TRASHED AND TREASURED

Fossils in archaeological contexts in prehistoric Scania

Terese Ljunggren

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Supervisor: Åsa Berggren

Department of Archaeology and Ancient History

Lund University

Thanks to

My mother for constant love and support

My supervisor for motivation and feedback

The staff at LUHM for welcoming and helping me

Coffee for always being there for me

Front image: Terese Ljunggren, 2019

Abstract

Humans have always been fascinated with and collected fossils, regardless of any pre-existing knowledge of their ancient origins. But, there is very little research on the subject, especially in Swedish archaeology. This thesis explores the relationship between people and fossils in prehistoric Scania through contextual analysis and the affordances of different fossilized organisms. What is revealed is a multifarious relationship with both continuity and changes throughout prehistory. The little research that has been published on the subject is expanded upon, and it is determined that fossils have held a place in the material cultures, practices and worldviews of people in the region from the Mesolithic to the Viking Age and beyond.

Keywords: Fossils, prehistory, Scania, contextual archaeology, affordance.

Abbreviation guide

Chronology

BA: Bronze Age

EBA: Early Bronze Age

EIA: Early Iron Age

EN: Early Neolithic

LBA: Late Bronze Age

LIA: Late Iron Age

LN: Late Neolithic

Meso: Mesolithic

MN: Middle Neolithic

Neo: Neolithic

PRIA: Pre Roman Iron Age

RIA: Roman Iron Age

VA: Viking Age

VP: Vendel Period

Fossils

Be: Belemnite

Bi: Bivalve

Co: Coral

Su: Sea urchin

Un: Unidentified/undefined

Table of Contents

> Man, always curious and inquisitive and ever desirous of adding to his useful knowledge; among other sources of amusement and instruction, is naturally led to contemplate and to enquire into the work of nature.
>
> - Linnaeus, *Systema Naturae* (1735: preface, transl. by McNamara, 2011:10)

> When, a few million years ago, someone first picked up a rock and belted the living daylights out of some poor unsuspecting rat, humans' acquisition of natural objects began.
>
> - Kenneth McNamara, *The Star-Crossed Stone* (2011:27)

Introduction

A long fascination

A fascination with fossils is not strange in today's society, and it has been claimed to be perhaps the most universal interest in the world (Glørstad *et al*., 2004:95). We find it many avenues: The dramatic displays of dinosaurs in museums; fossil-rich locations listed as tourist destinations, and school trips arranged to visit them; news stories when new or unusual specimens have been found; groups on Facebook where people share their personal fossil collections and how they acquired them. But one thing that people of today might not have reflected over – I know I certainly hadn't until pretty recently, which is part of the reason behind this study – is the incredibly long history this fascination has. As long as there have been humans – and maybe even before that – they have been attracted to the peculiarly shaped or patterned pieces of mineral that are fossils. Following are a few examples to highlight the variety of fossils, and the archaeological contexts they have been found in.

In France and England the naturally perforated specimens of fossilised *Porosphaera globularis*, a Cretaceous sponge, have been collected and worn as beads possibly from as far back as the Acheulean, 1.67 – 0.13 million years ago (Bednarik, 2005:539ff). While there have been some back and forth regarding these oldest instances of *Porosphaera* beads in archaeology, there are undisputed finds from later periods. Near Gravesend in Great Britain a necklace made from 79 such beads was found in a Bronze Age cist (Oakley, 1978:227), and the fossilised sponges are also known to be present in Anglo-Saxon graves and huts (Meaney, 1981:116). The naturally perforated stems of crinoids, or sea-lilies, were also used in Bronze Age Britain as pearls and have been found in barrows. These fossils can easily be broken apart at their disc-like joints to make pearls of different lengths, and they bear a resemblance to the contemporary faience beads from Egypt. Crinoid stem-discs have also been found fitted in an Iron Age bronze harness fitting from Northamptonshire, England, and in a couple of Anglo-Saxon graves (Meaney, 1981:116f; Oakley, 1978:227ff).

In the Stony Littleton long-barrow near Bath, dated to ca. 3000 BCE, one of the entrance stones bears the external mould of an ammonite. The stone slab has been quarried about 5 miles away from the barrow, and might have been regarded an object of some sort of power (Oakley, 1978:223). The other entrance stone is covered by the fossil bivalve *Gryphaea*, often referred to as 'Devil's toe nails' (McNamara, 2011:81). At Glastonbury Tor in Somerset, England, hundreds of ammonites were found during excavations in the 1960's. It is thought that the spiralling shape of the fossils might have inspired the spiralling terracing of the Tor itself (McNamara, 2011:81f). The fascination with ammonites specifically would survive for a long time in Britain. They were worn as amulets in Elizabethan times, known in folklore as

‘snakestones’ and associated to the legend of St. Hilda. According to the legend the ammonites were originally living snakes, which were petrified when St. Hilda founded the convent at Whitby (Oakley, 1978:221). Later, in the 19th century, it was fashionable to wear small ammonites as jewellery (Oakley, 1978:223).

In a Bronze Age tumulus on the Dunstable Downs in England, a spectacular grave was found in the late 1800’s. Around a hundred fossils of the heart shaped sea urchin *Micraster* were arranged around the skeletal remains of an adult and a child (fig. 1). The estimated total amount of fossils in the tumulus were circa 300 (McNamara, 2011:100ff; Oakley, 1978:229).

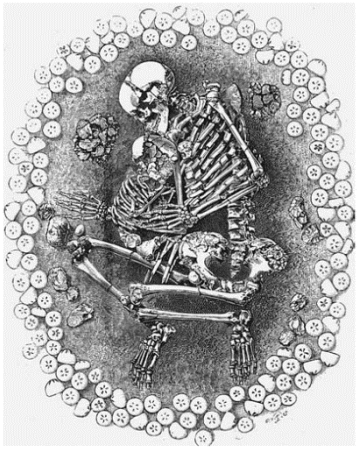

Fig. 1: Illustration of the burial arrangement at Dunstable Downs. The illustrator, Worthington Smith, likely took some artistic liberty in this rendition. Source: Smith, 1894.

Throughout the last three millennia the club-shaped spines from the fossil sea urchin *Balanocidaris* have been used as talismans and amulets (Meaney, 1981:120; Oakley, 1978:233), as well as for medicine (McNamara, 2011:38ff). One such spine was found in Denmark, likely belonging to the middle ages, inscribed with the runes ᛏ (T) and ᚢ (U). This has similarities with the name of the Germanic sky god, which appears to sometimes have been written as “TU” in English runes during the pagan period. While this connection has been firmly rejected by some, a link between a thunder-related fossil (see below) and a sky god seems more than coincidental by others (Meaney, 1981:120).

During Medieval times in Sweden the fossil teeth of the now extinct fish *Lepidotes* were thought to have a magical origin and possess magical properties. Also known as ‘toadstones’ or ‘bufonite’, these button-shaped and shimmering brown fossils were believed to grow in the heads of old toads, and it was thought that they could cure or bring relief to a wide array of ailments. When worn, for example on a ring, it would supposedly protect the bearer from poison and toxins. No definite toadstone rings are preserved in the Swedish archives, but a gold ring from 1250-1300 CE carries a stone that fits their description (Bengtsson Melin, 2014:263ff).

These are only a few examples of the variety of ways fossils have been brought in to be a part of the life and death of people over many thousands of years in Europe. It is clear that the fascination with fossils has a long and diverse expression in the archaeological record and throughout history. However, while delving further into the subject I realised something. Despite people around me talking of fossils being found in archaeological features in Sweden – especially in Scanian archaeology – I couldn’t find any literature on the subject apart from sporadic comments. My curiosity was peaked. I shifted my focus instead to archaeological reports, and that’s when I stumbled across the report from the archaeological investigations at Döserygg. My curiosity skyrocketed. Not only is the site itself incredibly interesting overall, but in several of the dolmens that were unearthed they were found: the sea urchin fossils.

Simply searching for the term “fossil” (eng: fossil) in archaeological literature, databases and reports was instantly revealed to be impractical for my purpose, as the term “fossil” is more commonly used to refer to fossil farmland (swe: fossil åkermark). Any actual fossils were drowned in the results concerning prehistoric farmíng. By refining my methods – using specific keywords like “sjöborre” (eng: sea urchin), “belemnit” (eng: belemnite), “vätteljus” (eng: gnome’s candles, see below), “snäckskal” (eng: shell) and “fossiliserad” (eng: fossilised) – I

soon found more of what I was looking for. Fossils in graves, postholes, wetlands and pits. From the Mesolithic to Medieval times, they started popping up everywhere. As a collector of fossils and odd-looking stones myself, I knew this was the subject I wanted to explore for my masters' thesis.

Before delving further into the subject, I would however like to offer a short explanation as to what these fossils actually are. While archaeologists are not seldom misunderstood by the general public as hunting for dinosaurs, the truth is that palaeontology is usually not part of Scandinavian archaeology.

What fossils are

Most people might think that it is more or less obvious what is meant by the use of the word 'fossil': Organisms like plants and animals that over a very long time have turned to stone. But there are other uses for the word, and instances where the boundaries of what material this thesis deals with need to be clearly defined. The term 'fossil' can be used to refer to different kinds of sub-fossils – for example microfossils like pollen, macrofossils such as seeds, or partially fossilised bones (Merriam-Webster, 2019) – and these are not the subject of this study. The term is also used in relation to other subjects that are not relevant in this study, such as fuel. Fossilised resin, more commonly known as amber (Merriam-Webster, 2019), and any remains of organisms encased therein are also excluded. The fossils dealt with here are the mineralised, or petrified, remains of organisms which were alive in a past geological age. The way in which remains are fossilised varies, and depending on the process fossils from the same species of organism can vary in appearance.

Fossilisation processes

Usually the fossilisation process only preserves the outer shape of an organism, and can occur in two main ways. One is where the organism has been buried in sediment, where it leaves a hollow imprint of its external features after dissolving. The hollow is filled by dissolved minerals which then crystallise to form a solid cast of the hollow. Both the cast and the hollow are considered fossils in palaeontology. The other process is the replacement of substances like bone and shell by other minerals, commonly lime, quartz, or iron compounds. This process has the ability to fossilise very fine and detailed structures, but most common is that only the outer shape is preserved. This latter process can also include a cast of the inner part of the organism by a separate mineral or compound (Castro, 2015; Rhodes *et al*., 1970:16f).

Research history: Fossils in…

… Prehistoric Scandinavia

Despite the fact that fossils tend to garner a bit of attention when found during archaeological excavations in Sweden, sometimes being given their own section in reports, very little in depth research has been made. Mostly it is general ritual interpretations that are mentioned in order to offer some sort of explanation for their presence (e.g. Celin, 2006:53; Kronberg, 2015:37. See catalog.), while no in depth study on the subject has been made. This is true also for fossils found in areas outside Scania, where they are a rarer occurrence (e.g. Hernek, 2018:22). Because of this the following section is expanded to include some material from Denmark and Norway, instead of being limited to Scania or Sweden. As evident below, the little research there is, is hard to find.

The Mesolithic

While the literature is scarce, fossils in Mesolithic context have some degree of further interpretation regarding fossils beyond being simply of ritual character.

In his many years of field walking in Jonstorp, north-west Scania, during the early 1900's, Oskar Lidén (1938) found thousands of archaeological objects. While he mainly performed thorough walks, he would sometimes use a spade or soil auger/earth borer when he deemed it suitable (1938:6). From the archaeological material he collected he identified 11 Stone Age settlements, seven Mesolithic sites (1938:32-69) and four Neolithic sites (1938:11). On three of the Mesolithic settlements Lidén found a total of four fossil sea urchins, by him identified as *Analcytus*-species. Together with 22 smooth rocks he interpreted them as possible amulets. He bases this interpretation on the beliefs that 'peculiar' stones and petrifications, like nodules of calcic clay (swe: *marlekor*) and fossils, have a supernatural origin and protective powers. These beliefs have a long history and were still around in the early 1900's (1938:177f). Unfortunately the exact circumstances of their discovery is not detailed, and it is very possible that the fossils found by Lidén were simply naturally present in the soil and not archaeological in nature at all. The identification of the fossils today points to them being of the genus *Echinocorys* (Glørstad *et al*, 2004:102f; see visual analysis below), as the name *Analcytus* is no longer used (Smith & Kroh, 2011).

In a Mesolithic midden (Broholm, 1928:187ff) on the Danish peninsula Langø known as Langødyngen ("the Langø midden"), several belemnites have been found, both in excavations by the Danish National Museum in 1926-1927 and in earlier excavations by apothecary Helweg Mikkelsen (Broholm, 1928:132, 162). Hans Christian Broholm, who led the excavations by the National Museum, offered two interpretations for the presence of the fossils in the midden: Perhaps their peculiar shape made them subject for collection simply as curious object, maybe by children; or they might be related to religious beliefs and could have been used as amulets, an interpretation he also gives to perforated animal teeth from the same time period (1928:162f).

During the excavations in Skateholm in Scania in the 1980's, fossil sea urchins were found in two Mesolithic graves. When the first was found in 1982, a fossil sea urchin next to the hip of the buried individual, it was uncertain whether it was intentionally put into the grave since these fossils occur naturally, although sparsely, in the soils in the area. But when another sea urchin fossil was found in another grave the following year, placed by the hip like the first one, it seemed reasonable to interpret the fossils as grave gifts. Moreover, the skeletal remains of both individuals buried with fossils were female, both laid outstretched on their backs (Larsson, 1983:26). The general burial custom at both Skateholm I and II was to bury the dead in individual graves without burning, and the bodies were found to have been placed in a variety of positions. While outstretched on the back was the most common overall, this position was slightly more common among male skeletons (Larsson, 1988:103ff). It should be noted that several skeletons were too poorly preserved to determine their sex (Larsson, 1988:125). While single burials were the most common, double burials did occur. A few graves had traces of some kind of wooden coffin or frame, but whether grave III or VI was among them is unclear (Larsson, 1988:109ff). Objects found in the graves were interpreted in two ways: Grave goods that accompanied the dead, or items that were deposited as part of the burial ritual. In the second category the most common was skeletal parts from animals, but pieces of amber, flint objects and tooth-beads also occurred (Larsson, 1988:114f). The grave goods was varied, but some patterns could be discerned. Female burials had less as well as less varied grave goods. The

skeletons were found to commonly have adornments around their hips, consisting of carefully arranged beads made from animal teeth sown onto a piece of clothing. The fact that some beads had been re-perforated after breaking at the first perforation showed that they were worn for some time before the burial (Larsson, 1988:125ff), and they have been interpreted as a possible totemic element (Larsson, 1988:143). No trace of this particular kind of adornment was mentioned in relation to graves III and VI, but the placement of the fossil at the hip is similar. Due to the poor preservation of organic material it is unknown whether the fossils were somehow part of the clothing, or perhaps in a pouch.

While there are no other examples of fossil sea urchins from Skateholm I or II, fossil shark teeth were found in both male and female graves. Both kinds of fossils are interpreted as having been collected as curious objects, but the possibility that the sea urchins were connected to spirituality or totemism is lifted. If this was the case these fossils could have been carried around as amulets (Larsson, 1988:143). It should also be noted that a smooth, round stone was found in grave IV, the most find rich grave, which belonged to a male. The stone was placed behind the head of the buried individual together with other grave goods (Larsson, 1988:118ff).

At the 2001-2003 excavations in Svinesund in south-east Norway, a fossil bivalve was found at a Mesolithic settlement dated to 6500-6200 BCE. This fossil was a highly unusual find, as it had been worked through polishing and carving into a figurine, interpreted to resemble a female figure. It was found in a domestic context and was probably a part of everyday life for the Mesolithic people that lived there, possibly as an amulet of some sort (Glørstad *et al.*, 2004:96ff). As the fossil is a slightly weathered internal mould of a bivalve, it lacks the details of the shell needed to identify it to species level. Its dimensions and geometry, however, suggests that it belongs to the genus *Cyrtodontula*, which occurs in the Ordovician rocks in the Oslo region near where it was found (Glørstad *et al.*, 2004:100). At the same settlement another fossil, the internal mould of a sea urchin of the genus *Echinocorys*, was also found, this one weathered but unaltered. These are not locally occurring in the ground, and the nearest sources are in Scania and Denmark, more than 400 kilometers away. It is possible that this fossil has been transported by the receding glaciers or sea ice at the end of the last ice age, but intentional collection and transportation by humans cannot be ruled out (Glørstad *et al.*, 2004:101f). Sea urchins are also known to have been used for flint knapping in Mesolithic Norway, and prehistoric stone axes containing fossils or fossil imprints are not unusual in Norway (Glørstad *et al.*, 2004:103).

The Neolithic and Bronze Age

Any research regarding fossils in prehistoric archaeological contexts from the Neolithic onwards is difficult to find, at least when it comes to Sweden. The material does not seem to have sparked the interest of more than a few willing to work with it in depth (e.g. McNamara, 2011; Oakley, 1965; 1978), and so far it is not the Scandinavian material that has been of main interest.

While some connection between Neolithic graves and fossils, more specifically those of sea urchins, have been noted by some, it has so far not been given much weight (Bolander, 2016:72).When they are documented in this context they tend to be interpreted as less important than other material in the grave, and not part of the grave goods (e.g. Hadevik, 2009:43; Rudebäck, 2010:146f), and not uncommonly glossed over completely, only to be found in the finds list.

From 1988 to 1991 excavations were undertaken in the votive fen at Hindby. Among the tonnes of material found in the fen were 40 sea urchin fossils which had been deposited mainly during the Late Neolithic and Early Bronze Age (Berggren, 2007:7, 80f). The fen and the material deposited therein were later used in Åsa Berggrens dissertation, published in 2010, as a base for discussion regarding ritual deposition and offering practices in prehistory. While the fossils are not in focus for the main part of the study, they have their own section in the rundown of the find material in the fen (2010:283f). Berggren points out that the pattern of deposition differs between the fossils and other stones found in the fen, and they seem to mainly have been put into the parts of the fen which still had open water at the time of deposition. It is suggested that fossils could have had a ritual significance in prehistory, which is supported by the finds of fossil sea urchins in other ritual contexts, but could have been viewed simply as curious objects (2010:284).

In 1909 a fossil sea urchin was found in a Bronze Age mound in Denmark. The way it was found suggested that it had been initially placed on the pile of rocks that covered the grave (Blinkenberg, 1911:84). In another Bronze Age grave from Denmark, this one remarkably preserved, two fossil sea urchins were found placed next to a wooden box together with a stone axe fragment and several rocks. Had the wooden box not been preserved and the neat arrangement of these items disturbed, it is very possible that the fossils and rocks would have been overlooked (Hydén, 2009:576).

Iron Age

In the early 1900's in Denmark, a fossil sea urchin was discovered in the loose earth by a farmer. It was set in two bronze bands, crossed at its underside and looped together at the top, and dated to Pre-Roman Iron Age (Blinkenberg, 1911:85). This find is rather famous among people with an interest with fossils and folklore, and the same illustration of this artefact has been used several books and articles covering the subject (e.g. Blinkenberg, 1911, fig. 33; Meaney, 1981, fig. IV.j; Oakley, 1965, fig. 8. See fig. 2). According to Oakley (1978:231) there used to exist a belief in Denmark that fossil sea urchins were animated by a god, which made them ideal for use as amulets, and fossils with this interpretation has been found in Iron Age graves in Denmark on at least two occasions. In one of these graves was a bronze loop, which suggest a similar mounting of the fossil as the one mentioned above (Carlie, 2004:155f)

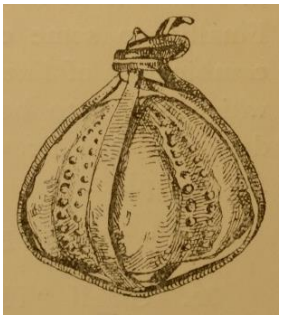

Fig. 2: Fossil sea urchin mounted in bronze loops. Unknown illustrator. Blinkenberg, 1911: fig. 33.

The idea that fossils were objects of magical and protective powers is also brought up by Anne Carlie (2004) in her book on house cult in south Scandinavia. She found that fossil sea urchins had been documented in 15 Iron Age houses on six different locations, two in Sweden and four in Denmark. One of the Danish houses was excavated around 1907-1911, and in the western part two sea urchin fossils and one black stone was found on the floor. They were interpreted by Christian Blinkenberg as thunderstones, and that they had probably been hung from the ceiling in the building (Blinkenberg, 1911:84, see below; Carlie, 2004:156). In other buildings in Denmark the fossils had been found in postholes, alone or with other deposited artefacts like pottery vessels and knapping stones, and also in the fill of pit houses. While the placement of the fossils in the buildings indicate that they were believed to possess some sort of protective power, Carlie stresses caution when drawing parallels between more recent folklore and prehistoric practices (2004:156ff). During her research she was surprised by the few examples

she found of fossils deposited in prehistoric houses, and questions whether this is due to the practices of prehistoric peoples or the behaviour of archaeologists. She also noted that other fossils, like belemnites, did not have the same presence in buildings, and speculates that they might have been valued and treated differently from sea urchin fossils (2004:160). The two instances of sea urchin fossils found in postholes in Sweden were from Scania. As they have already been subject to Carlie's research they are not included in the material of this study, but will be described and discussed in relation to it.

In a short article published in 2007, Peter Kresten brings up the possibility of fossil collectors during the late Viking Age. During excavations in Sigtuna, near Stockholm, 49 fossils were found, which were later studied by Kresten in the early 1990's. The fossils had possible origins mainly throughout south Scandinavia, including cretaceous fossils which were most likely from Scania or Denmark. Among the fossils were belemnites, for which the closest source would be the Kristianstad area in north east Scania. As for the purpose behind the collection of these fossils, while it might have been ritual in nature or based on some belief connected to them, Kresten proposes that they were collected as curious objects as this is something people have been known to do for a very long time. He even suggests that the people who collected the fossils made the connection to once living organisms (Kresten, 2007).

... Folklore

While I agree with Carlie in the sense that any transmission of younger beliefs onto older practices should be done with caution, the fact of the matter is that the most accessible and widespread literature on fossils in archaeological context is leaning heavily into folklore.

Kenneth Oakley – a physical anthropologist, geologist and palaeontologist with an interest in archaeology and folklore (Britannica, 2019) – noted that many of the fossils found in Upper Palaeolithic contexts have meaning and symbolism in later folklore, not only in Europe but in large parts of the world (1965). This connection between the fossil as part of material culture and folklore or myths has been explored by several authors (Bassett, 1982; Blinkenberg, 1911; Carelli, 1996; Glørstad *et al.*, 2004; McNamara, 2011; Meaney, 1981; Oakley, 1965, 1978), and the historical belief in fossils as possessing magical powers is sometimes referenced in reports (e.g. Nilsson & Onsten-Molander, 2004:75). The most common belief that could be applied to the Scanian fossils is that of thunderstones.

Thunderstones

The mythology of thunderstones has been around for a long time, possibly for thousands of years, and is found in large parts of the world. In many cultures thunder and lightning are related to higher powers or gods, and the thunderstones are the material remnants of these powers. This includes large parts of Europe, and in Scandinavia the thunderstones have been connected to Norse mythology (Almqvist, 1978:534f; Carelli, 1996:157f; McNamara, 133ff). The fact that gods related to thunder and lightning can be traced back to Indo-European times is one reason to assume that the belief in thunderstones has been around and spread over thousands of years. In Scandinavia the god Thor was preceded by another sky god, or gods, at least as far back as the Bronze Age (McNamara, 2011:146f)

In the early 1900's, Danish archaeologist and researcher Christian Blinkenberg (1911) started collecting accounts of beliefs regarding thunderweapons and thunderstones in Denmark. In northern Jutland and the islands of Zealand, Funen and Langeland thunderstones meant ancient stone axes, or 'stone wedges' as they are sometimes referred to. In the rest of Jutland it was sea

urchins that were known as thunderstones, and on the southern islands of Falster, Lolland and Bornholm it was belemnites that were connected to this name. Irrespective of the lithic object, the lore surrounding them was pretty much the same: During thunderstorms, thunderstones fell from the sky when lightning struck. The stones were thus imbued with the power to protect against lightning. Since they were believed to avert lightning strikes they were kept in houses to protect them and the people living there (Blinkenberg, 1911:68-83; McNamara, 2011:140ff; Oakley, 1978:231). Thunderstones are also known in Swedish and Norwegian folklore. Throughout Scandinavia they have many names, but are often related to thunder, lightning or the Norse god Thor. In Scania the most common Thunderstones from historical times are Neolithic stone tools (Karsten, 1994:146), but sometimes fossils, meteorites, sulfuric crystals and axe-like stones are called thunderstones (Almqvist, 1978:534; Blinkenberg, 1911:87ff; Carelli, 1996:157ff).

The belief in thunderstones can be traced back in literature to as early as the early 1000's. In a poem written by bishop Marbodaeus in Rennes, sometime between 1067-1081 CE, their protective abilities are described. According to Peter Carelli it is likely these continental traditions that contributed a lot to the spread of the belief in the abilities of thunderstones, which would persist through medieval and historical times. The beliefs can be followed in literature, but are unfortunately difficult to prove in archaeology (1996:158ff). Outside Scandinavia, fossil sea urchins have had a strong connection to lightning in England and Germany (Meaney, 1981:118) and up until the mid-1800's sea urchin fossils were called thunderstones in Sussex (Oakley, 1978:230).

In Denmark the term 'thunderstone' refers to fossils or Neolithic stone tools. According to Oakley (1978:232) and McNamara (2011:135ff) there are indications that a connection between sea urchin fossils and Neolithic axes, possibly as part of the thunderstone-lore, was present in Britain during the Early Iron Age and in Roman-Celtic beliefs. In Kent, England, a cremation burial was found consisting of an Iron Age A type pottery bowl containing a weathered part of a Neolithic flint axe head and a flint sea urchin. Broken flint axes and fossil sea urchins have also been found among the votive offerings in Roman-Celtic temples.

Belemnites have been subject to similar beliefs. The idea of lightning as an arrow connected with the belemnite as a thunderstone is widespread in Europe. Historically belemnites have also been known as 'elf-shots' in Great Britain, weapons shot by fairies at cattle, giving them diseases or disorders. As being hit by lightning was one way to be elf-shot, these two beliefs surrounding belemnites co-existed with each other (Meaney, 1981:111). Superstitions similar to the elf-shots are known to have existed among the Anglo-Saxons (Meaney, 1981:109), but not enough belemnites have been found in order to confirm any solid connection between belief and fossil during this time (Meaney, 1981:113).

Thunderstones were not only believed to protect against lightning, but served a myriad of purposes. Several of the accounts collected by Blinkenberg specifically speak about keeping thunderstone-urchins placed next to the milk to keep it from going sour and give good cream (1911:78ff). Other abilities, like keeping cattle and horses safe and healthy (1911:74, 89), healing properties (1911:75f), keeping trolls away (1911:83, 90), help beer ferment and bringing luck (1911:90) have been ascribed to thunderstones in general.

Gnomes' candles

In contrast to the myth of thunderstones, this belief is not as widespread but limited to Scandinavia. In folklore belemnites were believed to be candles used by mythological creatures like pixies, elves and gnomes, hence the name "vätteljus" (eng: gnomes' candles). It was believed that if you put one of these "candles" in the bed of an infant, it would protect it from dying as it would protect the child from gnomes (Eriksson, 2017:92). In Sweden it has become an everyday word for these fossils, and it is frequently used when referring to belemnite fossils in archaeology.

Purpose and research questions

Fossils found in archaeological contexts have been collected and documented by archaeologists for a long time, especially in areas with naturally occurring fossils in the ground. One such area is Scania in south Sweden. Fossil bearing deposits from the Upper Cretaceous are present in southwest and northeast Scania, roughly divided by the Fennoscandian Border Zone (also known as the Sorgenfrei-Tornquist Zone, fig. 3) that runs through the region from northwest to southeast (Christensen 1975:4f) and are mixed up in the moraine (Hydén, 2009:576). The fact that the presence of fossils in some places can be explained both by geology and human intervention, a closer look is needed to discern the true nature behind the fossils found in archaeological contexts.

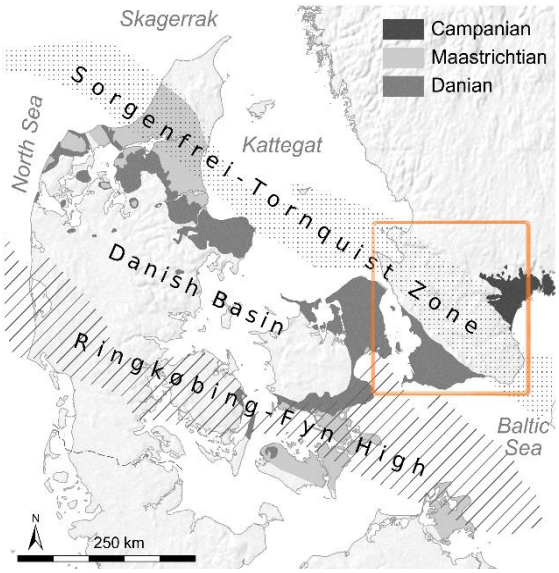

Fig. 3: Simplified geological map of south Scandinavia, Scania marked in orange. Grey fields indicate presence of flint/chalk deposits. Reworked from Brandl et al.*, 2018: fig 2.*

Fossils as material culture

The main body of the fossils dealt with in this thesis have not been visibly physically altered by humans in any way. This means that they do not fit into the general understanding of artefacts in archaeology. The term 'artefact' is usually used to refer to objects manufactured by humans (Caple, 2006:1; Persson, 2014:30), either by creating a new object by the combination and manipulation of different raw materials – for example a pot – or by altering the shape of a thing to serve a new purpose – for example perforating a shell to make a bead. However, natural objects – things that have not been created or physically altered by people, like fossils – can be identified as artefacts from their context (Caple, 2006:12). These kinds of objects are referred to as *manuports* (Darvill, 2002:245).

While 'artefact' is a central concept in archaeology, so is 'material culture'. Material culture includes not only artefacts, but also all the other things that have been used by humans in some capacity (Earle, 2004:155). Therefore it encompasses a wide array of stuff, from manufactured objects like knives or pots, to seemingly unremarkable object like quartz pebbels (Scarre, 2004:141). Even if fossils might be reluctant to fit in the category of artefacts, as we find them in archaeological contexts they are seemingly part of the material culture.

The purpose of this study is to explore the place of fossils in the material cultures of prehistoric Scania through the main question: What was the relationship between people and fossils?

In order to explore this, a few sub questions have been formulated:

- What kinds of fossils have been found?
- What could they have been used for?
- In what contexts are they found?
- How do fossils relate to other finds in these contexts?
- Are there indications that the fossils have a non-local origin?
- Is the material uniform or varied?
- Are there changes over time?

Limitations

Due to constraints in time as well as expected size and extent of the thesis, some limitations have been set in place for this study. Geographically the thesis is limited to Scania. As I am both living and studying in Lund, it has been possible to access local material and publications. It is also a region in which the natural presence of fossils differs from the rest of Sweden due to its geology, which poses its own set of problems when analysing and discussing the material.

The source material has been selected based on the availability of documentation regarding the find context of the fossils. When possible, unpublished reports have been kindly provided by my supervisor, for which I am very grateful, but otherwise published reports and other literature have been a necessity. Fossils for which no information about what kind of feature or archaeological time period they are associated with have been excluded from the main part of the analysis.

Setup and implementation

Finding and describing the material

The material has been found through searching for keywords in the report archives Samla, the National Heritage Board's (Riksantikvarieämbetet) digital document archive, as well as contact with the main keepers of archaeological collections from Scania in Lund (Lund University Historical Museum, LUHM) and Malmö (Malmö Muséers Arkiv, MMA). A total of at least 250 fossils were found distributed on 78 different sites. Of these, 202 fossils from 48 sites were selected for contextual analysis based on availability of adequate documentation of their find context. 58 fossils from 30 sites were subject for a visual analysis.

The fossils for which adequate information regarding their find context have been published, are presented in a catalogue together with information about their context. This catalogue is placed at the end of the thesis. The descriptions are based on the information regarding the fossils, their find context, find composition, dating and any interpretations given in reports and other documents. A summarized presentation of the fossils is included under the headline "Material" below.

Further description of the individual fossils have been possible where the material has been kept in archives. At LUHM I was given the opportunity to study the fossils in their collections, and the information gathered aids in further exploration and discussion of the material than would have been possible using literary sources alone. The results from this visit are detailed under the headline 'Visual analysis – a small case study' below as well as in appendix 1.

