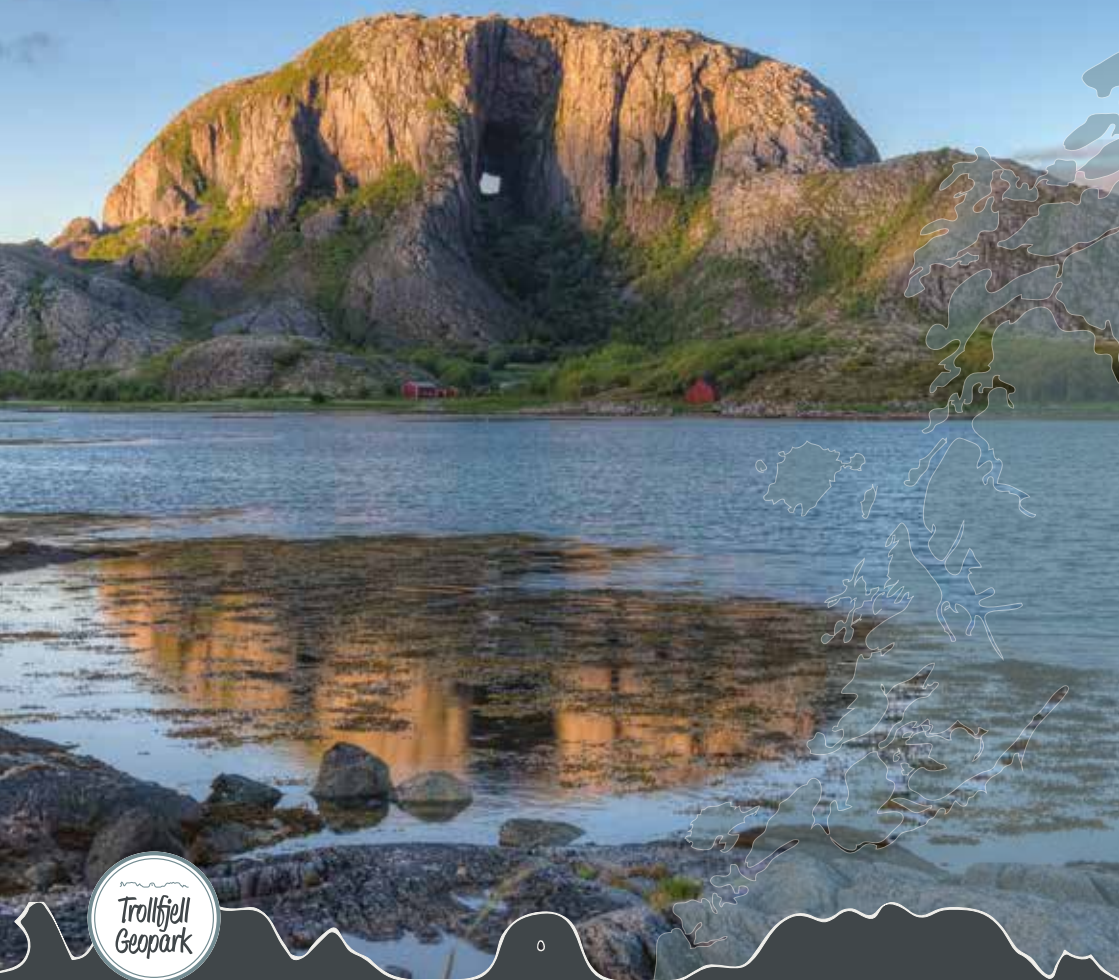


# Trollfjell Geopark

TORGHATTEN – The land that rose up from the ocean



Trollfjell  
Geopark



*... for coming to Brønnøysund  
without visiting Torghatten  
would be the same as going to  
Copenhagen without seeing the  
Round Tower or going to Rome  
without seeing the Pope.  
... It was a splendid summer night  
in Nordland, the golden evening sky  
and the reddish glowing mountains  
all around were reflected in the  
clear water. It was as though we  
were rowing in a sky of glimmering  
gold...*

Henrik Scharling (1836–1920)  
– Danish theologian and author, 1865

TEXT: Tom Heldal, Magnar Solbakk, Anna Bergengren.

COVER IMAGES: Bjørn Henrik Ormø (front), Magnar Solbakk (back).

ILLUSTRATIONS: Pgs. 6 and 9 are from Lauritzen, S. E., Nielsen, J.O., Stav, B.A. (2011): Kartlegging i Torghatten, Brønnøy Municipality: Torghatthullet og Svartholene, Acta Spelæologica Norvegica – Norsk Speologisk Årsbok 3, pgs. 77-96.

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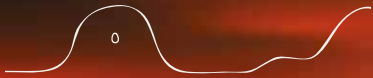


This brochure is part of the EU project, Drifting Apart.

