The ice time route

In Dals Ed there are many traces of the Inland ice retreat. Explore them along the ice time route round Lilla Le and over to the shore of Stora Le.

In the surroundings of Dals Ed there are a number of deposits from the end of the ice time. These were of great importance for understanding how the ice melted away.

The maps are explained from the left:

1. The ice time route, map with numbered stops.

2. The ice retreat started about 13000 years ago and slowly a landscape emergedthat had been covered by more than one kilometer thick ice emerged.

During the melting of the ice there were several breaks. About 12000 years ago the climate became colder, the ice did not melt away and the ice margin remained at about the same area for a long time. This caused two ice margins which you can see north and south of Lilla Le. These two deposits are part of a marginal zone from Norway across Sweden over to southern Finland.

3. The map to the left shows the distribution of land and sea at the rim of the inland ice at about 12000 years ago. The land had been subducted by the weight of the icecap and rose slowly from the sea. The level that the sea reached when the ice disappeared is called the highest shoreline

4. On this map you can see the rate of the deglaciation and the approximate position of the ice margin at different times.

The ice did not melt at the same rate all the time. The temperature varied and at times it became colder again and the ice ceased to melt. As from approximately 12600 years ago and about 900 years ahead it became colder. This caused the inland ice to expand again and its margin could advance out into recently deglaciated areas. At the end of this period at about 11500 years ago it become warmer again and the ice melted away rapidly.

5. It is more than one hundred years ago (1909) since famous geologist Gerard De Geer wrote a paper describing the ice time features around Lilla Le at Dals Ed. This happened at a time when the knowledge of the Swedish geology grew rapidly. De Geer is famous for his work with establishing a time table based on varve chronology (Dal`s Ed, Some stationary Ice-borders of the last glaciation).

Kronoparken

View of the proximal side of the northern marginal zone. The western part is best visible. The slope rises 50 meter above the lake and reaches also down to the bedrock under 20 meters of water and additional sediment. The moraine was mainly built by the glacial melt water streaming in the bottom of the valley with great pressure below the ice. The melt water brought material which had been thorn away from the bedrock or had been eroded from sediment under the ice out to the mouth. Here the power of the stream ceased suddenly and its load was deposited. The glacfluvial stream was forced to change its course and another part of the ridge was built along the ice margin across the entire valley. From the bottom of the glacier also proper till was deposited as intercalations.

Eventually, when the ice became thinner, ponds were formed between the outer parts of the ice and the adjacent slope where sand and gravel was deposited so the ridge got a rounded connection to the valley.

Meltwater canyon

Canyons in the bedrock where there are no stream to day are known from several places in Sweden. They are called “kursu” or “kårså” in northern Sweden. In southern Sweden they are called “skura”.

The canyon here is comparatively small, less than 10 meters across. Vertically eroded in the crystalline bedrock where it has its lowest part in the direction between Lake Sågtjärn and Lake Timmertjärn. It has been formed beneath the inland ice by melt water extruded under great pressure, enough to erode lodgement till as well as the fractured bedrock. The erosion was mostly due to backwards erosion. From the highest point of the depression 165 meters above sea level it slops both ways. This is a proof that it can not have been formed by a stream after the ice age. Lake Sågtjärn has its natural outlet towards southwest, but during the ice age this was blocked and the melt water in the depression was forced the shortest way to Lake Timmertjärn.

Above the highest shoreline south east lake Sågtjärns southern bay there are several pits. They are formed from ice blocks of the melting inland ice buried in glacial drift.

In the high ground southeast lake Sågtjärn there are several pits. They are formed from ice blocks of the melting inland ice buried in glacial drift. Also in the terrain below the highest shore line ice bergs could strand and be buried in drift. The dead ice as it is called remained for comparatively long time, and when the ice melted a depression was the result.

Drainer / Draining channel

The shore level displacement during the time from the creation of the southern moraine to the formation of the northern had elevated the ground outside the younger ridge and the melt water eroded a channel down to approximately 144meters. Mät. section.

Iceberg hollow

A small iceberg has stranded here and been buried in sand and gravel. The dead ice as it called rested here for a comparatively long time and when the ice eventually had melted there was a hollow at the spot. In this case the shore displacement had lifted the ground above the wave washing zone so it remained. Springs appear in the same way on slopes but the bottom always fall downstream.

The depression where Lake Lilla Le is situated is also the result of ice separated from the main dynamically moving glacier. The ice remained there until the major part of the sediment transportation from the northern ice margin ceased.

Äng / Edsbräckan

At the ice margin the melt water eroded its former depositions and transport this and the sediment coming from beneath the glacier up and over the sediments accumulated in front. The valley was filled up to the water surface of the sea outside the ice margin. On the fare end of the slightly dipping plain over which the debris was transported sand and coarser grains rolled and slide out and built successively new steeper dipping beds. A ice marginal delta was built.

At the nature reserve Äng /Edsbräckan

Moraine mound

The steep mound rising above Lake Lilla Le at the camping site consists of till. It has melted out of the glacier and consists consequently of all fractions from the smallest, clay to boulders. The surrounding

concave slopes are composed from sand and gravel as the surface to the south. The reason for the steep sloops is that the ice formed a wall at which the stratified drift could build.

Gully (8)

This gully was eroded when Lake Lilla Le for a short time had its discharge this way to Lake Stora Le. It starts only two meters deep at the Lake Lilla Le, but grows soon to an impressive gully in the loose sediments in the eastern part of the moraine. The gully formation ceased when it reach less erosive strata in Lake Lilla Le

2. Shaped by stagnant ice

At the camping site you are on the southern moraine, wich form a point in the lake. The ground here is till which is a soil that is composed of rock fragments of all sizes from clay particles to boulders that have melted out of the ice or have been dragged and pushed by it.

The slopes around Lilla Le are built by glacifluvial sediments, composed of sand and gravel. The depression where the lake is located was formed when a huge ice block was buried by the sediments streaming out from the ice margin. When the supporting walls of the ice melted away the fairly steep slopes developed. The small valley west of Lilla Le where the railway is today was eroded by a glacifluvial stream.

The green line in the picture to the left corresponds to A and B in the picture to the right and the blue line to section C. The sections B and C represent the present.