

12 VEGETATION ON THE GRAVEL FLATS

Away from the craters the ground changes, as does the vegetation. Here the trail returns to moraines left by Ice Age glaciers. Vegetation is typical for the gravel flats. On the remainder of this trail it should be possible to see: moss campion (*Silene acaulis*); northern rock cress (*Cardaminopsis petraea*); sea campion (*Silene uniflora*); and sea thrift (*Armeria maritima*).

13 HARDSHIP OF THE MIST – AT HOME AND ABROAD

During the Laki eruption a poisonous ash cloud spread over Iceland, hiding the sun, and leaving behind devastation. Icelanders experienced their worst catastrophe – móðuharðindin or the “hardship of the mist”. Animals died and people starved to death. Two years after the start of the eruption cattle were reduced by half, horses by two-thirds, and sheep by about four-fifths. During the hardship of the mist one fifth of all Icelanders died, and close to the eruption the death rate was doubled. Twenty farms were buried under lava another thirty were temporarily abandoned.

The sulphurous mist from Laki spread over the entire northern hemisphere. It covered up to a quarter of the earth’s surface. A large part of the mist fell as acid rain, damaging vegetation. The mist excluded some of the sun’s rays so that the earth’s climate cooled. The cold period lasted three years and caused widespread crop-failure and famine. The economic crisis which followed may have contributed to the French Revolution.



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GUESTS ARE REMINDED THAT:

- It is forbidden to damage nature in any way, such as by driving off-road, digging up plants, disturbing wildlife, interfering with geological features, or building cairns.
- No rubbish may be left behind, or buried, in the park area.
- It is forbidden to light a fire in the open.
- Dogs, and other pets, are not allowed to run loose in the National Parks. Owners are responsible for clearing up the animals’ waste.
- Take nothing away except photographs and memories – leave nothing behind except light footprints.

In emergency dial 112 - Neyðaraðstoð hringið í 112



VATNAJÖKULSPJÓÐGARÐUR
NATIONAL PARK

VISITOR TRAIL

INTERPRETATION TRAIL AT LAKI

Around 230 years ago, here at Laki, fire fountains erupted with loud explosions. Glowing lava flowed all the way to the coast. Now there is silence and nature colonises the solidified lava. The eruption’s influence reached far beyond Iceland’s shores and even changed the history of mankind.

The story of the greatest eruption in Icelandic history is told along an interpretation trail of approximately 0,5 km. A gentle walk, with time to absorb the history, should take about 30–45 minutes.

1 ICE AGE LANDSCAPE – THE FOUNDATION

Mt. Laki is not part of the Laki crater row; it is a hyaloclastite ridge formed in an eruption below an Ice Age (Pleistocene) glacier about 20,000 years ago. This locality is on a moraine left behind by the retreating glacier about 10,000 years ago. In 1783 an eruptive fissure ripped apart the Ice Age landscape, extending into the slopes of Laki where it can be seen clearly. From here the trail goes past recent (Holocene) craters and lavas which were produced in the eruption.

2 THE ERUPTION IN 1783-1784

A series of earthquakes announced the coming event. On Whitsunday, 8 June 1783, an eruption began with booming, ash fall and a sulphurous smell. An eruptive fissure, 12.5 km long, had opened east of Mt. Hnúta, southwest of Laki. The eruption went in cycles. Each cycle began with earthquakes, followed by explosive eruptions, and a new fissure opened east of the previous one. At the end of July activity declined west of Laki and an eruption began east of the mountain. In total ten fissures erupted, each 2–5 km long. A row of craters lies on each eruptive fissure; the largest craters are in the mid-section. The eruption ended on 7 February 1784. The craters are named after Mt. Laki.

3 SPATTER AND SCORIA CONES

Volcanic material ejected in an explosive eruption is called tephra. Tephra is sub-divided by particle size; spatter is the coarsest material, followed by scoria, pumice and ash, which is the finest. Coarseness is determined by the chemistry and water content of the magma, amongst other things. In the eruption fountains of lava were thrown high into the air. The semi-solid lava fell around the crater and built up its walls. Explosive activity could be followed by lava flowing from the volcanic vent. The lava needed to force a path out of the crater thus each crater has one or two openings.

4 STEREOCAULON LICHEN

Stereocaulon lichens look like small light-grey bushes. These lichens are amongst the first to colonise new lavas and rapidly form vegetation cover, along with mosses. Lichen is a partnership between fungi and green algae, and sometimes blue-green algae (cyanobacteria). Stereocaulon vesuvianum is a common variety on the Laki lava where it grows with fringe-moss and other species. On the lowlands the mosses dominate and coat the lava in thick moss hummocks, but in the highlands Stereocaulon vesuvianum grows well. The habitat type (breyskjuhraunavist) characterised by the combination of Stereocaulon lichens and fringe mosses is rare in Iceland.