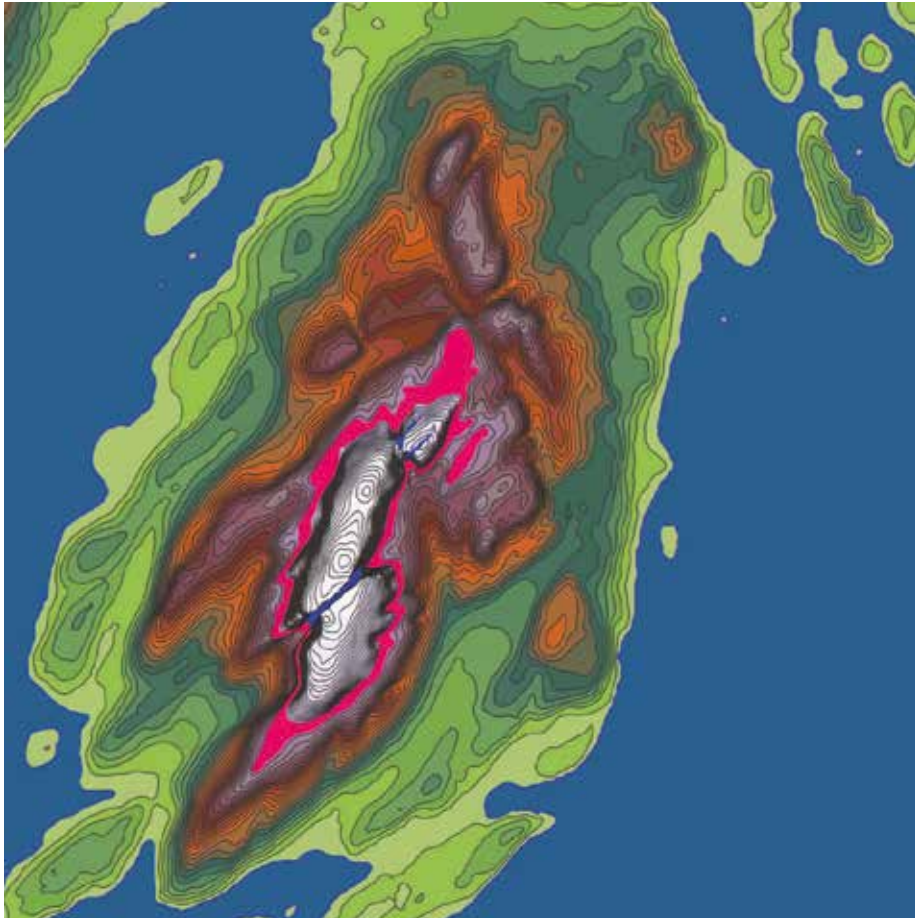
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# THE LAND THAT ROSE UP FROM THE OCEAN



