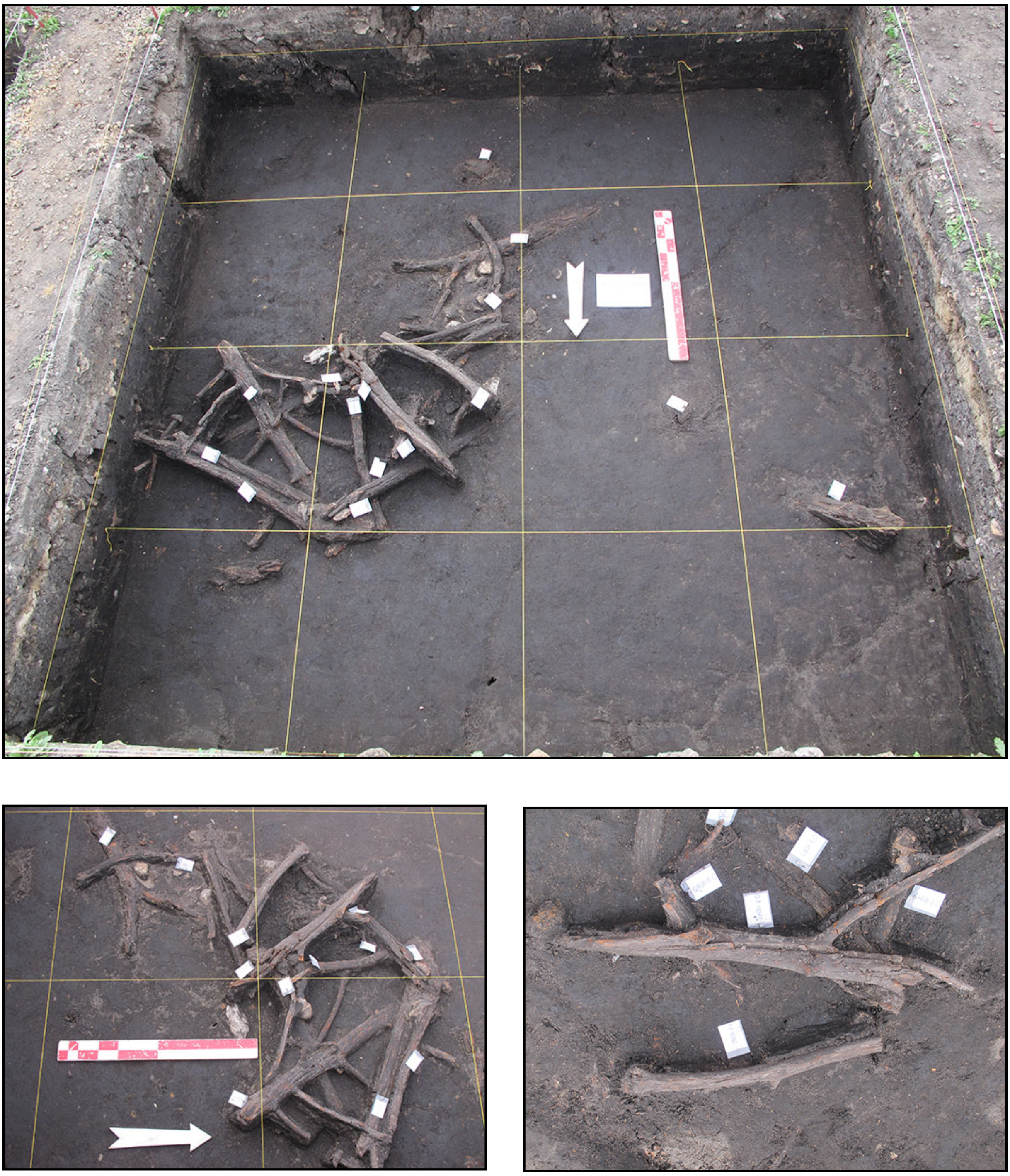


Fig. 113 Concentration of wooden elements in trench 940 c **a.** General view **b.** Detail of the element's group **c.** Part of a logboat **d.** A boat-shaped artifact.

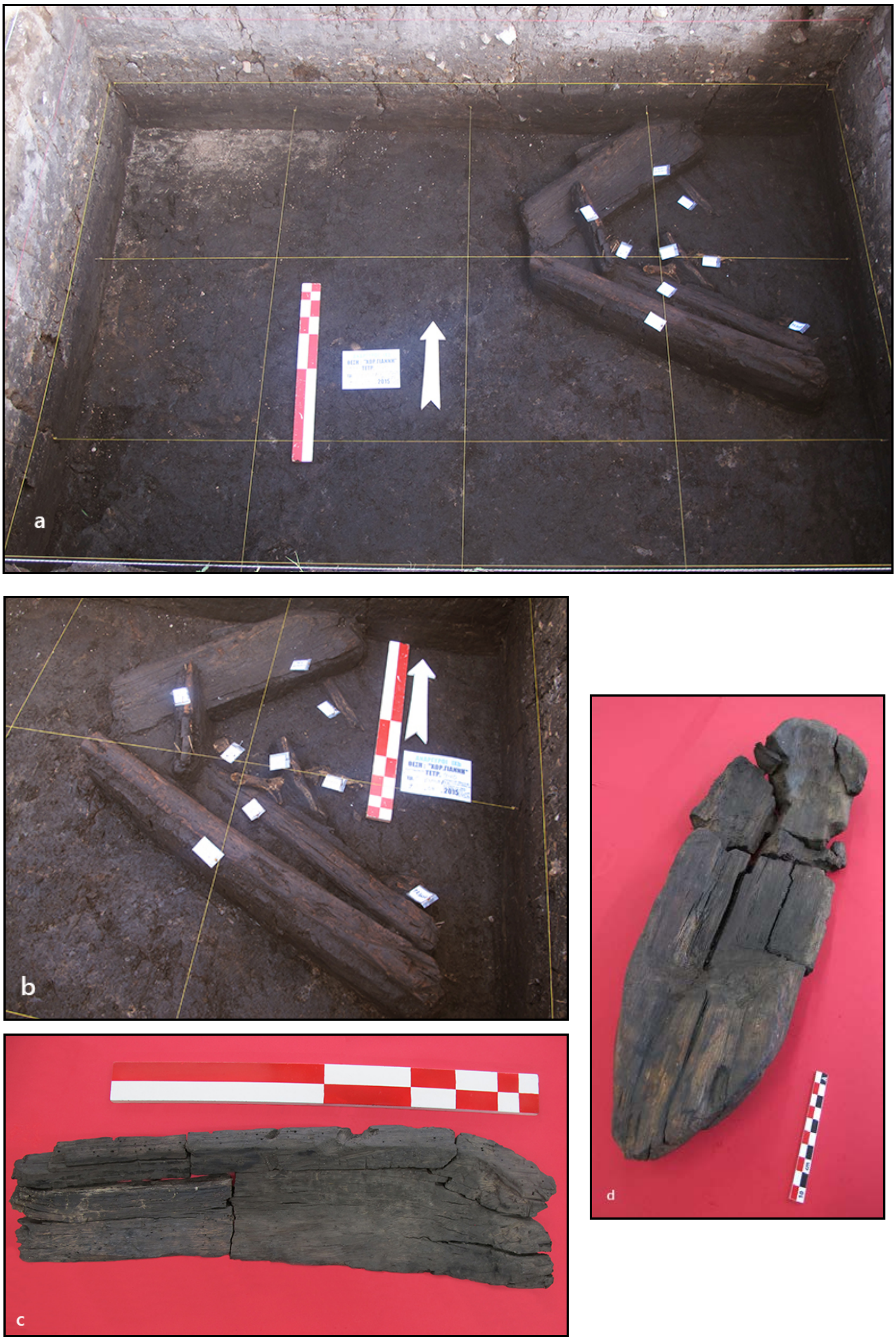


Fig. 114 General views of postholes with posts preserved in their bottom discovered in trenches 574 a, b and 857 d.

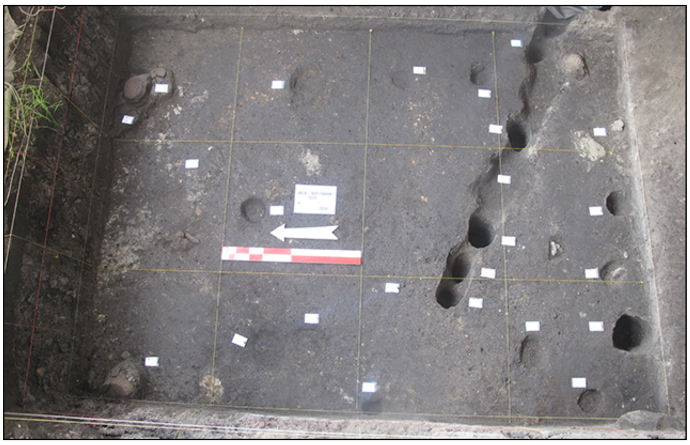


Fig. 115 Concentration of twigs and branches in trench 886 b at Southeast Sector of the excavation.

Fig. 116 Waste or woodchips and small wood sampled from the lowest layers of the habitation.

Fig. 117 *Trackway 1* at the Eastern Sector of Anarghiri IXb excavation.

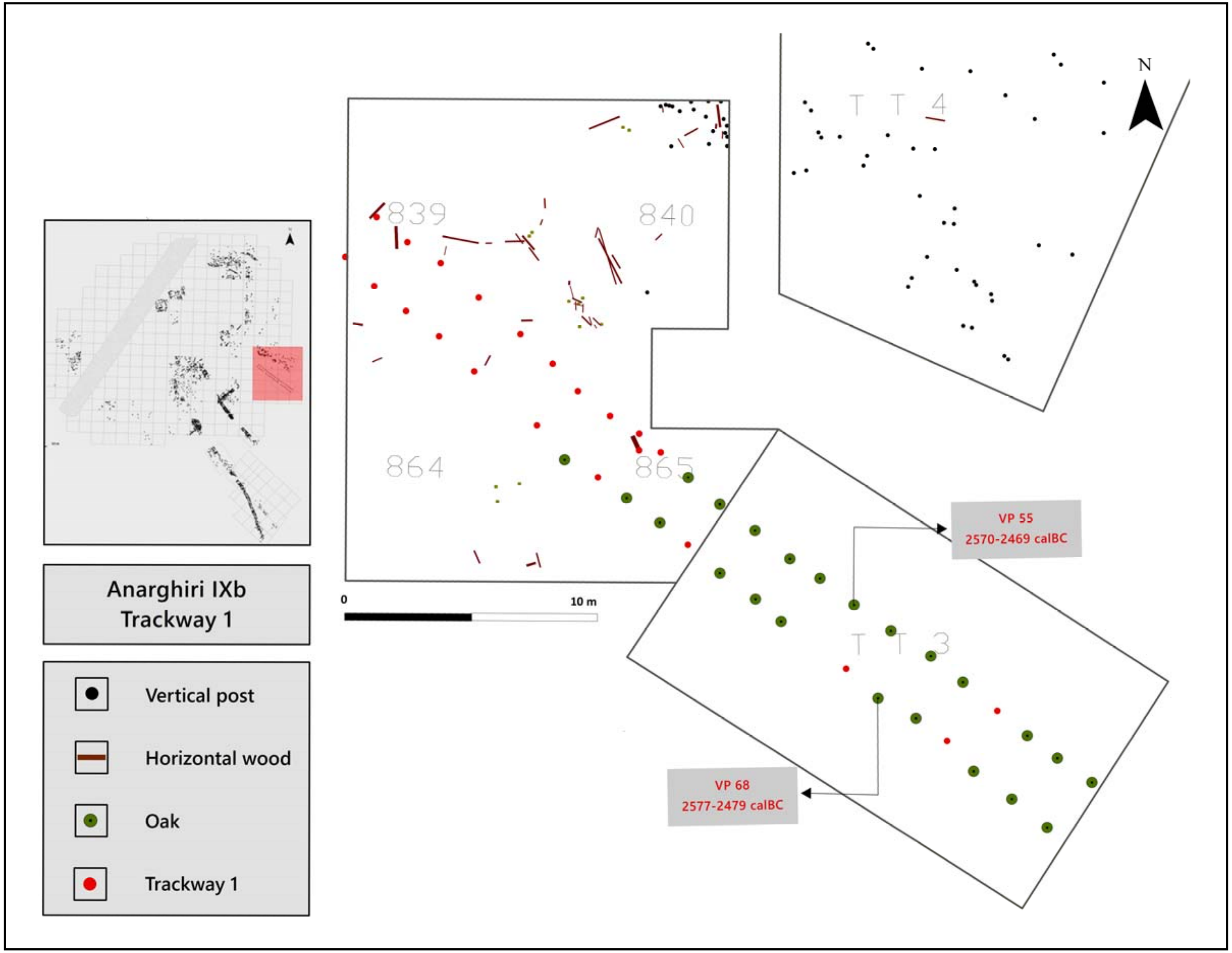


Fig. 118 a. General view of *Trackway 1* (East - West view) **b, c** Details of exposed posts.

Fig. 119 a. Group of *Trackway 1* sampled posts **b-d** Details of processed posts.

Fig. 120 *Trackway 2* **a.** Aerial view **b.** View from southeast during the excavation **c.** View from west after the completion of the excavation.

Fig. 121 *Trackway 2* **a.** Vertical posts **b.** Horizontal wood 11963 and 11964 in trench 928 b **c.** View from northeast after the completion of the excavation with VP 11931 and 11994.

Fig. 122 Aerial views of *Trackway 3* **a.** The northern sector of Anarghiri XI, *Trackway 3* and the southern peripheral zone of Anarghiri IXb **b.** The course of *Trackway 3* between the two habitations.

Fig. 123 Views and structural wood from *Trackway 3* **a.** The trackway's course towards Anarghiri IXb excavation **b.** The trackway's remains in trench 960 b **c, d** Vertical posts from *Trackway 3*.

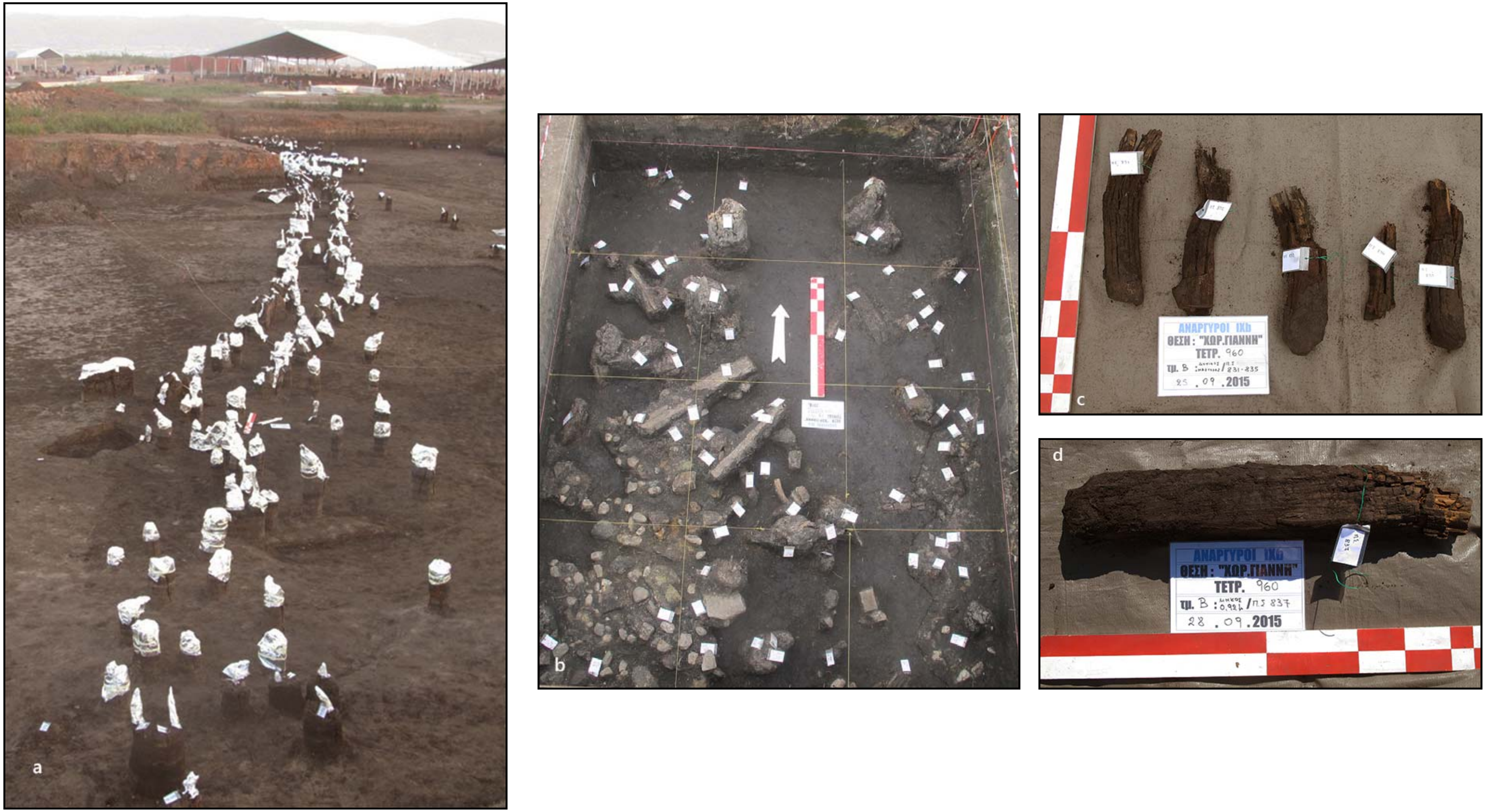


Fig. 124 Plan of *Trackway 3a(?)*.

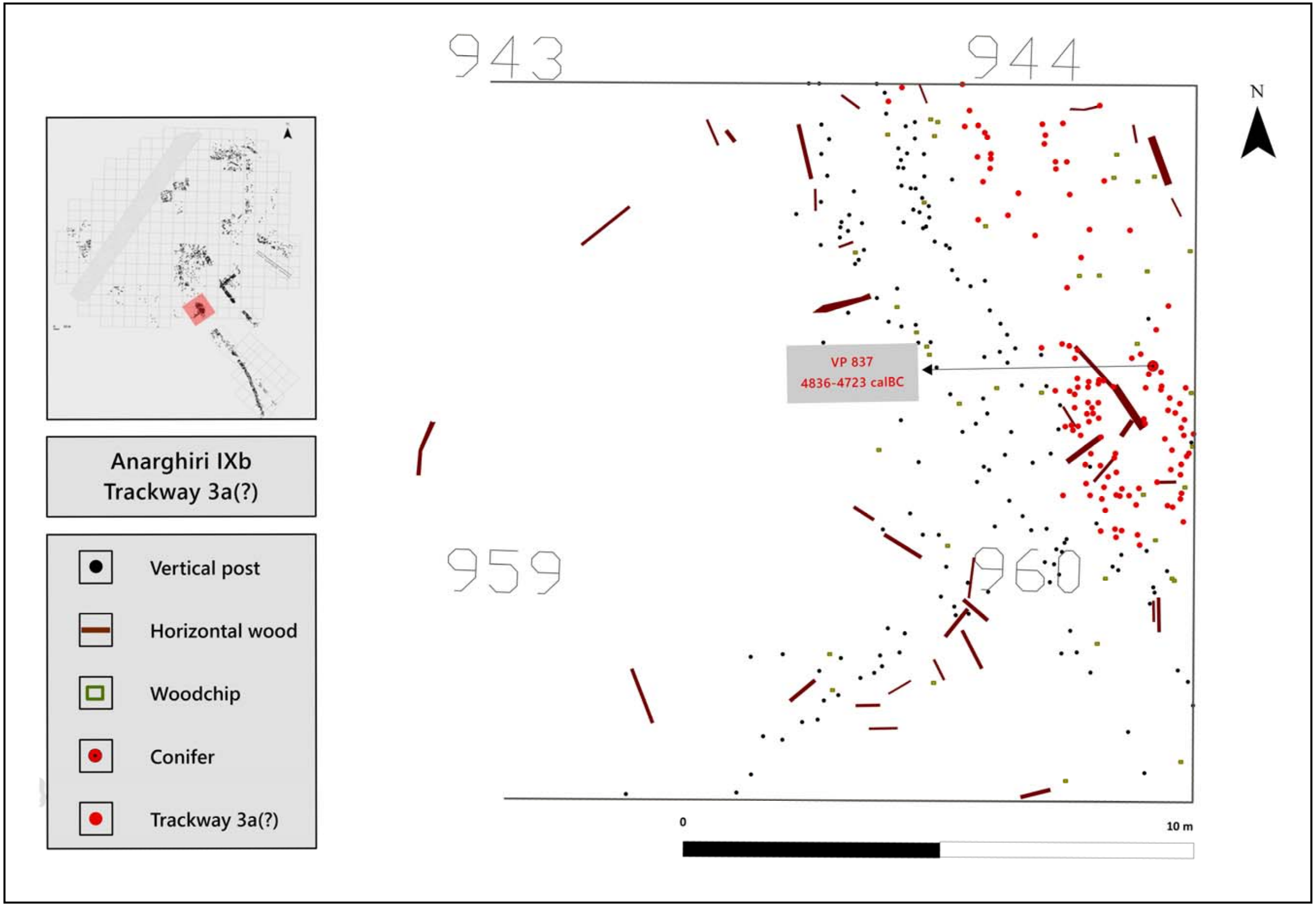


Fig. 125 The remains of *Trackway 3a(?)* **a.** The eastern posts' row of *Trackway 3a(?)* in trench 944 d **b.** The western and part of eastern posts' rows of *Trackway 3a(?)* in trench 944 c.

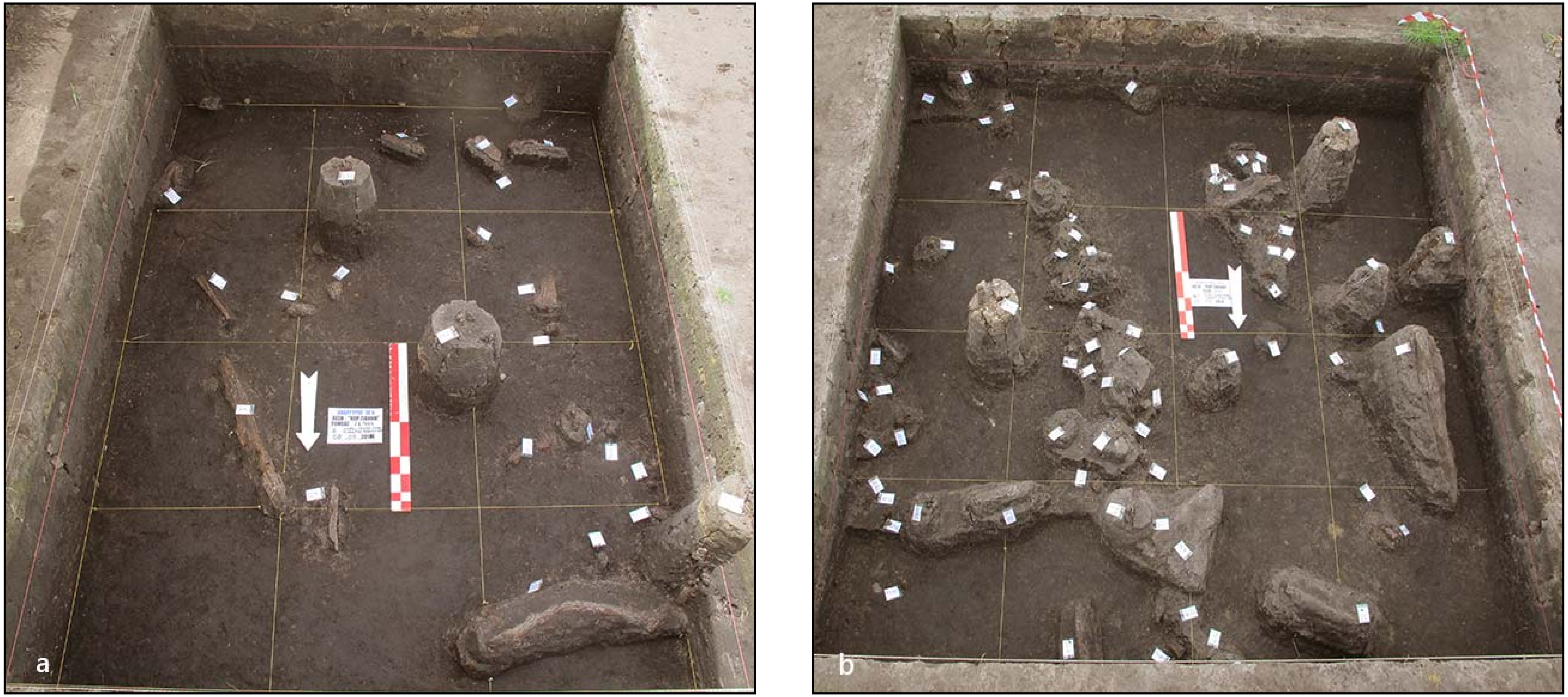


Fig. 126 Plan of *Trackway 3b(?)*.

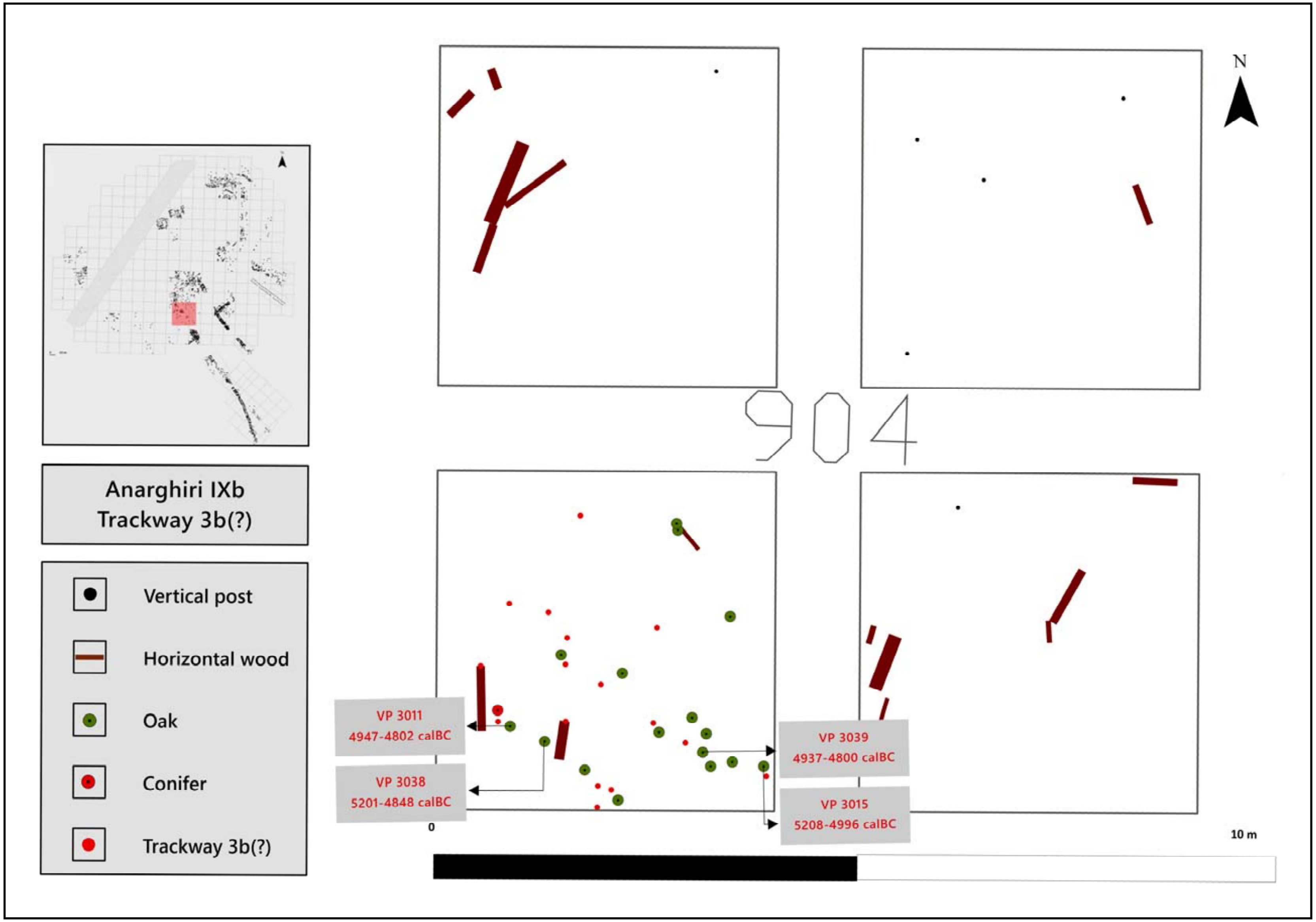


Fig. 127 The remains of *Trackway 3d(?)* **a.** The double posts' row in trench 904 c **b, c** Vertical posts during the excavation of *Trackway 3b(?)* in trench 904 c.

Fig. 128 Plan of *Trackway 4(?)*.

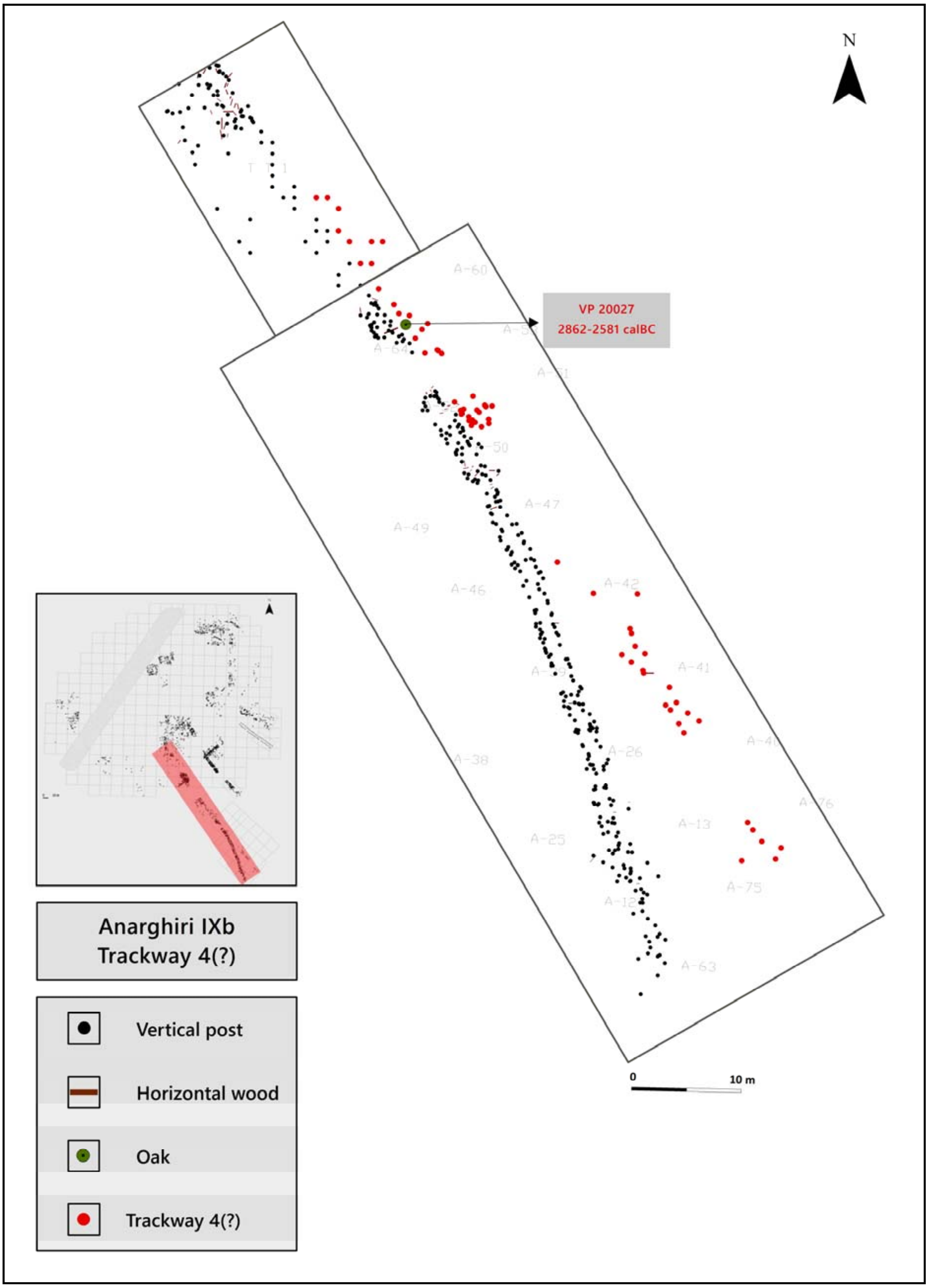


Fig. 129 The remains of *Trackway 4(?)* **a.** The course of the trackway (right) together with *Trackway 3* between Anarghiri XI and Anarghiri IXb (view from south) **b.** View from southeast, with the location of animal bones' concentration.

