

Globalization and tradition in Forest Sámi commemoration rituals

Textiles and animal skins in the 17th-century burial ground in Mukkala, eastern Lapland, Finland

TUIJA KIRKINEN¹, AKI ARPONEN² & INA VANDEN BERGHE³

¹University of Helsinki. Department of Cultures, Unioninkatu 34 (P.O. Box 3), FI-00014 University of Helsinki, Finland, tuija.kirkinen@helsinki.fi

²University of Turku. Faculty of Humanities, School of History, Culture and Arts Studies, Geotalo, Akatemiankatu 1, Archaeology, FI-20014 University of Turku, Finland, orava44@hotmail.com

³Royal Institute for Cultural Heritage (KIK-IRPA), Jubelpark 1, 1000 Brussels, Belgium, ina.vandenberghe@kikirpa.be

Abstract

The Mukkala burial ground consists of eight excavated inhumation burials that all date to the middle of the 17th century and 1–2 near-by shaman burials from the beginning of the century. The site was excavated by Jorma Leppäaho in the 1930s. Since its discovery, Mukkala is of importance as one of the few excavated Sámi burial grounds and the only one representing the later extinct Forest Sámi population in Finland.

The aim of this paper is to reveal the quality of the Forest Sámi culture of the Sompio Lapp village, when the cultural assimilation into the neighbouring populations was already under way. The paper concentrates on the organic material excavated in Mukkala, the burial ground of the Sompio Lapp village. First, we present the textiles which were made for everyday use by weaving, knitting, naalebinding (nål(e)binding, one needle knitting), and braiding. Second, we study the remains of animal skins, which were used for wrapping the deceased and for fur shoes and pouches. Finally, we recognize both the continuity of age-old circumpolar traditions, novelties in local production and dyeing of textiles, and the acquiring of commodities by trade.

Keywords: Forest Sámi, textiles, animal hair identification, 17th century

Introduction

The Mukkala burial ground is situated in eastern Lapland (Finland) in Savukoski which, in the 17th century, belonged to the Sompio Lapp village (Figure 1). In 1934, Jorma Leppäaho (1937) excavated this burial ground with its nearby open-air burial of a possible shaman. Based on the coin finds, he dated the burial ground to the 1650s and the potential shaman burial to the beginning of the 17th century. As the number of identified Sámi burials from the medieval and early-modern period is low (Storå 1971: 86, 116; Purhonen 1995; Svestad 2007), Mukkala is of importance among the few excavated sites.

The identity of those buried in Mukkala has been regarded as the so-called Forest Sámi, i.e., groups which lived in the boreal forest zone mainly surviving on hunting, fishing, and foraging. The term was used in the 16th to 18th centuries especially for the groups living in the modern Savukoski region (Itkonen 1948a:122; Kulonen et al. [eds] 2005: 124; Storå 1971: 36–60; cf. Hansen & Olsen 2006: 192–5). The colonization of the area gradually led to the assimilation of the Sámi into the groups of Finns and to the adaptation of peasant life. In addition, the local Kemi Sámi language assimilated into the Finnish language and disappeared by the end of the 19th century (Itkonen 1948a: 96–7, 116–7, 122).

In Mukkala, the burial customs and the grave goods reflect an early stage of the assimilation process. The emergence of Christian symbols like the iron burial crosses and a signet ring featuring the Crucifixion (Immonen 2015: 362, 373) has been interpreted as evidence of either the ongoing Christianization of the Sámi population (Itkonen 1948b: 350–1; Storå 1971: 94; Elo & Seppälä 2012:



Figure 1. The location of the Mukkala burial ground and the modern distribution of Sámi languages (from Kulonen et al. 2005), dark area. The first official parishes in Finnish Lapland, Kemi and Tornio, were established in the 14th century, the churches of Inari and Kemijärvi were built in the mid-17th century, and the Russian Orthodox monastery in Kandalaksha was built in the 16th century. Drawing: T. Kirkinen.

36), or the trade contacts with surrounding Christian groups (Svestad 2007: 48–9). The nearest and most obvious zone of contact was the area around Lake Kemijärvi, 90 kilometers south of Mukkala. The colonization of the area was begun in the late 16th century by Finnish peasants. The first church was built in Kemijärvi in 1647 and was used as a base from which the conversion of the Sámi in eastern Lapland was carried out (Itkonen 1948a: 64–7, 112). See Figure 1.

The 17th-century colonial activity in northern Fennoscandia was highly motivated by trade and by the policies of Sweden and Denmark–Norway, which tended to take control over resources, i.e., furs, fish, metals, and pearls. In eastern Lapland, the Sámi were also in contact with fur trading companies, which especially exported beaver skins to the Russian markets (Itkonen 1944; Storå 1971: 54–60; Hansen & Olsen 2006: 229–61; Nordin 2010: 58). The interest in northern furs was based not only on their high quality, but also

on the fact that, in the more southern areas, the local populations of game had already suffered from extensive overhunting (Pylkkänen 1956: 86–103; see also Kulonen et al. [eds] 2005: 382).

In the 17th century, the desire for fashionable status items and foreign consumer goods was on the rise. In Mukkala's find material, the influence of colonial world trade can be read in many ways, for example in the discovery of a clay tobacco pipe (SU5187:11, the Finno-Ugric collection at the National Museum of Finland) and in Christian motifs. According to historical sources, the items traded in the Sámi area consisted of fabrics, hemp, linen, yarn, rope, pelts, mittens, iron, kettles, knives, nails, spear heads, coins, bronze, and silver items, groceries and alcohol (Itkonen 1944, 1948a: 37, 40, 43). Many of these items, especially metal artefacts like knives, silver jewellery, and coffin nails exist among the finds in Mukkala. Most interestingly, Mukkala's deceased were accompanied by a versatile textile and skin material, i.e., by fabrics, accessories made by knitting and naalebinding, ribbons, fur and textile pouches, Sámi fur shoes and animal skins used for wrapping (see Leppäaho 1937).

In this paper, we present an analysis of the textile and skin finds from Mukkala. We aim to produce new knowledge about the ways in which cloth-type materials reflect the 17th-century Forest Sámi material culture at the intersection of the traditional circumpolar way of life and the pre-modern, colonial world. Our focus is on the elements traditionally regarded as Sámi, i.e., Sámi fur shoes, ribbons, and the skins used for wrapping, as well as the materials used for traditional dyeing. Although the study material is fragmentary by nature and, e.g., all skin items were not salvaged during the excavation, we regard the existing material as sufficient for our study.