*Photo: Rune Andreas Brennvik*



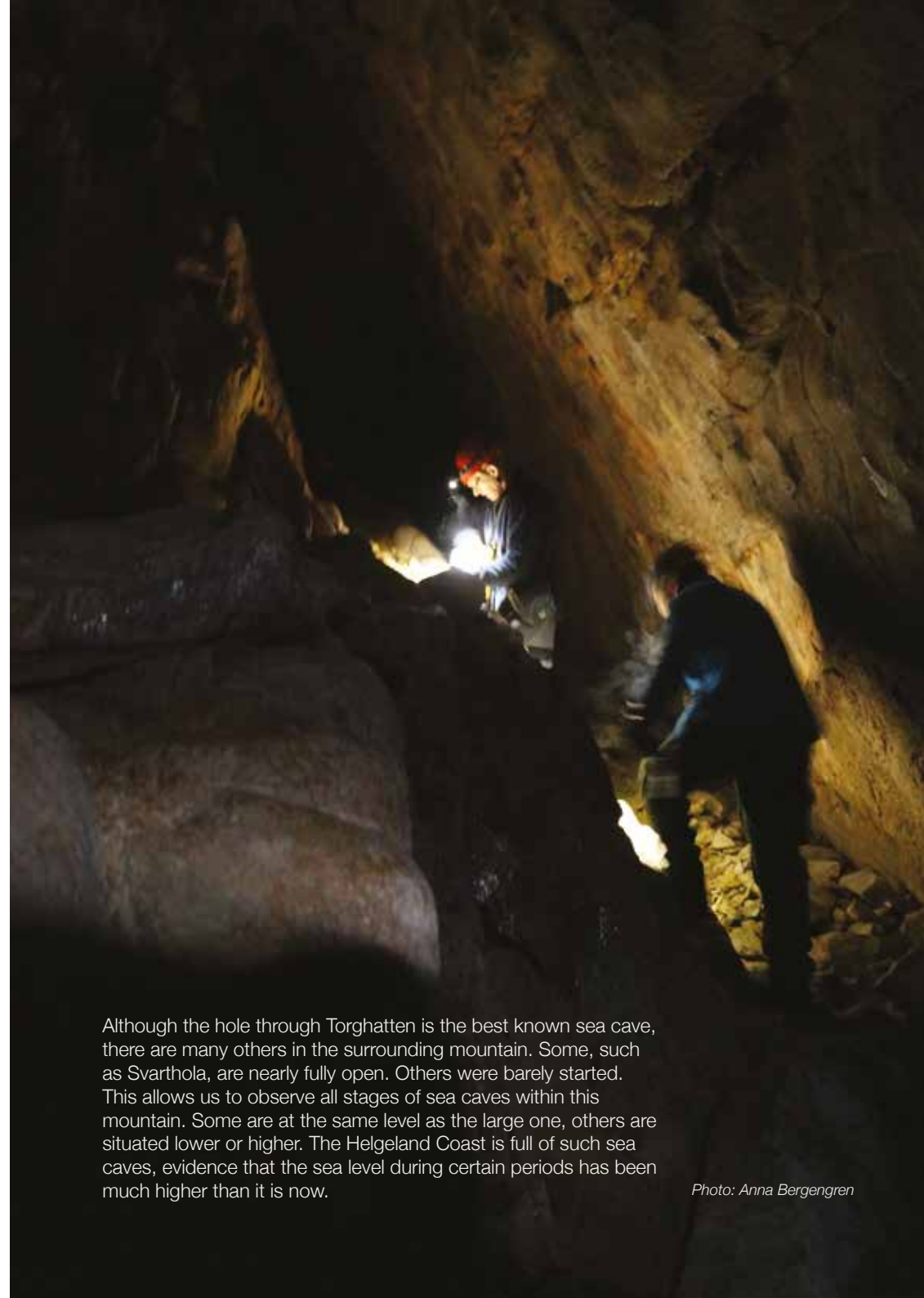
*Torghattan with the Torghatt Hole and the Svartholene caves (marked in blue). The level 112–125 metres is marked in red.*

*Illustration from Lauritzen et al 2011.*

## EVIDENCE FROM THE ICE AGES

Torghattan is a sea cave, or more precisely two sea caves which have become a fully open tunnel. During long periods and from both sides, the waves, frost and salt have eroded the hard granite rock until the two caves met and became one.

It is probable that the ocean and waves have been pounding against Torghattan during long periods over the last 2 to 3 million years causing cracks to expand into caves and then connected the two smaller caves as one large one. Between the glacial periods, the forces of nature calmed down and affected lower levels of the topography, such as nowadays. However, no mercy will be shown during future glacial periods, and as the waves again pounds on Torghattan's open door, the cave will eventually become a deep crevice.



Although the hole through Torghattan is the best known sea cave, there are many others in the surrounding mountain. Some, such as Svarthola, are nearly fully open. Others were barely started. This allows us to observe all stages of sea caves within this mountain. Some are at the same level as the large one, others are situated lower or higher. The Helgeland Coast is full of such sea caves, evidence that the sea level during certain periods has been much higher than it is now.

*Photo: Anna Bergengren*



View from the Torghattan Hole, with Leka to the south.

Photo: Anna Bergengren



In Torghattan, even people become tiny.