Fig. 130 Plan of *Fence 1* at the Northern Sector of Anarghiri IXb excavation.

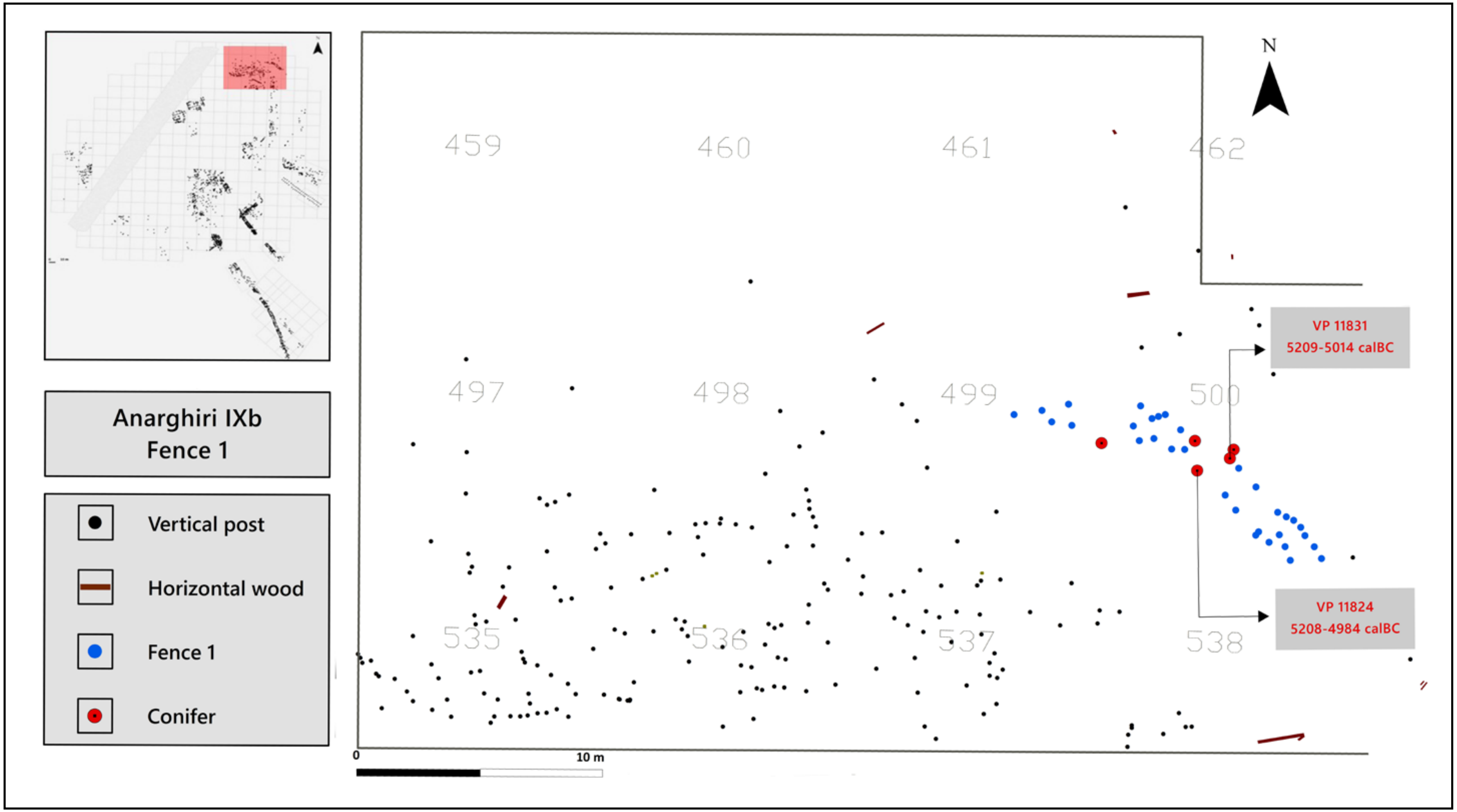


Fig. 131 a. General view of leaning posts of *Fence 1* **b, c** Posts bearing branches.

Fig. 132 Plan of *Fence 2* at the Southeast Sector of Anarghiri IXb excavation.

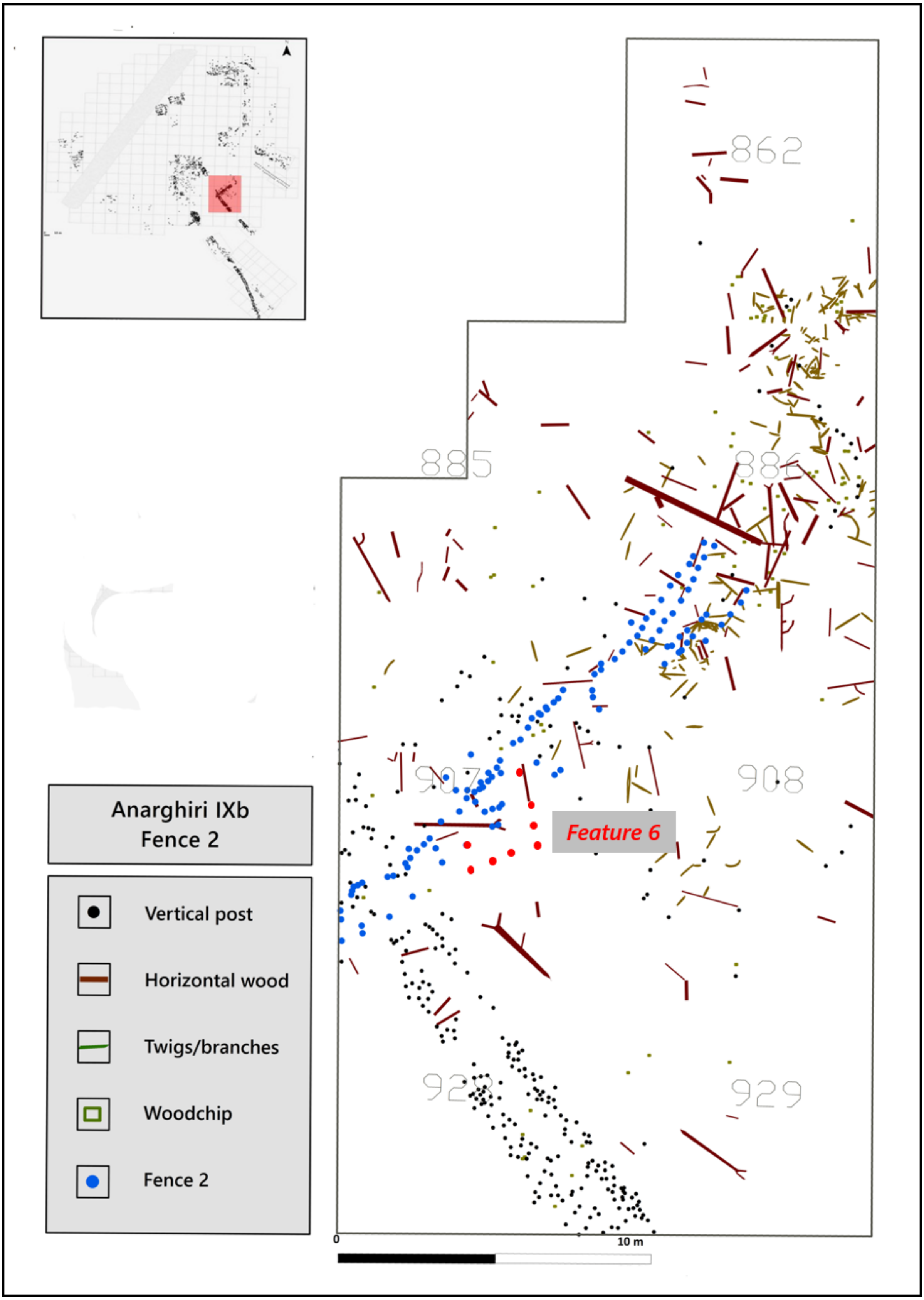


Fig. 133 General views of *Fence 2* **a.** Aerial view of posts in trench 908 a **b.** View from north.

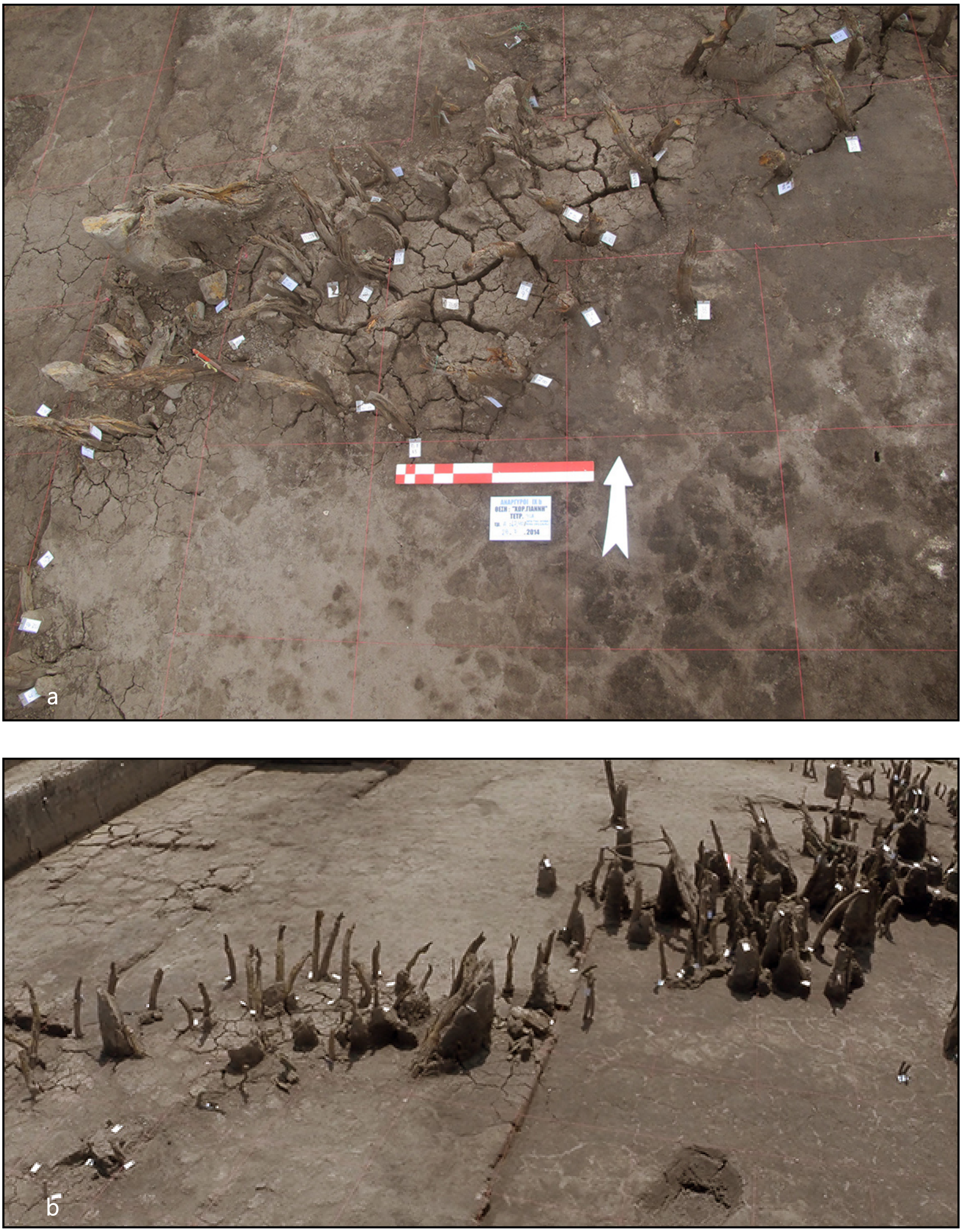


Fig. 134 *Fence 2* construction **a, b** Vertical posts and twigs (wattle?) in trench 908 a **c.** Vertical posts from trench 907 b.

Fig. 135 Plan of *Fence 3* at the Southern Sector of Anarghiri IXb excavation.

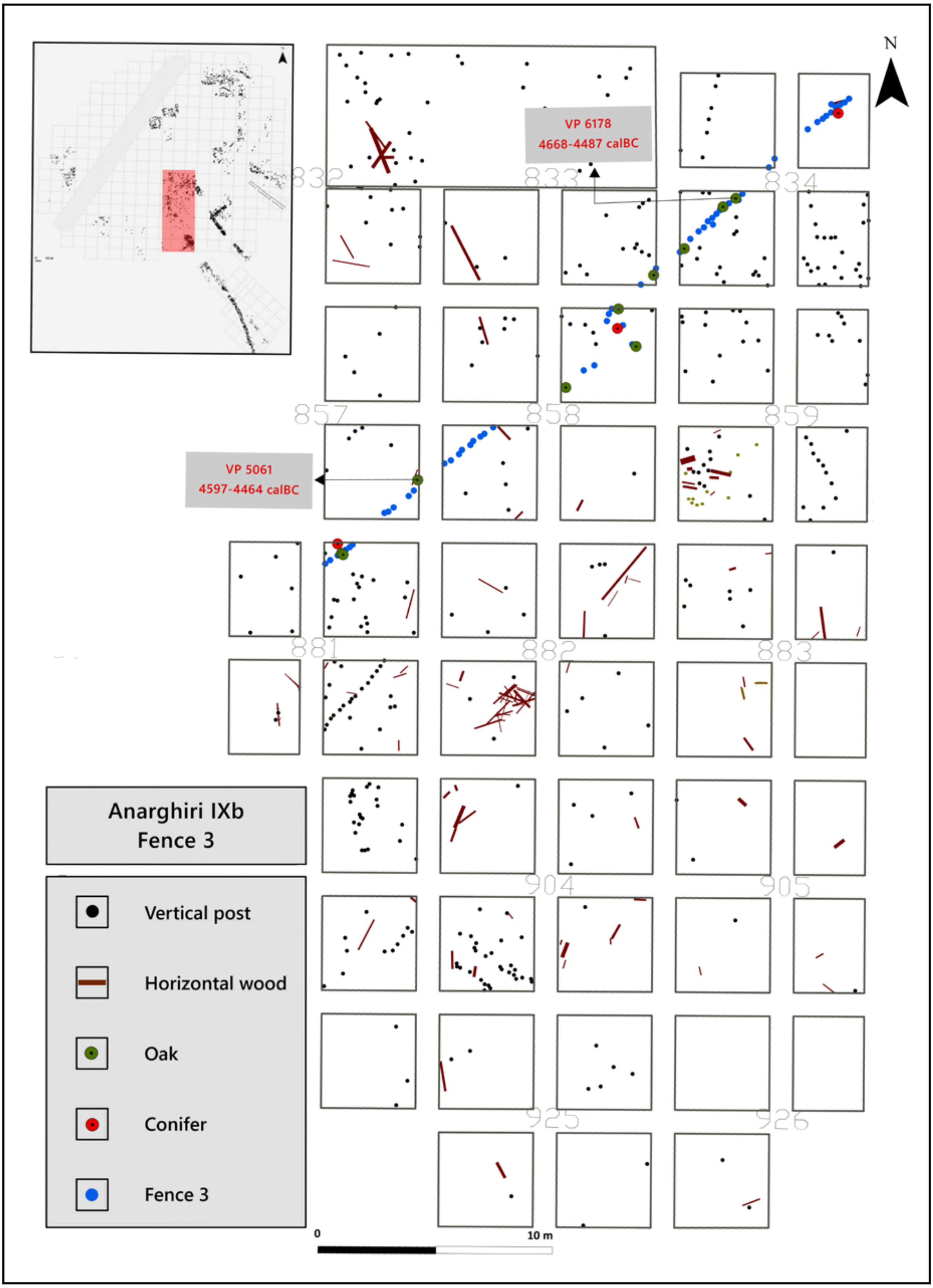


Fig. 136 General views of *Fence 3* **a.** The course of *Fence 3* in trenches 834, 857 and 858 **b.** Foundation ditch (?) of *Fence 3* in trench 834 c **c.** The posts' alignment in trench 834 c after the excavation of the ditch.

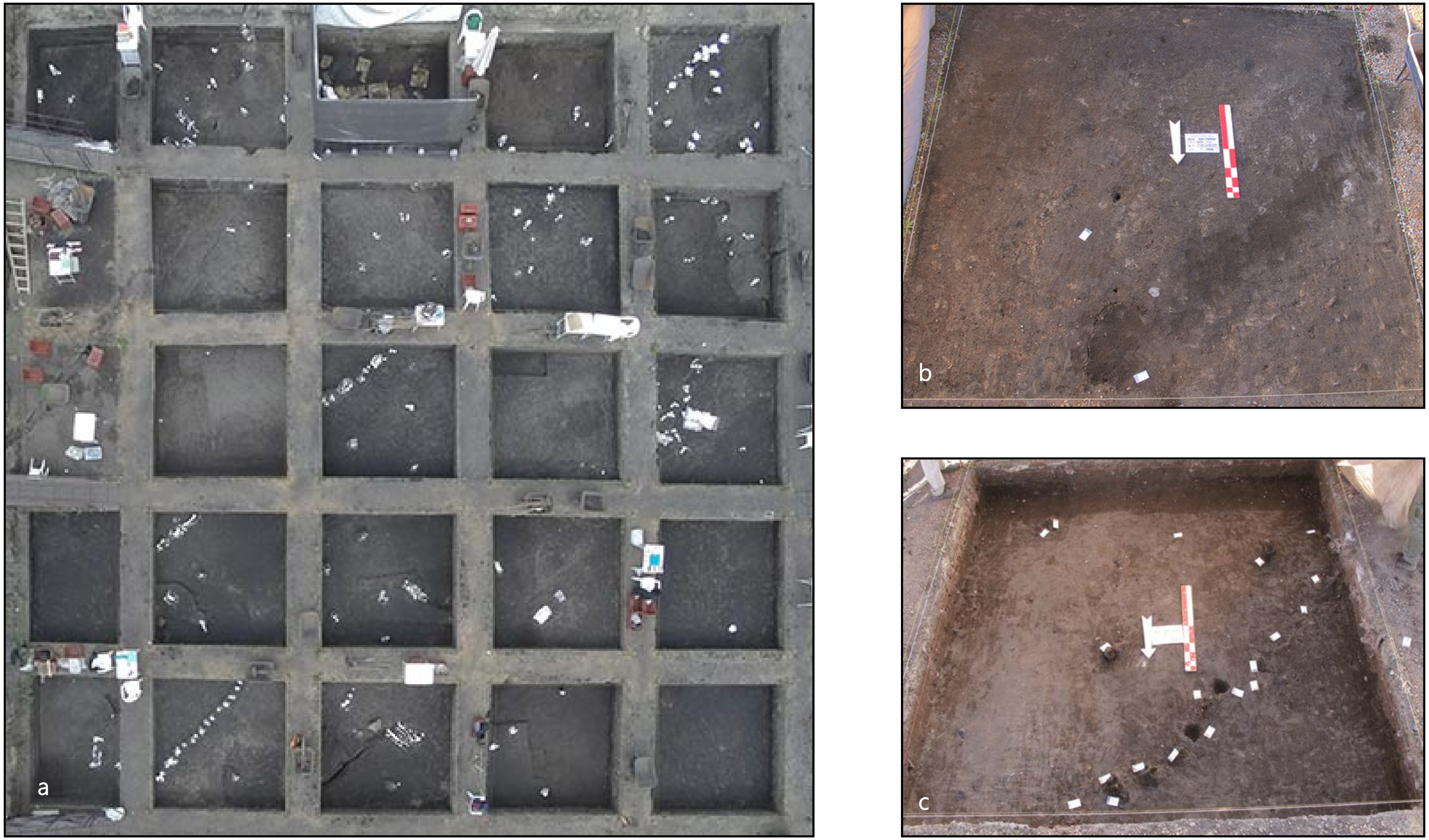


Fig. 137 Parts of *Fence 3* **a.** The course of *Fence 3* in trench 834 b **b.** Vertical posts of *Fence 3* in trench 858 c **c.** Vertical posts of *Fence 3* in trench 881 b.

Fig. 138 Plan of *Fence 4 and Fence 5* at the Northern Sector of Anarghiri IXb excavation.

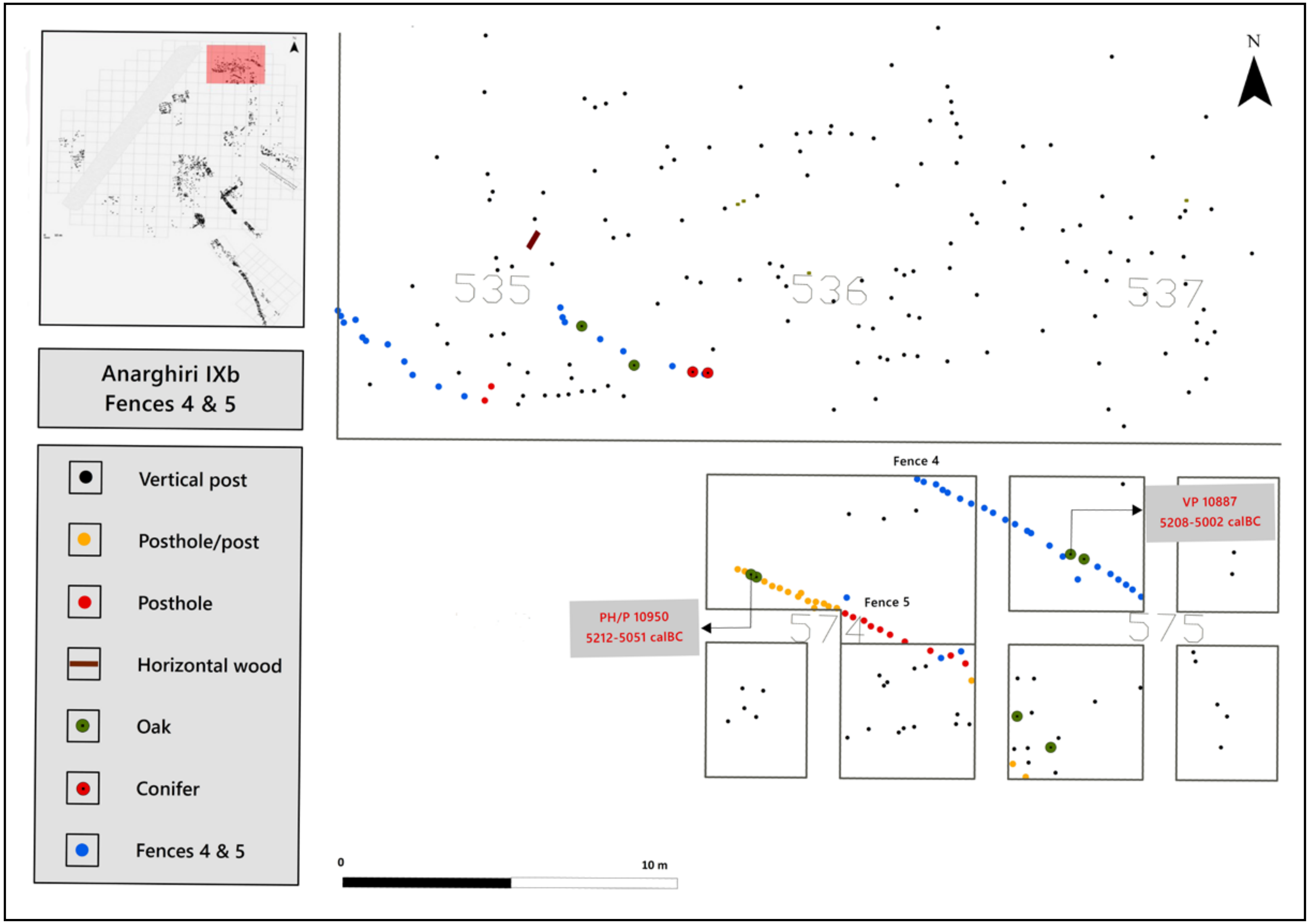
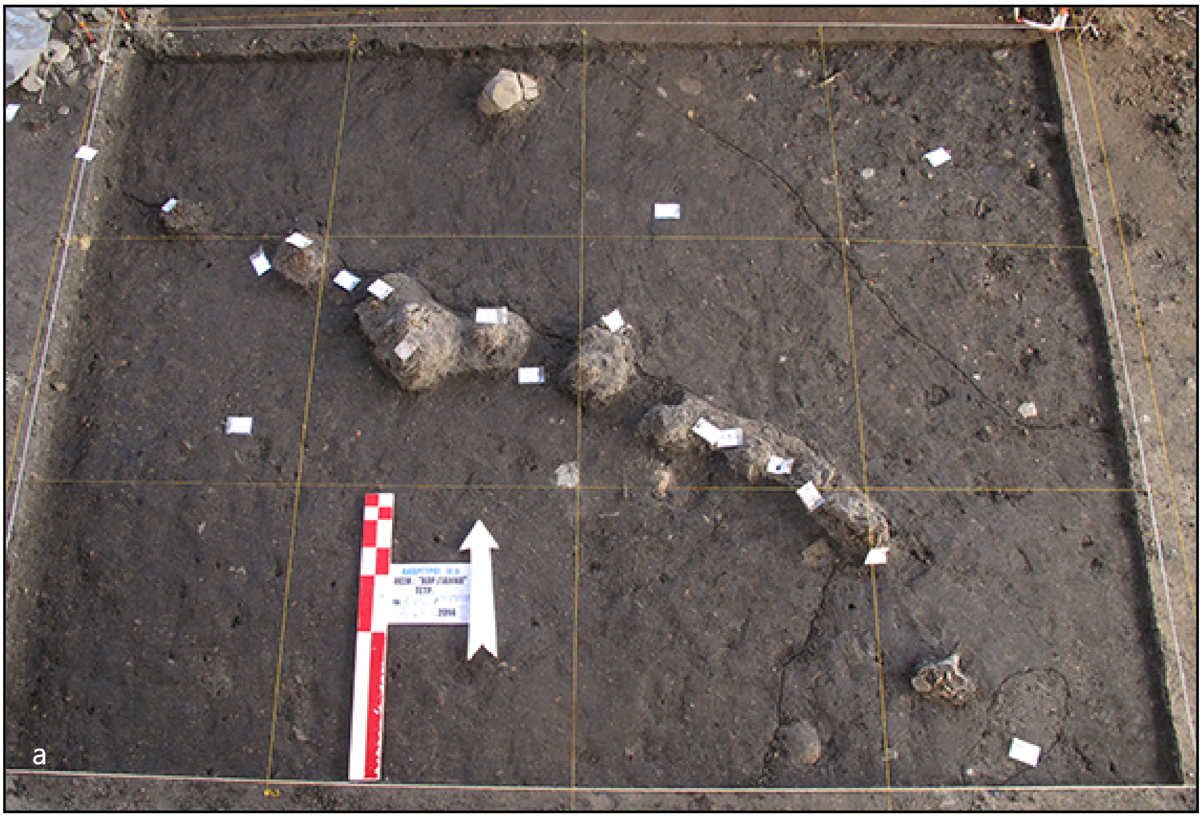


Fig. 139 Parts of *Fence 4* **a.** Vertical posts of *Fence 4* in trench 575 a **c.** Vertical posts of *Fence 4* in trench 574 b.



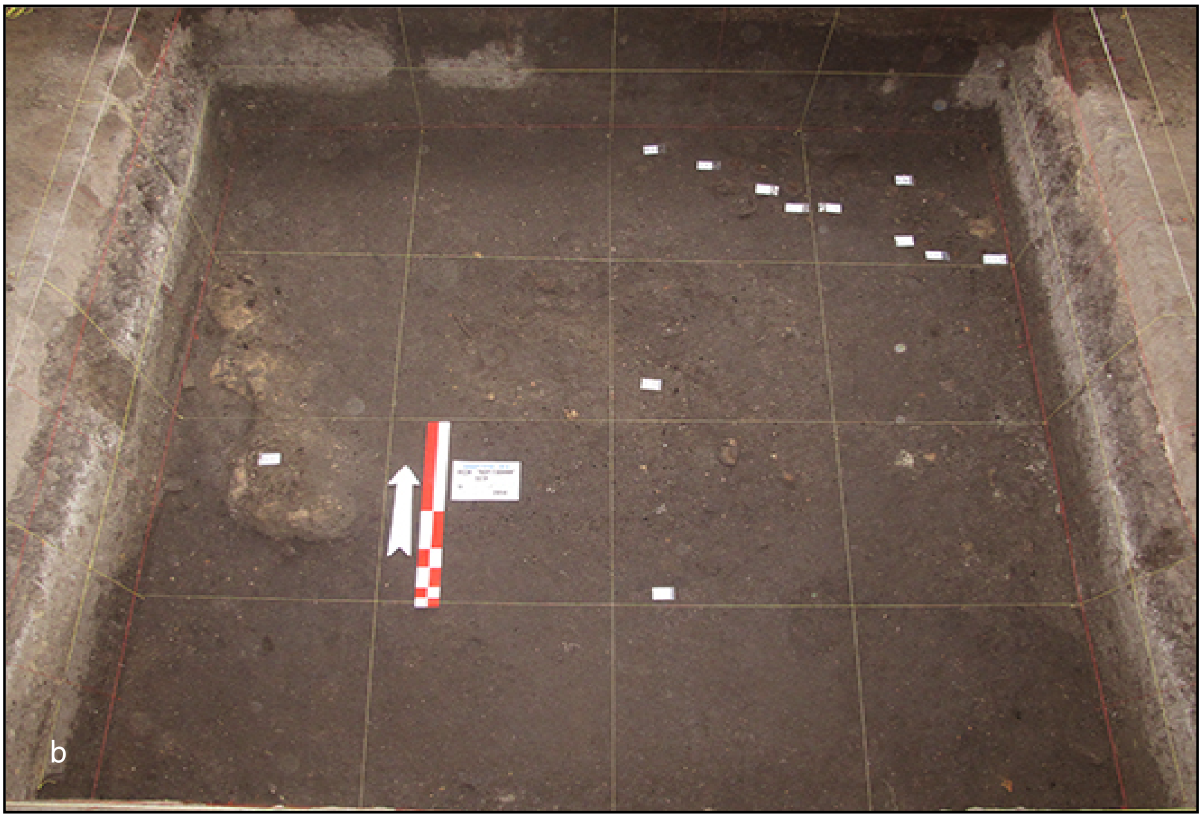


Fig. 140 Parts of *Fence 5* **a.** General view of *Fence 5* from northwest **b.** Ditch with postholes/posts within the excavational context of trench 574 c with structural remains and movable finds **c.** The posts of *Fence 5* in trench 574 c after the removal of the superimposed layers.

