

## 1: Wetlands and Archaeology - Archaeological Prospectors

*Archaeology is inherently multi-disciplinary using a wide range of methods, and wetland archaeology is no different. Wetlands often preserve a record of the past environment in their underlying sediments, so paleoecological methods are frequently employed alongside archaeological investigation in wetlands to understand the environment in the past.*

Selected Bibliography Traditionally wetlands were viewed as peripheral places that were inhospitable and therefore saw settlement of marginal people only. More recently this view has been challenged suggesting that wetlands were highly productive ecosystems that has attracted human activity from the very distant past right up until today. This is not to say that certain wetlands through history were not viewed as marginal or indeed otherworldly places. There is substantial archaeological evidence to suggest that this was the case, especially from northern Europe where there appears to be a very long lived and widespread tradition of depositing artefacts including people into watery places. Wetland archaeology offers insight into very intimate aspects of the past because of the exceptional preservation encountered. These detailed glimpses offer opportunities to develop an understanding of how things worked in the past in human time scales ie. Reed bales, Valence Lake, Hungary. Wetlands often preserve a record of the past environment in their underlying sediments, so paleoecological methods are frequently employed alongside archaeological investigation in wetlands to understand the environment in the past. For example, if you are interested in what plant resources were available through time, doing pollen analysis of sediment cores can tell you what species of plant were present at different times. Hydrology is very important in wetland archaeology and is often used to understand the threats posed to wetland sites. Measuring and modelling how water moves through the landscape has been a very important part of strategies for protecting and mitigating against damage to wetland archaeological sites. The range of scientific analyses that can be performed in wetland contexts is wide, and again adds to the intimate level of detail that can be gleaned from wetland sites that is frequently not possible in dry contexts. Paleoecological investigation begins with collection of suitable sample material, like this core through a former lake. This makes understanding the conditions of preservation that much more important. Water preserves organic material by limiting the amount of oxygen available to organisms that would otherwise use that material as a source of energy. But, the organisms that are able to function in these environments do not like acidic conditions, so wherever waterlogged deposits are also somewhat acidic, remarkable preservation occurs. This makes the presence of sphagnum moss an indicator of good preservation. Sphagnum moss is common throughout the northern hemisphere in wet or boggy ground conditions. It produces a slight acidic waste product through its normal biological functions and as a result the surrounding soil and ground has a lowered pH. In these areas, and the water bodies whose catchments run through them, have exceptional preservation. As a general rule, wherever waterlogged or submerged conditions have low oxygen, low light and low energy there will be good preservation of organic remains. A close-up of Sphagnum moss. Journal of archaeological science, 29 3 , Washington State University Press. Journal of Wetland Archaeology, 12 1 , Wetland archaeology and beyond: Van de Noort, R. His research project examines Scottish crannogs with a focus on adding new information through submerged and terrestrial fieldwork. This site operates as a living document where professionals are constantly adding and improving content. Have a question or wish to contribute? Visit our "Contact" page! Follow Us Why Maritime? In Keith Muckelroy argued for maritime archaeology over the others. Nautical refers to ships, but archaeologists also work on sunken cities. Marine refers to the ocean, but we dive in lakes and rivers, too. Underwater seems fitting, but Vikings chiefs were buried in ships on land. Recognizing these issues, Muckelroy chose the "maritime" to encompass all aspects of seafaring cultures.

## 2: Prehistoric Archaeology of Wetlands in Estonia | Maili Roio - [www.enganchecubano.com](http://www.enganchecubano.com)

*Product Description. Edited by Scottish Wetland Archaeology Project 'We have to accept that wetland archaeology is a theatre of archaeology in its own right, neither reliant on dryland archaeology nor validated by the provision of insights to dryland studies the dawning of a theoretical framework for wetland archaeology is upon us.'*

