
Glacial Landforms and their Geological Significance in the Area of Kymenlaakso Region, Southern Finland

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ABSTRACT

Pleistocene glaciations began in Finland and surrounding countries around 125,000 BP and ended around 10,000 BP. The ice cap ~3,500m thick at its origin covered the Gulf of Finland, the Baltic Sea and other lakes, and its southern edge had extended encompassing northern British Island, Poland, Germany, Netherlands, Estonia etc. around 125,000 BP. It retreated by the year 8000 BP leaving behind different types of depositional (moraines and eskers) and erosional landforms (pot holes - hiidenkirnun and striations -uurre). We investigated glacial landforms in two sub-regions of Kymenlaakso in Southern Finland using 1:20,000 topographic maps.

The moraines (Salpausselkä) composed of sand, gravel, pebbles and boulders (erratic) form arcuate ridges that are occasionally more than 2 kms wide and 100 m high. These ridges form two distinct arcs termed Salpausselkä I and II. In some regions a third arc, Salpausselkä III, is recognized. The intervening areas of hollows or bottoms are composed of dark peat bogs (sponge) give rise to a hummocky topography which is characteristic of a retreating glacier. The eskers range from 5 -50 m in height, 50-500 m in width, and 100s of m to 10s of km in length. They occur as unbroken or detached segments. The sediments are sorted according to grain size, and cross-laminations showing one flow direction are common. Kettle holes (Suppa) and terraces (Kame) are the salient topographic features in esker areas. In many places of the moraines and eskers, glacial erratics (pieces of rocks) native to the area are found. The erratics differ in size from pebbles to large boulders weighing as much as 15,000 to 17,000 metric tons. The silt, sand, gravel, pebbles and boulders of moraines and eskers are mined for land filling, cement industry and are used in the construction industry. Forest felling and land degradation are the consequent outcomes of such mining.

Glacial striations oriented in the direction of ice movement are seen as long, delicate, finely cut, commonly straight and parallel furrows or lines inscribed on a bed rock surface by the rasping and rubbing of rock fragments embedded at the base of a moving glacier. In our study, good examples of striations were observed in the Verla Sapinvuri rocky area and along the Rapakivi granite bedrock located inside the Kotka Fortification. Askola area in southern Finland underlain by mica schists and migmatites belonging to Svecofennian granite-migmatite zone is significant for formation of potholes (hiidenkirnu).