Mukkala burial ground and open-air burial(s)

The Mukkala site, named after the Mukkala farmstead, is situated near the Luirojoki River in Savukoski parish, eastern Lapland (Figure 1). The site (Figure 2) was discovered in 1931 when a local forest officer sent an assemblage of items to the National Museum of Finland. The finds (SU5125), among them bronze rings, coins used as pendants, finger rings, and arrow heads were found on the chest of a skeleton, covered only by a thin layer of moss. Most of all the bronze rings and finger rings have been regarded as the pointers of a Sámi drum. Consequently, the find has been interpreted as an open-air Sámi shaman burial, accompanied with a “hoard” (Leppäaho 1937; for shaman burials see Kopisto 1971; Harjula 2006; Piha 2011: 47–51; Purhonen 1995). Later on, Christian Carpelan (1964) surveyed the site in the 1960s and heard from the locals that another open-air burial was found at Mukkala at the end of the 1930s. Unfortunately, the finds of that burial, i.e., pieces of copper plate and a metal item, were discarded.

The Mukkala burial ground is situated about 50 meters ESE from the shaman burial. It was partly destroyed by ditch digging and farming, as human bones were reported to have been found there through the years (Leppäaho 1937; Carpelan 1964; Elo & Seppälä 2012: 36). In 1934, Jorma Leppäaho excavated eight graves there, i.e., four or five male, two or three female, and one child burial. Most probably, this was only part of the total number of graves at the burial ground; in the 1960s, C. Carpelan (1964) recovered traces of unexcavated and partly destroyed burials, some of which were threatened by modern land use.



Figure 2. The Mukkala site in the 1930s. Photo: J. Leppäaho, National Museum of Finland.

The excavated graves were oriented toward N-S, NE-SW or NW-SE, and only one of them (grave V) presented the tentatively Christian orientation of E-W. The graves were 40–80 cm in depth. In six of them the deceased was buried in a coffin or a coffin-like wooden structure, three of which were sparsely joint with nails (see also Storå 1971: 174). Two bodies, a child (grave VI) and a female (grave IV; see Figure 3), were only wrapped in a skin. Additionally, graves II, III, and V were marked with iron burial crosses. The grave goods were relatively few and consisted mainly of fire steels, knives, finger rings, and pouches (in graves III, IV, and VIII). The male burial in grave V was interpreted as a shaman burial as its find material correlates well with the one found in 1931. In graves I, II, VI, and VII no personal items were found (Leppäaho 1937).

Material and methods

Textiles

Textile accessories and their fragments were preserved in the Mukkala graves. Most of them have

never been cleaned, which restricted their handling and documenting. The most remarkable accessories, the woolen ribbons from grave I, are still wrapped around the shafts of the fur shoes (SU5187:4a and SU5187:4b, Figure 4). Additionally, mineralized traces of textiles have remained on surfaces of the iron grave goods. The textiles and pseudomorphs were examined with a stereomicroscope and digital photo enlargements in order to document the direction of twist and ply of the yarns and the thread count. The fiber material of the braids was analysis with a transmitted light microscope.

Two samples were taken from the ribbons (SU5187:4) in the grave I and sent to the textile laboratory of KIK-IRPA, Brussels, Belgium for dye analysis. The investigation of organic dye compounds has been performed with high performance liquid chromatography and photodiode array detection. Prior to this, dye extraction was obtained in a strong acidic environment using a mixture of 37% hydrochloric acid, methanol and water with purification of the extracts with ethyl acetate. Secondly also a milder acidic method

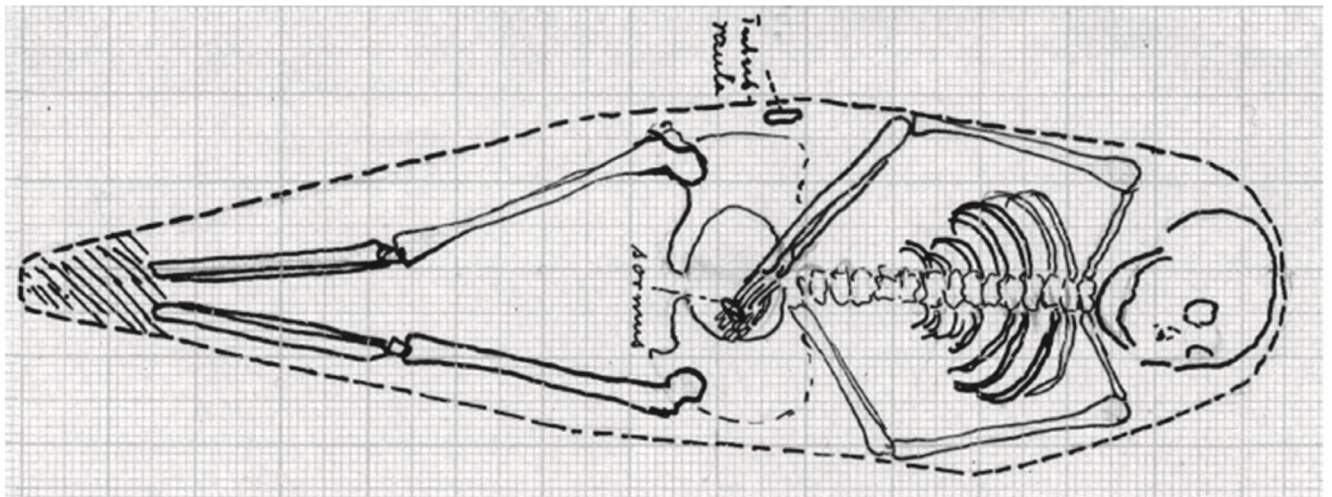


Figure 3. The female in grave IV was wrapped in an animal skin and furnished with 1) fur shoes, 2) a fire steel, a knife, and a 3) finger ring. Photo and drawing: J. Leppäaho, National Museum of Finland.