Many peer-reviewed articles from fieldwork in the north-east of North America have illustrated that the abundance of archaeological sites around wetlands are second to none. Often considered to be the grocery store of the prehistoric period, wetlands provide virtually everything required for survival on the changing landscape. Wetlands are currently not considered as a source for archaeological resources in New Brunswick. Through the identification of lithic material chosen for their stone tools, it is clear that they had a wide-ranging area of resource procurement and habitation. It is not uncommon to find lithic material on Palaeoindian sites that originated many hundreds of kilometres away. Due to the rapidly changing environment and low capacity for resources on the tundra, travel was a necessity to follow migrating caribou and other game along with newly established plant resources and using wetlands as more stable areas of resource procurement. Thousands of diagnostic Palaeoindian artifacts have been recorded throughout north-eastern North America. In a landscape of continual climactic change, wetlands were a source of stability that attracted game of all forms and were some of the first areas to be colonised by plants for use as tools, foods and medicinal purposes. Ioway mat lodge "made from reeds found in a wetland. Great insulation for cold weather habitation. As the cultural sequence progresses, more work has been done to research palaeoenvironments, which helps to identify how and where people lived in the past. Throughout the middle Holocene approx. Basketry from the Biderbost site. Is this an artifact of our still relatively small sample? Or are we detecting a pattern of settlement related to exploitation of wetlands, similar to that espoused by Nicholas , for southern New England? Could it also be that changes in the environment over time have either masked or affected the archaeological record in some way, such that only those sites close to wetlands have survived? With a strong focus by aboriginal groups on wetlands in the first five or six millennia post-glaciation, to ignore them, leaves a massive hole in our understanding of the early populations of the region. To ignore wetlands, not only as a focal point but also as a source of archaeologically relevant data, one extinguishes virtually all hope of recovering any organic artifacts or ecofacts that may tell us far more information than is normally collected from a typical New Brunswick archaeological site. With the number of wetland-associated archaeological sites considered as abundant as the confluence of streams highest magnitude , it is also no wonder that they are focal points of significant ceremonial sites. An aerial view of the Cow Point cemetery during a flood event , which overlooks the Grand Lake Meadows wetland The scarcity of resources from the Palaeoindian period to the Historic period meant that the presence of relatively stable hydrological environments were attractors to both game and plant species and thus a very desirable location for people searching for food and water. This stability in resources also encouraged extended periods of habitation and a return to a specific location, leading to the formation of formal cemeteries. Therefore, we must first determine whether there are any heritage resources present in and around these wetlands before they can be allowed to be destroyed.

## 3: Archaeology in wetlands | Ramsar

*Archaeology of Wetlands [John Coles] on [www.enganchecubano.com](http://www.enganchecubano.com) \*FREE\* shipping on qualifying offers. Archaeology of Wetlands. CLEAN tight and unmarked text block. First Edition, Edinburgh Scotland University Press.*

The dates indicate evidence for occupation in the 1st-2nd centuries AD and in the 9thth centuries AD. Multiple phases of occupation on crannogs is absolutely the norm with these sites being abandoned and then re-occupied two or more times. There is good evidence for use of crannogs in the 1st-2nd centuries AD across Scotland, although this the first evidence for that period in north-east Scotland. In the 9thth centuries, there is far less evidence for use of crannogs in Scotland, but the evidence is growing with five sites now have radiocarbon dates from the period, three of those through this project Loch of Leys, Prison and Castle Islands, Loch Kinord. The excavation of Loch Glashan crannog in south-west Scotland has a hint of occupation in the 9th century in the form of a leather book satchel, possibly indicating use by Christian clergy or monks, but most of the evidence from this site dates from earlier centuries. Crannogs in Ireland have been excavated that date to this period as does the Welsh crannog at Llangorse, and these are normally associated with high status dwellings, although exceptions to this have been highlighted by Christina Fredengren. An intriguing possibility lies in the use of crannogs at this time as assembly sites. Although not a crannog proper ie. In contrast to the 9thth centuries, evidence for the use of crannogs in the 1st-2nd centuries AD is much greater. Most of this evidence comes from south-west Scotland, and not least from Robert Munro. More recent sampling and excavation has radiocarbon dated phases to the 1st-2nd centuries AD at Barlockhart, Buiston, Loch Glashan, Erskine Bridge, and Dumbuck crannogs. Interestingly, these sites span areas that were within regions of high Roman influence in this period in the south-west and areas that saw significantly less, such as at Loch Migdale, Sutherland. The Loch of Leys sits between the two. There is the Raedykes Roman camp a few miles down the Dee from the Loch of Leys, but this part of Scotland was never an established part of the Roman empire like parts of south-west Scotland were. This might suggest that building crannogs was not simply or only a direct response to Roman occupation. This slideshow requires JavaScript. Nearly always with crannogs, the history of use is multi-phase, multi-period and difficult to untangle. The Loch of Leys crannog is no exception to this. The aim of the excavation at the Loch of Leys was to establish if there was activity pre-dating the known medieval occupation of the island. That has clearly been answered, and we can confidently say that there were at least three phases of occupation at the Loch of Leys; 1st or 2nd century AD, in the late 9th or 10th century AD, and from the historic sources, occupation in the 13thth centuries AD. However, the relatively poor state of preservation on the site means that the stratigraphic relationship between the two radiocarbon dates remains unclear. Further excavation and dating might resolve this question, and better preserved parts of the site may yet be discovered that would yield even better chronological resolution. Thanks to Thys Simpson and the Leys Estate for allowing and arranging access to site. Palaeoenvironmental work at the Loch of Leys is ongoing, so stay tuned for more information on the history of the Loch of Leys. Antiquity, 63 , pp. BAR British Series Loch Glashan Crannog Crone, A. Society of Antiquaries of Scotland. Irish Crannogs Fredengren, C. Forging a chronological framework for Scottish crannogs; the radiocarbon and dendrochronological evidence. Proceedings from the Munro International Seminar:

