

# Halvikhallin, Norway: A Photographic Quest in Search of the World's Largest Sea Cave Entrance

text and photos by Dave Bunnell

Cavers are fond of keeping lists of the largest and deepest caves and seeing where their discoveries fit in. Not surprisingly, caves that aren't formed by dissolution don't end up on such lists (<http://www.caverbob.com/>) Back in the 90s, after I'd already spent many years exploring sea caves, I began to keep lists of the longest in both the USA and the World, and turned my list over to Bob Gulden for inclusion in his site. It has expanded considerably, with sea caves reaching lengths previously thought unimaginable in New Zealand, with Matainaka Cave surveyed to a whopping 1.54 km and two others exceeding 1 km. (<http://www.caverbob.com/seacave.htm>). Lists are now kept for lava tubes, piping caves, gypsum caves, talus, conglomerate, chalk, sandstone, and salt. However, there are other records not kept on such lists, such as those devoted to cave volume or to entrance size.

At the UIS meeting in Barcelona, Spain in 1986 I met Swedish caver Rabbe Sjöberg. We were both presenting papers at a symposium devoted to non-solution caves and his report concerned relict sea caves that he had surveyed along the coast of Norway. He lists 10 over 150m in length. The caves range from 100 to 384 feet above present sea level, so are no longer being enlarged by wave action. Perhaps the best known of these caves is Torghatten, a high and dry tunnel that cuts 160m through a small mountain on a peninsula just south of Bodo and quite visible to those on boats passing by. It is possible to drive to the base of the mountain and hike up to the cave in about 20 minutes.

Topping his list of long relict caves is Halvikhallin, which tapes out at 340m or 1,115 feet. But even more notable than its length is its vast entrance, taping out at 722 feet wide and 262 feet high. This almost certainly makes it the largest known sea cave entrance and among contenders for the largest cave entrance of any type. The author knows of no current compilation of large entrances, although the entrance to the Xibalba portion of the Chiquibul System in Guatemala has sometimes been cited as the widest. It apparently measures about 200m in width, or 656 feet. (See photo on page 2, the inside cover). If the above measures are accurate, the Halvikhallin entrance may be the widest entrance of *any* type in the world.

## Why the relict caves?

Much of the Norwegian coast experienced an isostatic rebound after the melting



Google Maps satellite image showing the approach to Vingsand and an arrow pointing to the cave in a nearby peninsula. The only feasible approach is by sea.

of large ice sheets following the last ice age. The present interglacial period dates to about 11,700 years ago so these caves have roughly been out of reach of the sea for that period. A more precise calculation can be made using software that takes regional locations into account (see figure, page 17).

With such impressive statistics and my long-standing interest in littoral caves, this one had been on my bucket list for years. Not to mention rough plans for a sea cave book in the future entitled *Dangerous Beauties, inside the world's great sea caves*.

Approaching the beach below the cave, from the boat. This was the calm before the storm...





**This panorama was taken as close to the dripline as possible. It appears more circular because it is not bisected by the large talus slope as seen in views from further back**



**Torghatten, another relict sea cave that is better known, cuts completely through this small peak.**



**Another view out from further in, on the other side of the talus pile, Elizabeth and Per.**

## **The Journey**

But its a long way to Norway, and the cave is out on the end of a peninsula that is isolated from overland approach so must be reached by boat. Last May I had an opportunity to do a 10-day cruise along the Norwegian coast with my wife, Elizabeth Rousseau. As it turned out, we could end our trip in Trondheim, a few hours' drive from the small port of Vingsand that is quite near the cave. I resolved to try and visit this cave while in the area, so planned several days stay in Trondheim after getting off the cruise. The cruise itself was stunning and highly recommended.

As I began questing for a way to the cave before the trip, I encountered a description of it on the Norwegian hiking web site, ut.no. It described the short trail up but simply mentioned needing to make a boat trip some 1.5 miles out to it, where a beach landing would need to be made. Google search turned up shots of groups of people here but I couldn't find any commercial options for visiting outside of renting a small fishing boat in Vingsand, something that might work unless there was some surf in the landing zone coming or going. Usually its the latter that is worrisome as most winds pick up in

the afternoon.

One of my lines of inquiry turned out to be key to going. I contacted NSS member Stein-Erik Lauritzen, a professor of Geology based in Bergen, Norway to see what he knew about visiting the cave. He put me in touch with Trondheim-based cave diver Ane Mengshoel, who had been to the cave before and sent me some nice images of the landing cove. She in turn had a diver friend, Per Landfald, who alternated time between Trondheim and Vingsand, where he had properties in town and resided on an island off the coast, for which he owned a very seaworthy small boat. She put us in touch and Per was agreeable to take us out to the cave and help with some photos. All this transpired a month or more before the trip via Facebook messaging so I was hopeful that so long as the weather was with us, I might realize my dream of reaching the cave thanks to this beautiful example of networking among new friends...

I mentioned we were on a cruise before the visit to the cave, a Hurtigruten ferry that runs the Norwegian coast from Bergen to the far northeastern port of Kirkenes. We started in Bergen and ended in Trondheim, which meant we would pass the area near the cave along the route—twice. With luck I thought I might get a view of it, and in consultation with the boat's "expedition" team, and by supplying them with the coordinates, they were able to tell me within 5 minutes when we would be passing by on the route north. Though they were in the habit of pointing out sites of interest along the way, they hadn't heard of this cave before. It was late afternoon, and the seas were relatively calm so we were in close enough that I could grab a pretty decent photo. On the voyage south, it was too dark for decent photos when we passed (despite being north of the Arctic Circle) but we did get a great view of the Torghatten opening along the way and that



Further into the cave—Interesting groove patterns on the ceiling could be products of erosion from wave action or frost shattering.



