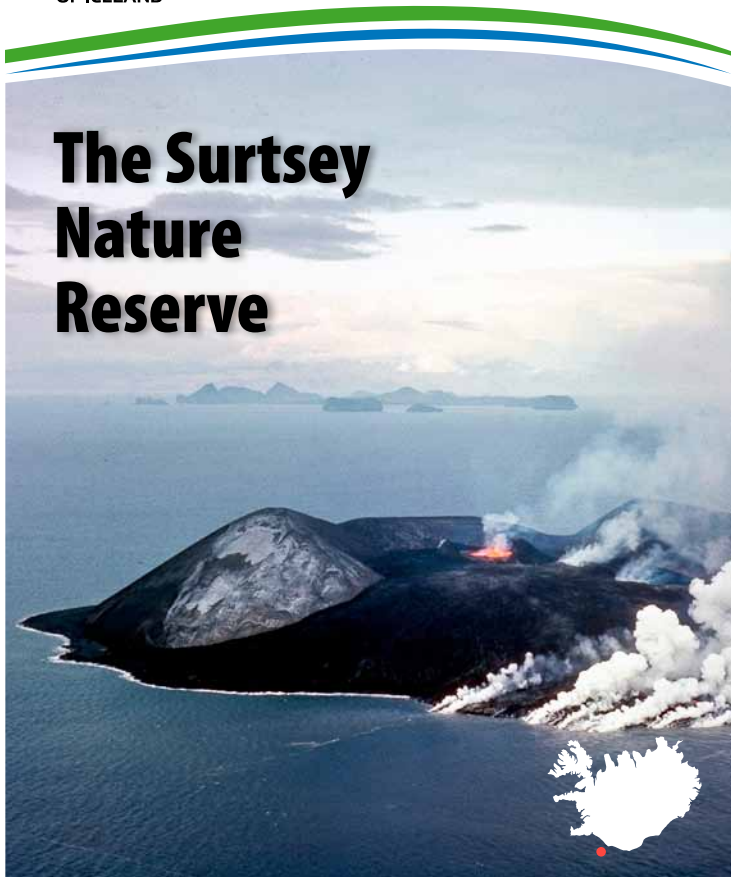




ENVIRONMENT AGENCY
OF ICELAND

The Surtsey Nature Reserve

PHOTO Sigurðeir Jónsson, Surtsey, 1 May 1964





■ Facts

- Surtsey, Iceland's southernmost outpost, is the second largest island of the Vestmannaeyjar archipelago.
- Scientists have been monitoring its formation and development since it first appeared in 1963. More research has been carried out on Surtsey than on any other volcano.
- Surtsey provided scientists with their first opportunity to monitor how palagonite tuff forms from unconsolidated volcanic tephra. Tuff was first found on the surface of the island in 1969.
- The erosion and development of the island is monitored by means of regular aerial photos and hydrographic measurements.
- Scientists maintain an annual watch on the plant and animal colonisation of this new island, which is free of human interference.
- Seeds and tiny creatures are carried to Surtsey by the sea, the wind, birds, drifting debris and floating clumps of grass from other islands.
- Ecological research on Surtsey has shed new light on the development and progress of plant and animal populations on islands.
- The first colonists on Surtsey were diatoms found on the beach in August 1964.
- The first higher plant was the sea-rocket (*Cakile artica*), which was found in 1965.
- Fulmars and black guillemots were the first bird species to breed on Surtsey. Nesting began in 1970.
- Gull colonies established themselves on Surtsey around 1985, followed shortly by many new species of higher plants.
- Ravens nested on Surtsey for the first time in spring 2008. They raised three chicks.



