

# More than sixty years of osteoarchaeological research at the University of Helsinki

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## Abstract

In the 1960s Björn Kurtén, Professor of Palaeontology at the University of Helsinki, took the first steps to analyse bone materials from archaeological sites. His main interests were ancient faunal populations and their distribution history. In the 1970s and afterwards, other scholars from the natural sciences— for example, Ann Forstén, Mikael Fortelius, Jukka Jernvall, Leif Blomqvist, Stella From, Sirpa Nummela and Pirkko Ukkonen – also began working with archaeological bone materials. The palaeontology and biology student Mikael Fortelius conducted his civil service at the National Board of Antiquities in the 1980s by analysing bones from archaeological sites. He published the first and so far, only guide of analysis of archaeological bones in Finnish, with focus on Finnish assemblages. The next important stage was when the biology and palaeontology student Pirkko Ukkonen began systematic analyses of archaeological bone assemblages and later finished a doctoral dissertation on faunal history based partly on these materials. This meant that osteology became an important part of archaeology in Finland. This also led to specialized osteology courses for students of zoology, palaeontology and archaeology at the University of Helsinki. More and more archaeology students at the University of Helsinki became involved in osteology, and they conducted analyses and wrote theses on archaeological bone assemblages from Finland and neighbouring countries.

**Keywords:** osteoarchaeology, history of discipline, University of Helsinki, archaeology, bone analysis

## Introduction

In Finland, prehistoric bone materials from the oldest archaeological sites (osteological materials include bone, teeth, antler and horn) are typically small and fragmented burnt pieces. Unburnt skeletal remains rarely survive in Finnish soils longer than some hundreds of years (Fortelius 1982; Ukkonen 2001). Exceptions are lake sediment and wetland contexts, in which unburnt bones have also been found in Finland (e.g., Ukkonen 2001; Lahelma 2012; Koivisto 2021). Bones from younger periods, like the Iron Age and Medieval Age are usually unburnt and well preserved. Assemblages from these younger prehistoric periods can be large and contain complete bones.

Analyses of burnt and unburnt bone material differ from each other remarkably, mainly because unburnt material can consist of complete bones which generally can yield much more information than tiny and fragmented pieces.

The first analyses of bones from Finnish archaeological sites were made by foreign researchers, mainly zoologists. One of the earliest analyses was by the Danish zoologist Herluf Winge when he analysed the bones from the Stone Age site Jettböle on Åland, excavated in the early 1900s (Winge 1914). Archaeologist Julius Ailio also used identifications by Winge in his doctoral dissertation *Die Steinzeitliche Wohnplatzfunde in Finland* (Ailio 1909). These early reports were mainly lists of identified bones and skeletal elements. Among the slightly later osteo-

logical analyses was the study of zoologist V.A. Korvenkontio (1937), who examined the geological finds of Stone Age seals in Finland (articulated, unburnt seal skeletons with harpoons), took measurements and gave proper descriptions of the bones.

Osteoarchaeological research (of both humans and animals) has developed into a significant branch of archaeology in Finland (albeit in relatively late stage, compared to Sweden, for example). Today several researchers work in osteoarchaeology in three universities in Finland (Oulu, Turku and Helsinki). The first minor study unit (25 credits) in osteoarchaeology was launched at the University of Oulu in 2022.

This paper aims to give a short introduction of the development and achievements of osteoarchaeology at the University of Helsinki with a focus on animal osteoarchaeology. The overview contains references from my own experience as an osteoarchaeologist, as well as other researchers involved in the development of the discipline in Helsinki. This article is not meant to be understood as a comprehensive research history. Osteological analyses were conducted at other universities at a very early stage (for example, Lahtiperä 1970; Formisto 1993), but they are not focus of this review.

## Ann Forstén's legacy

Osteoarchaeological research began at the University of Helsinki in the 1960s when Björn Kurtén, Professor of Palaeontology, investigated bone materials from archaeological sites. Kurtén's main interest were faunal populations and their distribution history, not so much archaeological questions (Kurtén 1988). A new chapter in the research began when Ann Forstén started to analyse archaeological bone materials. Forstén was a Professor of Zoology and an internationally known expert on the evolution and systematics of fossil horses. As a former student of Kurtén, Forstén's interests were also in early zoohistory (e.g., Forstén & Alhonen 1975), but she as well wanted to understand how animals were utilized in the prehistory. Forstén published several scientific papers (e.g., Forstén 1972; Forstén & Blomqvist

1977) on zooarchaeological materials, and these can be characterized to be among the earliest articles in osteoarchaeology in Helsinki. Ann Forstén's interest in supporting and encouraging new students in the use of bone collections of the Zoological Museum of the University of Helsinki had a profound impact on the development of osteology and zooarchaeology at the University of Helsinki.

