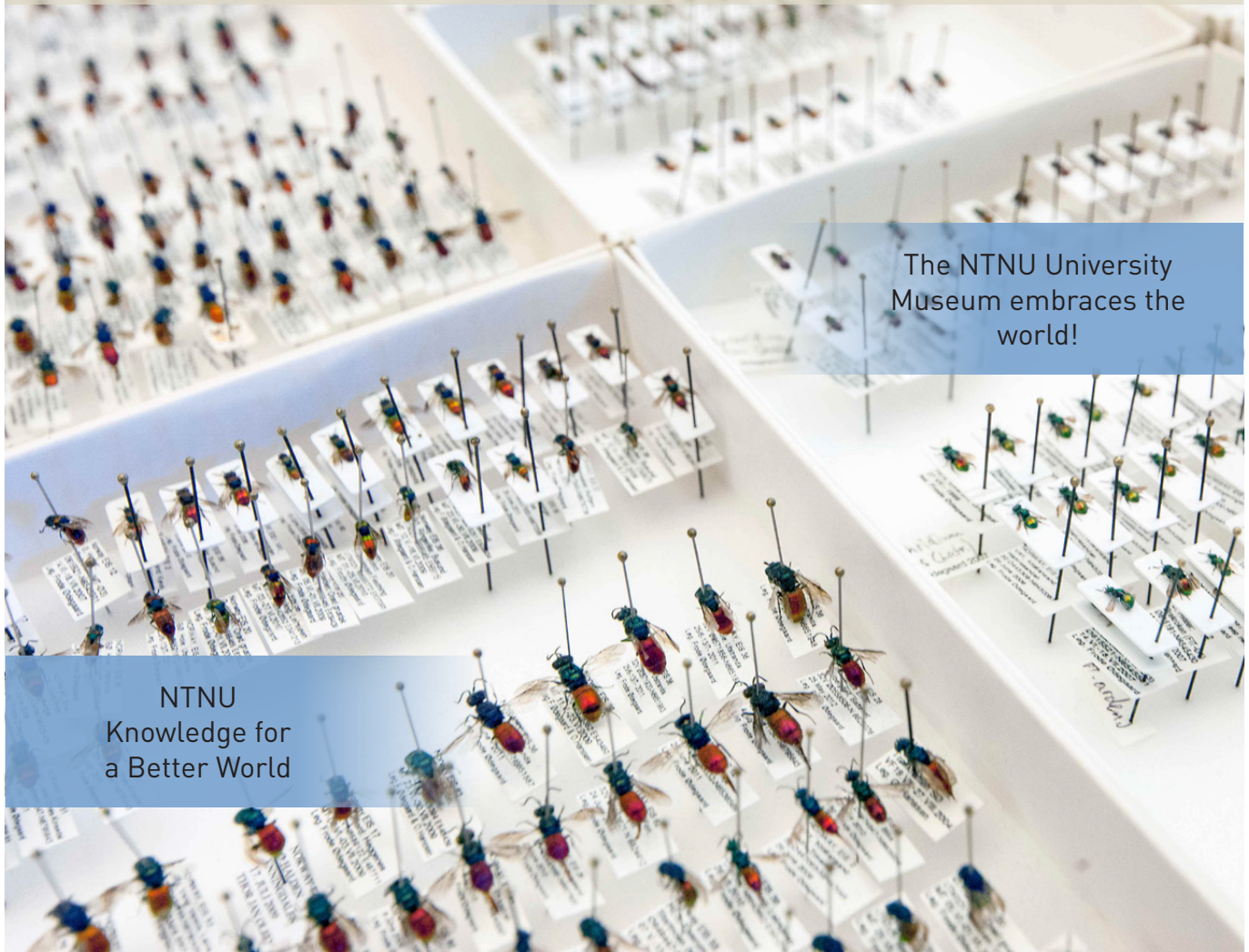




# Annual Report 2013



# Visions



The NTNU University Museum embraces the world!

NTNU  
Knowledge for  
a Better World



Let me start by saying thank you to Axel Christophersen, who captained the good ship NTNU University Museum for most of this century. The year 2013 brought a new Museum Director, a new NTNU Rector and a new Government. While these in their different ways could all affect the course of the ship, it is the individual employees who have the greatest influence on our speed. And the truth is that our speed is greatest when we all row to the same beat, and when we know where we're going!

Both the Government and the Rector talk about internationalization. This means going abroad. We have journeyed there before, so we know the way and what it takes. What is new is the imperative that more of us make the trip, more should build their international contacts, and more in their own way should help to fulfil the university and the Museum's visions: Knowledge for a Better World and The University Museum embraces the world!

Our role as a University Museum also has an important national component. The Museum is responsible for coordinating the country's initiative on DNA barcoding, NorBOL, which is linked to the world's largest international project on biodiversity. This gives us the opportunity to play an important role in national environmental monitoring in cooperation with other university museums, while it also renews interest in our own natural history collections.

The NTNU University Museum is a traditional and important institution for the meeting between science and the public. The Kalvskinnet area is becoming an increasingly prominent cluster of educational and cultural institutions in Trondheim, a development in which we will also be involved. I look forward to a challenging and stimulating time as the new captain of a proud ship with a solid crew. Now we're ready to set all sails and head off into the future!

*Museum Director Reidar Andersen*

## Innhold

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The **IMAGINARY** exhibition was opened on 15 November. This is an interactive exhibit on mathematics developed in Germany that has visited more than 60 cities in Europe and the United States. The exhibition is being shared to stimulate interest and curiosity about mathematics.



The IMAGINARY exhibit was realized by the University Museum and the Science Centre in Trondheim, with the support of the Board of the Abel Prize, Tekna, NITO – the Norwegian Engineering and Technology Organization, the NTNU Department of Mathematics, the National Centre for Mathematics Education, the RENATE Centre, the Torstein Erbo Endowment Fund and the Royal Norwegian Society of Sciences and Letters.

## Our role in society

The NTNU University Museum has its origins in the Royal Norwegian Society of Sciences and Letters (DKNVS), which was founded in 1760. The Museum thus builds on the oldest organized scientific collections in Norway. In 1968, the Norwegian Parliament created the University of Trondheim, of which the DKNVS Museum became a part, and in 1984 the Museum was incorporated into what today is the Norwegian University of Science and Technology, NTNU.

The NTNU University Museum will develop and disseminate knowledge about nature, culture and science. The Museum will protect, manage and strengthen its scientific collections through research, outreach and teaching.

The NTNU University Museum is one of the leading institutions in the protection, preservation, publishing and research on natural and cultural materials from Norway and the rest of the world. The Museum was named the 2010 Museum of the Year in Norway and is one of six Norwegian university museums.