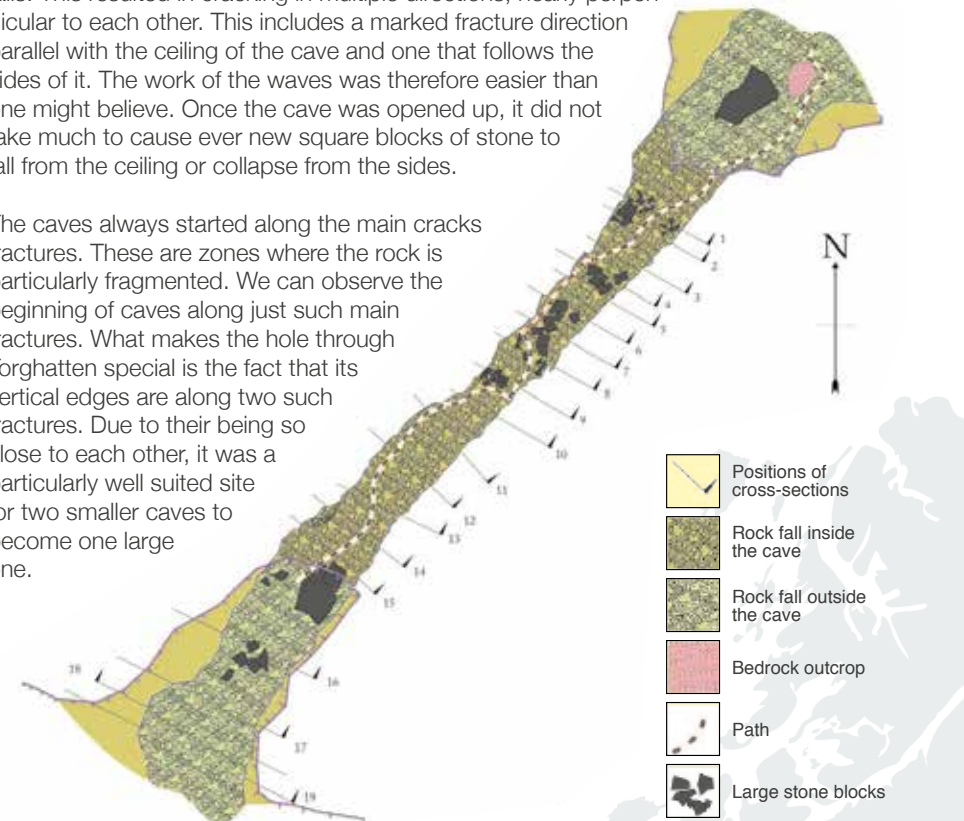
Photo: Magnar Solbakk

## FROM HUMBLE BEGINNINGS TO CAVE

Torghatten consists of hard granite, which is why it protrudes forth in the landscape. The softer types of rock around it were ground down to a flatter landscape. Within the rock, there are fractures and other zones of weakness. They originate from a much earlier phase in Torghattan's geological history. When the granite cooled and hardened from molten rock nearly a half billion years ago, it shrank somewhat. Just as all materials shrink as their temperature falls. This resulted in cracking in multiple directions, nearly perpendicular to each other. This includes a marked fracture direction parallel with the ceiling of the cave and one that follows the sides of it. The work of the waves was therefore easier than one might believe. Once the cave was opened up, it did not take much to cause ever new square blocks of stone to fall from the ceiling or collapse from the sides.

Illustration of the Torghattan Hole, from Lauritzen et al 2011.

The caves always started along the main cracks fractures. These are zones where the rock is particularly fragmented. We can observe the beginning of caves along just such main fractures. What makes the hole through Torghattan special is the fact that its vertical edges are along two such fractures. Due to their being so close to each other, it was a particularly well suited site for two smaller caves to become one large one.





*Pebbly rock scree with Stone Age settlement sites northeast of the Torghatten Hole.*

*Photo: Fredrik Høgaas*

## A SETTLEMENT SITE WITH A VIEW

Ten to eleven thousand years ago, when the first people arrived, there was a nice bay just north of the hole through Torghatten. It was south-facing and sheltered from wind and sea. In other words, a nice place to settle and harvest the abundant resources of wild game, fish and sea mammals. Lots of pebbly rocks on the beach made it simple to build dwellings. The first settler stacked the rocks in circular wall structures, made roofs of animal skins and wood, and was thus able to attain functional huts. Some of them had a view toward the hole through Torghatten.

The land rose up from the ocean, and the settlers moved down along the terrain toward the beaches. Thus became the history of the people around Torghatten a story of mankind's colonising of new territories. They came to a land encumbered by the Ice Age and watched the ice melt in the east. The land rose and the people made use of ever larger areas of the rising land right up until the time when the strandflat made thousands of islands and shallows available for human use. Fish and small farms became sources for making a living, the rising strandflat became the basis for larger populations and ultimately cities and power centres. Prehistory became cultural history. At Torghatten, we can travel back in time – from the Ice Age to modern times, via the Stone Age, Viking Age and Middle Ages.

## FROM VIKING CENTRE OF POWER TO FISHERMAN-FARMER

During the Viking Age, the Iron Age farm of Torgar at Torghatten had a key role in Norway's being united as one nation. Some of the first Norwegians mentioned by name reside here – Sigrid and Torolv, as described in Egil Skallagrimsson's saga. Following the battle at Hafrsfjord (between the years, 872–900), Sigrid and Torolv held a large feast at Torgar. It was for Harald Fairhair and his entourage of 300 men. The chieftain at Torgar amassed 500 men, so the king was sullen. The king became a bit more "cheery" when he received a fully equipped Viking ship as a farewell gift. However, there were rumours going around that Torolv was engaged in piracy, and Torgar was burnt down and Torolv was killed.

The Middle Ages were great eras for Christianity and the Church. However, this was equally the age of the fisherman-farmer. For at least 1,000 years, typical inhabitants of the Nordland and Brønnø regions worked as both fishermen and farmers, right up until the 1940s. The view from Torghatten toward the southwest shows us a number of fisherman-farmer holdings, the nearest being outer Hatten Farm. The fisherman-farmer system involved collective work across both sexes and including all generations. The farming was mostly geared toward subsistence and the women surely bore most of the responsibility for achieving profitable crops. Fishing providing money to pay taxes and purchase goods one could not produce at the farm. Nearly all fisherman-farmers in Helgeland were tenant farmers.