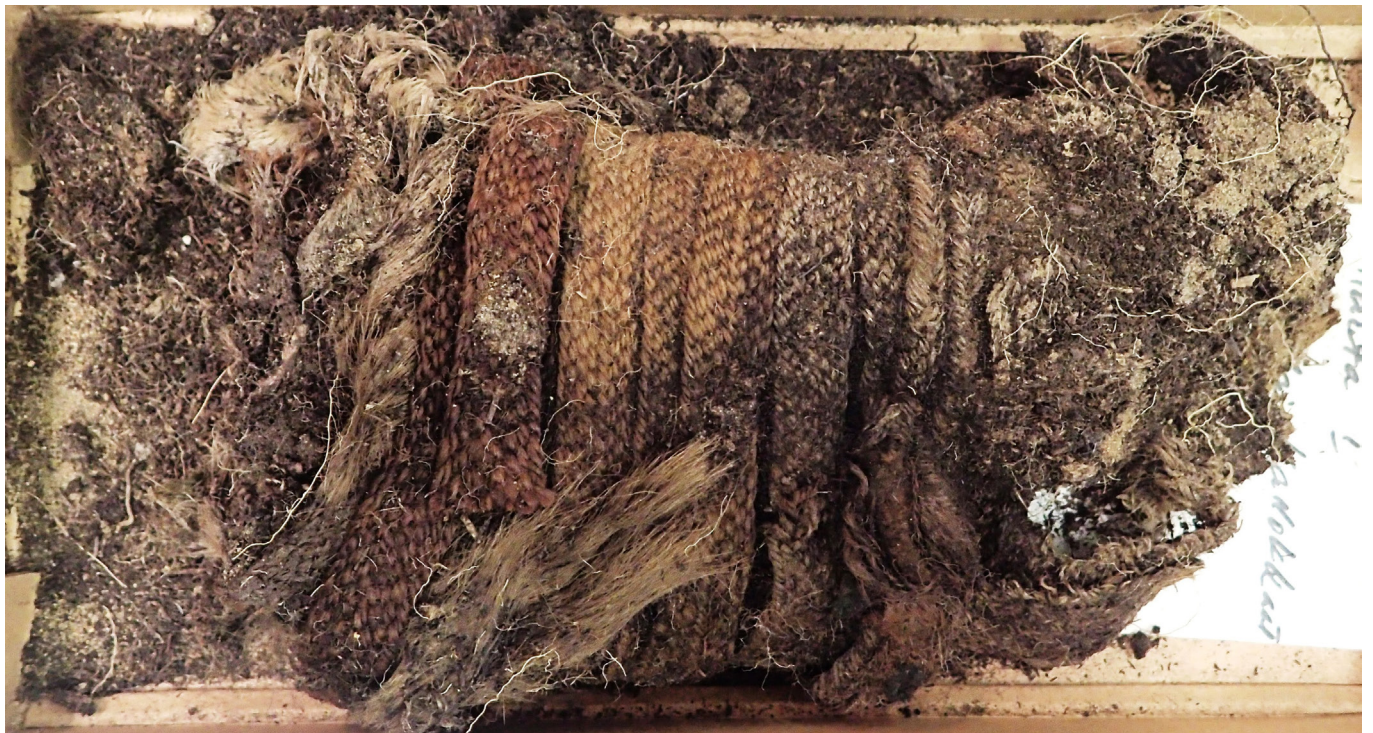


Figure 4. The three colored ribbons in grave I are still wrapped around the shafts of the fur shoes. The combined size of the fur shoe and ribbon ensemble is 195 x 105 x 40 mm (SU5187:4a) and 220 x 100 x 55 mm (SU5187:4b). Photo: A. Arponen.

was followed using a 2.1M oxalic acid, acetone, methanol and water mixture, all according to earlier described protocols by Vanden Berghe (Vanden Berghe et al. 2009). Scanning electron microscopy with energy dispersive X-ray detection (Zeiss EVO 150 with detector from Oxford Instruments) was used further on to identify the presence of possible inorganic substances related to the red coloration. For this, the conduction of the samples was first improved by a thin carbon layer coating.

Animal skins and furs

Animal skins have been used in the Mukkala graves both for wrapping the deceased and for fur shoes and pouches. The items were relatively well preserved, but from the wrappings only loose hairs were left for the study. The remains of skins were identified by species through the morphological study of the hairs.

Each investigated sample consisted of 4–10 hairs or hair fragments. As a result, a total of 18 samples were prepared for optical microscopic examination by mounting them in Entellan Neo after Greaves & Saville (1995: 7). Additionally, the scale structures were studied by preparing longitudinal negative casts with transparent nail polish (after Kirk et al. 1949; Tridico et al. 2014: 3). The cross sections of the fibers were made after Greaves & Saville (1995: 39–40). The research material is presented in Appendix 1. The key features of the identification process were the diameter, length, and cross section of the hair, the shape of the root section, the structure of the medulla and cuticular scales, the width of the cortex, the presence of pigment granules, and the overall coloring of the hair (See Goodway 1987). The identification of fibers was based on the identification keys in Appleyard (1978), Rast-Eicher (2016) and Teerink (2003). Additionally, the reference material collected at

the Finnish Museum of Natural History, University of Helsinki, was vital for the identification.

Also, the animal-skin string accompanied by a bronze chain (SU5187:42) in the shaman's grave (grave V) was studied but it did not contain any morphological features for identification.

Results

Ribbons

The most remarkable textiles in the Mukkala assemblage is the pair of woolen ribbons in grave I. They are wrapped approximately eight times around the shaft of the fur shoes (SU5187:4a and SU5187:4b). The length of the nearly identical ribbons is approximately two meters each. They were made by way of sewing together three stumps of braids one after another. The width of the braids is 12–14 mm and they are of three colors, i.e., brownish red, brownish yellow, and white. In both ribbons, the brownish-yellow braid is in the middle. The z-twisted yarns have been woven into braids by finger loop braiding, i.e., without the help of any equipment. There have probably been eight loops in each of the braids (Figure 5). At the brownish-red end of the ribbon SU5187:4a, there is a knot and, at the white end, the braid is divided into two plaited tails, which are approximately 5 mm wide. Near the point of division, the flat part of the braid is decorated by sewing red and blue squares and circles of woolen cloth onto it. Regarding the ribbon SU5187:4b, the brownish-red end shifts from being flat to that of a semi-circle that is knotted.

The dye analyses of the dark red and brownish orange braid fibers (Figure 6) result twice in the detection of degradation compounds of tannins,

such as caffeic, protocatechuic, gallic, ellagic and ferrulic acid and other colorless derivatives. Other detected constituents were benzoic acid derivatives (paramethoxy and parahydroxy benzoic acids) indicative for fiber degradation, as well as an unknown flavonoid constituent, more likely referring to contamination from the burial ground than related to dyeing. Element analysis further on resulted in the detection of some iron and a high amount of sulphur on both sample surfaces, which refers to the presence of iron sulphides or sulphates on the fibers rather than to the use of a red inorganic pigment.

Textiles made by knitting and naalebinding

The catalogue number SU5187:4b includes a fragment of knitted sock and in the same grave (grave I) also other fragments of knitted textile (SU5187:5, Figure 6) were preserved. Their oblong shape points toward the shaft of a sock. In grave V (the shaman's grave) some fragments of a textile made by naalebinding (SU5187:50, Figure 7) were found. They are probably parts of a mitten, but possibility of a hat cannot be ruled out. The yarns of the textiles mentioned in this connection are s-twisted and undyed. The yellowish or brownish color is due to the burial conditions.