## 4: The Scottish Wetland Archaeology Programme

*Wetlands and Archaeology admin Blog For decades, archaeologists have known that wetlands are exceptional sources of food, medicine, water and other resources necessary to surviving in nature (Nicholas etc.).*

Wetland occupations in prehistoric Europe, Francesco Menotti 3. Europe s wetlands from the Migration Period to the Middle Ages: Occupations of past wetland environments in the United States, Barbara, A. People-wetland interaction in Canada, Kathryn Bernick 6. People and wetlands in Africa, Peter Mitchell 8. The past Eastern Russian wetlands: Wetland occupations in New Zealand, Geoffrey Irwin Australian wetland occupations before and after the Europeans, Sally Brockwell Waterlogged archaeological evidence Introduction The Alpine region lake-dwellings, Pierre Petrequin Houses, households and settlements: Portable wooden objects from wetlands, Robert Sands Fishing traps and weirs on the Northwest Coast of North America: Bone and antler artefacts in wetland sites, Jorg Schibler Road networks and transport Survey and excavation Introduction Detecting organic materials in waterlogged sediments, Andreas Weller and Andreas Bauerochse Underwater survey and acoustic detection and characterisation of archaeological materials, Ruth Plets Archaeological strategies for terrestrial wetland landscapes, Richard Brunning Excavation Intertidal survey and excavation, Martin Bell Excavation of wet sites, Glen, H. Multidisciplinary scientific network Introduction Insect analysis in wetland archaeology, Stephen Davis Palaeoecological reconstructions, Ciara Clarke Geoarchaeological and soil micromorphological studies in wetland archaeology, Charles French Palaeoclimatology and archaeology in the wetlands, Michel Magny Dating methods Radiocarbon dating of wetland sites, Tom Higham Dendrochronology in wetland archaeology, Andre Billamboz Lacustrine varve counting as a dating technique: A vulnerable cultural heritage: A review of current post-excavation treatment methods for waterlogged organic archaeological materials: National and international wetland management policies, Adrian Olivier Wetland Archaeology in the twenty-first century: Life history approaches and wetland habitation: Rhythm of wetland life: Towards an Anthropology of Wetland Archaeology: Long-distance trade routes linked to wetland settlements, Paolo Bellintani Integrating dry lands and wetlands in late prehistoric farming regimes, Kristian Kristiansen People, lakes and forest in the Baltic region: Wetland archaeology and the public Introduction Wetland archaeology in the media and the popular literature: Museum exhibitions, open-air museums and hands-on archaeology, Gunter Schobel Reflections and future perspectives Introduction The archaeology of wetlands: He has been involved in wetland archaeological research for fifteen years, working on various projects in different parts of Europe. Theory and Practice OUP, He has directed many wetland archaeological projects in estuaries, lakes, rivers and boglands, and is the author of numerous books and papers on wetland archaeology, including The Archaeology of Lake Settlement in Ireland and Rethinking Wetland Archaeology Moss University of Oregon George P.