Analysing the material

The analysis of the material is based in two main approaches: Contextual and through materiality. The contextual analysis is focused on the contexts the fossils were found in, from individual feature to geographical location. The materiality of fossils is explored partly through their context in space and time, but also through their affordances. The choice of methods is based on the circumstances surrounding the material (see 'Research history' above and 'Source criticism' below), as they make it possible to reach answers to the questions asked in this study. The run-downs of their backgrounds, implementations and implications are provided under the headlines 'Methodological approaches' and 'Theoretical approaches' below.

Source criticism

There has been some difficulty finding exhaustive information about the material, which is reflected in the catalogue as the descriptions therein give a varying level of detail. Since the exact number of fossils is not always disclosed in either reports or archive records, only a minimum number can be given in some cases. As the means used are mainly based on the material being identified digitally, some fossils which are documented in older or non-digital publications have been excluded from the contextual analysis. I am frustratingly aware of this as I have run across fossils mentioned in literature when it has been too late to include them in this study, and will probably continue to do so. It grieves me, but also highlights the fact that it is an overlooked material. To my fortune, none of those that I have found too late to include would have changed the main conclusions of this study.

It is also possible that fossils have been documented in a way which makes them 'invisible', e.g. under broader categories like flint or stone objects. Due to the time constraints it has not been a realistic venture to go through non-digitalised material, apart from the cases where a reference has been found via the information provided by the archaeological archives, report databases or in reports.

In the original plan for studying the fossils, the visual analysis was meant to serve a greater role than it ended up doing. This happened partly due to poor time management on my end, as well as unfortunate circumstances. A significant number of the fossils concerned in this thesis are located at MMA in Malmö, but a crammed schedule on both their and my end meant I was unable to arrange a visit to look at the fossils. Some of the fossils that were supposedly at LUHM's storage in Lund were missing placement information, or simply not there yet. In a few instances there was no information regarding the fossils' storage location at all. As a result of this, I decided to look at all the fossils I could find through the local database at LUHM's repository. Contextual information is missing for most of them, and the visual analysis will thus serve as an aid in the exploration of affordances and discussion part of the study.

Even if we know that fossils found on archaeological sites in Scania have been given attention since at least the 1930's (Lidén, 1938), it must be remembered that some fossils – especially sea urchins – are naturally occurring in the moraine in large parts of Scania. Therefore it is a possibility that they've been overlooked in archaeological contexts, or ended up in them by mistake (Hydén, 2009:576). It is also important to remember that the extent of archaeological investigation is very much uneven in Scania. The areas in and around Lund and Malmö have been subject to a lot of exploitation, and thus also the accompanying archaeological surveys and excavation. Especially the large infrastructure projects in the Malmö area and the development of the research centre MAX IV, Science Village and ESS at the edge of Lund have

produced a heavy load of archaeological reports. This is reflected in the material as 28 of the sites referred to in this thesis are from these areas.

Bias

A lot of material from the past have not survived until the present. The things studied by archaeologists is also not representative, as factors as material, time period, use and value play a role in the preservation of things. Stone and some metals survive well, while organic materials like wood decay quickly. Things from the more recent past have not had time to decay to the same extent as things from more distant times, and are sometimes accompanied by oral or written history. The things that were not used were not worn, and thus more likely to survive. Valuable things – things that were symbolic, economically valuable, unusual, etc. – can stand a better chance of preservation as they might be better taken care of than things that are not valued (Caple, 2006:17ff). In this study the main objects of interest, the fossils, stand the test of time pretty well. At least in the cases where the petrification process has turned the organism or its imprint into a solid piece of tough material like flint. But like all other archaeological material that doesn't lay hidden a good enough distance from the surface, fossils are subject to disturbance or destruction by activities like farming. And even if the fossils themselves remain unbothered by time, this might not be true for materials and objects associated with them. This in turn can affect the interpretation of manuports like fossils greatly, as seen in the Bronze Age example from Denmark above: Had the wooden box not been preserved, neither had the arrangement of the objects around it.

There are also several factors that may affect any interpretations made by the individual studying a material. Access to objects, specialists and equipment can vary greatly depending on the subject of study, and it is unfortunately a reality that it is easier to acquire financial means for more high-profile objects as opposed to mundane, everyday things. Interpretations are also dependant on the basis of existing knowledge, development of analysis techniques, the experience of the interpreter, and whether the subject of study is foreign to the interpreter in material, culture, et cetera. (Caple, 2006:17ff). This ties into the issue of the uneven geographical coverage of archaeological information mentioned above. As for the individual studying the material – me – I do not have the knowledge and experience necessary to make more than a general identification of the fossils in this study. Additionally, I am not familiar with the terminology used in the study of fossils, which has posed some challenge both when reading and trying to find scientific literature on particularities within the subject.

As this thesis has a contextual focus, the context of the archaeologist is important to take into consideration, as this is intimately related to all other contexts through investigation and interpretation (Hodder, 1991:154f). For me this means where I am in time and place in relation to the material and people I am studying. While I am physically in the same geographical region, Scania, I most likely have a completely different understanding of the objects I am focusing on. The conclusion that fossils were the petrified remains of once living organisms was first made in the 1500's, and far from all fossils are easy to identify as a fair number of them bear little to no resemblance to their living counterparts. Not to mention that some of them have been extinct for millennia and look little like anything living today (Rudwick, 1972:1ff). We can of course not know for certain what the prehistoric peoples thought about the nature of fossils. What we do know is that the ideas surrounding fossils have varied over time and place in both folklore (see below) and science (Rudwick, 1972). Hence when discussing different fossils in prehistoric

contexts, it is with the understanding that while I know them as different end results of the same process, the people of the distant past most likely did not.

Methodological approaches

Studying fossils - What is the thing?

Literary sources

In most of the reports and literature I've used to find my material, the fossilised organism is described on the class or order level on the taxonomical system, e.g. sea urchin (class *echinoidea*) or belemnite (order *belimnitida*). This means that the taxonomic information is relatively low in resolution and makes a detailed provenience analysis impossible. The level of information that is available, together with the visual analysis, does however allow for using other literary and online-sources to find general descriptions of these fossil types, what material they could be made up of and whether they might have their origin somewhere else than where they ended up in an archaeological feature.

Visual analysis

A lot of information about an object is contained on its surface. By simply using the human eye, the basic features of the material can be discerned like its shape, colour, traces of use or wear, and what material it consists of (Caple, 2006:23, 184). Additionally, I personally feel that it is good to get a look at the real, physical material that I work with, as it is inspiring and makes the work feel less abstract and more connected to the physical reality of archaeology. In this case it also helps bring attention to a material that is rarely given any thought once it's ended up in storage.

The fossils that I did get to view were measured using a sliding scale and notes were taken on what kind of fossil it is, its colour, preservation (i.e. what parts of the original organism is preserved and whether the fossil is damaged), the material when it was specified or I could recognise it, as well as notes on any distinguishing features and traces of use or wear.

Contextual analysis – where is the thing?

Physical context

Things are not isolated (Caple, 2006:11; Hodder, 2012:3). They exist together with other things at a given time and place, i.e. things exist in a context and can be analysed and interpreted in relation to the different elements of their context. This can also work the other way around, that the presence of certain things implicates the context it is present in as well as previous contexts it has been a part of (Caple, 2006:12).

According to Chris Caple (2006:59f) an object's physical context consist of the following:

- The physical material surrounding the object.
- Where the object is located when it is found. Depending on the scale this may refer to for example a part of a structure or a region of the world.
- Other artefacts associated with the object.

Investigating the physical context is an important part in understanding an object and any activities it's been part of. A single object could allow for many different uses or harbour different symbolic meanings. Depending on where it is found it can give very different indications to the function of an object, as well as the culture and beliefs of the person or people who used it. What other things, if any, the object was found with can speak of cultural of functional relationships between objects. Some objects are parts of sets and serve as indicators

for the rest of such a set, and any activity that comes with it. Sometimes unusual groups of objects are found together and can have powerful symbolic meaning (Caple, 2006:59f).

As described above for the study of objects, physical contexts are also bias in a way. The context from which an archaeological object is recovered is only the last one the object was a part of. It is possible, in many cases very likely, that the object has been part of several different contexts before ending up in the one in which it was found. A critical eye is also important in those instances where parts of a context may have been altered, intentionally or not, after its initial creation (Caple, 2006:60f).

Con-text: Reading the archaeological record

In his book *Reading the Past,* Ian Hodder (1991:124f, see also 1987:2) discusses the different ways archaeologists talk about context and use it to aid in interpretation. The term 'context' is derived from the Latin word *contexere*, which means to connect. Context can refer to both the physical context – that is the physical connections between things and their surroundings – as well as the relationships between things and social systems, general theory and data, the archaeological record and different processes, et cetera. The concern with context, or connections, can be seen as a defining aspect of archaeology. In the words of Hodder (1991:125):

> To be interested in artifacts without any contextual information is antiquarianism, and is perhaps found in certain types of art history or the art market. Digging objects up out of their context, as is done by some metal detector users, is the antithesis in relation to which archaeology forms its identity. To reaffirm the importance of context thus includes reaffirming the importance of archaeology as archaeology.

When archaeologists speak of the archaeological *record*, there is an implied notion that it is possible to read material culture, somewhat like a text. This concept is explained by Hodder (1991:125ff) as in order to understand an isolated part of material culture – say, a fossil – it needs to be put 'with its text', i.e. 'con-text'. Like the meaning or purpose of a single word can be difficult or even impossible understand until it is read as part of the sentence in which it belongs, objects are often mute when viewed out of context. Further similar to a word, an object may have different meaning depending on which context it is viewed in. A fossil found in a dolmen says something different than a fossil found in a domestic building. However, comparing the archaeological record to *language* is not a perfect analogy. Language is a lot more difficult to decipher. For example, even if a lot of a dead language has survived through written text we might never be able to understand what it says. In the case of material culture, objects are more ambiguous than words and what can be expressed through them is simpler. The meanings that can be translated from material culture are not the thoughts of any individual, but the patterns created by public and social concepts repeated in every day practice. It's these patterns – the 'grammar', if you will – that enable archaeologists to access the concepts embedded in the material culture. The meaning of material culture is further restricted and influenced by the physical, functional and technological circumstances of its production. Since material culture-as-text is less complex and more pragmatic than language-as-text, it is possible for archaeologists to decipher the meanings of material culture through its context.

The use of linguistic models like this one has been popular in other sciences as well, and this movement is known as 'The linguistic turn'. The purpose of these models is to reach the people behind the object, while the material itself is viewed as passive. This has received critique for

being far too anthropocentric of a perspective, leading to the material itself being marginalised. In response a turn to lay more focus on the material, known as 'The material turn', has taken place in several disciplines, including archaeology. This turn is not meant to supress the role of humans, but rather to bring the material forward and treat it as equal. In this view on the archaeological record, humans and the material have been dependent on and influenced each other (Persson, 2014:36ff). One way to explore and understand this mutual relationship is through the concept of materiality, which is further discussed below.

Similarities and differences

One way for archaeologists to go about interpreting meanings from material culture is laid out by Ian Hodder (1991:128ff). By identifying differences and similarities in various contextual associations, it is then possible to arrive at meaning concerning the content and function of the materials in different contexts:

Similarities and differences of archaeological objects can be found in

- Temporality (phase, period)
- Spatiality (region, site, activity area, hearth)
- Depositional units (pit, wall, burial, house, etc.)
- Typology (culture, style, type)

can allow the archaeologist to arrive at contextual meaning concerning

- Systemic process and structure
- Symbolic process and structure

Hodder provides the example of fibulae being found in female burials. The artefacts then have a similarity in a certain type being found in the same spatial location and the same depositional unit. If no fibulae are found in non-female burials this encourages an association between fibulae and females or 'womanhood', especially if other connections can be found between the artefact type and activities or ideas related to women. This connection would be further strengthened if it was contrasted by, for example, brooches being found exclusively in male graves and in association with ideas concerning 'manhood'. This is an example of reaching a possible symbolic meaning of objects through similarities and differences, but the same basic method can be used for identifying functional, utilitarian relationships. Further, the two aims are not contradictory. If tools are found around the hearth in a house, but not in the rest of the structure, the area around the hearth can be interpreted as an activity area. At the same time this may indicate the tools signifying a domestic hearth and the meaning of 'home'. This approach of finding similarities and differences may seem obvious, but it happens that the context is somewhat pushed aside in the hunt for similarities. Here Hodder gives the example of decorated pots. If one kind of pot is the only decorated container in a context, the absence of decoration on other containers is highly relevant for interpreting the significance of the decoration. But instead the pots are removed from their context and their similarities measured against pots from other contexts. The framework and meaning content of the original context is lost.

The contextual similarity and difference category that this work is mainly focused on is that of the depositional unit. By this is meant closed layers of soil, graves, pits, et cetera, and co-occurrence within the same depositional unit is often claimed as "more important than unbounded spatial distance" (Hodder, 1991:134). Since the depositional unit is a combination of temporal, spatial and typological attributes, it is in essence what is described as physical

context above. Its place in time and space together with its contents is what clues us in on what and why it is. The contextual information is key in this study, as the fossils themselves have not been studied, and any similarities and differences between them remain largely unknown. By focusing on their find contexts, and the similarities and differences therein, the relationship between fossils and people can be explored with focus on action rather than aesthetics.

Theoretical approaches

Materiality – Why is the thing?

The term and concept of materiality was picked up by archaeology in the 1990's due to its direct connection to physical things, both artefact – things created by human agency – and natural things with attached value and meaning (Taylor, 2008:299f). While a concept dealing with physical things, as the dictionary definition of the term 'materiality' clearly states (Merriam-Webster, (2019), seems like a perfect match with the archaeological discipline, it hasn't been all smooth sailing.

In his article 'Materials against materiality' (2007), some of Tim Ingold's thoughts on materiality are in many ways similar to mine. Literature and discussions on materiality have a tendency to be abstract, impractical and creating a distance to the material instead of allowing for a closer understanding. And perhaps the most pertinent, *why can no one seem to explain what it is*? (2007:1ff). However, I am not in agreement with Ingold's seeming complete dismissal of materiality as a useful concept to work with in archaeology. In a response to Ingold's article, Christopher Tilley is in agreement with parts of Ingold's frustration (2007:19), but argues that there is a significant difference between the study of materials and their properties in an empirical way – which is what Ingold proposes a heavier emphasis on throughout his article – and to theorise why these materials and properties matter to people, and how they affect them and their actions. The empirical study of materials and their properties is part of understanding their materiality, i.e. the relationship between materials/things and humans, which cannot be captured by empirical study alone (2007:16ff). Tilley finishes his response by offering four points to what materiality is and helps us do, which nicely line up with the goal and method of this thesis (2007:20):

> So to write about materiality is (i) to attempt to develop a general theoretical and conceptual perspective or a theory of material culture in a material world; (ii) to consider the manner in which the materiality or properties of things, always in flux, are differentially experienced in different places and landscapes and social and historical contexts; (iii) to concern ourselves with the recursive relationship between people and things and the material world in which they are both embedded; and (iv) to address the affordances and constraints that things in relation to media such as the weather offer people and why some properties of things rather than others come to have significance in their lives.

In the analysis both the material and the activities it has taken part in are investigated, the former through affordances and the latter through contextual analysis. The concept of materiality works by supporting and tying these two together, aiding in understanding why the fossils have ended up where they are found by the archaeologists of our time.

Materiality and affordance

A major part of materiality is, as stated above, the properties or qualities of materials, and how these affect and influence human behaviour. One way to explore this relationship is through affordances, a concept that has been brought into discussions of materiality and related archaeological theory by several authors (e.g. Dant, 2005; Hodder, 2012; Ingold, 2007; Knappet, 2004; Renfrew, 2007). The different aspects of an object, such as its shape, size, colour, et cetera, decides its affordances, meaning that the properties of materials or things afford certain outcomes. For example, in the production of flint tools a long and thin flint nodule will produce a long and thin flint tool (Hodder, 2012:50). If a thing, let's say a sea urchin fossil, has a flat bottom one can deduce the affordance of the thing being put on a flat surface without

rolling away, it is put-down-able and stay-in-place-able. In short, affordance is what the properties of a thing allows for: its '-ables'.

The term 'affordance' was coined by psychologist James Gibson (1979:127) and the theory of affordances was popularised with his book *An Ecological Approach To Visual Perception* (1979:127-143). Here Gibson describes how the formation of the concept of affordance has its roots in Koffka's 'demand character', that things tell us what to do with them, and Kurt Lewin's 'Afforderungscharakter', translated to 'invitation character' or 'valence', where objects invite certain behaviour. These are not inherent in the objects themselves, but bestowed upon them in them being experienced. Not physical characteristics, but 'phenomenal'. Gibson's affordances are instead neither phenomenal nor physical, they are "properties taken with reference to the observer" (1979:143). The affordances of an object are in essence its physical properties, but at the same time dependent on who or what perceives or interacts with it. A closed door affords opening for the general human adult, i.e. for an individual tall enough and with limbs able to grab a handle the door is open-able. But this might not afford opening for those who cannot reach or manipulate its handle, e.g. children, people of short stature, or chair bound individuals. The affordance of some objects may also result in misinformation and misperception. Gibson (1976:143) gives an example that I think many of us are familiar with: A closed glass door being mistaken for an open doorway, and thus walked into. The affordance of the glass, it being see-through-able, led it to be mistaken for open air, which is walk-through-able.

While there are of course dangers in assuming the particular way an object was used solely based on its physical properties, they can help us understand the objects connection with other things. By studying affordances it can help archaeologists to understand connections and relationships between things based on the forms and properties of materials and objects (Hodder, 2012:50).

When speaking of fossils, different kinds are suitable for different things. In the Upper Palaeolithic people used mollusc shells, both fossil and non-fossilised, for jewellery and headdresses, and in order to thread or fasten them they had to be perforated. In the case of molluscs, gastropod shells are stronger than bivalves when pierced, and thus more suitable for perforation. While this may mainly be true for non-fossilised molluscs, it is not unthinkable that the knowledge of these affordances would also be applied to the fossils used side by side with non-fossilised shells (Oakley, 1978:209ff). Some fossil sea urchins, like *Cidaris*, can have a natural perforation through the middle which, together with their size, made them suitable to be used as spindle whorls (Oakley, 1978:233). In Neolithic Italy, flint sea urchin fossils were used to produce small flakes, and it was specifically the fossils that were of the appropriate material that were used for this purpose (McNamara, 2011:89). In all of these cases the fossils had certain properties, or presumed properties, which allowed for certain outcomes when observed, or remembered (Knappett, 2004:48f), and acted upon by humans. By identifying the affordances of the fossils that are subject to this study, it makes possible not only to recognise whether they were collected or used because of them, but also which affordances were not recognised or acted upon (Kirch, 1995:43f). This in turn may help deduce the specific value of a fossil – especially if it's functional in nature and it has been used in a way that leaves physical traces – if it has any.

This exploration of materiality between humans and objects – that the properties of a material allows for certain outcomes when acted upon – can reveal many potentials in the human-fossil

relationship. But as the fossils alone have a tendency to be rather quiet about this relationship when studied on their own (e.g. Bolander, 2019:72), there is a need to study them in their contexts to better understand what they can tell us (Scarre, 2004:141).

Materiality and contexts

One way to think about materiality in relation to archaeological contexts is through the question "what materialised?" This way of thinking is described by Daniel Miller (2005). While he focuses on artefacts, the notion is easily transferred to contextual analysis: Out of all possible outcomes the one excavated is "what materialised" through the relationship and interaction between humans and materials. To answer the question of "why?" behind what materialised, the "particular consequences of past events out of the various possible consequences that might have accrued from their [artefacts] presence in the world" (2005:213) must be considered. There is a context, a particular consequence of human and material interaction, and out of all outcomes allowed by the human-material relationship the find context is the one that the material ended up in.

Of course, the find context is only the last stage in a materials relationship with the humans of the past, before beginning a new life as a subject for archaeology. Depending on the material, there might be clues to more than this last depositional stage that tell more about the happenings – previous materialisations, if you will – that led up to this final consequence of past events. Here the issue of fossils not being manufactured artefacts may pose some difficulty. While, say, a pot tells us about a series of previous materialisations – raw materials, production technique, vessel type, décor, all speak of other consequences in interaction with both humans and other materials – this is not the case for many fossils as they are often found unaltered, i.e. they have not been used as raw material in any production sequence.

Material

The fossils

	Sea urchins (su)	Shells (sh)	Belemnites (be)	Bivalves (bi)	Mollusc (mo)	Coral (co)	Shark tooth (st)	Unidentified/unspecified (un)	Total
Amount	177	4	3	2	1	1	1	15	202
% of total	87.6%	2%	1.5 %	1%	0.5 %	0.5 %	0.5 %	7.4%	
Altered	4	0	2	0	0	0	0	0	6
Altered %	2.3 %		66.7%						3%
Features	105	4	2	1	1	1	1	9	120
% of features	88.2%	3.3%	1.6 %	0.8%	0.8%	0.8%	0.8%	7.6%	

Table 1: Overview of the fossils in the study. "Altered" indicates human made alterations.

The fossils identified in the source material are of a few different kinds, with sea urchins being the by far most common fossil documented at archaeological sites in Scania. Out of 202 fossils, 177 are sea urchins. Next most common identified fossils are shells with 4 fossils, followed by 3 belemnites and 2 bivalves. The final 3 identified fossils are 1 coral, 1 mollusc and 1 shark tooth. 15 fossils remain unidentified. Fossils for which neither dating nor adequate contextual information exist have been excluded from the analysis.

Sea urchins

Fossil sea urchins usually only consist of the 'corona' or 'test' – the plated, shell like structure encasing the living sea urchin's soft tissues – or the mould of it (Donovan, 1991:259; fig. 4). The preservation of the test can vary depending on the circumstances surrounding the death of the animal, how quickly it was buried post mortem and whether this process was turbulent or calm (Smith, 1984:17ff). The test of a living sea urchin consist of mineral calcite, and can thus be directly preserved as a fossil, sometimes getting filled with a different mineral material (BGS, 2019), but the fossils viewed at LUHM's storage were mainly solid fossilisations, with the pattern of the outside or inside of the test preserved to some extent.

The sea urchins viewed in LUHM's collection were all most likely of the genus *Echinocorys*. They are identified through the placement of the peristome (mouth opening) and periproct (butt opening) and the overall shape of the fossil (Wright & Smith, 1987:230ff; Wienberg Rasmussen, 1977:404). Fossil *Echinocorys* are naturally occurring in the Scanian moraine and chalk deposits (Eriksson 2017:102; Rhodes *et al*., 1962:111). Those fossil sea urchins that have been pictured in reports also fit the description of *Echinocorys*. In the few cases where fossil sea urchins have been taxonomically identified in reports they have all been *Echinocorys*-urchins.

Fig. 4: A few examples of sea urchin fossils. The two leftmost fossils show the plated structure of the test. Image three and four from the left show an internal mould of flint. The rightmost fossil only have part of the test preserved, the inside filled with a different mineral showing.
Photos: Ljunggren, 2019. Fossils from the author's personal collection.

Belemnites

Fig. 5: Belemnite fossil with a fresh break. Arrow indicating the lengthwise seam. Photo: Ljunggren, 2019 Fossil from the author's personal collection.

Belemnites are fossilised cephalopods, which too are common in Scanian chalk deposits (Rhodes *et al*., 1962:132). The belemnites viewed in LUHM's collection all visually resemble species that are naturally occurring in the Kritianstad area in northeast Scania (Christensen, 1975:67ff, plates 1-12) as well as in Denmark (Gyldendal, 2019). The fossilised part of belemnites is called the *rostrum*, which was the top part of the extinct cephalopods' conical shells for balance. The rostrum consist of thin, fibrous calcite crystals which are arranged in right angles from the surface, which can be seen as a slight radiating pattern from the centre when viewing a width-wise break edge (fig. 5). They may also display concentric patterns, and similar to tree-rings they probably represented the animal's growth (fig. 6). The end of the rostrum nearest the animal's head has a conical depression called the *alveolum* (BGS, 2019; fig. 6). The shape of the rostrum and the depth of the alveolum varies depending on the species of belemnite, but they all have their finger-like shape in common (Christensen, 1975: plates 1-14). Belemnite fossils have a length-wise groove which can be seen as a depression or line if its outer layer or alveolum is preserved (BGS, 2019; Christensen, 1975: plates 1-14; Doyle, 2003:fig. 1). In the crystal structure there is also a 'seam' that runs

Fig. 6: A few pieces of belemnite fossils. The leftmost fossil has an opaque outer layer, and the one next to it has a raw, unpolished surface. Third from the right is a lightly polished piece. Fourth shows a belemnite piece that is opaque all the way through. The second image from the right shows the tree-ring like pattern of the rostrum. The rightmost picture shows the alveolum. Photos: Ljunggren, 2019. Fossils from the author's personal collection.

lengthwise through the rostrum (fig. 5).

The appearance of belemnite fossils vary when it comes to opacity and colour, depending on the fossilisation process and the organic contents of the rostrum. Pale layers consist of pure/-er calcite, while presence of organic material gives a darker discolouration (BGS, 2019).

Shells, bivalves, molluscs and oysters

Fossils categorised under these terms are difficult, as they could refer to several large groups of organisms, organisms from different taxonomical branches, be interchangeable or confused with each other. Most likely they all belong to the taxonomical class of *bivalvia*, or bivalves, which is below the phylum *mollusca*, i.e. molluscs. Bivalves consist of two shells, or *valves*, connected in a hinge-like manner, which protect the soft tissue of the living organism. The valves are made up of layers of crystal aragonite or calcite, and can vary greatly in size and shape between species. The fossil internal moulds of bivalves have through history been

referred to as body parts of large, four footed animals, due to their similarities in shape with for example horses' heads and bull's hearts (BGS, 2019). The bivalves at LUHM's were from a mix of species with no clear similarities, and could not be further identified.

Coral and Shark tooth

Both of these fossils were fragments, and no more taxonomic information is available. The coral most likely consist of the fossilised calcareous skeleton, the *corallum*, which the soft bodied organism, the *polyp*, lived in. Fossilised corals come in a wide variety of shapes and sizes (BGS, 2019). Like corals, fossil shark teeth can come from a wide variety of species, of which many are present in Scania (Siverson, 1993).

Analysis

What are the things?

Visual analysis – a small case study

The 8th and 9th of April in 2019 I was kindly welcomed to have a look through the local database and archaeological collection at LUHM's storage location in Lund. I was met with excitement over that someone was taking the time to investigate a material that has been pushed to the side in favour of other material categories. This also prompted a prediction that the fossils, while definitely present in the collection, might not be straightforward to find. This prediction was correct. I came in with a list of more than 90 fossils I was hoping to find, but ended up locating only slightly more than half. Unfortunately a lot of the fossils in the contextual analysis below were among those not found or present at the storage facility, which prompted the visual analysis to be kept separate. The overlap between the contextual and visual analysis is only 12 fossils (see appendix 1). I also happened to stumble upon fossils that were not included in the database, as I at one point opened the wrong box and found four sea urchin fossils. As these were from the excavations in Uppåkra, which have not yet been published at the time of writing, and no information was present in the database, they've been excluded altogether. But they were in line with the results from studying the other sea urchin fossils.

Below the information about the fossil types that are also present in the contextual analysis is presented, followed by other and unidentified fossils. The complete data from the visit is presented in table form in appendix 1.

Sea urchins

Sea urchins were the most common fossil among those identified in LUHM's collection, with 24 out of 58 being of this kind. 12 were found in the southwest, 10 in the west and 1 in the northwest of Scania. They have a large variation in size, from smaller than half a golf ball to about the size of a tennis ball. Their material composition varied slightly and was often unclear, but flint seems to be the most common. While a majority have a beige or grey colour, a few stand out with a more red, orange or yellow hue. One of the smaller fossils was dark grey with a spot where clear crystals had formed at its surface during its fossilization. In some cases the imprints left of the in- or outside of the sea urchin's test were of a slightly different colour than the rest of the fossil, clearly showing the characteristic star-shape on the top or the geometric patterns from the test-plates.

There is a mix of whole and broken fossils, but in several cases the only damage is to the bottom of the fossil or only a small sliver has been chipped off. Two fossils are burned, both from Iron Age or later contexts. Several fossils from Neolithic contexts have a very smooth surface that

Fig. 7: Variations in the drop-shape of Echinocorys *(left and middle); Sketch of fossil hand stone. Illustrations and photo: Ljunggren, 2019. Fossil from the author's personal collection.*

almost gives a polished impression. These are all in the smaller size range and have a more or less distinct drop shape when viewed top-down (fig. 7).

Only one fossil show clear signs of having been used in some way. It is one of the sea urchin fossils from Herrestorp/Vellinge (ID A/G12460), which is included in the contextual analysis and has been interpreted as a hand stone (Brink *et al*., 2014:93). It has a flat, worn down side along its bottom edge, and its shape and size makes it comfortable in the hand (fig.7). While part of the fossil seem to be of flint, the worn side is of a softer mineral.

Belemnites

15 belemnite fragments from five different sites were located in the collection. They are of varying dimensions, from 5 to 16 millimetres in diameter and 14 to 62 millimetres in length. 12 of the fragments are compact and slightly translucent with a red-orange hue. 3 of the fragments are a dull grey-beige colour and look like they have gone through a different fossilisation process than the majority, one looks like it's been burned. The centre of two of these belemnite pieces was fragmented and partially missing. These 3 more dull fragments were from two sites dated to the Mesolithic or Neolithic. Of the 12 orange-red pieces only one is from a dated context. 6 are loose finds, and the remaining finds are from unknown find circumstances. The dated piece is from an Iron Age site in southwest Scania (see "Pit houses" below), while the remainder are from the Kristianstad area in northeast Scania.

The Iron Age belemnite piece differs from the rest as it has been interpreted as a bead (Sarnäs, 2018:20). When opening the box it was in, it did not stand out among the other glass beads it was stored with. As the piece had been split in two along its seam, it was possible to conclude that it is fashioned from the bottom part of a belemnite fossil where the alveolum formed a natural perforation through the piece. The edges of the piece are more distinctly rounded off than the vast majority of the other belemnite fragments (fig. 8).

When comparing this possible bead to the other pieces, another fragment showed some distinct similarities. A lengthwise split, orange fragment among the loose finds from the Kristianstad area has smoothly rounded off edges, and part of the alveolum is visible at one end. However, it differs in that it has a seemingly manufactured perforation running all the way through (fig. 8).

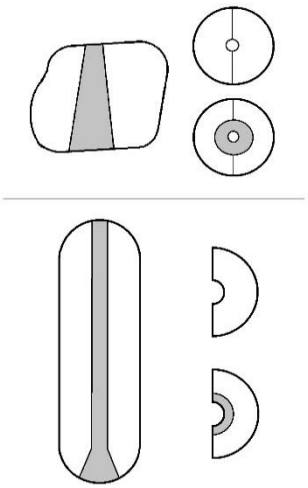

Fig. 8: Possible belemnite beads in LUHM's collection. Sketch of split bead from Lilla Isie (top); sketch of possible bead from northeast Scania (bottom). Not to scale. Illustration: Ljunggren, 2019.

During the writing of this thesis I took the opportunity to visit the exposed chalk deposits at Ivö in northeast Scania, where I happened upon a substantial amount of belemnite fossils. I noted that when found in this environment they tend to not have the translucency and red-orange hue that was common among the belemnites in the archaeological collection. Instead, they were opaque with a beige colour and recognizable only through their distinct shape. A closer look revealed that the amber coloured and translucent part of the fossils was hidden underneath an outer layer of a much more inconspicuous appearance. That this is one of their more frequent 'natural' fossilised states in this region was confirmed through studying photographic material (e.g. Christensen, 1975: plates 1-14).

Bivalves

Three of the fossils in LUHM's collection were found to be bivalves of different species, none identified and all from different sites in the western half of Scania. They vary in size from 20 to 50 millimetres across and 7 to 20 millimetres thick, and are composed of different minerals. One of them is attached to its surrounding sandstone matrix, another is possibly burned. They all have a grey to grey-brown colour. Only one of them is whole.

Coral

Only one piece of fossilized coral of unidentified species was found in LUHM's collection. It is a small fragment about the size of a fingertip. It has a bone white colour.

Other and unidentified fossils

The 15 remaining fossils are of various sizes and shapes. Most of them are of unidentified organisms. A couple could possibly be from orthoceratites, based on their elongated shape and striped appearance. *Orthoceras* was a genus of cephalopods which had a conical shell which divided into smaller chambers as the animal grew, giving the fossil its distinct pattern (FFAF, 2018). One of these pieces I found very intriguing as it seemed to have been worked into an elongated drop-shape. Another small piece of mineral bore the imprint of what looks like an ammonite, an extinct marine animal with a coiled shell, or gastropod, molluscs who also have coiled shells (BGS, 2019). In this category are also several fragments of what I can only guess is some sort of bivalve shell, white and covered with what looks like tiny swirls or dots of a translucent mineral. As I have not found any reference to anything looking remotely like them, they stay unidentified for now.