A piece of fabric and pseudomorphs: traces of clothes and accessories

In the graves with iron grave goods there are mineralized fabrics, pseudomorphs, indicating the presence of clothes and accessories (Figure 8). There are 11–19 z-twisted yarns / cm in the pseudomorphs of the plain weave fabrics. There is no remarkable difference in the number of ends and picks / cm. Only one tiny piece of cloth (SU5187:15) has been preserved as non-mineralized. The undyed plain weave fabric with z-twisted yarns is in contact with a piece of fur

found in grave III. It was situated next to the shoulder of the deceased.

Fur shoes

According to Leppäaho, the remains of fur shoes were observed in all graves (e.g. see Figure 3), although items themselves (SU5187:4, :4a and :4b, possibly also :5) were archived only from grave I in which the shoes were tied up with ribbons (Figure 4). Moreover, although Leppäaho wrote in the catalogue that the shoes were used with the hairy side inside, it is evident that the hairy side was outside.

The analyzed guard hairs had a broad lattice medulla with mosaic-like cuticular scales, which are typical features of *Cervidae* sp. hairs (Appleyard 1978; Rast-Eicher 2016: 228–9, 235–6). Notably, the hairs had a clear cortex and a straight root section that separate them from the body hairs of an elk or a reindeer. Instead, they have the best match with reference samples collected from elk's feet and head (Appendix 1).

Skins for wrapping the deceased

Animal skins were used in Mukkala for wrapping or as shrouds in five burials, i.e., in graves III, IV (Figure 3), V, VI, and VIII. Leppäaho collected hair samples (SU5187:14, :15, :50, :51/:53, :55) from three graves. The hairs were identified as reindeer (*Rangifer tarandus*; graves V and VIII) and brown bear (*Ursus arctos*; grave III) hairs (Appendix 1).

Pouches

The remains of a pouch with fire-making equipment (SU5187:12, :13, :14) were found in grave III. The accompanied hairs were identified as *Mustelidae* sp. or red fox (*Vulpes vulpes*) fur (Appendix 1). The skin pouch from grave V (SU5187:45) was unfortunately not available



Figure 5. The woolen braids have been made by means of finger loop braiding. For the ribbons, the stubs of braids have been sewn together one after another. The width of the braids is 12–14 mm. Photo: A. Arponen.



Figure 6. Fragments of a knitted textile, most probably a shaft of a sock. Grave I. Photo: A. Arponen

Figure 7. Fragments of a textile, probably a mitten, made by naalebinding. Grave V. Photo: A. Arponen.



Figure 8. A close view of a mineralized fabric, a pseudomorph, on the surface of a corroded fire steel. Next to the pseudomorph two pieces of flint and quartzite. Grave V. Photo: A. Arponen.

for the study. On the mineralized textile and fur layers on the surface of the iron fire-making equipment, it can be hypothesized that the pouch (SU5187:51) from grave VIII was made of woven textile. Moreover, the deer hairs which were on the top of the corrosion crust originated either from clothing or from the skin used for wrapping.

Discussion

Ethnographic parallels for cloth-type material

In Mukkala, the scarcity of find material, as well as the excavation and documentation method, do not provide much room for making specific conclusions about the way the dead were clothed. Therefore, we have applied ethnographical comparisons in presenting hypotheses about the way the deceased were equipped.

The piece of a plain weave cloth and pseudomorphs in some of the burials indicate the use of clothes and / or accessories. The metal items do not provide any additional information about the clothes, as there were no dress fasteners like buttons, hooks, or brooches. In the possible shaman grave (grave V), a buckle (SU5187:27) possibly from a belt and two brooch fragments (SU5187:25, 26) were found, but they have been interpreted as pointers or remains of a Sámi drum in previous research literature (Leppäaho 1937; Itkonen 1948b: 350; Purhonen 1995).

According to ethnographical sources, a deceased Sámi was clothed either in his/her everyday clothes, best clothes, wedding clothes or in garments he/she was wearing at the time of death. Sometimes a naked corpse was wrapped in linen cloths, and sometimes the clothes were collected on top of the grave or discarded

(Itkonen 1948b: 352–3, 355; Manker 1961: 189–90; Storå 1971: 213–4, 225). Hence, it is possible that the pseudomorphs indicate the use of shirts (e.g., Itkonen 1948a: 352) or wrappings made of plant fibers. Moreover, the piling of textiles on the grave might explain the concentration of finds on the chest of the deceased in the open-air shaman burial. In this case the metal rings, coins, and bear teeth might refer to ornaments that were bound to clothes (Ervasti 1956: 15; Schefferus 1956: 234, 237–9).

In the ethnographical sources, the importance of equipping the deceased with mittens and especially with socks and shoes for the after-life journey has been pointed out (Harva 1948: 489; Itkonen 1948b: 353, 355; Manker 1961: 189; Storå 1971: 213). In Mukkala, the remains of socks and a possible mitten as well as fur shoes verify this custom. In grave I, the fur for the shoes originated from elk leg or head skin. According to N. Storå (1971: 213) and Itkonen (1948a: 323–6), fur shoes in eastern Lapland were made of the elk-leg skins, not only of reindeer-leg or -head skins.

In the research literature, the wrapping of bodies in reindeer skins or in birch bark has been connected closely to Sámi ethnicity, as these materials have been found in the excavated Sámi burial grounds and reported in historical and ethnographical sources (Waronen 1898: 64–5; Itkonen 1948a: 350; Manker 1961: 176–9, 190–2; Storå 1971: 87, 92, 95–6, 106; Zachrisson 1997; DuBois 1999: 71; Svestad 2007; 2011).

In Mukkala, the remains of reindeer or bear hairs, which were discovered from five of the eight burials have been interpreted as remains of wrappings or hides with which the coffin was lined. No remains of birch bark were reported from the graves.

However, the use of deer and bear skins for wrapping the dead cannot be identified solely as a Sámi habit. Instead, it was a widespread and long-lasting northern tradition, the practice of which continued from the Mesolithic Stone Age up until the 19th century (Waronen 1898: 65; Harva 1933: 206, 209; Osgood 1936/1970:145; Itkonen 1948b: 353–4; Storå 1971: 92–3, 95; Albrethsen & Petersen 1975; Albrethsen et al. 1976; Larsson 1988a; 1988b; Petersen et al. 1993; Petersen & Nielsen 1993; Pritzker 2000; Nilsson Stutz 2006: 218, 231–2; Liesowska 2015; Jonuks 2016). Most interesting were the wrapping of bodies in reindeer and elk skins, birch bark, and occasionally in cattle and bear skins. This was a common phenomenon also in the southern Finnish Late Iron Age and medieval period inhumation burials (Kirkinen 2015).