## 5: The Art and Archaeology of Florida's Wetlands - CRC Press Book

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However, some wetland archaeologists wetlands, albeit to varying degrees, and the study e. Method and Theory at the Beginning of the 21st Century with their environment, and a better understand- natural landscape to a degree that is unimagin- ing of the diversity of these relationships is now able elsewhere. This integration is realized, espe- required. Thus, the regional, off-site, environmental the changing theoretical agenda of wetland archae- reconstruction based on pollen evidence can be ology at the beginning of the 21st century. Here, the integrated analysis high and soils are saturated with water, oxygen is of pollen and plant macrofossils, linked to excav- largely absent, and reducing as opposed to oxi- ations of prehistoric trackways and settlements, dizing conditions prevail. A true equilibrium is never achieved, but the The third research opportunity, and possibly pace of change can be so slow that 3,year-old the most important, lies in the potential to date arti- timbers look as if these were cut down the previ- facts, deposits, and archaeological phases through ous day. Alongside the wooden structures and arti- radiocarbon and dendrochronological assay with facts, woven baskets, and leather objects created by much higher resolution and greater precision people in the distant past, environmental macro- than is possible on non-wetland sites and, thus, and microfossils, including tree and plant remains, can reveal something of the real-time dynamic of pollen, insect, diatoms, testate amoebae, and prehistoric life. For example, dendrochronology foraminifera, all have a greater change of long-term revealed the dynamic sequence of site construc- survival in wetlands. In exceptional circumstances, tion, occupation, and contraction of a Neolithic such as in an acidic raised bog, human skin, hair, lake village at Charvines, Lac de Paladru, France and nails may be preserved as well. This better- Bacquet and Houot We can assume that many non- in archaeological studies of free-draining land- wetland sites experienced similar dynamic patterns scapes. It has been argued, on the basis of cross- but, without high-resolution dating, this cannot be cultural comparisons, that the invisibility of women shown and phases tend to extend over centuries. It The second research opportunity lies in the is, therefore, unsurprising that the overwhelming potential to integrate the study of people within their majority of wetland sites known to us have been Part V: Characterizing Landscapes Preservation analysis Woodworking technology analysis Woodland reconstruction Material culture studies Radiocarbon dating Pollen analysis Insect analysis Plant macrofossil analysis Landscape reconstruction Dendrochronology Tool analysis Figure There are also a and Flag Fen in the United Kingdom; Freisack in number of promising, but not yet widely used, Germany , ploughing or construction work in for- survey techniques that may be able to identify mer wetland landscapes, for example, Windover archaeological wetland sites before the remains are in the United States; many urban wetland sites at or near the surface, such as multispectral aerial across the world , or through natural erosion of reconnaissance e. We settlements; the crannogs in Ireland and Scotland; should also recognize the early drainage of wet- Ozette in the United States. Method and Theory at the Beginning of the 21st Century Figure Reconstruction sequence of this Neolithic lake-settlement as revealed by dendrochronology. Within Europe, the most notable scale operations. The size of the trenches is limit- projects include those of the Dutch Delta Louwe ed by several factors, including the friable nature Kooijmans , the Assendelver Polder in the of the organic materials, which must be kept wet Netherlands Brandt, Groenman-van Waateringe, throughout the period of exposure, the need to and Van der Leeuws,, , the Somerset Levels recover all organic remains once exposed to oxy- Coles and Coles , The Fenlands Hall and gen, and the habitually unstable nature of the sur- Coles and the landscape-scale excavations rounding soils typically peat or alluvial sediments. Elsewhere, side the excavation trench, and extensive damage Part V: Characterizing Landscapes through desiccation of un-excavated remains will the researchers, who should make their theoretic- be the consequence. The director of excavation must there- Severn estuary merits also citing Bell, Caseldine, fore ensure that the different aspects of the work and Neumann Besteman ; Brinkkemper ; Koch ; First, many research projects remain