Overall, this category is very varied, and shows that it wouldn't do any harm to introduce some more paleontological knowledge in archaeology.

Affordances

The fossils come in a variety of shapes, mainly related to which type it is. Sea urchins are generally round-ish with a flat base, belemnites are long and thin, et cetera. Some of these shapes that they naturally occur in could afford them to be used as substance for specific objects. Sea urchins, for example, can have a similar shape and size as spindle whorls. However, as the mineral composition of fossils can vary greatly, the affordances related to the material they consist of do the same. The analytical exploration and discussion below is based on known uses of fossils, their unfossilised counterparts, or objects with similar affordances, so as to not get lost in pure speculation. As only two fossil types in my material – belemnites and sea urchins – show any signs of having been used or manipulated, these are given separate discussions.

Belemnites

While it has been thought that belemnites were used by prehistoric people as pointy implements like arrowheads (Douglas, 1793, cited by Oakley, 1978:225), they are not particularly suited for the task. The crystal calcite that makes up belemnites is hard, but their structure make belemnites pretty easy to split both width- and lengthwise. This is probably why there have been no documented cases – and no sign in this study – of belemnites being used as tools: they are simply too break-able. What we do know is that they've been perforated and polished to be worn as pendants as far back as 20 thousand years ago in Europe (McNamara, 2011:37).

The growth pattern of the rostrum means that any opaque outer layer can be chipped off or polished down to reveal its more translucent, amber coloured inner parts, which due to its crystal composition can be polished to a soft gleam (fig. 9). The arrangement of the calcite crystals make the fossils easy to break into shorter pieces as the crystal structure runs width-wise. If the fossil then has a deep alveolum, it could be strategically broken off so that a thread-able hole was readily available. If not, the crystals all meet at the centre of the rostrum also creating a lengthwise, less dense line (see Christensen, 1975: pl. 9 fig. 6A; pl. 11 fig. 4C), which makes it possible to open and widen the central space without destroying the overall structure of the fossil. In short, belemnites are polish-able, perforate-able, sometimes readily thread-able, and it is possible to work with and around the brake-ability. While there are only 3 belemnite pieces included in the contextual analysis below, 2 of these are of interest in relation to these affordances. In a Viking Age pit house in Lilla Isie a couple of possible belemnite beads were found. One of these is described above. It is similar in shape to shape 127 in Callmer's systemisation of Late Iron Age beads (1977:33f)

Fig. 9: Belemnite piece with underlying translucent layer polished out (top); belemnite piece with a separated outer layer (bottom).
Photos: Ljunggren, 2019. Fossils from the author's personal collection.

One of the other belemnite fragments that was part of the visual analysis (Öllsjö, fragment 3) could also have been a bead. Like the belemnite pieces from Lilla Isie/Östra Torp, it was split in half with the conical *alveolus* visible at one end with a channel leading to the other (see fig. 8). When imagining the other half of this belemnite fragment the channel would form a round, lengthwise perforation through the piece. This kind of open, central perforation is not naturally occurring in belemnites. Furthermore, like the presumed bead from Lilla Isie, the Öllsjö-fragment has rounded edges, which is also something that is not present in any of the fragments without a central perforation. Unfortunately this piece is not dated as it was a loose find. Even if it's not whole, it is clear that if was of a simple, oblong shape with rounded off edges. An exact match is not to be found in Callmer's systemisation, but it shares elements with several bead types (1977:33f).

Beads with a similar appearance are known from Denmark, where opaque red, reddish-brown and orange glass beads are the most common glass beads towards the end of the Iron Age (Olldag, 1995:31); on Gotland chest decorations with orange and red glass paste-beads were in fashion during the Vendel period (Magnus, 2003:130); amber as a raw material for beads makes a comeback during the Viking Age after dwindling in numbers since the Neolithic (Magnus, 2003:127ff). A clear difference in craftsmanship is however to be noted, as amber can be formed into a crude bead by pretty much anyone with the ability to hold a knife (Magnus, 2003:130f), which is not true for belemnite beads (McNamara, 2011:37).

Sea urchins

In contrast to belemnites, fossil sea urchins have served some practical functions through time. As mentioned above, in Neolithic Italy they were used to produce small flint flakes and as knapping stones in Mesolithic Norway. They were used as hammer stones in Roman and Saxon Britain (Oakley, 1978:233f), where fossils from *Cidaris*-urchins were occasionally used as spindle whorls (see above). The shape and pattern of *Cidaris*-fossils (fig. 10) seem to also have inspired the look of spindle whorls of other materials (Oakley, 1978:233f), further indicating a connection between these fossils and tools.

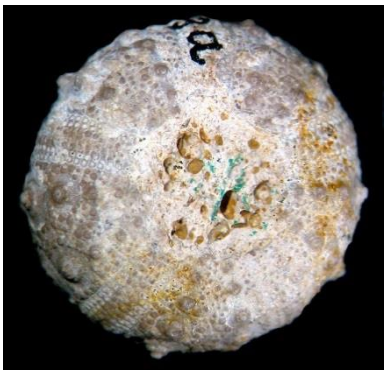

Fig. 10: Cidaris*-fossil. Note the central opening in the test. Smith & Kroh, 2011. Courtesy of the Trustees of the Natural History Museum, London.*

None of the identified fossils in this study are of the *Cidaris*-type, and while the shape of *Echinocorys*-fossils is similar to that of some spindle whorls (Magnus, 2003:133), none of the fossils in this study have been perforated in a way that suggests use of this nature. Possibly this is due to *Echinocorys*-fossils not being as readily perforate-able as *Cidaris*-fossils, and the fact that they often consist of flint which affords splitting rather than perforation. The only instance where a sea urchin fossil has a hole running through it (Svågertorp S, A279, see fig. 11), it is circa 1 cm wide and offset from the centre (Koch & Tuominen, 2008:44) and would not make for a functional spindle whorl. Furthermore the find context of this fossil does not suggest use of this fashion, and when giving the picture of this fossil a closer look it seems more likely that the hole would have been used for suspension (fig. 11). This is more in line with the use of sea urchin fossils as beads in prehistoric France (McNamara, 2011:36f), or the alleged use of them as amulet-pendants in Roman Iron Age Britain (Oakley, 1978:231). It is more suspend-able rather than practically use-able as a tool.

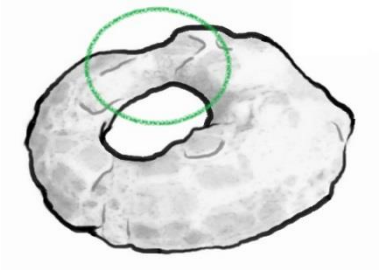

Fig. 11: Perforated fossil from battle axe grave. The green circle marks possible wear from suspension. Illustration: Ljunggren, 2019. After Koch & Tuominen, 2008:fig. 24

The only sea urchin fossil with a convincing interpretation as a tool is the one from Herrestorp/Vellinge mentioned above. Its size and shape makes it comfortably hold-able and its mineral composition allows for use as a grinding/sleek stone without damaging the object being worked, which similar use of a solid flint tool likely would do. A few other sea urchin fossils are described to show traces of being used, but for what is not further discussed. Descriptions like "worn" could mean traces of hammering or grinding, or that the fossil has been knocked about in the moraine.

A vast majority of the fossils found in archaeological contexts in Scania have remained un-altered by humans. If their affordances for practical use has not been acted upon, how could they have been used?

Affordances of un-altered fossils

As discussed above, pieces of belemnite fossils were possibly manufactured into beads, and that this process would require care as to not trigger the break-ability of the fossil when unwanted. If the aesthetic qualities and possibilities of belemnite fossils were sought after to the extent that someone would go through the trouble of perforating them it is also possible that

those belemnite pieces that show no obvious sign of use were worn in other ways. The appreciation for materials with similarities in appearance to belemnites during the Late Iron Age, like glass (Henricson, 1995; Olldag, 1995:27), amber (Magnus, 2003:130ff), carnelian and rock crystal (Holm, 2010; Magnus, 2003:132), perhaps prompted people to collect the fossils. As even unworked glass and broken glass objects were in demand as raw material for jewellery in Late Iron Age Scandinavia (Henricson, 1995:13), it is not hard to imagine the want for this type of adornment. But, as the fossils affordances exist together they influence each other. The brake-ability and hardness is as much a reality when the perforate-ability is acted upon as at any other time, which means that making a belemnite bead would require patience and care in the crafting process to avoid breaking the piece.

As their fragile nature demand for a crafts person of some skill to allow transformation into a bead – not everyone can afford it – any production on a larger scale would likely seek out raw materials with less strict affordances regarding this kind of manipulation. Subsequently belemnites might have been worn in other ways to avoid breaking them in the bead-making process. An arrangement as the one shown in the pictures to the right (fig. 12, see also appendix 2) works on its own, but could be made more secure using waxed string or a sticky material like resin. Of such a pendant only the fossil would be preserved in most instances, and it might not show any signs of ever being worn in such a fashion.

Fig. 12: Example of suspension of belemnite piece for which no perforation is needed.
Photos and craft: Ljunggren, 2019.

Like belemnites, sea urchins can possess aesthetic qualities that would be enticing for people. A fossilised imprint of the sea urchin test can look like snake skin or a five-rayed star pattern, glittering crystals can form as part of the fossil, and patina come in a range of rich colours. As sea urchin fossils in Scania are frequently of very hard and dense material like flint, they would not be particularly perforate-able, but smaller specimens can be tied in a similar fashion as the belemnites. And let us not forget the Danish find of a sea urchin fossil mounted in bronze bands (see 'Research history' above). Shells have been worn for adornment throughout prehistory (McNamara, 2011:36f; Oakley, 1978:209ff), and their fossilised counterparts share their shape while being able to withstand a couple more bumps or a tight knot without shattering. What this means though, is that they are not only wear-able, but with the addition of a string fossils afford to be hung off of or fastened to a variety of objects. If strung to a stationary object, a string would be even more unlikely to leave any traces on the fossil's surface, than if it was worn on the body. A few more step-by-step methods to suspend fossils – or any small object – are available in appendix 2.

The visual analysis found several smaller sea urchin fossils to have a rather smooth surface, looking almost polished. This could be caused by erosive processes such as billowing water, but could this surface not be the result of frequent handling of the fossil? All of the smooth-surfaced sea urchin fossils in the visual analysis have been from Neolithic archaeological contexts, and sea urchin fossils are thought to have been used as amulets far before that on the

European continent (see above). If they were believed to possess some sort of protective power or bring luck, touching or holding them could be an act of pulling from that power. Another option is that the simple port-ability and place-ability of sea urchins, as opposed to the cylindrical and very roll-away-able shape of belemnites, makes them suitable for use as, for example, gaming pieces. With frequent use they could attain a smoothed surface. Hemispherical game pieces are known from the Iron Age (Magnus, 2003:130), a shape which is undoubtedly similar to the domed *Echinocorys*-fossils. Even if the dating is different, it's far from unthinkable that Neolithic people would partake in games of some sort. Or, if the surface is indeed indicative of frequent handling, perhaps these small patterned stones were simply fidget-able.

As is probably clear at this point, exploring the relationship between people and fossils in this manner can be dragged out and expanded upon to no end. But there is one particular affordance I would like to round off with.

The common affordance

One affordance that all fossils in this thesis have in common is perhaps not a surprising one: they are all collect-able. Not in the way we use the word nowadays, to refer to something of value explicitly because of its scarcity, but that their physical properties allow for collecting by the person looking for something to collect. They can be found as loose objects that do not require any tools to procure them, i.e. acquire-able. Their often intriguing or unusual appearance makes them jut out to the observer, i.e. notice-able. Their relatively small size and light weight mean that they are easily picked up by one hand, the smaller ones also by children, i.e. pick-up-able and port-able. They fit in a pocket or pouch (pocket-able), can be tied in a string around the neck or wrist (wear-able), placed out as décor in a home (display-able), or put away in a collection of other curious and odd looking things (hoard-able). Collect-able things can be treasured possessions, given away, or picked up to then be forgotten. I myself am guilty of all of the above, especially of finding pebbles in the pockets of jackets I haven't worn for a while. Thus, there are many possible reasons that the collect-ability of fossils would be acted upon by people.

Fig. 13: A selection from my own collection of curious things found in nature. Photo: Ljunggren, 2019.

Where are the things?

Physical contexts

The fossils were found in a great variety of contexts, from graves and ritual depositions to pits filled with refuse. The different context categories are presented in alphabetical order below. Loose finds and some top soil finds have been excluded in this section, as their find contexts do not provide any useful information. More detailed information regarding the fossils and their contexts can be found in the catalogue, along with their respective sources.

Cultural layers

Site	ID	Date	Fossils	Comment	Finds (kg)
Annetorpsleden	A15796	MN	8 su (448 g)	Waste from households and crafting	N/A
Hammar /Nosaby	A2701	PRIA	1 su (158 g)	Waste from households and crafting	54,9
Kvarnbyrondellen	A185	IA	1 co		0,02
Svågertorp 8B-C	A42285	MN	1 su 1 sh	Sea urchin fossil has a worn side and is possibly related to an axe deposition	N/A
Svågertorp 8B-C	A42672	Meso-LBA	2 su	Settlement activity	N/A
Svågertorp U	A690	Neo-BA	1 su		0,7
Trolle-Ljungby	215	LN	1 sh	Area is close to wetland	N/A
Trolle-Ljungby	228	EN-MN	1 un		N/A
Vintrie Park	A102	Neo	1 su (9 g)	Feature could possibly be remains of a mound/mounds	0,5

Table 2: Cultural/settlement layers with fossils.

Nine features with fossils were interpreted as settlement layers or cultural layers of a settlement character, distributed on seven different sites. They chronologically span from the Mesolithic to the Iron Age, with seven having the Neolithic within their age range. In four of layers one sea urchin fossil was found, in one there were two sea urchin fossils and in one there were eight. Two layers had one shell fossil, one layer had one coral fossil, and one layer contained one unidentified fossil. Only one of the fossils (Svågertorp 8B-C A42285), a sea urchin, is interpreted as possibly being intentionally deposited, as it was found directly above a buried stone axe. This fossil has a worn surface which could indicate some sort of use. Otherwise the finds in the layers consist of mostly waste from activities on the settlements, like crafting, flint knapping, cooking and other household activities. One exception is layer A102 at Vintrie Park, which could be the spread out remains of a Neolithic mound or mounds.

Dark spot

Site	ID	Date	Fossils	Comment	Finds (kg)
Hindby	A1209	LBA	1 su (157 g)	Feature possibly settlement related	1,1

Table 3: The so called "dark spot"-feature

One fossil sea urchin was found in a feature described as a dark spot (swe: “mörkerfärgning”). As the other finds in the feature was exclusively flint it has been interpreted as a possible flint knapping site. There is no further interpretation of the fossil.

Graves

Site	ID	Human remains	Date	Fossils	Comment / interpretation	Finds (kg)
Annetorpsleden	A15407		MN	2 su (88 g)	Grave with stone packing No finds were interpreted as grave goods	N/A
Annetorpsleden	A152088		MN	2 su (88 g)	Grave with stone packing No finds were interpreted as grave goods	N/A
Dagstorp 47	A2116		LBA-EIA	1 su (0 g)		N/A
Fosie 11B	A314		IA	1 st (0,4 g)	Fossil part of grave interpretation	0,02
Glostorp	A350		EN-MN	1 su (39 g)	Fossil could be intentionally deposited	4
Gyllin's garden	8321		LN	1 un (1 g)	Grave with stone packing	0,35
Gyllin's garden	206006	x	LN	1 su (136 g)	Possibly boat grave Likely 2 individuals	1,8
Gyllin's garden	206813	x	LN	1 su (12 g) 2 bi (21 g)	Wood chamber grave Minimum of 5 adults, 3 children	1,2
Svågertorp S	A279	x	MN-LN	1 su >3 un	Battle axe grave Adult male, 30-39 years old Sea urchin fossil possibly grave goods	4
Vintrie	A9a		Neo	1 su (94 g)	Stone packing, possible wooden cover construction and coffin.	>1,6
Östra Odarslöv	A77999		RIA	1 sh	Unclear wether shell was intentionally deposited	1,4
Östra Odarslöv	A79182		RIA	1 un (2 g)	Possibly a female burial	>0,9

Table 4: Features interpreted as graves, which contained fossils.

Fossils were documented in 12 graves on eight sites. Dating stretches from the Mesolithic to the Iron Age, with a majority being from the Neolithic. The total amount of fossils is at least 20, 12 of which are sea urchin fossils. None of the graves were considered to be cremation graves, though three (A314, A350, A2116) are ambiguous. Only three of the inhumation graves contained any preserved human remains.

The graves with fossils from the Middle and Late Neolithic are reflective of the wide variety in burial customs that emerge during this time (Runcis, 2005:272). Different stone packings and incorporations of wooden constructions are represented, and possibly even a burial in a wooden canoe.

Only two graves had interpretations regarding the sex of the buried individual. In the battle axe grave the skeleton was preserved and was subject to osteological evaluation (see below). Grave A79182 at Östra Odarslöv was interpreted as a possible female burial from the grave goods, which included a rich set of glass and amber beads, a bronze fibula, a couple of iron tools and pottery vessels.

Of the ambiguous graves, the possible grave at Fosie 11B (A314) showed signs of having served as support for a raised stone. It could thus be an example of an empty grave monument, where no human remains have been deposited. These monuments are known from Iron Age and play a part in the perceived deficit of human remains in Late Iron Age archaeology (Hadevik & Gidlöf, 2003:165, 173f; Herschend, 2009:33ff).

The only fossil with a convincing interpretation as actual grave goods, and not some other deposition in the grave, is a perforated sea urchin fossil found in a battle axe grave. The strict practices surrounding the choice and arrangement of the grave goods in these graves mean that it's highly unlikely that such an odd object would end up among it by mistake.

Battle axe grave

The sea urchin fossil, perforated like a ring or bead (see fig. 11 above), was found in a battle axe grave (A279) at Svågertorp S in Malmö. The perforated fossil was placed behind the head

of the buried individual together with other grave goods. There were other fossils found elsewhere in the grave, which were also considered to have been intentionally collected and deposited. These fossils are not further described (Berggren & Brink, 2010:279ff). Like in the typical battle axe grave, the dead individual was positioned on their side facing east. Among the most common gifts accompanying the dead are battle axes, hollow edged flint axes and pottery vessels. Artefacts like different flint tools and jewellery are also common. Only the battle axes seem to have been limited to male graves. It is possible that the grave goods was produced specifically for the burial, as it has been noted that a lot of the tools in these graves are unused and the pottery is burial specific (Runcis, 2005:272). There is also a strict pattern to the placing of objects in battle axe graves, possibly a value-hierarchy where the most valuable objects – often axes – are placed by the head, and the less valuable – often pottery – by the feet (Berggren & Brink, 2010:276ff; Runcis, 2005:272). As the fossil could have been worn as a pendant and was placed together with the 'more important' objects, it is likely to be part of the grave goods.

Hearths

Site	ID	Date	Fossils	Comment	Finds (kg)
Lockarp	(no ID)	EIA	2 su	Fossils discussed to have a ritual purpose in report	N/A
Lockarp	A424	PRIA	1 su (78 g)	Fossils discussed to have a ritual purpose in report	1,03
Pilbladet	A19558	LBA-EIA	1 su (65 g)	Remnants of hearth bottom	0,07
Södra Sallerup 151	A5553	LBA	1 su		N/A

Table 5: Hearths that contained fossils.

5 fossil sea urchins are from hearths. One hearth contained two fossils, and the remaining one each. Two of the features lack any description of other finds, and one only produced a single flint flake apart from the fossil. The latter, Pilbladet A19558, was interpreted to be the bottom remnants of a larger hearth, in which different materials had been burned. Hearth A424 at Lockarp contained fragmented materials and bone from cattle.

Megalithic tombs

Site	ID	Feature	Date	Fossils	Comment	Finds (kg)
Döserygg	A11	Bottom construction (dolmen)	MN	2 su (168 g)		10,5
Döserygg	A13	Bottom construction (dolmen)	MN	4 su (232 g)	2 chambers	75,2
Döserygg	A15	Dolmen	EN-MN	1 su	From bottom construction/mound fill	2,6
Döserygg	A158	Dolmen	EN-MN	1 su	From bottom construction/mound fill of probable dolmen	N/A
Döserygg	A212423	Bottom construction (dolmen)	MN	3 su	Slate Pendant	0,7
Döserygg	A213280	Bottom construction (dolmen)	EN-MN	1 su (39 g)		3,3
Döserygg	A223332	Bottom construction (dolmen)	EN-MN	1 su		2,5
Döserygg	A85003	Bottom construction (dolmen)	EN-MN	3 su		13
Vintrie Park	A2	Bottom construction (dolmen)	EN-MN	1 su (29 g)	2 chambers	55,2
Östra Odarslöv	Dolmen 2	Dolmen	EN-MN	1 su (64 g)	From bottom construction/mound fill	8,6
Östra Odarslöv	Dolmen 3	Dolmen	EN-MN	5 su (140 g)	3 fossils arranged	2,2
Skregie	A120	Below dolmen	Neolithic	1 su (27 g)	Old ground surface	N/A
Skregie	A41642	Stonelift (dolmen chamber)	Neolithic	1 su (16 g)	(no finds list)	N/A
Truls Hoj	A18345	Stonelift (passage grave)	MN	1 un (12 g)	Other grave monuments nearby	0,19

Table 6: Megalithic grave monuments which contained fossils. Features that are possibly unrelated have been separated at the bottom of the table.

26 fossils were found in features related to megalithic tombs, 25 of which are sea urchin fossils and 1 unidentified fossil. The sea urchin fossils were found in dolmens or dolmen related features, and the unidentified found in a stone lift from a passage grave. Dolmens are mainly a Neolithic element in Scandinavia, but they do reappear in the Iron Age. However, no Iron Age dolmens are documented in Scania (FMIS). The two fossils documented in the stone-lifts from

chamber blocks (A18345, A41642) and the one found below a dolmen construction (A120) have been separated at the bottom of the table, as they might not be directly part of the constructions made on top of them. While depositions of objects below large stones is known from the Neolithic, they are usually not part of megalithic grave constructions (Karsten, 1994:139f).

None of the megalithic tombs were intact at the point of archaeological excavation, but rather the opposite. None of them had any standing chamber structure left and any remains of the mounds had been heavily disturbed by agricultural activity.

At Döserygg there were a total of 20 dolmens, of which 19 were long dolmens and one was a round dolmen. Remnants of another two probable dolmens were also documented (Andersson & Wallebom, 2011:29). Two of the dolmens were dated to Early Neolithic, four to Middle Neolithic, and the remaining 16 to Early-Middle Neolithic in general (Andersson & Wallebom, 2011:12, 30-82). Fossils were only found in dolmens from the two latter categories.

Finds in the fill of dolmen mounds are not necessarily intentionally deposited, as they could be already present in the soil used for the mound (Brink & Larsson, 2017:37). This uncertainty goes double for fossils as they are already present in the soil without human intervention. While this means that the interpretation of fossils found in dolmens, unless they have been placed in an arranged manner as in Dolmen 3 at Östra Odarslöv, needs to be mindful of these circumstances. Still it should be pointed out that if their presence in dolmens is unintentional in this manner, they should have a similar find frequency in other kinds of mounds. When combining the fossils from the contextual analysis and the visual analysis, only one out of 201 sea urchin fossils and one out of 30 unidentified fossils were from passage graves or passage grave related features, while 25 sea urchin fossils were found in dolmens or dolmen related features. No other fossils are known with certainty from other kinds of mounds, the only possible instance in this study being the layer hesitantly interpreted as remains of a mound (Vintrie Park A102 above). One type of feature that has a connection to Neolithic long mounds is a so called façade, and one such feature at Odarslöv (A11734, see below) was found to contain a sea urchin fossil, which was interpreted as a possible ritual element. However, the façade constructions excavated in this area have been found to be freestanding constructions with a spatial connection to long dolmens rather than long mounds (Andersson, 2017:49). At Döserygg sea urchin fossils were also found in the wetland depositions near Dolmen 1 (see below), which were contemporary with the dolmens (Andersson & Wallebom, 2011:114f). Furthermore, at Östra Odarslöv it was found that the pottery in the dolmen mounds was contemporary with the construction of the dolmen, which indicates that it was intentionally deposited during the construction rather than a secondary deposition (Lagergren, 2017:92). If this is true for Döserygg as well, it increases the likelihood that the fossils were intentionally incorporated in the construction of the dolmens.

Pit houses

Site	ID	Feature	Date	Fossils	Comment	Finds (kg)
Herrestorp	A2163	Floor	EN	1 su (27 g)	Funnel beaker sherds in center Feasting location?	1,5
Lilla Isie	A56	Pit house	VA	2 be (5 g, 2 g)	Fossils possible beads. Refuse material	3
Lockarp	(no ID)	Pit house	VA	1 su (78 g)	*Echinocorys* Fossils discussed as ritual items Grain storage	1,7
Mossby	L4525	Fill (pit house 2855)	VP-VA	1 moll (1 g) 2 un (4 g)	Pottery match with L4543	0,3
Mossby	L4543	Floor (pit house 2855)	VP-VA	1 oy (23 g)	Horned cranium fragment, offering? Pottery match with L4525	0,3
Risebergabäcken	A20	Pit house	VA	1 su	Poorly preserved loom weight	N/A
Risebergabäcken	A66	Pit house	IA	1 su		N/A
Skregie	A4012	Floor	VA	1 su (99 g)		N/A
Skregie	A20700	Floor and infill	VA	1 su (59 g)		N/A
Svågertorp F	A1304	Pit house/ hut bottom	EN-MN	3 su		1,7
Södra Sallerup 15F	A9369	Pit house	PRIA	1 su (67 g)		7
Östra Grevie	12	Pit house	VA	1 su (61 g)	Central horse cranium, offering?	2,3

Table 7: Pit houses that contained fossils.

17 fossils were found in 11 pit houses. Nine contained sea urchin fossils, eight of which had one sea urchin fossils each, and one had three. These range in age from the Neolithic to the Viking Age, with a majority of six pit houses from the Late Iron Age. One Late Iron Age pit house at Mossby contained no sea urchins, but one mollusc, one oyster and two unidentified fossils. The final feature is from Lilla Isie, dated to the Viking Age and contained two belemnite pieces, one of which has split into two halves. These are the ones that have been interpreted as beads (for description, see "Visual analysis" and "Affordances" above).

Two pit houses contained finds that could be ritual deposits/offerings placed centrally in the structure. Pit house 12 at Östra Grevie had a horse cranium placed over a central pit, and floor layer L4543 at Mossby had a horned fragment of an animal cranium in the centre. A similar occurrence can be noted in floor layer A2163, where large sherds from a funnel beaker were found in the centre. The two craniums were interpreted as possible offerings in the reports, while the pottery was simply noted (see catalogue). In none of these instances are the fossils described as related to the central deposition, other than being from the same feature/structure.

The fill in several of the features are interpreted to be waste from the surrounding area, and not from activities taken place inside the structure. The materials are generally indicative of settlement activities as butchery and crafting, the latter especially in the Late Iron Age features (see catalogue). The fossils found in the fill layers of the pit houses are therefore likely to be secondary, unintentional deposits. Nevertheless, the oyster fossil and two sea urchin fossils were found in the floor layers of their respective pit houses, and another sea urchin could possibly be from a floor layer. These are more likely to have been deliberately deposited, or at least brought into the structure, as they are from the time when the pit houses were in use. Three of these fossils are from features dated to the Iron Age, with the remaining being from the Neolithic.

In a similar case from the mid 1990's, several fossil sea urchins were found in Late Iron Age pit houses at Strandby Gammeltoft in Denmark. As these are not naturally occurring at this location, they've been interpreted as house offerings meant to serve a protective purpose in the similar to the later thunderstones. While the fossils in Scania could have been collected nearby,

the Danish finds are similar in that a majority of them were found in the fill of the pit houses, and only two show signs of having been deposited while the houses were in use (Henriksen 1997, cited in Carlie, 2004:157). A clear difference lies in that the fossils found in the fills at Strandby Gammeltoft would still have had to been brought there from somewhere else by humans, whilst the fills from the Scanian pit houses could include fossils completely unintentionally.

Pits

31 of the features in this study were documented as pits. As their interpreted purposes vary greatly, the presentation of them is broken up after pit type and presented in alphabetical order.

One common issue with almost all of the pits is that if they were dug into the moraine, fossils could be unintentionally dislodged into the pit by digging, during use or deposition of other material.

General pits

Site	ID	Date	Fossils	Comment / interpretation	Finds (kg)
Almvik	A5	LBA	1 su	Bottom of larger pit	N/A
Gyllin's Garden	15486	(none)	1 su (14 g)		N/A
Herrestorp	A/G12460	EN	2 su (115 g, 95 g)	Fossils are of similar size and colour	4,5
Limhamn	A5422	Neo/IA	1 su (62 g)	Contents chronologically ambiguous	0,11
Lindelängelund	A42859	EN-MN	1 su (128 g)	Contained moraine flint	0,005
Sunnanå 12	A702	IA	1 un (85 g)		0,35
Svågertorp 8B-C	A1618	BA	1 un	Surface of fossil worn	N/A
Svågertorp L	A252	LN	1 su (21 g)	Close to LN longhouse	N/A
Svågertorp M	A1353	PRIA	1 su (49 g)		0,24
Svågertorp S	A108	Neo	1 su	Fossil found with moraine flint	2,4

Table 8: General pits that contained fossils.

These are the pits for which the purpose is unknown, and there are no interpretations regarding the contents in the reports. It is not unusual to find that the contents of these pits might not be directly related to the intended purpose of the feature. Out of the ten pits, seven contained one sea urchin fossil, one contained two sea urchin fossils, and two contained one unidentified fossil. They range in date from the Early Neolithic to Iron Age, with a slight leaning toward the Neolithic in general with four out of ten pits being from this period. One of the fossils in Herrestorp A/G12460 is interpreted as a hand stone, and the one found in Svågertorp 8B-C A1618 has a worn surface that could indicate some kind of use.

In the Neolithic, pits were commonly refilled with fragmented materials, and often mixed up with charcoal and soot. These pits have frequently been interpreted as simple refuse pits where all kinds of trash may have been disposed of, but in recent years archaeologists have noticed that the content of these kinds of pits does not seem random. Quite to the contrary, the "garbage" seems to be a curated selection of materials and sometimes even arranged in the pit. The act of disposing of refuse in this fashion show that the Neolithic peoples treated their trash, or at least some of it, in a thought out manner. The materials in these pits weren't simply thrown away and forgotten. In relation to some events, like feasts, pits were dug for the sole reason of later being filled with the garbage produced by the happening. In these pits objects have been found to have been broken as they've been put in the pits (Andersson *et al*., 2015:38f).

Cooking pits

Site	ID	Date	Fossils	Comment / interpretation	Finds (kg)
Asmundtorp	AK200	LBA-EIA	1 su	Fossil pressed in bottom edge	N/A
Svågertorp X	A1619	LBA-EIA	1 su (87 g)		0,05
Tygelsjö 41	A18905	LBA	1 su (89 g)		0,47

Table 9: Cooking pits which contained fossils.

Three pits were interpreted as cooking pits, all within the age range of Late Bronze Age to Early Iron Age. The fills and contents of these are sooty and burned. The fossil sea urchin in Asmundtorp AK200 did not show any trace of being burned, and together with its placement in the feature it was deemed to most likely be part of the surrounding soil rather than the contents of the cooking pit. There are no further interpretation or description of the other two fossils.

Refuse pits

Site	ID	Date	Fossils	Comment / interpretation	Finds (kg)
Hammar/Nosaby	A3153	VP	1 su (158 g)	Contents are most likely refuse and indicate different crafting activities	2,2
Hammar/Nosaby	A3165	VP	1 su (158 g)	Contents are most likely refuse and indicate different crafting activities	9,9
Hindby	A1221	LBA	1 su (51 g)	Contents are interpreted as refuse	2,5
Svågertorp 8B-C	A19044	BA	1 su	Surface of fossil worn Contents of similar features interpreted as refuse pits	N/A
Tygelsjö 41	A18831	LBA	1 un (12 g)	Fossil in layer 6 of 7 with 1 flint flake and 6 pottery sherds	0,38
Tygelsjö 41	A26038	LBA	1 su (70 g)	Feature secondarily used as refuse or cooking pit	0,56

Table 10: Refuse pits which contained fossils.