Globalization in action

The acquiring of cloth-type materials in the 17th-century Sompio Lapp village was a multifaceted act, which is documented in tax records and historical sources. In general, the livelihood of the local Forest Sámi people required annual migration from one place to another, which did not allow raising sheep or growing plants in order to acquire fiber material for *fabrics* (Itkonen 1948b: 183–4). As a result, wool and plant fibers (especially hemp and linen) were obtained as yarns or as cloths through trade. Merchants traveling from one Lapp village to another exchanged them with furs, the day's catch, and other produce of nature (Itkonen 1944: 12–3 note 4). In the beginning of the 17th century, Sompio was also visited by tax collectors representing the sovereigns of Sweden, Denmark–Norway, and Russia (Itkonen 1944: 34, 36, 91). Along with the merchants and tax collectors, quality fabrics reached the remote areas of northern Scandinavia

including Sompio. From the beginning of the 16th century, a versatile collection of Dutch, Flemish, Silesian, Bohemian, and English, and later also Russian and Swedish fabrics were traded among the Sámi of Lapland (Itkonen 1944: 11 note 1, 19). Peasants and Sea Sámi, whose more sedentary life allowed sheep raising and weaving with a loom, could offer coarser cloths and accessories (for the keeping of sheep, see Itkonen 1948b: 189, note 8).

Besides imported items, there was evidence of local textile production at Mukkala. *The ribbons* which were found from grave I represent textiles that were manufactured and sold by the Sámi at the latest in the early 17th century (Itkonen 1944: 114). The Sámi have traditionally used ribbons to fasten coats, dresses and fur shoes (Itkonen 1948a: 358–61). Of the many techniques to manufacture ribbons, even the most advanced one of weaving with rigid heddles, was adopted by the Sámi in the 17th century (Gjessing 1938: 50; Itkonen 1944: 114; Schefferus 1956: 286–7; Løvlid 2010: 15–8).

Based on the finds, the 17th-century Sompio Sámi knew two ways of manufacturing ribbons. The bone tablets found at their dwelling site in Juikenttä, Sodankylä indicate tablet weaving (Carpelan 1974: 59). With tablets, it would have been possible to manufacture long colorful bands with patterns. The ribbons in Mukkala grave I, however, were made by sewing together stumps of monochrome unpatterned braids made by the finger-loop technique. The Mukkala ribbons seem to be almost unique in the Sámi area. In the beginning of the 20th century, a couple of unpatterned ribbons (SU4904:7) from the Skolt Sámi area were deposited in the collection of the National Museum of Finland. In general, the Skolt Sámi have favored finger weaving in ribbon manufacturing, but these ribbons are made by

using finger-loop braiding. Do these ribbons represent a retreating braiding technique in the Skolt Sámi – Sompio Lapp village area? Does the technique indicate a connection between the two areas? The material is too limited to answer the question definitively, but it has been hypothesized that part of the population in Savukoski parish has spoken the Skolt Sámi language¹ (Sammallahti 2015: 56).

In the literature depicting the way of life of the Sámi in the 18th, 19th, and early 20th century the plant species used in textile dyeing and tanning have been mentioned with varying accuracy (see, for instance, Fellman 1906; Sjögren 1828; Itkonen 1948a; Leem 1975; Linné 1971, 1977, 1986, 1991; Arponen 1998). As sources of yellow dye *Diphasiastrum* ssp. (species of clubmoss), flowers of *Galium verum* and leaves of *Betula* ssp. are mentioned. With roots of *Galium* ssp. and *Potentilla erecta* red and with *Parmelia saxatilis* (lichen) more brownish red was obtained. Bark of *Alnus* ssp. gave brown and black colors. Other plant species mentioned without indication of the obtained color are *Calluna vulgaris*, *Xanthoria candelaria* (lichen), *Galium boreale* (flowers), *Juniperus communis* (ruffles), *Rumex acetosa* (roots) and *Arctostaphylos uva-ursi* (twigs).

The Sámi used three wood species for tanning. They are *Salix* ssp., *Alnus* ssp. and *Betula* ssp. In different areas different species were favored. Additionally, the type of leather to be manufactured required a particular species of wood. The brown color of sisna leather could be changed into red by dyeing it with *Alnus* ssp. bark (Itkonen 1948a: 315–9).

The tannin related molecules detected in the red and the brownish–yellow braid yarns in the

absence of any other organic red mordant dye or any inorganic red pigment, suggests the use of tannins (Cardon 2007: 409). Although a wide range of local and non–local plants exist which are rich in tannin, this could confirm the use of *Potentilla erecta*, eventually in combination with other tannin source(s). The fact that much more of these molecules were found in the red compared to the brownish–yellow fibers, might explain the difference in shade between the two. Mordanting and/or dyeing of textiles with tannins is a very old practice in northern Europe. Earliest evidence goes back to the Scandinavian Iron Age (Walton Rogers 1988; Vanden Berghe et al. 2009) and tannin, particularly in yarns with red shade, was recently encountered in textiles from a Danish first century AD grave (Vanden Berghe et al., forthcoming).

The knitted and naalebanded textiles from grave I most probably indicate local peasant production. Knitting and naalebinding are both techniques, which were used to fulfill domestic needs, and the skill was passed from mother to daughter and was little affected by fashion (Crowfoot et al. 2006: 72–5). In the 17th century, Sámis bought woolen mittens from peasants and merchants to be worn inside fur mittens (Itkonen 1944: 12–3, 43; 1948a: 358). It is thus no surprise that there was a fragment of a mitten made by the naalebinding method in a Mukkala grave.

Knitting is a fairly new innovation, which spread in the 15th and 16th centuries throughout Europe (Hoffman 1967: 425–8). One of the earliest examples of knitting in Northern Europe is a mitten fragment found in Jõuga, Estonia, and it is dated to the end of the 13th or the beginning of the 14th century (Peets 1987: 108). However, one would not expect to find socks in a 17th–

century context like Mukkala, because the Sámis have had a strong tradition of using hay in their fur shoes. There was plenty of suitable hay to be gathered and prepared by Sámi women and, at least in the 19th century, it was available by trade, too (Itkonen 1944: 52, 88, 124; 1948a: 372–6). In general, Sámi people replaced shoe hay with woolen socks only at the end of the 19th century (Itkonen 1948a: 357). Socks were neither mentioned as a merchandise or as a good to pay taxes with; this indicates that they would have been made for domestic use only. For the Sompio Sámis the most obvious place to obtain socks was around Lake Kemijärvi. As the annual migration of the Sompio Sámis included fishing in Lake Kemijärvi they were regularly in contact with the Finnish peasants who had begun to populate the area in the beginning of the 17th century (Itkonen 1948a: 112–3).