decontext- Larsson Third, most wetland lake settlements and so forth cannot be based landscape projects are disconnected from current on a modern Western, functionalist, perspective. The aim of this Furthermore, it must also be recognized that the section is to consider how such a re- engagement perception of wetlands and other type of land- with mainstream landscape archaeology could be scapes differs between insiders and outsiders. First, the landscape archaeology of wetlands Fourth, nature-culture interactions should be has to be contextualized. This includes geographi- recognized more clearly. For example, enculturating cal contextualization, since interactions between nature and the spirits within them forms a key wetland and non-wetland landscapes are omni- theme of human behavior, which can be favorably present, both in the physical for example, the run- studied in wetland landscapes with its high-resolution off of nutrients-rich water from hills into a bog dating and close association with palaeoenviron- and cultural for instance, the use of stone axes mental source material e. Contextualization ; Tilley The best example of a study in should extend to include the passing of time and wetlands that develops this theme is the most recent the cultural changes surrounding them, and it work on Star Carr in the Vale of Pickering in north- should also include the sociopolitical context of east England Conneller and Schadla-Hall Method and Theory at the Beginning of the 21st Century Fifth, special attention should be given to of wood, and the curing of leather. It should be the boundaries and edges of the landscapes. Similarly, Naomi Field and region e. The archaeological study of wetland landscapes Sixth, marginality and liminality should not be offers three major advantages over non-wetland coalesced. The concept of liminality is frequently landscapes: As economic and by people in the past. However, these research ritual activities are not, on a landscape level, mutu- potentials can be realized only if and when wet- ally exclusive, the recurrent equation of liminal- land archaeology becomes fully geographically ity with marginality is often mistaken. Although and theoretically contextualized. References To date, few wetland studies have made the expli- cit distinction between the two concepts, but I have Arnold, B. CBA Research Report Besteman, is one that offers myriad resources, ranging from J. An Archaeology of Natural Places. Characterizing Landscapes Brandt, R. An Essay der Leeuws, S. Assendelver Polder in Landscape and Persistence, London: The survey and Harris, M. The rhythm of life: Seasonality and excavation of a Bronze Age timber circle at Holme- sociality in a riverine village. Journal of the Royal next-the-sea, Norfolk, â€” Proceedings of Anthropological Institute 4 1: Wetland Farming in the Area to J. Understanding the British Iron Age: An and Roman Period: An Environmental and Palaeo- Agenda for Action. Charavines il y a J. Landscape, Ecology ans. The temporality of the landscape. Recent work at World Archaeology Meare Somerset and Sutton Common South â€”â€”â€”. Journal of Archaeological Science Ground pene- Transformations in Anthropological Knowledge. Sweet Track to Kelly, R. Environment, mobility, and Coles, J. The Archaeology of Wetlands. Energetic activities of commoners. Proceedings of the Prehistoric Society Neolithic offerings from the wetlands Conneller, C. Beyond Star of eastern Denmark, in B. The Vale of Pickering in the 10th millennium B. Excavations at Buiston, Ayrshire Larsson, L. South Scandinavian wetland sites and â€” The Environmental Donoghue, D. Multispectral remote sensing for and Cultural Heritage of Wetlands, pp. Consiglia nazionale Delle Ricerche Oxford: Universita Degli Studi Di Siena, â€” Imagination and Evans, C. Review of Purdy, B. Wet Desire in a Northern Landscape. Proceedings of the Prehistoric Press. Wetland exploitation Field, N. Current Themes in East Anglian Oxford: East Anglian Archae- Fredengren, C. Soil Micromorphology and Landscape Evolution. Cultural response to environmental London: The dis- Gearey, B. Oxford Journal of Archaeology archaeology of wetlands. Make Prayers to the Raven: A Lisheen Mine Archaeological Project â€” Koyukon view of the northern forest. University of Chicago Press. Wet sites, wetland sites, and cul- Purdy ed. The Environmental tural resource management strategies, in Enduring and Cultural Heritage of Wetlands, pp. The Environmental and Cultural Heritage Oxford: The straight and nar- Books, Oxford. An Intertidal Archaeological pp. Survey of the Shannon Estuary. Proceedings of the Prehistoric â€”â€”â€”. Places of resistance in the Society

## 6: Archaeology of Wetlands: A Personal Journey - Oxford Handbooks

*The chapter discusses topics such as the global reach of wetland archaeology today; the challenges of recovery and conservation and the potential that wetland archaeology has to inform us about past societies, time, and our common humanity.*