Six pits were interpreted as refuse pits, or pits that had been filled with refuse after their original use stopped. They range in date from Bronze Age to Vendel Period, with half of them being from the Late Bronze Age. One fossil was found in each feature, of which five are sea urchins and one is not specified. The surface of the fossil sea urchin in Svågertorp 8B-C was worn and could have been used in some way.

Ritual and offering pits

Site	ID	Date	Fossils	Comment	Finds (kg)
Hindby	A1259	LN-EBA	1 su (58 g)	Possible offerings related to fen deposits	96,4
Hindby	A1265:4	LN	1 su (96 g)	Possble offering pit	0,025
Lindelängelund	A152502	RIA	1 su (86 g)	Possible ritual deposition	0,12
Skregie	A7052	Neo	1 su (46 g)	Contents interpreted as offerings	N/A
Södra Sallerup 15I	A4506	LBA	1 su	Ritual pit, intentional deposition	0,97
Södra Sallerup 15F	A9283	(none)	1 su	Possible grave	N/A
Södra Sallerup 15I	A11206	LBA	1 su	Ritual pit, intentional deposition	9,5

Table 11: Ritual and offering pits which contained fossils.

Seven of the pits contained intentional depositions which were interpreted as ritual, or as possible offerings. In this category the fossils are all sea urchins, and one was found in each feature. Their chronological spread is from the Neolithic to Roman Iron Age. Pit A9283 at Södra Sallerup 15F has not been dated, and it is the only feature in this category which has also been suggested to be a grave. No human bones were found, but since the age is unknown it could be an example of an empty grave (see Fosie 11B A314 under “Graves” above).

The two pits at Hindby were dug into the edges of the fen located at this site (see "Wetlands" below). They differ from most of the other pits as they've been dug into the organic sediments surrounding the fen, where there are no fossils naturally occurring. The fossils found in these pits must have been brought there by people. The materials deposited in these pits are interpreted as related to the contemporary depositions made in the fen, and like the fen the material deposited in the pits was mainly stones.

The contents of the pit at Lindelängelund were interpreted to be a ritual deposition due to the presence of pottery sherds from burnished ware made from fine clay, and the fossil is interpreted as part of this deposition. The pit itself is suggested to have been dug for another, unidentified, purpose.

The pits at Skregie and Södra Sallerup 15I were interpreted as an offering pit and ritual pits respectively. The deposited materials consist mainly of flint and pottery. Pit A11206 at Södra Sallerup 15I contained over half a kilo of animal bones from various species, including a dog cranium, as well as two crucible fragments. It was the most find-rich feature found during the excavations at the site. The other pit at the site, A4506, had a more limited range of finds, but a large flat stone was placed in the surface of the feature.

While all the finds in the depositions at Lindelängelund, Skregie, and Södra Sallerup 15F and I are interpreted as purposefully put in the pits, the issue formulated in the beginning of this section still stands. Unfortunately it is not disclosed whether the finds were arranged in such a way that suggests the fossils were definitely put in the pits, rather than just dislodged into them.

STORAGE PIT AND PIT DEPOSITION

Site	ID	Date	Fossils	Comment / interpretation	Finds (kg)
Lindelängelund	A17562	IA	1 su (17 g)	Storage pit	0,07
Östra Odarslöv	A3185	EN	1 su (17 g)	Bottom remnant of pit with intentional deposition Fossil in surface on to flints that fit together	1

Table 12: Storage pit and pit deposition which contained fossils.

Only one pit feature containing a fossil was interpreted as a storage pit, and one other was found in an intentional deposition. They have been combined here as these interpretations both concern a form of intentional deposit that has not been interpreted as ritual in any way. Both of the fossils are sea urchins, but one of them is only visible in the surface of a split piece of flint.

The storage pit was related to an Iron Age long house, and only contained the fossil, 10 grams of unidentified animal bones and 3 sherds of Baltic ware pottery. There is no interpretation in the report regarding whether the fossil was intentionally deposited or not. It could have been put in the pit, perhaps for some reason similar to the belief that sea urchins would keep food or drink from spoiling (see "Folklore" above), or it could have been dislodged into the pit as it was dug or when items were put in or pulled out of it.

The other feature was found to contain the remnants of six intentionally placed pottery vessels at its centre, along with the fossil, some fired clay, a flint core and some flint flakes. It also contained a noteworthy amount of burned grains. As with the storage pit, it is not explicitly stated whether the fossil is interpreted as part of the deposition, and it could have been an unintended addition as small flint nodules occur in the surrounding moraine.

As both fossils are sea urchins and recorded as the same weight, it might seem like the fossils are of the same size. However, as the one from Östra Odarslöv was encased in flint its actual weight would be less than 17 grams.

Pit systems

Site	ID	Date	Fossils	Comment / interpretation	Finds (kg)
Knästorp	A266	BA	1 su (114 g)	Fossil collected as curious object	N/A
Svågertorp U	A770	LBA-RIA	1 su (76 g)	Cooking related	1,9
Östra Grevie	35000	EIA	1 su (39 g)	System larger than 330 m2	4,2

Table 13: Pit systems which contained fossils.

Three fossil sea urchins were found in as many pit systems. In none of them are the fossils discussed as possibly being intentionally deposited, but the one from Knästorp A266 was discussed in the report to have been collected by the Bronze Age people at the site as a curious object. This pit system does not have an interpretation regarding its purpose, but was found in a settlement connected activity area, and contained burnt material, some flint and pottery sherds from cooking- and storage vessels. Only 1/5 of this feature was excavated, so it is possible that it could have contained other fossils and materials.

The pit system at Svågertorp U was interpreted as cooking related and to have been used in connection to the longhouses found at the same site. The pit system at Östra Grevie is thought to have been dug as a source for clay, and later filled up during the Early Iron Age when it went out of use. This fill produced a variety of materials along with the fossil, which is not surprising considering the size of the pit system. A couple of more unusual finds – for the find compositions in this study, at least – are 16 fired clay blocks and a couple of loom weights. Otherwise the find material is of settlement or activity-character, as is the material from the other pit systems, with flint flakes, animal bones, pottery sherds, and other waste from crafting.

The find material from all the pit systems is in line with settlement activity, like flint flakes, animal bones, pottery sherds and tools used in everyday activities.

Considering the sheer size that pit systems can have, combined with fossils occurring in the moraine, it is likely that a fossil or two could end up in them by chance (Rostóvanyi & Hydén, 202:104) or have been dislodged into the pits during digging.

Postholes

Site	ID	Construction	Date	Fossils	Comment
Gyllin's garden	13902	Long house	EIA	1 su (62 g)	Fossil found "right below post"
Gyllin's garden	200798	Long house	RIA	1 su (42 g)	Fossil interpreted as house offering
Gyllin's garden	200846	?	?	1 su (65 g)	
Gyllin's garden	201101	?	?	1 su (103 g)	
Pilbladet 1	A20791	Hut/activity area	LBA	1 su (94 g)	Fossil found near bottom of feature Feature fill might be from after the post was removed
Svågertorp 8B-C	A1404	?	?	1 sh	Feature described as isolated
Svågertorp 8B-C	A2073	?	?	1 su	Feature described as isolated
Svågertorp 8B-C	A24047	Long house	EBA	1 su	Fossil interpreted as possible house offering Hole of wall post by entrance
Svågertorp S	A2221	Long house	MN	1 su	Hole of roofbearing post in oldest house on site
Svågertorp X	House 13	Unclear	RIA	1 su (67 g)	Fossil interpreted as possible ritual deposition Post holes were dug into the moraine
Tygelsjö 41	AS11804	Economy building	VP-VA	1 su (5 g)	Hole from wall bearing post, possibly next to entrance
Örtofta 51	A18046	Long house	VP	1 su (20 g)	Fossil interpreted as possible ritual deposition House possibly related to Iron Age aristocracy

Table 14: Postholes that contained fossils.

12 fossils were found in as many postholes. All but one, a shell fossil, were sea urchin fossils, and all but one were seemingly the only find in their respective feature. The only fossil that was found with other material was the sea urchin in Svågertorp S A2221, in which a grinding stone fragment was found together with the fossil. It is however worth noting that not all features were thoroughly described, some only mentioned as part of a discussion around the fossils. In four cases the sea urchin fossils were suggested to be house offerings or deposited in the postholes as part of a ritual, and one case is thought to be a secondary deposition from the feature filling up after the post was removed from the hole. Three out of four possible offerings were from Iron Age postholes, with the remaining being from the Early Bronze Age. All of the possible offerings were made in long houses. Remaining seven fossils lack further interpretation in the reports, but for two of them the feature itself was noted as of some possible significance. However, like with the pits, when postholes are dug into the moraine it can be difficult to distinguish between intentional deposition and unintentional occurrence (Rostóvanyi & Hydén, 2002:104f).

Fossils found in postholes have been discussed by Anne Carlie in her book on cultic practices in relation to houses in prehistoric Scandinavia. In her research she only found two examples of fossils deposited in postholes from Scania, both sea urchins: One in the hole of a roof bearing corner post of an Iron Age longhouse in Skabersjö, the other in one of the postholes by the eastern entrance of a longhouse dated to Viking Age/Early medieval in Säby. Both were interpreted as ritual depositions (2004:279f). Carlie also includes material from other sites in Scandinavia, and concluded that the deposition of sea urchin fossils in postholes, or houses in general, was a phenomena limited to the Iron Age, with no particular leaning to either the earlyer or later phases (2004:156ff). While the very last part of this conclusion still stands, the finds in this study have a wider chronological range, with one instance of a fossil sea urchin from the Middle Neolithic, Early Bronze Age and Late Bronze Age respectively. The Late Bronze Age posthole might not have been from a house and the fossil not an intentional deposition, but the other two were both postholes from longhouses. The Early Bronze Age deposition was interpreted as ritual, while the Neolithic is lacking interpretation. Both of these

fossils were found in the general Svågertorp area, as was one dated to the Roman Iron Age which was interpreted as a possible ritual deposition.

Stone circle

Site	ID	Date	Fossils	Comment	Finds (kg)
Döserygg	A121	EN-MN	1 su	No interpretation of fossil	1

Table 15: Stone circle by which a fossil was found.

One fossil sea urchin was found in relation to feature A121 at Döserygg, which was made up of nine large stones placed in a circle, possibly with a pathway marked by two rows of stones. It is not specified where the fossil was found, and it does not have a specific interpretation. The other finds from this feature are 1 kilogram of worked flint and ca 60 grams of pottery sherds.

Stone packings

Site	ID	Construction	Date	Fossils	Comment	Finds (kg)
Odarslöv 46	A11734	Facade	EN-MN	1 su (42 g)	Fossil interpreted as possible ritual element Feature related to a megalithic monument	0,03
Sunnanå 19E	A5841	Cult house	LN	1 su (63 g)	Several ritual elements present in relation to structure	14,9
Sunnanå 19E	A5841 (topsoil)	Cult house	LN	1 su (43 g)	*Echinocorys* Found in topsoil above stone packing interpreted as part of a cult house	4,5
Svågertorp K	A3096	Undecided	Neo	2 su	Feature suggested to be a boundary, part of a grave or related to a long dolmen	>4
Vintrie Park	A2859	Undecided	Neo	1 su (122 g)	Feature suggested to be support for a raised stone or remnant of a larger stone packing	1,3

Table 16: Stone packings which contained fossils.

Five fossil sea urchins were found in stone packings and one in a directly related feature, all dated to the Neolithic.

One of the stone packings (A11734) is interpreted as a so called façade, a feature type that is related to dolmens in this area. The fossil found in this feature was interpreted as a possible ritual element. The stones in the feature was mostly in the size range of 5-15 centimetres in diameter, and based on the weight the fossil was likely slightly smaller (see appendix 1). Only 1/10 of the feature was excavated. Considering the arranged fossils found in Dolmen 3 at the neighbouring site Östra Odarslöv – which would also be in the smaller size range based on their combined weight – there could have been another fossil or two still to find in the feature.

Two fossils were found in what has been interpreted as a Late Neolithic cult house (A5841). It was described as incorporating several ritual elements, like the large amount of stone tools used as part of the stone packing. Whether the fossils are interpreted as ritual elements is unclear, but the one found in the stone packing was brought up in by Berggren's discussion around the fossils found in Hindby fen (2010:284). While the finds in the topsoil have been related to the underlying construction, younger material had been introduced through ploughing. The fossils found in connection to the cult house are both sea urchins which, based on their weight, are of roughly the same size.

The interpretations for the remaining two stone packings are uncertain.

Wells

Site	ID	Feature	Date	Fossils	Comment	Finds (kg)
Lindelängelund	A58377	Fill above wells	EIA (fill material)	1 su (283 g)	Fossil interpreted as ritual deposition The Early Iron Age dating is of the fill material, and not the layer event	2,1
Lindelängelund	A74539	Curb	EIA	1 su (120 g)	Fossil interpreted as ritual deposition	>4,9
Lindelängelund	A80810	Well	LIA-EM	1 be (4 g)	Fossil interpreted as ritual deposition	>1
Lindelängelund	A80835	Well	EIA	1 su (59 g)	Fossil interpreted as ritual deposition	6
Risebergabäcken	A32	Well	VA	1 su		N/A
Södra Sallerup 151	A2148	Well	?	1 su (69 g)		>0,6
Södra Sallerup 151	A6040	Well	LBA	2 su (200 g)		2,1

Table 17: Wells which contained fossils.

Eight fossils were found in five wells, one well curb and one well related fill layer. Seven are sea urchin fossils and the remaining a belemnite.

The contents in wells can be difficult to interpret as they have been open for a longer time compared to other feature types (Rostóvanyi & Hydén, 2002:104). Things have a much larger chance of ending up in them by accident. All instances of fossils being interpreted as intentionally deposited in wells are from Lindelängelund. The exact chronological boundaries of the depositions in the wells at Lindelängelund is not entirely certain, but the practice seems to stretch from the Neolithic (Carlie & Lagergren, 2014:112) into the Early Medieval on the site (127), with a break during Late Bronze Age and early Pre Roman Iron Age (Carlie & Lagergren, 2014:118f). The fossils have only been deposited from the Early Iron Age onwards. The only feature which contents are thought to be partially secondarily deposited is that of the fill above the wells (A58377). This is due to the finds in this layer being dated to the Early Iron Age, while material from the underlying well A80810 is younger. This means that even though the fossil in A58377 is interpreted as a ritual deposition, it could have been included in the fill unintentionally.

Well A80810 at Lindelängelund is believed to have been open for a relatively short time. As the fill in the well was uniform and the find material interpreted to have some ritual characteristics – fossil included – it is possible that the well was filled as part of a closing ritual. The deposition of the overlying layer A58377 was possibly the same event as the closing of A80810 as the fill materials were very similar. While the other well, A80835, and the well curb, A74539, that contained fossils also have ritual elements in their respective fills, they do not show signs of the same rapid closing as A80810.

Well A80835 contained partial human remains from 2-3 individuals, as did other wells at Lindelängelund. The bones in A80835 were likely old at the time of deposition, and are not interpreted as the result of human sacrifice (Carlie & Lagergren, 2014:99). Among the other finds of human remains in the wells and curbs at Lindelängelund were the intact skeleton of a five year old, in a well dated to the transition from Neolithic to Early Bronze Age (Carlie & Lagergren, 2014:113f), and the cranium of an adult female was placed on top of a filled well curb in the late Pre Roman Iron Age or early Vendel Period, probably as part of a closing ritual (Carlie & Lagergren, 2014:123).

Wetlands

Site	ID	Feature	Date	Fossils	Comment	Finds (kg)
Döserygg	(no ID)	Wetland deposition	EN-MN	3 su 1 un	Intentional deposition Possible offerings	55
Hindby	A1300	Votive fen	LN-EBA	40 su (1,3 kg)	Votive deposits	300+
Svågertorp L	A184	Wetland deposition	IA	1 su (108 g)		1,5

Table 18: Wetlands in which fossils have been deposited.

Fossils have been documented in wetlands at three different locations, and in vastly different quantities. At Döserygg there were three sea urchins and one unidentified fossil, and in A1300, the votive fen at Hindby, 40 sea urchin fossils have been recorded, and in A184 at Svågertorp L there was a single sea urchin. The depositions of fossils in the three wetlands do not overlap in time. This is one of the few physical contexts where there is no doubt that the fossils have been collected someplace else and deliberately brought to or thrown into the wetland on purpose, as fossils – of the sizes and weights in this study – do not occur naturally in the sediments of wetlands.

The depositions at the previous wetland at Döserygg were concentrated to an area near dolmen 1, and were interpreted as offerings or intentional depositions. There were two pottery vessels placed into the wetland which contained burned bones, and the concentration of finds seemed spatially related to these depositions. Parts of the find material from the wetland had been subject to destruction or burning (Andersson & Wallebom, 2011:114).

The votive fen at Hindby has been subject for discussion regarding depositional practices previously, without mention of any fossils (Karsten, 1994:167) or with a shorter section about them in a larger body of work (Berggren, 2010:283ff). It was in use from the Mesolithic to the Late Bronze Age. The intensity of depositional activity varied over time with the highest intensity during the Late Neolithic and Early Bronze Age (Berggren, 2007:169), the same period that the fossils were deposited. While a wide variety of objects had been deposited in the fen – flint, pottery, tools, wood objects, etc. – the most commonly deposited material was unworked stones. These stones alone had a combined weight of circa 13 tonnes. These are described to be of a limited size, in the range of 1-2 fists, while the fossil sea urchins are noticeably smaller (Berggren, 2007:80f). The fossils were spread out in the fen, with a slight concentration by a clay layer at the eastern edge. While objects like fossils, which have no clear value or symbolism, could be argued to have been unintentionally dropped into the fen (Berggren, 2008:19), the contemporary deposition of valuable items supports that the deposition of usually non-valuable objects was very much intentional (Koch, 1998:133). In the report it is noted that the worked stones from the fen show that the prehistoric peoples had good knowledge of the qualities and affordances of different rock types (Berggren, 2007:91).

The material found in the wetland at Svågertorp L was interpreted to be of a completely different character than the other two, as it was deemed to be refuse material from the nearby settlements (Tuominen *et al*., 2000:26).

Find compositions

There is no real surprise to see fossils occurring with materials like flint, pottery and animal bones, as these are some of the most common material categories dealt with in Scanian archaeology and are found in almost all kinds of features. The only feature category were no other finds than fossils were found – or at least not included in the reports – are postholes. In all but one a single fossil, most commonly a sea urchin, was the only documented find.

There are a few material categories/artefacts that are more unusual that occur several times together with fossils. Slate pendants were found in one dolmen and two other graves, which equals to 2.5 % of all features and 12 % of dolmen and grave features. However, slate pendants have seemingly been documented in far more graves and megalithic tombs than fossils have (FMIS). But the real problem here is the methods used for finding the material for this study. As interesting as it is as a point for discussion, no conclusions should be drawn without a more thorough look at the graves and dolmens that *did not* contain fossils – or more correctly, those we *don't know* whether they did or not – before making any assumptions about correlations between fossils and any specific material categories and artefacts. A certain degree of resolution is needed in order to properly see any patterns, or lack thereof, which is not present in this study. And of course, this does not only apply to slate pendants, but all reoccurring but uncommon materials. Still, I would nevertheless like to attempt a more broad and general discussion regarding the find compositions, with the above word of caution in mind. For this the more common feature categories with detailed documentation and material analyses have been selected, as to minimise the degree of speculation.

Graves and tombs

The find material in graves that contained fossils was varied. Pottery was found in all features, and bones or teeth from animals in all but one. Flint was present in 8 out of the 12 features. The pattern for the megalithic monuments was similar, with flint in all features and pottery present in all but one (the passage grave at Truls Hoj). No bones were found however, probably due to poor preservation and the unfortunate state of the megalithic graves at the time of excavation. Tables of the find compositions in megalithic monuments and graves can be found on the next page.

In several of the dolmens and a few of the other graves were items that have a strong connection to profane, everyday activities, like flint cores, knapping stones and grinding stones. Finds of these typically profane objects in ritual or sacred contexts have been discussed to express a connection between the profane and domestic, and transformative in their practical and symbolic value as they move between different spheres of life (Victor, 2002:39). The pottery in the dolmens has also been found to be of a typical settlement character, with fragments from vessel types that have been used for a variety of domestic activities like cooking and containers for liquid. Fragments from clay discs could also be from domestic activities, but their function is not completely understood (Andersson & Wallebom, 2011:173ff). In the report from the excavations at Döserygg it is suggested that the pottery material found in the dolmens might be more reflective of other activities at the site, rather than being directly related to the burials. This is indicated especially by the clay discs, as most of them were found in relation to other features at the site. This would however still indicate a meeting between every day, domestic activities and the sacred, ritual environment at the site (Andersson & Wallebom, 2011:177).

Site	ID	Clay disc	Flint arrowhead	Flint axe	Flint core	Flint/tools	Lithic tools	Pottery
Döserygg	A11	x	x	x	x		x	x
Döserygg	A13	x	x	x	x	x	x	x
Döserygg	A15			x		x		x
Döserygg	A158					x		x
Döserygg	A212423			x		x		x
Döserygg	A213280			x		x	x	x
Döserygg	A223332			x		x		x
Döserygg	A85003		x	x		x		x
Vintrie Park	A2			x	x	x	x	x
Östra Odarslöv	Dolmen 2		x		x	x	x	x
Östra Odarslöv	Dolmen 3					x	x	x
Skregie	A120					x		x
Skregie	A41642	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Truls Hoj	A18345					x		

Table 19: Find compositions from dolmens which contained fossils. Details in catalogue.

Site	ID	Bone/teeth	Fired clay	Flint	Jewellry	Lithic tools	Pottery	Slag	Weapons
Annetorpsleden	A15407	x	x	x		x	x		
Annetorpsleden	A152088	x	x	x			x		
Dagstorp 47	A2116	x					x		
Fosie 11B	A314	x					x		
Glostorp	A350	x	x	x		x	x		
Gyllin's garden	8321			x			x		
Gyllin's garden	206006	x		x	x		x	x	x
Gyllin's garden	206813	x	x	x	x		x	x	x
Svågertorp S	A279	x		x	x		x		x
Vintrie	A9a	x		x			x		
Östra Odarslöv	A77999		x		x		x		
Östra Odarslöv	A79182				x		x		x

Table 20: Finds compositions in graves which contained fossils. Details in catalogue.

The flint material from two of the dolmens (A13 and A213280) at Döserygg were subject to use and wear trace-analysis, which showed that 33-40% of the flint had traces of use. The different flint objects point in two directions. On the one hand there was material which would typically be found on a settlement. On the other were more unusual objects, unused tools and intentionally destroyed flint items, which all have a more ritual character (Andersson & Wallebom, 2011:132f).

Working off of the assumption that the fossils were intentionally deposited, they could belong to different practices. They could represent a movement between spheres like the typically profane items have been suggested to do, they could be specifically chosen for deposition like the less common and unused objects, or perhaps reflective of an activity – in this case it would be collection of fossils – that people took part in at the site and in connection to the dolmens.

Offerings and ritual depositions

These contexts are of a few different kinds: Seven of the contexts are ritual pits, and as was brought up earlier there is always a chance that fossils could end up in these features unintentionally if they are dug into the moraine. However, the interpretations are based on judgements by one or more archaeologists in the field, and these do carry some weight. Four of the contexts are wells or well-related, all from Lindelängelund. Issues with interpreting materials found in wells have also been brought up earlier. Two are wetland depositions, and the depositions in Hindby fen makes this the most fossil rich category over all. As mentioned above, wetland depositions differ from other contexts in that fossils of the kind that is the subject of this study – petrified remains of organisms of a notice-able and pick-up-able size – do not occur in these, sometimes completely organic, sediments without being moved there by human agency. Tables over the find compositions in these three feature categories can be found on the following page.

There are several cases of postholes where contents have been interpreted as ritual depositions or offerings. The posthole depositions differ from the other context categories as the fossils are mainly found without any other material accompanying them. Thus they are not further discussed in this section, but any points made about offerings or ritual depositions in general can be applied to these as well.

Starting off with the ritual pits (table 21), they all contained a single fossil sea urchin each, but none of them share the exact same composition of find material. The amount of material too varies greatly, from 96.4 kilograms in Hindby A1259, to less than a kilogram in Hindby A1265:4, Lindelängelund A152502 and Södra Sallerup 15I A4506. The most common find materials are flint, pottery and bone, with only three of the pits containing one or more flint or stone tools/weapons. The only identified bones are from Hindby A1259, which come from pig, roe deer, owl and cattle, and Södra Sallerup 15I, which were from bird, fish, cattle, sheep, sheep/goat, domesticated pig and a dog cranium. In the latter feature the pottery was relatively gathered, and several vessels could be identified among the sherds. The pottery in Lindelängelund A152502 was burnished and made from a fine clay. There is no obvious connection between the deposited materials dating and composition, but flint is absent only in the one pit dated to the Iron Age (Lindelängelund A152502). When comparing the pits with a ritual/offering interpretation to the “general pits” (table 22) the find composition overall is similar, with the most common materials being flint, pottery and bone also in the general pits. Some contained flint or stone tools (Herrestorp A/G12460, Svågertorp S A108), and the only

Site	ID	Bone	Flint	Fired clay	Flint point	Lithic tools	Pottery	Axe
Hindby	A1259	x	x				x	
Hindby	A1265:4		x		x			
Lindelängelund	A152502	x					x	
Skregie	A7052		x			x	x	
Södra Sallerup 15F	A9283	x	x		x			x
Södra Sallerup 15I	A4506		x				x	
Södra Sallerup 15I	A11206	x	x	x			x	

Table 21: Find composition in the features interpreted as ritual depositions/offerings. Details in catalogue.

Site	ID	Bone	Flint	Fired clay	Flint point	Clay disc	Lithic tools	Pottery
Almvik	A5							x
Herrestorp	A/G12460	x	x	x		x	x	x
Limhamn	A5422		x					x
Lindelängelund	A42859		x		x			
Sunnanå 12	A702	x	x					x
Svågertorp L	A252	x	x	x			x	
Svågertorp M	A1353	x	x					x
Svågertorp S	A108	x	x	x		x		x

Table 22: Find composition in features only referred to as "pits". Features that lack description of finds have been removed. Details in catalogue.

Site	ID	Bone	Fired clay	Flint	Knife	Lithic tools	Pottery	Shell	Wood
Lindelängelund	A58377	x	x	x		x	x		
Lindelängelund	A74539	x		x		x	x		x
Lindelängelund	A80810	x		x		x	x		x
Lindelängelund	A80835	x		x		x	x		
Risebergabäcken	A32	x		x		x	x		
Södra Sallerup 15I	A2148	x	x	x	x		x	x	
Södra Sallerup 15I	A6040	x	x	x		x	x		

Table 23: Find composition in wells. The contents in the features at Lindelängelund are interpreted as ritual/partly ritual in nature, while the contents of the features from Risebergabäcken and Södra Sallerup 15I have not. Details in catalogue.

Site	ID	Clay disc	Flint axe	Flint core	Flint tools	Stone tools	Pottery
Döserygg	(no ID)	x	x	x	x	x	x
Hindby	A1300		x	x	x	x	x
Svågertorp L	A184				x		x

Table 24: Find composition in wetland depositions. Döserygg and Hindby have been interpreted as ritual/offerings, while the material at Svågertorp L are interpreted as refuse. Details in catalogue.

identified bones are from sheep/goat (Sunnanå 12 A702). The fill of Lindelängelund A42859 contained moraine flint.

Moving on to the wells/well related features (table 23), of those interpreted containing ritual depositions three contained one sea urchin fossil and one contained one belemnite (A80810). They all had bone flint, pottery and stone tools among the material. In A74539 and A80810 wood objects had been preserved. Otherwise the only difference in find composition is the fired clay in fill layer A58377, but some of the material in this layer are thought to be secondarily deposited. The ritual elements and possible closing rituals in the well features at Lindelängelund extend to other wells in the area, which did not contain any fossils (Carlie & Lagergren, 2014: app. 2). Comparing the ritually interpreted material with that from wells with no such interpretation, but which still contained fossils, the general composition is the same with bone, flint, and pottery in all three. Stone tools are however only found in A6040. The material of the knife in A2148 is not disclosed in the report and the feature is not dated.

Lastly a look at the wetlands (table 24). Three of the contexts in this study were wetlands, for two of which the find material have been interpreted as offerings or ritual depositions. These two, at Döserygg and Hindby, both contained a variety of materials as opposed to the wetland at Svågertorp L, where the find material was interpreted as settlement refuse. There were also a lot more material deposited at both Döserygg and Hindby, circa 55 and >300 kilograms respectively (not counting the 13 tonnes of stone in Hindby fen), compared to 1, 5 kilograms at Svågertorp L. The quantities of fossils follow a similar pattern, with three sea urchins and one unidentified fossil at Döserygg, 40 sea urchin fossils in Hindby fen and a single sea urchin fossil in Svågertorp L A184. When comparing these numbers it should be taken into consideration that the different wetlands were in use for different amounts of time, with Hindby being the longest, and the size of the wetland matters too. Most of the finds from the wetland at Döserygg were found in an area of circa 30 square meters (Andersson & Wallebom, 2011:114), Hindby fen was circa 890 square meters big at the surface and 10 centimeters to over one meter deep (Berggren, 2007:29, 32ff). The layer at Svågertorp L varied in thickness from 5 to 50 centimeters, and most of the finds were from three test pits (Tuominen *et al*, 2008:26). They are also different kinds of wetlands: Döserygg is only described as a previous wetland area (Andersson & Wallebom, 2011:7), Hindby A1300 was a peat fen formed in a dead ice hollow (Berggren, 2007:42) and Svågertorp L A184 was formed by fluvial sediments (Tuominen *et al*, 2008:26).

Overall fossils found in ritual depositions or as offerings do not seem to occur with a set assemblage of materials. Apart from the wetland depositions, the general find compositions in this study are similar between ritual and non-ritual features of the same category. The fossils thus do not seem to hold a position as objects of ritual significance on their own. While the general composition of finds is rather similar, the specific objects and how they've been treated are rather different. In the ritual depositions/offering pits vessels were determined to have been put down and arranged in one feature, the pottery in another were of a burnished ware made of fine clay. Some of the material in the wetland at Döserygg had been deliberately broken or burned (Andersson & Wallebom, 2011:114). Fine pottery and human remains were found in the wells at Lindelängelund (Carlie & Lagergren, 2014: app. 2), as opposed to the "ugly" cup in Risebergabäcken A32 (Sarnäs, 2009:12). Hindby A1300 too contained human bones (Berggren, 2007:98), and a myriad of objects not found in any of the other features: flutes and pipes, a wooden ladder, a pig's tooth made into a pendant, horn tools, flint daggers and a bronze

axe (Berggren, 2007:56ff, 102ff, 140ff, 168f). Some of the deposited material show traces of ritual destruction or burning (Berggren, 2007:135, 148f).

However, these interpretations and the opposition of ritual and non-ritual, offering and non-offering deposition, is not without problems. In her dissertation Berggren discusses wetland depositions and the interpretations surrounding them over time. Offerings – the distinction between *offering* and *sacrifice* does not exist in Swedish terminology, where "offer" (eng: offering) is the only term used (2010:45ff) – and ritual depositions are two common interpretations of deposited material found in wetlands (2010:19ff, 44). Berggren points out that these interpretations have a tendency to be built on a process of elimination, where the deposited material is interpreted as offerings since they do not fit into any other category, like funerary- or settlement-practices and -activities. Furthermore a distinction is often made between ritual, and non-ritual offering, where the ritual is implicitly seen as sacred and the non-ritual as profane. It is also not unusual for interpretations of depositions as offerings or of ritual character to be made without further motivation or challenge (2010:88ff). I am in agreement with Berggren's position that these tendencies are problematic. These interpretations are often built on assumptions regarding what the depositions are or are not, and there is a lack of attention and discussion regarding profane rituals and formalised practices (Berggren, 2010:97). This goes not only for wetland depositions, but material interpreted as ritual or offerings over all.

Fossil origins

Sea urchins, bivalves and coral

As fossil sea urchins, and especially *Echinocorys*-fossils, are well-known to be naturally occurring in the moraine as well as chalk deposits and encased in flint, there are no indications that the sea urchin fossils found in archaeological contexts in Scania have been collected someplace outside the region. However, since no proper taxonomic study has been performed on this material there is still of course the possibility that sea urchin fossils that have been collected someplace else and then transported to Scania are waiting to be found, either in the museums' collections or in the ground. The same goes for the bivalves and coral in this study, since the simple descriptions provided in the reports are not enough to determine their origin.