■ Vestmannaeyjar

The Vestmannaeyjar archipelago is a group of 18 islands along with a number of skerries and seamounts located 10 km south of Iceland. Heimaey (13,6 km²) is the largest island, followed by Surtsey (1,4 km²). The islands are part of a single volcanic system, with Heimaey at its centre. Volcanic activity, mostly on the seabed, began approximately 100,000 years ago. The oldest geological formation above sea level is Norðurklettar, a cliff that formed

40,000 years ago at the northern end of Heimaey. At least 24 eruptions have occurred in this system during the last 10,000 years. Stórhöfði, Sæfjall, Helgafell, Bjarnarey and Elliðaey all emerged in a series of eruptions 5,000–6,000 years ago. Two eruptions have occurred in historical times: the Surtsey eruption (1963–67) and the Heimaey eruption (1973). Surtsey provides valuable information about the formation and development of the outer islands of the archipelago.



■ The Surtsey eruption

On 14 November 1963, fishermen noticed volcanic activity on the surface of the sea 18 km southwest of Heimaey. The following day, a small island emerged, which was later named Surtsey. The Surtsey eruption continued until 5 June 1967, the longest continuous eruption since the settlement of Iceland. Volcanic activity began in a 400 m fissure at a depth of 130 m. The first eruptions were characteristically explosive, and a column of thick black smoke rose 9 km into the sky as tephra craters were formed. In April 1964, the nature of the eruption changed when seawater no longer had access to the vent, the explosive eruptions ceased and lava began flowing in Surtsey.

Surtla, Syrtlingur and Jólnir, smaller volcanoes in the same system, rose from the seabed close to Surtsey in 1964–66. Surtla (1964) never reached the surface, while Syrtlingur (1965) and Jólnir (1965–66) formed islands that were quickly eroded by the sea once eruptions ended. The Surtsey volcano system is a 5.8 km long ridge, mostly underwater, covering an area of 13.2 km².

When the Surtsey eruptions ended in 1967, the island's surface area was 2.6 km² and it rose to a height of 170 m above sea level. The island eroded rapidly during the first few years after the end of eruptions, and by 2006 Surtsey measured only 1.4 km². Its highest point is now 155 m above sea level.