In the current article, wetland archaeology is seen as comprising, in accordance with the Ramsar convention on wetlands, the archaeological research of swamps, peat bogs, marshes, rivers and lakes, as well as inundated dry land; the latter being added as a special category to the concept of wetlands by archaeologists see Coles Sites and solitary finds detected from permanently or temporarily over moist areas have previously been observed as the object of either bog archaeology or underwater archaeology in Estonia e. Jaanits ; Roio , whereas the first notion has been treated as a specific distinction of common archaeology and the latter as a special field of the discipline e. Artefacts randomly gathered from wetlands, especially from bogs, have been deposited in Estonian museums since the middle of the 19th century. The study of pile dwellings in the Baltic countries also began in the 19th century. As in several other places in Europe Speck ; Schlichtherle ; Menotti discussions concerning prehistoric pile dwellings took place here within academic circles, following the famous discovery by Ferdinand Keller in the Zurich Lake in Switzerland. It is known that by at least the subject of Central European pile dwellings had fallen under the auspices of the Learned Estonian Society that united part of the intellectual community of Tartu Engelmann The bog became an archaeologically significant location for the first time between the 80s Fig. Following this, several Stone Age settlement sites cal BC that were buried under the peat layers of former or current bogs were found. Finds from different periods deposited into peat for various reasons, including caches and offerings, and trackways constructed into bogs must be mentioned in this context as well, as they account for the highest number of wetland sites. The majority of trackways in bogs belong to historical times Lavi Alongside the presentation of general trends, we will emphasize those single sites which have played an especially important role in the wetland archaeology: Mesolithic artefacts from Siportant role in the wetland archaeology: ivetsi: The research history is comprised of both intense periods of fieldwork that have been broken up by shorter or longer breaks. The research has been much influenced by coincidences: The systematic detection of wetland sites has not yet taken place. According to a specialist in the field, Lembit Jaanits Despite the attempts that have been in the field of underwater archaeology over the last Fig. Location of study years, this branch of research has remained marginal in Estonia, and has area A and places only begun to be conducted on a scientific basis relatively recently. Indrekob ; Jaanits ; Jaanits 8 Ulbi, 9 Raadi, 10 , overviews of these in more inclusive studies e. From the same area where the postglacial compensational land upheaval was relatively slow, another Mesolithic settlement site, approximately years younger than Pulli Sindi-Lodja I Fig. Sindi-Lodja I was first covered by gyttja or organics and sediments with alternating layers of sand and organics developing into the base of the waterbody, thereafter becoming paludified and buried under peat and finally inundated by the waterbody of the Baltic Sea basin, which was the Litorina Sea at that time cal BC Kriiska et al. The equipment of a fishing trip a fishing net a sinker with preserved remains of a bast fishing line and a float from pine bark, Fig. Reference to the publication with original data has been given in brackets. Location maps of vicinity of inland waterbodies as well. For example, an arrow and a harpoon Kunda archaeological sites by Jaanits et al. In the case of all these items we seem to be dealing with artefacts that were lost or abandoned during fishing or hunting trips. Mesolithic artefacts have been found from present waterbodies as well. These findings were probably washed out from several Mesolithic settlement sites. Mesolithic fishing spear heads have been found elsewhere in Southwestern Estonia: The other important find area is Lake Peipsi Fig. The find places of Lake Peipsi have yet to be studied thoroughly, but we can conjecture that at least part of the items discovered were probably been lost on fishing trips. Out of all of the Mesolithic find places so far investigated, the Kunda area Fig. As previously mentioned stray finds preserved under or inside peat layer were obtained there already in the ies Grewingk In Constantin Caspar Andreas Grewingk, professor of mineralogy of the University of Tartu and the founder of Estonian archaeology, discovered a Stone Age settlement site there