Belemnites

Belemnites were found in two locations, Lindelängelund in Malmö and Lilla Isie/Östra Torp on the southern coast. While fossils have been found in the flint from the flint mining site at Södra Sallerup in the Malmö area, this late cretaceous flint and chalk has been moved here by the inland ice during the last deglaciation and is mixed up in the moraine (Berggren, 2018:32). Fossils can be found as impurities in the flint (Berggren, 2018:202) and mixed up in the moraine (see above), but belemnites are not mentioned either case. This could be explained by the fact that the preservation of most fossils, apart from sea urchins, in late cretaceous chalk tend to be poorer than in younger (BGS, 2019). The state of the belemnites viewed in LUHM's collections also suggest that they are

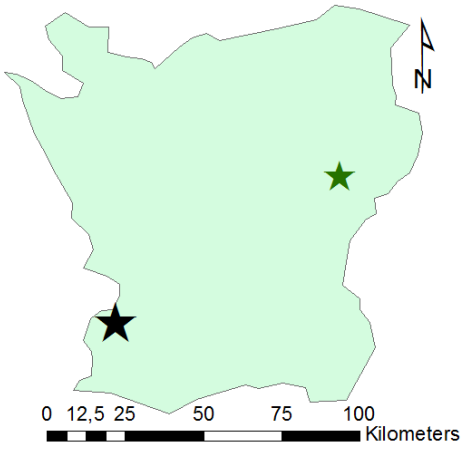

Fig. 14: Map over Scania whit Malmö (black star) and Kristianstad (green star) marked. Geo data © Lantmäteriet, 2019.

significantly smaller and more brittle than the far more common sea urchin fossils, as they in all instances were either only fragments or broken into several pieces. Any belemnites that travelled along in the chalk with the ice would be less likely to survive this journey in one piece, and simply more difficult to discover due to their size. Thus it seems more probable that intact belemnites and larger fragments would originate from locations where they have been undisturbed and can simply be collected from the chalk deposits as they erode. The nearest such locations are Kristianstad area in northeast Scania and eastern Denmark. For example, the island Ivö northeast of Kristianstad (Kristianstad municipality, 2019) and Møns Klint on the island Møn in eastern Denmark (Gyldendal, 2019) have accessible chalk deposits which contain belemnites. When the belemnites from the visual analysis is included, their spread looks very different and more in line with this suggestion, as all but the ones from Lindelängelund and Lilla Isie are from the Kristianstad area. Furthermore, if they were used as beads during the Viking Age, like the pieces from Lilla Isie and Öllsjö suggest, this would make it all the more important to have a viable source for suitable raw material. The movement of fossils from the Kristianstad area during the Viking Age is further supported by the finds of belemnites and other typically Scanian or Danish fossils as far away as Sigtuna (Kresten, 2007:41f), more than 500 kilometres north of Kristianstad.

Shark teeth

Fossilised shark teeth from a myriad of species can be found in Scania, commonly in the Kristianstad area in northeast Scania. Most teeth come from species of the genus *squalus* and are only a few millimetres in size (Siverson, 1993:1). They've been found in graves as far back as the Mesolithic (see above), and without identifying the species the teeth belonged to it is impossible to say exactly where they were collected.

Discussion – Why fossils?

Continuity and changes over time

Common through all of prehistory is the presence of fossil sea urchins in connection to ritual activities. Important to note here is that the term "ritual" or "offering" has been used in the reports to describe features with intentionally deposited or included elements that have no other practical function, sometimes assumed to have some relation to cosmological or magical beliefs. That a number of different kinds of features and depositions are described as ritual or containing offerings does not mean that they served the same purpose or meant the same thing, or that they were exclusively sacred in nature (see above). Over time, the location for the ritual activities that include sea urchin fossils change. In the Neolithic the most common archaeological features to produce fossils are dolmens and graves. During the transition to and into Bronze Age, sea urchins are deposited in the votive fen in Hindby and in ritual/offering pits. When entering the Iron Age another shift happens to the domestic sphere with ritual depositions in postholes becoming the dominant feature, accompanied by ritual depositions in wells (see appendix 3).

Over the same time span we see shifts in the customs related to these different features. During the Neolithic the burial custom was to bury the dead, individually or collectively, in some fashion: in the ground, a mound, a stone coffin, a megalithic tomb, et cetera. While cremation was practiced to some extent during the Neolithic, it was not common until the Late Neolithic (Runcis, 2005:272). The transition into Bronze Age only produced changes in the grave goods and inhumation and cremation was continued to be performed side by side for some into Early Bronze Age. Over time cremation gained in popularity and through most of the Bronze Age it was seemingly the dominating method (Arcini & Svanberg, 2005:302ff; Runcis, 2005:273f). In the Iron Age the burial and funerary customs again turn very diverse, but there is a deficit of human remains in the Late Iron Age (Herschend, 2009:34ff). The fact that there are no confirmed cremations among the graves in this study could indicate that the inclusion of fossils in burials was limited to inhumations of different kinds.

This shift in the presence of sea urchin fossils is also interesting considering that while depositions of fossils in houses is mainly an Iron Age phenomenon, so called house offerings in general have been a practice since the Neolithic, and intentional depositions in stake holes have been dated to the Mesolithic. In fact, house offerings have been found to become one of the more common offering practices toward the Late Neolithic and during the Bronze Age (Karsten, 1994:147ff, 162ff; Victor, 2002:39). Usually these depositions consist of stone- or flint tools, and identical practices have been found in Stone Age Denmark and Norway (Karsten, 1994:148). Another type of offering in the Neolithic are burnt offerings, but the only burned sea urchin fossils in this study are from later periods.

Depositions of sea urchin fossils in houses become the main ritual deposition/offering of fossils during the Iron Age, which is in line with previous research by Carlie (2004). The placement of the fossils mainly in postholes could indicate some belief similar to the later folklore surrounding so called thunderstones, in that they might have been placed in the features for some protective purpose. In relation to this it is also worth noting that the only fossil found in a storage pit was a sea urchin, and the feature was dated to Iron Age. As detailed above, thunderstones were sometimes kept in the pantry in order to keep the food from spoiling during historical times.

Interpretation of objects to as having a protective function or as house offerings are not limited to postholes, and it is possible that fossils found in other building-related features could have been deposited for these reasons. One example in this study is the presence of fossils in pit houses, which mainly occurs in features from Late Iron Age. However, in several of the pit houses the fossils were found in the fill or it is unknown whether they were from the fill or floor of the structure. These have most likely ended up in the features when the houses were no longer in use and filled up with material from surrounding activities. Only two fossils from the Iron Age pit houses, one oyster and one sea urchin, were reported as found in the floor layer of the structure, which would make them related to the time the house was in use. Neither of them were interpreted as house offerings or ritual depositions, but they might have been collected and brought into the houses for some other reason.

Alongside burials, ritual depositions and offerings, fossils have also been found in a myriad of features and contexts that do not directly indicate any special value being put on them, or that they were noticed at all. In several cases, especially concerning different kinds of pits, any fossils found in these features might have ended up there completely unintentionally. Nevertheless, if the material in the Neolithic pits was organised and curated refuse, the people who made and deposited material in these pits would have been aware of any fossils in them. If that is the case, the fossils could have been seen as "used up" in some way, that they had served their purpose and were ready to be discarded. Alternatively the inclusion of a fossil served a more specific purpose in connection with the other material, possibly related to beliefs surrounding the kind of fossil deposited. Most of the fossils in these pits are sea urchins, which have been shown to hold some significance to people in south Scandinavia already in the Mesolithic, up to the Iron Age and beyond.

Local phenomena

At a few sites there are indications of a local practices or tradition of including fossil sea urchins in specific contexts or ritual depositions. Those detailed below are all from southwest Scania, most likely because of the large amounts of archaeological data produced in this area. Future excavations might reveal similar practices or traditions in other parts of Scania, or Scandinavia for that matter.

The dolmens at Döserygg

During the Neolithic at Döserygg these fossils were included in dolmens and depositions in a wetland adjacent to the dolmen area. While it is possible that the fossils were unintentionally included in the dolmens, either as part of the bottom stone construction or the mound fill, the intentional deposition in the wetland together with the fact that several fossils were found in some of the dolmen speaks for an awareness of and appreciation for them. While I was unable to arrange a viewing of the fossils, images of several of them were included in the report (Andersson & Wallebom, 2011: fig. 15, 17, 30, 35 & 42). All of the photographed fossils were similar in shape and colour, which could indicate that fossils with a specific appearance were chosen to be deposited in the dolmens and the wetland.

The people who built and used these monuments had probably taken note of fossil sea urchins and collected them to some extent. Considering the arranged sea urchin fossils from Dolmen 3 at Östra Odarslöv, the fossils from the Mesolithic graves at Skateholm II, and that fossil sea urchins were deposited in wetlands and offering pits, it is clear that Stone Age people noticed, picked up and handled these curious lumps of mineral. What they exactly meant or signified

we'll probably never know, but at least the Neolithic people at Döserygg did not mind them in their megalithic mounds.

The dolmens at Östra Odarslöv are also interesting in that, while not as many have been found as at Döserygg, in 2 out of 3 there were sea urchin fossils (Larsson & Brink, 2017b:31-49). The two sea urchins found in relation to passage graves were from the same general area around Barsebäck in western Scania, which could potentially point to a similar practice in this area. This is however only a speculation at this point, as one of these fossils was found in a chamber block imprint and the specific context of the other is unknown.

Depositions at Hindby Fen

Another site with convincing indications of local tradition is the votive fen at Hindby with related features. During the transition from Late Neolithic to Early Bronze Age dozens of fossil sea urchins were deposited in the fen. While many tonnes of 'regular' unworked stones were also deposited, the fossils were of a notably smaller size and also deposited during a significantly more limited time span. Fossil sea urchins were also found in two features (pits A1265:5, A1259) related to the fen, which contents were interpreted as possible offerings. The material in the pits were varied, and like the fen, large amounts of stone had been deposited in them.

It is of course possible that some material found in wetlands have simply been accidentally dropped into them (Koch, 1998:132). Even if this were to be the case for any of the fossils, it still means that they were continuously collected someplace else and brought to the wetland by people over hundreds of years. It was also noted that the worked stone and stone tools which had been deposited in the fen indicated a good knowledge of the qualities of different rock types. Since the fossils found in Hindby fen were not worked or used as tools, together with the assumption that the people who collected them would be aware of their affordances, it was not any practical use – for tools or as raw material – that encouraged people to collect and bring them to the fen.

Used fossils in Svågertorp

All of the fossils that have worn surfaces which could be from some sort of repeated use were found on two sites in southwest Scania. Three fossils with worn surfaces were found at Svågertorp 8B-C (fig. 15), one in a Middle Neolithic cultural layer and two in Bronze Age pits. The only other used fossil, a sea urchin used as a hand stone, was found in a Neolithic pit at Herrestorp/Vellinge, around 10 kilometers south of Malmö. This supports that any use of fossils as tools was not a widespread practice, but rather seems to have been a localised phenomenon that was not continued into Iron Age. The few instances of fossils showing signs of use in this way indicates that they were not the primary material sought after for this purpose, but rather a highly occasional occurrence. However, considering the very limited amounts of research that has been done on the fossils themselves, a more in depth study with use and wear-trace analysis could change this picture dramatically.

Continuity in Svågertorp

In Svågertorp fossil sea urchins have been found in postholes from longhouses dated to the Middle Neolithic, Early Bronze Age and Roman Iron Age. While these features were found at different sites in Svågertorp (areas 8B-C, S, X) they are all within a small part of today's Malmö, an area covering approximately 1 square kilometer. Previous research has shown that the practice of depositing sea urchin fossils in the postholes of long houses was established in south Scandinavia during the Iron Age, but the finds in Svågertorp could indicate that this was a local practice there already in the Neolithic, or at least the Early Bronze Age as the deposition in area 8B-C A24047 is interpreted as intentional. The fossil in the Neolithic posthole (area 2 A2221) has no such interpretation, but was found together with a fragment of a grinding stone. While worked stones and stone tools have the same chronological pattern as fossils when it comes to posthole depositions, a few cases are known from the Neolithic in south Scandinavia (Carlie, 2004:84ff). The co-occurrence of a sea urchin fossil and a grinding stone, both known to be part of ritual posthole depositions in longhouses in later periods, point in the direction of an intentional deposition. In Svågertorp fossil sea urchins have also been found in a Neolithic pit house/hut bottom (area F A1304); two Neolithic pits (area L A252, area S A108), of which one was near a contemporary longhouse; in a Neolithic stone packing (area K A3096); and a Neolithic battle axe grave (area S A279). While the pit house/hut bottom, pits and stone packing are features in which the fossils might not have been deposited intentionally, other finds indicate an awareness of and appreciation for these fossils during the Neolithic, as stated above. In the neighbouring areas Vintrie, immediately west of Svågertorp, and Annetorpsleden, circa 1 kilometer to the north, sea urchin fossils have also been found in various Neolithic features (Annetorpsleden A15407, A15796, A152088; Vintrie Park A2, A9a, A102, A2859). Additionally, Hindby, with its votive fen, lies only a few kilometres to the east-northeast of Svågertorp. If the deposition of sea urchin fossils in postholes goes back to the Neolithic in the area, the practice could be related to the depositions of the same kind of fossils in the fen, as both practices have been interpreted as ritualised offerings. Perhaps not in the sense that these practices were performed for the same reason, but that the view of the fossils as objects suitable for these depositions was similar.

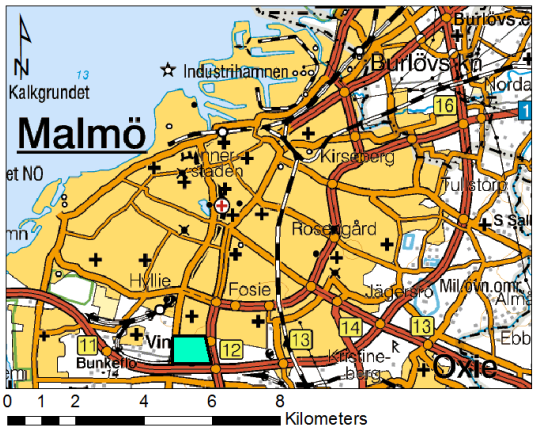

Fig. 15: Map over Malmö, Svågertorp marked in teal. Map © Lantmäteriet, 2019.

Fossils and people

Overall, it seems like the most prominent affordance of fossils is their collect-ability. They have evidently been noticed and picked up to later be put someplace else, most commonly without having anything being done to them. At least not anything that would leave any obvious traces. The most common fossil found in archaeological features throughout prehistory is the sea urchin. While a few of these could possibly have been used in some way, as they have wear traces, only one fossil show convincing signs of having been used as a tool. None of these used or possibly used fossils were directly interpreted as part of ritual of offering depositions. Fossils that were to be deposited as part of ritual or offering practices were thus not subject to any use or alteration prior to deposition, which points to them being collected solely for this purpose.

The only possible exception is the sea urchin fossil from Svågertorp 8B-C A42285, which has a worn surface and was found above an axe deposition. Still, any connection between the axe and the fossil is highly uncertain, as the fossil was not found in the deposition. One fossil was found on a possible flint knapping site (Hindby A1209), and its weight suggests that it might have been a suitable size for a knapping stone (see sea urchin fossils in visual analysis, appendix 1, for comparison). As there was no mention of whether the fossil bore traces of this kind of use or not, its potential use as a tool remains unknown.

Only one fossil in this study, a sea urchin, was proposed to have been collected as a curious object (Aspeborg, 2015:14), and nowhere are fossils discussed to have been subject to collecting in order to be added to a collection of fossils or objects of similarly curious appearance. There are no obvious signs of non-ritual or non-offering "hoards" of collected fossils in this study either, but in some instances several unworked and unused fossils have been found features that are more or less limited in time and space: Three fossil sea urchins were found in a Neolithic pit house/hut bottom at Svågertorp F; an unspecified number of fossils were found in the battle axe grave at Svågertorp S; and eight sea urchin fossils were found in a cultural layer at Annetorpsleden. While these numbers are completely overshadowed by the dozens of fossils found at Sigtuna (see above), and the intentionality of the fossils' presence is debatable, they show that collection of fossils, perhaps as a pastime, cannot be ruled out.

In conclusion, the more practical affordances of sea urchin fossils – raw material for producing small flint flakes, raw material for creating objects like spindle whorls, use as a hand or knapping stone, et cetera – have not played any substantial part in the value of them. People did not primarily see them as practical objects, but still collected them and later put them in wetlands, pits, graves and postholes. Why exactly they did this and what their understanding of these fossils were, we will never know for sure, but these practices could be the predecessors to later myths and folklore surrounding them.

There are no signs of belemnites being used for any utilitarian purpose, most likely because their brittle nature make them unsuitable as tools. There are no indications that they have a notice-able presence in the moraine. There is also only one instance of a belemnite being interpreted as a ritual deposition of any kind. Then why do we find them in archaeological contexts? It seems that the aesthetic value is key in the case of belemnites. When imagining the time and patience spent to carefully craft a curious, but rather dull, piece of mineral into a glass, amber or carnelian-like bead, the end product must have been viewed as worth all the trouble. There is however one major flaw in the idea of belemnites being used for adornment, or collected as pieces admired for their potential for beauty: They have not been reported among other jewellery, as grave goods or an item of trade. I would nevertheless like to bring forth the suggestion that perhaps belemnites actually are present in these contexts, as they can be confused with other materials when not looked for. As an example, when I opened up the box which contained the belemnite bead at LUHM's storage, I immediately thought it was the wrong box. It seemed to only contain glass beads. After double checking and scratching my head for a bit I identified the small box with the find ID I was looking for. And there it was, obvious after a closer look and the image of other belemnite fragments fresh in mind. Clearly fashioned from the bottom part of the rostrum, with the conical alveolum in its cross-section. Had I not seen several belemnites in the hours before and had the bead not been split, it would have been impossible – for me at least – to identify it as something different from the other beads in the box.

Future possibilities

Overall fossils, and especially those from sea urchins and belemnites, make up a material that has a lot of potential for future research. Throughout the process of writing this thesis I have had a distinct feeling that I have only been scratching the surface of an immensely interesting material. Considering the possible number of fossils that have been excluded from this study simply because they have been difficult to find in the records, and the fossils that might have been overlooked on excavations, this thesis might only have dealt with the tip of an iceberg.

This study also shows that the excavations performed over the past decade have changed the detectable presence of fossils in the archaeological record, and thus the potential for exploration and investigation. The research performed by Anne Carlie in the early 2000's found fossils in Iron Age houses on only two sites in Scania, while this thesis have found records of fossils in Iron Age postholes or pit houses at 12 different sites. It also found 5 instances that pre-dates the Iron Age, something that Carlie noted she was unable to find. This illustrates that as more fossils are documented, patterns become clearer and new discoveries are made. The fact that archaeological reports are becoming increasingly easy to access thanks to digital services like the National Heritage Board's report archive means that excavation data is more accessible now than ever before.

In order to perform more in depth research into fossils, their roles and uses in prehistory, an extensive and thorough inventory of the material is sorely needed. This should include a higher degree of taxonomic identification, as this would make provenience analysis more feasible. This in turn would make it possible to track if fossils were collected and moved. A proper use and trace-wear analysis would also be beneficial, as this would lessen the degree of speculation when discussing the functions fossils had in the past.

A rather simple, but not easy, next step would be to compare the material from Scania with fossils from neighbouring regions in Sweden, Denmark and Norway. If a provenience analysis indicate transportation to or from another area, this too should be explored.

It has been touched upon in this thesis, but the aesthetics of fossils is another field that should be explored further, especially when considering belemnite beads in order to investigate the possibility of them being sought after for use as adornment. Concerning the sea urchin fossils, it would be very interesting to see if there is any connection between specific aesthetic qualities and different find contexts, as they have a rather great variation in appearance.

Conclusions

While this study does not provide any straight, simple answers regarding fossils in the Scanian archaeology, it does show that there are indications of them being an integrated part of material culture throughout prehistory in the region. From the dwellings of the dead to the homes of the living, from tool to adornment, trashed and treasured.

The fossils found

This study found six different kinds of fossils: Sea urchins, belemnites, bivalves, shells, coral and shark tooth. The by far most common fossil is the sea urchin, making up almost 86 % of the fossils from known contexts in this thesis. Because of this it has only been possible to analyse any trends among the sea urchin fossils, and not the other kinds. The sea urchin fossils are most likely of the genus *Echinocorys*, which is known to be present in the Scanian moraine. The belemnites are likely to originate from the Kristanstad area in north east Scania or Denmark, as is the shark tooth.

What they were used for

The unworked state of a vast majority of the fossils combined with the long running practice of depositing them in a ritualised manner points to them mainly being collected in order to be deposited. This applies especially to sea urchin fossils. Belemnite fossils are more likely to have been used for adornment as there are a few intriguing examples of belemnite pieces which show signs of having been worked into beads. By exploring the possible affordances between belemnites and humans it has been found that they could have been used as adornment more frequently than the archaeological record suggests. While the affordances of belemnites do not lend them useful as tools, the opposite is true for sea urchin fossils. Still, only one fossil sea urchin show convincing signs of having been used as a tool, with an additional three sea urchin fossils showing signs of use. None of these were interpreted as intentional, ritual or offering-depositions. Additionally, the three fossils with traces of (unknown) use were from the same general area in today's Malmö and point toward a local, occasional practical use of these fossils as tools.

Where they have been found

Fossils are found in a wide variety of contexts, from pits filled with refuse to ritual depositions and graves. They are found in archaeological features throughout prehistory, from the Mesolithic to the Viking Age, and beyond. While the fossils are not limited to a specific type of feature during any one time, the material studied in this thesis show a movement of sea urchin fossils between the different spheres of the prehistoric people's lives. From the Neolithic they've been found mainly in dolmens and graves, transitioning into and during the Bronze Age they are more common in ritual depositions like the votive fen at Hindby, and in the Iron Age they are mostly found in the domestic sphere in features like postholes and pit houses. Alongside intentional depositions, frequently with a ritual interpretation, fossils have been found in contexts where they have probably ended up unintentionally as holes have been dug into the moraine, pits have been filled and earth has been moved.

Expanding on previous research, this study shows that the practice of depositing sea urchin fossils in postholes could have been an older phenomena than previously thought, possibly dating back to the Neolithic in Svågertorp. There is also an increasing number of fossils found in contexts that support the idea of prehistoric roots for later folklore and myths surrounding them.

When looking at the geographical and chronological spread of features that contain fossils, there are indications of local practices, like inclusion of sea urchin fossils in the dolmens and wetland at Döserygg during the Early-Middle Neolithic, the deposition of sea urchin fossils in the fen and pits at Hindby during the Late Neolithic-Early Bronze Age, and the possible tools in Svågertorp from Middle Neolithic and Bronze Age.

What they have been found with

The fossils have been found on their own, both as singular depositions and unintentional presence, and with a myriad of other materials and objects. They've been included among highly valued grave goods, collected to then be thrown in a bog with many tonnes of stones and hundreds of kilograms of other material, and possibly arranged among other trash in pits. Interpretations of other material they've been found with suggest that fossils could have a transformative value as it was moved between spheres of life, like sacred and profane, or domestic and funerary. However, in many cases it is impossible to prove beyond doubt that the fossils were deposited intentionally, as they do occur in the moraine.

Where they are from

While no in depth provenience analysis could be performed, it's concluded that the material shows no immediate indication of having been transported from outside Scania. All of the fossil types identified are naturally occurring in the Scanian geology, both in the moraine and in chalk deposits. Within Scania the only sign of transportation is the belemnite fossils found in southwest Scania, which are argued to likely originate from the northeast part of the region.

Uniformity and variation

The material is rather uniform in that sea urchin fossils are far more common in archaeological contexts than other fossil types. However, sea urchins can vary in size, shape, colour and material, as shown in the visual analysis of the fossils in LUHM's archaeological collection.

While not as many belemnites were available at LUHM or found in archaeological reports, of those I did have an opportunity to study closer, most were similar in colour and material. A fair amount of these fossils were loose finds, but point in the direction of a preference for the translucent, orange fossilisations.

The relationships between fossils and people

The overall conclusion regarding the relationships between people and fossils in prehistoric Scania is that they are continuous and multifarious. Sea urchin fossils have been collected for intentional deposition, often interpreted as ritual in nature, since the Mesolithic, but the features they are found in change over time. At the same time they are found in circumstances where they do not seem to have been noticed or given a second thought, thrown out with trash, dislodged into pits or moved as part of the soil they occur in. While sea urchin fossils afford for use as tools or raw material, they do not seem to have been used in any way that would leave marks on their surface before deposition in a ritual manner, and there is only one single convincing example of a sea urchin fossil having been used as a tool. Furthermore there are indications of local practices surrounding or including collection and deposition of sea urchin fossils, mainly in southwest Scania at the time being. The reason behind the deposition of sea urchin fossils in a ritual manner or as offerings could be due to beliefs that the fossils possessed protective powers or other beneficial properties, similar to the later thunderstone-folklore.

As the exploration of affordances show, belemnites differ from sea urchin fossils in that they are not suitable for use as tools. They do however possess similar aesthetic qualities to popular elements in Viking Age jewellery, and their polish-able, perforate-able or readily tread-able affordances allow for belemnite pieces being turned into beads. Since belemnites are also quite break-able, they could have been worn in other ways to avoid breaking them in the bead making process. If belemnites were sought after to be used for adornment, the chalk deposits in Kristianstad could have been a source for raw material. Finds from Sigtuna near Stockholm show that belemnites were transported fair distances during the Viking Age, and at least one Viking Age bead made from a belemnite piece have been found in south Scania.

Other fossils could also have been worn as adornment or amulets. In the case of bivalve fossils, they would be more sturdy and durable than their unfossilised counterparts. The bivalves in this study are not described as or do not show signs of having been worn in any way, and could possibly have been subject to similar practices and processes as the sea urchin fossils. There is however one sea urchin fossil that could have been worn as a pendant. It has a perforation – likely not made by humans, but a result of the fossilisation process – and was found in a battle axe grave, placed in a way that indicates it was of high value.

To sum it up, fossils have held a place in material culture throughout prehistory in what we today call Scania. Not always noticed, but when they were and subsequently collected, they were incorporated in practices and traditions related to the worldviews and beliefs of the peoples of the past.

Summary

Fossils have intrigued humans for a very long time, as is evident in the archaeological record. While there is no real shortage of material to study in Scania, the research on this material is lacking. Fossils have been noticed and discussed by only a few people in Scanian archaeology during the 1900's, and have been excluded from a lot of previous research. A step in the right direction was Anne Carlie's work on building related cultic activities published in 2004.

This thesis aimed to investigate the relationship between humans and fossils in the prehistory of Scania through the use of contextual analysis and materiality. Information regarding the find contexts of the fossils were found in reports and related literature. The materiality aspect was explored through the affordances of different fossils, as well as their find context. A visual analysis of fossils in LUHM's archaeological collection served as an aid in the exploration of affordances. Unfortunately the overlapping material between the contextual and visual analysis is small.

The visual analysis looked at a total of 58 fossils: 24 sea urchins, 15 belemnite pieces, three bivalves, one coral and 15 other or unidentified fossils. A total of 202 fossils from 120 different contexts were subject for the contextual analysis: 177 sea urchins, four shells, three belemnites, two bivalves, one mollusc, one coral and one shark tooth. 15 fossils were unidentified or unspecified.

By determining what affordances had or had not been noticed and acted upon, it was concluded that the main use of fossils was not of a utilitarian need. Rather, the common affordance of the fossils is their collect-ability. The reasons for collecting can vary, but in the case of sea urchin fossils it seems they were collected in order to be deposited, often in a manner interpreted as ritual. The other types of fossils were too few to draw any solid conclusions, but some have been interpreted in the same way as sea urchins.

The exploration of affordances further suggest that belemnites have been worn as jewellery, either by being made into beads or through other suspension methods. This conclusion is based on the documented find of two belemnite beads from the Viking Age and the discovery of another likely belemnite bead in LUHM's collection, combined with the popularity of beads with a similar appearance to fossilised belemnites during the same period.

The contextual analysis revealed patterns of continuity and change in the presence of fossils in the archaeological record over time. They are found as intentional depositions, often interpreted as ritual, throughout all of prehistory. The depositions moves from funerary features in the Stone Age, to wetland depositions and ritual pits in the Bronze Age, and finally more domestic features in the Iron Age. Most commonly these fossils are sea urchins, and the practices of depositing sea urchin fossils throughout prehistory could be a precursor to the later folklore surrounding them. There are also indications of local practices and traditions surrounding and including fossils, related to the Neolithic dolmens at Döserygg, the depositions in and around Hindby fen during Late Neolithic-Early Bronze Age, used fossils in Svågertorp in the Neolithic and Bronze Age, and possibly a tradition of posthole depositions of fossil sea urchins dating back to the Neolithic, this too in Svågertorp. This last discovery is especially interesting as previous research has only found posthole depositions – or house offerings – of fossil sea urchins from the Iron Age in south Scandinavia.

Catalogue

The setup of this catalogue is such that each location is presented in alphabetical order with a short description of the site. Then follows descriptions of features containing fossils in alphabetic/numerical order after feature ID. The level of detail given in this catalogue reflects the level of detail in the source material.

A question mark (?) is used where the information is unclear.

A dash (-) is used when the information is not provided.

Where a "Description:" is given it is based on a description of the fossil taken during the visit to LUHM's storage 8-9th of April.

Almvik

Source: Winge, 1971.
Excavation in preparation for construction of a sound wall revealed pits and hearths from the Late Bronze Age.

Feature: A5, pit
Dating: Late Bronze Age (1100-500 BCE)
Fossils: Sea urchin (1)
Weight: -
Fill material: Black-brown humous and somewhat clayey, a few stones.
Other finds in context: Pottery sherds (2).
Interpretation: Interpreted as the bottom of a larger pit.
Comments: Apart from the fossil, the pit is very similar in description to the other pits in the report. No further interpretation given in the report from 1971, but the site was later connected to a larger settlement area excavated in the 1990's (Carlie *et al*., 2014:13ff).

Annetorpsleden

Source: Andréasson et al., *2006:9, 72ff; Hadevik, 2009:42ff*
The area was investigated in preparation for road construction. 4103 features were uncovered, of which 1725 were excavated. Among the excavated features were 111 pits, 29 stake holes, 29 stake holes, 24 hearths, 16 cultural layers, 4 stone packings and 3 wells. A total of 12 fossils were found in 3 different contexts.

Feature: A15407, stone packing, grave
Dating: Middle Neolithic A II-III
Fossils: Sea urchins (2)
Weight: 88 g (together)
Other finds in context: Bone, fired clay, flint cores, flint flakes, flint tools, pottery, hand stone.
Interpretation: The feature was interpreted as part of a possible grave.
None of the finds were interpreted as grave goods.
Comments: One of 4 adjacent possible graves (A15333, A15367, A152088) from the Neolithic.

Feature: A15796, cultural layer
Dating: Middle Neolithic
Fossils: Sea urchins (8)
Weight: 448 g (together)
Other finds in context: -
Interpretation: -
Comments: -

Feature: A152088, stone packing, grave
Dating: Middle Neolithic A II-III
Fossils: Sea urchins (2)
Weight: 88 g
Other finds in context: Bone, fired clay, flint flakes, pottery.
Interpretation: The feature was interpreted as part of a possible grave.
None of the finds were interpreted as grave goods.
Comments: One of 4 adjacent possible graves (A15333, A15367, A15407) from the Neolithic.

Asmundtorp

Source: Ericson, 2007.
Archaeological excavation revealed a settlement area with pits, hearths and a long house. The finds were relatively few.

Feature: AK200, cooking pit
Dating: Late Bronze Age – Early Iron Age (1100 BCE-400 CE)
Fossils: Sea urchin (1)
Weight: -
Other finds in context: None described.
Interpretation: The fossil was found pressed into the bottom edge with the flat side facing into the pit. As it wasn't burned it is uncertain that it was deliberately placed in the pit, and it's likely to be a natural occurrence in this case.
Comments: No further description of the feature or fossil.

Dagstorp

Source: Bolander, 2016:7, 62-82.
8 areas were investigated in preparation for a long distance heating line. In Dagstorp 47 (area 4) 3 grave fields and settlement areas (4:4, 4:6-7) and

one settlement with a hut (4:5) were discovered, with a chronological range from the Mesolithic to the medieval. Other historical features were also found.

Feature: A2116, possible grave (4:4)
Dating: Possibly Late Bronze Age – Early Iron Age
Fossils: Sea urchin (1)
Weight: 0 g
Other finds in feature: Bone/teeth (64 g), pottery sherds.
Interpretation: The feature is interpreted as a possible grave, but no human remains were identified.
Comment: Identified bones/teeth are from sheep/goat, horse and cattle.
The pottery fragments seem to belong to the same vessel.