Fig. 141 Plan of *Fence 6(?)* and the posts' alignment in trench 960 c at the Southern Sector of Anarghiri IXb excavation.

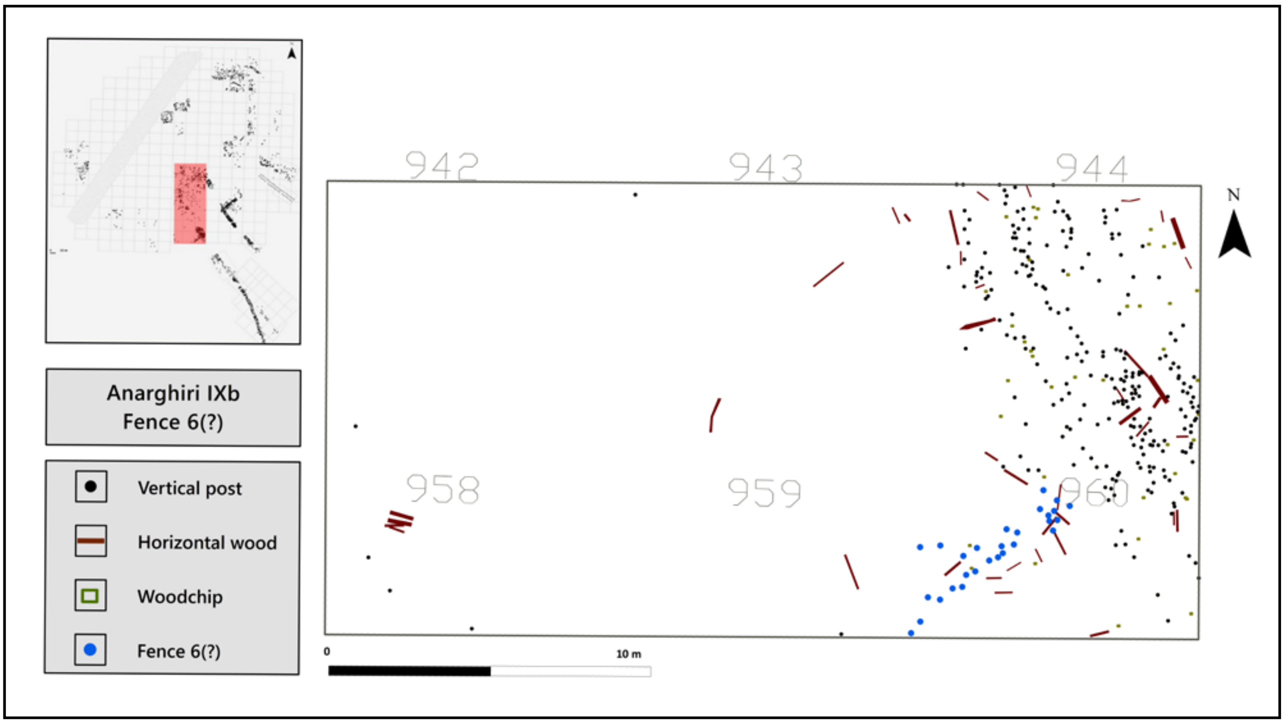
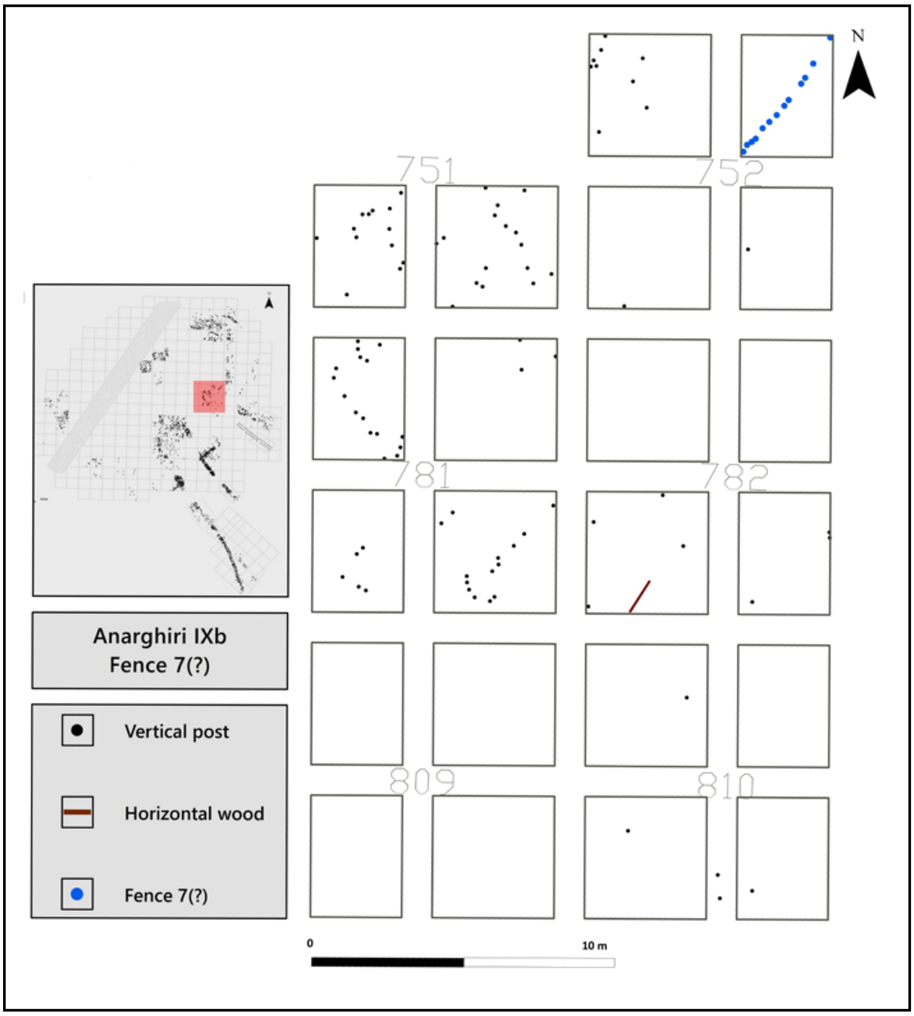


Fig. 142 Plan of *Fence 7(?)* and the posts' alignment in trench 752 b at the Eastern Sector of Anarghiri IXb excavation.



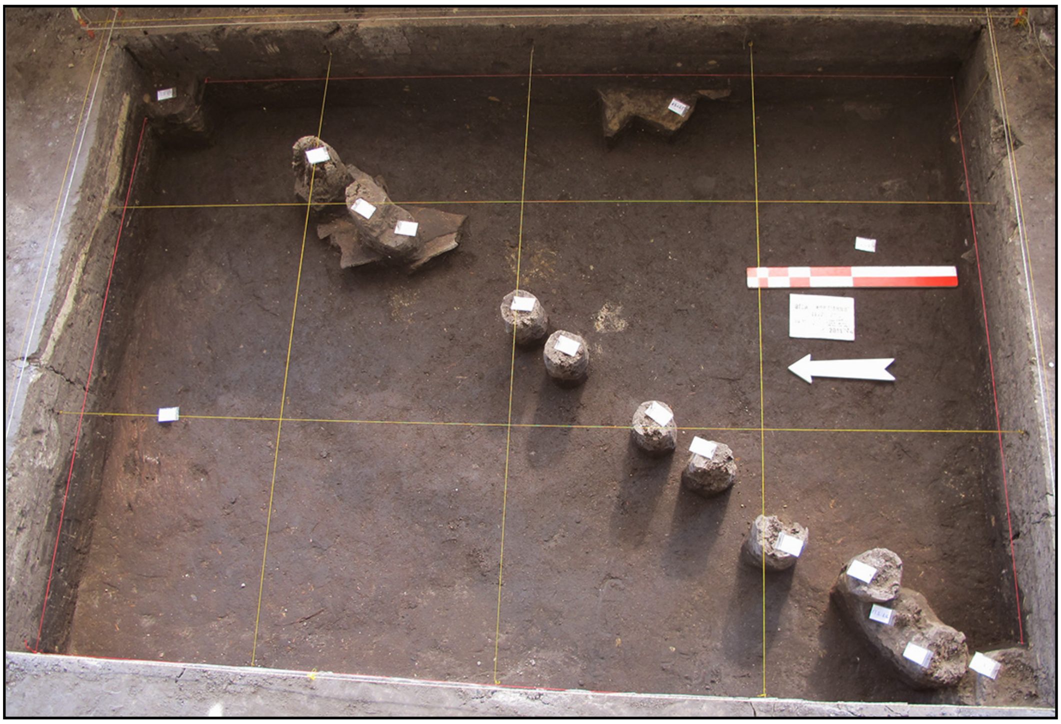


Fig. 143 Plan of *Fence 8(?)* in trench 881 d at the Southern Sector of Anarghiri IXb excavation.

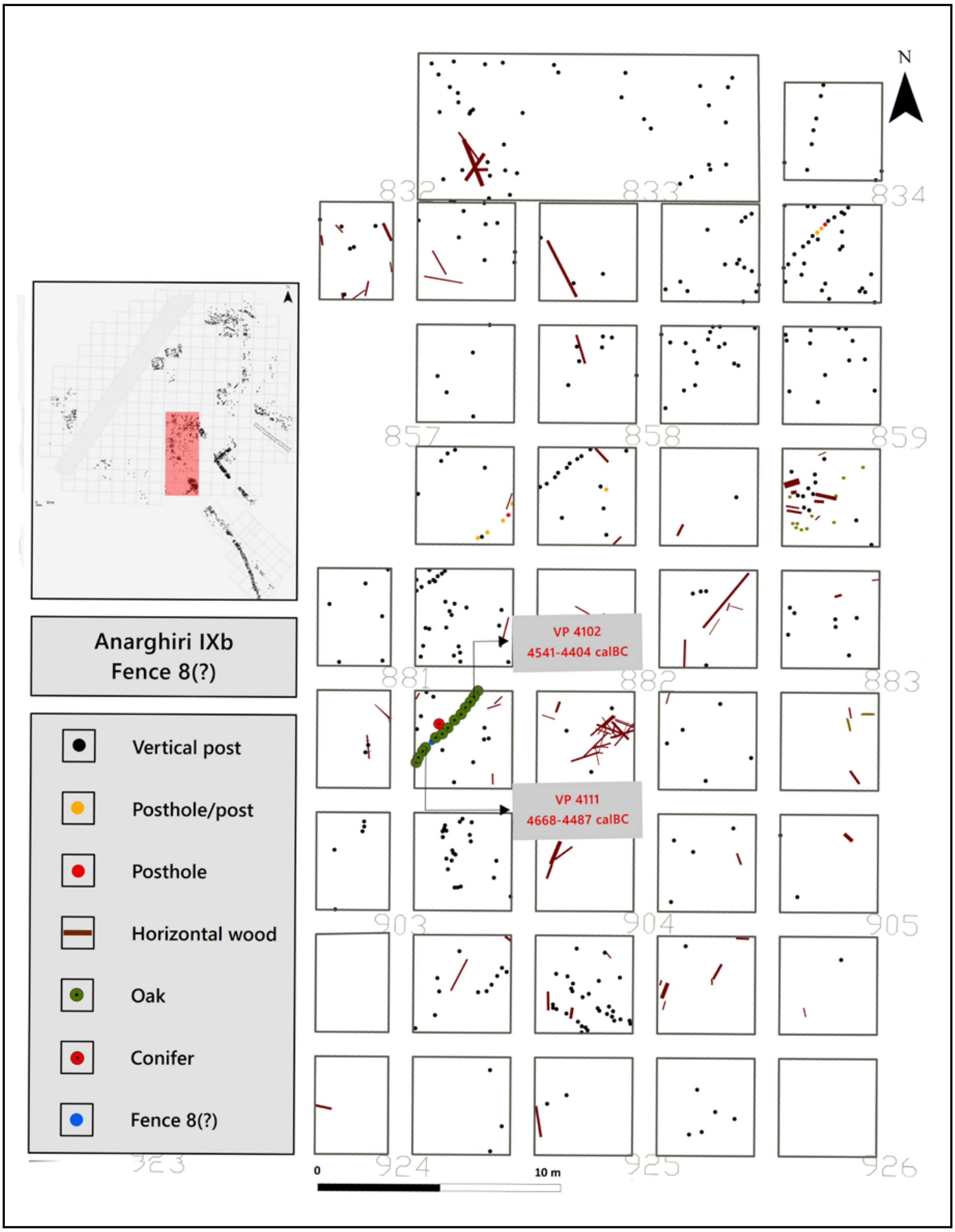


Fig. 144 *Fence 8(?)* in trench 881 d at the Southern Sector of Anarghiri IXb excavation.

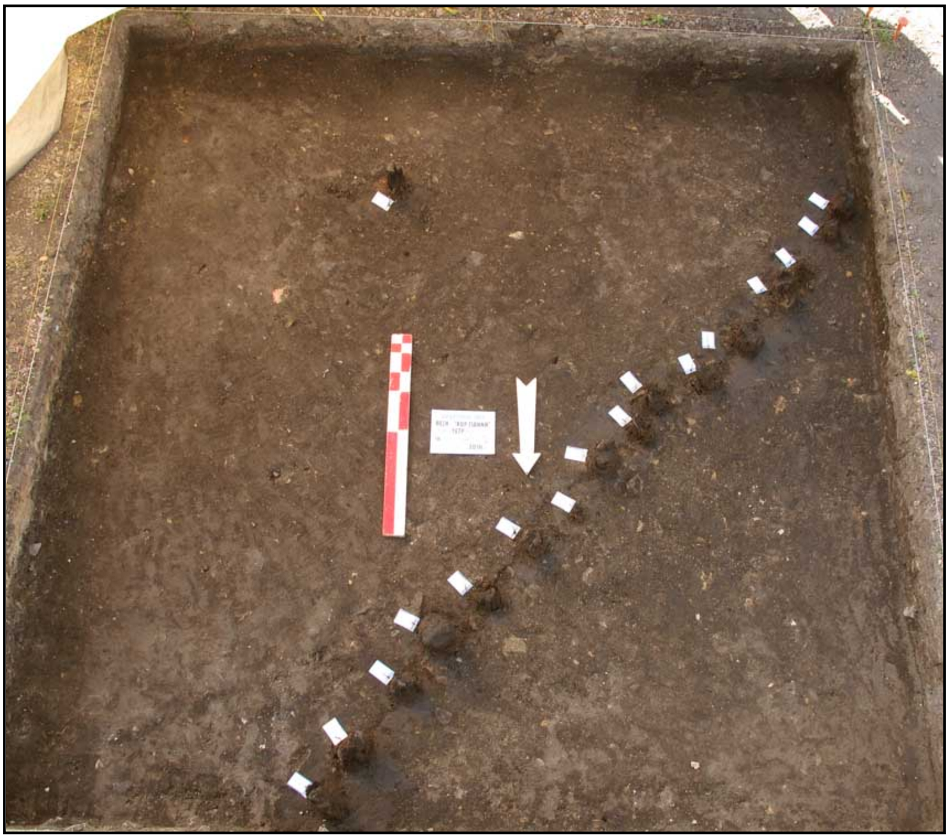
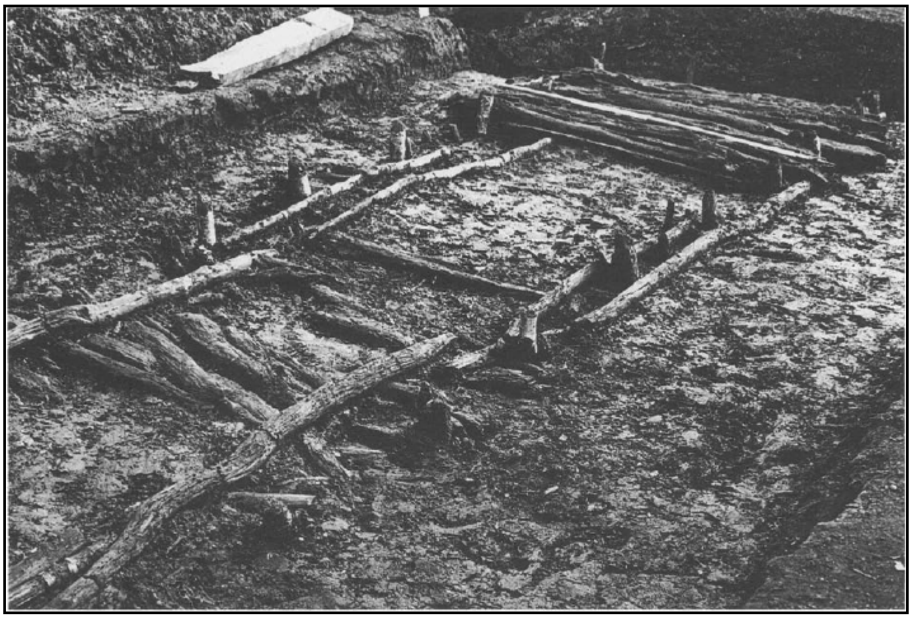


Fig. 145 Vertical posts with processed upper part from *Fence 8(?)*.

Fig. 146 Photo and reconstruction of the Late Neolithic trackway in Cloonbony, Co. Longford (Casparie and Moloney 1994).



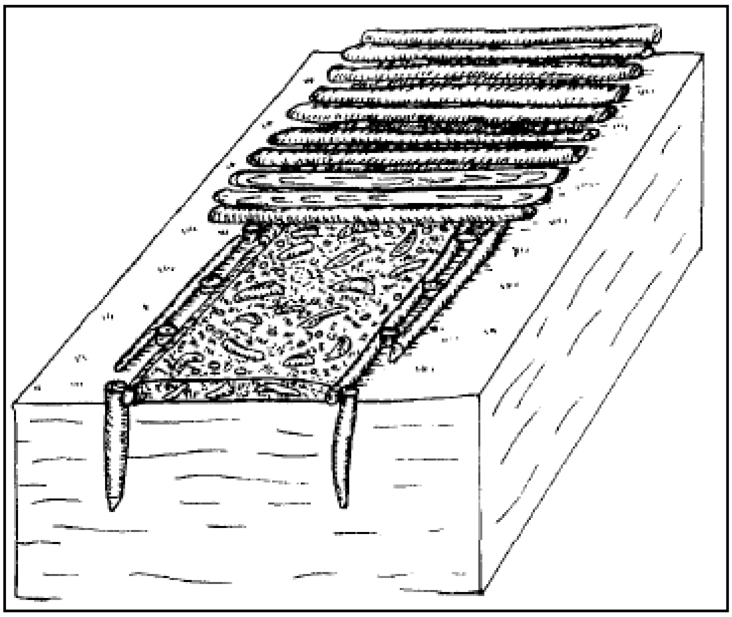


Fig. 147 The Neolithic Trackway XXI in Bourtanger Moor (Casparie 1982).

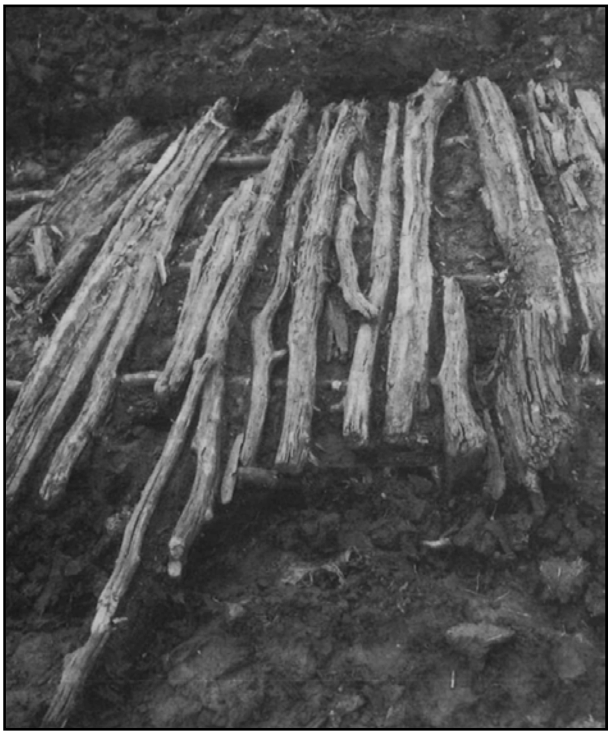
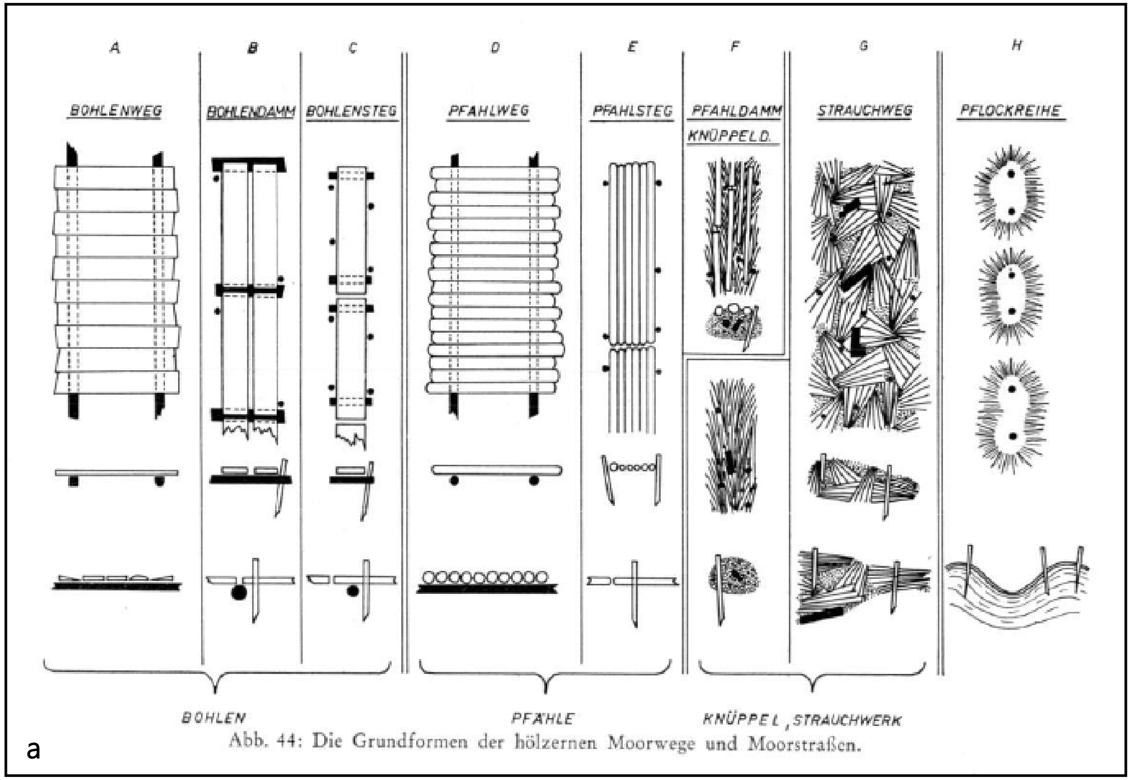


Fig. 148 a. Hayen's typology of northwestern Germany's trackways b. Types of vertical structural elements used in trackways' construction (Hayen 1957).



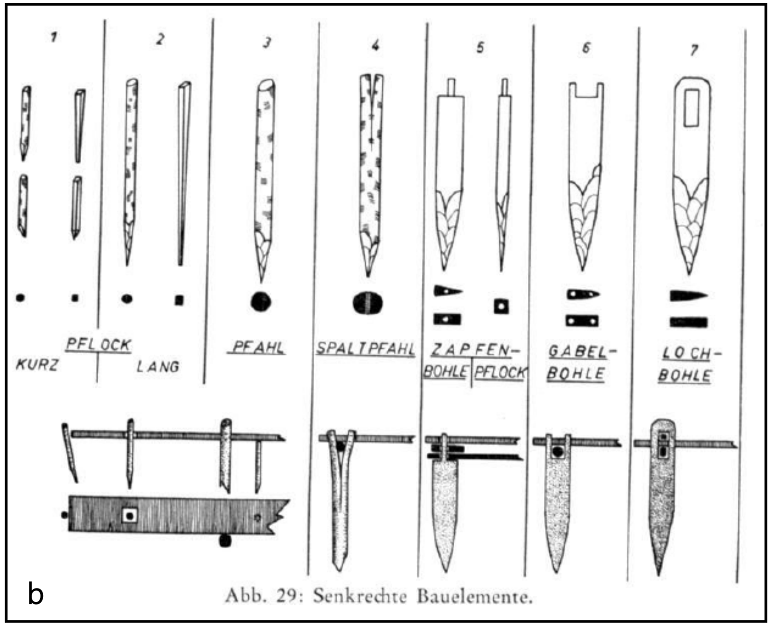


Fig. 149 a-c Trackway XLII (Ip) in Wittemoor. Female (b) and male (c) wooden figurines (Fansa und Schneider 1998) **d.** Trackway XXXXVI (Ip) found in Jethauser Moor, Ldkr. Friesland (Fansa und Schneider 1998) **e.** Trackway XXXI (Pr) in Campemoor, Ldkr. Vechta (Dieckmann 1998).

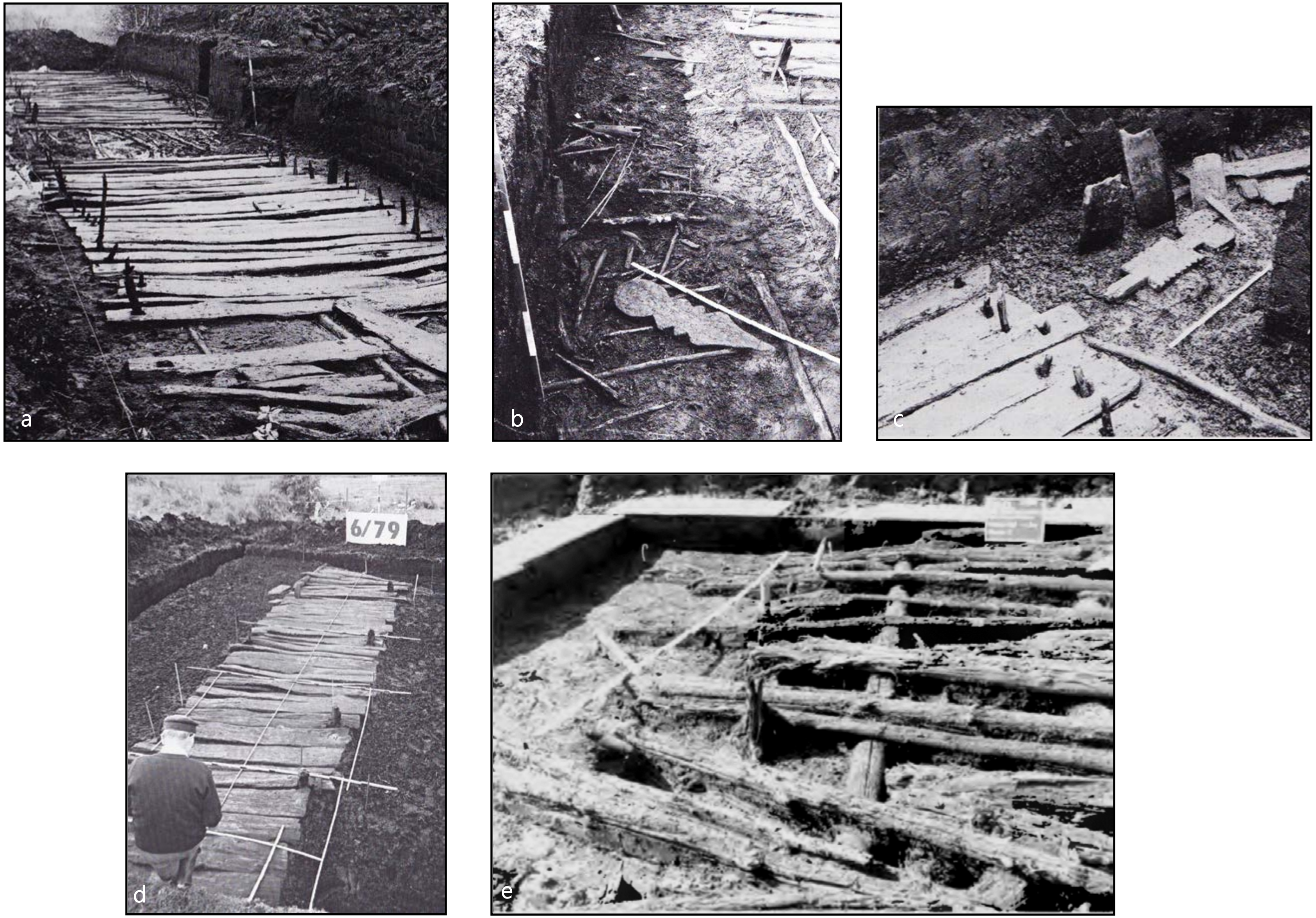


Fig. 150 a-c Chalain 19 wooden trackways and palisade (Viellet 2009) **d, e** Chalain 2 trackways and palisades (Viellet 2009 and Pétrequin 1997).