Forstén died suddenly in 2002 at the age of 62. In her obituary in *Helsingin Sanomat* on 9 April 2002, colleagues Pirkko Ukkonen, Mikael Fortelius and Risto Väinölä summarized Forstén's importance in curating osteological collections at the University of Helsinki: 'When the Finnish Museum of Natural History (Luonnontieteellinen keskusmuseo) was founded in 1990, she became the head of the department of vertebrates and a professor. Conscientious care of the museum's collections and their widest possible use in research were Forstén's main goals. She devotedly served the researchers visiting the Zoological Museum and satisfied the public and the media's thirst for information. Ann Forstén was an important source of information and support for early Finnish osteologists'. (Author's translation from Finnish)

## Osteoarchaeological research intensifies

In the 1980s and 1990s Mikael Fortelius and other palaeontologists and zoologists, for example Jukka Jernvall, Leif Blomqvist, Stella From and Sirpa Nummela conducted osteoarchaeological analyses. When I asked Fortelius about the initial phase of his osteological studies and how he came to identify archaeological bones, he replied:

*'If it (the initiative to start osteological analyses) came from above, the possible culprits are Kurtén, Forstén and Milton Núñez. Leif Blomqvist could also come into question, because I got to know him well when I was working during the summer in Korkeasaari Zoo in the 1970s... It is more likely that the contact was made directly with students studying geology as a minor. In any case, I already started doing bone analyses for the National Board*

*of Antiquities during my basic studies, initially for archaeology students' degrees. I remember the first one was Pirjo Uno, but in the end, there were half a dozen of them, if not more. I spent time with Eero Muurimäki and Heikki Matiskainen in those years, J.P. Taavitsainen also belonged to that cohort. The most important teachers were Ari Siiriäinen and Christian Carpelan, sometimes also Matti Huurre and others.'* (Email 8 May 2021)

Fortelius continued also to do larger analyses for archaeologists, and the reports were deposited in the archives of the National Board of Antiquities (today the Finnish Heritage Agency). Fortelius published short papers on dogs found in burials in Eura; one alone (Fortelius 1982) and one with Leif Blomqvist (Blomqvist & Fortelius 1982). A more important publication was the one Fortelius wrote during his civil service at the National Board of Antiquities. The book *Johdatus arkeologiseen luuanalyysiin* (Fortelius 1981) is the first and still the only guide for analysis of archaeological bones in Finnish, with an emphasis in Finnish assemblages (but see Söderholm & Ukkonen 1999; Salo *et al.* 2011; Mannermaa 2011). Fortelius did not continue working as an osteologist but became a palaeontologist, and – he acted as a Professor of Palaeontology until his retirement in 2022.

Archaeologist Jyri Kokkonen interpreted some osteological analyses made by Fortelius in his book *Kymin Niskasuon keramiikkalöydöt* (Kokkonen 1978), published by the Department of Archaeology at the University of Helsinki. The materials analysed by Forstén, Fortelius and others (see e.g., Lahtiperä 1970) formed the data that Ari Siiriäinen, professor in archaeology at the University of Helsinki used in his study on the cultural ecology of Finnish Stone Age sites (Siiriäinen 1981). This article was actually the first more extensive article to compare the osteological materials from Stone Age sites and aimed to study the changes in animal utilization. Although Siiriäinen was aware of the limited usefulness of Stone Age burnt bones and the related challenges, he made quite bold interpretations about the chronological variation of the hunted species. Siiriäinen's study meant that osteology became part of archaeology at the University of Helsinki.