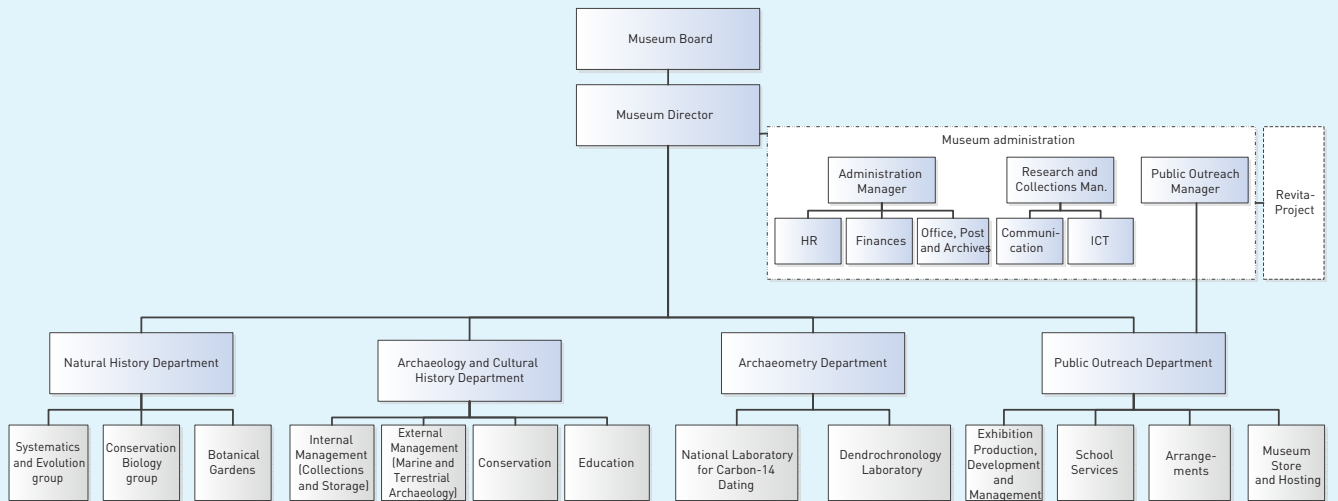
The Museum's collections include approximately 1,435,000 specimens of plants and animals, more than 8,000 fossils, rocks and mineral types and more than 520,000 archaeological and

historical artefacts from the Stone Age, Bronze Age and Iron Age and medieval and modern times. Highlights include Bishop Gunnerus's large herbarium collection from the 1760s, calcareous algae collected by Charles Darwin, priceless artefacts used by Fridtjof Nansen when he overwintered in Greenland after his crossing of the Greenland ice cap in 1888, and much more.

The Museum's staff are constantly striving to unearth and document knowledge on the planet's natural and cultural history, and to share new knowledge with a wider audience. Their efforts are a crucial part of the Museum's goal of securing and preserving the collections and making them accessible to both researchers and the public. By doing this, the Museum is truly living up to its vision to "embrace the world."



# Organization



Per 05.03.2013



The **Department of Archaeology and Cultural History (SAK)** studies pre-historic, historic, maritime and Sami archaeology. The department is home to the Museum's conservation laboratory and is responsible for the cultural history collection as well as teaching in applied archaeology.

The **Department of Archaeometry (SA)** dates archaeological, geological and organic matter, using radiocarbon dating [carbon-<sup>14</sup>] and dendrochronological dating (tree rings). The National Laboratory for C-<sup>14</sup> dating is a part of this department.



The **Department of Public Outreach and Exhibitions (SF)** is responsible for producing and maintaining the Museum's exhibits, and coordinating public events and school programmes and other educational offerings. The department also runs the Museum Shop.



The **Department of Natural History** manages and contributes to the Museum's natural history collections. The department conducts research in biogeography, biosystematics and ecology, with an emphasis on conservation biology. The two botanical gardens are part of this department.



# The figures speak

The Museum is a public body that constantly tries to optimize the use of all available resources, including its financial, personnel and infrastructure resources. Every year, a collective financial statement is prepared for NTNU, including an income statement, balance sheet, notes and cash flow statement. There is no separate balance sheet for the University Museum, because these are not prepared at the unit level at NTNU.

NTNU has had a goal of reducing the proportion of unused appropriations to 5 - 10 % of the appropriation from the Ministry. The University Museum has had unused appropriations in excess of 30 % of the appropriation from NTNU. For this reason, the University Museum has deliberately reduced its appropriation over the last few years. This year's negative

accounting result of NOK 7.119 million should be seen in this context.

Unused appropriations from previous years are actively used to enhance employee skills and measures to enhance competitiveness. The allocation as of 31 December 2013 was NOK 9.53 million, including strategy and reorganization funds (RSO). The allocations at NTNU are now at a desired level and the objective will be to balance income and expenses.

The revenues of the University Museum are generated from two primary sources: grants from the NTNU Board and grants from or selling services to private and public enterprises (externally funded income).

## Income Statement

Results	(figures in NOK 1000)				
	2009	2010	2011	2012	2013
<b>Income distribution:</b>					
NTNU appropriation (note 1)	76 143	78 129	76 600	80 225	87 399
External funding (note 2)	28 940	44 734	27 153	41 760	32 720
Other income (note 3)	1 650	3 677	7 501	7 082	4 668
<b>Total income</b>	<b>106 733</b>	<b>126 540</b>	<b>111 254</b>	<b>129 067</b>	<b>124 787</b>
<b>Cost allocation:</b>					
Investments (note 4)	3 370	4 554	1 880	2 557	3 093
Payroll and social security costs (note 5)	72 780	77 134	71 276	77 389	80 522
Other operating expenses (note 6)	26 243	30 669	21 935	32 742	30 727
Change in business capital	-108	-758	-15	-556	-1 608
Internal posts	14 262	15 020	15 341	18 297	19 172
<b>Total expenditures</b>	<b>116 548</b>	<b>126 619</b>	<b>110 417</b>	<b>130 429</b>	<b>131 906</b>
<b>Result for the year</b>	<b>-9 815</b>	<b>-79</b>	<b>837</b>	<b>-1 362</b>	<b>-7 119</b>

**Note 1:** Appropriation revenues from NTNU are relatively stable from year to year and adjusted mainly according to wage and price inflation. Individual grants for scientific equipment, job recruitment or security measures may result in some variations.

**Note 2:** Externally financed income comes from three sources: a) commissioned projects, b) collaborative projects and c) "public authority", which are archaeological investigations that are required in accordance with the Cultural Heritage Act. The external income varies widely from year to year. The reason is strong competition for both commissioned and collaborative projects. Revenues from "public authority" are cyclical, and the University Museum has little opportunity to influence the scope of this aspect of its operation.

**Note 3:** "Other income" includes grants from the Directorate for Cultural Heritage that partially fund archaeological investigations of marine, rock art and other archaeological sites protected under the Norwegian Cultural Heritage Act.