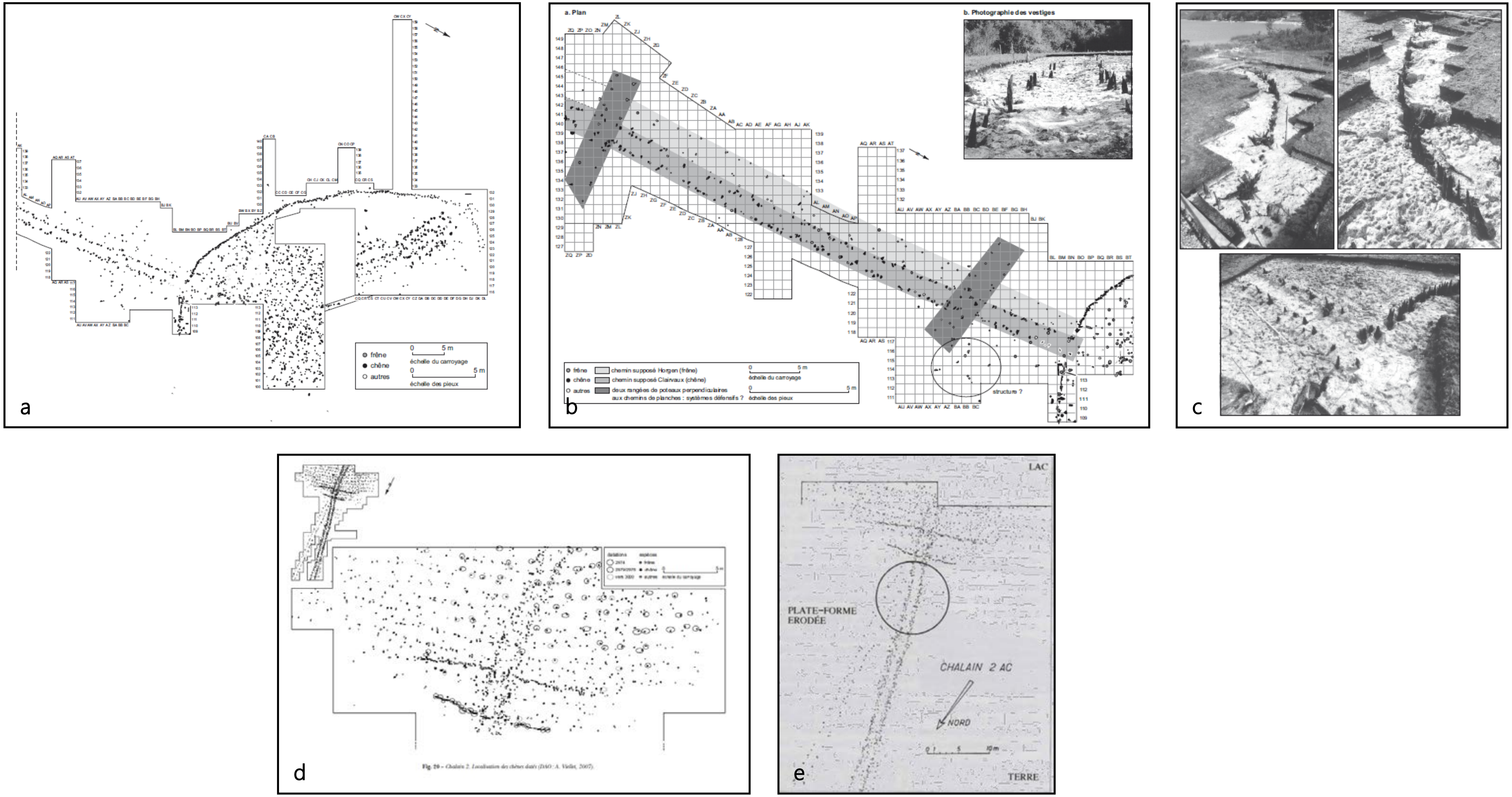


Fig. 151 The trackway in Torwiesen II **a.** Plan of the excavation across the trackway's course **b.** The bridge-like part of the trackway **c, d** Reconstructions of the trackway and the Neolithic habitation (Schlichtherle 2011).

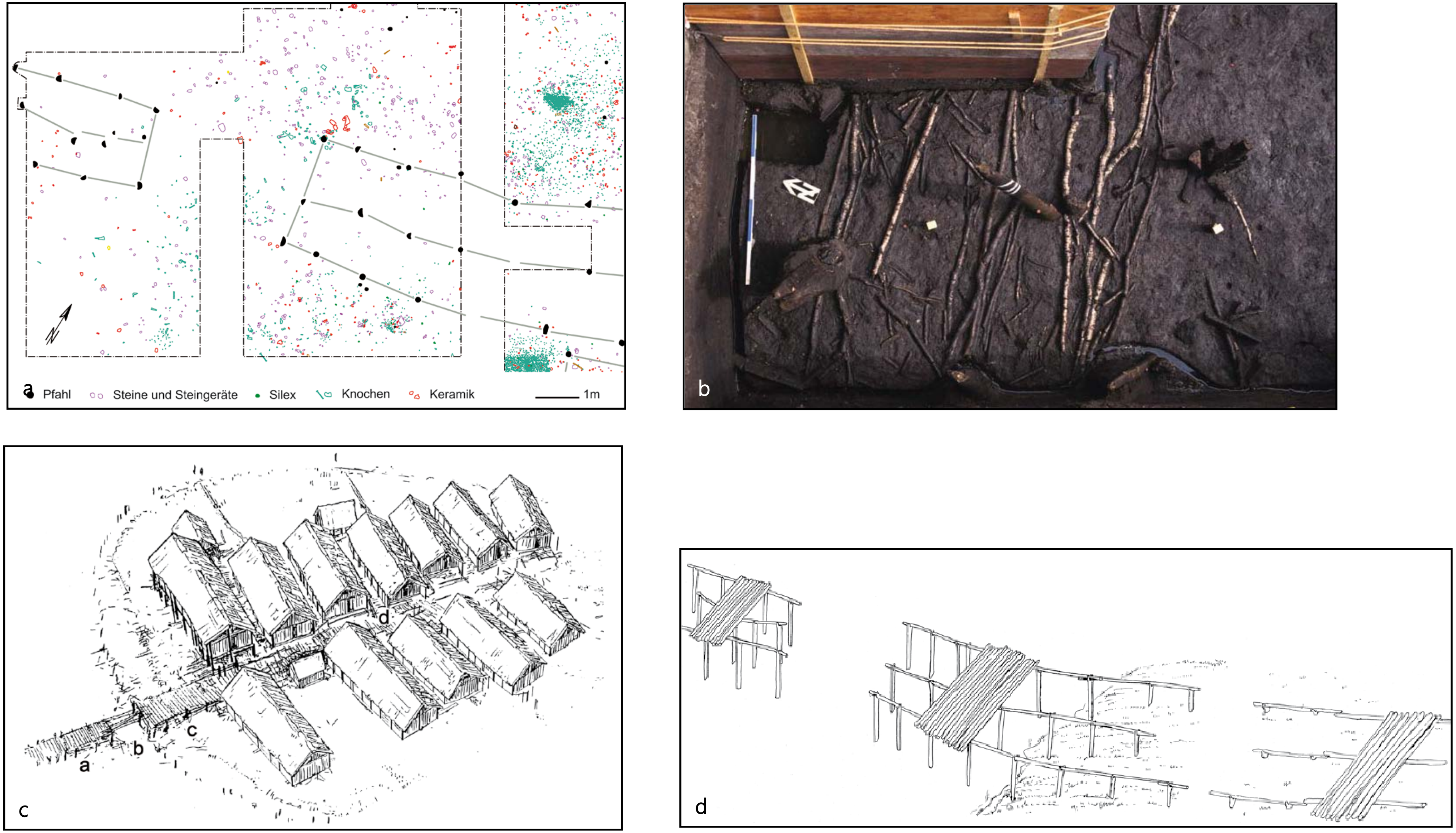


Fig. 152 a, b The trackway in Bad Buchau-Bahndamm. A retaining post with horizontal wood (a) and the structure's stratigraphic position (b) **c.** Reconstruction of Seekirch-Stockwiesen trackway and habitation and Plan of the excavation across the trackway's course **d.** The substructure of the trackway **e.** Part of a wooden wheel (a, b, c, e in Heumüller 2016; d in Schlichtherle 2011).

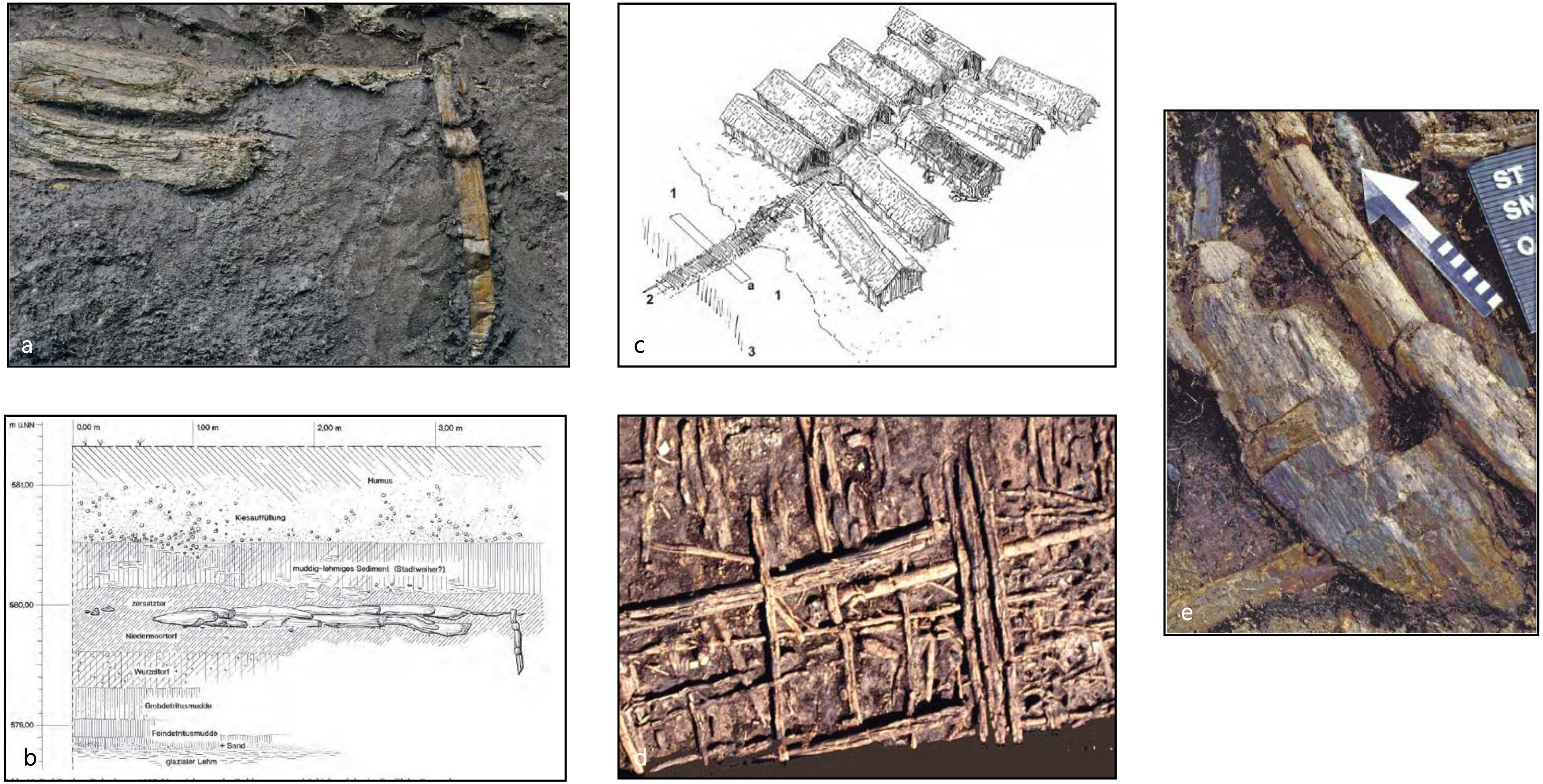


Fig. 153 The Siedlung Forschner in Federsee **a.** Plan of the trackway and the structures across its course towards the settlement's palisades (Heumüller 2016) **b.** General plan of the trackway and the successive walls and palisades of the settlement (Torke 2009) **c.** Reconstruction of the trackway's structures (Köninger 2016).

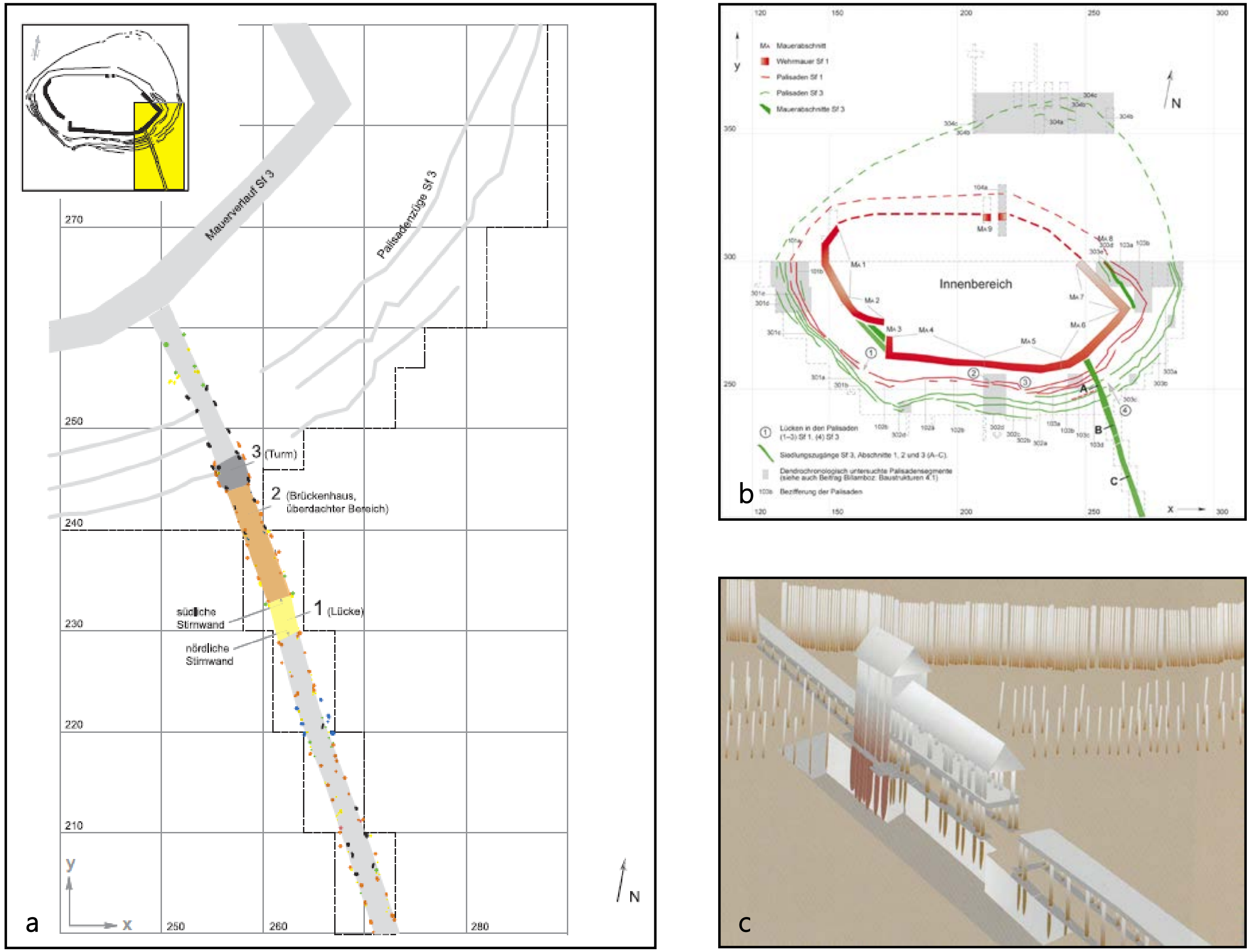


Fig. 154 The Neolithic settlements Pestenacker (a-d) and Unfriedshausen (e) **a.** General plan of the habitation (Limmer 2016) **b.** The double posts' row of the trackway **c, d** Plan of the fence and detail of its construction (Bauer 1996) **e.** General plan of the habitation (Schönfeld 1995).

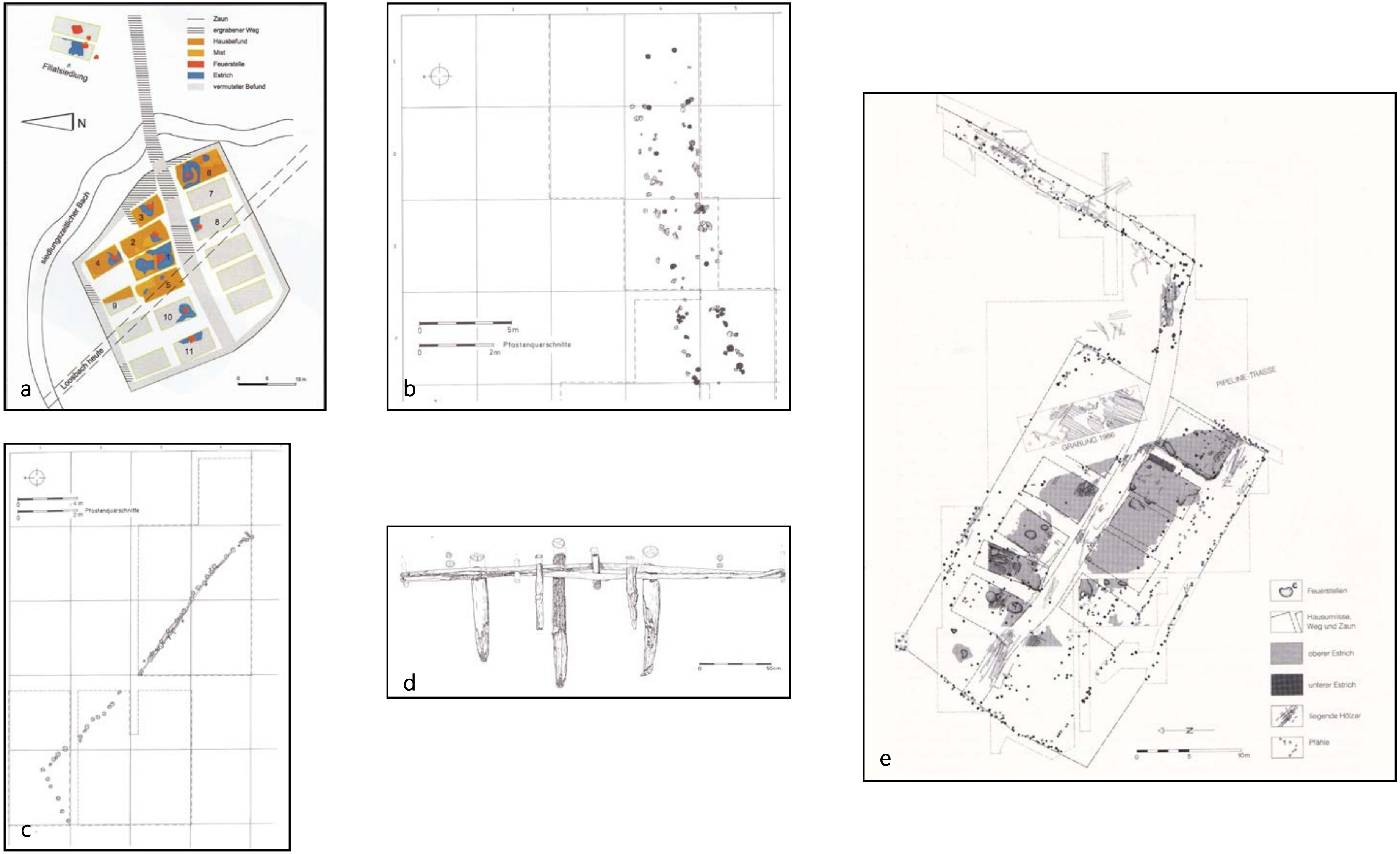


Fig. 155 a. Plan of the Neolithic trackway in Thayngen II **b.** Plan of the fence of Thayngen III and detail of its construction (Guyan 1967).

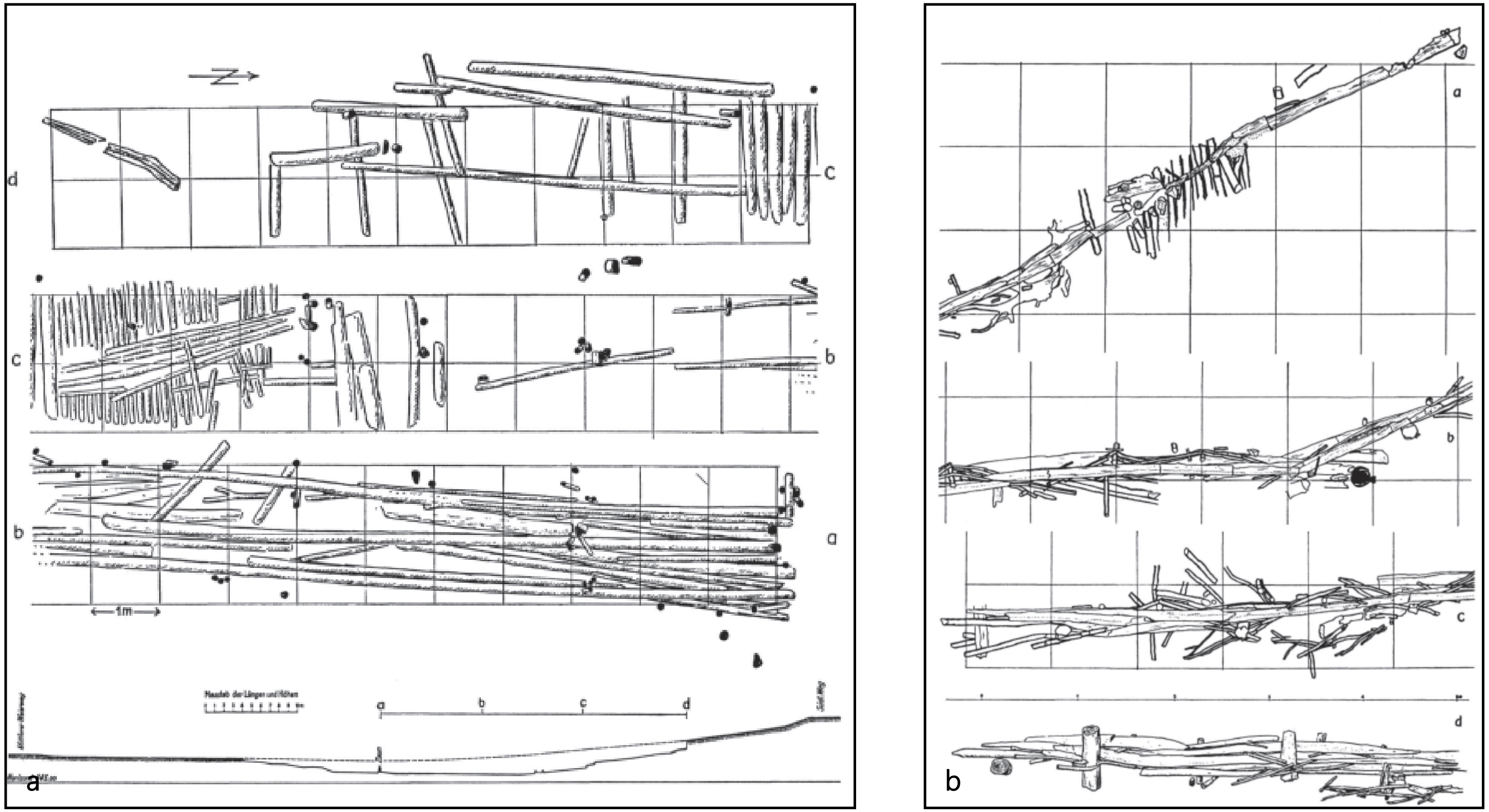


Fig. 156 a. Plan of the posts' alignments and structures between Hurden and Rapperswil in Lake Zurich (Scherer and Wiemann 2008) **b.** Plan of the Bronze Age settlement Rapperswil-Technikum and the successive palisades (Schmidheiny 2010).

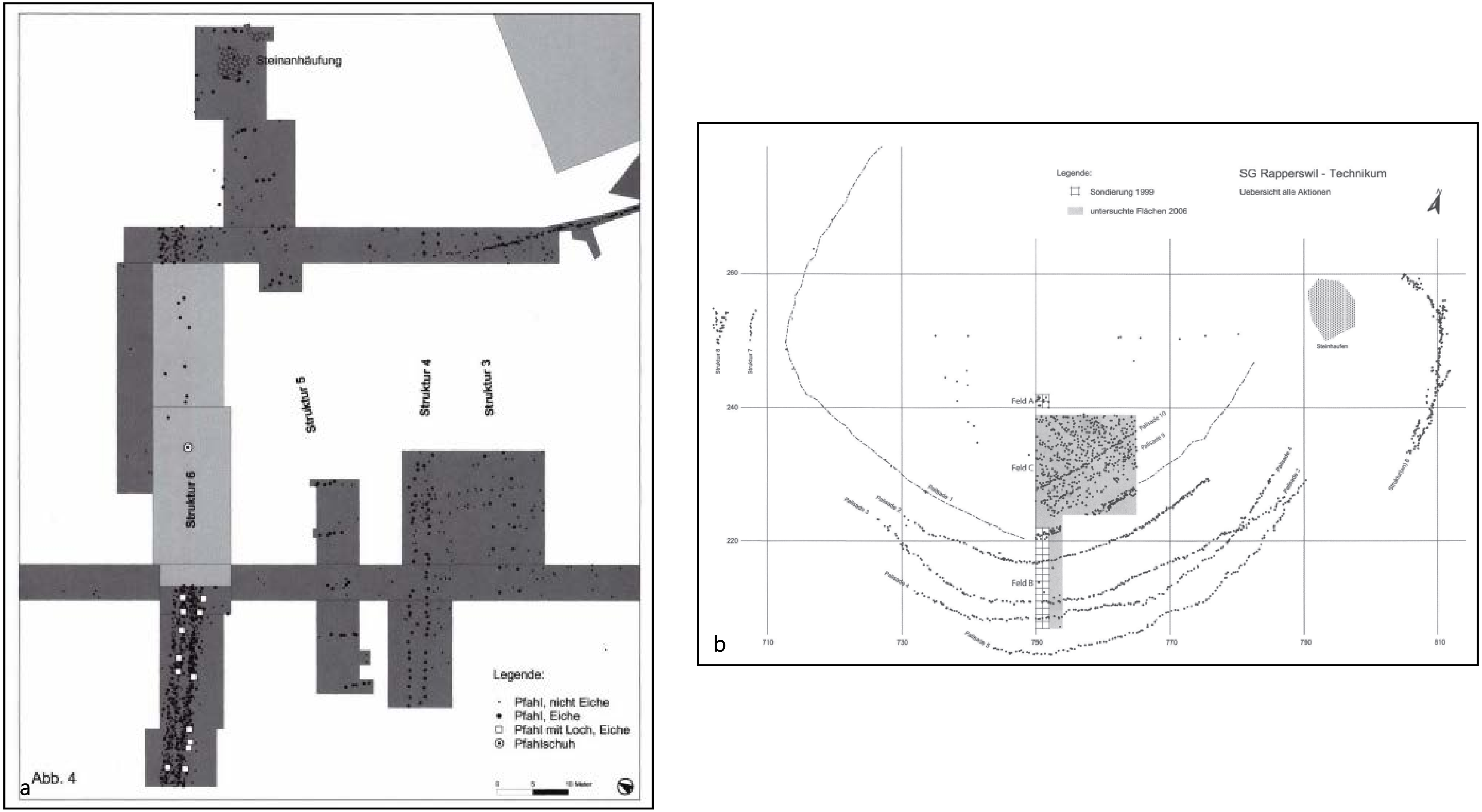


Fig. 157 Palisades, fences and trackways of the Neolithic settlement Zürich-Parkhaus Opéra (Bleicher and Harb 2018).

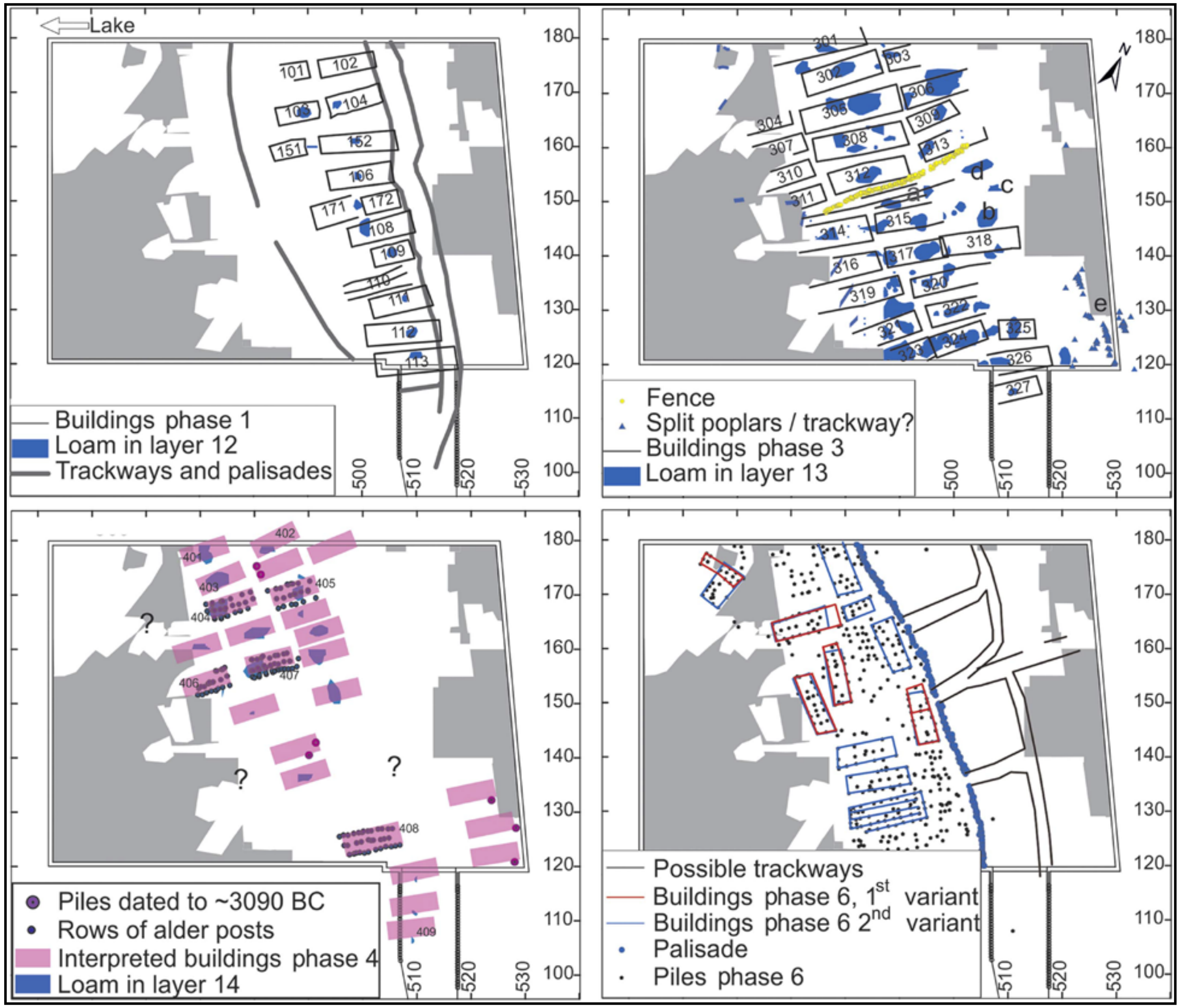


Fig. 158 a. Plan of the habitation and the trackways in Sutz-Lattrigen (Hafner et al. 2016) **b.** Posts' alignments and trackways in Nidau-BKW (Hafner und Suter 2000).