5 BIOLOGICAL CRUST

Biological crust, or organic soil crust, occurs on the ground's surface where microscopic organisms bind soil particles together in a continuous crust. The most significant organisms in the crust are blue-green algae (cyanobacteria), green algae, fungi, mosses and lichens; different combinations grow in different conditions. Biological crust strengthens the surface of the soil and reduces soil erosion. It retains surface moisture and makes it easier for seeds to germinate and for plants to spread. It increases soil fertility because blue-green algae bind nitrogen from the atmosphere. Biological crust occurs widely in the highlands, and in lowland areas where soil erosion has occurred. It is one of the most widespread habitat types in Iceland; and one of the least understood.

6 FISSURING – THE RESULT OF CONTINENTAL DRIFT

Iceland lies on the junction of two tectonic plates which are drifting apart. The country does not split apart because newly erupted rock fills the fissures, just as it did in the 1783 eruption and many others. Here you can see an eruptive fissure on the slopes of Laki, and below your feet you can see that separating has continued. The tectonic plates separate at about the same speed as fingernails grow – 2cm/year each way. Eruptions on tectonic fissures form long crater rows with expanses of lava. There have been other eruptions in the area e.g. at Eldgjá, Vatnaöldur, and Heljargjá.

7 MOSSES

Nowhere else in Iceland are mosses as prominent as in the highlands southwest of Vatnajökull ice cap. Mosses have virtually no roots and absorb rainwater and nutrients through their small leaves. They therefore have an advantage over flowering plants where precipitation is high and the ground is poor in nutrients. The most common species are fringe mosses, particularly woolly fringe moss (*Racomitrium lanuginosum*) and dense fringe moss (*Racomitrium ericoides*). Both of these varieties form mats or hummocks, Woolly fringe moss appears silver-grey in dry weather due to long hairs growing from its leaf-tips; it grows on hillocks in the lava. Dense fringe moss grows in damp hollows, is more yellow than the woolly fringe moss, and has short hair tips. Can you find both types of moss?

8 THE LAKI LAVA (SKAFTÁRELDHAUN)

Lava from this part of the Laki craters flowed into the Skaftá river course. The river dried up on the third day of the eruption and by the fifth day lava had flowed to the lowlands 40 km away. There it spread westwards to Kirkjubæjarklaustur and buried 10 – 12 farms. That part of the lava is called Eldhraun. The lava which ran from the craters east of Laki followed the Hverfisfljót river course to the lowlands east of Kirkjubæjarklaustur. The lava there is called Brunhraun. The Laki eruption is considered one of the biggest in Iceland's history and Skaftáreldhraun is the third largest lava to flow on Earth since the end of the Ice Age, covering about 560 km² or 0.5% of Iceland.

9 WALKING ON MOSS

About 8000 people visit the Laki crater row every summer. At first there were no organised walking paths around the craters. Walking on moss can kill it, and then it does not re-grow in the same place. Scars of damaged moss are widespread. In order to compensate for past damage the national park staff has developed a method for repairing the scars. Moss mats are put in the old trampled areas. The place where the moss is collected is carefully cleaned; new moss gradually grows back on the rocks. This is time-consuming work. It is important that everyone helps to make the work successful. Please assist by only walking on the marked and posted paths around the Laki crater row. Do you see a path that has been reclaimed?

10 HYALOCLASTITE (MÓBERG)

A volcanic eruption on dry land spreads volcanic material over a large area, and flowing lava cools and solidifies slowly. When an eruption happens under water, or below a glacier, the magma is cooled suddenly and shatters into glassy fragments which collect in a pile around the volcanic vent. In time the hyaloclastite fragments fasten together and form rock. The Icelandic name for this rock (móberg) comes from the reddish-brown colour which the rock has when the iron in it rusts or oxidises. When the Ice Age glaciers melted, mountains and ridges of hyaloclastite were exposed. Hyaloclastite is the commonest rock type in Iceland's volcanic zone but is very rare in the rest of the world. Look at a piece of hyaloclastite and see how it differs from the other volcanic rocks nearby.

11 FAIRY RINGS

Rings and other arc formations often seen in the moss carpet are caused by a fungus growing in the soil beneath. The explanation for the ring form is that the fungus is made of a dense network of threadlike mycelia which grow in circle from a central spot. The living edge of the mycelium competes with the moss or releases chemicals that cause it to wither. The size of the rings is determined by the age and growth rate of the fungus. Often the rings are quite large and intertwined forming complex patterns in the moss.