Photo from the back end of a shorter upper level passage using LEDs to light the ceiling



Per beneath some impressive inclusions in the gneiss

was pointed out to passengers over the PA system.

While I viewed hundreds of miles of coast along our cruise route, I saw only a small number of features that appeared to be active sea caves. Clearly most of the major sea caves in Norway are these relict caves.

### The Visit

June 3 2018 saw us on an early departure from Trondheim and a delightful 3 hour drive up to Vingsand. The coastal road in the last 10 miles or so was especially stunning, with stark peninsulas of grey gneiss cliffs jutting out into the sea. Reaching the small fishing village of Vingsand, we found Per and his friend Fritjof Aune waiting for us in the harbor. Being a relatively short distance to travel by boat, Per had asked his friend to drop us off and pick us up a few hours later. This way we wouldn't have to land the boat or try and find a place on some rocks to tie it off. The crossing to the cave took only about 20 minutes and it was so calm we could just step off on some rocks. You really can't miss seeing this cave from pretty far away and as you approach you can see another wide entranced cave high in the cliffs. From the approach you can also see a prominent fault dipping some 45 degrees which was clearly the factor



Vertical panorama of the passage leading into the lower level

Inclusions in the gneiss show considerable deformity, perhaps by the faulting that guided the caves' formation



offering a zone of weakness for the cave's erosion by the sea. It probably took some 20 minutes to wind up a talus slope towards the cave. The entrance is deceptively wide due to its gradual widening, and you have to really be inside to appreciate it. Photos had to be taken from pretty far in to capture the whole entrance, even with an 18mm wide angle, so I shot some as a series of vertical slices I put together (ie, a pano). Doing this allowed a better view of the offshore islands in the half page photo and revealed the roundness to the entrance afforded when shor from in front of the huge breakdown pile.

While half my efforts seemed to focus on the entrance, I got a number of them in the interior. The gneiss here has inclusions

typical of gneiss, as seen in two of the photos here. I had brought was a bunch of flashulbs instead of strobes thinking big cave to shoot. Mostly I shot using just the daylight coming in but could have used some strobes in the smaller passage in the interior. Instead we used some LEDs Per had to illuminate some of the further dark reaches, with the camera on a tripod. On the lower passage you can crawl a pretty good distance (70+ feet) necking down gradually to an uncomfortable end.

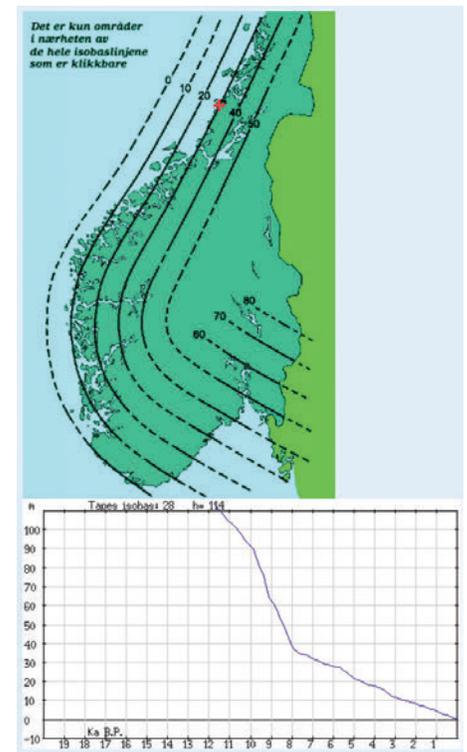
#### Why is the cave so large?

In Rabbe Sjoberg's article on the cave, he mentions doing some dating of sediments in the cave and finding a period of as much as a million years. While the methodologies for

dating in the 1980s could be questioned, this is a vast amount of time compared to most presently active sea caves, whose enlargement can at best be from a period dating to the end of the last ice age or about 11,000 years. And its likely that the cave extended beyond just one glacial episode (see caption below).

#### Acknowledgments

A big thanks to the Norwegians mentioned that made this visit come together, Per Landfald, his friend Fritjof Aune, Ane Mengshoel and Stein Erik Lauritzen. The latter also provided some counsel on coastal geology but if anything is wrong note that there wasn't time for him to review the full article before going to press. We greatly appreciate the time spent with them all in Norway and the hospitality shown us.



**Map of sea level changes over time at the cave's locale, due to isostatic rebound after glacial melting. 11,000 years ago the local sea level was at 100 meters lower relative to land, about the same elevation as the cave entrance today. The cave has been uplifted beyond the active surface zone for that long. Rebound occurred more quickly in the first 3000 or so years then slowed. While this could allow for a good million years or more of development, it could have been extant and hence began its enlargement in even earlier glacial periods, especially given its large size. (Stein Erik Lauritsen, personal communication).**

Map generated via [http://geologiskolen.uit.no/lokalGeologiskolen/Norge/n5\\_strandlinjeprog.htm](http://geologiskolen.uit.no/lokalGeologiskolen/Norge/n5_strandlinjeprog.htm) which gives further explanation to the isobars on the map, which indicate sea level stands over time.