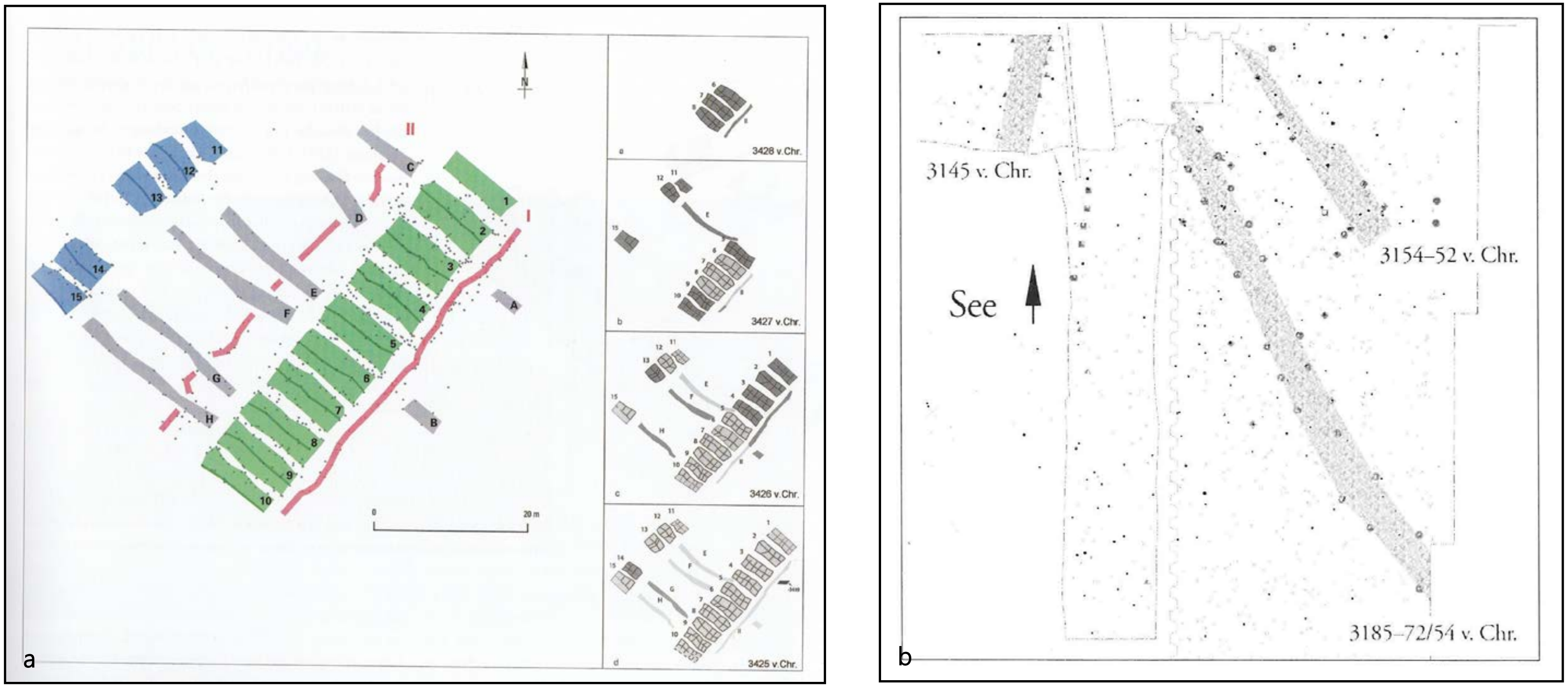
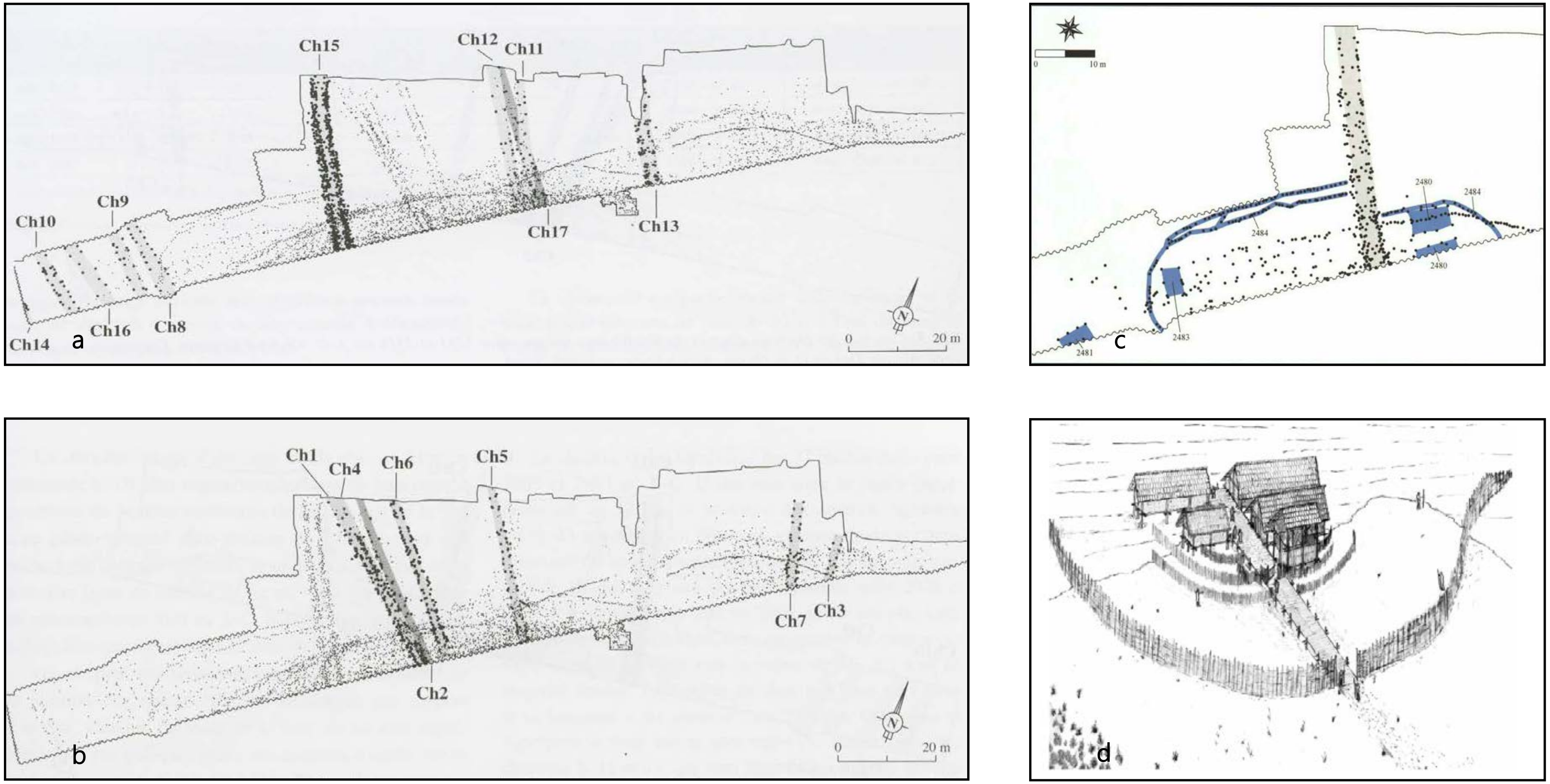


Fig. 159 The Neolithic habitation Marine-Les Piécettes (NE) **a.** Plan of the excavated area with the trackway, the palisades and the special building (Honegger 2012) **b.** General view of the trackway's course from north **c.** View of the artificial mound from north (Honegger und Michel 2002) **d.** The three successive phases of the special building (Honegger 2005).

Fig. 160 The habitation Concise-sous-Colachoz (NE) **a.** Plan of the excavated area with the Middle Neolithic trackways **b.** Plan of the excavated area with the Final Neolithic trackways (Winiger 2006) **c.** The Final Neolithic Trackway 15 and the habitation's fences (Winiger et al. 2004) **d.** Reconstruction of the Early Bronze Age habitation with Trackway 20 and palisades (Winiger et Burri-Wyser 2014).



The pile-field and the wooden structures

of the Neolithic lakeside settlement Anarghiri IXb

Western Macedonia, Greece

Volume III: Plans

Inauguraldissertation

an der Philosophisch-historischen Fakultät der Universität Bern

zur Erlangung der Doktorwürde

vorgelegt von

Tryfon Giagkoulis

Promotionsdatum: **22. Februar 2019**

eingereicht bei

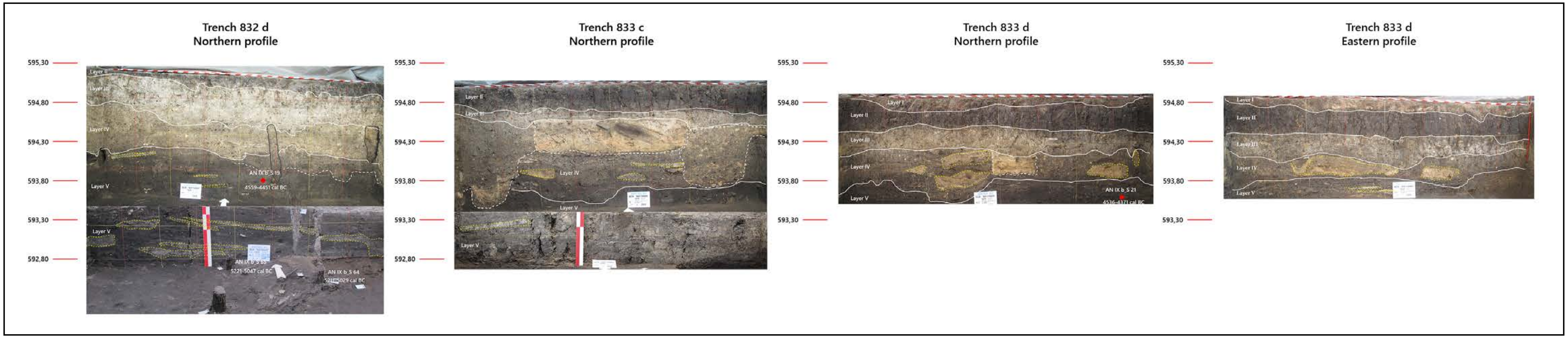
Prof. Dr. Albert Hafner, Institut für Archäologische Wissenschaften der Universität Bern

und

Prof. em. Dr. Kostas Kotsakis, Department of History and Archaeology,

Aristotle University of Thessaloniki

Plan 1 Profiles of trenches 832-833 at the Southern Sector of the excavation with successive layers, ^{14}C dated samples and schematic representation and description of the layers' sequence.



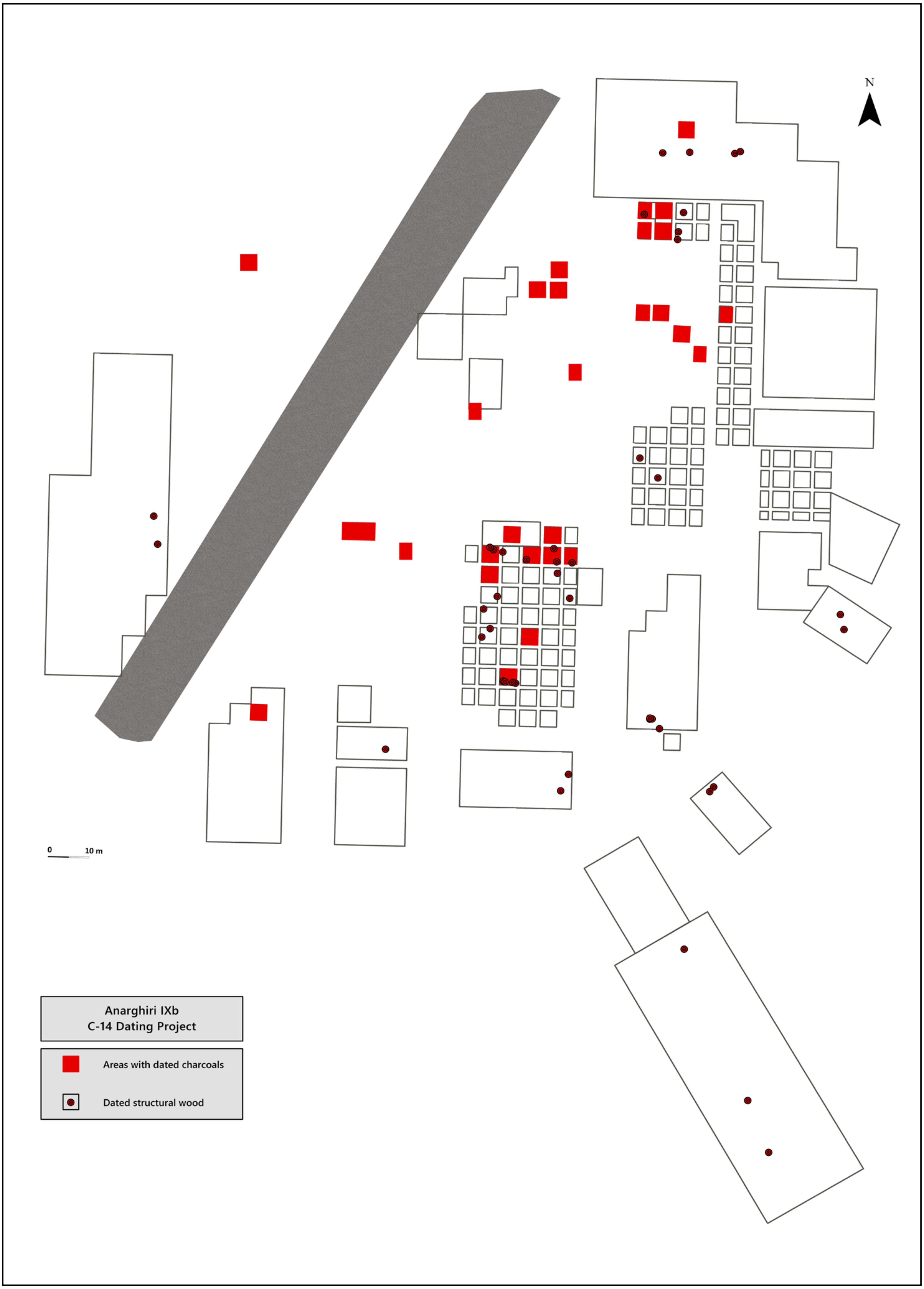
ELEVATIONS	832 d Northern Profile: LAYER	DESCRIPTION	C14 DATES
595.40-595.30	0-I	Topsoil - removed	
595.30-595.20			
595.20-595.10	II	Uppermost archaeological layer - disturbed. Dark brown clumpy soil, with roots and small pebbles	
595.10-595.00			
595.00-594.90			
594.90-594.80	III	Light grayish soil, with scattered small clay fragments and charcoals. Adequate quantity of pottery	
594.80-594.70			
594.70-594.60			
594.60-594.50			
594.50-594.40			
594.40-594.30	IV	Pale brownish soil, soft and crumbly, with scattered charcoals and clay fragments, disturbed by two postholes. Abundant pottery, animal bones and artifacts	
594.30-594.20			
594.20-594.10			
594.10-594.00			
594.00-593.90			
593.90-593.80	V	Dark brown compact soil, with increasing humidity. Abundant organic materials, well-preserved wooden elements and artifacts. Horizontal elongated, sandy or chalky sediments and lenses.	
593.80-593.70			
593.70-593.60			
593.60-593.50			
593.50-593.40			
593.40-593.30			S19_CHARCOAL: 4559-4451 calBC
593.30-593.20			S64_POST 6273: 5211-5029 calBC
593.20-593.10			
593.10-593.00			
593.00-592.90			
592.90-592.80			S65_POST 6279: 5221-5047 calBC
592.80-592.70			

ELEVATIONS	833 c Northern Profile: LAYER	DESCRIPTION	C14 DATES
595.40-595.30	0-I	Topsoil - removed	
595.30-595.20			
595.20-595.10	II	Uppermost archaeological layer - disturbed. Dark brown clumpy soil, with roots, small pebbles and scattered clay fragments	
595.10-595.00			
595.00-594.90			
594.90-594.80			
594.80-594.70			
594.70-594.60	III	Light grayish soil, with scattered small clay fragments and charcoals	
594.60-594.50			
594.50-594.40	DISTURBED	Pale brownish soil, soft and crumbly, with scattered charcoals and clay fragments. Interpolated solid layer of red-yellowish burnt (?) clay, possibly belonging to an architectural feauture or thermal structure. Further disturbances (pits?) in eastern and western edges of the profile, possible intrusions from Layer III	
594.40-594.30			
594.30-594.20	IV		
594.20-594.10			
594.10-594.00			
594.00-593.90			
593.90-593.80			
593.80-593.70			
593.70-593.60	V	Dark brown compact soil, with increasing humidity. Abundant organic materials, charcoals and sandy or chalky sediments	
593.60-593.50			
593.50-593.40			
593.40-593.30			
593.30-593.20			S66_ POST 6211 : 5480-5362 calBC
593.20-593.10			
593.10-593.00			
593.00-592.90			
592.90-592.80			S 74_N_CHARCOAL: 5209-5018 calBC
592.80-592.70			

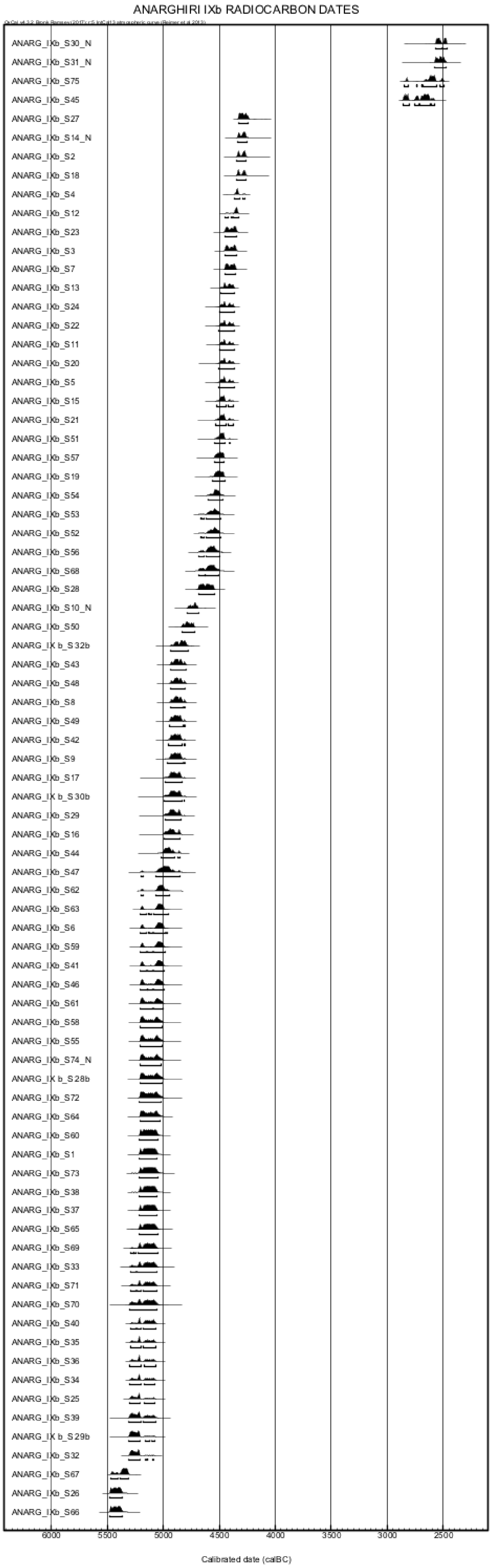
ELEVATIONS	833 d Northern Profile: LAYER	DESCRIPTION	C14 DATES
595.40-595.30	0-I	Topsoil. Light brown, with small roots and pebbles	
595.30-595.20			
595.20-595.10			
595.10-595.00			
595.00-594.90	II	Dark brown clumpy soil, with scattered small clay fragments and chalky sediments	
594.90-594.80			
594.80-594.70			
594.70-594.60			
594.60-594.50			
594.50-594.40	III	Light grayish soil, with scattered small clay fragments and charcoals	
594.40-594.30			
594.30-594.20			
594.20-594.10			
594.10-594.00	IV	Brownish soil with abundant charcoals and clay fragments. Several grey-yellowish clayey lenses possibly belonging to architectural structures or clay thermal and other structures	
594.00-593.90			
593.90-593.80			
593.80-593.70			
593.70-593.60			
593.60-593.50	V	Dark brown compact soil, with increasing humidity. Abundant organic materials, charcoals and sandy or chalky sediments	S21_CHARCOAL: 4536-4371 calBC
593.50-593.40			
593.40-593.30			
593.30-593.20			S67_POST 6215: 5467-5308 calBC
593.20-593.10			
593.10-593.00			
593.00-592.90			
592.90-592.80			
592.80-592.70			

ELEVATIONS	833 d Eastern Profile: LAYER	DESCRIPTION	C14 DATES
595.40-595.30	0-I	Topsoil. Light brown, with small roots and pebbles	
595.30-595.20			
595.20-595.10			
595.10-595.00			
595.00-594.90			
594.90-594.80	II	Dark brown clumpy soil, with scattered small clay fragments and chalky sediments	
594.80-594.70			
594.70-594.60			
594.60-594.50			
594.50-594.40			
594.40-594.30	III	Light grayish soil, with scattered small clay fragments and charcoals	
594.30-594.20			
594.20-594.10			
594.10-594.00			
594.00-593.90	IV	Brownish soil with abundant charcoals and clay fragments. Several grey-yellowish clayey lenses possibly belonging to architectural structures or clay thermal and other structures	
593.90-593.80			
593.80-593.70			
593.70-593.60			
593.60-593.50	V	Dark brown compact soil, with increasing humidity. Abundant organic materials, charcoals and sandy or chalky sediments	
593.50-593.40			
593.40-593.30			
593.30-593.20			
593.20-593.10			
593.10-593.00			
593.00-592.90			
592.90-592.80			
592.80-592.70			

Plan 2 Spatial distribution of Anarghiri IXb ^{14}C samples.

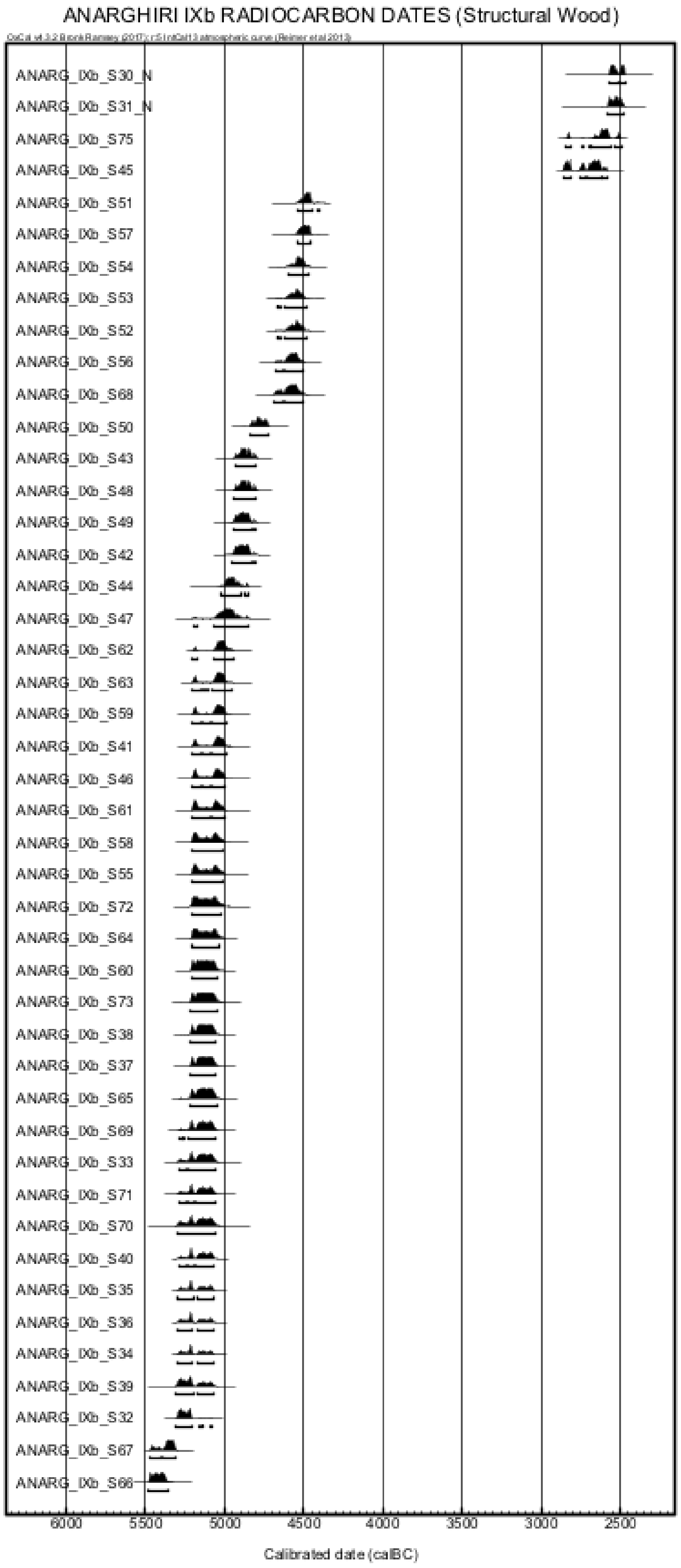


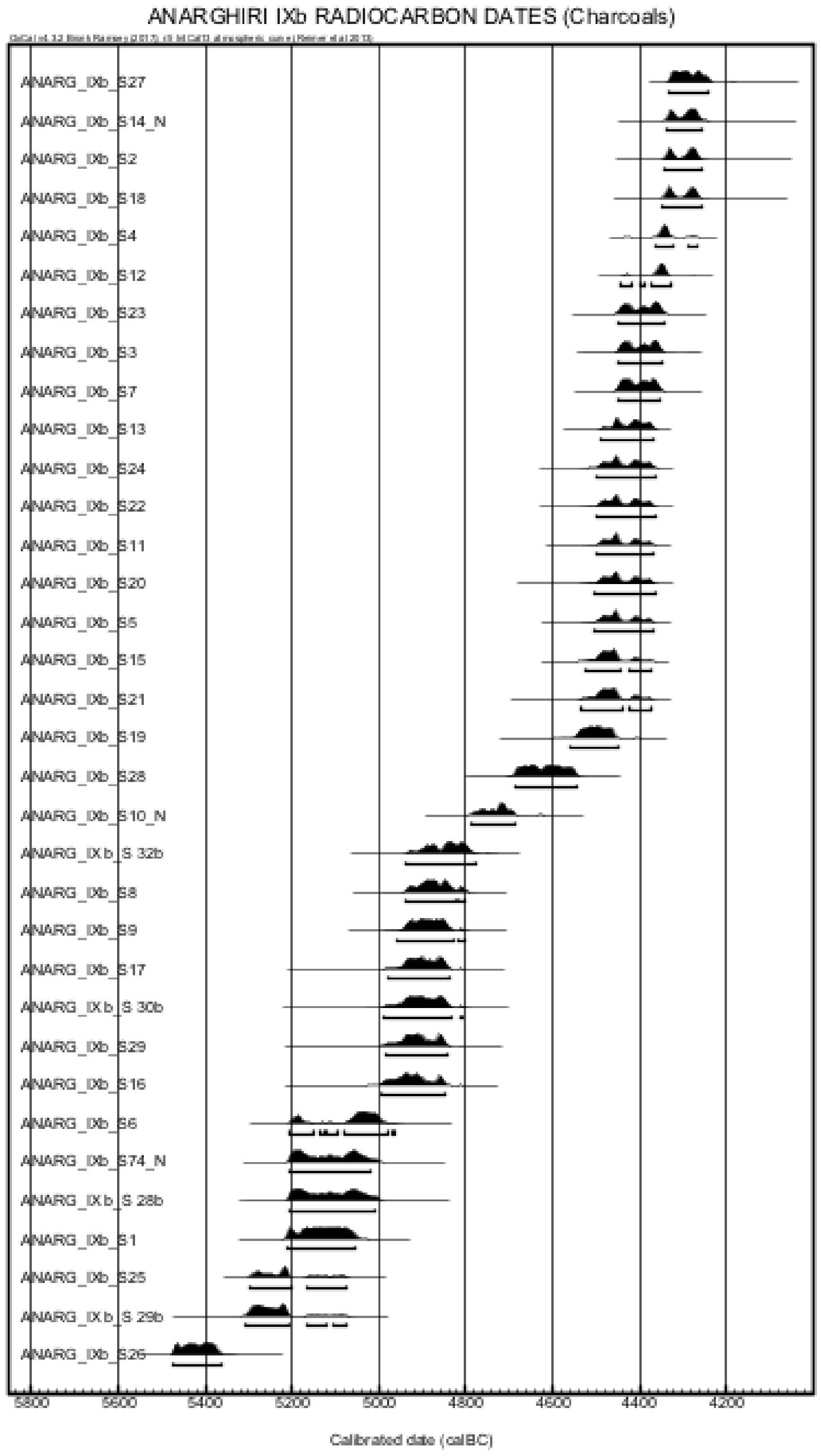
Plan 3 Sorted dates' diagram and table of Anarghiri IXb ^{14}C samples.



