

# Drumbabót

## Information Sheet

Recommended visit: 3 - 4 hours



### Location: DRUMBABÓT

**Conservation designations:** Local municipal protection. (Hverfisvernd)

**Grid reference:** 63.74°N, -20.21°E

**Address:** Fljótshlíð

**Parking available:** Yes. Free parking available

**Personnel to be contacted prior to visit:** Katla Geopark, Gunnarsholt 851 Hella,

E-mail: info@katlageopark.is, Phone: +354 844 7633

### Useful equipment:

- Pencil
- Notebook
- Camera
- Task sheet.
- Simplified map of Katla UNESCO Global Geopark

### Relevance national curriculum:

- Local and national history, geological formations, drift of tectonic plates, volcanic activity, national cultural history.

**Rock types and geological processes observed:** Subglacial eruption, volcanic sand, layers of sediment.

**Geological structures:** Outwash plain from Katla outburst and meandering river in the past.

**Earth processes:** eg. Holocene sediments, volcanic ash, river/flood sediments, jökulhlaup, erosion, deposition, land uplift, natural preservation.

**Geological periods present:** Holocene - 822 AD until present day.

### Site specific hazards and risks:

- The river Þverá is cold, deep and fast flowing and the sandy river banks change frequently
- Extremely fragile tree stumps can be found at Drumbabót. They must be treated with care
- The abundant birdlife in the area is easily disturbed
- Weather conditions can change rapidly. Prepare accordingly

### Mitigation measures:

- Only cross the river under the supervision of a local expert guide (4x4 vehicle needed)
- Avoid the riverbanks
- Never remove geological or biological material from the sites, particularly tree fragments
- Do not deliberately disturb the wildlife.

**Did you know:** In 2003, a spring flood from the Þverá river exposed ancient tree stumps that had been buried for centuries, namely, Drumbabót. There is another glacially covered volcano, Eyjafjallajökull, that evoked a flood on the other side of the valley in 2010. Iceland has the largest outwash plain on earth, Skeiðarársandur, with an area of 1.300 km<sup>2</sup> located about 180 km further to the east.

**Topics to cover before visit:** Subglacial eruptions and their effect on the glacier and the huge content of frozen fresh water. The forces building within the glacier in relation to meltwater, tephra in the meltwater, and its tendency to seek the path of least resistance from beneath the glacier, creating damaging flood paths. It can be enlightening to show images from recent floods to demonstrate the tremendous forces and changes in vegetation/succession. It is useful to cover weather-, erosion-, deposition- and coastal processes. Discuss the changes of sediment/volcanic sand along the coastline, especially from the time since humans have settled in the area, as well as changes in Icelandic vegetation from time of the settlement.

**Keywords:** Subglacial eruptions, glacial floods, sedimentation, outwash plain, environmental impacts, birch forest, tundra habitat, primary and secondary succession.



Stop 1-5: An illustration of a sub-glacial eruption resulting in a flood.



Stop 2: An overview of tree stumps in the Drumbabót area. Note the sparse vegetation.



Stop 1-5: A part of the Markarfljótsaurar outwash plane.

#### Geological history\*:

The Katla volcanic system is known for subglacial eruptions. The Katla cauldron is wide and the glacier covering it is up to 700m thick. 21 eruptions are known in historical time, the last large eruption occurring in 1918. The total amount of tephra produced in that eruption has been estimated around 700 million m<sup>3</sup> and glacial outburst flood about 8 km<sup>3</sup>. Glacial outburst floods, jökulhlaup, are incident with the Katla caldera eruptions. The glacial floods have three main channels from beneath the glaciers, through Entujökull, Kötlujökull and Sólheimajökull, depending on the location of eruption within the caldera. Although uncommon, six jökulhlaups are known to have burst out from the western part of Mýrdalsjökull, inundating Thorsmörk and the Markarfljót delta and the lowlands. Four of these jökulhlaups have occurred within the period 6200 to 1200 years ago, the youngest of these believed to have washed out a birch forest in the lowland in 822, now called Drumbabót.

Drumbabót is a 100-ha area where the remains of an ancient forest are visible. These remains have been well preserved in wet sediments and exposed due to weathering and erosion over the last century. This desert-like area contains the last vestiges of what may have been a 2,000-ha birch forest that flourished between 755-830 AD. 100-ha of battered 1,200-year-old tree stumps are all that remain of a dense forest that may have contained 500-600 mature trees per hectare. Comparable to some of the largest birch trees found in Iceland today, many of the trees grew to 30 cm in diameter. Today, still in their upright position, and all leaning in a south-westerly direction, these relics are firmly embedded in palagonite soil. Annual rings indicate that the trees were 70-100 years old when they were hit by the flood and that they were most likely killed in a glacial outburst flood from the eruption of Katla. A recent (2017) study of the rings and C-14 isotopes confirms the death of the forest during the autumn of 822/early spring 823.