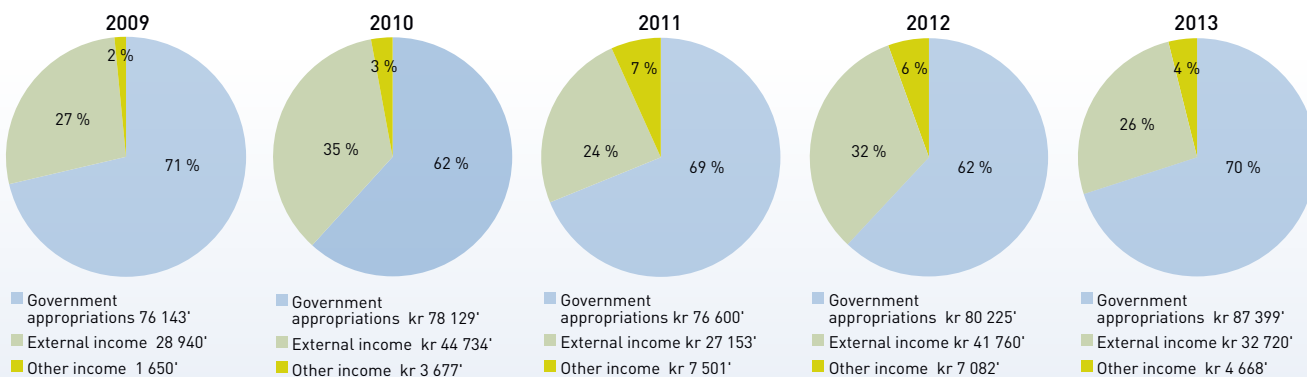
**Note 4:** Investments are recognized in the income statement for that year. There is a central fixed asset register of all investments at NTNU. Capitalized assets and depreciation are recognized only in NTNU's consolidated financial statements.

**Note 5 and 6:** Salaries and related personnel costs make up 60-65 % of total costs, while other operating costs normally constitute 20-25%.

**Note 7:** Business capital has been reduced by NOK 1.608 million over the years and as of 31 December 2013 is at NOK 2.315 million.

**Note 8:** Internal posts include a number of financial transactions between appropriation accounts and externally funded projects. The main cost is the internal rent paid to NTNU, which was approximately NOK 19.5 million in 2013.

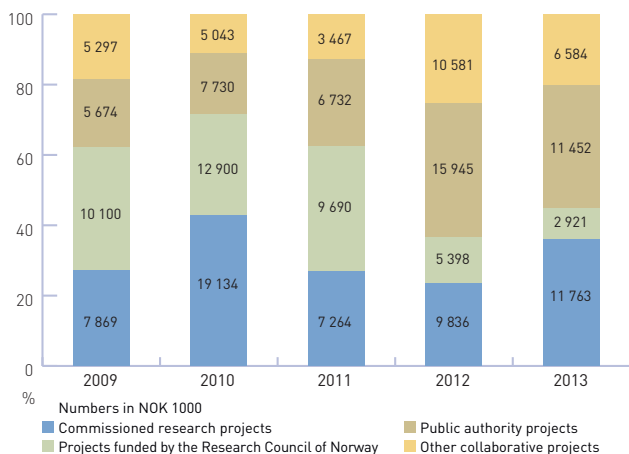
## Income distribution (figures in NOK 1000)



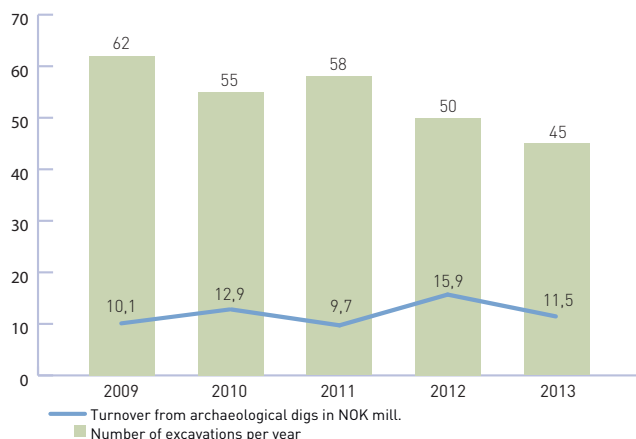
Grants of NOK 2-2.5 million from the Directorate for Cultural Heritage for public authority were included under external revenues through 2010. Starting in 2011, this income is listed under Other income.

# The figures speak

## Breakdown of revenues from externally financed projects

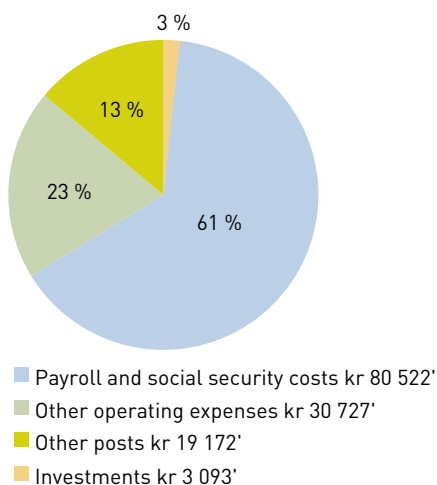


## Archaeological investigations

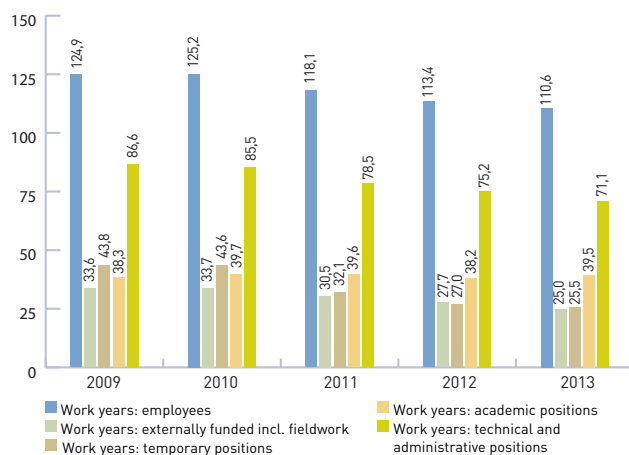


Underwater and land-based archaeological surveys, as a part of public authority.

## Breakdowns of expenses 2013



## Personnel



In addition to the staff listed in the table, the University Museum has a relatively large number of hourly employees, especially during the field season. This amounted to approximately 7.9 full-time equivalents in 2013.

## Employees

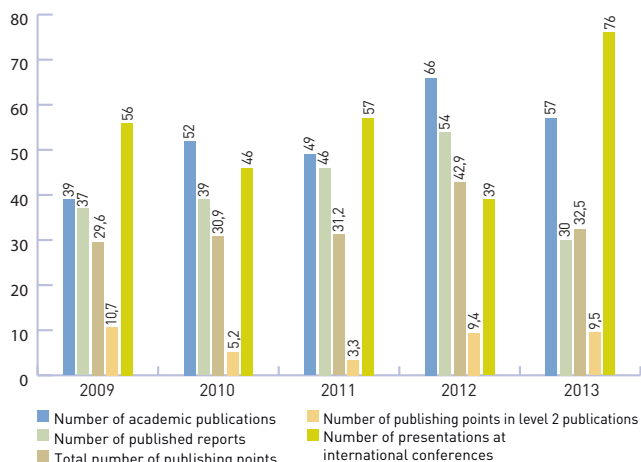
The NTNU University Museum is in the midst of a generational shift. The challenge now is to recruit the right expertise at the right time to realize the Museum's strategies. An effort is underway to craft a strategic personnel plan for the entire Museum. The Department of Archaeology and Cultural History has also conducted functional analyses for their areas of operation.