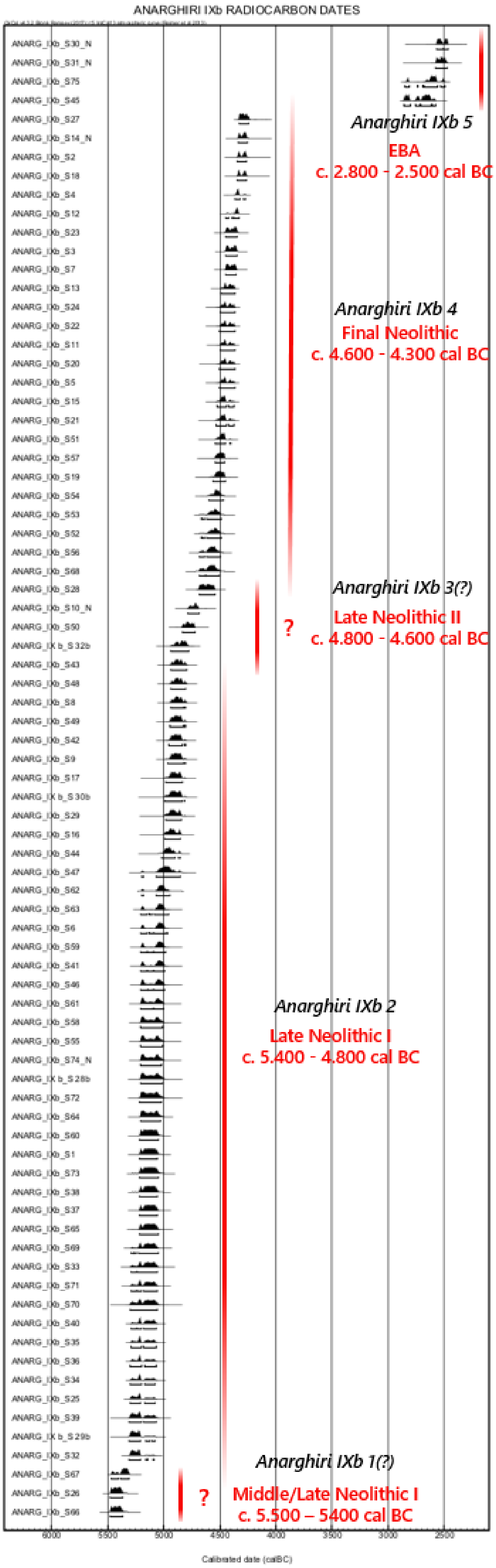
Laboratory No	Sample ID	Dated element	Radiocarbon Date BP	Age uncertainty	Calibrated Date BC	%
BE-8648.1.1	ANARG_IXb_S30_N	Post 55	3990	20	2570-2469	95.4
BE-8649.1.1	ANARG_IXb_S31_N	Post 68	4019	20	2577-2479	95.4
BE-8129.1.1	ANARG_IXb_S75	Woodchip	4070	25	2849-2492	95.3
BE-8116.1.1	ANARG_IXb_S45	Post 20027	4119	20	2862-2581	95.4
BE-8081.1.1	ANARG_IXb_S27	Charcoal	5408	22	4331-4240	95.4
BE-8651.1.1	ANARG_IXb_S14_N	Charcoal	5432	21	4340-4256	95.4
BE-8056.1.1	ANARG_IXb_S2	Charcoal	5443	21	4344-4260	95.4
BE-8072.1.1	ANARG_IXb_S18	Charcoal	5448	22	4346-4259	95.4
BE-8058.1.1	ANARG_IXb_S4	Charcoal	5487	22	4365-4268	95.4
BE-8066.1.1	ANARG_IXb_S12	Charcoal	5510	22	4445-4329	95.3
BE-8077.1.1	ANARG_IXb_S23	Charcoal	5547	27	4449-4346	95.4
BE-8057.1.1	ANARG_IXb_S3	Charcoal	5553	22	4449-4350	95.4
BE-8061.1.1	ANARG_IXb_S7	Charcoal	5562	22	4451-4353	95.4
BE-8067.1.1	ANARG_IXb_S13	Charcoal	5607	22	4487-4366	95.4
BE-8065.1.1	ANARG_IXb_S11	Charcoal	5620	22	4499-4368	95.4
BE-8078.1.1	ANARG_IXb_S24	Charcoal	5617	26	4500-4364	95.4
BE-8076.1.1	ANARG_IXb_S22	Charcoal	5618	26	4501-4364	95.4
BE-8059.1.1	ANARG_IXb_S5	Charcoal	5623	23	4503-4367	95.4
BE-8074.1.1	ANARG_IXb_S20	Charcoal	5621	26	4504-4365	95.4
BE-8069.1.1	ANARG_IXb_S15	Charcoal	5634	22	4527-4373	95.4
BE-8075.1.1	ANARG_IXb_S21	Charcoal	5635	26	4536-4371	95.4
BE-8112.1.1	ANARG_IXb_S51	Post 4102	5647	22	4541-4404	95.4
BE-8092.1.1	ANARG_IXb_S57	Post 11463	5666	22	4542-4457	95.4
BE-8073.1.1	ANARG_IXb_S19	Charcoal	5673	27	4559-4451	95.4
BE-8118.1.1	ANARG_IXb_S54	Post 5061	5702	22	4597-4464	95.4
BE-8126.1.1	ANARG_IXb_S53	Post 6178	5716	22	4668-4487	95.4
BE-8109.1.1	ANARG_IXb_S52	Post 4111	5716	22	4668-4487	95.4
BE-8127.1.1	ANARG_IXb_S56	Post 11476	5730	22	4679-4499	95.4
BE-8093.1.1	ANARG_IXb_S68	Horizontal wood 1605	5735	28	4683-4501	95.4
BE-8082.1.1	ANARG_IXb_S28	Charcoal	5764	23	4688-4547	95.4
BE-8650.1.1	ANARG_IXb_S10_N	Charcoal	5853	22	4790-4686	95.4
BE-8115.1.1	ANARG_IXb_S50	Post 837	5913	22	4836-4723	95.4
BE-8098.1.1	ANARG_IXb_S43	Post 20423	5982	22	4936-4799	95.4
BE-8095.1.1	ANARG_IXb_S48	Post 3039	5984	22	4937-4800	95.4
BE-8176.1.1	ANARG_IX b_S 32b	Charcoal	5963	28	4938-4777	95.4
BE-8062.1.1	ANARG_IXb_S8	Charcoal	5985	22	4938-4801	95.4
BE-8100.1.1	ANARG_IXb_S49	Post 3011	5996	22	4947-4802	95.4
BE-8096.1.1	ANARG_IXb_S42	Post 820	6000	22	4954-4804	95.4
BE-8063.1.1	ANARG_IXb_S9	Charcoal	6000	23	4959-4802	95.4
BE-8071.1.1	ANARG_IXb_S17	Charcoal	6010	23	4982-4837	95.4
BE-8083.1.1	ANARG_IXb_S29	Charcoal	6020	23	4986-4844	95.4
BE-8174.1.1	ANARG_IX b_S 30b	Charcoal	6011	28	4990-4810	95.4
BE-8070.1.1	ANARG_IXb_S16	Charcoal	6030	22	4993-4848	95.4
BE-8101.1.1	ANARG_IXb_S44	Post 20337	6048	23	5020-4850	95.4
BE-8113.1.1	ANARG_IXb_S47	Post 3038	6073	37	5201-4848	95.4
BE-8125.1.1	ANARG_IXb_S62	Post 10904	6104	22	5202-4946	95.4
BE-8124.1.1	ANARG_IXb_S63	Post 10897	6117	22	5207-4959	95.3
BE-8060.1.1	ANARG_IXb_S6	Charcoal	6119	23	5207-4964	95.4
BE-8119.1.1	ANARG_IXb_S59	Post 11824	6121	22	5208-4984	95.4
BE-8103.1.1	ANARG_IXb_S41	Post 4953	6123	22	5208-4988	95.4
BE-8117.1.1	ANARG_IXb_S46	Post 3015	6130	22	5208-4996	95.4
BE-8087.1.1	ANARG_IXb_S61	Post 10887	6138	22	5208-5002	95.4
BE-8091.1.1	ANARG_IXb_S58	Post 11831	6145	23	5209-5014	95.4
BE-8114.1.1	ANARG_IXb_S55	Post 4127	6145	22	5209-5011	95.4
BE-8652.1.1	ANARG_IXb_S74_N	Charcoal	6146	22	5209-5018	95.4
BE-8172.1.1	ANARG_IX b_S 28b	Charcoal	6147	28	5209-5010	95.4
BE-8094.1.1	ANARG_IXb_S64	Post 6273	6155	22	5211-5029	95.4
BE-8084	ANARG_IXb_S72	Post 11733	6155	28	5212-5022	95.4
BE-8123.1.1	ANARG_IXb_S60	Post 10950	6169	22	5212-5051	95.4
BE-8055.1.1	ANARG_IXb_S1	Charcoal	6177	22	5213-5056	95.4
BE-8104.1.1	ANARG_IXb_S38	Post 6208	6182	22	5215-5056	95.4
BE-8122.1.1	ANARG_IXb_S37	Post 124	6183	22	5215-5056	95.4
BE-8085	ANARG_IXb_S73	Woodchip	6177	28	5217-5046	95.4
BE-8089.1.1	ANARG_IXb_S65	Post 6279	6186	28	5221-5047	95.4
BE-8086.1.1	ANARG_IXb_S69	Post 6709	6201	29	5288-5052	95.4
BE-8102.1.1	ANARG_IXb_S40	Post 4934	6213	23	5291-5063	95.5
BE-8108.1.1	ANARG_IXb_S33	Post 2027	6206	34	5292-5054	95.4
BE-8120.1.1	ANARG_IXb_S71	Post 8009	6211	29	5293-5059	95.4
BE-8106.1.1	ANARG_IXb_S35	Post 2040	6219	22	5294-5069	95.4
BE-8110.1.1	ANARG_IXb_S36	Post 122	6222	22	5296-5071	95.4
BE-8107.1.1	ANARG_IXb_S34	Post 2023	6223	22	5296-5072	95.4
BE-8121.1.1	ANARG_IXb_S70	Post 6728	6212	41	5297-5056	95.4
BE-8079.1.1	ANARG_IXb_S25	Charcoal	6230	23	5299-5076	95.4
BE-8097.1.1	ANARG_IXb_S39	Post 12611	6233	35	5305-5068	95.4
BE-8111.1.1	ANARG_IXb_S32	Post 2011	6247	22	5308-5081	95.5
BE-8173.1.1	ANARG_IX b_S 29b	Charcoal	6247	29	5309-5078	95.4
BE-8088.1.1	ANARG_IXb_S67	Post 6215	6376	29	5467-5308	95.4
BE-8080.1.1	ANARG_IXb_S26	Charcoal	6443	24	5476-5366	95.4
BE-8090.1.1	ANARG_IXb_S66	Post 6211	6446	29	5480-5362	95.4

Plan 4 Structural wood and charcoals sorted dates' diagrams.

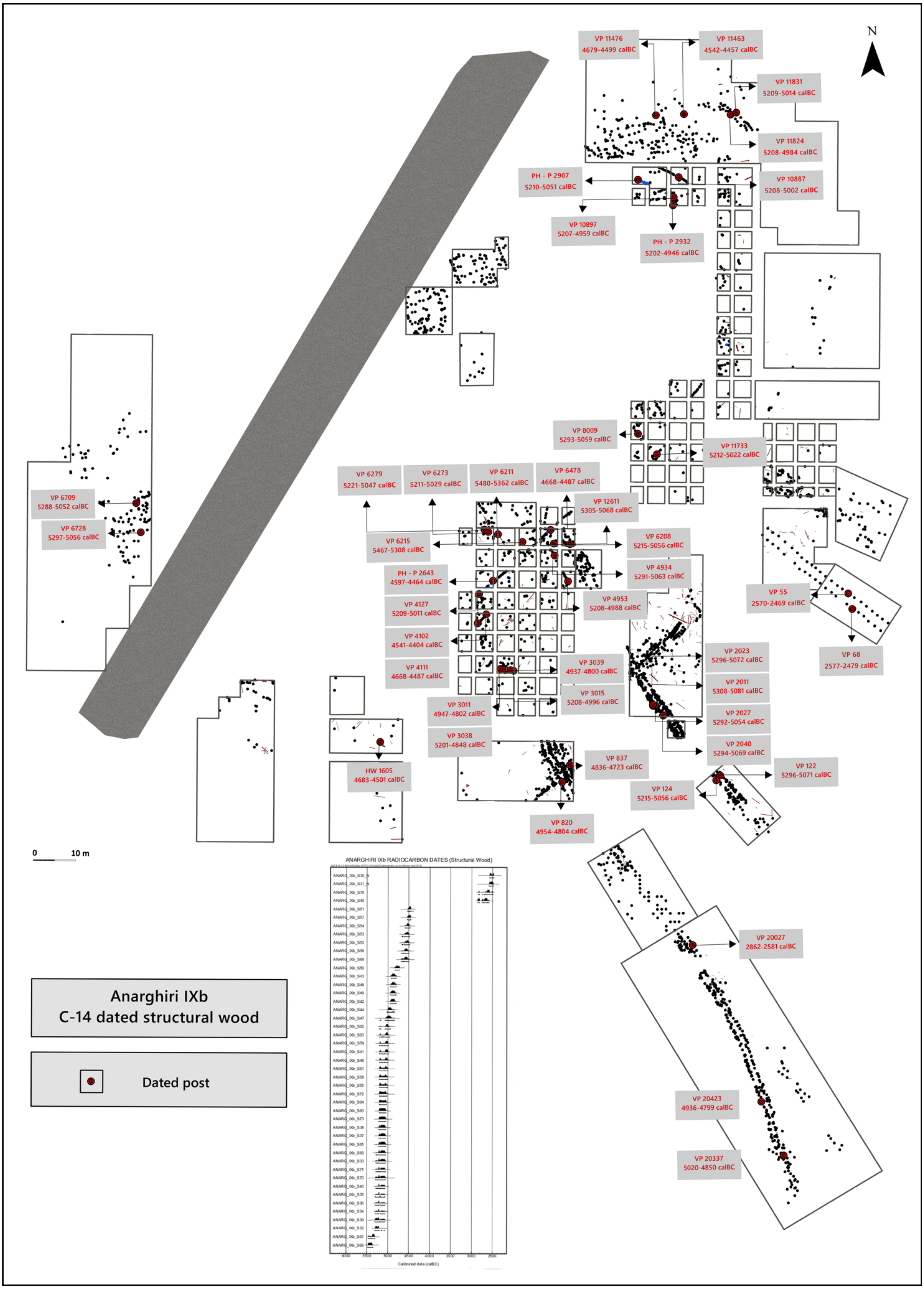




Plan 5 Anarghiri IXb ^{14}C dates: periodization's proposition.



Plan 6 Anarghiri IXb pile-field with ^{14}C dated structural wood.

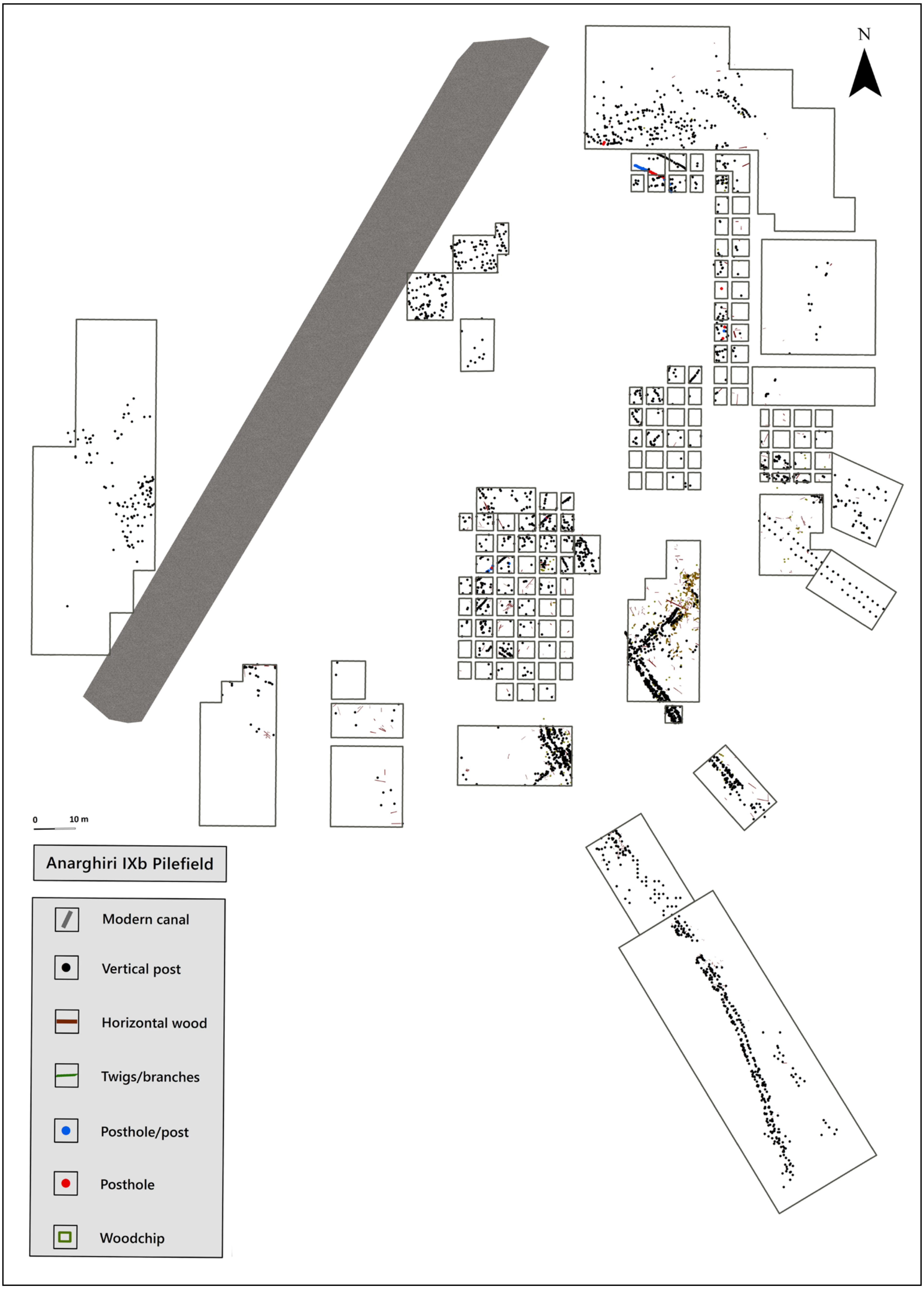


Plan 7 Schematic representation of the vertical/stratigraphic distribution of dated structural wood in 10cm elevation's zones and excavational trenches.

ELEVATION	498	499	500		574	575		781		TRIAL TRENCH 3	832	833		834		857
	a	c	c	d	a	a	c	a	d		d	c	d	c	d	d
593,70 - 593,61																
593,60 - 593,51																
593,50 - 593,41						5208-5002										
593,40 - 593,31	4679-4499	4542-4457									5211-5029	5480-5362				
593,30 - 593,21					5212-5051		5202-4946								5215-5056	
593,20 - 593,11			5208-4984							2570-2469			5467-5308			4597-4464
593,10 - 593,01				5209-5014										4668-4487		
593,00 - 592,91								5293-5059		2577-2479	5221-5047			5305-5068		
592,90 - 592,81							5207-4959									
592,80 - 592,71																
592,70 - 592,61																
592,60 - 592,51									5212-5022							
592,50 - 592,41																
592,40 - 592,31																
592,30 - 592,21																5217-5046
592,20 - 592,11																
592,10 - 592,01																
592,00 - 591,91																
591,90 - 591,81																
591,80 - 591,71																

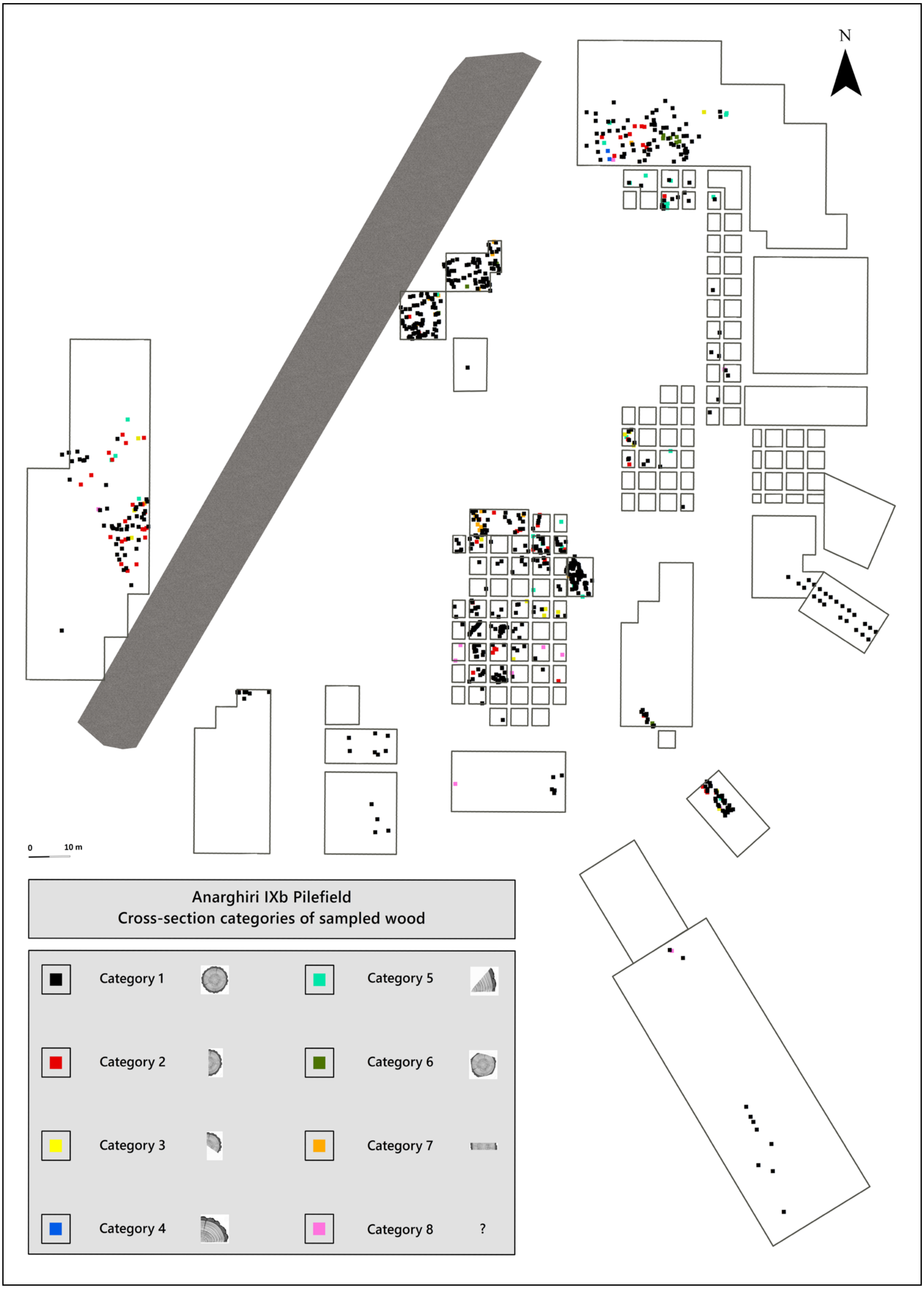
ELEVATION	859		881		904	928	940	960		E7		A12	A26	A64	TRIAL TRENCH 2
	a	d	b	d	c	d	c	b	d	b	d				
593,70 - 593,61											5297-5056				
593,60 - 593,51										5288-5052					
593,50 - 593,41															
593,40 - 593,31				4541-4404											
593,30 - 593,21			5209-5011	4668-4487											
593,20 - 593,11								4836-4723							
593,10 - 593,01	5291-5063	5208-4988				5308-5081									
593,00 - 592,91					4947-4802							5020-4850			
592,90 - 592,81					5208-4996	5292-5054									5215-5056
592,80 - 592,71															5296-5071
592,70 - 592,61									4954-4804						
592,60 - 592,51					4937-4800		4683-4501								
592,50 - 592,41					5201-4848									2862-2581	
592,40 - 592,31						5296-5072									
592,30 - 592,21						5294-5069									
592,20 - 592,11													4936-4799		
592,10 - 592,01															
592,00 - 591,91															
591,90 - 591,81															
591,80 - 591,71							2849-2492								

Plan 8 The Anarghiri IXb pile-field.

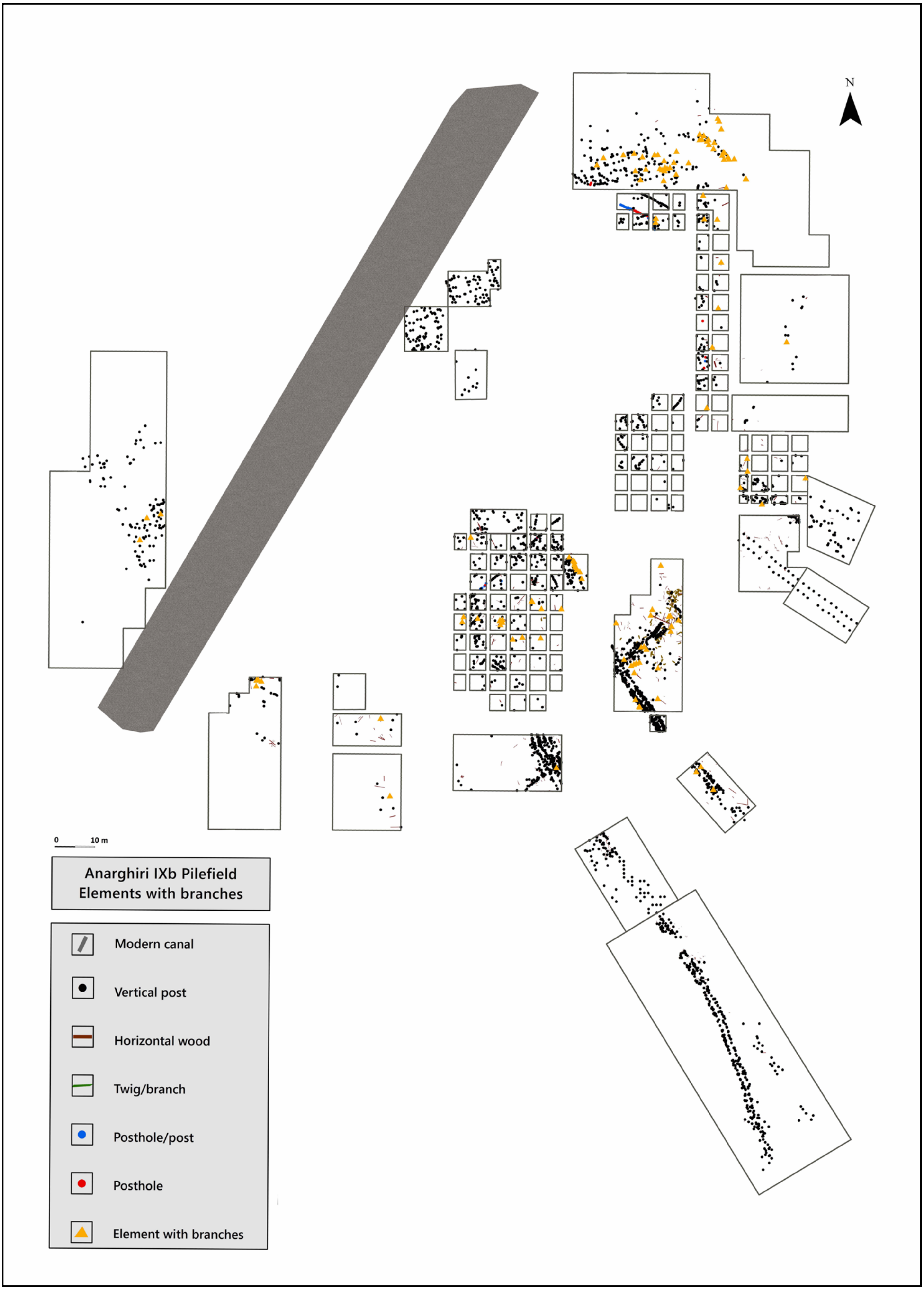


Plan 9 Spatial distribution of identified wood species.

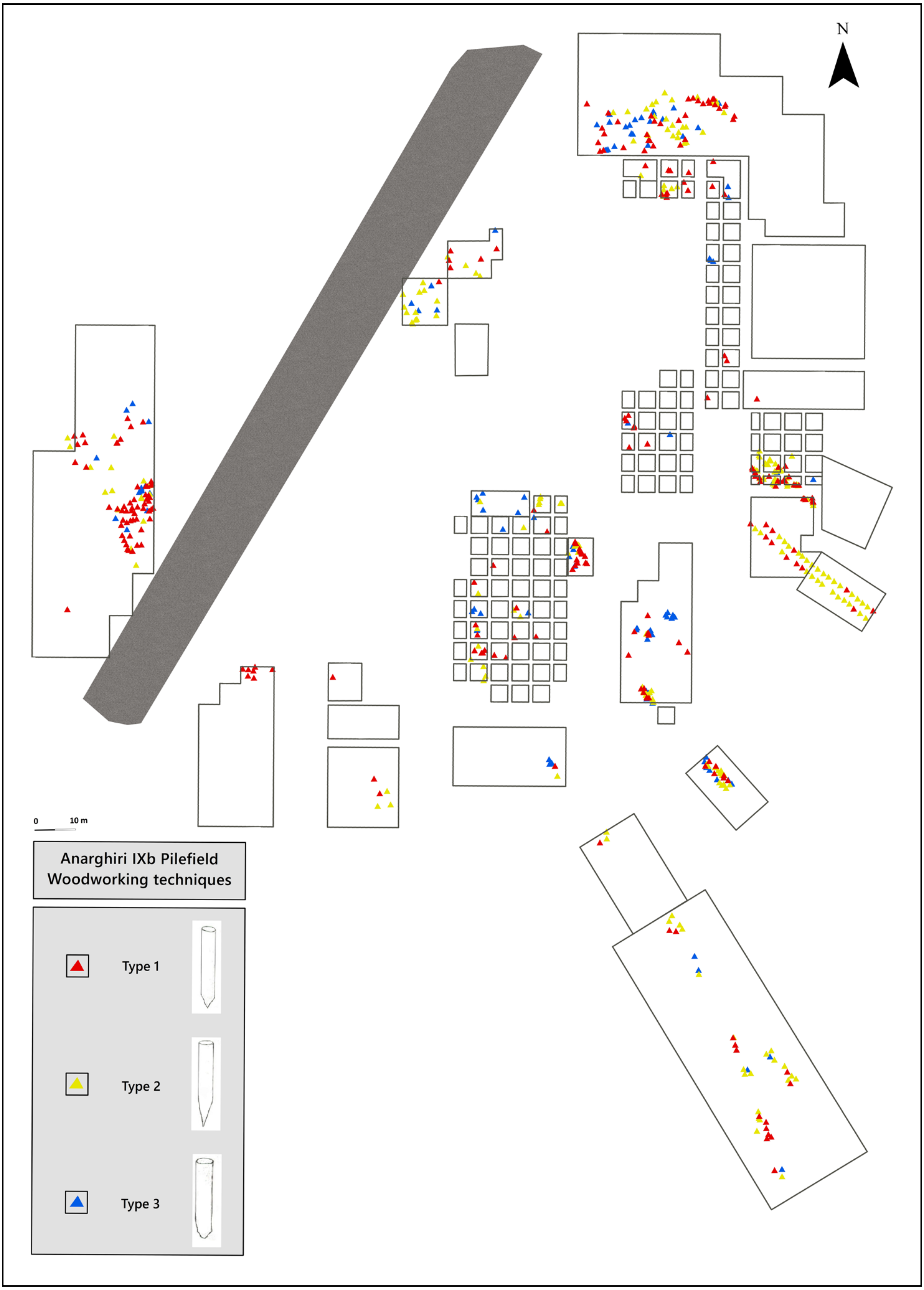
Plan 10 Spatial distribution of cross-section categories of sampled wood.