Was it only socks that moved from Lake Kemijärvi to Sompio? Shoe hay was a free and practical solution for insulating feet against both cold and heat. Woolen socks were no better than hay and it was hardly a question of fashion either (see also Manker 1961: 189). Most probably, some Finnish peasant daughters were married to Sompio Sámi men and the women with their knitting skills —combined perhaps with their ignorance as to how to use shoe hay — caused a considerably early replacement of hay with socks in the Sámi community. Also, the Sompio women of Finnish origin may have been responsible for the possible mitten made by naalebining; moreover, the weaving tablets found in Juikenttä were perhaps left behind by them, too. It is probable that Sámi men were required to have some knowledge of Christianity before they could be married to Finnish peasant daughters, and this superficial knowledge of Christianity is reflected in some of the grave goods in Mukkala.

Conclusions

The finds of the Mukkala burial ground represent a Forest Sámi culture that later became extinct. The burial customs and grave goods reflect the many temporal layers of a mid-17th-century Sámi culture. Due to the remote living area, the Sompio Sámi population had preserved some of the pre-Christian burial customs, like the wrapping of the deceased in skin or fur. These burial customs, however, do not belong exclusively to the Sámi tradition, as they were known at large by hunting populations in northern Eurasia.

Remoteness, however, did not prevent the Sompio Sámi from contacting neighboring peoples and from obtaining goods from them. Yarns, fabrics, and accessories were acquired by trade and, as such, these represented a foreign material impact on the clothing. However, choosing types and colors of the fabrics, sewing them into a desired pattern and connecting accessories to them were the cornerstones in creating the Sámi tradition. Ribbons may have been the only textile manufactured from yarns to a ready-made product by the Sompio Sámi and even here the possibility of exchange with other Sámi peoples cannot be excluded. As ribbon making did not necessarily require any equipment, it is no wonder it began to flourish among the Sámi at an early stage.

Knitted socks and possibly the accessories made by naalebining were not obtained via trade. They refer, rather, to a personal connection to the manufacturer. In the Sompio Lapp Village, socks seem to have replaced shoe hay, a traditional method of insulation, at an exceptionally early stage. This may indicate intermarriages between

Sompio Sámi men and the daughters of the Finnish peasants living near Lake Kemijärvi. In support of this hypothesis, intermarriages in Kemijärvi parish are mentioned in the earliest surviving records at the very beginning of the 18th century (Rytkönen 1990: 88).

Acknowledgements

We are grateful to Pia Klaavu, the Finnish Heritage Agency, for her great help in sampling the animal hairs for this research. We also thank the personnel of Orimattila, National Museum of Finland, for their kind help in the study of the find material. The fibers were identified via optical microscope at the University of Helsinki, Dept. of Archaeology. The research was supported by the Academy of Finland (*Nature in Arts, Culture and History: Temporal Sedimentations of Landscape and the Diversity of Nature project, 1278008*).

Endnote

1) The connection between these two neighboring Sámi populations, the Forest Sámi and the Skolt Sámi, should be studied in more detail in the future. They shared similarities not only in their material culture but also in their livelihood, as they both lived mainly on hunting and fishing and put relatively little weight on reindeer herding (Kortessalmi 2007: 280, 283). As potential evidence for contacts between the two populations, reindeers were documented to roam naturally between these two areas, which also obliged the Savukoski–Sompio herders to follow their animals into the Skolt area (Kortessalmi 2007: 286–7).

References

- Albrethsen, S. E. & Petersen, E. B. 1975. Jægerfolkets grave. *Skalk* 5: 3–10.
- Albrethsen, S. E., Petersen, E.B. & Jørgensen, J.B. 1976. De levede og døde...for 7000 år siden. In *Nationalmuseets Arbejdsmark* 1976: 5–23.
- Appleyard, H. M. 1978. *Guide to the Identification of Animal Fibres*. 2nd edition. Wira, Leeds.
- Arponen, A. 1998. Keltaista kanervasta, punaväriä ahomatarasta. Saamelaisen käyttämiä väriaineita 1700–1800-luvulla. *Raito* 1/98: 6–8.
- Cardon, D. 2007. *Natural Dyes. Sources, Tradition, Technology and Science*. Archetype Publications Ltd, London.
- Carpelan, C. 1964. Lappalaisperäisten muinaisjäännösten inventointi ja tutkimus Sompion Lapissa kesällä 1964. Unpublished report. The archives of the Finnish Heritage Agency, Helsinki.
- Carpelan, C. 1974. Kaapit 13–15. Sompio. In *Kemijoki 8000 näyttelyopas. Kemijoen alueen muinaisuutta 8000 vuoden ajalta arkeologisten tutkimusten valossa*: 57–63. The archives of the Finnish Heritage Agency, Helsinki.
- Crowfoot, E., Pritchard, F. & Staniland, K. 2006. *Textiles and Clothing c.1150–c.1450. vol. 4. Medieval finds from excavations in London*. Museum of London, London.
- DuBois, T. 1999. *Nordic Religions in the Viking Age*. University of Pennsylvania Press, Philadelphia.
- Elo, T. & Seppälä, S.-L. 2012. *Entistä Keminkylää. Savukosken kulttuuriympäristöohjelma. Suomen ympäristö 20*. Ympäristöministeriö, Helsinki.
- Ervast, J. 1956. *Descriptio Lapponiae Kiemensis eli Kemin–Lapin Kuvaus vuodelta 1737*. Kemin Kotiseutu- ja Museoyhdistys r.y., Kemi.
- Fellman, J. 1906. *Anteckningar under min vistelse i Lappmarken*. Tredje delen. Finska litteratursällskapet tryckeri, Helsingfors.
- Gjessing, G. 1938. Skoldehamndrakten. En senmiddelaldersk nordnorsk mannsdrakt. *Viking* 1938: 27–81 and Pl. VI–XI.
- Goodway, M. 1987. Fiber identification in practice. *Journal of the American Institute for Conservation* 26: 27–44.
- Greaves, P.H. & Saville, B.P. 1995. *Microscopy of Textile Fibres. Microscopy Handbooks* 32. Taylor & Francis, London & New York.
- Hansen, L.-I. & Olsen, B. 2006. *Samernas historia fram till 1750*. Liber AB, Stockholm.
- Harjula, R. 2006. Saamelaiset noitahaudat Suomessa. MA dissertation. Dept. of Archaeology, University of Oulu.
- Harva, U. 1933. *Altain suvun uskonto*. Werner Söderström Osakeyhtiö, Porvoo.