## The establishment of osteoarchaeology

Sirpa Nummela is one of the biologists who continued to analyse bone materials from archaeological sites after Fortelius. She describes how she started:

*'I started doing bone analysis in 1988 when my student mate Stella From asked if I would be interested. She had quite a lot to analyse for the archaeologists of the National Board of Antiquities, and someone else was needed. She knew I was interested in bones and anatomy. All in all, I occasionally did these analyses along with my studies till the early 1990s, when I started to do a thesis on the middle ear of mammals and the bone analyses were left aside. They were then continued by Stella From, and especially Pirkko Ukkonen.'* (Email 15 September 2021)

Indeed, the next significant step was taken when the palaeontology and biology student Pirkko Ukkonen – also inspired by Professor Björn Kurtén's work – started a systematic analysis of archaeological bone assemblages. Ukkonen was a biologist and fauna historian. She studied geological animal skeletal finds from Finland and was foremost interested in the development of the glacial and post-glacial fauna and paleo-environment (Ukkonen 1993). To have more data, she also included 'subfossil' bones from archaeological sites in her MA thesis (Ukkonen 1993). Ukkonen was invited to participate in archaeological excavations for two weeks by Sirkka-Liisa Seppälä (today working as Senior Advisor at the Finnish Heritage Agency). The excavation took place at Saamen museo in Inari in 1992. After this experience Ukkonen participated in two research projects in the archaeological department of the University of Helsinki and she began also to include archaeological approaches in her publications (e.g., Ukkonen 1996; 2004).

Sirkka-Liisa Seppälä explains why she wanted to hire Ukkonen:

*'I wanted to hire Pirkko for the excavations, so that she could get an idea of what the bone material looks like and how it appears in the soil and cultural layer, for example, in relation to structures and finds, how it has been preserved and what fac-*

tors can affect preservation. This was somewhat of a spontaneous thought – I didn't know if something similar had been done with other excavations. But it seemed necessary for the osteologist to be there longer than just visiting. I had met Pirkko a little earlier and she had done the analysis of the previous year's excavations in Inari and was familiar with the material. I remember that it was really rainy at that time, but Pirkko seemed satisfied with what she experienced. As far as I know, this was her only archaeological field experience and no doubt influenced her ideas about archaeology and osteology. And it also affected my own work and fieldwork methods. During the excavations in Inari, the soil was sieved much more precisely than generally elsewhere, and we managed to recover very small pieces, pieces, for example, fish vertebrae that Pirkko managed to identify.' (Email 6 April 2023; see also Figure 1)



Figure 1. Pirkko Ukkonen is cleaning a layer 3 at the Mesolithic settlement site Saamen museo in Inari. Photo: Sirkka-Liisa Seppälä, Finnish Heritage Agency (negative number 91255).

## Osteoarchaeologists

As result of this process (initiated by Ann Forstén, Mikael Fortelius; Stella From, Sirpa Nummela and others, and established by Pirkko Ukkonen), the National Board of Antiquities began to include osteological analysis as a routinised part of archaeological investigations. This was important for later research. In the 1990s a lot of field research was carried out at Stone Age settlements, financed with employment funds for land use projects. A considerable amount of bone assemblages was analysed during the short but intensive road- and house-building period. This established the tradition that bones from archaeological fieldwork became analysed. Ever since, osteological analysis has become a routine part of archaeological fieldwork. Although the infrastructure still needs to be developed (and bones from archaeological excavations will not always be analysed even today), that practice has influenced the conditions and opportunities for osteoarchaeology to develop as a scientific field in Finland.

In the late 1990s, just a few researchers were doing osteological analyses – but there were more materials to be analysed. At that time, Pirkko Ukkonen was writing her PhD dissertation on the history of Finnish glacial and postglacial fauna (Ukkonen 2001) and did not have time to continue doing osteological analyses for archaeologists. This situation was the reason why specialized osteology courses were organized for students of zoology, palaeontology and archaeology at the University of Helsinki. Courses were mainly held by Ukkonen from the early 2000s. I was one of Pirkko Ukkonen's first osteology students. In 1998, I had just graduated from geography at the University of Helsinki (with archaeology as the secondary discipline) but wanted to jump into the world of osteoarchaeology. First, I assisted Ukkonen in the osteology courses and later started to teach in them with Ukkonen or alone. The palaeontologist Suvi Viranta – today working as senior University lecturer of anatomy at the Department of Anatomy, University of Helsinki – also acted as teacher in those courses. The osteology courses meant that more and more archaeology students at the university of Helsinki became interested in

osteology and prepared their seminar works and theses based on archaeological bone assemblages from Finland and neighbouring countries.

Niklas Söderholm was an archaeology student who started to do osteological analyses as Ukkonen's student but later went to the University of Stockholm to study osteology and specialize in human osteology. After graduating in archaeology Söderholm specialized in forensics and made a career in the police forces.