Grewingk The settlement site is situated on the left bank of the Kunda River, on an  $74 \text{ m}$  large and  $4 \text{ m}^2$ . This object has given name to one of the central Mesolithic archaeological cultures in the entire Eastern Baltic, and following the excavations of Richard Indreko in 1927 Indreko ; a became one of the standard sites of the era. Small-scale studies, including geo- and bioarchaeological studies, have also been conducted there e. Altogether  $ca \text{ } 1000 \text{ m}^2$  has been excavated. The lake probably paludified during the Mesolithic era; with peat then partly growing onto the cultural layer of the settlement site. These peat layers created perfect conditions for the preservation of the bone and antler artefacts that had sunk into the lake during fishing or waterfowl hunting or were left behind at the dwelling site. Fishing spear head, harpoons, arrowheads, ice picks, adzes, awls, axe heads etc. Of course, numerous stone tools and debris from their processing have been gathered from the settlement site as well e. Indreko b; Jaanits et al. During excavation of the Kunda bog, pine and oak poles were mostly found in two spots, leading to the suggestion that such spots may have been fish racks Grewingk The lower parts of the up to  $10 \text{ cm}$  long and on average  $7 \text{ cm}$ . According to the find context these might belong to the Mesolithic as well. The place was inhabited by the people of the Narva Culture from approximately years cal BC Piezonka The gathered archaeological Jaanits et al. Villa I yielded Mesolithic Narva type pottery and sherds destroyed graves Jaanits By the river the cultural layer river includes Narva type pottery of the settlement site was buried under the date of the type approximately peat Jaanits Sherds of Early Metal Age ; Jaanits Akali covers an extensive territory of  $1000 \text{ m}^2$ ,  $10 \text{ cm}$  layer as well Jaanits et al. In Estonia Chapter 3 61 addition stone, bone, amber and clay artefacts as well as animal and fish bones were detected Jaanits Neolithic sites in wetlands The location or burial of Neolithic sites under peat layer or their ending up in water has principally been analogous to processes during the Mesolithic. Even though the Baltic Sea was regressive at the time, the paludification process did not take place at settlement sites situated on the sea coast, as all wetland sites of the period are connected with inland waterbodies and are located in Southeastern and Eastern Estonia. The site was excavated by Jaanits in 1927 and altogether  $1000 \text{ m}^2$  were investigated Jaanits The cultural layer on the riverside slope of the hill was later buried under peat Jaanits The settlement site of Tamula I Fig. Photo in the photographic archives of the Institute of History of Tallinn University: This settlement site existed during a period when the water level of the lake was lower than it is now. After the dwelling site was abandoned the water level rose and peat formed on the cultural layer. Later waves began to destroy the bank, including the cultural layer, so that part of the Neolithic artefacts ended up at bottom of the lake Jaanits et al. The Tamula I settlement site was archaeologically excavated in 1927 under the leadership of Indreko, in 1956, 1989 by Jaanits; altogether  $1000 \text{ m}^2$  of the site have been excavated e. Indreko ; a; Jaanits ; ; ; Several stoneless hearths Jaanits Since the soil holds timber-conserving qualities, unique features have been preserved in the grave material which significantly complements our knowledge of the Neolithic burial customs of the area. Thus beds of branches have been unearthed from several graves Fig. A part of the remains of wooden constructions in the bottom of the aforementioned lake derive from the Stone Age. During fieldwork conducted by Selirand in 1927, a collection of extremely brittle poles were discovered at a location which was on average  $15 \text{ m} \times 20 \text{ m}$  northeast to where construction remains had previously been discovered Selirand Proof that the pole remains belonged to the same period as the pottery that had been discovered was provided after an analysis of the timber samples taken by Kalle Virtanen in 1927 was carried out According to the radiocarbon and dendrochronological dates the Neolithic settlement site derives from approximately 4000 cal BC Virtanen In the course of the aforementioned cursory investigations it was not explained whether we were dealing with a Neolithic pile dwelling or whether it was simply that the water level of the lake was lower than nowadays and the dwelling site was instead situated on a small peninsula Selirand Since the poles had been preserved, the place had to already have been over-moist during habitation or the water level had to have risen very quickly after the settlement site was abandoned, before the process of the decomposition of timber had begun. On the basis of finds collected from the bottom of waterbodies a few Northeastern and Southwestern Estonian Neolithic settlement sites have been localized. Rich find material, including numerous bone artefacts and sherds of Typical and Late Combed Ware Kriiska In contrast to the examples previously mentioned these are mostly stone artefacts, with few exceptions, such as a harpoon head from the Audru River in Malda Fig.

There are several stone axes that can be associated with wetlands. Several axes have been obtained from contemporary waterbodies. Single shaft-hole stone axes have been discovered from bogs, for example a battle-axe was collected from the Paistu bog Fig. While Mesolithic artefacts collected from wetlands can, with a few exceptions, be associated with fishing and hunting and are mostly interpreted as lost or discarded foraging tools, Neolithic material is different. We are mainly dealing here with shaft-hole stone axes. It cannot be suggested that it was only axes that were lost or discarded back then. The manner of axe deposition was apparently not occasional; rather it might be interpreted as a knowing deposition of sacrificial artefacts into wetlands. On the basis of their appearance short, can be fragmentary and their find context. Proceeding from these parameters, Kristiina Johanson, who has studied Estonian stone shaft-hole axes However, only a small part of these can be connected with wetlands. Construction re- or extent this action took. Photo by to discern a offering context for these finds, especially when we agree that Indrek Ostrat Bronze and Iron Age sites in wetlands Only a few Bronze and Iron Age sites are known that are directly situated in wetlands. Compared to the Stone Age these are more varied. More numerous are the stray finds that have been deposited into waterbodies, bogs or temporarily inundated areas. The remains of log constructions Fig. As mentioned above, study of the site had already begun in the 19th century, and according to folklore people had dived there as early as Hupel However, more serious research was initiated only in with the expedition under the leadership of Selirand Selirand Additional investigations were conducted in , , " by Selirand, Fig. Photo in the photo- Selirand ; ; Virtanen The oldest part belongs to the 4th-2nd century cal f This part of the underwater site has rarely been studied, and finds which would correspond to the above dates have not been detected.