Döserygg

Source: Andersson & Wallebom, 2011.
Total of at least 19 sea urchin fossils and 1 unidentified fossil. From the images included in the report the sea urchins seem to be of the genus *Echinocorys*.
Not all of the contexts are described in the report, and the method of excavation and degree of documentation differed between the contexts.
The excavated area exposed a total of 20 dolmens, and two possible dolmens, a stone circle, palisades, stone packings, wetland depositions and other megalithic structures. The site was mainly in use during the early and middle Neolithic, with some indications of use in the periods before and after.
The pottery from the contexts below is all of settlement character.

Feature: A11, dolmen 1.
Dating: Middle Neolithic A, III-V (3090-2760 cal. BCE)
Fossils: Sea urchins (2)
Weight: 168 g (together)
Other finds in context: Fired clay (19 g), pottery/clay disc (13, 56 g), flint arrowhead (1, 1 g), flint axes (1+3 frag., 204 g), flint blades (10, 55 g), flint cores (5, 364 g), flint flakes/waste (603, 6 kg), flint tools (29, 787 g), retouched flint (23, 536 g), other burned flint (206, 1620 g), pottery sherds (78, 342 g), knapping stones (2, 285 g).
Interpretation: The bottom construction of a dolmen with a single chamber, likely a round dolmen. Covered by a layer of mound fill/cultural layer (A110, A112).
Comments: The finds were concentrated to the edge of the dolmen and around the burial chamber. It is not specified where the fossils were found.
Some of the flint tools and flakes/waste was burned.
Macrofossil analysis show that food (hazelnuts, grains) had been handled in the area. One possible deposition of bread wheat.

Feature: A13, dolmen 2
Dating: Middle Neolithic A (2910-2630 cal. BCE)
Fossils: Sea urchins (4)
Weight: 232 g (together)
Other finds in context: Fired clay (546 g), clay discs (2, 27 g), flint arrowhead (1, 2 g), flint axe (2+13 frag., 487 g), flint blades (28, 110 g), flint cores (14, 1365 g), flint flakes/waste (3597, 26692 g), flint tools (144, 5947 g), retouched flint (157, 4628 g), other burned flint (2740, 13643 g), pottery sherds (2776, 15928 g), knapping stones (19, 2218 g), other worked stone/stone tools (23, 3381 g).
Interpretation: The bottom construction of a long dolmen with two chambers. Two channels, one from respective chamber to the outside edge of the dolmen, seem to be remnants of some sort of passages. Covered by four layers of mound fill (A102-A105).
Comments: The finds were concentrated around the burial chambers, the edge of the dolmen and in in connection to the channels. It is not specified where the fossils were found.
Among the flint tools were mainly scrapers and knives.
Some of the flint flakes, blades, retouched flint, axes and tools were burned.

Feature: A15, dolmen 4
Dating: Early – Middle Neolithic (3950-2400 BCE)
Fossils: sea urchin (>1)
Weight:
Other finds in context: Mainly flint (2.5 kg) and pottery sherds (0.1 kg)
Interpretation: The bottom construction of a long dolmen with a single chamber. Covered by a layer of mound fill (A121).
Comments: Finds were collected from both the mound fill and the dolmen area. It is not specified where the fossil was found.
Among the flint were around 10 scrapers, axe fragments and a worked blade.

Feature: A121, stone circle
Dating: Early – Middle Neolithic (4000-2350 BCE)
Fossils: Sea urchin (1)
Weight: -
Other finds in context: Worked flint (1 kg), pottery sherds (0.06 kg).

Interpretation: A stone circle consisting of 9 large rocks placed directly on the ground, with a possible pathway leading to it marked by two rows of stones and stone imprints.
Comments: It is not specified where the fossil was found.
Among the finds were 3 scrapers, an axe fragment and a naturally shaped figure stone.

Feature: A158, dolmen 21
Dating: Early – Middle Neolithic (3950-2400 BCE)
Fossils: Sea urchin (1)
Weight: -
Other finds in context: Flint scraper (1), pottery sherds.
Interpretation: Most likely the bottom construction of a dolmen, covered by a layer of possible mound fill (A158). Possibly a fundament for other construction.
Comments: The feature was given low priority and was removed with a digger. The collected pottery sherds were from funnel beakers.

Feature: A85003, dolmen 8
Dating: Early – Middle Neolithic (3950-2400 BCE)
Fossils: Sea urchins (>3, "several")
Weight: -
Other finds in context: Flint (7.6 kg), burned flint (1.4 kg), pottery sherds (4 kg)
Interpretation: The bottom construction of a long dolmen with a single chamber. Possible passage from chamber to the edge of the mound. Covered by a layer of possible mound fill (A145).
Comments: Finds were concentrated to the feature edge, the possible passage, and mainly around the burial chamber. It is not specified where the fossils were found.
Among the flint were scrapers, axe fragments, arrowheads and chisels.

Feature: A212423, dolmen 10
Dating: Middle Neolithic A/B (2880-2610 cal. BCE)
Fossils: Sea urchins (3)
Weight: -
Other finds in context: Flint (0.5 kg), pottery (0.1 kg) slate pendant (1).
Interpretation: The bottom construction of a long dolmen with a single chamber. Covered by a layer of mound fill (A152). Disturbed by recent ditches.
Comments: The finds were concentrated to the dolmen edge and around the burial chamber. It is not specified where the fossils were found.
Among the finds were flint scrapers, flint blades, an axe fragment and 38 funnel beaker pottery sherds.
A small portion of the flint material was affected by fire.

Feature: A213280, dolmen 12
Dating: Early – Middle Neolithic (3950-2400 BCE)
Fossils: Sea urchin (1)
Weight: 39 g
Other finds in context: Burned clay (9 g), flint axes (2 frag., 127 g) flint blades (5, 20 g), flint flakes/waste (20, 892 g), flint tools (14, 633 g), other worked flint (7, 222 g), burned flint (1, 4 g), pottery sherds (152, 785 g) knapping stone (1, 586 g).
Interpretation: The bottom construction of a long dolmen with a single chamber. Covered by a layer of mound fill (A153).
Comments: The finds were concentrated in and around the chamber. It is not specified where the fossil was found.
The pottery consisted of funnel beaker sherds with a rich variation in décor.
There are indications that the dolmen was used during later periods as a charcoal sample from the chamber floor was C-14 dated to Late Iron Age.

Feature: A223332, dolmen 15
Dating: Early – Middle Neolithic (3950-2400 BCE)
Fossils: Sea urchin (>1)
Weight: -
Other finds in context: Flint (2 kg), pottery (0.5 kg).
Interpretation: The bottom construction of a long dolmen with a single chamber, covered by the remains of the mound fill (A164). Partially disturbed by an investigation trench.
Comments: It is not specified where the fossil was found.
Among the finds were a flint axe and chisel, both from the chamber, and around 60 funnel beaker pottery sherds.

Feature: Wetland deposition
Dating: Early – Middle Neolithic (3950-2400 BCE)
Fossils: Sea urchins (3), unidentified (1)
Weight: -
Other finds in context: Fired clay (2, 6 g), clay discs (15, 141 g), flint axes (2+9 frag., 224 g), flint blades (31, 144 g), flint cores (8, 490 g), flint flakes/waste (2594, 24188 g), flint tools (77, 2498 g), retouched flint (53, 1482 g), burned flint (1585, 18621 g), pottery sherds (432, 2750 g)., knapping stone (3, 321 g), worked stone/stone tools (3, 207 g).

Interpretation: Intentional depositions in the wetland next to dolmen 1. Possible offerings.
Comments: It is not specified where the fossils were found.
Among the flint tools were scrapes, knives, chisels and drills.
No fossils were found in any of the depositions made in vessels or pits.

Flädie

Source: Becker, 2003.
The site was investigated in preparation for road construction. Excavation revealed 23 pit houses, 16 grave-like features, 4 wells, 176 hearths/pits, and postholes.

Feature: Not specified.
Dating: Late Vendel Period – Early Viking Age (700-900 CE)
Fossils: Sea urchin (1)
Weight: -
Other finds in context: -
Interpretation: The finds from the site points to in being related to crafting/production of various objects as well as cattle-breeding.
Comments: No further description of the fossil or where it was found.

Fosie

Source: Hadevik & Gidlöf, 2003:13, 118-177.
The site was investigated in preparation the construction related to the large Öresund-connection project. A total of 325 presumed prehistorical features were documented, dated from the Mesolithic up to Vendel Period with emphasis on Late Bronze Age. The features include 11 constructions, 68 pits, 32 dark spots, 5 pit systems, 5 hearths, 2 wells and 1 grave.

Feature: A314, grave
Dating: Iron Age
Fossils: Shark tooth (1)
Weight: 0.4 g
Other finds in context: Bone (1, 0.1 g), pottery sherds (9, 23 g).
Interpretation: No human remains were found, but the foundation of a raised stone and the fossil support the interpretation of the feature as a grave.
Comments: The fossil is a fragment of a shark tooth.

Glostorp

Source: Hadevik, 2009:42ff; Lindhé, 2007:5ff, 21ff
The site was investigated in preparation for a lowering of the ground water level, related to the Öresund-connection project.
The site was divided into 4 areas (1-4), with a fossil being documented in area 4. This was the area that produced the most features and finds, and was further subdivided (4A-D). Area 4 contained settlement features and 1 grave.

Feature: A350, grave (area 4D)
Dating: Early Neolithic – Middle Neolithic **(**Uncal. 4655+-75 BP)
Fossils: Sea urchin (1)
Weight: 39 g
Other finds in context: Burned bone (33, 5 g), fired clay (22, 161 g), flint tools/waste (43, 423 g), pottery sherds (611, 3102 g), grinding stone.
Interpretation: The feature could possibly be 2 graves. None of the finds were considered grave goods, but the fossil could be intentionally deposited.
Comments: The featured contained significant amounts of stone. The fossil was found in the fill between them. 7000 grams of lithic material was documented.

Gyllin's Garden

Source: Carlie et al.*, 2007.*
The area was subject to archaeological investigation in preparation for building construction. Three areas (A, D and E) were excavated. A total of 2730 features were documented, 1157 of these were further investigated. Features included, but were not limited to, 9 wells, 530 pits, 33 pit systems, 2 pit houses, 4 houses, 47 hearths, 22 layers, 1656 postholes, 4 ovens and 7 graves. The chronological span stretched from the Neolithic to the 1700's.

Feature: 8321, grave II (area A)
Dating: Late Neolithic
Fossils: Undefined (1)
Weight: 1 g
Other finds in context: Flint flakes/waste (69, 329 g), pottery sherds (3, 18 g)
Interpretation: Grave with stone packing.
Comments: The fossil was found in the northwest quadrant, along with 11 flint flakes/waste.

Feature: 13902, house 22 (area A)
Dating: Late Pre Roman Iron Age – Early Roman Iron Age.
Fossils: Sea urchin (1)
Weight: 62 g
Other finds in context: None.
Interpretation: House 22 was interpreted as a longhouse.
Comments: The fossil was found "right below the post" in the feature.
House 22 showed signs of going through

reconstruction of the roof bearing structure. It was part of phase b of farm VIII.

Feature: 15486, pit
Dating: -
Fossils: Sea urchin (1)
Weight: 14 g
Other finds in context: None.
Interpretation: -
Comments: No further information in report or on DVD.

Feature: 17178, groove/ditch
Dating: -
Fossils: Sea urchin (1 frag.)
Weight: 8 g
Other finds in context: Bone (0.9 g), flint flakes/waste (3, 5 g).
Interpretation: -
Comments: No further information in report or on DVD.

Feature: 200798, posthole, house 13 (area D)
Dating: Late Roman Iron Age (255-390 CE)
Fossils: Sea urchin (1)
Weight: 42 g
Other finds in context: None.
Interpretation: House 13 was a long house. The fossil is interpreted as a house offering.
Comments: House 13 was part of the middle phase (b) of farm V together with a shed (house 14) and a pit (A222684).

Feature: 200846, posthole
Dating: -
Fossils: Sea urchin (1)
Weight: 65 g
Other finds in context: None.
Interpretation: -
Comments: -

Feature: 201101, posthole
Dating: -
Fossils: Sea urchin (1)
Weight: 103 g
Other finds in context: None.
Interpretation: -
Comments: -

Feature: 206006, grave VI (area D)
Dating: Late Neolithic
Fossils: Sea urchin (1)
Weight: 136 g
Other finds in context: Flint daggers (2, 163 g), flint flakes (285, 1030 g), burned flint (73, 83 g), retouched flint (2, 83 g), pottery sherds (50, 303 g), slag (3, 3 g), slate pendant (1, 11 g), tooth enamel.
Interpretation: Possible boat grave. A dark spot is interpreted as the remnants of a dugout canoe with visible sheers. The burial likely contained two individuals.
Comments: The fossil was found by eastern board.

Feature: 206813, grave I (area D)
Dating: Late Neolithic
Fossils: 1) Bivalve (2), 2) sea urchin (1)
Weight: 1) 21 g, 2) 12 g
Other finds in context: Bone (0.4 g), fired clay (4, 5 g), flint arrowhead (1, 1 g), flint flakes/waste (219, 799 g), retouched flint (2, 34 g), burned flint (31, 92 g), pottery sherds (10, 31 g), slag (1, 170 g), slate pendant (1, 11 g)
Interpretation: Wood chamber grave with human remains from at least 8 individuals, 5 adult and 3 children.
Comments: The bivalve fossils were found in the southeast quadrant, along with flint, fired clay and pottery sherds.
1 g of the fired clay was briquettes.
This kind of grave was not previously known from Scania.

Hammar/Nosaby

Source: Helgesson et al.*, 2014.*
An archaeological investigation was performed in preparation for construction. Two areas were excavated, area 2 with two trenches (north and south) and area 3 with one. A total of 2349 features were registered, 673 of these were further investigated. Among the features were 17 houses, postholes, 117 hearths, 79 pits, 8 graves, 3 wells and an oven.
Activity at the site was interpreted as being divided into 7 phases stretching from the Middle Neolithic to Medieval/post-medieval. The fossils were found in features dated to the Bronze/Iron Age phases 3 (A2701) and 4 (A3135, A3165).
The area with cultural layer A2701 had several settlement structures and traces of crafting activities, as well as 2 graves.
The area containing the pits A3153 and A3165 is interpreted as an extensive crafting/workshop area from late Iron Age.

Feature: A2701, cultural layer
Dating: Late Bronze Age – Pre Roman Iron Age (900-360 BCE)
Fossils: Sea urchin (1)
Weight: 158 g
Other finds in context: Bone (11996 g), worked bone/horn (4, 185 g), bronze fibula (1, 6 g), flint blades (16, 362 g), flint cores (39, 5560 g), flint flakes/waste (2008, 25758 g), flint knapping stones

(2, 870 g), flint tools (44, 2541 g), grinding stones (7, 1288 g), stone axe (1, 42 g), pottery sherds (816, 5245 g), slate water-stone (2, 109 g), quartz flakes/waste (40, 792 g).
Interpretation: The find material is interpreted as mainly consisting of waste from household and crafting.
Comments: The finds in A2701 were heavily concentrated to the western part (80-95 %), while postholes from several structures were found in the eastern part. This points to the find distribution being due to removal of household and crafting waste from the structures.

Feature: A3153, pit (area 2, south)
Dating: Vendel Period (570-665 CE)
Fossils: Sea urchin (1)
Weight: 158 g
Fill material: The feature had several fill layers. The finds were made in the top layer (1) which consisted of grey-black sooty silty sand/humus.
Other finds in context: Bone (1531 g), bronze objects (3, 4 g), clay pipe (1, 1 g), fired clay objects (15, 45 g), flint flakes (36, 289 g), flint knife (1, 69 g), glass (1, 1g), iron objects (5, 15 g), pottery sherds (4, 23 g), slag (1 g), quartz (2, 40 g).
Interpretation: The pit was likely dug as a source for clay/gravel, and later filled with refuse/waste from surrounding crafting activities.
Comments: Pit A3153 was one of several pits that had been dug through each other.
Among the clay objects were casting moulds, one with a failed casting of needles still in it, and a crucible.
The feature was disturbed by a younger ditch.

Feature: A3165, pit (area 2, south)
Dating: Vendel Period (570-665 CE)
Fossils: Sea urchin (1)
Weight: 158 g
Other finds in context: Bone (7637 g), worked bone/horn (3, 394 g), bronze objects (6, 5 g), fired clay (62, 142 g), fired clay objects (59, 318 g), flint flakes/waste (31, 196 g), garnet (2, 1g), glass game piece (1, 1 g), iron objects (40, 209 g), lead (1, 1 g), pottery sherds (52, 788 g), silver rings/loops (2, 1 g), slag (117 g).
Interpretation: The pit was likely dug as a source for clay, and later filled with refuse/waste from surrounding activities like butchering and crafting.
Comments: The feature was partially disturbed by a recent ditch.
Among the fired clay were 54 pieces from crucibles and 5 from casting moulds, as well as pieces from an oven wall. The lead weight and unworked pieces of garnet are also most probably related to crafting. The glass piece and silver rings/loops are viewed as more exclusive items.

Herrestorp/Vellinge

Source: Brink et al., *2014*
Two areas were excavated in preparation for construction of a residential building, called the east and west areas. The east was dominated by Iron Age settlement features but also had Neolithic graves and possible Bronze Age features, and the west was dominated by Neolithic settlement features and probably inhabited by family groups for most of the year.
The fossils were all found in the west area of the excavation. In this area a house, 6 huts, 3 pits with post constructions, 1 well and over 20 pits were found. Most of the features were from the Early Neolithic, but the house and one pit was from the Iron Age and the well and one pit from Bronze Age.

Feature: A2163, floor
Dating: Early Neolithic I (4000-3500 BCE)
Fossils: Sea urchin (1)
Weight: 27 g
Description: Not whole. Beige colour. 45x43x22 mm.
Fill material: Light grey-brown humous clayey sand, some pebbles.
Other finds in context: flint blade (1, 2 g), flint flakes (53, 321 g), flint knapping stone (1, 317 g), flint scraper (1, 19 g), fire starting flint (1, 55 g), other burned flint (7, 42 g), other worked flint (2, 145 g), pottery sherds (76, 616 g).
Interpretation: Floor layer in construction A6, a pit with surrounding post construction. The depression that the layer filled could have been created through erosion from activity in the structure. A6 seems to have had some other function than as a residence, possibly related to social events like feasts.
Comments: Some of the pottery had décor.
In the pit at the center of A6 big sherds from a funnel beaker were found. It is also the only pit where grains were found.

Feature: A/G12460, pit
Dating: Early Neolithic I (4000-3500 BCE)
Fossils: Sea urchins (2)
Weight: 1) 115 g, 2) 92 g
Description: 1) Whole fossil with a smooth grinding surface along one side of the bottom edge. Brown/beige/grey colour. 53x42x35 mm.
2) Almost complete fossil, only a small piece is missing. Brow/grey/beige colour. 63x51x34 mm.

Other finds in context: Burnt bone (8, 1 g), fired clay (6, 44 g), clay discs (5, 10 g), flint axe (2, 26 g), flint blades (2, 17 g), flint cores (2, 89 g), **f**lint flakes (418, 1931 g), flint knapping stones (3, 143 g), flint tools (10, 236 g), other burned flint (286, 341 g), pottery sherds (157, 1219 g), grinding stones (2, 452 g).
Interpretation: The function of the pit is unclear. The larger fossil with a smoothed surface is interpreted as a hand stone. The other fossil is not further described.
Comments: Both fossils were found in the same digging unit.
68% of the flint (by weight) is burned. Among the tools are scrapers and drills.
Analysis of the pottery suggests that the feature is one of the oldest pits at the site.
Hazelnuts and charcoal was found in a soil sample from this feature.

Hindby

Source: Berggren, 2007.
The site was investigated in preparation for construction. The surrounding area has been subject to archaeological investigation since the 1960's.
The site was divided into 4 areas, fossils were found in 2 adjacent areas (Bostadsdelen ("the residential area") and Industrihotelldelen ("the industrial hotel area")).
Industrihotelldelen revealed 290 features, of which 123 were excavated. In bostadsdelen 32 features were documented, 13 of which were excavated.
Total of 44 fossil sea urchins were documented in 5 different contexts.

Feature: A1209, dark spot (bostadsdelen)
Dating: Uncertain. Possibly Late Bronze Age
Fossils: Sea urchin, (1)
Weight: 157 g.
Fill material: Humous sand.
Other finds in context: Flint flakes (57, 535 g), flint nodule with processing (3, 469 g).
Interpretation: In a possible settlement area, which seems unrelated to the activities at the bog. Possible leftover of a flint knapping site, or a place to get rid of flint waste.
Comments: In the same area as A1221.

Feature: A1221, pit (bostadsdelen)
Dating: Uncertain. Possibly Late Bronze Age.
Fossils: Sea urchin (1)
Weight: 51 g
Fill material: Sand, clay, moraine.
Other finds in context: bone (397.5 g), charcoal, fired clay (2, 25 g), conical flint core (3, 142 g), other flint cores (11, 1097 g), flint flakes (49, 387 g), flint nodule with processing (3, 154 g), other flint tool (1, 22 g), other flint (5, 187 g), pottery sherds (5, 72 g).
Interpretation: In a possible settlement area, which seems unrelated to the activities at the bog. Used as refuse pit, but the pit's shape suggests a different original function. The materials in the pit are interpreted as refuse.
Comments: The fossil was found in the top level of the pit, same as the pottery sherds.
Bones from cattle, horse and sheep/goat identified.
In the same area as A1209.

Feature: A1259, pit (Industrihotelldelen)
Dating: Late Neolithic – Early Bronze Age
Fossils: Sea urchin (1)
Weight: 58 g.
Fill material: Humous fen peat, stones (95.7 kg).
Other finds in context: Bone (106.6 g), flint grinding stone (1, 520 g), other flint (6, 40 g), pottery sherds (10, 7 g).
Interpretation: Related to other depositions in the bog. Materials are possibly offerings.
Comments: In clay layer at the east edge of the bog. Pit was covered by a stone packing.
Among bones pig, roe deer, owl and cattle were identified.

Feature: A1265:4, pit (Industrihotelldelen)
Dating: Late Neolithic
Fossils: Sea urchin (1)
Weight: 96 g.
Fill material: Black clayey humous fine sand, stones (22.1 kg), charcoal.
Other finds in context: Flint dagger point/spear head (1, 7 g), flint flake (1, 14 g)
Interpretation: Related to other depositions in the bog. Materials are possibly offerings.
Comments: Pit located at east edge of the bog. The fossil was found underneath one of the stones in a stone packing that partially covered the pit.
Feature: A1300, fen (Industrihotelldelen)
Dating: Late Neolithic – Early Bronze Age

Fossils: Sea urchins (40)
Weight: 26-183 g, total ca 1.3 kg.
Fill material: Peat.
Other finds in context: Identified bones/horn (4515 frag., 125 kg), unidentified bones/horn (5022 frag., 11 kg), worked bone/horn (43, 1291 g), bronze axe (1, 420 g), flint axes (28, 4.7 kg), flint blades (12, 147 g), flint cores/core fragments (342, 27.5 kg), flint flakes (302, 3.7 kg), flint microblade (1, 1g), worked flint nodules (116, 8.7 kg), fire starting flint (1, 11 g), other flint tools (ca 93, 4.5 kg), unworked flint (18, ca 1.9 kg), pottery sherds

(880, 3.8 kg), stone (ca 13 000 kg), coated stones (24, 3 kg), stone axes (9, 4.7 kg), grinding/crushing stones (84, 57.5 kg), pestle/grinding stones (11, 2 kg), polishing stones (6, 1.4 kg), polishing/grinding stones (23, 8 kg), stone tool fragments (53, 23 kg), wooden ladder (1), wooden poles (3), wooden stakes (10), other wooden objects.
Interpretation: Feature interpreted as a sacrificial bog. Materials found in it interpreted as offerings.
Comments: Fossils were spread out in the peat, <1 fossil in any one digging unit. Slight concentration to east along A1264.
Fossils are unworked and smaller in size than other unworked stone deposited in the bog. The latter are about the size of one or two fists.
Deposition of fossils more limited in time than unworked stone, mainly occurring in the latest phase. The bog was used from the Mesolithic to Late Bronze Age.
The identified bones belong to a myriad of species, including domesticated mammals, birds, fish and human.
The bronze axe is an Early Bronze Age palstave, with simple design and ornamentation.
Among the flint tools are scrapers, knives, daggers, arrowheads and sickles.
Among the pottery are sherds from funnel beakers, and other Neolithic and Bronze Age pottery.

Knästorp

Source: Aspeborg, 2015
A preliminary investigation was performed in preparation of exploitation. Excavation revealed sporadic settlement features from the middle of the Bronze Age like pits, postholes and hearths.

Feature: A266, pit system
Dating: Bronze Age
Fossils: Sea urchin (1)
Weight: 114 g
Other finds in context: Flint flakes (8), pottery sherds.
Interpretation: The fossil is interpreted as having been collected by the Bronze Age people as a curious object. The area it was found in is interpreted as an activity area for a nearby settlement.
Comments: Only 20% of A266 was excavated. Soot, charcoal and burned rock was also found in this feature.
Most of the pottery sherd were from cooking- or storage vessels.
The surrounding area was most likely rich and well populated during the Bronze Age.

Kvarnbyrondellen

Source: Rudebäck, 1990
Archaeological investigation was performed in preparation for construction. Archaeological features were discovered in three areas, the northwest area, the north-northeast area and the southwest area.
The feature with the fossil was located in the southwest area, in which 2 houses, 2 possible houses, 1 pit house, hearths, postholes, pits and remnants of cultural layers. Several of the features were dated to the Iron Age.

Feature: A185, remnant of cultural layer
Dating: Possibly Iron Age, but a nearby pit (A188) contained Bronze Age pottery.
Fossils: Coral (1)
Weight: -
Fill material: Humous clayey sand
Other finds in context: Flint core (1 frag, 18 g)
Interpretation: The layer contained 2 possible postholes (A185 A, A185 B), and was found in connection to a concentration of postholes that could possibly be from a house. The area overall was of settlement character.
Comments: The archaeological features were heavily disturbed by farming. Not all features were excavated.

Lackalänga

Source: Runcis, 2004:5, 24, 47
Archaeological investigation in preparation for the extension of the railway. At Lackalänga 10:10, Bronze Age postholes and pits were found during the excavation.

Feature: -
Dating: Possibly Bronze Age
Fossils: Sea urchin (1)
Weight: -
Description: Whole fossil with a clear star-shape on top. Grey/white colour. 56x48x36 mm.
Other finds in context: -
Interpretation: The site consisted of Bronze Age settlement features.
Comments: The fossil was found in the dump heap and could possibly be from the topsoil.
No dating given.
No further descriptions given.

Lilla Isie

Source: Sarnäs, 2018
During digging for the redirection of a water/sewage piping, the work was monitored by archaeologists. A total of 138 postholes, 31 pits, 15 hearths, 13 ditches and 11 pit houses were

uncovered, and of these 36 postholes, 5 pits and all the pit houses were excavated. Three long houses were identified.

Feature: A56, pit house
Dating: Viking Age
Fossils: 1) Belemnite (1), 2) belemnite (1)
Weight: 1) 5 g, 2) 3 g
Fill material: Grey-brown humous gravel/sand
Description: 1) Fragment of a belemnite. Perforated, possibly naturally. Split in half. Reddish-brown colour, slightly translucent. Each half is 14x14x7mm.
2) Fragment. Not kept.
Other finds in context: Amber (2), bone (1804 g), bone object (1), bone skate (1), burned clay (39 g), copper alloy-objects (2), decorated glass (1), iron nails (4), iron objects (2), pottery sherds (57, 765 g), slag, spindle whorls (1+1 frag).
Interpretation: Fossil 1) is perforated and interpreted as a possible bead.
Fossil 2) was interpreted as a possible bead fragment.
The large amounts of bone in the pit houses point to them being used as refuse pits once decommissioned. The material in them thus reflect the activities surrounding them, rather than inside them. The site overall is interpreted as a Vendel Period-Viking Age settlement.
Comments: The bones were from cattle, horse, pig, sheep, sheep/goat, European water vole, birds and fish.
Finds of spindle whorls, a loom weight and slag suggests textile work and smithery/metal work in the settlement.

Lindelängelund

Source: Carlie & Lagergren, 2014
An archaeological investigation was performed in preparation for the lay out of a botanical garden. Over 4000 archaeological features were found, including houses, wells, ditches, pits, hearths and stone packings, from the Neolithic to post-medieval times. 926 of these were investigated.
A total of 9 fossils were found in as many features. All 9 were intact.

Feature: A100, topsoil
Dating: Possibly Early Roman Iron Age.
Fossils: Sea urchin (1)
Weight: 141 g
Other finds in context: brick (3, 6 g), copper alloy (1, 0g), copper brooch (1, 3g), flint axe (1, 45 g), flint scraper (1, 15 g), iron (1, 0 g), lead (1, 8 g), silver coin (1, 1 g), knapping stone (1, 508 g).
Interpretation: -
Comments: The fossil was found in the topsoil above House 11, dated to Early Roman Iron Age. It is unclear whether the fossil belongs to the house.

Feature: A17562, storage pit
Dating: Iron Age
Fossils: Sea urchin (1)
Weight: 17 g
Other finds in context: Bone (10 g), pottery sherds (3, 59 g)
Interpretation: Storage pit belonging to House 6.
Comments: No further interpretation of the fossil. The pottery sherds were from Baltic ware.

Feature: A42859, pit
Dating: Early – Middle Neolithic
Fossils: Sea urchin (1)
Weight: 128 g
Other finds in context: Flint arrowhead (1, 1 g), flint flakes (2, 4 g).
Interpretation: The pit was located in an Iron Age activity area. No further interpretation.
Comments: The fill contained moraine flint.

Feature: A58377 (unit G79684), fill above wells
Dating: Early Iron Age (fill material)
Fossils: Sea urchin (1)
Weight: 283 g
Fill material: Dark grey-brown humous sandy silt, some stones.
Other finds in context: In the same digging unit: Bone, flint scraper (1, 52 g), pottery sherds (8, 50 g) In other units: Burned clay (3, 154 g), flint flake (1, 3 g), pottery sherds (38, 568 g, knapping stone (1, 1025 g).
Interpretation: The fossil is interpreted as a ritual deposition.
Comments: Considering that this feature was filled after the wells it has to be younger than the youngest well fill. The dating of the fill material suggests that it is a secondary deposit.

Feature: A74539, well curb
Dating: Early Iron Age
Fossils: Sea urchin (1)
Weight: 120 g
Fill material: Dark brown-grey humous silty sand. Bottom part of fill consisted of compact brown-grey clay.
Other finds in context: Bone (2225 g), flint flakes (12, 189 g), pottery sherds (31, 967 g), knapping stones (3, 1431 g), wooden stakes (2), wood objects (2), wooden sticks (4).
Interpretation: The fossil is interpreted as a ritual deposition.
Together with well A152645 and well curb

A74492, the feature is interpreted as an important or holy place.
Comments: The fossil was found upside down next to a collection of bones (75777).
Animals identified among the bones are cattle, pig, sheep/goat and dog.
One of the wooden stakes are interpreted as a ritual pole.
Soil samples revealed seeds and pollen from hemp.

Feature: A80810, well
Dating: Late Iron Age – early medieval
Fossils: Belemnite (1)
Weight: 4 g
Other finds in context: Bone (460 g), flint flake (1, 8 g), pottery sherds (2, 22 g), knapping stone (1, 507 g), wooden ash rake (1).
Interpretation: The fossil is interpreted as a ritual deposition. The well was probably short lived and possibly filled as part of a ritual, as the fill material is uniform and has some ritual characteristics.
Comments: The well is in the same area as A80835.
Remnants of wooden weaving from the well walls were found in the fill material, as well as shells toward the bottom.
Among the bones cattle, horse, sheep/goat and pig could be identified.
The knapping stone had a smoothed/grinding surface.

Feature: A80835, well
Dating: Early Iron Age
Fossils: Sea urchin (1)
Weight: 59 g
Fill material: Dark grey-brown sandy silt with much weathered rocks. Varved. Surrounded on the edges by a fill of grey sand, which contained some wooden sticks toward the bottom. Stiff dark brown clay at well bottom.
Other finds in context: Level 0.5-1.0 m: Bone (1396 g), human bone (1), flint flakes (7, 113 g), pottery sherds (35, 397 g), knapping/grinding stones (2, 661 g), stretcher (1, 844 g).
Level 1.0-1.6 m: Bone (1014 g), human bone (3), flint flakes (6, 37 g), pottery sherds (19, 368g).
Level 1.6-1.8 m: Bone (1014 g), human bone (1), flint flakes (4, 49 g), pottery sherds (2, 36 g).
Interpretation: The fossil is interpreted as a ritual deposition.
Comments: The well is in the same area as A80810.
It is unknown in which level the fossil originated.
The animal bones are from cattle, pig, horse, sheep/goat and dog.
The human bones are from 2 or 3 individuals. The bone fragment in level 1 has a fitting with one from level 2.