- Harva, U. 1948. *Suomalaisten muinaisusko*. Werner Söderström Osakeyhtiö, Porvoo.
- Hoffmann, M. 1967. Nålbinding. *Kulturhistoriskt lexikon för nordisk medeltid från vikingatid till reformationstid* Band XII: 425–8.
- Immonen, V. 2015. *Kirkkojen ja kartanoiden kätöistä*. Maahenki, Helsinki.
- Itkonen, T. I. 1944. Lapin verotus ja kauppa ennen vanhaan. *Suomen museo* L: 1–135.
- Itkonen, T. I. 1948a. *Suomen lappalaiset vuoteen 1945*, vol. 1. WSOY, Porvoo.
- Itkonen, T. I. 1948b. *Suomen lappalaiset vuoteen 1945*, vol. 2. WSOY, Porvoo.
- Jonuks, T. 2016 A Mesolithic Human Figurine from River Pärnu, South-West Estonia: A Century-Old Puzzle of Idols, Goddesses and Ancestral Symbols. *Estonian Journal of Archaeology* 20 (2): 111–27.
- Kirk, P.L., Magagnose, S. & Salisbury, D. 1949. Casting of Hairs – Its Technique and Application to Species and Personal Identification. *Journal of Criminal Law and Criminology* 40 (2): 236–41.
- Kirkinen, T. 2015. The role of wild animals in death rituals: furs and animal skins in the Late Iron Age inhumation burials in southeastern Fennoscandia. *Fennoscandia archaeologica* XXXII: 101–20.
- Kopisto, A. 1971. Kuusamon lappalaishauta. *Suomen Museo* 78: 64–72.
- Kortesalmi, J. J. 2007. Poronhoidon synty ja kehitys Suomessa. *Suomalaisen Kirjallisuuden Seuran Toimituksia* 1149. Suomalaisen Kirjallisuuden Seura, Helsinki.
- Kulonen, U.-M., Seurujärvi-Kari I. & Pulkkinen, R. (eds) 2005. *The Saami. A cultural encyclopaedia*. Suomalaisen Kirjallisuuden Seuran Toimituksia 925. Suomalaisen Kirjallisuuden Seura, Helsinki.
- Larsson, L. 1988a. Dödshus, djurkäkar och stenyxor. Några reflektioner kring senmesolitiskt gravskick. In K. Jennbert, E. Iregren & L. Larsson (eds) *Gravskick och gravdata: rapport från Arkeologidagarna*.
- Larsson, L. 1988b. *Ett fångstsmåhålle för 7000 år sedan. Boplatser och gravar i Skateholm*. Signum, Lund.
- Leem. K. 1975. *Beskrivelse over Finmarkens lapper 1767*. Rosenkilde og Bagger, København.
- Leppäaho, J. 1937. Savukosken Mukkalan lappalaismakinto. *Kotiseutu* 3–4: 134–144.
- Liesowska, A. 2015. Mummy of a child warrior from ‘lost medieval civilization’ unearthed near Arctic. *The Siberian Times* 17.06.2015.
- Linné, C. von 1971. *Flora Æconomica eller Hushållsnyttan af de i Sverige Wildt Växande Örtter*. *Suecica Rediviva* 18. Bokförlaget Rediviva, Stockholm.
- Linné, C. von 1977. *Flora Lapponica exhibens Plantas per Lapponiam crescentes*. *Suecica rediviva* 68. Bokförlaget Rediviva, Stockholm.
- Linné, C. von 1986. *Svensk flora. Flora svecica*. Bokförlaget Forum AB, Stockholm.
- Linné, C. von 1991. *Lapin kasveja*. *Suomalaisen Kirjallisuuden Seuran Toimituksia* 541. Suomalaisen Kirjallisuuden Seura, Helsinki.
- Løvlid, D. H. 2010. The Skjoldehamn find in the light of new knowledge. A discussion of the burial, the ethnic affiliation of the outfit, and the person’s gender and social status. <http://www.ceilingpress.com/Resources/SkjoldehamnFindInLightofNewKnowledge.pdf>.
- Manker, E. 1961. Lappmarksgravar. Dödsföreställningar och gravskick i lappmarkerna. *Acta Lapponica* XVII.
- Nilsson Stutz, L. 2006. Unwrapping the Dead. Searching for evidence of wrappings in the mortuary practices at Zvejnieki. In L. Larsson & I. Zagorska (eds), *Back to the Origin. New Research in the Mesolithic-Neolithic Zvejnieki cemetery and environment, northern Latvia*. *Acta archaeologica Lundensia Series* 8: 217–33. Almqvist & Wiksell International: Stockholm.
- Nordin, J. 2010. Det emblematiske silvret. Sverige in den Atlantiska världen vid 1600-talets mitt. In A. Lihammar & J. M. Nordin (eds), *Modernitetens materialitet. Arkeologiska perspektiv på det moderna samhällets framväxt. The Museum of National Antiquities Studies* 17: 47–70. Statens historiska museum, Stockholm.
- Osgood, C. [1936] 1970. *Contributions to the ethnography of the Kutchin*. Yale University of Publications in Anthropology 14. Human Relations Area Files Press, New Haven.
- Peets, J. 1987. Totenhandschuhe im Bestattungsbrauch der Esten und anderen Ostseefinnen. *Fennoscandia archaeologica* IV: 105–12.
- Petersen, E. B. & Nielsen, E.K. 1993. Grave, mennesker og hunde. In S. Hvass & B. Storgaard (eds), *Da klinger i muld...25 års arkeologi i Danmark*: 76–81. Aarhus Universitetsforlag, København.
- Petersen, E. B., Alexandersen, V. & Meiklejohn, C. 1993. Vedbæk, graven midt i byen. In *Nationalmuseets Arbejdsmark* 1993: 61–9.
- Piha, M. 2011. *Saamelaiden kirkkomaiden ulkopuoliset hautausmaat rautakaudelta 1950-luvulle. Tutkimushistorian ja -traditioiden vaikutus arkeologiseen hauta-aineistoon*. MA dissertation, Dept. of Archaeology, University of Turku.
- Pritzker, B. M. 2000. *A Native American Encyclopedia. History, Culture, and Peoples*. Oxford University Press, Oxford & New York.
- Purhonen, P. 1995. Shaman graves in northern Finland – an encounter of paganism with Christianization. In *Congressus octavus internationalis Fenno-Ugristarum, Jyväskylä 10.–15.8.1995 Pars VII: Litteratura, Archaeologica & anthropologica*: 362–7. Moderatores, Jyväskylä.
- Pylkkänen, R. 1956. *Säätyläispuku Suomessa vanhemmalla Vaasa-ajalla 1550–1620*. *Suomen*

Muinaismuistoyhdistyksen Aikakauskirja 55. Suomen Muinaismuistoyhdistys, Helsinki.