Söderholm's master's thesis was about the anatomical human bone assemblage at the University of Helsinki. This was a collection of human remains, mostly skulls collected in the 1800s and 1900s, and stored at the University of Helsinki. The collections consisted of both prehistoric and historical human skeletal materials – approximately 1200 skulls and 400–500 boxes of postcranial elements – and photos and glass negatives (Söderholm 2002, Appendix 1). The human remains had various origins. Some were excavated in various parts in Helsinki during construction works, some were from late prehistoric burial sites, and some were from graves with various ethnic populations like Saami and Siberian groups. In 1995, the Saami ancestral remains were reburied in Inari, where they had originated from, and later the rest of the Saami remains were also deposited in the Siida Museum in Inari (Söderholm 2002, 4; Harlin 2008). The remaining Saami ancestors were reburied in Inari, Utsjoki and Nellim in the summer of 2022 (Valtioneuvoston tiedote 27 April 2022).

This collection formed an important basis for cranial and skeletal research at the University of Helsinki. Söderholm's task was to study, analyse and catalogue the remains. Earlier the collection had been intensively used by physical anthropologists, anatomists and physiologists. It was also used in some of the earliest osteological analyses of archaeological human remains. For example, Konrad Hällsten, professor in anatomy and physiology at the University of Helsinki studied some human remains from the Levänluhta Iron Age burial site in Isokyrö, Western Finland in 1892 (Hällsten & Thuneberg 1892) and the Tuukkala Iron Age cemetery in Mikkeli in 1893 (Hällsten 1893). Early researchers who worked with these collections also included Edward von

Weymarn, who published skulls found in Kaukola in 1881 (Weymarn 1881). Although some materials were from archaeological excavations, research questions were anatomical and anthropological, not archaeological (Söderholm 2002; Ruohonen 2012).

During the following decades several osteological master's theses were written in the discipline of archaeology at the University of Helsinki (e.g., Peltonen 2002; Söderholm 2002; Lahti 2004b; Salo 2005; Nurminen 2006; Deckwirth 2008; Seitsonen 2010; Kivikero 2011; Vakkari 2013; Maaranen 2016) and many of these scholars continued to a PhD as well (e.g., Salo 2016; Kivikero 2021; Nurminen 2021). Many of the osteologists working with materials at that time in Helsinki were self-learned, or they received private training from colleagues. Some people went to study osteology abroad, mostly in Stockholm (Salo, Lahti), in Lund (Mannermaa) or in Visby (Kivikero) in Sweden, or in the UK (Salo, Maaranen).

One of the students who learned osteology abroad was Eeva-Kristiina Lahti (today Nylander). She was in the osteoarchaeology field in 2001–2005 and completed a master's thesis in osteology at the University of Stockholm (Lahti 2004a) and archaeology at the University of Helsinki (Lahti 2004b). She felt that the field of osteology was not as respected in Finland as it is Sweden:

*'Perhaps most of all, because everyone was fascinated about the potential of the DNA analyses and that the osteology as a field was not well-respected in Finland, it was assumed that there would be no need for expertise. In addition, we were dependent of the Zoological Museum, because, for example, the National Board of Antiquities did not compensate for the use of reference materials in any way. The problem was the same as in Finnish archaeology in general that the potential of osteology was not properly understood, like, for example, in Sweden. Of course, they also have better preserved material.'* (Email 2 July 2023).

Nylander is not involved in osteology anymore but works in the repatriation of Saami artefacts (Nylander 2023).

Challenging prospects for the future have been the main reasons for osteologists to move to other work possibilities and leave osteology. After analysing bone materials for various archaeological actors in Finland, and perhaps writing a master's thesis on archaeological bone materials, many of these self-learned or academically trained osteologists started to prepare a PhD thesis or went to work in other fields. It was the natural consequence of work that otherwise had no horizons or continuity. After a couple of years doing osteological analyses for archaeologists, I decided to apply for grants and become a PhD researcher – as this was practically the only way to continue in the field of osteoarchaeology in the early 2000s.

The lack of an institutionalized osteoarchaeological unit or organization at the national level has hindered the development of the field. A positive development in Finland is that today both the University of Oulu (Professor Anna-Kaisa Salmi) and the University of Helsinki (me as Associate Professor) have osteoarchaeologists as professors. However, both professorships are titled professorships of archaeology, not osteoarchaeology. In comparison, Sweden has three professors in the field of osteoarchaeology (2023).