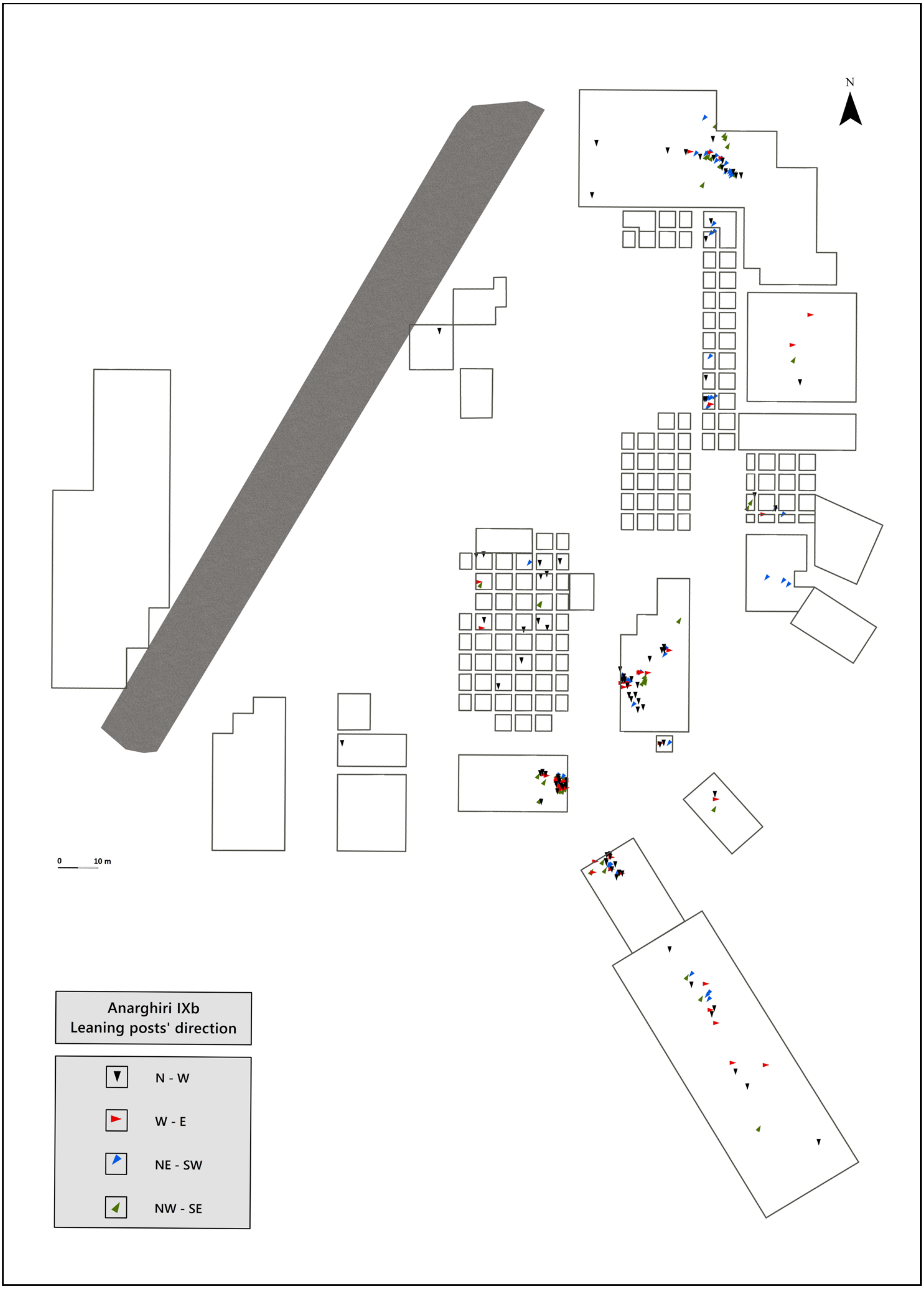
Plan 11 Spatial distribution of elements bearing branches.



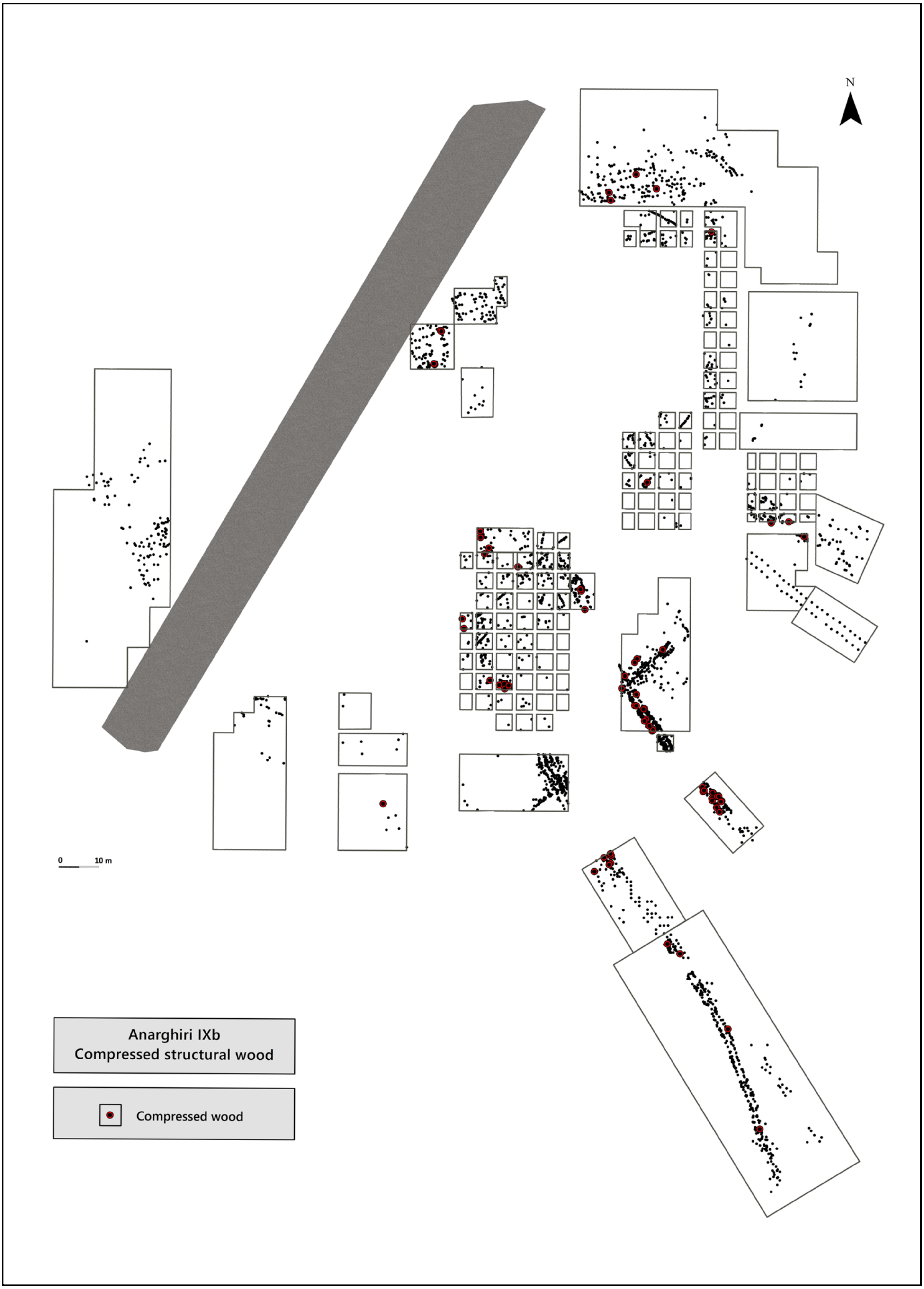
Plan 12 Spatial distribution of woodworking types.



Plan 13 Spatial distribution of leaning vertical posts.

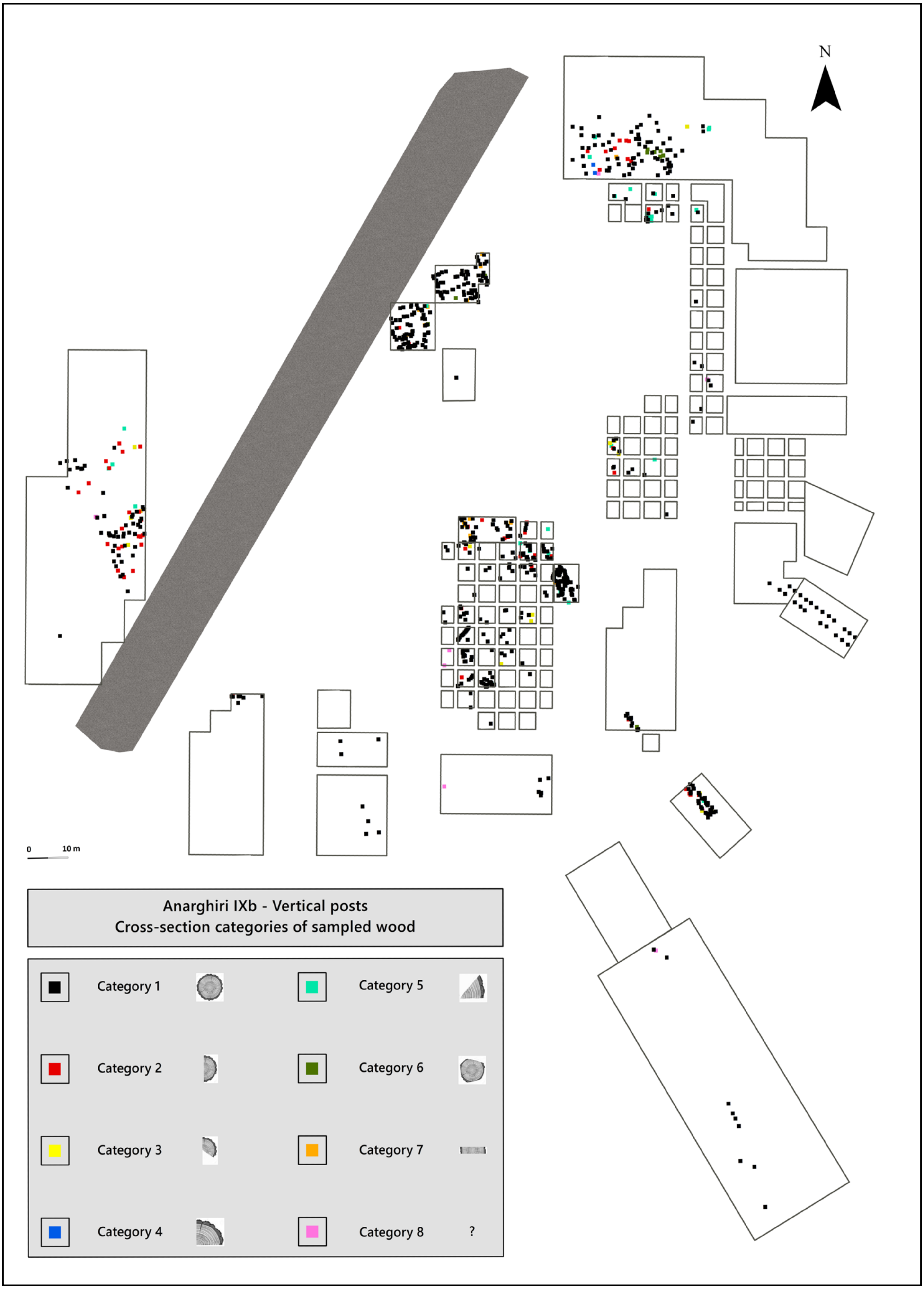


Plan 14 Spatial distribution of compressed wooden elements.

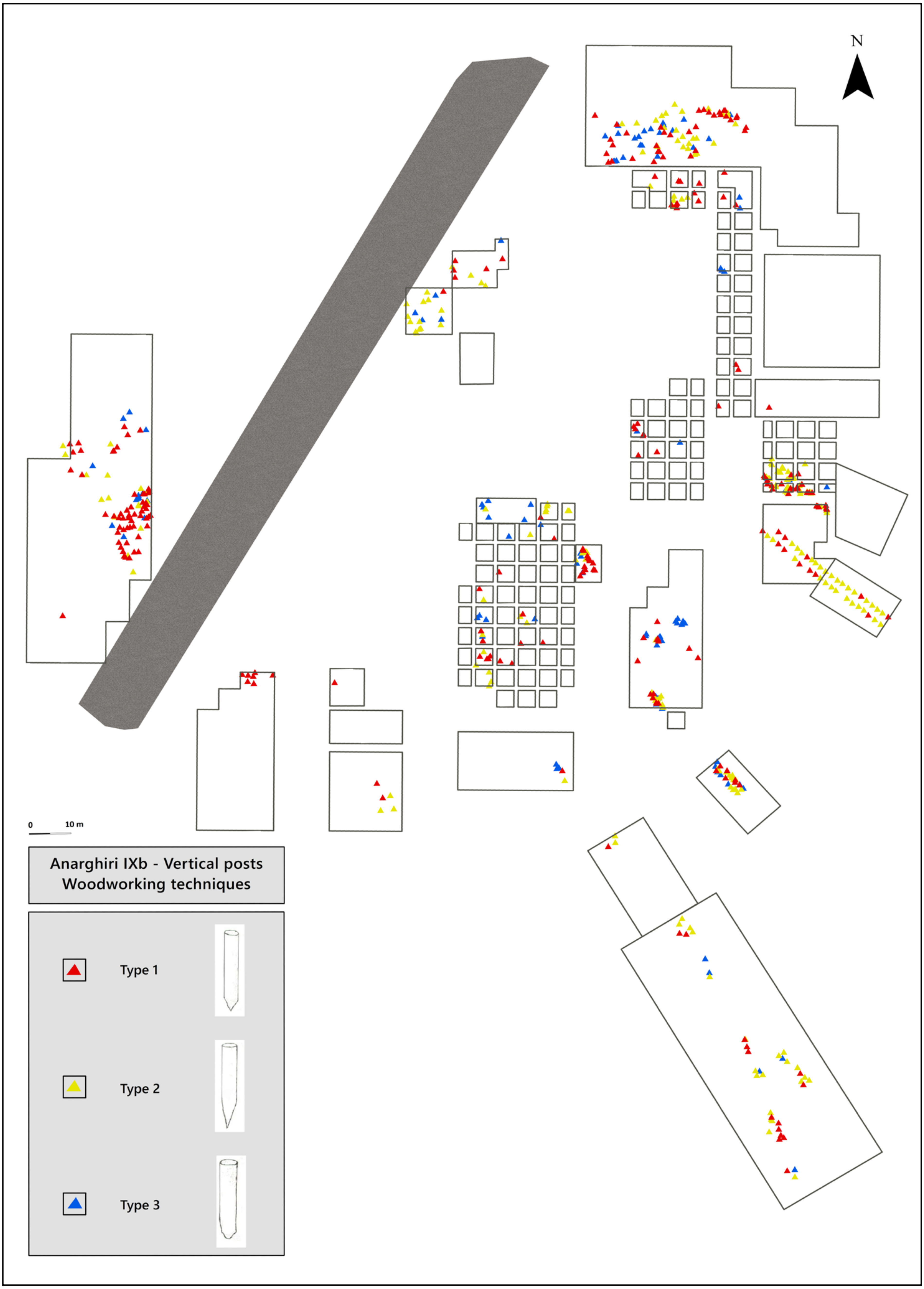


Plan 15 Spatial distribution of identified wood species of vertical posts.

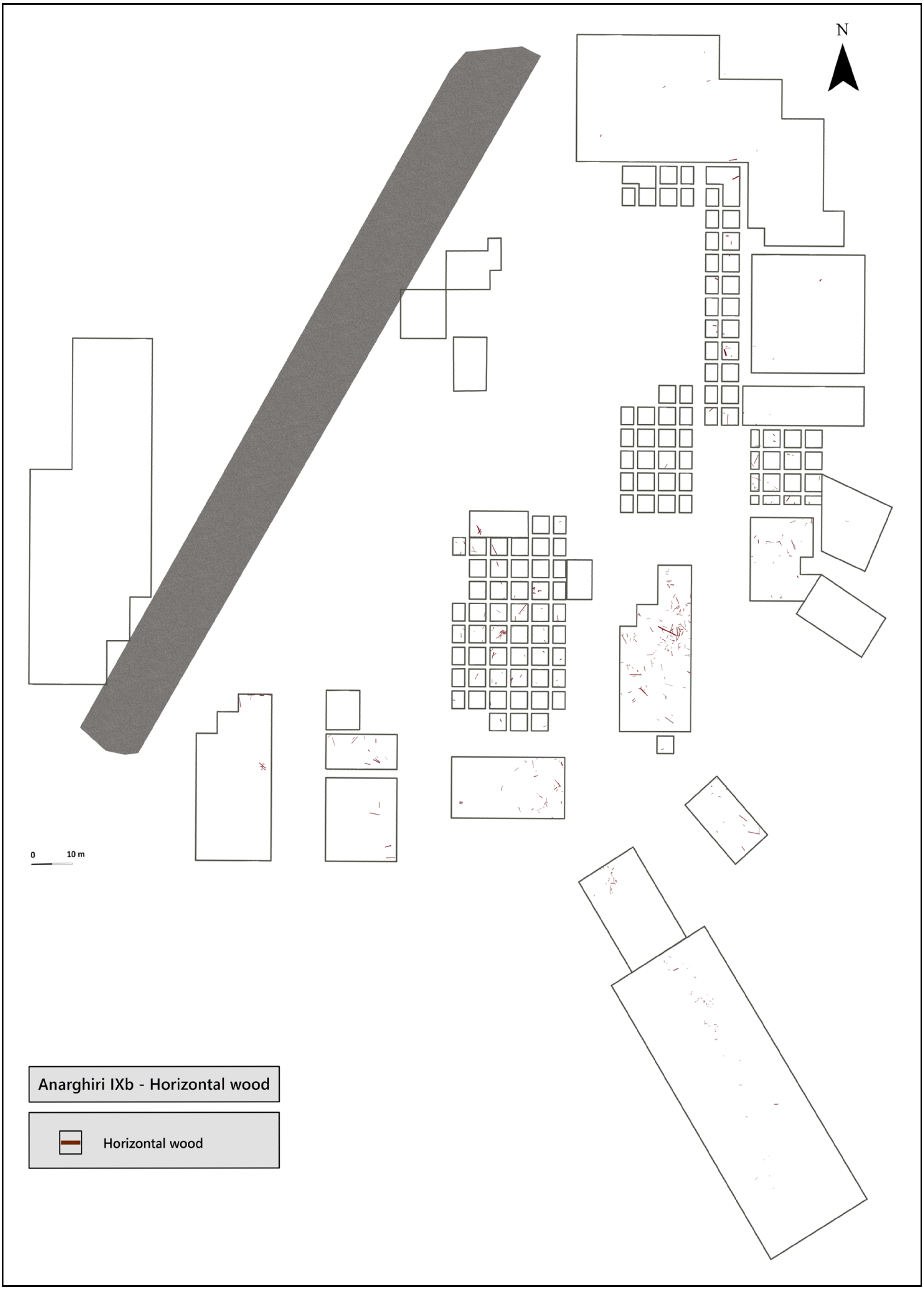
Plan 16 Spatial distribution of vertical posts' cross-section categories (sampled wood).



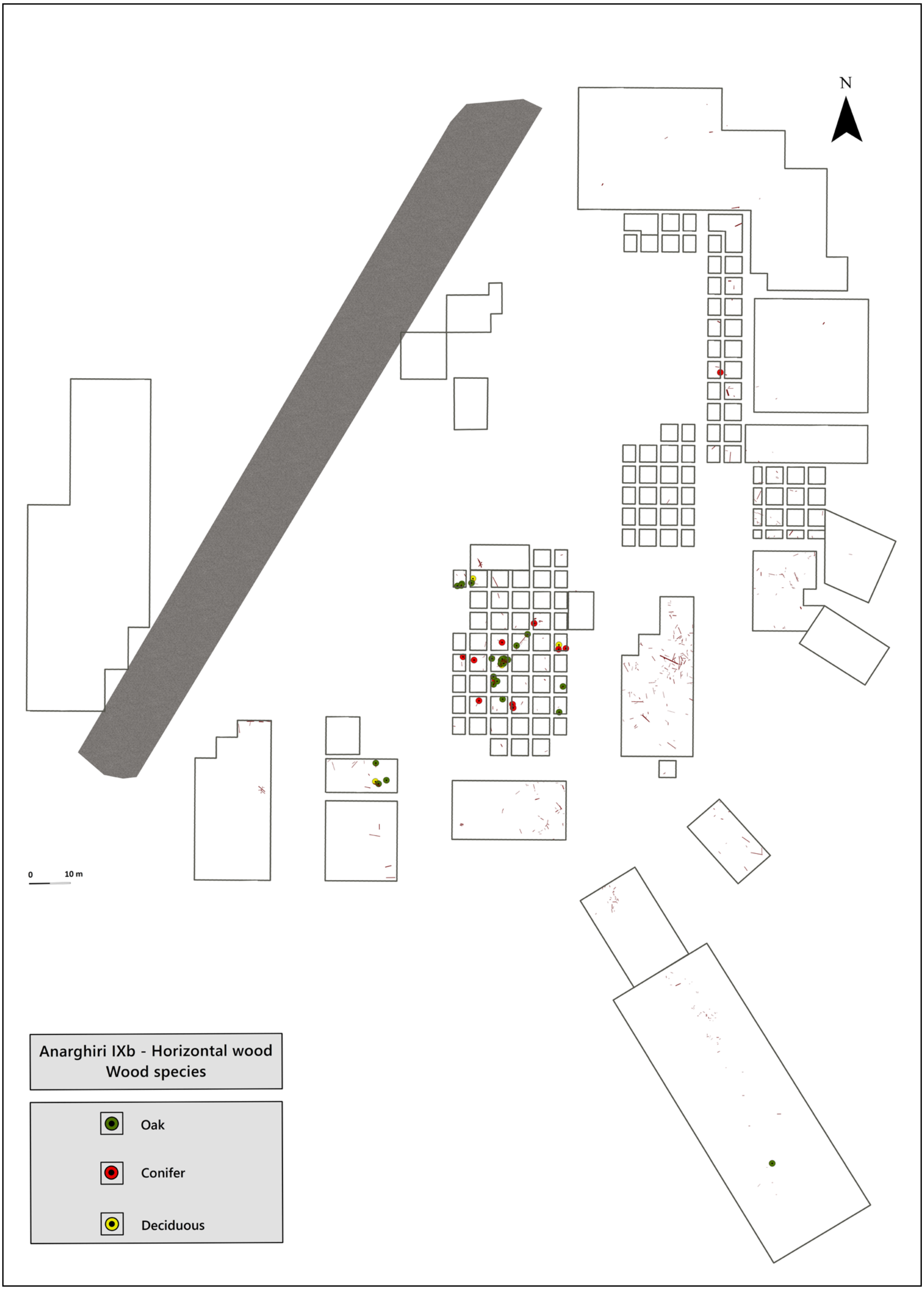
Plan 17 Spatial distribution of vertical posts' woodworking techniques.



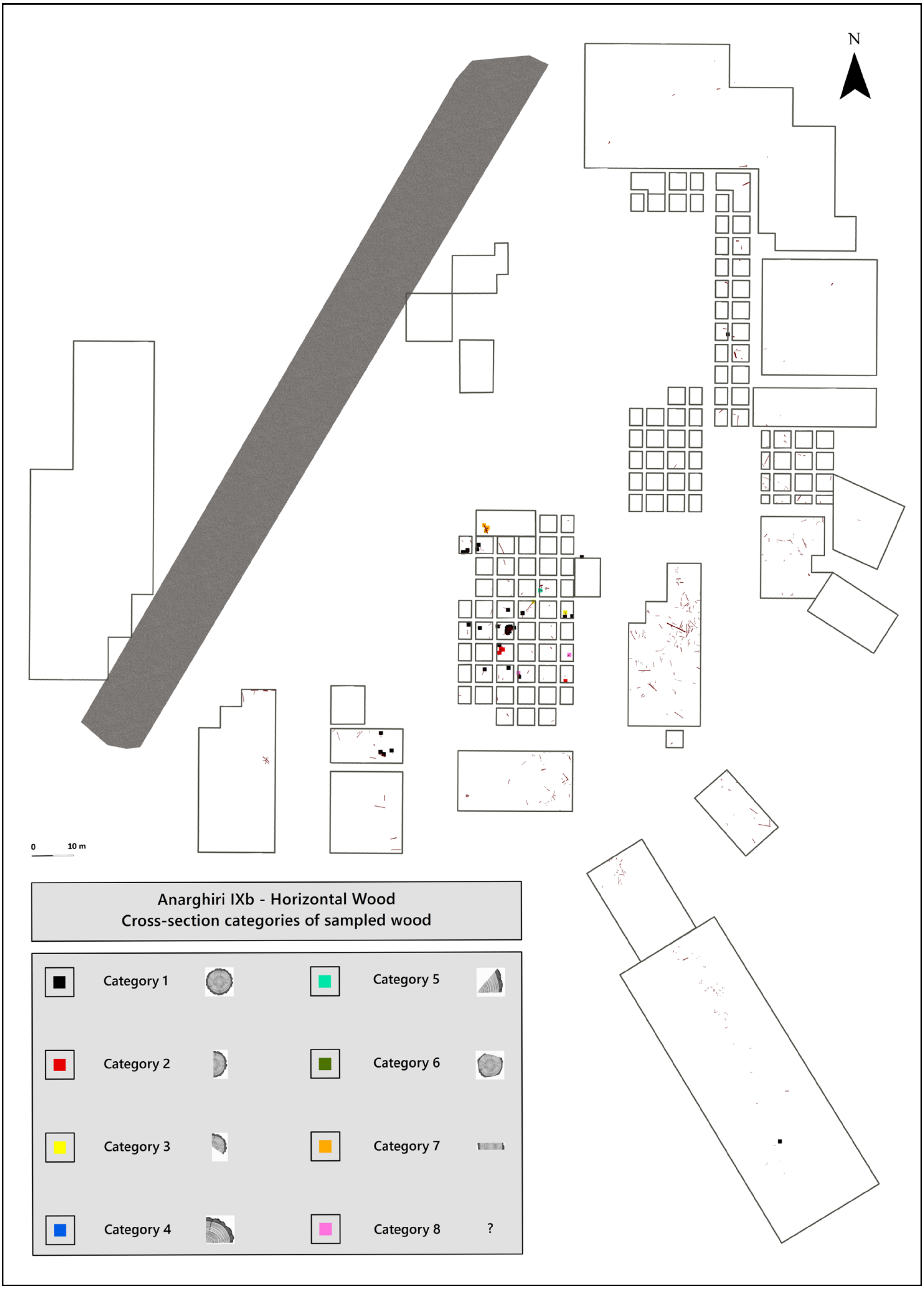
Plan 18 Spatial distribution of horizontal wood.



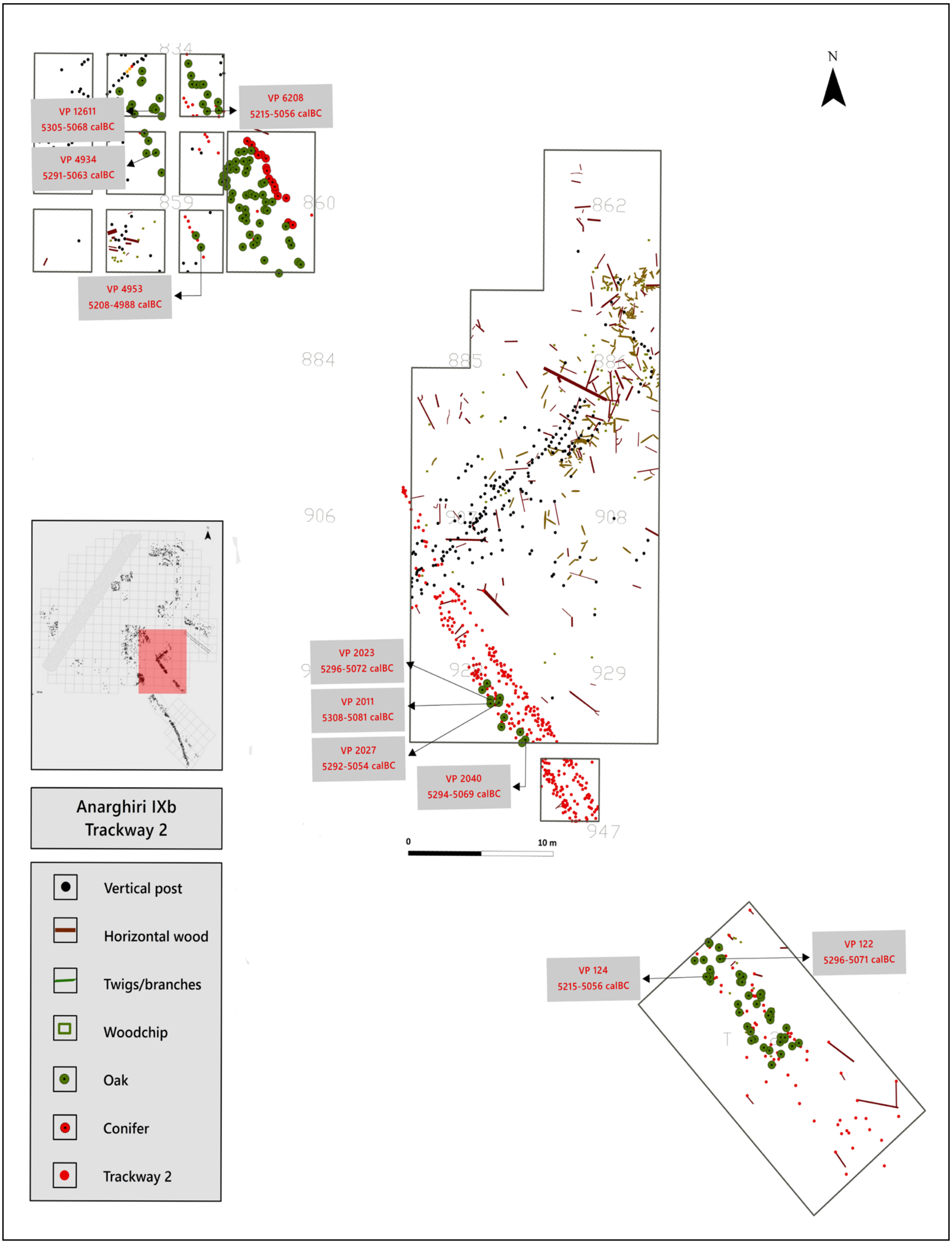
Plan 19 Spatial distribution of horizontal wood identified species.



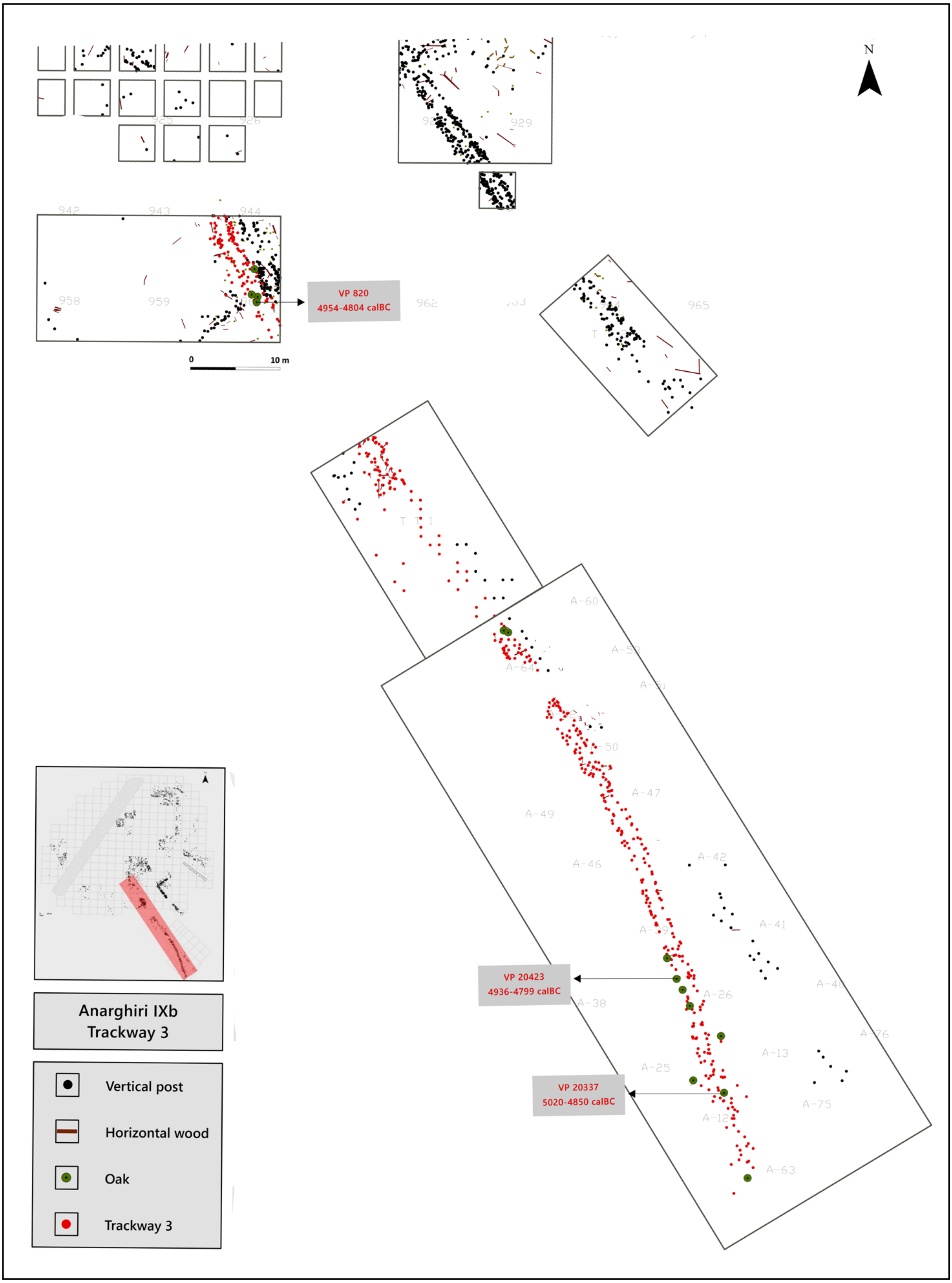
Plan 20 Spatial distribution of horizontal wood cross-section categories (sampled wood).