Rast-Eicher, A. 2016. *Fibres. Microscopy of Archaeological Textiles and Furs*. Archaeolingua, Budapest.

Rytkönen, R. 1990. *Kemijärven historia I. Noin vuoteen 1870*. Kemijärven kaupunki ja Kemijärven seurakunta, Kemijärvi.

Sammallahti, P. 2015. Saamelaisen asutushistorian vaiheista. Saamen maa ja saamen kieli. In P. Magga & E. Ojanlatva (eds), *Ealli Biras – elävä ympäristö*. Saamelainen kulttuuriympäristöohjelma. Saamelais-museosäätiön julkaisuja 9. Sámi Museum – Saamelaismuseosäätiö, Inari.

Schefferus, J. 1956. *Lappland. Acta Lapponica VIII*. Nordiska museet, Stockholm.

Sjögren, A. J. 1828. *Anteckningar om församlingarne i Kemi-Lappmark*. J. Simelii enka, Helsingfors.

Storå, N. 1971. *Burial customs of the Skolt Lapps*. FF communications 210. Suomalainen tiedeakatemia – Academia Scientiarum Fennica, Helsinki.

Svestad, A. 2007. ”Folk er vanligvis ikke særlig villige til å snakke om de døde”. Synspunkter på materialitet og samisk gravskikk. *Arkeologi i norr* 10: 41–76.

Svestad, A. 2011. The impact of materiality on Sámi burial customs and religious concepts. *Fennoscandia archaeologica* XXVIII: 39–56.

Teerink, B. J. 2003. *Hair of West-European Mammals: Atlas and Identification Key*. Cambridge University Press, Cambridge.

Tridico, S., Koch, S., Michaud, A., Thomson, G., Kirkbride, K. P. & Bunce, M. 2014. Interpreting biological degradative processes acting on mammalian hair in the living and the dead: which ones are taphonomic? *Proceedings of the Royal Society B* 281: 20141755. <http://dx.doi.org/10.1098/rspb.2014.1755>.

Vanden Berghe, I., Gleba, M. & Mannering, U. 2009. Towards the identification of dyestuffs in Early Iron Age Scandinavian peat bog textiles. *Journal of Archaeological Science* 36: 1910–1921.

Vanden Berghe, I., Mannering, U. & Bruselius-Scharff, A. Forthcoming. Dyestuff investigation of the Lønne Hede textiles.




Walton Rogers, P. 1988. Dyes and wools in Iron Age Textiles from Norway and Denmark. *Journal of Danish Archaeology* 7: 144–158.

Waronen, M. 1898. *Vainajainpalvelus muinaisilla suomalaisilla*. Suomalaisen Kirjallisuuden Seura, Helsinki.

Zachrisson, I. 1997. Svepta i näver. In I. Zachrisson, V. Alexandersen, M. Gollwitzer, E. Iregren, L.-K. Königsson, C.-H. Siven, N. Strade & J. Sundström (eds), *Möten i gränsland. Samer och germaner i Mellanskandinavien*: 53–60. Statens historiska museum, Stockholm.

Appendix

| | catalogue number (SU) | grave | function | identification | diagnostic fibre properties |
|---|--------------------------|-------|------------|---|--|
|  | 5187:4 | I | fur-shoes | <i>Alces alces</i> , hair from feet or head | The guard hairs are 1,5-2 cm long and 60-130 µm in diameter. The medulla is filled lattice type with round or polygon shaped cells. The cuticular scales are mosaic-like. Notably, the hairs have a clear cortex and a straight root section. The hairs have the best match with reference samples collected from elk's feet and head. |
|  | 5187:4a | I | fur-shoes | <i>Alces alces</i> , hair from feet or head | See above |
| As in Figs SU5187:4 and :4a | 5187:4b | I | fur-shoes | <i>Alces alces</i> , hair from feet or head | See above |
|  | 5187:5 | I | unknown | Cervidae | The guard hairs are about 2 cm long and 200-240 µm in diameter. The medulla is filled lattice type with round or polygon shaped cells. The cuticular scales are mosaic-like. |
|  | 5187:12 | III | fur-pouch? | Mustelidae/Vulpes | The hairs are 2-4 mm long. The guard hairs are about 25 µm (proximal part) and fine hairs 10-15 µm in diameter. Most of the hairs are fine hairs. Their medulla is cloisonné /amorphous and the medullary index is 0,7. The cuticular scales are in the proximal part petal-like with prominent scale margins. |
|  | 5187:13 | III | fur-pouch | Vulpes / Mustelidae | See above |
| As in Figs SU5187:12 and :13 | 5187:14 | III | fur pouch? | Vulpes / Mustelidae | See above |
|  | 5187:14 | III | wrapping? | <i>Ursus arctos</i> | The guard hairs are 3,5-7 cm long and the shaft is 70-90 µm in diameter. The cross-section is round. The medulla is narrow and unicellular with gaps. The cuticular scales cannot be observed. |
| As in Fig SU5187:14 | 5187:15 | III | wrapping? | <i>Ursus arctos</i> | See above |

| | | | | | |
|--|-------------|------|--------------------------------------|-------------------------------|---|
|  | 5187: 41/42 | V | skin item | indet. | |
| <p>As in Fig SU5187:5</p>  | 5187: 50 | V | wrapping | Cervidae | As in SU5187:5. The diameter of the guard hair is 150 µm. |
|  | 5187:51 | VIII | loose hair | Cervidae / <i>Alces alces</i> | As in SU5187:5. The diameter of the guard hair is 300-330 µm. On the base of the width of the hair it is tentatively identified as elk. |
| <p>As in Fig SU5187:51</p>  | 5187:53 | VIII | loose hair, presumably from wrapping | Cervidae | As in SU5187:5. The diameter of the guard hair is 110-260 µm. |
|  | 5187: 55 | VIII | wrapping | Cervidae | As in SU5187:5. The diameter of the guard hair is max 240 µm. The sample contains several wine-glass shaped root sections. |