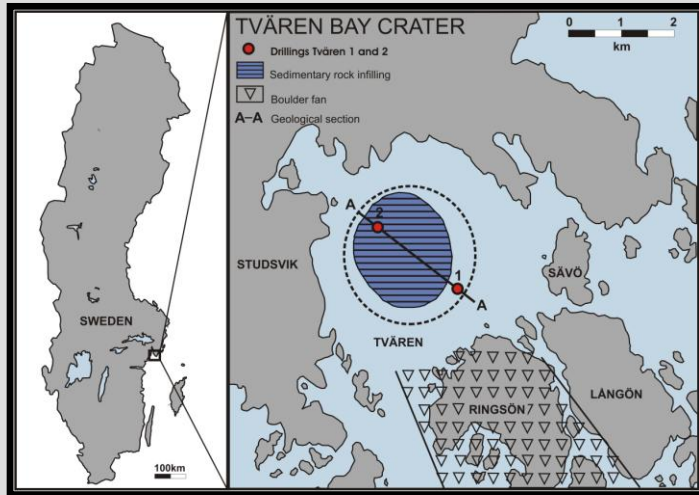


# The Tvären Crater

## -an impact in the Ordovician Sea-



**Location:** 58°46'N, 17°25'E  
**Age:** Ordovician (Caradoc)  
**Diameter:** 2 km

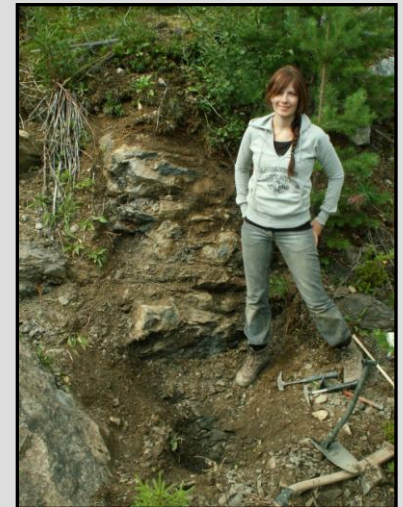
## Geological background

In the Ordovician several bolides hit the Baltoscandian marine shelf, one of them resulted in a crater in the Tvären bay, situated in the Stockholm archipelago, Sweden. The crater has a diameter of 2 km and a depth to the Precambrian bedrock of more than 200 m. The impacted sedimentary sequence at Tvären consisted of Ordovician carbonates (the orthoceratite limestone) resting on non-lithified sands of Early to earliest Middle Cambrian age (Lindström et al. 1994). Core drillings of the rock sequence in the Tvären bay were carried out in 1991 and one of the two cores produced an almost complete sedimentary sequence. The base of the core consists of 5m hydrothermally altered basement breccia. The marine impact caused a surge of returning seawater and as a result deposited a graded resurge unit, consisting of approximately 60 m Palaeozoic material from the area, onto the basement breccia. Above the resurge deposits post-impact secular sedimentation produced 80 m thick grey carbonatic mudstone. The post impact sequence has yielded abundant fossils such as graptolites, chitinozoans, trilobites, ostracods, brachiopods, echinoderms, scolecodonts and bryozoans.

# Ongoing Research

## PhD project

The project aims at studying the faunal recovery after marine Ordovician meteorite impacts, emphasizing on the colonisation of faunal elements and depositional environments in the Tvären Crater, as well as in the Lockne Crater. The Tvären crater might not give the impression of being particularly remarkable judging from its dimension, though it holds a lot of fascinating information dating back to the Caradoc. Studies on the Tvären Crater are focused on the post impact secular deposits in the drill core as well as in erratic boulders, whereas Lockne is centred on predominantly field related material. Impacts present a significant addition to the ecological perspective on how ecosystems can be disturbed and how they can recover. The dramatic alteration of the seafloor topography, caused by the impact, offered new habitats by means of the crater morphology and sheltering rims, allowing the marine fauna to immigrate the newly formed crater. Immediate evidence of post-impact environmental conditions inside any recognized impact crater is particularly sparse. These gaps of information are essential to fill by presenting analysis of deposits, palaeoenvironment and fossil distribution from syn-impact to post-impact depositions inside the crater.



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