Feature: A84630, posthole House 12
Dating: Late Vendel Period – Viking Age
Fossils: Sea urchin (1)
Weight: 99 g
Other finds in context: -
Interpretation: The posthole was roof bearing and the fossil is interpreted as having been deposited in a ritual manner. The house is interpreted as the main building of a Vendel Period/Viking Age farm.
Comments: No other finds from House 12.

Feature: A152502, pit
Dating: Early Roman Iron Age
Fossils: Sea urchin (1)
Weight: 86 g
Other finds in context: Bone (6 g), pottery sherds (20, 114 g).
Interpretation: The function of the pit is unclear, but the fossil is interpreted as possibly part of a ritual deposition together with the pottery.
Comments: The pit is part of a larger area with hearths and pits (A30).
The pottery sherds are from burnished ware and made from a fine clay.

Limhamn

Source: Berggren, 2015
Archaeological investigation was performed in preparation for the construction of a road. The site was in an area known for its rich Neolithic archaeology. A total of 396 features were documented, of which 295 were excavated. Identified features were 2 wells, 39 pits, 1 pit system, 2 hearths, 3 cultural layers, 4 stone packings and 316 postholes. The chronological range stretched from the Neolithic to Iron Age.

Feature: A5422, pit
Dating: Neolithic – Early Iron Age
Fossils: Sea urchin (1)
Weight: 62 g
Fill material: Grey clayey silt. A large rock in pit center, with a large amount of smaller rocks around it.
Other finds in context: Flint flakes (18, 79 g), burned flint (3, 26 g), pottery sherd (1, 6 g)
Interpretation: The material in the pit was chronologically mixed. Its original purpose is unclear.
Comments: The feature was one of several pits found in and around layer A3371. Most of these pits were dated to the Neolithic, but some to Iron Age.

Other rock filled pits have been found to be Neolithic.

Lockarp

Source: Celin, 2006.
The area was excavated as part of the City Tunnel-project. A total of 424 features were documented during the archaeological investigations, including 189 postholes, 97 hearths, 68 pits, 2 wells and 1 pithouse. Most of them dated to the Roman and Pre Roman Iron Age, with some finds and a few pits from the Bronze Age, the Neolithic only represented by one carbon dating and 3 finds.

Feature: A424, hearth
Dating: Pre Roman Iron Age
Fossils: Sea urchin (1)
Weight: 78 g
Fill material: Sooty soil, large amounts of burned rock in top part.
Other finds in context: Bone (2, 13 g), fired clay (1, 1 g), flint (15, 123 g), pottery sherds (2, 6 g), stone tools (2, 807 g).
Interpretation: The feature is interpreted as a hearth.
Comments: The bone was from cattle.
Fossils are discussed to have a ritual purpose in the report.

Feature: Hearth (unknown ID)
Dating: Early Iron Age
Fossils: Sea urchin (2)
Weight: -
Fill material: -
Other finds in context: -
Interpretation: -
Comments: Fossils are discussed to have a ritual purpose in the report.
The feature/-s these fossils were found in are not further described in the report.

Feature: Pit house (unknown ID)
Dating: Viking Age
Fossils: Sea urchin, *Echinocorys* (1)
Weight: 78 g
Fill material:
Other finds in context: Bone (6, 56 g), bronze (1, 5 g), fired clay (2, 7 g), flint (52, 525 g), iron (1, 12 g), pottery sherds (74, 793 g), slag (4, 3 g), grinding stone (1, 287 g).
Interpretation: The pit house could have been used to store grains.
Comments: The feature was excavated in 4 quadrants, with most of the finds from the eastern areas.
Bones were from cattle, pig and sheep/goat.
Large amounts of grain was found in the feature.
Fossils are discussed to have a ritual purpose in the report.

Mossby

Source: Bolander, 2017
An archaeological investigation was performed in preparation for house construction. Excavation revealed a total of 702 archaeological features: 492 postholes, 86 pits, 30 fire related features, 6 grooves/ditches, 12 houses, 3 pit houses and fencing. They were mainly settlement related, and most of the activity was during the late Iron Age. The oldest material on the site was dated to the Mesolithic, and structures from Bronze Age was also found.
Parts of the investigated area was disturbed by recent activity.

Feature: L4525, pit house
Dating: Vendel Period – Viking Age (759-950 CE)
Fossils: 1) Mollusc (1), 2) unidentified (2)
Weight: 1) 1 g, 2) 4 g
Fill material: Dry and packed grey-brown sand which contained gravel and pebbles.
Other finds in context: Bone (65, 115 g), iron object, pottery sherds (32, 194 g)
Interpretation: The feature is the fill of pit house 2855.
Comments: The bone material is consistent with refuse from butchering and cooking rather than consumption. The material in L452 could be reflecting the activities around the house rather than inside it (see feature A56 from Lilla Isie/Östra Torp above).
The iron object could be the remnants of a knife.
Pottery sherds in this layer match sherds from L4543.

Feature: L4543, floor
Dating: Vendel Period – Viking Age (759-950 CE)
Fossils: Oyster (1)
Weight: 23 g
Fill material: Silty sand which contained charcoal and small grained gravel.
Other finds in context: Bone (109, 212 g), fired clay (3, 6 g), glass bead (1, 1 g), iron object (1, 9 g), unfired loom weights (13-14), sowing needle (1, 1 g), pottery (20, 119 g).
Interpretation: The feature is interpreted as a floor in pit house 2855.
Comments: A horned fragment of an animal cranium was found in the center of the floor layer and interpreted as an offering.
Pottery sherds in this layer match sherds from L4525.

Odarslöv

Source: Kronberg 2015:5, 37, 81
The site was investigated in preparation for construction related to the Science Village exploitations. Remnants from 14 huts, 2 houses, 2 dolmens, 3 façade-features, 2 graves, 2 pits and 1 possible procession road were found. Previous archaeological investigations have found Neolithic features and material in the area.

Feature: A11734, stone packing, façade 3
Dating: Early Neolithic – Middle Neolithic
Fossils: Sea urchin (1)
Weight: 42 g
Fill material: Small stones, moraine flint
Other finds in feature: Flint core (1, 18 g), flint flakes (2, 12 g)
Interpretation: The stone packing was interpreted as the remnants of a façade related to a megalithic construction.
The fossil was interpreted as a possible ritual element.
Comment: The stones were mostly 5-15 cm in diameter.
Only 10 % of the feature was excavated due to large amounts of rain.
A few sherds of younger pottery was found, but interpreted as not being related to the active phase of the feature.

Pilbladet 1

Source: Berggren, 2018
An archaeological investigation was performed in preparation for house construction. The area is of interest mainly because of its flint mines, which were active mainly during the Neolithic. The site was heavily occupied during Bronze and Iron Age. A total of 340 features were discovered, of which around 20 were mines and around 100 open cuts. 9 pits, 4 hearths, 4 postholes and several layers were also investigated.
The flint in the flint mine contains fossils.

Feature: A20791, posthole
Dating: Late Bronze Age
Fossils: Sea urchin (1)
Weight: 94 g
Fill material: Black/black-grey sooty sand containing charcoal and rocks, some burned.
Other finds in context: None.
Interpretation: The posthole might have been filled with material from nearby hearths after the post was removed.
Comments: The fossil was found near the bottom of the feature.
The feature is part of a hut/activity site.

Feature: A19558, hearth
Dating: Late Bronze Age – Early Iron Age
Fossils: Sea urchin (1)
Weight: 65 g
Fill material: Black-grey/brown mixed clayey sand with significant amounts of charcoal, small flint fragments and rocks.
Other finds in context: Flint flake (1, 1 g).
Interpretation: The feature was the remnants of a hearth bottom, in which varying materials have been burned.
Comments: Macrofossil analysis found carbonized remains from several different plants, mainly field weeds.

Risebergabäcken

Source: Sarnäs, 2009:5, 8ff
A total of 498 features were documented, of which 81 were further investigated. Excavated features include 3 wells, 32 pits, 1 pit system, 4 pit houses, 17 hearths, 17 postholes and 5 grooves. Dating placed features in the Neolithic and Iron Age.

Feature: A20, pit house
Dating: Viking Age
Fossils: Sea urchin (1)
Weight: -
Fill material: Grey-black humous sandy silt.
Other finds in context: Bone (>130 g), flint flakes (4), burned flint (6), loom weight (1 frag.), pottery sherds (8), burned grinding stones (3 frag.).
Interpretation: -
Comments: Identified bones were from dog, sheep/goat and fish.
The loom weight was poorly preserved.

Feature: A32, well
Dating: Viking Age
Fossils: Sea urchin (1)
Weight: -
Other finds in context: Bone, flint flakes (17), pottery sherds (6), burned grinding stone (1 frag.), slate water-stone (1).
Interpretation: -
Comments: The bones were from cattle and horse.
One pottery sherd was from an “ugly” cup.
The water-stone was perforated for suspension.
Only the southwest quadrant was excavated.

Feature: A66, pithouse
Dating: Iron Age
Fossils: Sea urchin (1)
Weight: -
Fill material: Grey-brown/brown humous sand and clay with increasing amounts of charcoal and soot towards center bottom.

Other finds in context: Bone, flint flakes (7), burned flint (114 g), other flint (3), pottery sherds (20).
Interpretation: -
Comments: The bones were from cattle, horse, pig and sheep/goat.

Skregie

Source: Söderberg, 2014
An archaeological investigation was carried out in preparation for development of road E6 to highway standard. Excavation revealed 2491 features, of which 905 were investigated. Among these were houses, ditches, pits, pit houses, postholes, and the bottom construction of a dolmen. Activities on the site date to the Neolithic and Iron Age – post-medieval.

Feature: A120, underneath dolmen
Dating: Neolithic
Fossils: Sea urchin (1)
Weight: 27 g
Description: Piece missing on underside, slightly "squished" shape. Corona preserved. Grey/beige colour. 39x38x15 mm.
Fill material: Grey sand
Other finds in context: Pottery sherd
Interpretation: Layer A120 was interpreted as an old ground level below the dolmen related features.
Comments: The dolmen possibly had two phases, first a round dolmen and later a long dolmen.

Feature: A4012, floor in pit house 2
Dating: 700-1100 CE
Fossils: Sea urchin (1)
Weight: 99 g
Description: A piece is missing from the bottom of the fossil. Parts of the corona preserved, rough looking. Beige/grey/white colour. 50x47x41 mm.
Fill material: Dark brown compact sand.
Other finds in context: Amber, bone, fired and unfired clay, flint, iron, pottery, stone objects.
In the infill above (AL 1994) were amber, bone, fired and unfired clay, flint, iron, pottery, quartz.
Interpretation: The feature is part of a pit house. No further interpretation regarding the fossil.
Comments: The pit house seems to have been in use over a long time, in two different phases.

Feature: A7052, pit
Dating: Neolithic
Fossils: Sea urchin (1)
Weight: 46 g
Description: Whole fossil, drop-shaped. Beige/grey colour. 44x33x27 mm.
Fill material: Grey-brown silty sand, stones.
Other finds in context: Flint, pottery, knapping stone.
Interpretation: The feature is interpreted as an offering pit, and the contents as an intentional deposition/offering.
Comments: Among the flint were flakes, a scraper and a chisel.

Feature: A20700, pit house 19
Dating: 700-1100 CE
Fossils: Sea urchin (1)
Weight: 59 g
Description: Large pieces missing, small parts of corona preserved. Clear star-shape on top. Grey/beige colour. 51x41x29 mm.
Fill material: Layers of 1) grey-brown silty sand, 2) yellow-brown sand, 3) brown silty sand, 4) black/brown silty sand (floor).
Other finds in context: Bone, burned clay, copper alloy, flint, pottery
Interpretation: The feature is the cut of a pit house, containing three layers of infill (1-3) and one floor layer (4). No further interpretation regarding the fossil.
Comments: None of the layers were given ID's. The finds were not collected according to layer during the excavation.

Feature: A41642, dolmen phase 1
Dating: Neolithic
Fossils: Sea urchin (1)
Weight: 16 g
Description: Piece missing on underside. Smooth surface, gives almost polished impression. Orange/red patina. 34x32x16mm.
Other finds in context: -
Interpretation: -
Comments: The fossil was found in one of the chamber block imprints.
The dolmen possibly had two phases, first a round dolmen and later a long dolmen

Sunnanå 12:1

Source: Aspeborg, 2003
An archaeological investigation was performed in preparation for construction. Five areas, A-E, of varying size were excavated. Two fossils were found, one in area B and C respectively.
In area B excavation revealed 84 postholes, 18 pits, 7 hearths, 2 grooves/ditches and one hut, and 22% of these were excavated. The area was interpreted as a Neolithic settlement.
In area C excavation revealed 52 postholes, 29 pits, 1 hearth, 1 well and 6 grooves/ditches. The area is interpreted as part of an Iron Age settlement.

Feature: A702, pit (area C)

Dating: Probably Iron Age
Fossils: Sea urchin (1)
Weight: 85 g
Description: Whole fossil. Looks a little "squished" to the side. Beige-grey colour. 58x47x30 mm.
Other finds in context: Bone (4, 4g), flint flakes/waste (36, 325 g), pottery sherds (3, 15 g)
Interpretation: -
Comments: Half of the feature was investigated. All finds but 12 flint flakes/waste were from the lower part of the pit.
Bone from sheep/goat could be identified.

Feature: A3166, not defined (area B)
Dating: Neolithic
Fossils: Sea urchin (1)
Weight: 55 g
Description: Piece missing on underside, clear star shape on top. Grey-brown colour. 44x40x27 mm.
Other finds in context: Flint blade (1, 5 g), flint flakes (79, 1720 g), , flint scraper (2, 80 g), pottery sherds (3, 15 g).
Interpretation: -
Comments: The context ID does not have a description. It could be (part of) the cultural layer that covered most of Area B.

Sunnanå 19E

Source: Steineke et al., *2005:9, 217, 243-274*
The site was investigated in preparation the construction related to the large Öresund-connection project, and was divided into three areas (A-C). The 2 fossils were found in area B, which had features (4 houses, 2 pits, 1 cooking pit, 2 hearths and 1 well), from the Mesolithic, Neolithic and early Iron Age.

Feature: A5841, unit 1, topsoil (area B)
Dating: Late Neolithic
Fossils: Sea urchin, *Echinocorys* (1)
Weight: 43 g
Other finds in context: Bone (8, 43 g), daub (1, 3 g), flint axe (1, 61 g), flint core (6, 556 g), flint flakes (527, 2551 g), flint knife (2, 13 g), flint scraper (8, 205 g), other flint (17, 455 g), pottery sherds (91, 546 g).
Interpretation: A5841 was interpreted as a cult house. A different possibility is that it could have been a grave, but no human remains were found. Several ritual elements were present in other features related to the construction. The finds in the topsoil, apart from a few clearly recent elements introduced by ploughing, were interpreted as clearly related to A5841.
Comments: The topsoil above the stone packing in A5841 produced the majority of the finds from A5841.
Two concentrations of finds from the topsoil were possibly related to 2 pottery vessels that might have been placed in A5841.

Feature: A5841, unit 4, stone packing (area B)
Dating: Late Neolithic
Fossils: Sea urchin (1)
Weight: 63 g
Other finds in context: Flint core (1, 41 g), flint flake (1, 1 g), flint nodule (1, 333 g), flint scraper (3, 95 g), pottery sherds (43, 401 g), sickle (1, 26 g), grinding/polishing stones (10, 13098 g), stone tool (1, 832 g).
Interpretation: The stone packing was interpreted as part of a cult house. A different possibility is that it could have been a grave, but no human remains were found. Several ritual elements were present in other features related to the construction.
Comments: Grinding/polishing stones and similar stone tools had been used as part of the construction of the stone packing. This secondary use of the objects could be ritual in nature.
The unit that produced the fossil also contained a core, a flint flake, a flint scraper and 10 sherds of pottery.
The feature description mentions a concentration of flint flakes from unit 5. This is not included in the finds table in the report.

Svågertorp

The Svågertorp area is known to have had more or less continuous settlement from the Neolithic to the Viking Age and has been subject to extensive archaeological investigation (Brusling & Streiffert, 2002:4).

Area 8B-C

Source: Rostovanyi & Hydén, 2002.
The site was investigated in preparation the construction related to the large Öresund-connection project. Around 1400 features were investigated, including 6 houses, 8 areas with postholes, more than 300 pits, 150 cooking pits, 1 pit house, 6 wells and 6 cultural layers. The activities at the site were divided into 9 phases (I-IX) stretching from the Palaeolithic to the 1800-1900's. Most of the features were dated to the Bronze Age.
Parts of Area B was disturbed by machinery being driven over the open trench. The culprit is unknown.
A total of 26 fossils were found in 19 different features, but only a fraction of them are further mentioned or analysed in the report.

Feature: A1404, posthole (area B)

Dating: -
Fossils: Shell (1)
Weight: -
Other finds in context: None.
Interpretation: -
Comments: The feature is only mentioned as part of a discussion about the fossils, and described as isolated.

Feature: A1618, pit
Dating: Bronze Age
Fossils: Sea urchin (1)
Weight: -
Other finds in context: -
Interpretation: The surface of the fossil was worn, which could be caused by repeated use (which use is not specified).
Comments: The feature is only mentioned as part of a discussion about the fossils.

Feature: A2073, posthole (area B)
Dating: -
Fossils: Sea urchin (1)
Weight: -
Other finds in context: None.
Interpretation: -
Comments: The feature is only mentioned as part of a discussion about the fossils, and described as isolated.

Feature: A19044, pit
Dating: Bronze Age
Fossils: Sea urchin (1)
Weight: -
Other finds in context: -
Interpretation: The surface of the fossil was worn, which could be caused by repeated use (which use is not specified).
The pit's function was unclear.
Comments: A detailed description of the specific feature is missing, but the contents of similar pits were interpreted as refuse/waste.

Feature: A24047, posthole, House 2 (area B)
Dating: Early Bronze Age
Fossils: Sea urchin (1)
Weight: -
Other finds in context: ?
Interpretation: The feature is interpreted as a hole for a wall post in House 2, which was divided into a residential section and another area for threshing. The fossil is interpreted as a possible intentional deposition, along with a flint core in another posthole.
Comments: No further description of the fossil. A total of 6 houses in this area were dated to the Bronze Age.

Feature: A42285, cultural layer
Dating: Middle Neolithic A, III-IV
Fossils: Sea urchin (1), shell (1)
Weight: -
Other finds in context: -
Interpretation: The sea urchin has a worn side and was found directly above a pit with an intentionally deposited axe. It is possible that the sea urchin is related to this deposition.
Comments: The feature is only mentioned as part of a discussion about the fossils.

Feature: A42672, cultural layer 5 (area C)
Dating: Mesolithic – Late Bronze Age
Fossils: Sea urchins (2)
Weight: -
Other finds in context: Bone, fired clay, flint cores, flint tools, pottery.
Interpretation: There were no indication that the fossils had any relation to the human activity at the site.
The finds in A2672 were related to settlement activity. Some material has probably been brought in by water and erosion from spatially separated activities.
Comments: Bones from cattle, sheep/goat and pig were identified.

Area E

Source: Brusling & Streijffert, 2002
The site was excavated in preparation for construction of an industrial area and a traffic junction.
440 features were unearthed and around 200 were further excavated. 2 houses, 4 layers, 3 pits and 1 well were identified. Activities recognised are Neolithic offerings in the wetland in the south end of the area and Iron Age settlement.

Feature: Loose find
Dating: Possibly Late Neolithic
Fossils: Sea urchin (1)
Weight: -
Other finds in context: A spoon scraper was found together with the fossil.
Interpretation: Spoon scrapers are commonly from the late Neolithic and have a connection to offerings both on its own and with other objects.
Comments: The find was made close to a wetland area. Deposits of single spoon scrapers are almost always found in wetlands.

Area F

Source: Brusling & Streijffert, 2002
The site was excavated in preparation for construction of an industrial area and a traffic junction.

6 houses and 1 other construction, 2 stone packings, 6 pits, 1 cooking pit, 2 postholes, 2 cultural layers and 1 well are described in the report.

Feature: A1304, pit house/hut bottom
Dating: Early Neolithic II – Middle Neolithic II
Fossils: Sea urchins (3)
Weight: -
Other finds in context: Fired clay, knapped flint (113, 1250 g), pottery sherds (165, 419 g).
Interpretation: -
Comments: Among the flint were 3 scrapers.

Area K

Source: Koch & Tuominen, 2008
The site was excavated in preparation for construction of an industrial area and a traffic junction. Around 700 features were found, 407 of these were investigated. The area had 1 stone packing and 1 cultural layer from the Neolithic, and 4 long houses, 1 shed, 2 pit houses, 8 pits, 1 hearth, 1 pit system and 2 wells from Iron Age settlement. Other features include a wetland layer and pit systems.

Feature: A3096, stone packing
Dating: Neolithic
Fossils: Sea urchins (2)
Weight: -
Fill material: Brown-grey humous slightly silty sand. The bottom of the feature, below the stones, had inclusions of lighter beige-grey sand.
Other finds in context: Flint cores (20, 1072 g), flint flakes (398, 1713 g), other worked flint (9, 497 g), other burned flint (96, 899 g), knapping stone (1), ground/polished rock (1)
Interpretation: The stone packing was difficult to interpret. It was suggested to be part of a grave, a boundary to the nearby wetland or perhaps related to a long dolmen.
Comments: Finds were collected from in and below the feature, with the majority originating from the stone packing.

Area L

Source: Tuominen et al.*, 2008*
The site was excavated in preparation for construction of an industrial area and a traffic junction. Excavation of area L revealed 10 houses, 4 wells, 7 pit systems, 7 pits and other layers/features. The chronological spread was from early Neolithic to post-medieval.

The north part of this area connected to a larger wetland area.

Feature: A184, wetland
Dating: Neolithic, Iron Age
Fossils: Sea urchin (1)
Weight: 108 g
Other finds in context: Arrow shaft smoother (1, 42 g), flint drill (2, 113 g), flint flakes (46, 225 g), flint point (1, 27 g), flint scraper (1, 29 g), worked flint (7, 540 g), other flint (20, 246 g), pottery.
Interpretation: -
Comments: Material from both the Neolithic and Iron Age was found in A184, and also from Bronze Age in related features.

Feature: A252, pit
Dating: Late Neolithic
Fossils: Sea urchin (1)
Weight: 21 g
Fill material: Dark sooty brown-gray humous silt.
Other finds in context: Bone, fired clay (9 g), knapped flint (35 g), flint knapping stone (1), grinding stone (1).
Interpretation: -
Comments: The pit was situated close to a late Neolithic long house.

Area M

Source: Tuominen & Koch, 2008
The site was excavated in preparation for construction of an industrial area and a traffic junction**.** Large parts of area M was old industrial land with a lot of recent features and facilities. Parts of area M could not be investigated due to safety reasons.
A farm with several phases from Migration Period to Viking Age was discovered in this area, as well as a house from Pre Roman Iron Age. Some Neolithic features were present, but it is thought that the Iron Age activities made earlier events difficult to discern.

Feature: A1353, pit
Dating: Early Pre Roman Iron Age
Fossils: Sea urchin (1)
Weight: 49 g
Fill material: Grey-brown sandy silt
Other finds in context: Bone (6 g), flint (4, 69 g), pottery sherds (3, 165 g)
Interpretation: The purpose of the pit was unclear.
Comments: The fossil was damaged/not whole. The feature was cut by a long house from late Iron Age.

Area S

Source: Koch & Tuominen, 2008

The site was excavated in preparation for construction of an industrial area and a traffic junction. There has supposedly been a long dolmen in this area.
Close to 800 features were found and 523 of these were further investigated. The features revealed Neolithic and Iron Age features. Dated to the Neolithic were 6 pits, 1 cultural layer, 1 long house, 1 battle axe grave, 4 possible graves, 1 posthole and a possible flint knapping area. From Late Bronze Age/Iron Age were 4 long houses, 4 pits, 4 hearths, 3 wells and 1 pit system.

Feature: A108, pit
Dating: Neolithic
Fossils: Sea urchin (1)
Weight: -
Fill material: Dark grey sandy silt with inclusions of charcoal. The feature contained stones and moraine flint.
Other finds in context: Burned bones (6 g), fired clay (13 g), clay disc (1 frag., 103 g), flint core (10, 478 g), flint flakes (287, 1021 g), flint scraper (1, 14 g), other worked flint (8, 310 g), other flint (28, 1 g), other burned flint (74, 210 g), burned hazelnut shell, pottery sherds (42, 230 g).
Interpretation: The fossil was found among moraine flint.
Comments: -

Feature: A279, battle axe grave
Dating: Middle Neolithic B – Late Neolithic
Fossils: Sea urchin (1), undefined (>3)
Weight: -
Fil material: Sand lens above pottery vessel and hip of the skeleton. The bottom of the feature consisted of a rust-brown compact clayey gravel and sand layer, on top of a beige-brown silty clay.
Other finds in context: Human skeleton, battle axe (1, 837 g), clay bead, (1, 7 g), flint axe (1, 301 g), flint blades (3, 22 g), other flint (1376 g), pottery sherds (16, 35 g), pottery vessel (1, 1198 g), shells (2), stone with round dimple (1, 195 g), possible ochre.
Interpretation: Osteological analysis of the skeleton indicates that it is from a 30-39 year old male.
The fossil is not explicitly mentioned as part of the grave goods, but is implied to be.
Comments: The sea urchin was found behind the head of the buried individual, in the soil below the axes and flint blades. It is 2.5 cm in diameter with a 1 cm in diameter perforation. From the picture in the report (fig. 24) it looks like the perforation might be natural. This could be due to damage or misshaping of the organism before fossilization. The other fossils are only mentioned to have been collected at the same level as the skeleton.

Feature: A2221, posthole, house 6
Dating: Middle Neolithic A III-V – Middle Neolithic B
Fossils: Sea urchin (1)
Weight: -
Fill material: Light brown-grey silty sand
Other finds in context: Grinding stone (1 frag., 3559 g).
Interpretation: A2221 was the hole after one of the roof bearing posts in a long house.
Comments: House 6 was the oldest house at the site.

Area U

Source: Bäck & Gruber, 2008
The site was investigated in preparation for the construction of the Svågertorp-thoroughfare. 1396 features were exposed and 805 further investigated. Excavation revealed 1 longhouse, fencing, 2 pits and 2 layers from the Neolithic, and 7 longhouses, 2 hearths, 2 pits, 1 pit system and 1 well from Bronze Age/Iron Age.

Feature: A690, part of layer A915
Dating: Neolithic – Bronze Age
Fossils: Sea urchin (1)
Weight: -
Fill material: Brown/grey-brown sand containing pebbles and gravel. Light grey patches.
Other finds in context: Flint flakes, other flint.
Finds from A915: Arrow head (1, 1 g), flint core (1 frag., 25 g), flint flakes (19, 163 g), burned flint (10, 39 g), other flint (2, 359 g), pottery sherds (111 g).
Finds from A699: Flint flakes, scraper.
Interpretation: A690 was a separate spot near A915, but interpreted as parts of the same feature. The same goes for feature A699.
Comments: Only part of the layer was excavated.

Feature: A770, pit system
Dating: Late Bronze Age – Roman Iron Age
Fossils: Sea urchin (1)
Weight: 76 g
Fill material: Mainly dark brown/gray silt, multiple clay lenses, 10 liters of stone. A sooty layer was separately investigated as A1349 (hearth).
Other finds in context: Bone (1.4 g), flint flakes (28, 168 g), flint scrapers (2, 73 g), burned flint (127, 725 g), other flint (6, 3 g), pottery sherds (72, 53 g), grinding stone (1, 867 g).
Interpretation: The pit system is interpreted as cooking related and connected to the nearby long

houses.
Comments: -

Area X

Source: Bäck & Gruber, 2008
The site was investigated in preparation for the construction of the Svågertorp-thoroughfare. 786 features were exposed and 540 further investigated. Excavation revealed 1 longhouse and 1 pit from the Neolithic, and 5 longhouses, 1 water hole, 1 well, 3 cooking pits/hearths, 8 pit systems, 3 pits and other features from Bronze Age/Iron Age.

Feature: A1619, cooking pit
Dating: Late Bronze Age – Early Iron Age
Fossils: Sea urchin (1)
Weight: 87 g
Fill material: Sooty fine sand with big pieces of charcoal, and burned rocks at the bottom.
Other finds in context: Flint flakes (4, 7 g), burned flint (4, 1 g), other flint (1, 41 g).
Interpretation: -
Comments: -

Feature: Posthole, house 13
Dating: Late Roman Iron Age
Fossils: Sea urchin (1)
Weight: 67 g
Other finds in context: Flint flakes (2, 66 g), other flint (6, 210 g), pottery sherds (3, 14 g).
Interpretation: What kind of structure/-s house 13 was is unclear.
The fossil could have been deposited as part of a ritual.
Comments: It is not disclosed in which posthole the fossil was found. The postholes were dug into the moraine.

Södra Sallerup

Source: Nilsson & Onsten-Molander, 2004:7ff
The site was investigated in preparation for construction related to the large Öresund-connection project. The location is distinguished by the presence of flint mines, which have been subject for archaeological investigation since the 1950's.

Area 15F

Source: Nilsson & Onsten-Molander, 2004:83ff
The area revealed relatively few archaeological features, dating from the Neolithic to Pre Roman Iron Age. 47 archaeological features were uncovered in the investigation, 35 of which were excavated. The features include cultural layers, 1 pit house, pits and 1 hearth. Area 15F lies close to a wetland area.

Feature: A9283, grave/ritual pit (area F)
Dating: -
Fossils: Sea urchin (1)
Weight: -
Other finds in context: Burned bones, thick necked axe (1), flint arrowheads (1+1 frag.), flint flakes.
Interpretation: The interpretation of the feature as a cremation burial is supported by the burned finds, but no human remains could be confirmed. The features finds and place in the landscape suggest it might be a ritual pit.
Comments: The bones were found in a layer of charcoal and seem to be animal bones, but presence of human bones could not be ruled out.
A human neck vertebra was found in a nearby feature (A10466).

Feature: A9369, pit house
Dating: Pre Roman Iron Age
Fossils: Sea urchin (1)
Weight: 67 g
Fill material: Brown-gray/dark grey humous sandy silt. Bottom layer was a light brown-grey leaching layer.
Other finds in context: Bone (313, 878 g), fired clay (50, 602 g), flint (261, 5324 g), pottery sherds (38, 198 g).
Interpretation: -
Comments: Identified bones were from bird, cattle, sheep, sheep/goat and horse.

Area 15I

Source: Nilsson & Onsten-Molander, 2004:16, 32-82
930 features were documented in the area, of which 590 were further investigated. Features include 7 wells/water holes, 5 ritual pits, at least 32 pits and 4 houses. The chronological range spans from Late Neolithic to Early Iron Age, with most of the settlement features being from Bronze Age settlement and ritual activity. Area 15I also contains an open cut area which has been used as a source of flint, mainly during the Neolithic.

Feature: A2148, well
Dating: -
Fossils: Sea urchin (1)
Weight: 69 g
Fill material: Layer 1-4: Yellow-grey/brown-grey humous sandy clay.
Layer 5-6: Grey-brown/brown-red sandy clay.
Other finds in context: Bone (263 g), fired clay (10 g), flint (14, 221 g), burned flint (3, 3 g), knife (1, 20 g), pottery sherds (7, 32 g), shells.
Interpretation: -
Comments: Identified bones were from cattle, dog, sheep/goat and domesticated pig.

Two postholes (A14583, A14596) are interpreted as part of the well construction.

Feature: A4506, ritual pit
Dating: Late Bronze Age B
Fossils: Sea urchin (1)
Weight: -
Fill material: Layer 1: Dark grey-brown sandy clay with charcoal and burned rocks.
Layer 2: Grey sandy clay with charcoal.
Other finds in context: Flint (35, 802 g), flint tools (2, 81 g), burned flint (5, 9 g), pottery sherds (12, 73 g).
Interpretation: The feature was interpreted as a ritual pit with intentionally deposited materials.
Comments: In the feature's surface was a large flat stone.
Most of the finds were from layer 1.