### **Osteoarchaeological research – The main outcomes**

What kind of information was provided by the osteological PhD theses in archaeology at the University of Helsinki? As the field started only in the 1960s–1970s, basic knowledge was needed. As mentioned above, the first thesis at the University of Helsinki to use osteoarchaeological materials was by Pirkko Ukkonen (2001). Ukkonen's seminal research drew a picture of the Finnish glacial and postglacial mammalian fauna. From an archaeological point of view, the main achievements were that a huge amount of bones from Stone Age archaeological sites were analysed and that a general overview of postglacial animal fauna was based on archaeological materials. Although Ukkonen's thesis did not make conclusions about prehistoric hunting habits, her work is still a foundation of faunal and environmental history for many archaeologists.

The next PhD thesis to use Finnish archaeological bone materials was my own study on birds and fowling in the circum-Baltic region (Mannermaa 2008a). I analysed all bird bones from the Stone and Bronze Ages in Finland, and I was able to identify species and taxa despite the fragmented state of the bones. A new understanding of fowling traditions in Finland and the Baltic Sea area was generated, but an even more important result in my thesis was the notion that birds had important roles in mortuary practices (Mannermaa 2008b).

The book *Jääkauden jälkeläiset. Suomen lintujen ja nisäkkäiden varhainen historia* (Ukkonen & Mannermaa 2017) was based on research by Pirkko Ukkonen and me. This book, published by the National Board of Antiquities, was very popular and the edition sold out quickly.

Most PhD researchers in archaeology at the University of Helsinki have focused on animal bones. So far, the only PhD thesis focusing on human osteology was written by Kati Salo (2016). She studied human skeletal materials from archaeological excavations in nine Iron Age and early historic sites in Southern Finland. A total of 555 skeletons were studied morphologically, with the focus on paleopathology. The PhD thesis deals with several disease categories and the novelties are mainly in seeing what pathological lesions manifested in the same individuals when the effects of age-at-death, sex and preservation of the bones and teeth were statistically considered. The interconnections between dental conditions and other diseases have been noted in the medical literature only recently, and therefore these kinds of research results should be studied further in both modern and past populations to gain more knowledge. Later, Salo and colleagues at the University of Helsinki published an article about human osteological finds from Stone Age burials in Finland (Ahola *et al.* 2016) and cremated human bones from the Bronze Age (Salo *et al.* 2022).

One more osteological thesis about Stone Age bone assemblages was published at the University of Helsinki, namely Katariina Nurminen's thesis about fish and fishing in Stone Age Finland (Nurminen 2021). Extensive assemblages of tiny, burnt fish bones from Stone Age sites were analysed. The thesis showed that fish-

ing was the most reliable source of daily food in Finland during the Stone Age. Fishing was mainly focused on the fish types, that can be trapped with fishing methods known in ethnographic literature. The identified species from various parts of the country are similar, suggesting rather homogeneous fishing patterns.

Sanna Seitsonen wrote her master's thesis on Karelian Stone Age sites (Seitsonen 2010) and published her results in a journal article (Seitsonen 2008). Seitsonen's study was the first systematic analysis of the large amount of burnt bone assemblages in the Karelian Isthmus. A total of fifteen bone assemblages dating to the Stone Age and Early Metal Period were analysed and interpreted. Seitsonen showed that seals (Ladoga ringed seal or Baltic Sea seal species) were the most commonly identified animal group in the Stone Age settlements. According to Seitsonen, subsistence in the whole area of the Karelian Isthmus and Ladoga Karelia seems to have been more or less concentrated on seal hunting. Seitsonen and colleagues later published a paper focusing on the Lake Ladoga area (Seitsonen *et al.* 2017).

The studies by Ukkonen, Mannermaa, Nurminen and Seitsonen are unique in the world, as it is uncommon that burnt bones from settlements are analysed, perhaps because they are thought to be potentially unreliable source of data. In Finland, the Karelian Isthmus, Arkangel'sk Oblast (Russia) and Norrland (Sweden), burnt bones are the only source of data from the Stone Age and thus cannot be ignored.

Hanna Kivikero published her thesis in 2020 about osteological materials and early literal sources from medieval and historical castles in Southern Finland and Åland (Kivikero 2020). This very thorough study was especially important, as it clearly showed that a much wider picture of the food economy can be achieved by investigating two different primary source materials from the same sites.