## 7: Wetlands | Maritime Archaeology

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Eric Rodriguez Eric Rodriguez is a maritime archaeologist and a geographic information systems professional currently based in southern California. He specialises in wetland studies, studying both reconstructive techniques and their influence on prehistoric and historic communities. In addition to his current position, Eric continues his research on European wetlands, focusing on the Humber wetlands of Northern England. Latest posts by Eric Rodriguez see all Wetlands of War: The Case for Amphibious Warfare in Prehistory - April 29, Introduction In recent decades, landscape archaeology has redefined wetlands, not simply as boundaries, but as dynamic areas that both housed and influenced the daily experiences of their inhabitants. This is predominantly due to the modern appointment of both combat and wetland archaeologies as sub-disciplines, and the recent developments in the palaeogeographical modeling of wetland environments. While the evidence for these amphibious battlegrounds in prehistory is often limited to theoretical discussions, several historic examples can be drawn from both New World and Old World sources which demonstrate a strong understanding of the tactical advantages of wetland warfare that would have been carried out by prehistoric communities. The Economic and Ritual Value of Prehistoric Wetlands As a landscape, wetlands blur the distinction between terrestrial and aquatic zones. However, wetlands are not simply a merger of these two distinct environments but rather a unique set of landscapes in their own right, valued for ritual and economic use. Uncovered dockyards and trackways from the East Anglian Fenlands and the Humber Wetlands present a strong case for a preference of wetland-based lifestyles over more terrestrial agricultural practices Pryor , Van Der Noort Additionally, votive deposits have been frequently recovered such as decorative jaded axes in the Humberhead Levels of northern England. In the scope of combat archaeology, wetlands are commonly discussed in a funerary context as much of the recovered evidence from wetlands relates to mass graves or ritual deposits of weaponry and warriors. While these sites hold ritual significance, an absence of archaeological material with a combative nature does not exempt wetlands from participating in violent events. Jade axe recovered from Somerset British Museum Tactical Advantages of Wetlands While evidence of the strategic use of wetland fortifications can be found as early as the Roman period, Clausewitz best describes the benefits of wetlands in wartime, especially as a stage for guerrilla attacks However, these same features inhibit successful skirmishes if the waters prove impassable, limiting forward advancements and potentially preventing retreats. Both of these individuals understood the tactical value of wetlands and heavily utilized these environments in their military campaigns. One specific wetland, the Black Swamp of the Niagara Peninsula in Canada, provides a strong demonstration of amphibious warfare that cements the value of wetlands in a combative context. Later in , the British Commander Drummond withdrew his forces into the swamp to avoid entrapment by American troops. However, as wetlands provide exceptional preservation of organic and inorganic materials, there remains hope to eventually uncover material of a combative nature in these settings. One possible method to better visualize and find these forgotten battlegrounds would be through reconstructing palaeo-wetlands and using Geographical Information Systems GIS analyses to determine the nature of these wetlands and whether they lie in areas that would have been disputed over. While much of this work is speculative, the nature of wetlands as desirable and contested areas with tactical advantages in warfare present a landscape that would have been profusely utilized by prehistoric communities in times of war and peace. References British Museum N. Clausewitz, Carl von, and J. Sheep, stockyards and field systems: Bronze Age livestock populations in the Fenlands of eastern England. Antiquity, 70 , Van de Noort, R. Windgather Van de Noort, R. To learn more about Combat Archaeology Click Here.

## 8: Society for Combat Archaeology "Wetlands of War: The Case for Amphibious Warfare in Prehistory

*The Oxford Handbook of Wetland Archaeology is the most comprehensive survey of global wetland archaeology ever*

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### 9: Oxford Handbook of Wetland Archaeology - Oxford Handbooks

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