The Museum's ten-year Revita project ends in 2015, and it will be a challenge to maintain and develop the knowledge that

resulted from the project. A plan was developed in 2013 for the last phases of the project, which will address both academic and personnel aspects.

In 2013 "Kvikk'lunsj" (Quick Lunch) was established as a part of efforts to strengthen internal communication. Here, employees make a brief presentation of their projects and initiatives over lunch once a month. The initiative was a success and will continue.

## Publications



The Museum is working to increase its number of scientific publications. An action plan for improving the quality of the Museum's research with specific goals and measures was developed in 2013. The Department of Natural History held a publishing week for the first time in 2013. The initiative received very good feedback, and it is expected to have an effect related to several scientific publications from the department in 2014/2015. The Department of Archaeology and Cultural History incorporated scientific publication as a part of employee performance appraisals, and plans to ensure more research time to increase the number of publications by the department's academic staff.

## Studies

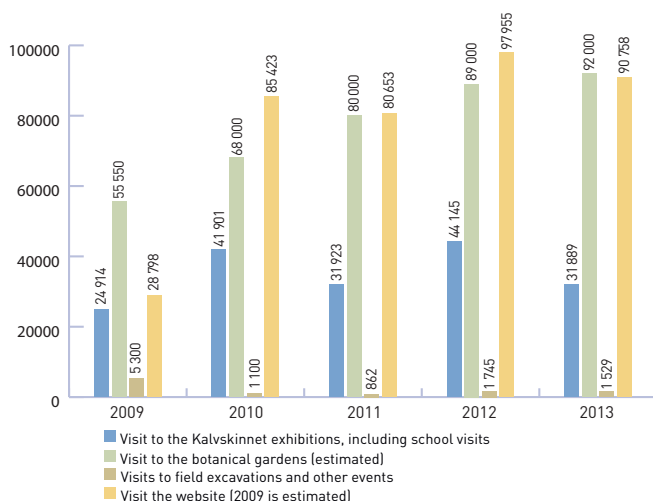
	2009	2010	2011	2012	2013
Archaeology: Number of completed theses with supervisor at the Museum	5	4	3	2	4
Biology: Number of completed theses with supervisor at the Museum	3	2	4	3	1
Archaeology: Number of field course days	2 338	2 014	1 824	1 716	1 300
Biology: Number of field course days	490	285	1 220	1 207	1 072

The Department of Archaeology and Cultural History did not have any excursions abroad in 2013, which is why there are fewer field course days than in 2012. The overseas field excursion will be held in March 2014 with a double class.

## Collections

	2009	2010	2011	2012	2013
Estimated number of cultural history objects	444 516	453 425	471 244	504 832	520 127
Estimated number of natural history objects	1 373 951	1 378 719	1 406 316	1 423 532	1 442 943

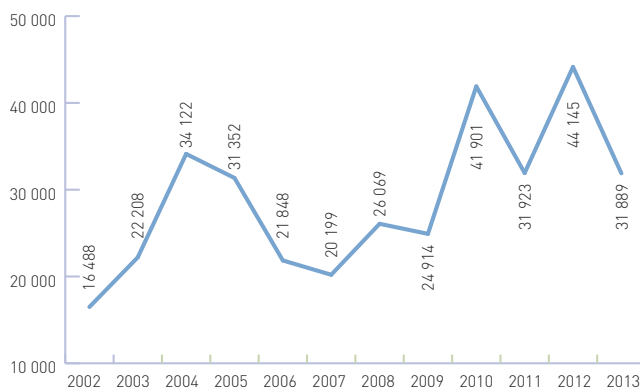
## Besøk



There were fewer visitors to the exhibitions at Kalvskinnet in 2013 than in 2012, which can be explained by the fact that the Museum did not have any major new exhibitions or related events in 2013. Past experience has shown that there is a clear correlation between the number of visitors per year and new offerings to the public.

The number of visitors to the botanical gardens has increased from 2012 to 2013. It is especially gratifying that the Kongsvoll Alpine Garden has had an estimated 12 000 visitors.

## Visit Numbers 2002-2013



The peaks in visitor numbers are related to highly visible major exhibitions: In 2004, "From deadly dinosaurs to the oil age"; in 2010, the anniversary exhibition "Kunnskapslarm" and in 2012, "Afghanistan – Hidden Treasures".



# The figures speak

## Dating

	2009	2010	2011	2012	2013
Carbon dating	655	1 414	1 493	1357	0
Dendrochronological dating	161	231	461	627	307

No carbon dating was done for customers in 2013 because of efforts to ensure stable operation of the accelerator mass spectrometer and work to improve the preparation lines.

## Media coverage

	2009	2010	2011	2012	2013
Press coverage, Norwegian*	1 001	762	867	1 064	723
Press coverage, English*	45	4	18	14	197
Articles on forskning.no	14	17	23	12	24

Mentions in Norwegian media dropped as expected compared to 2012, when an article on the kinds of insects found in Christmas trees spread nation-wide, and there were several articles on the Afghanistan exhibition. It is gratifying that coverage in the foreign press has increased and that the coverage includes both cultural and natural history topics.

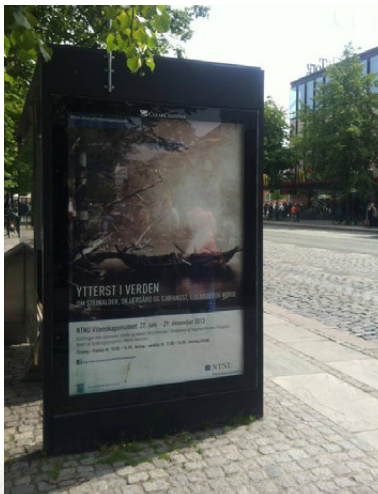
\*Source: Retriever



## Digital public in 2013

Visits to <a href="http://ntnu.no/vitenskapsmuseet">ntnu.no/vitenskapsmuseet</a> and <a href="http://ntnu.edu/museum">ntnu.edu/museum</a> Source: Webtrends	90 758
Number of visits to the Museum's blogs, <a href="http://Norbol.org">Norbol.org</a> and <a href="http://Norark.no">Norark.no</a> Source: Google Analytics	39 386
User interactions on the University Museum Facebook page	37 466
User interactions on the Ringve Botanical Garden Facebook page	9 833
User interactions on Norark Facebook page	9 200
<b>Digital public in 2013</b>	<b>186 643</b>

A "user interaction" is defined as the number of times a user likes, comments or shares content from the page.



Total reach of the University Museum Facebook page	904 124
Total reach of the Ringve Botanical Garden Facebook page	208 075
Total reach of the Norark Facebook page	282 593
<b>Total Facebook reach in 2013</b>	<b>1 394 792</b>

"Total reach" is defined as the number of people who saw the page's activity, including posts, posts from other pages, ads for the page, comments on and off the page and check-ins.

Norark was registered on Facebook on 7 April 2013. The NTNU University Museum also has accounts on YouTube, Flickr and Twitter.

A separate digital content strategy for the NTNU University Museum was adopted in 2013, and will provide guidance for working with digital content over the next five years.