All these studies, as well as numerous other publications in osteoarchaeology show that osteology at the University of Helsinki or Finland overall is no longer just an auxiliary science of archaeology, but an important part of it. Osteological topics have been successful also in the grant competitions of the European Research

Council (ERC). The first and, so far, only Starting and Consolidator Grants of the ERC in the field of archaeology in Finland were awarded to osteoarchaeologists. Both projects study animals' osteological remains. Anna-Kaisa Salmi at the University of Oulu received the Starting Grant in 2017 for the project *Domestication in Action: Tracing Archaeological Markers of Human-Animal Interaction* (DOMACT, 2018–2023), and I was granted the Consolidator Grant in 2019 for the project *The Animals Make Identities: The Social Bioarchaeology of Late Mesolithic and Early Neolithic Cemeteries in North-East Europe* (AMI, 2020–2026).

### Collaboration between zoologists and archaeologists

How did the contacts between zoologists and archaeologists begin? One of the first archaeologists to order osteological analyses was Pirjo Rauhala (later Uino). She needed bones analysed for her master's thesis on Kvarnbacken (Andersby) Stone Age settlement in Liljendal (Rauhala 1977). Pirjo Uino remembers:

*'In the 1970s, when I was doing my master's degree on the Stone Age settlement of Kvarnbacken (Andersby) in Liljendal, whose excavations I had participated in 1973 as a drawer, I received an instruction from someone (Siiriäinen, Meinander or Edgren?) to request an osteological analysis of the waste fauna from the Bachelor of Sciences Mikael Fortelius. He had started to specialize in animal osteology and, as I understand it, he needed burnt bone practice material from the National Board of Antiquities. At least he did the analysis for me pro bono, or he had some funding of his own, but at least I didn't have to pay for that research. There was a total of 4368 burnt bone fragments in the excavation material of all years, of which Fortelius identified about 10%. I have published those results in my thesis in the chapter 'The waste fauna of Andersby Kvarnbacken'.* (Email 10 October 2021)

Collaborations between osteologists and archaeologists have always been good. Docent in archaeology Satu Koivisto started her collaboration with osteologists when she was a researcher at the

National Board of Antiquities in the mid-1990s. Regarding this, she explains:

*‘It’s been going well with everyone! There have also been surprises, but mostly positive ones, for example, when Pirkko (Ukkonen) found burnt Mesolithic human bones in the bone materials of Hommas in Vantaa! Pirkko also went through the materials from the previous year and found more people there. This significantly changed the direction of research and led to new interpretations.’* (Email 4 October 2021).

Pirjo Uino remembers her first encounter with an osteologist in the 1970s:

*‘At that time, he (Fortelius) was at ‘Elukka’ and came to visit the National Board of Antiquities at my request, where we agreed on the execution of the work. ‘Mikki’ then had long hair halfway down his back and, luckily, he didn’t seem scary at all. It was nice to get to know him.’* (Email 10 October 2021)

When archaeologists deliver bone material for analysis, they do not usually give any wishes or suggestions for osteologists. To questions about communicating with osteologists before analyses, Satu Koivisto answers:

*‘Not much, because I trusted the expertise of the analysts; I brought them the materials from my excavations. The instructions were mainly related to practice, for example presenting the results in a table or ordering the findings. Osteologists sometimes gave recommendations, for example, about which burned fragments were suitable for AMS dating, etc.’* (Email 4 October 2023)

One archaeologist who has collaborated a lot with osteoarchaeologists is Marianna Niukkanen, the Chief Intendant of the Archaeological Field Services at the Finnish Heritage Agency:

*‘Of course [I have given instructions to osteologists] to some extent, but in general I have trusted the author’s expertise. Guidance has sometimes been difficult, as I myself do not know the field or its methods very well, and there are no ‘quality guidelines’ for bone analyses.’* (Email 27 March 2023)

## Reference collections, osteology in the field and teaching osteoarchaeology

Practically all animal osteologists working in Helsinki have used the osteological collections at the Zoological Museum of the Finnish Museum of Natural History LUOMUS (of the University of Helsinki). Still in the 1980s the bone reference collection was lacking in domestic animals, and – osteologists needed to prepare skeletons by themselves. Sirpa Nummela, a zoologist who worked as osteologist for a short time in the late 1980s describes:

*‘The reference material consisted of the bones in the museum’s collections, and in addition there was reference material from sheep, goat and cattle, maybe horse, which before my time Stella (From) had obtained from a slaughterhouse and boiled clean in the taxidermy premises of the first floor of the museum. She applied this same cleaning procedure to some bird and fish material she had collected in nature, and additional reference material for fish was kindly lent to us by Lauri Koli, Professor of Ichthyology at the Finnish Museum of Natural History at that time.’* (Email 7 April 2023)

Osteological analyses were possible because the Zoological Museum let researchers use the reference collection and working spaces. Also, the personnel at the taxidermy section of the Zoological Museum has always helped osteoarchaeologists in many ways. Until the early 2000s the bone reference collection at the Zoological Museum was located on the fourth, uppermost floor (Figure 2a-b). It was a narrow, dusty room with beautiful, curved windows. As part of the large renovation of the zoological museum in 2004, the whole fourth floor of the exhibition hall was demolished, apart from some narrow circles left on the sides, to return the building to its original condition, and the so-called bone room and the bone collection were moved to the cellar, where they are still located. These bone collections are still the main reference material used in osteological analyses in Helsinki.

Osteologists were mainly focused on species identification of mammals, and birds and fish were sometimes left unidentified. This was partly due to the lack of proper fish and bird reference





Figure 2a-b. Before renovation the bone room of the Zoological Museum was located in the 4th floor, in the "attic". Many osteologists started their bone analyses there. The photos show Mikael Fortelius' work table in 1977. Photos: Mikael Fortelius.

collections (biologist Lauri Koli had gathered a fish collection that was used, but it was not large enough). The situation improved when the Zoological Museum began preparation of separate bird and fish bone collections (in the 2000s) for the uses of osteological analyses. Preparation of these collections was initiated by me when I needed a proper bird bone reference collection for my PhD thesis (Mannermaa 2008a) and Katariina Nurminen needed a proper fish bone reference collection for her PhD thesis (Nurminen 2021).

Most osteologists were hired only for analysing bone materials, not for field work. Satu Koivisto wanted to hire osteologists but there was no possibility:

*‘I would have liked to for a few sites, but unfortunately there was never the opportunity [=money] to hire an osteologist – I have called them during the excavations and asked for advice, preliminary determinations (human/animal bone?) or instructions regarding the excavation, lifting and handling of materials. Everyone has always been helpful.’* (Email 4 October 2021)

The situation has changed in the 2000s, as today it is more and more common to hire osteologists for excavations, especially if human bones are expected to be found. Marianna Niukkanen is constantly consulting osteologists:

*‘Yes, an osteologist has sometimes been involved in the project already during the fieldwork phase. In most cases, however, osteology has been consulted during the fieldwork phase, and it has only really become involved in the post-work phase. In some cases, bone analysis has already been done in the field.’* (Email 7 April 2023)

While in the earliest phases osteologists working in Helsinki were clearly focusing on the study of animals, it seems that today the majority of the osteoarchaeology students want to specialize in human osteology. Osteology is taught only occasionally at the University of Helsinki. The study of archaeological bones is a topic in one lecture in the basic course ‘Archaeological research materials’ and osteoarchaeology is a topic in one lecture in the basic course ‘Archaeological methods.’ I have given ani-

mal osteology courses since 2003. Human osteology courses were mainly taught by Kati Salo at the Open University (of the University of Helsinki). Human osteology has been a more popular study subject among archaeology students during the last ten years. The latest osteology courses were ‘In the end it’s all just bones - or isn’t it? Comparative osteology for archaeologists’ held in 2022 by two PhD students, Rebekka Eckelmann and Olga Batanina, together with me, and a ‘Bio-anthropology for archaeologists’ course held by Dr Tamás Szeniczey, Dr Tamás Hajdu, Dr Martin Trautmann and PhD student Olga Batanina (Figures 3 and 4).

What is the future of the osteoarchaeology at the University of Helsinki? Since 2022, the laboratory of archaeology at the University of Helsinki has had a separate room for osteological teaching and working. The room is still almost empty of bones, but the aim is to establish a bone reference collection that can be used for various analysis purposes (for example osteology courses, workshops and analyses of bone materials from training excavations).



Figure 3. Comparative bone course at the Archaeology laboratory of the University of Helsinki in 2022. Photo: Kristiina Mannermaa.



Figure 4. Bio-Anthropology for Archaeologists course in action at the Archaeological laboratory of the University of Helsinki in 2023. Photo: Kristiina Mannermaa.

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