Feature: A5553, hearth
Dating: Late bronze Age
Fossils: Sea urchin (1)
Weight: -
Other finds in context: -
Interpretation: -
Comments: -

Feature: A6040, well
Dating: Late Bronze Age A
Fossils: Sea urchins (2)
Weight: 200 g
Fill material: Brown-grey/dark-grey slightly humous clay, more silty near bottom. Inclusions of charcoal, burned clay and burned rocks.
Other finds in context: Bone (3 g), fired clay (707 g), flint (140, 400 g), burned flint (20, 109 g), pottery sherds (40, 551 g), grinding stone (1, 175 g).
Interpretation: -
Comments: -

Feature: A11206, ritual pit
Dating: Late Bronze Age A
Fossils: Sea urchin (1)
Weight:
Fill material: Layer 1: Dark grey humous silt.
Layer 2/3: Light grey/brown silty clay.
Other finds in context: Bone (594 g), bronze (1 frag.), fired clay (467 g), crucible (2 frag.), daub (280 g), flint (227, 2898 g), pottery sherds (271, 5225 g).
Interpretation: The feature was interpreted as a ritual pit with intentionally deposited materials.
Comments: Identified bones were from dog (cranium), bird, fish, cattle, sheep, sheep/goat and domesticated pig.
622 g of the flint was burned.
The pottery was relatively gathered in the feature. Several vessels could be identified.
This was the most find rich feature found during the investigation (9.3 kg of find materials).

Trolle-Ljungby

Source: Hyll, 2015:7, 57ff
The area was evaluated in preparation for road construction. This was performed through field walking. 23 new archaeological/cultural historical locations were discovered, another 31 locations were deemed of interest and in need of further investigation.

Area: 215, settlement
Dating: Late Neolithic
Fossils: Shell
Weight: -
Other finds in area: flint axe (1 frag.), flint blades, flint dagger (1 frag.), flint flakes, other retouched and knapped flint, pottery sherds, quartz.
Interpretation: Area 215 was assessed to be a Late Neolithic settlement.
Comments: The area is close to a previous wetland.

Area: 228, possible settlement
Dating: Early Neolithic – Middle Neolithic A II
Fossils: Undefined
Weight: -
Other finds in area: Fired clay, flint axe (2 frag.), flint flakes, other knapped flint, pottery sherds.
Interpretation: Area 228 was judged as an area of interest which needs to be further investigated. Possible settlement.
Comments: -

Truls Hoj

Source: Andersson, 2017:21f, 26, 48f
The area was investigated in preparation for construction. 288 features were documented, including 210 stone lifts, 28 pits, 17 postholes, 11 layers, 3 stone packings, 1 grave, as well as 2430 stones which were interpreted as part of constructions. A feature discovered during the preliminary investigation was of special interest, and turned out to be a passage grave.

Feature: A18345, stone lift, passage grave
Dating: Middle Neolithic
Fossils: Unspecified (1)
Weight: 12 g
Description: Not whole. Brown/white colour. 28x26x28 mm.
Fill material: Humous silt.
Other finds in context: Flint core (1, 163 g), flint flakes/waste (5, 28 g).

Interpretation: -
Comments: The feature was in the outer stone row of a passage grave. Other finds from this row include 0.5 kg of flint, of which two blade knives, and 2 pottery sherds.
There are other grave monuments from the Late Neolithic only 600 meters away.

Tygelsjö 41:1

Source: Grehn, 2006:5
The area was investigated in preparation for house construction. Three areas were excavated: A, B and an additional area. Area A lies close to a Bronze Age mound, and contained stone packings, pits, 1 pit house and several other houses. The features dated from the Neolithic to Early Iron Age.
Features from area B include 1 grave, several stone filled pits, 4 longhouses and several wells, and dated from Early Neolithic to Viking Age.
4 fossils were found in as many features, 3 in area A and 1 in area B

Feature: A18831, pit (area A)
Dating: Late Bronze Age
Fossils: Undefined (1)
Weight: 12 g
Fill material: Layer 1: Dark brown sandy silt with inclusions of charcoal.
Layer 2: Dark grey sandy silt with more inclusions of charcoal than layer 1.
Other finds in context: Bone (17 g), fired clay (135 g), flint flakes (19, 151 g), other flint (2, 6 g), pottery sherds (26, 72 g).
Interpretation: -
Comments: Only 25 % of the feature was excavated. It was excavated in 7 layers, the fossil was found in layer 6 together with 1 flint flake and 6 pottery sherds.
The bones were interpreted as butchering waste.

Feature: A18905, cooking pit (area A)
Dating: Possibly Late Bronze Age
Fossils: Sea urchin (1)
Weight: 89 g
Fill material: Layer 1: Brown gray silt with burned rocks and fired clay.
Layer 2: Black sooty silt with significant amounts of burned rocks, fired clay and charcoal.
Other finds in context: Fired clay (38 g), flint flakes (9, 68 g), pottery sherds (3, 11 g), grinding/knapping stone (1, 359 g).
Interpretation: The feature was interpreted as a cooking pit based on its contents.
Comments: Half of the feature was excavated.

Feature: A26038, pit (area A)
Dating: Late Bronze Age
Fossils: Sea urchin (1)
Weight: 70 g
Fill material: Dark brown/black clayey silt, with large pieces of charcoal towards the bottom.
Other finds in context: Flint flakes (14, 139 g), other flint (3, 161 g), knife/billhook (1, 49 g), pottery sherds (17, 218 g).
Interpretation: The feature was part of a pit system with 2 similar features (A26050, A25999). They could have been dug as a source for clay, and later filled with waste/refuse or used as cooking pits. Two postholes (AS18604, AS18612) were interpreted as related to the pit system.
Comments: -

Feature: AS11804, posthole, house 2 (area B).
Dating: Vendel Period – Viking Age (cal. 650-870 CE)
Fossils: Sea urchin (1)
Weight: 5 g
Fill material: Grey-brown sandy silt.
Other finds in context: None.
Interpretation: House 2 was interpreted as an economy building connected to House 1. Posthole AS11804 was from the wall and possibly next to an entrance.
Comments: Other postholes in house 2 only produced flint flakes.
House 1 has been interpreted as the main building of a large farm, possibly of high standing in the region.

Tygelsjö 76:1

Source: Frejd, 2013
The area was investigated in preparation of house construction. The investigation was divided into three areas (A-C). 292 features were documented, 119 of these were further investigated. Excavated features include 2 possible graves, 46 pits and 66 postholes. Activities in the area date to the Neolithic, and human presence was most likely seasonal.

Feature: A5117
Dating: Neolithic
Fossils: Undefined (2)
Weight: 9 g
Other finds in context: Flint flakes/waste (55, 366 g).
Interpretation: -
Comments: No further description of either feature or fossils in the report.

Feature: Loose find
Dating: -
Fossils: Sea urchin (2)
Weight: 90 g

Other finds in context: -
Interpretation: -
Comments: No further details in report.

Vintrie Park

Source: Brink & Hammarstrand Dehman, 2013
4 sea urchin fossils were found in four different Neolithic contexts. The site is complex and has graves (two long mounds, two long dolmens, one battle axe and several earth graves), huts, pits and cultural layers from the Neolithic. The area around the grave site have been clearly settled, with remnants of houses, pits and wells.
The site was in continuous use through the Neolithic and Bronze Age, there are structures and graves from the Iron Age and graves from the 1700's.

Feature: A2, U8178, long dolmen
Dating: Early – Middle Neolithic
Fossils: Sea urchin (1)
Weight: 29 g
Other finds in context: Fired clay (1213, 5486 g) , flint axes (10, 277 g), flint blades (17, 72g), flint cores (97+8 frag., 4625 g), flint flakes (4342, 19117 g), flint tools (64, 1116 g), other flint (73, 2997 g), other burned flint (1331, 5301 g), pottery sherds (1918, 12831 g) , other worked stone (10, 3349 g).
Interpretation: Bottom construction of a long dolmen with two chambers and an edge row of stones. The fossil was found outside the edge row and could be part of the mound fill.
Comments: The flint tools include scrapers, knives, sickles, points, drills and arrowheads.
In the same digging unit as the fossil 19 flint flakes (52 g) and 3 other flint objects (8 g) were found.

Feature: A9a, grave
Dating: Neolithic
Fossils: Sea urchin (1)
Weight: 94 g
Other finds in context: Burned bones, flint flakes (15, 24 g), burned flint chippings (9, 1 g), pottery sherds (2, 16 g), stone with smoothed surface (1, 1514 g).
Interpretation: Grave, disturbed by another later grave (A9b) and a recent ditch (A9376). Consists of a stone packing and a stone row (frame), and could possibly have had a wooden cover construction. A dark spot inside the stone frame could be the trace of a wooden coffin.
Comments: Before it was discovered that A9 was two separate graves (A9a and A9b), 806 g of flint objects were found, some of it burned. Among these were one drill (71 g), one scraper (40 g) and 87 flakes (426 g).

Feature: A102, layer
Fill material: Brown sandy silt
Dating: Neolithic
Fossils: Sea urchin (1)
Weight: 9 g
Other finds in context: Flint axe (1 frag., 6 g), flint flakes (88, 296 g), flint scraper (1, 18 g), , burned flint (45, 88 g), retouched flint (1, 4 g), pottery sherds (2, 16 g).
Interpretation: Carefully interpreted as the remains of a mound/mounds
Comments: Parts of the layer was removed with digger.
Almost half of the flint is affected by fire.

Feature: A2859, stone packing
Dating: Neolithic?
Fossils: Sea urchin (1)
Weight: 122 g
Other finds in context: Flint flakes (19, 43 g), burned flint (4, 2 g), stones with smoothed surface (2, 1298 g).
Interpretation: The angled shape of the stone packing suggests it might have been a support construction for a raised stone, or it might be part of a larger stone packing which has not been preserved. Some of the finds could have their origin in an older settlement phase at the site.
Comments: The age is assumed due to the features' relationship to other contexts.
The stone packing also contained some split red sandstone of the same kind that was found in for example a dolmen at the same site.

Åhus

Berggren, 2017:7, 51ff, app. 2
An archaeological investigation was performed in preparation for exploitation of the area. 6 areas (A-F) were investigated. A fossil or fossils were mentioned in area F, in which 38 archaeological features were found and 10 further investigated. The features were 4 grooves/ditches, 20 pits and 14 postholes. Some of the features points to settlement activities, but no dating was performed/possible.

Feature: G541, topsoil
Dating: -
Fossils: ?
Weight: -
Other finds in context: Flint flakes (3, 1 g), flint waste (5, 1 g), other flint (6, 1 g), pottery sherd (1, 1 g).
Interpretation: -
Comments: G541 was a test pit in area F.
Fossil/-s mentioned in the finds list in in the post on "other flint" (6, 1 g).

Örtofta

Source: Bolander, 2016:7, 17-51
8 areas were investigated in preparation for a long distance heating line. In Örtofta 51 (area 1) 3 settlements (1:1-3) were discovered with a chronological range from the Neolithic to Iron Age, as well as historical features.

Feature: A18046, posthole, House 2 (1:3)
Dating: Vendel Period
Fossils: Sea urchin (1)
Weight: 20 g
Other finds in feature: ?
Interpretation: The house was a long house and might have been related to Iron Age aristocracy. The fossil could be a ritual deposition.
Comment: Other finds made in connection with house 2 are fired clay, flint flakes/waste, 1 flint drill, 1 flint scraper and pottery fragments.
Parts of the flint material has likely been deposited in the structure after its destruction.
A18046 showed signs of the post having been changed at some point.

Östra Grevie

Source: Bolander 2017b
The area was investigated in preparation for construction. 19 houses, 5 pit houses, 4 fencings, 1 well area and a large pit system were documented. The location was settled during Bronze and Iron Age.
2 fossils were found in area N2

Feature: 35000, pit system
Dating: Early Iron Age
Fossils: Sea urchin (1)
Weight: 39 g
Fill material: Homogenous with inclusions of fired clay, charcoal, burned rocks, daub and soot.
Other finds in feature: Bone (83, 153 g), fired clay (158, 493 g), fired clay block (16, 232 g), daub (158, 670 g), flint cores (2, 247 g), flint flakes/waste (42, 411 g), retouched flint (1, 5 g), iron objects (4, 15 g), loom weights (2, 155 g), grinding stone (1, 977 g), pottery sherds (111, 845 g).
Interpretation: The pit system was dug as a source of clay, and later filled during Early Iron Age.
Comment: The pit system was more than 330 square meters in size.

Feature: Pit house 12
Dating: Viking Age
Fossils: Sea urchin (1)
Weight: 61 g.
Other finds in feature: Bone (290, 2031 g), knife blade (1, 14 g), fired clay (2, 31 g), flint flakes (3, 40 g), iron objects (3, 19 g), pottery sherds (7, 98 g), slag (3, 103 g)
Interpretation: The pit house could be related to House 16 and the economy buildings House 19 and 20, and thus be part of a farmstead.
Comment: A horse cranium was over a central small pit (A40046) in the floor and could be a ritual deposit in the house.
House 12 and 9 were the only pit houses with traces of wall structures.

Östra Odarslöv

Source: Brink & Larsson, 2017a:5ff ; Brink & Larsson, 2017b
The location was investigated in preparation for construction of research facilities. The investigation was divided into four areas (object 1, 2, 4 and 5) with fossils being found in object 1 and 2.
Object 1 contained 2525 archaeological features, mainly related to Neolithic settlement and graves.
Object 2 revealed 2262 archaeological features, mainly from Iron Age settlement and a grave field from Roman Iron Age/Vendel Period.

Feature: A3185, pit (object 1)
Dating: (cal. 3770-3520 BCE)
Fossils: Sea urchin (1)
Weight: -
Fill material: -
Other finds in feature: Fired clay (56 g), flint core (1), flint flakes, pottery sherds (115, 986 g)
Interpretation: The feature is most likely the bottom remnant of a pit with intentionally deposited material, which has been damaged by ploughing.
Comment: The fossil was in the surface of two flint flakes that fit together.
One of the fired clay fragments could be from a figurine.
3 of the flint flakes were polished.
The pottery was from 6 intentionally placed vessels in the center of the feature.
In the feature were also a noteworthy amount of burned grains.

Feature: A77999, grave (object 2)
Dating: Late Roman Iron Age (cal. 240-395 CE)
Fossils: Shell (1)
Weight: -
Fill material: Grey-brown clayey silt, slightly humous.
Other finds in feature: Fired clay (1, 1 g), gold objects (2), pottery sherds (1, 3 g), pottery vessels (3, 1394 g)
Interpretation: It is unclear whether the fossil was intentionally placed in the grave.
Comment: Three cups were placed in a row in the grave.

The gold objects were a ring and a small decorated gold plate.

Feature: A79182, grave (object 2)
Dating: Roman Iron Age C3-D
Fossils: Undefined (1)
Weight: 2 g
Fill material: Layer 1: Mix of clay and topsoil that sealed the grave.
Layer 2: Dark brown humous and porous clayey silt with burned/unburned flint and spots of fired clay.
Layer 3: As 2 but with finds.
Other finds in feature: Amber beads (264 g), bronze fibula (1 frag., 1 g), enamel fragments, glass pearls (287), iron knife (1), iron needle, pottery sherds (12, 9 g), pottery vessels (2, 602 g).
Interpretation: The finds indicate a female burial.
Comment: There were traces of a wooden coffin in the grave.
The pearls are from two bands and of several different types.
The knife (1696) is of a type that has also been found in Nydam Mire, Schleswig.

Feature: Dolmen 2 (object 1)
Dating: Early Neolithic II – Middle Neolithic AII (cal. 3330-3015 BCE)
Fossils: Sea urchin (1)
Weight: 64 g
Fill material: Brown-black humous clay and sand mixed with stones.
Other finds in feature: Flint arrowhead (1, 1 g), flint blades (9, 72 g), flint core (1, 67 g), flint flakes/waste (229, 1497 g), flint scrapers (15, 395 g), other worked flint (25, 259 g), burned flint (17, 193 g), pottery sherds (551, 4917 g), grinding stone (2, 1179 g).
Interpretation: The dolmen is interpreted as a long dolmen which was built in two phases. Finds in the mound fill could be secondary deposits.
Comment: A majority of the finds were from the mound fill (A15395), but are not separated in the finds table.
The burial chamber contained no finds.
Three deposits of pottery vessels were found in the dolmen (A19459, A145923, A140903).

Feature: Dolmen 3 (object 1)
Dating: Early Neolithic I – Middle Neolithic AII (cal. 3600-3000 BCE)
Fossils: Sea urchins (5)
Weight: 140 g
Fill material: Grey-brown clay.
Other finds in feature: Fired clay, flint blades (3, 10 g), flint flakes/waste (16, 90 g), flint scraper (4, 50 g), retouched flint (2, 97 g), burned flint (1, 19 g), pottery sherds (717, 1116 g), knapping stone (2, 693 g).
Interpretation: The dolmen is interpreted as a long dolmen. Finds in the mound fill could be secondary deposits.
3 of the fossils were found in a groove (A3252) and interpreted as being intentionally placed.
Comment: A majority of the finds were from the mound fill (A10532), but are not separated in the finds table

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Appendix 1: Visual analysis

The order of measurements is 1: length, 2: width and 3: height. Not all measurements were taken on all fossils as some have a round cross-section. Thus most belemnites only have length and width measurements. In the cases when they have a height measurement the fossil was split in half.

Colour descriptions are held to a general level as the perception of colour can vary greatly between individuals.

The fossils' material composition is either derived from the local collection database or determined from visual inspection. When the material is followed by a question mark there is some uncertainty, and where the material has been very difficult to recognize there is only a dash in the field.

Entries marked in green are also included in contextual analysis/catalogue.

Sea Urchins

Site	ID	Date	Weight (g)	Size (mm)	Material	Colour	Comment
Annelöv	A100	-	-	40x39x36	Flint	Yellow-brown	Not whole
Barsebäck 38:3	Layer 2	Meso	1	9x6x1	Limestone	Beige	Small fragment
Börringe	(no ID)	-	-	-	Flint	Grey-brown	Encased in flint
Gillhög	Passage grave	Neo	12	29x26x18	Limestone?	Brown-grey	Whole Corona pattern preserved.
Herrestorp/Vellinge	A2163	EN	27	45x43x22	-	Beige	Not whole
Herrestorp/Vellinge	A/G12460	EN	115	53x42x35	-	Brown/beige/grey	Smoothed surface, hand stone
Herrestorp/Vellinge	A/G12460	EN	92	63x51x34	-	Brown/grey/beige	Only small piece missing
Jonstorp	Settlement	Meso		90x52x25	Flint		Slight star shape on top From Lidén's collections
Lackalänga 10:10	(no ID)	BA	?	56x48x36	-	Grey/white	Clear star shape on top
Skabersjö	A154	IA-onw.	140	64x57x37	Flint	Black-brown	Whole Likely burned Clear star shape on top
Skregie	A120	Neo	27	39x38x15	-	Grey/beige	Piece missing on underside Slightly "squished" shape Corona pattern preserved
Skregie	A4012	VA	99	50x47x41	-	Beige/grey/white	Piece missing from bottom Rough looking Parts of corona pattern preserved
Skregie	A7052	Neo	46	44x33x27	-	Beige/grey	Drop-shaped
Skregie	A20700	VA	59	51x41x29	-	Beige/grey	Large pieces missing Clear star shape on top Small parts of corona preserved
Skregie	A41642	Neo	16	34x32x16	-	Orange/red (patina)	Piece missing on underside Smooth surface, gives almost polished impression
Skövlakärrsängen	(no ID)	-	16	28x25x18	-	Grey	Whole Small crystals
Sunnanå 12:1	A702	-	85	58x47x30	Flint/mixed	Beige-grey	Whole Slightly "squished" sideways
Sunnanå 12:1	A3166	-	55	44x40x27	Flint/mixed	Grey-brown	Damaged underside Clear star shape on top
Säbyholm	A10981	LBA-EIA	-	43x39x23	Flint	Grey/black	Likely burned Looks like it could have had a star shape on top
Säbyholm	A12062	LBA-EIA	-	32x32x20	Flint	Red/brown/grey	Clear star shape on top
Västra Hoby	Loose find	Neo	-	68x61x35	Flint/mixed	Grey-brown	Small piece chipped off of top
Västra Hoby	Loose find	Neo	-	38x33x21	Flint/mixed	Grey-brown	Whole
Västra Hoby	Loose find	Neo	-	29x27x19	Flint/mixed	Grey	Whole Smooth surface
Västra Hoby	Loose find	Neo	-	25x21x16	Flint/mixed	Grey-brown	Whole Smooth surface

Belemnites

Site	ID	Date	Weight (g)	Size (mm)	Material	Colour	Comment
Bromölla/Ivetofta	A34	-	-	1: 62x16 2: 40x13 3: 33x16 4: 25x13x8 5: 19x7	Calcite	Reddish brown/ orange-brown/grey	5 fragments, the 2 largest fit for a total length of 103 mm
Lilla Isie	A56	VA	5	14x14x7	Calcite	Reddish brown	Translucent, bead?
Nosaby 14	Settlement	Meso-Neo?	3	1: 16x8 2: 26x7	Calcite	Brown-grey	2 fragments
Nosaby 14	Settlement	Meso-Neo?	1	22x5	Calcite	Brown-black	1 fragment
Öllsjö	Loose finds	-	-	1: 26x16 2: 25x9 3: 29x8x5 4: 15x8 5: 17x8 6: 15x6	Calcite	Orange/reddish-beige	6 fragments Fragment 3 perforated and rounded corners?

Bivalvia

Site	ID	Date	Weight (g)	Size (mm)	Material	Colour	Comment
Barsebäck 38:3	Layer 2	Meso	1	25x13x7	Limestone?	Grey	Mussel? Not whole Possibly burned
Börringe	(no ID)	-	-	22x21x20	Stone	Grey-brown	Whole
Herrevad's monastery	(no ID)	Med	20	52x33x13	Sandstone	-	Not whole Attached to surrounding material

Coral

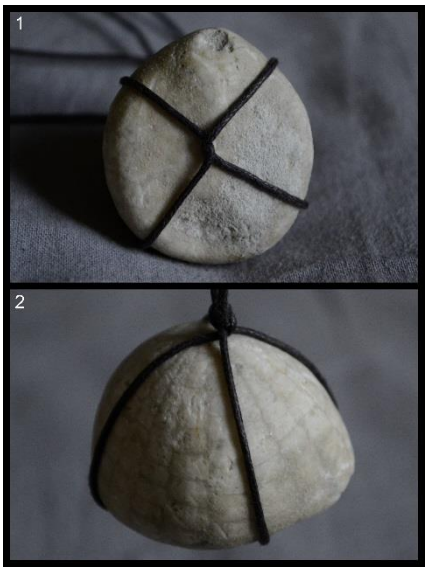
Site	ID	Date	Weight (g)	Size (mm)	Material	Colour	Comment
Karaby 2:21	A1	Neo-IA	6	24x18x16	?	Beige	Not whole Bone-like

Unidentified/other

Site	ID	Date	Weight (g)	Size (mm)	Material	Colour	Comment
Börringe	(no ID)	-	-	30x22,5x23	Stone	Grey-brown	Not whole Orthoceratite?
Höllviken	Layer 2, unit 30/36	-	9	23x18x13	Flint	Orange/beige patina	Whole Attached to surrounding material
Jonstorp	Settlement	Meso-Neo	-	25x24x23	?	-	Round, partial perforation From Lidén's collections
Jonstorp	Settlement	Meso-Neo	-	20x14	Stone	-	Imprint from ammonite? From Lidén's collections
Köpingebro 19:9	Groove 234	BA-IA	2	20x21x9	Limestone?	-	Not whole
Köpingebro 19:9	Hearth 376	BA-IA	2	20x10 25x7	-	-	2 fragments
Lyngsjö	Topsoil	Med	1	13x10x6	-	White	2 fragments Patterned surface Slight translucence
Mellby	A61	-	2	30x25x6	-	White	Fragment Patterned surface Slight translucence
Skövlakärrsängen	(no ID)	-	3	22x18x9	-	White	Not whole Patterned surface Slight translucence
Skövlakärrsängen	(no ID)	-	1	-	-	White	Not whole Patterned surface Slight translucence
Truls Hoj	A18345	MN	12	28x26x28	?	Brown/white	
Västra Hoby	Loose find	Neo	-	67x19x15	Limestone?	Grey	Drop/point-shaped Possibly worked orthoceratite
Österlen	Loose find	-	32	55x55	?	Beige	Attached to surrounding material
Österlen	Loose find	-	39	60x22	?	-	

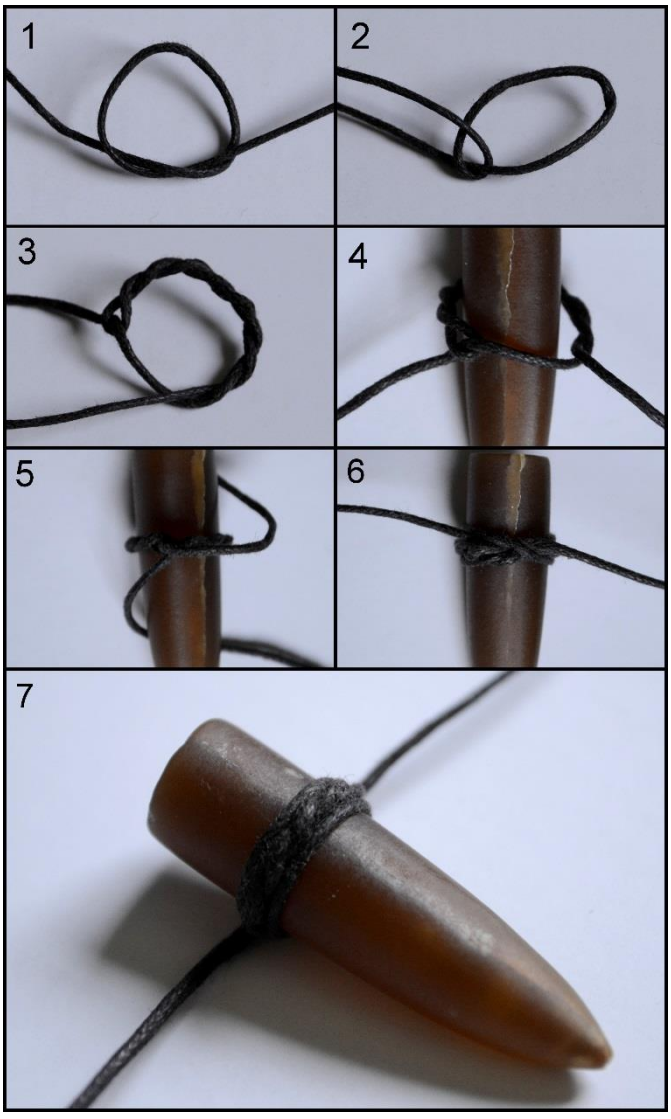
Appendix 2: Suspending fossils

Single string



1: Loop string over top of object. Twist strings 90° and loop back to top.

2: Tie a knot.



1: Make a loose knot.

2: Bring one end to other side.

3: Twist this end around the loop several times. This knot is known as a timber hitch.

4: Insert object to be suspended in the loop.

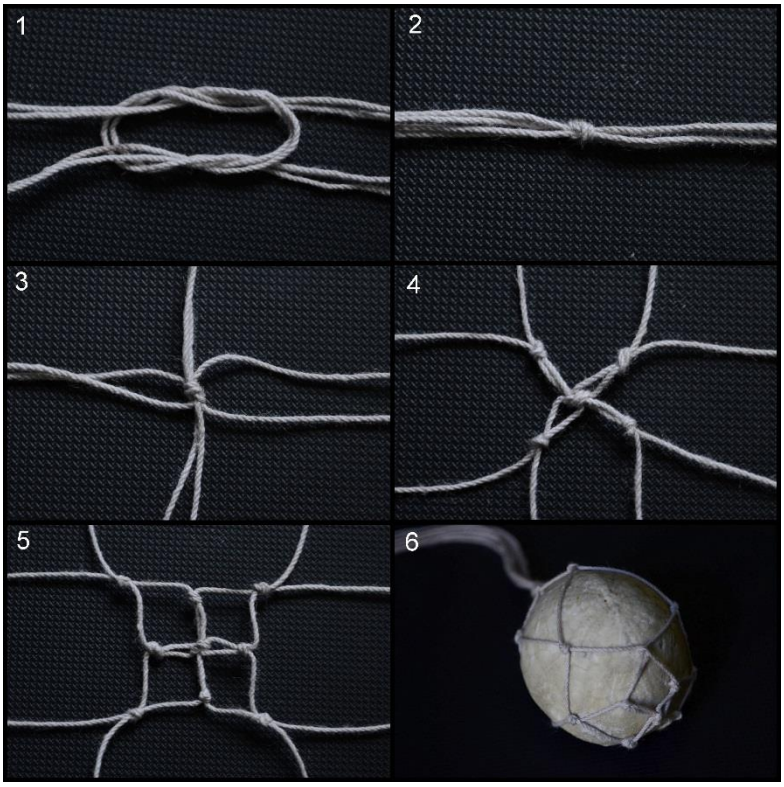
5: Tighten loop and bring ends around object in opposite directions.

6: Tighten again and make a knot.

7: Neat arrangement to use as decoration or adornment.

Crafts and photos: Terese Ljunggren, 2019

Multiple strings



1: Loop two pairs of string together in a square knot.

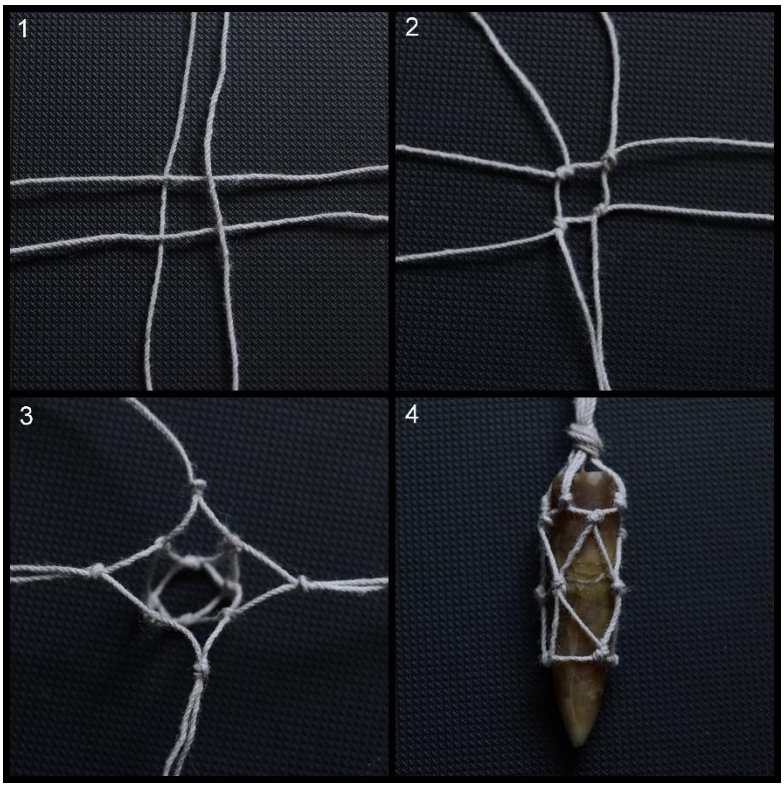
2: Tighten.

3: Separate strings into pairs.

4: Knot pair at equal distance from center knot, split the strings into new pairs.

5: Keep tying knots and splitting the pairs, creating a fish net pattern.

6: Put object in net. Adapting the distance between knots creates a snugger and more secure fit.



1: Lay out four strings, creating a central opening of appropriate size for object to be suspended.

2: Make knots at the "corners" of the opening. Split the pairs of strings (same as above).

3: Keep tying knots and splitting the pairs, creating a basket shape adapted to the object to be suspended.

4: Secure object in "basket" by making a knot at the top.

Crafts and photos: Terese Ljunggren, 2019

Appendix 3: Chronological spread

This table shows the number of fossils found in each feature category. The order of features have been arranged to illustrate how the presence of fossils have moved between features through time.

Period	EN	EN-MN	MN	MN-LN	LN	Neo	Neo-BA	EBA	LBA	BA	BA-IA	EIA	LIA	IA	IA-Med
Fossils	4	26	25	>4	>11	12	42	1	12	4	7	16	18	4	1
Dolmen		14	9			2									
Settlement		1			>1										
Stone circle		1													
Passage grave			1												
Stone Packing		1			1	3									
Grave		1	4		5	1					1	2		1	
Cultural layer			10			1	1				2	1			
STR-grave				>4											
Cult house					1										
Wetland		4					40								
Pit	3	1			1	1			4	2		1		1	
Ritual pit					1	1	1		2			1			
Dark spot									1						
Cooking pit									1		2				
Pit house	1	3										1	11	1	
Hearth									1		1	3			
Well/curb									2			2	1		1
Pit system										1	1	1	2		
Storage pit														1	