# Important events

## New leadership

Gunnar Bovim, former chief executive of the Central Norway Regional Health Authority, was appointed NTNU Rector in December 2012, and formally began his four-year position on 1 August. On 19 March the NTNU board appointed pro-rectors, deans and the museum director for four-year positions, effective August 1. Reidar Andersen, formerly director of the Norwegian Nature Inspectorate, was hired as director of the NTNU University Museum. He replaced Axel Christophersen, who had been the Museum's director for nearly eleven years. The Museum also got a new Board effective August 1, with Peter Johan Schei as chair.

Gunnar Bovim and Reidar Andersen visited the Museum in May. Here, Martin Callanan shows them some archaeological discoveries that have melted out of perennial snow patches.



## "Norwegian peat mosses"

The book "Norwegian peat mosses" by Kjell Ivar Flatberg was published in 2013. Norway, including Svalbard, is home to Europe's most exciting and diverse peat moss flora, and this book is the first of its kind to describe this diversity. One-third of the world's carbon is stored in peat, and no other plants have more carbon stored in them than peat mosses. These plants play a major role in the Earth's climate, as well as in water management and in shaping the northern landscape. This is the definitive book on these plants, with discussions of the characteristics of each species found in Norway and elsewhere, along with habitat descriptions and the ecology of the organisms in general. Kjell Ivar Flatberg is professor emeritus at the NTNU University Museum and is one of the world's foremost experts on peat mosses.



Department leader Torkild Bakken congratulates the author of "Norwegian Peat Mosses", Kjell Ivar Flatberg, during an early 2014 event marking the book's launch.

## NorBOL as a national research infrastructure

NTNU was granted funding from the Research Council of Norway in 2013 to expand the Norwegian Barcode of Life (NorBOL) into a full-scale national research infrastructure on DNA barcoding. The goal is to build an open reference library of DNA barcodes for all Norwegian species, thus providing a unique tool for biodiversity research and management. The NorBOL network is headed by the NTNU University Museum, includes a total of 16 institutions in Norway, and is linked to the world's largest international project on biodiversity, iBOL.



## Norark launched

The NTNU University Museum is the web editor and project leader for the web portal Norark.no, which was officially launched in May. This website, which is about Norwegian archaeology, has its origins in the Research Council funded project called "Forskning i fellesskap" (Collaborative research) and is a collaboration between the five university museums that conduct archaeological research. The portal contains blog posts from archaeological investigations in the field, links to scientific papers and reports, and popular science articles on current archaeological research and methodology.

Project manager and editor Tove Eivindsen demonstrates Norark.no for Reidar Andersen and Gunnar Bovim in the field, at the Thora Storm archaeological dig.

# Archaeological digs

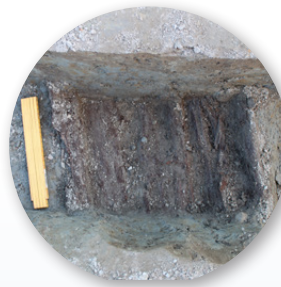


**BENAN 2-20 SEPTEMBER** The petroglyph area in Benan in Nord-Trøndelag is known from previous investigations, but surveys in 2013 revealed that it is larger than thought, and contains several newly discovered figures. The area is in the Bronze Age tradition, and was both traced and photographed for 3D documentation. The latter is done by photographing the entire outcrop and processing the images using photogrammetry software (which makes measurements in the images). It is unusual to combine traditional two-dimensional tracings with three-dimensional photogrammetry. The result will hopefully be used to create physical or virtual models to make the area accessible to both researchers and the general public. More (in Norwegian) at: [norark.no/sted/benan](http://norark.no/sted/benan)

**DALEM 29 APRIL-10 MAY** Major archaeological discoveries were made in 1868 and 1871 in Dalem in Sparbu, today the municipality of Steinkjer. One of the most stunning finds from Norwegian Migration Period (400-550 AD) was located next to the Skei Field, Nord-Trøndelag's largest burial ground. The Dalem find includes Norway's largest embossed buckle in solid gilded silver (23 cm long), three thin medieval coins as well as a number of other artefacts, including weapon debris. The University Museum began excavations at a site just east of the Dalem find on April 29. Before digging a trench for a fibre optic cable, the Nord-Trøndelag County Council registered the cable route. In the areas where finds were made, the University Museum excavated archaeological structures that would be damaged by the cable trench. The finds included cooking pits, postholes and possible wall ditches from a house. The researchers also found a layer with a cooking stone and charcoal, which may be remnants of a cooking stone layer. The site is dated from the Roman period (Birth of Christ - 400 AD) and well into the Viking Age. More (in Norwegian) at: [norark.no/sted/dalem](http://norark.no/sted/dalem)



**EGGE 27-31 MAY** A minor excavation was undertaken in advance of the construction of a pedestrian and bicycle path along county road 285 in Lund, north of Egge in Steinskjer. In a ditch that ran across the field was a clear U-shaped depression that had been cut down into the clay, which indicates that this was once an old pathway. These sunken ways are the most visible parts of old pathways. Agriculture and later use of the site has filled the hollow with material, so that it is not visible on the surface today. Logs were found right next to the sunken path, which had apparently been parallel to the pathway. It is rare to find preserved wood during archaeological surveys, but in this case the wood was well encapsulated in clay, which prevented its complete degradation. The section of path that was uncovered showed that it was only a small part of a longer network of paths that has now disappeared. The direction of the path indicates that it came from Egge, further south. Right below the excavation area is the Lund River, and the river bank near here contains a depression, suggesting that the path went down to the river. Perhaps there was a ford here, before the Lund bridge was built 50 meters further north at the beginning of the 1830s. More (in Norwegian) at: [norark.no/sted/egge](http://norark.no/sted/egge)

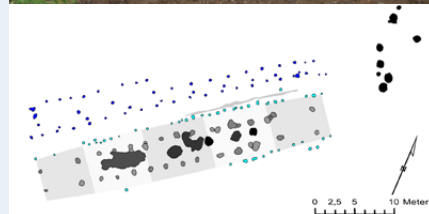


**GRANDFJÆRA 4 - 15 MARCH** In the spring of 2013, the NTNU University Museum conducted a dispensation excavation (under the Cultural Heritage Act §14) of the ballast mounds outside Grandfjæra in Molde. Grandfjæra was an important area for the timber trade along Fanne fjord. Molde was established in part as a result of the timber trade, with the earliest ports for timber active in the late 1500s. Grandfjæra subsequently had played an important role for Molde as a city for both industry and tourism. Traces of trade can be found on the seabed, in the form of large deposits of ballast stone and breakage (goods that were broken). The area will now be filled in conjunction with the development of new city centre housing. The material that was excavated primarily dated from the 1700s and later.