**HEMING UNGE** (ca. 1050) from Torgar entered into an athletic rivalry with king Harald Hardrada (1047–1066). Most notable was archery during which Heming, by the king's command, was required to shoot a nut off his brother's head. This occurred some centuries before the more famous myth about William Tell.

*Illustration of Torghatten by Joh. F.L. Dreier 1930.*



## EXPLORE TORGHATTEN

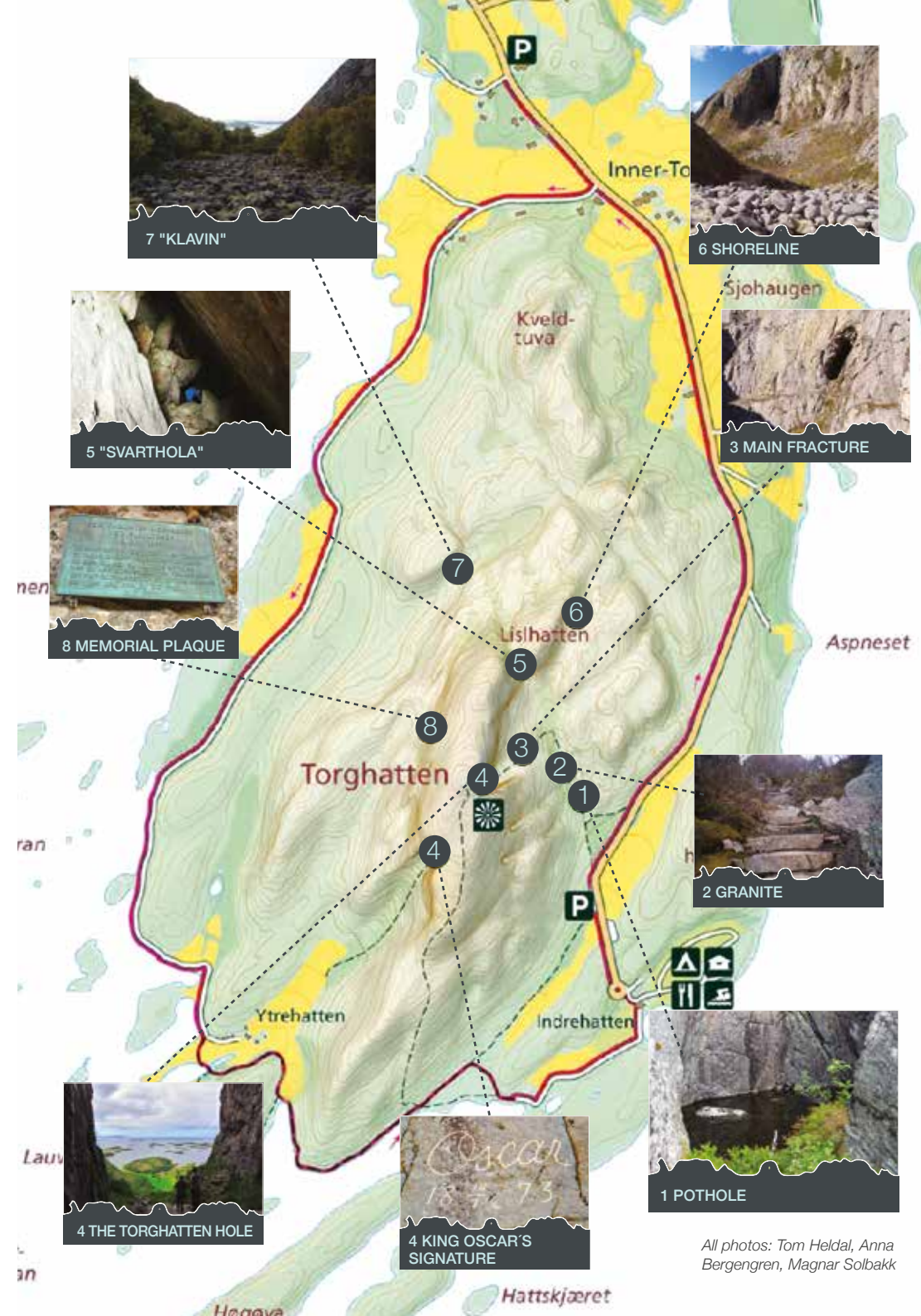
On the way up to the hole through Torghattan, there are several levels of pebbly rocks, which each show ancient shorelines on the rising land. You will also get to see naturally occurring potholes. **1** These are formed by rock and gravel, rotating water movements and lots of time. Ideally, one begins with a large rock which is rotated by the water movement and you end up with a small rock in a large hole that it has ground out of the rocky bottom. Nowadays, we know that many potholes were formed by rivers beneath the glaciers. We therefore find them in so many peculiar locations where there are no rivers at present.