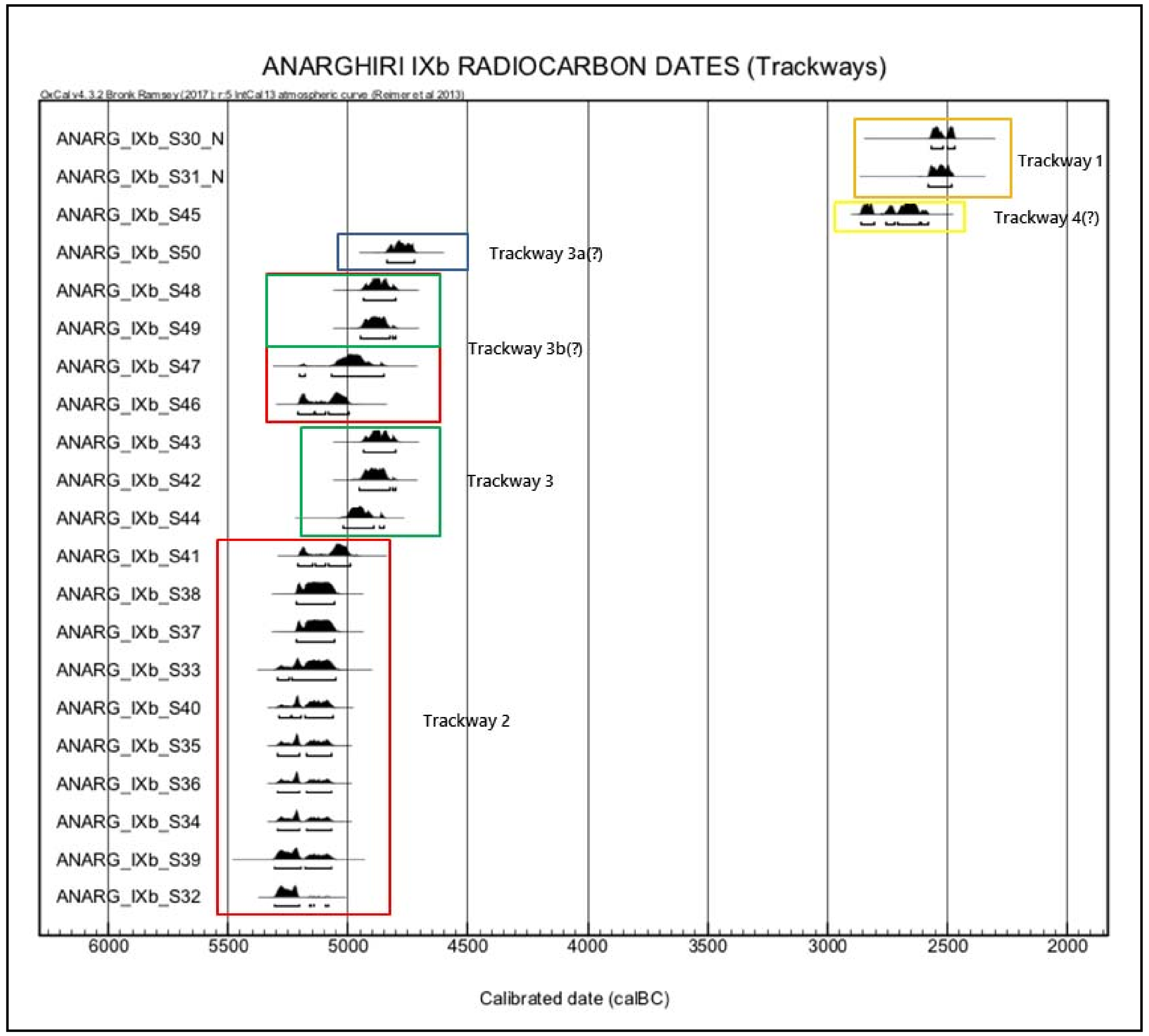
Plan 21 Trackway 2 at the Southeast Sector of Anarghiri IXb excavation.



Plan 22 Trackway 3 at the Southeast Sector of Anarghiri IXb excavation.



Plan 23 Chronological sequence of Anarghiri IXb trackways.



Trackway 2

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8103.1.1	ANARG_IXb_S41	Post 4953	6123	22	26	1-26	5208-4988
BE-8122.1.1	ANARG_IXb_S37	Post 124	6183	22	22	1-22	5215-5056
BE-8104.1.1	ANARG_IXb_S38	Post 6208	6182	22	50	1-20	5215-5056
BE-8102.1.1	ANARG_IXb_S40	Post 4934	6213	23	30	1-15	5291-5063
BE-8108.1.1	ANARG_IXb_S33	Post 2027	6206	34	28	1-28	5292-5054
BE-8106.1.1	ANARG_IXb_S35	Post 2040	6219	22	12	1-12	5294-5069
BE-8107.1.1	ANARG_IXb_S34	Post 2023	6223	22	47	1-47	5296-5072
BE-8110.1.1	ANARG_IXb_S36	Post 122	6222	22	39	9-39	5296-5071
BE-8097.1.1	ANARG_IXb_S39	Post 12611	6233	35	66	15-45	5305-5068
BE-8111.1.1	ANARG_IXb_S32	Post 2011	6247	22	41	1-41	5308-5081

Trackway 3

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8098.1.1	ANARG_IXb_S43	Post 20423	5982	22	28	1-28	4936-4799
BE-8096.1.1	ANARG_IXb_S42	Post 820	6000	22	22	1-22	4954-4804
BE-8101.1.1	ANARG_IXb_S44	Post 20337	6048	23	13	1-13	5020-4850

Trackway 3b(?)

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8095.1.1	ANARG_IXb_S48	Post 3039	5984	22	32	1-32	4937-4800
BE-8100.1.1	ANARG_IXb_S49	Post 3011	5996	22	55	1-30	4947-4802
BE-8113.1.1	ANARG_IXb_S47	Post 3038	6073	37	45	1-45	5201-4848
BE-8117.1.1	ANARG_IXb_S46	Post 3015	6130	22	19	1-19	5208-4996

Trackway 3a(?)

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8115.1.1	ANARG_IXb_S50	Post 837	5913	22	47	1-25	4836-4723

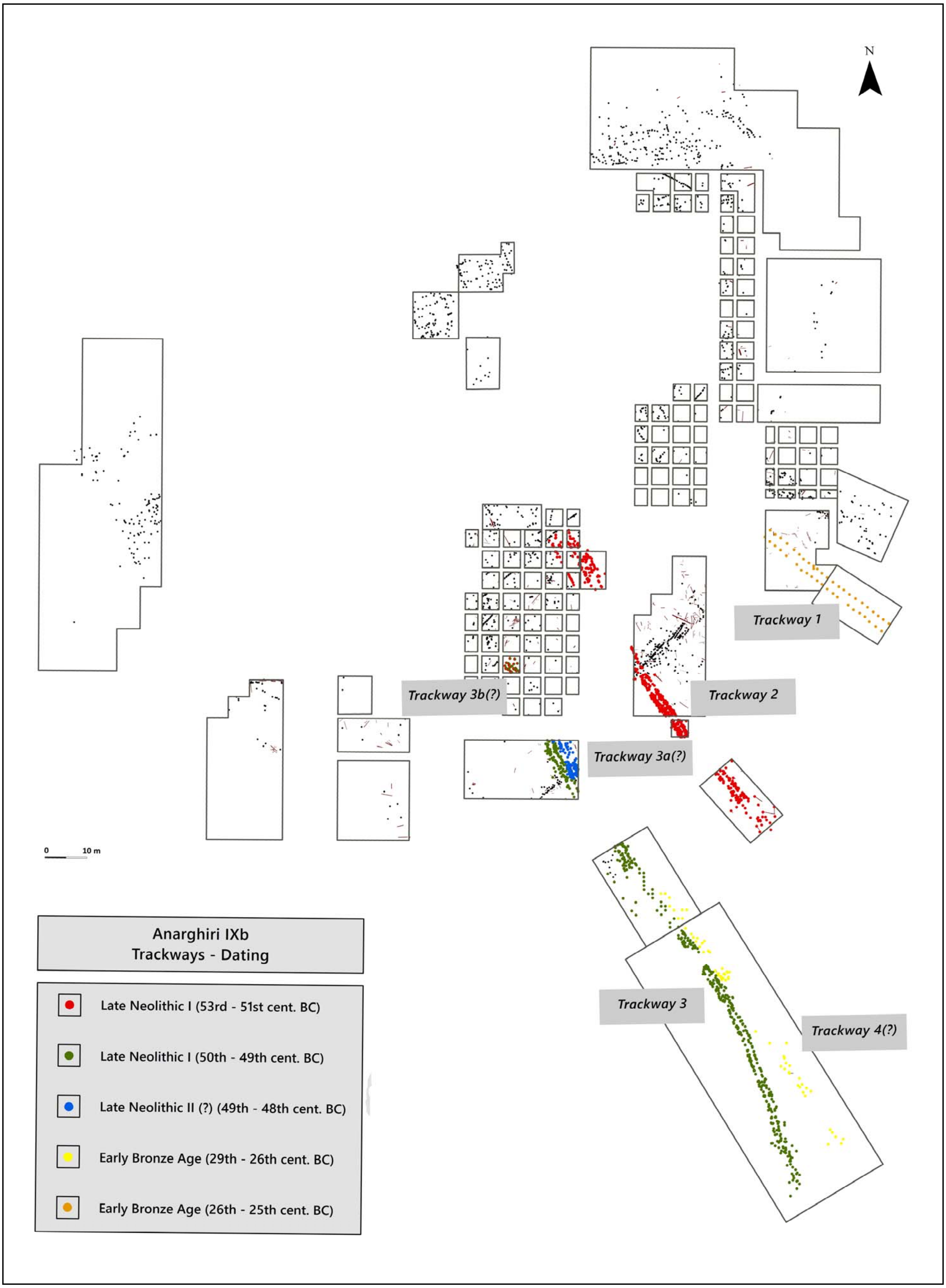
Trackway 4(?)

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8116.1.1	ANARG_IXb_S45	Post 20027	4119	20	28	1-28	2862-2581

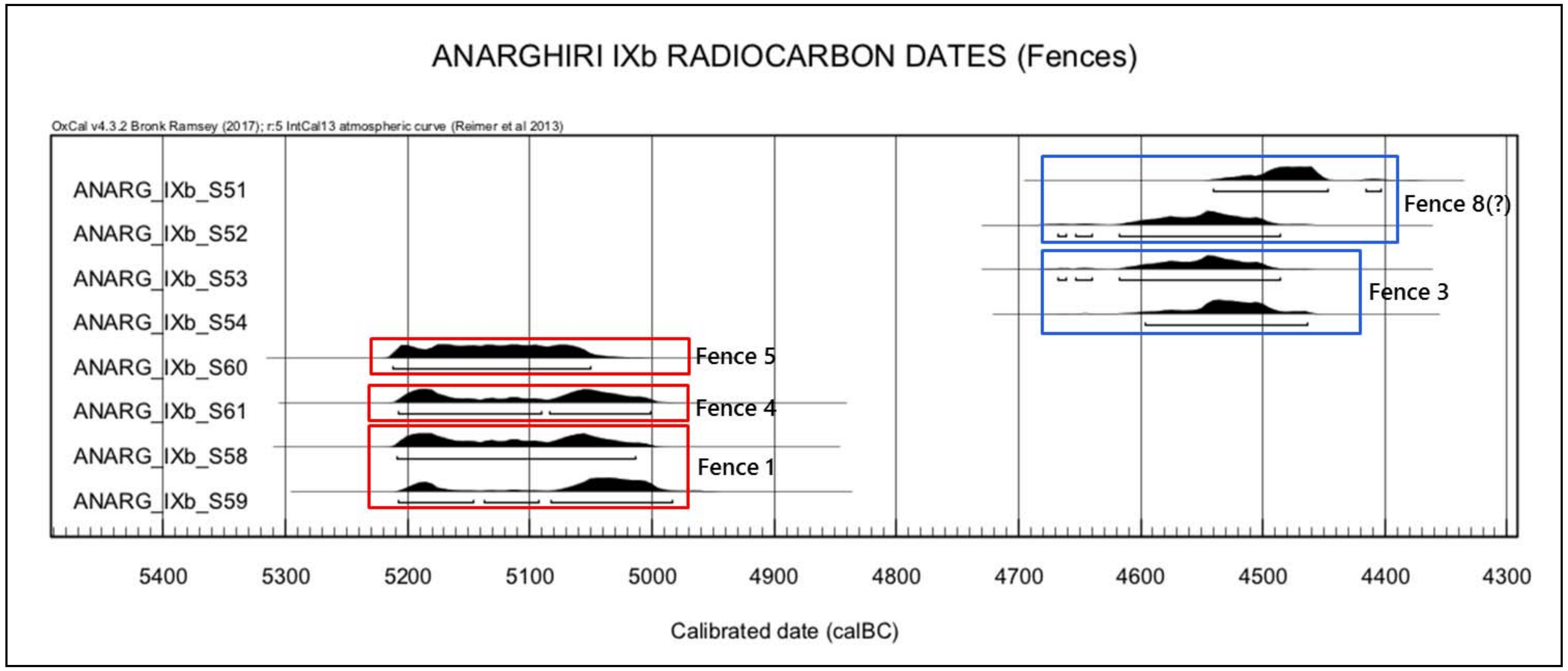
Trackway 1

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8648.1.1	ANARG_IXb_S30_N	Post 55	3990	20	27	1-27	2570-2469
BE-8649.1.1	ANARG_IXb_S31_N	Post 68	4019	20	50	1-50	2577-2479

Plan 24 General plan of Anarghiri IXb trackways.



Plan 25 Chronological sequence of Anarghiri IXb fences.



Fence 1

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8119.1.1	ANARG_IXb_S59	Post 11824	6121	22	41	1-20	5208-4984
BE-8091.1.1	ANARG_IXb_S58	Post 11831	6145	23	40	1-30	5209-5014

Fence 4

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8087.1.1	ANARG_IXb_S61	Post 10887	6138	22	17	1-17	5208-5002

Fence 5

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8123.1.1	ANARG_IXb_S60	Post 10950	6169	22	20	1-20	5212-5051

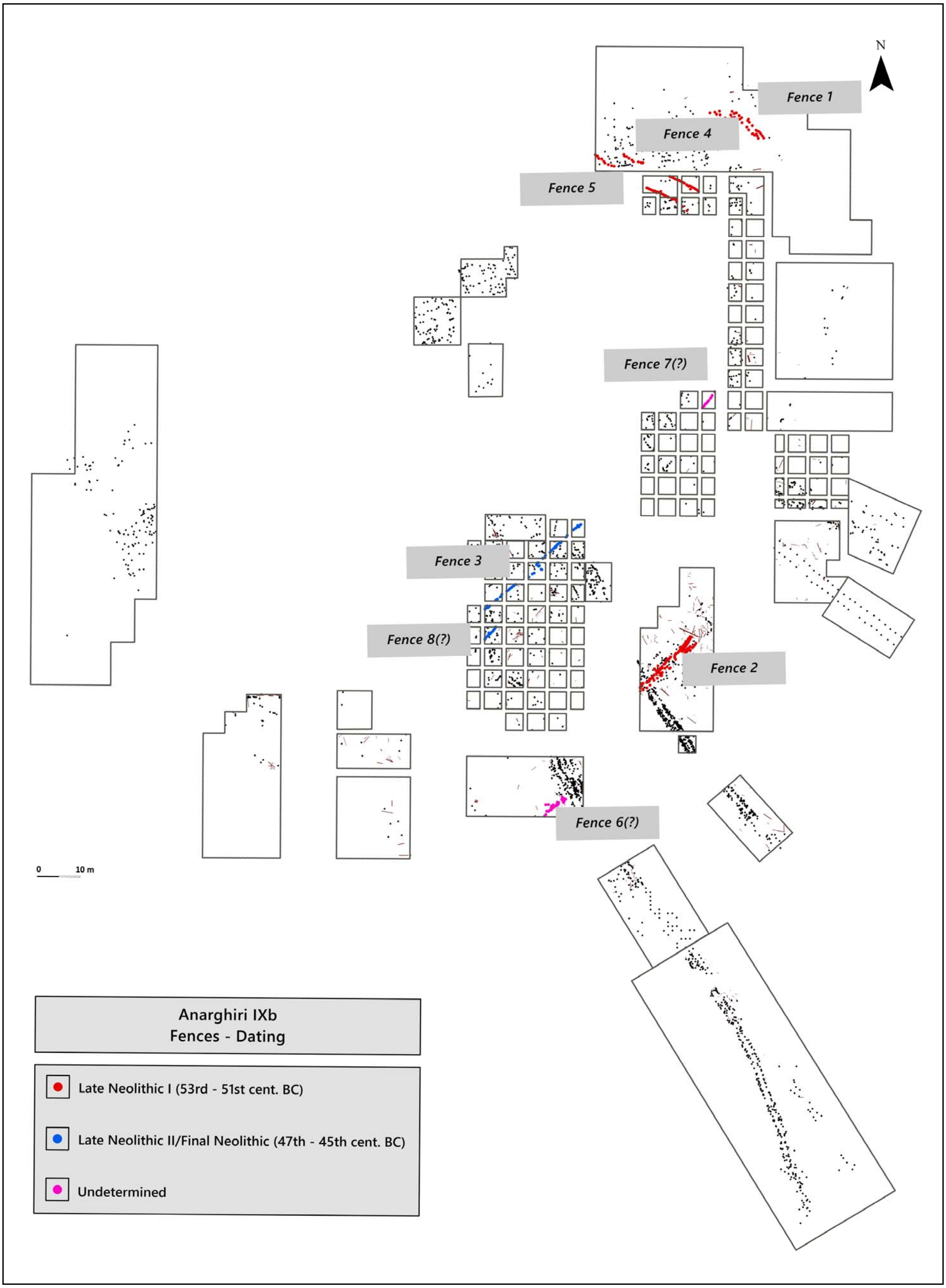
Fence 3

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8118.1.1	ANARG_IXb_S54	Post 5061	5702	22	37	1-37	4597-4464
BE-8126.1.1	ANARG_IXb_S53	Post 6178	5716	22	22	1-22	4668-4487

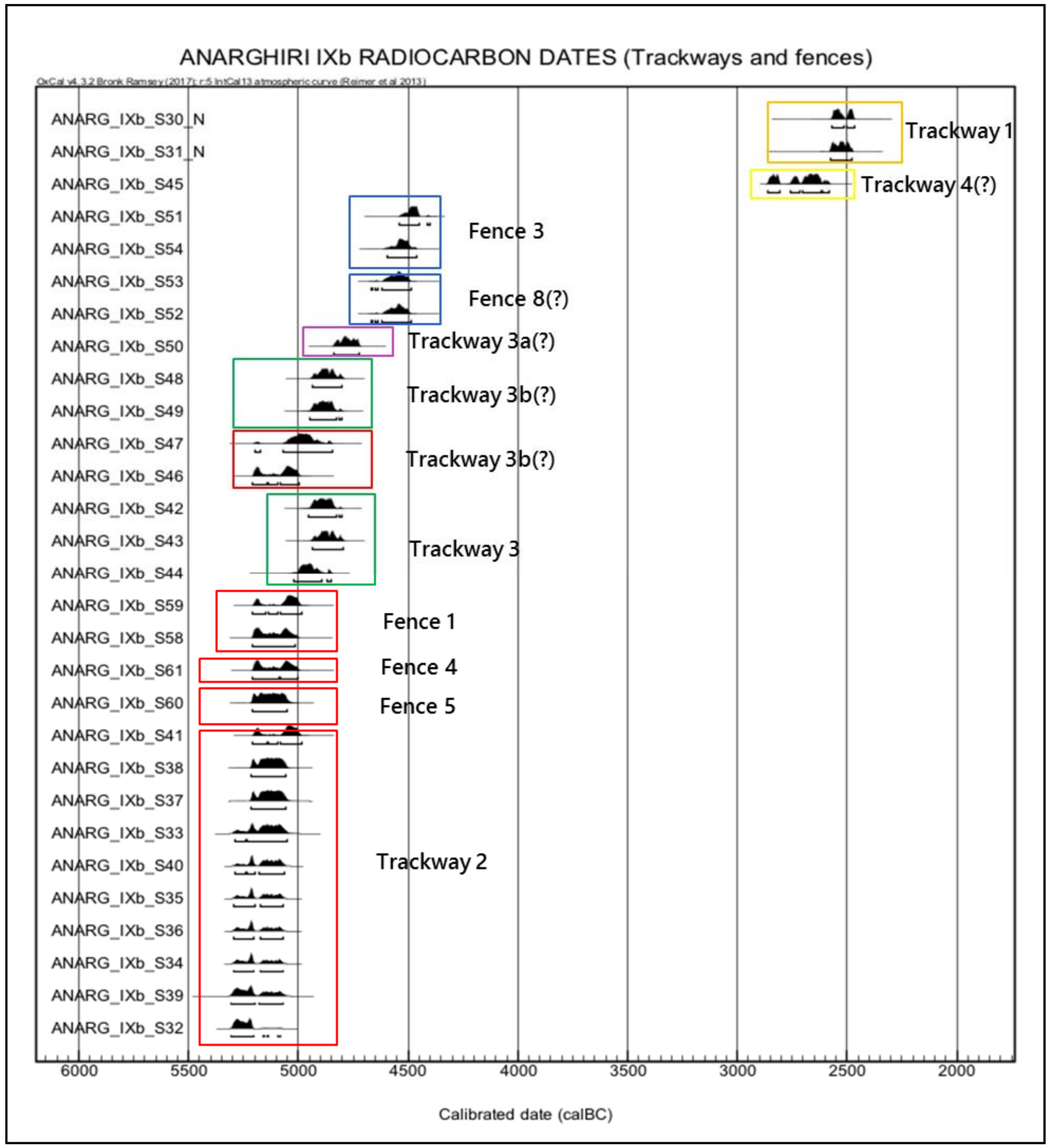
Fence 8(?)

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8112.1.1	ANARG_IXb_S51	Post 4102	5647	22	42	1-40	4541-4404
BE-8109.1.1	ANARG_IXb_S52	Post 4111	5716	22	51	1-20	4668-4487

Plan 26 General plan of Anarghiri IXb fences.



Plan 27 Chronological sequence of Anarghiri IXb trackways and fences.



Trackway 1

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8648.1.1	ANARG_IXb_S30_N	Post 55	3990	20	27	1-27	2570-2469
BE-8649.1.1	ANARG_IXb_S31_N	Post 68	4019	20	50	1-50	2577-2479

Trackway 4(?)

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8116.1.1	ANARG_IXb_S45	Post 20027	4119	20	28	1-28	2862-2581

Fence 3

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8118.1.1	ANARG_IXb_S54	Post 5061	5702	22	37	1-37	4597-4464
BE-8126.1.1	ANARG_IXb_S53	Post 6178	5716	22	22	1-22	4668-4487

Fence 8(?)

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8112.1.1	ANARG_IXb_S51	Post 4102	5647	22	42	1-40	4541-4404
BE-8109.1.1	ANARG_IXb_S52	Post 4111	5716	22	51	1-20	4668-4487

Trackway 3a(?)

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8115.1.1	ANARG_IXb_S50	Post 837	5913	22	47	1-25	4836-4723

Trackway 3

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8098.1.1	ANARG_IXb_S43	Post 20423	5982	22	28	1-28	4936-4799
BE-8096.1.1	ANARG_IXb_S42	Post 820	6000	22	22	1-22	4954-4804
BE-8101.1.1	ANARG_IXb_S44	Post 20337	6048	23	13	1-13	5020-4850

Trackway 3b(?)

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8095.1.1	ANARG_IXb_S48	Post 3039	5984	22	32	1-32	4937-4800
BE-8100.1.1	ANARG_IXb_S49	Post 3011	5996	22	55	1-30	4947-4802
BE-8113.1.1	ANARG_IXb_S47	Post 3038	6073	37	45	1-45	5201-4848
BE-8117.1.1	ANARG_IXb_S46	Post 3015	6130	22	19	1-19	5208-4996

Fence 1

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8119.1.1	ANARG_IXb_S59	Post 11824	6121	22	41	1-20	5208-4984
BE-8091.1.1	ANARG_IXb_S58	Post 11831	6145	23	40	1-30	5209-5014

Fence 4

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8087.1.1	ANARG_IXb_S61	Post 10887	6138	22	17	1-17	5208-5002

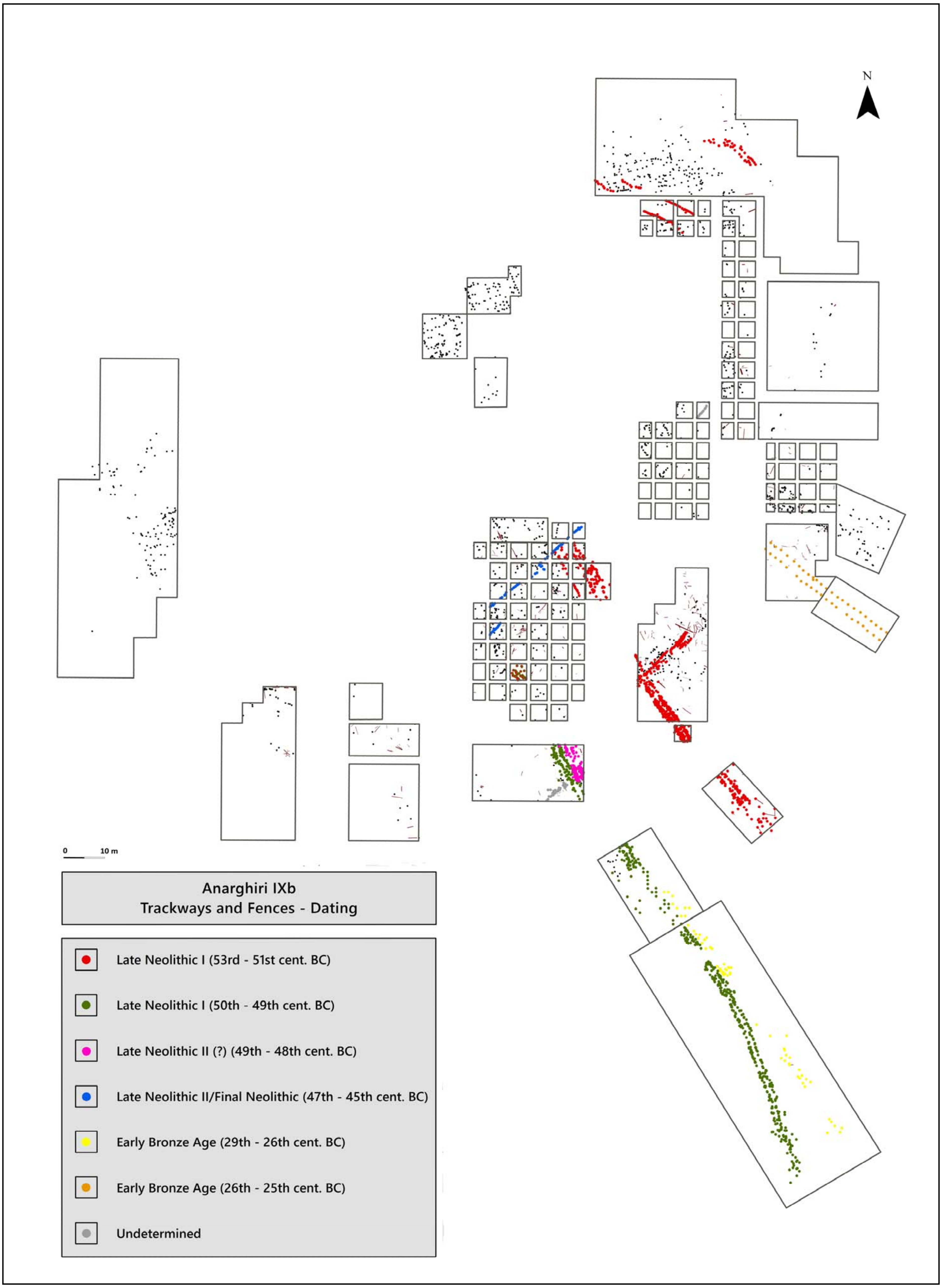
Fence 5

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8123.1.1	ANARG_IXb_S60	Post 10950	6169	22	20	1-20	5212-5051

Trackway 2

Laboratory No	Sample ID	Dated Element	Radiocarbon Date BP	Age uncertainty	Rings N	Dated rings	Calibrated Date BC
BE-8103.1.1	ANARG_IXb_S41	Post 4953	6123	22	26	1-26	5208-4988
BE-8122.1.1	ANARG_IXb_S37	Post 124	6183	22	22	1-22	5215-5056
BE-8104.1.1	ANARG_IXb_S38	Post 6208	6182	22	50	1-20	5215-5056
BE-8102.1.1	ANARG_IXb_S40	Post 4934	6213	23	30	1-15	5291-5063
BE-8108.1.1	ANARG_IXb_S33	Post 2027	6206	34	28	1-28	5292-5054
BE-8106.1.1	ANARG_IXb_S35	Post 2040	6219	22	12	1-12	5294-5069
BE-8107.1.1	ANARG_IXb_S34	Post 2023	6223	22	47	1-47	5296-5072
BE-8110.1.1	ANARG_IXb_S36	Post 122	6222	22	39	9-39	5296-5071
BE-8097.1.1	ANARG_IXb_S39	Post 12611	6233	35	66	15-45	5305-5068
BE-8111.1.1	ANARG_IXb_S32	Post 2011	6247	22	41	1-41	5308-5081

Plan 28 General plan of Anarghiri IXb trackways and fences.



Plan 29 General plan of Anarghiri IXb hypothetical diachronic development.