**HALLEM JUNE AND AUGUST** The NTNU University Museum conducted excavations in Hallem at Stiklestad in Verdal in 2013. The most striking find was a large longhouse with a length of between 40 and 45 metres and a width of approximately 7.5 metres in the middle. This makes the house the largest longhouse found in Trøndelag. The house is triple naved, with wall columns and two rows of roof-bearing poles that were set up in pairs. The house was thus built using post-and-beam construction. The distribution of hearths and possible walls indicate that the house had been divided into four to five rooms. There is more open space on both ends, with greater distance between the roof-bearing posts. In the middle there are two rooms with hearths. There is also a room where there may have been smithy activity. There are double and triple holes for several of the roof-bearing posts, which suggests that poles were replaced. This along with the many hearths suggests that the house was used over a relatively long time. Currently we have three dates that put the use of the housing in the pre-Roman Iron Age, around 300 BC. More (in Norwegian) at: [norark.no/sted/hallem](http://norark.no/sted/hallem)



**HØKNESLIA 22 APRIL - 10 MAY** Two fields in Høkneslia on the outskirts of Namsos were examined in the spring. The excavations were right below the Høyknes farm. The farm is known from written sources from the 1500s, but is certainly much older. A number of cultural heritage sites are already known from the farm, including a burial ground north and east of the excavation area. Unusually thick ground frost over large parts of Trøndelag caused some problems for the excavation, and heating cables and mats had to be used. Under the lower cultivation layer were traces of the use of a ridging plough (the predecessor to the plough), among other finds. These may be as old as the Bronze Age (ca. 1800-500 BC). A charcoal sample from a charcoal layer under a pile of stones assumed to have been cleared has been dated to the early Bronze Age. Some of the structures that were examined included approximately 40 postholes, 12 cooking pits/hearths and 10 burials of uncertain character. Four to six pairs of posts are clearly linked to a longhouse. This house would have been at least 12 metres long and had at least two hearths, but it could have been up to 25 metres long and had four hearths. One of these fireplaces has been dated to the early Roman period (Birth of Christ - 200 AD), which gives a clear indication of the house's age. A fun surprise turned up on the last day in the field: There was a large burial ground at Vallabakkan, north of the excavation area. Its remains are now regarded as more or less lost. Written sources reported that a stone monument had previously stood on top of one of the mounds. This had for some time lain with the remains of the pile, until it was rebuilt in 1973 by representatives from the NTNU University Museum. Sources did not indicate where the stone had been re-erected, and the



name Vallabakkan could not be found on any map.

It seemed as if the stone had disappeared with the last remains of the burial ground in the 1990s. However, a local history enthusiast, Bo Olsson, was able to indicate on the map the approximate location where he thought the monument would be. And there stood the stone in all its modest glory by a path not far from the excavation area. Now it is duly registered in Askeladden, a register operated by the Directorate for Cultural Heritage, as a last visible memory of a former large burial ground. More (in Norwegian) at: [norark.no/sted/hokneslia](http://norark.no/sted/hokneslia)



# Archaeological digs

**LEIN JULY** The remains of two houses from prehistoric times (Late Bronze Age, 1000-500 BC, and pre-Roman Iron Age, 500 BC - Birth of Christ) were found in Lein in Verdal, Nord-Trøndelag. Both houses are wooden post-and-beam construction, with two rows of roof-bearing poles, and wall supports on the outside of these. There is no evidence that the poles have been replaced, and the rows of poles are very regular with no overlaps or interruptions in the rows, suggesting that each house only had one phase of use. The northern part is hidden by the county road that is located across the field, and it is not possible to say how long the houses initially were. Two dates from roof-bearing poles in House 1 assigned it to the pre-Roman Iron Age (170 BC - 5 AD and 360 BC -170 BC), one of which is corroborated by roasted grains found in the macro test. A dating of burnt



grains found in roof-bearing poles from House 2 gave a date from the Late Bronze Age (790 BC - 730 BC and 650 BC - 540 BC). One quite unusual aspect of the two Lein houses is that they are oriented north-south on their long sides. In terms of the area's terrain and prevailing wind directions, it would probably be most appropriate to orient the houses east-west. This may therefore suggest that these houses may have been smaller buildings on a larger farm, where the main house (not found) may have been oriented east-west. There was no evidence of fires in the parts of the houses that were found. Some cooking pits were also found near the houses, of which one cooking pit was the same age as one house (dating to the pre-Roman Iron Age 200 BC - 45 BC). The northern area also contained waste pits, including one with animal bones, but these were dated to modern times. More (in Norwegian) at: [norark.no/sted/lein](http://norark.no/sted/lein)

**MEDIÅ 13-16 MAY** In May, a sunken path in Mediåmarka in Grong in Nord - Trøndelag was investigated. This sunken path was registered by the Nord-Trøndelag County Council in 2012 and is 120 metres long. It runs parallel to the Namsen River in a north-south direction. At its deepest the path is up to one metre deep, while elsewhere it is no more than 10 cm deep. The sunken path has a classic location on a small morainal ridge in a spruce forest between what today is somewhat wet farmland to the west and lighted trails located in slightly lower terrain to

the east. The sunken path was first examined using a metal detector. The total inventory of metal objects proved to be relatively recent: Three pieces of metal foil from a type of instant soup package (Rett-i-koppen) and two rusty cartridges from World War II. The sunken path was then cut with an excavator at four selected locations so that its profile could be documented using photographs and drawings. At least three new tracks in the path in the southern part of the area were discovered, where the terrain slopes down towards the south. All four tracks in the sunk-

## 2013 at the Museum through photos

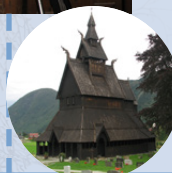


There was a seminar on snowdrift archaeology at the Museum in January under the auspices of the SPARC research project.

January



The first logs for the Hopperstad Stave Church were felled in the winter of 1131-32. This makes the logs the same age as the Urnes Stave Church, which is considered to be the country's oldest.



In February the editors of Norwegian popular science website forskning.no visited the Museum in search of good research stories.



February



Extensive fieldwork in recent years has yielded five species not previously known from Norway, according to a post from the Museum's Nudibranchia blog.

March



A thousand years ago the Vikings stole religious goods and gold from the United Kingdom - now British scientists have to come to Scandinavia to examine these treasures.

April



**17 January** The aim of this fieldwork was to collect polychaetes and benthic organisms for the collections.

In January there was a Viking workshop at the Museum



A replica of the medieval statue "The Mære Madonna" was completed in 2013 by woodcarver Boni Wiik.



PhD candidate Guro Jørgensen described her project, "An institution for dialogue? - A survey of the university museum's role in society" for the Museum's "Kvikklunsj" seminar.



**12 April** An exhibit in April and May featured selections from the Coldevin-Rosenvinge collection of paintings with motifs from Trondheim from the beginning of the 1800s.





**MOHALSEN 27 MAY – 7 JUNE** A settlement named Mohalsen I in Vega in Nordland was first investigated in 1974 and was considered at the time to be Norway's oldest settlement. Mohalsen I is at about 82 metres above sea level and has been carbon dated to 9150 BC. Fine sand carried by the wind has greatly eroded the settlement and approximately 300 m<sup>2</sup> has been highly affected by this erosion. Several hearths have been found, along with pits and concentrations of finds indicative of short-term settlements. Many different raw materials were used in the settlement, especially a great

deal of quartz – a raw material not found in the area. Hunters may have transported raw materials for tools from afar. A systematic reconstruction of flint material (a chaîne opératoire analysis) is currently underway,

which can show whether the settlements were simultaneous or were from multiple visits. The analysis will also seek to determine the origins of some of the more special raw materials on the site.