On the way up, you can also have a look at the material which Torghattan is made of, i.e. granite **2**. This is best viewed in the stairway that unknown workers possibly made prior to King Oscar's visit in 1873. You can see a rock that is grey to reddish in colour and has a striped structure. Pink minerals are potassium feldspar, grey is quartz and white is plagioclase feldspar. The stripes are defined by thin flakes of black mica (biotite). Geologists believe that the Torghattan granite was formed around 470 million years ago, and that the striping is principally due to compression as the viscous granite melt gradually rose up in the Earth's crust like a wedge pushing through other types of rock in its path. All this occurred while it slowly cooled and hardened.

When you are almost up at the hole, you can catch your breath and have a look at the mountainside to the right of it **3**. Here you see a distinctive main fracture, along which caves have been formed. The lowest one is extremely small, but we can imagine that this is how the Torghattan hole looked like in its very early stage. Slightly above this, you see a larger cave; a more advanced stage.

Up at the hole, **4** you will be plenty occupied with taking in the dimensions and view through the hole toward the strandflat to the southwest: 166 m long, 28–75 m high and 10–28 m wide. You walk through it and along the way are able to see the pits and the soft shapes on the walls due to salt weathering. On the other side, the landscape reveals itself in a big majestic manner. If you are lucky, you can see all the way to Leka in the distance. On the southwest side, you can see King Oscar's signature in the rock wall, just as King Olav and King Harald have signed the northeast side.

Upon returning to the opening in the northeast end, you can look straight ahead and discover a large crack in the mountain. Svarthola is situated inside there **5**. This is the longest cave in Torghattan, however, it has never broken through the mountain to become a tunnel. It is deep and ancient. Clay within the cracks inside the cave might even indicate that it has a history dating all



All photos: Tom Heldal, Anna Bergengren, Magnar Solbakk



*Also fantastic for kayaking – a good way to experience the strandflat and Torghatten.*