The great number of occurrences of ochre in the settlement are being analysed in greater detail. The dye is known from the Stone Age when it was used as a paint and makeup, but it was also used in skin preparation and is systematically found in tombs from the Early Stone Age in Scandinavia and Europe. More (in Norwegian) at: [norark.no/sted/mohalsen](http://norark.no/sted/mohalsen)



en path were measured and mapped. No material was found that could be used to date the sunken road to its original use phase, which unfortunately is often the case with sunken roads. More (in Norwegian) at: [norark.no/sted/media](http://norark.no/sted/media)



**RANHEIM 29 APRIL - 12 JULY** The University Museum completed a major excavation in Ranheim in Trondheim in the summer of 2013. It is known that there was a farm named Vik in the area until the 1600s, which is the reason why certain nearby places have names such as Vikåsen, Vikelva and the like. Parts of the old yard were destroyed by ploughing and the construction of houses and the nearby railway line. Nevertheless, archaeologists found evidence of the earliest buildings in the yard in the form of a longhouse built from posts. The first houses were probably built in the 600s. The most striking find, however, was six piles of so-called brewery



**16 April** Sea trout No. 22501 is ready for a summer of science. The sea trout were caught and marked the Nidelva as part of the research project "Life History Strategy of sea trout".



**22 April – 3 May** Field course for archaeology students, which was based at Hopsjø, in Hitra.



**2 May** *Crocus romance* at the Ringve Botanical Gardens.



Mai



**5. mai** "A little bit crazy: collectors and their collections", an exhibition about collectors and collecting, ended in May.

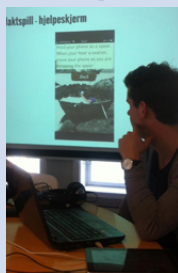
**23 May** 17 teachers from Germany, the Netherlands and Austria with the EU Comenius project visited the Newton Room, where Newton Teacher Eva Hofstad explained the concept.



**23 April** Witch hazel and other shrubs wait for the frost to abate, so they can be unwrapped and enjoy the sun.

**24 April** Students from the NTNU Department of Computer and Information Science prepare mobile and online board games for the Museum's exhibition "At the edge of the world".

**23 April** The launch of the fourth and final volume of "The Norwegian Flora Atlas". More than fifty years after the first volume was published, the work is now completed.



**26 April** A hyperspectral underwater imager developed at NTNU makes it easier for scientists to study underwater objects such as shipwrecks. The Norwegian Broadcasting Corporation's Newton science television programme came along to check it out.

**22 May** "Norark.no" was released on 22 May. The web portal is a joint effort between Norway's university museums, and is managed by the NTNU University Museum.



**26 May** Viking day at the Museum.

**28 May** Ringve Botanical Garden commemorated its 40<sup>th</sup> anniversary and celebrated with a new greenhouse.





# Archaeological digs



stone. These are stones that have been broken up into small pieces from being exposed to high heat. The stone would have been used to heat liquid in large (last paragraph here should be on page 14) kettles. A significant percentage of this activity was probably brewing beer. Beads, weights and other small items were also found. The most notable finds were several coins – one of which was a large coin minted under Charlemagne. Charlemagne reformed his coinage in 793/94, but this coin was minted before the reform. An older Merovingian coin (ca. 550-800 AD) was also found. Both of these finds indicate that this was a large farm that had contact with the wider world. More (in Norwegian) at : [norark.no/sted/ranheim](http://norark.no/sted/ranheim)



## THORA STORM SECONDARY SCHOOL

**13 MAI - 23 JUNE** The University Museum conducted an archaeological investigation of the construction site associated with a new school building for the Thora Storm High School in Kalvskinnet in Trondheim. The excavations resulted in the discovery of automatically protected cultural heritage objects and sites in the form of 34 buried structures, covered by a cultivation layer. Charcoal samples from the remains of a cooking pit and two of the other pits from oldest phase of the site were all dated to the Late Bronze Age transition (1 000-500 BC) - the pre-Roman Iron Age (500 BC - Birth of Christ). The cultivation layer included 250 finds, most of which were made with a metal detector. A large proportion were from the Iron Age and the Middle Ages, including a key from the Viking age, a coin from the 1300s, three battle arrowheads and a ring, possibly from chain mail. The area remained in cultivation until the mid-1800s, when a number of houses were built in the immediate area, including workers' housing, a gas plant and a farriery. The evidence for this activity was mainly in the form of rubbish heaps from the 1800s. These were filled with waste from the 1700 and 1800s, while some also contained older finds, including pottery shards from the Middle Ages, fragments of soapstone vessels from the Iron Age/Medieval period, and a slate fragment with parts of a drawing/carving of a ship from the late Middle Ages. A lime storage area was also built during the same phase, but at an unknown time. This relatively rare cultural find would have been used for storing lime and slaking, but has not yet been dated – making it difficult to determine how the lime was used. The next phase of use for the site included substantial postholes associated with a house, and a great deal of soot and coke, which is believed to have been associated with the nearby gas plant. In 1887, a so-called riding hall built right next door, and the associated basement construction was found on the east side of the field. The latest phase included construction of the Trondheim Trade High School (later the Trondheim Business High School and then Adolf Øien School), just west of the field. More (in Norwegian) at : [norark.no/sted/thora-storm-vgs](http://norark.no/sted/thora-storm-vgs)



**28 May** New NTNU Rector Gunnar Bovim visited the Museum along with newly appointed Museum Director Reidar Andersen.

**3 July** During the first two school vacation weeks, 40 10- to 12-year-old children participated in a variety of research-based activities as part of a summer club called "Sommerlarm".



**27 June** The exhibition "At the edge of the world - the Stone Age, island archipelagos and fishing, Tierra del Fuego and Norway" opened June 27.

**July** A "Museum Marathon" was held for the first time in Trondheim. The goal for participants was to collect code words from ten museums over the course of the summer.

**29 August** The BBC wrote about Martin Callanans exciting research on snow patch archaeology in August.



**13 September** Visitors to the Museum during Trondheim's Culture Night got to experience "Food from the edge of the world", storytelling and improvisational theatre.

June

July

August

September

**12 June** "Open Day" at the Ringe Botanical Gardens.



BLI MED PÅ Museumsmaraton

**9 July** The Garden Explorer allows visitors to see which plant species are found at the Ringe Botanical Gardens and exactly where they are located.



**July** Pilgrims travel from the medieval exhibit at Suhmhuset to Nidaros Cathedral.



**August** "Urban animals" and "Nature's master builders", two exhibitions and activity programmes about animals, people and architecture, ended in August.

**25 September** Magni Olsen Kyrkjeide, a PhD candidate from the Museum, participated in the Researcher Grand Prix competition.





**VERFTSGATA 10 JUNE - 5 NOVEMBER**

In connection with the construction of three office and commercial buildings at Verftsgata 2 in Trondheim, the NTNU University Museum undertook archaeological monitoring of the excavation. A preliminary investigation was difficult due to the large amounts of soil and seepage from the river that led to the need for sheet piling. The area is interesting owing to several centuries of shipbuilding activities (Arendt Sundt started the first yard here in 1830), and its central location at the river's mouth. Remnants of structures from different periods of shipyard operations and 12 loose boat parts were found during the investigation. A range of objects, including ceramics, glass and clay pipes were also found. The artefacts date from the early 1600s up to the 1900s, much of which were imported goods that arrived by sea and that were found in ballast material. None of the findings were significant enough to trigger the requirements for an exemption or further excavation. The survey highlighted the development of the use of the lot – from

when it was an open river delta, through an interesting period as a shipyard until the shipyard was closed and the site was paved – all of which bear witness to important parts of Trondheim's maritime history.



**VÅGE 22 JULY - 30 AUGUST**

The Museum examined an area in connection with the construction of a new tunnel in Vågstranda where there were traces of settlements and cultivated layers in the soil. The up to one metre thick cultivation layer has dates extending between the Bronze Age (about 1 700 to 500 BC) and the late Middle Ages. The Ner-Våge farm is located in the innermost part of Vågen, and is first mentioned in Aslak Bolt's property registers. Historically, the farm has been the residence of several prominent individuals, such as publicans, bailiffs and officers. According to tradition, there should also be an assembly area somewhere near the farm. The survey turned up small stone cairns and stone packings in the peat in the transition zone between the old agricultural fields and the marshy area. Several postholes and remnants of cooking pits were also found, particularly in the southern part of the excavation area. Many of the postholes were lined with stone and some were up to a metre deep. It is thought that there were traces of four possible house structures. More (in Norwegian) at: [norark.no/sted/vage](http://norark.no/sted/vage)

**25 September** Divers conducted a survey of a timber construction in the Nidelva River.

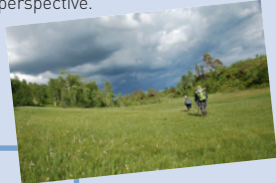


*October*



**3 October** A rune workshop was held at the Prinsen movie theatre in conjunction with the film "The Ragnarok Riddle" (Gåten Ragnarok).

**14 October** The MIRACLE project was awarded funding from the EEA. The project will seek to increase our understanding of the processes that turn marshes into stable ecosystems from a long-term perspective.



*November*



**15 November** Museum Director Reidar Andersen and Professor Helge Holden from NTNU's Department of Mathematical Sciences opened the "IMAGINARY" exhibition.

**November** A number of archaeological excavation reports from 2008, 2009 and 2010 were posted on [ntnu.no](http://ntnu.no) and were downloaded 4647 times before the year's end.

**November** The Stjørdal Hatchery and the University Museum completed their tally of spawning beds in the Stjørdal River. Six-hundred-and-forty spawning beds were located from Nustad waterfall to Sonoset, the highest number ever recorded.



**2-6 October** "Marine Ventures", an international symposium, brought together archaeologists from several continents.



**2 October** DNA barcoding of mosses collected in Alvdal and Kongsberg showed that a *Scapania* liverwort species was probably new to science.



**30 October** The Research Council of Norway awarded NOK 25.6 million to NorBOL for national infrastructure.

**31 October** Vibekke Vange explained during a Halloween event that ghosts love the Ringve Botanical Garden buildings and its grounds.



**22 November** Dag Dolmen received NTNU's award for outstanding research dissemination.

# Challenges and measures

The Museum's goal is to increase its research activity. This assumes that the Museum is able to recruit people with the appropriate academic background and museum expertise. The goal of maintaining and establishing more international networks is demanding. Significant resources are required to carry out outreach projects that are interdisciplinary and international in scope. A similar challenge is found in having the resources to meet the Museum's goals of safeguarding its collection and digitizing it. The biggest challenge to the Museum's protection and conservation efforts, both over the short and long term, is the lack of adequate storage magazines and magazine capacity.

## <sup>14</sup>C dating

The Museum has a national laboratory for dating that uses dendrochronology and carbon-14 dating. The laboratory area was improved in 2013 to ensure a cleaner environment for preparation work, and a new preparation line has been developed for <sup>14</sup>C samples, which works very well. There have been major challenges in getting the operation of the accelerator to stabilize, which is why there was no carbon dating done for customers in 2013. The accelerator now provides stable results and the plan is to recommence operations by the autumn of 2014.

**Measures:** One professor and two postdoctoral candidates will be recruited to enhance the Museum's research capacity. A new dating database of online services for customer/users is under development.

## Revitalization of exhibitions

The NTNU University Museum has no financial leeway to pursue the desired and necessary revitalization of exhibitions at Kalvskinnet. It is difficult to maintain visitor numbers without new exhibitions with dedicated marketing resources. This boost to the Museum cannot take place within current financial limits.

**Measures:** A comprehensive long-term plan for the exhibitions will be created, including financing.

## Kalvskinnet Knowledge Centre

NTNU and the Municipality of Trondheim are in the middle of a major process to clarify the direction of the University's campus and city development. The Kalvskinnet Knowledge Centre is an important aspect of this for the University Museum. The Museum has major challenges related to the quality and capacity of its storage magazines, and limited opportunities for innovation in the operation of exhibits in today's buildings. There are several major construction plans for Kalvskinnet, including for the Kalvskinnet Knowledge Centre, but a start date for its construction remains unclear.

**Measures:** Work with NTNU to ensure the construction of the Kalvskinnet Knowledge Centre.

## Continuation of the "City of Knowledge" programme

Kunnskapsbyen (the City of Knowledge) has been a collaborative effort between the University Museum, DKNVS and NTNU's Communication Division to share research with the public. The three-year agreement expired at the end of 2013. THE NTNU Communication Division withdrew from the programme, but the Museum and DKNVS requested an extension to 2014. It is a challenge to have lost a partner and the connection to Trondheim's central communication environment.

**Measures:** Kunnskapsbyen's future operation and partnerships need to be clarified.

2 December

The Grandparents' Climate Action group and the Trondheim Amateur Film Club recorded a music video for the exhibition "From Noah's Ark to the double helix".

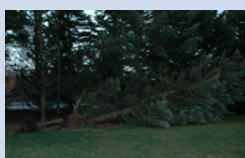


December



13 December  
Singing archaeologists on St. Lucia's Day. The video won the "Like" record for 2013 on the Museum's Facebook page, with 110 "Likes".

13 December A total of 18 trees had to be cut down in the Ringve Botanical Garden after winter storm Ivar. The photo shows an uprooted Veitch fir tree.



19 December Archaeologists Dag Øyvind Engstrøm and Geir Grønnesby were recognized as the Museum's most prolific contributors to Norark in 2013.



December  
The restoration of a rhinoceros that was underway throughout 2013 was completed in January.

2-3 December Nordic workshop in digital radiography. The use of digital x-ray documentation has significantly improved museum conservation work.



12 december  
The new Museum Board, both regular and alternate members, held its first meeting.

18 December The Norwegian Broadcasting Corporation's P2 radio programme called "Museum" came on a visit to hear Jon Anders Risvaag and Margrethe C. Stang talk about the University Museum's Høyland carpet.



 **NTNU**

NTNU University Museum

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