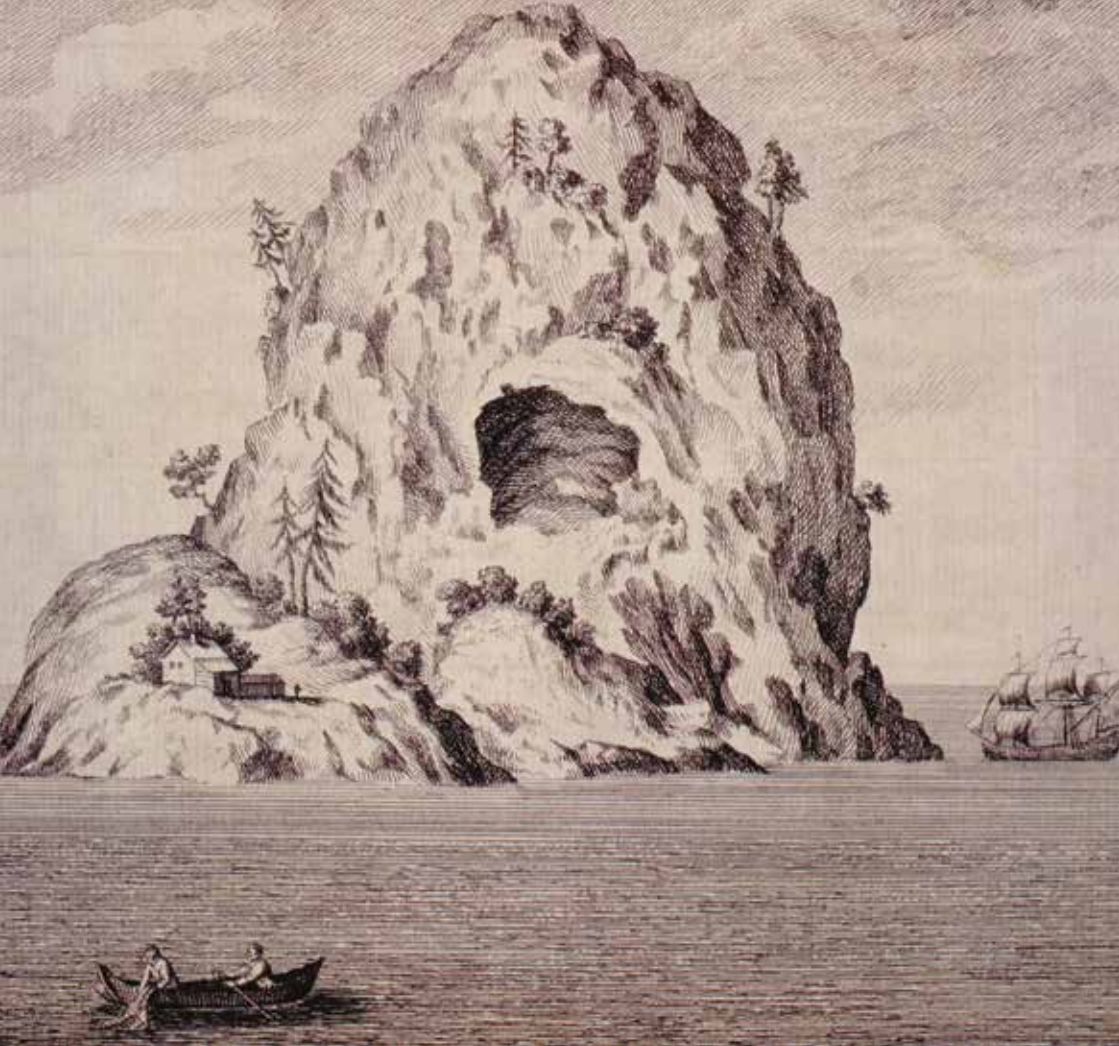
*Photo: Bjørn Henrik Ormø*

the way back to the time when the area was located in a tropical climate zone long before the glacial periods began to have an impact. Svarthola (the “Black Hole”) might one day reveal even deeper secrets about Torghatten than what we currently know?

Slight to the right of Svarthola, there is a pebbly rock scree <sup>6</sup>. This is an ancient shoreline. The first people came to Torghatten when the sea was at this level. They settled along this shoreline and used the pebbly rocks as foundations for their huts. There are at least five visible Stone Age settlement sites around Torghatten. You find them in the pebbly rock areas and they look like pits. There were once roofs above such pits, like huts or tents. On the northwest side of Lesshatten, you find “Klavin” – the ideal settlement for hunter-gatherer settlement with access to natural harbours <sup>7</sup>.

It was perhaps a settlement site for several thousand years, 4,000 to 8,000 years ago. There are traces from a number of settlement sites here at elevations of 60 to 75 metres above sea level.

On May 6, 1988, an evening with low fog, an aeroplane flew into the western mountainside of Torghatten. All 36 on board perished. The Widerøe flight was on route from Trondheim and Namsos; and the crash occurred during the approach to Brønnøysund. The plane, type Dash-7, had four engines and was considered one of the safest passenger aeroplanes. At that time, the plane crash was the most serious in Norway in 16 years. Nearly 700 people attended the memorial church service at Brønnøy Church, on 10 May, 1988. A memorial plaque was placed at the crash site on Torghatten’s western mountainside – for silence, contemplation and to place flowers <sup>8</sup>.



"Torghatten in Nordland, Petra Pertusa (The pierced mountain)"

Illustration from Pontoppidan "Norway's Natural History" 1752.

## MYTHS AND SAGAS ALONG THE COAST

Torghatten has been a dramatic mountain ever since its birth. Then came the people and eventually the myths. It has sparked the collective imagination for thousands of years. The sagas and legends have been handed down from generation to generation, from village to village.

The Troll Mountains stand forth in a spacious row, along Nordland county. Woven within a long and splendid fabric of Nordland-based imagination. Torghatten is an eye toward the shipping lane, which "sees with unsleeping Eyes". For many a Viking, a fisherman, a traveller along "Nordvegen" – the Northern Route – the mountain has served as a cherished navigational landmark.

Seafarers tipped their hats in a salute – here at the "gateway to the Nordland region". Sea captains used the sagas to teach young sailors to navigate. The stories were told on the sea journey northward to the fishing season in Lofoten and southward to Bergen with dried cod. It made it easier to remember the vast stretch of unsafe waters between Vågakallen and Lekamøya with the help of a good story.

The landscape took on faces, strength, weakness and the eternal yearning for love. They were fair maidens and mighty giants who were assigned fates worthy of heroes. In their zeal, they forgot how short the spring nights are and turned into mountains when the sun rose. This is the fairy tale of how the land was created. There are many versions about who was involved and where they came from and which traces they have left behind. It all depends on the storyteller's perspective and living conditions. The images turn yellow and the echo fades away, but our trolls became beautiful mountains. Torghatten was also one among a number of sacred mountains in Sami mythology. Johan Randulf, a priest in Nærøy from 1718 to 1727, writes about this in 1723. He mentions mountains such as Lekamøya, Heilhornet, Torghatten and Alstadhaug's Tinder: "... all such mountains are sacred and referred to as Saivo".

## ABOUT TROLLS AND GIANTS

"To the North in Hålogaland, there were two mighty kings: Vågakallen and the Sulitjelma King, with Vestfjorden between them. Both had their sorrows. The disobedient son of Vågakallen, Hestmannen, and the seven wild daughters of the Sulitjelma King, which he had sent to the island of Landego, where the Lekamøya maiden also was. One evening, Hestmannen caught sight of Lekamøya and the seven sisters as they were bathing in the ocean near Landego. A single glance sparked his intense desire for Lekamøya, whom he decides to abduct in the dark of night. On horseback in full armour, with waving helmet plume and his cape draped over his strong shoulders, he gallops southward on his midnight ride. The maidens catch sight of him and flee in all haste until they are exhausted. The seven sisters give up their flight and collapse at Alstadhaug. Only Lekamøya continues to flee toward the south while the King in the Brønnøy Mountains stands and observes the wild chase. At this point, daybreak is approaching upon golden clouds. The Brønnøy King looks on as the disappointed suitor puts arrow to bow, but he then casts his hat in the way and saves Lekamøya. The arrow flew from the string at the same moment and just barely pierced the hat which fell down at Torgar, as the sun rose. Everything turned to stone. So says the saga."



"Torghatten, An eternally modern hat". Illustrator F. Killinger, Zürich, probably 1899. Postcard published by the Danish Carl Stender's art publishing company.

## TORGHATTEN AS SEEN BY TRAVELLERS

*"In the summer, there are vessels anchored in the familiar Møvhavn Harbour, and this is when a wide variety of travellers visit this extremely rare Natural Wonder".*

John A. Nordhuus (1785–1863),  
farmer and parliamentary representative 1848.

*"It is not possible to imagine a more enchanting contrast than the sight of the hole from the inside and the mountains and ocean to the east and the meadows and farms to the west. The view across the sea with its countless mountains and skerries, seen from this gigantic telescope, is indescribably beautiful and awe-inspiring".*

James Monroe Buckley (1836–1920),  
American author, 1884.

*"Torghatten's round, heavy gigantic head rises above the small islands, with the hole in its forehead. The troll eye glares after hardening in the daylight toward Lekamøya who fled far to the south".*

Fridtjof Nansen (1861–1930),  
polar explorer and diplomat, 1920.

*"Into the mountain we creep, us tiny tots, as we do and dare, many of us at any rate. First we go down, and we soon reach the bottom; there the granite arch rises above us like a troll-like sky; we are spellbound now. But we are soon heading back up; and we crawl and climb until we are standing in the opening on the other side. From there, we look out over a glimmering sea littered with islands which farthest outward blend in with the sky. The view is splendid; thus home must beware of gods in the clouds. As we are still in the land of light".*

Arne Garborg (1851–1924),  
author, 1905.

*"And there is that rock dome with the bizarre top, which has a hat placed on its head – a hat from a tough battle; below is its watchful eye, which is never led astray by sleep, nor can it ever be closed".*

Petter Dass (1647–1707),  
from "Nordlands Trompet" 1739



*"This is a mountain in the form of memories about a woman's hat which she wears when she goes to the market... There are many legends and myths about the mountain, somewhat similar to "Ta Mong Lai"- the legend we have in Siam (Thailand). ... Upon arriving at the northern side, we saw the mountain with a large hole in the middle, somewhat similar to the pierced mountain in Pathalung. However, the hole in this mountain is more impressive because it is precisely in the middle, both from side to side and from top to bottom."*

King Chulalongkorn (1853–1910)  
of Thailand (Siam), 1907.

*"... and the whole of the magnificent nature along the Helgeland Coast paraded past us in ever-changing lighting: ... Torghatten like an old politician's hat floating on the water up in the north, and in toward the mainland – a wonderful entourage of mountain-tops and peaks..."*


Jacob Børresen (1857–1943),  
rear admiral, 1903.

*"There is also a mountain called Torghatten on the island of Torget, which is pierced clear through in the centre by a huge hole or a tunnel; it is long and high as a gothic cathedral; I have been there and believe that it was originally a crack in the mountainside where the mountaintop collapsed and created a roof; however, if there is another saga about the origin of Torghatten, such that it was created by mountain trolls, this might also be true, and I would concede."*

Karel Capek (1890–1938),  
Czech author, 1936.

*"Dear, stalwart, 'hat', you look equally old-man-like and charming from all the numerous angles from which I have sketched you. And you never disappoint me, dear hat. I know that you have forgotten and surreal small ponds and marshes, caves, passages and ravines in your peculiar head. I have been all over you, both on top and inside of you. You are a cautious and wise old man; you have hidden away the best of you for yourself. Your massive, famous tourist hole is the least notable thing about you. ..."*

Kaare Espolin Johnson (1907–1994),  
painter, 1953.

A large, dark silhouette of a person is shown climbing a jagged rock formation. The person is positioned diagonally across the frame, with their arms and legs extended as they ascend. The background is a light, clear sky. The rock formation has a prominent hole or opening near the top left.

The hat-shaped mountain with a hole piercing it clear through has sparked wonderment and experiences for travellers for many centuries. An iconic mountain on an iconic stretch of coast; a geological monument of processes that create our landscape. Torghatten not only contains a geological story, but also the story of the people who first came to this part of the world; that of the strandflat as the basis for existence for generations, and that of the deep mythology woven together with human survival amid the harsh coastal environment.