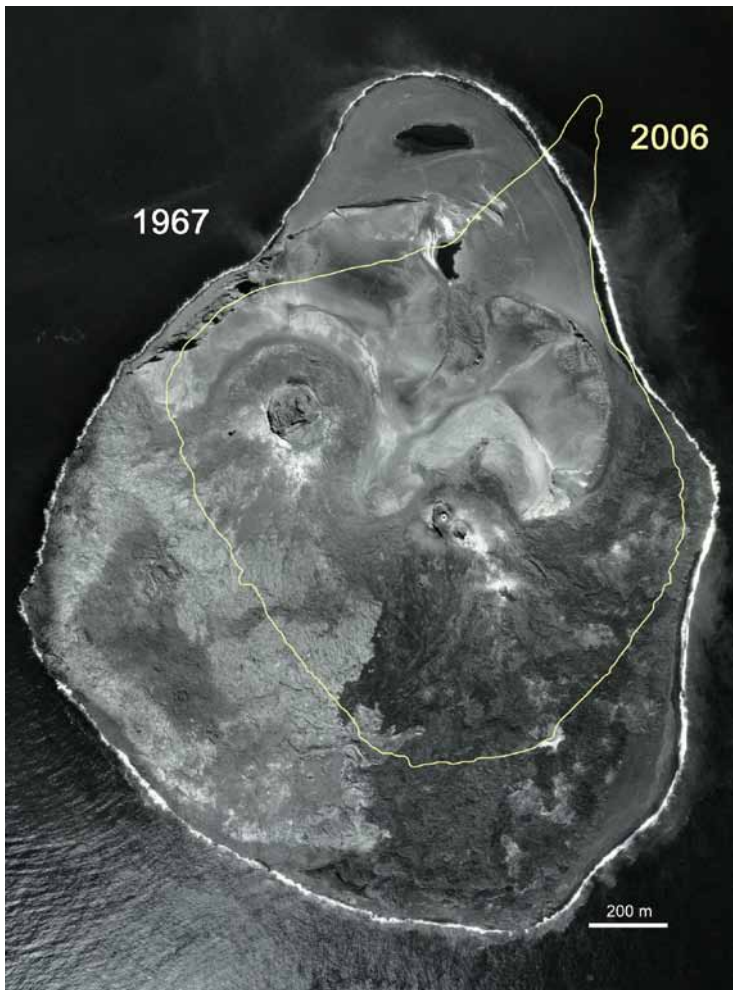


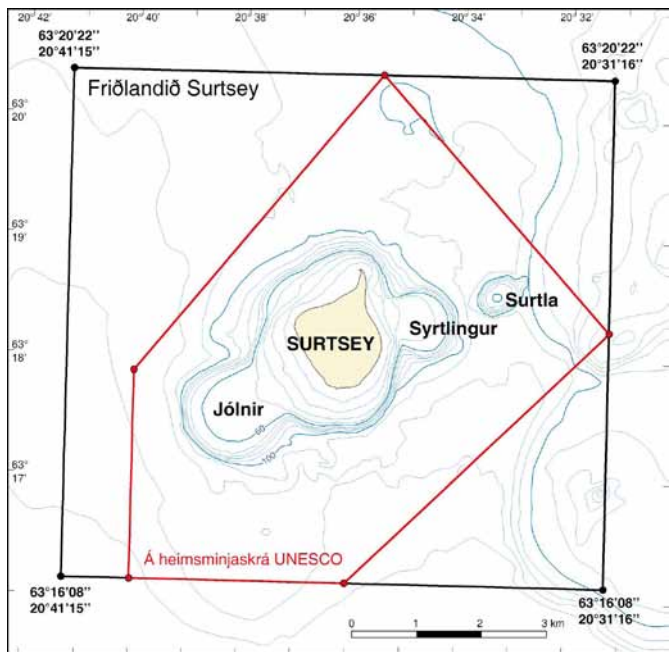
■ Research on Surtsey

Since it emerged, Surtsey has been a pristine geological and biological research laboratory, and it will continue to be so. Surtsey has provided the opportunity to monitor a submarine eruption and the formation and development of an island. Experts and enthusiasts interested in monitoring and protecting Surtsey founded the Surtsey Research Society in 1965. The Society's main purpose is to co-ordinate and promote research on Surtsey. Its members have built facilities and constructed a helipad to improve conditions for researchers on the island. In addition, the Surtsey Research Society takes regular aerial photos of the island and publishes the results of scientific investigations in the Surtsey Report.

Scientists from the Icelandic Institute of Natural History, the Marine Research Institute, the University of Iceland and a large number of foreign institutions have conducted wide-ranging research and monitoring projects on Surtsey. These projects have been of great importance to the natural sciences. Scientists have been able to trace the geological history of the island, time the colonisation of organisms and monitor changes to the island's ecosystem right from the very beginning.

Geologists on Surtsey have monitored geothermal development, tuff formation, land subsidence and marine erosion. Biologists have observed plant and animal colonisation, the development of ecosystems and the progress of plant and animal populations, both on land and in the sea.





■ The Surtsey Nature Reserve

Surtsey was declared a nature reserve in 1965. The eruption was still in progress, and protection was limited to the volcano above sea level. The area of the reserve was enlarged considerably on the island's nomination to the World Heritage List in 2006. The restricted zone currently covers the entire Surtsey volcano and the surrounding sea, a

total of 65 km². Human visits to the island have been restricted since 1965, and permission must be obtained from the Environment Agency of Iceland before going onshore. These restrictions are first and foremost to prevent biological contamination and to protect Surtsey's delicate environment. The Environment Agency manages the Nature Reserve, with the assistance from a six person expert advisory committee



■ Surtsey's future

Surtsey's survival is ensured following the formation of tuff, which is highly resistant to sea erosion. Vegetation will gradually cover the entire island with the exception of the steep sea cliffs. Surtsey's appearance and ecosystem are expected to be similar to those of other islands in the Vestmannaeyjar archipelago.

■ Surtsey Visitor Centre

The Visitor Centre, located in Vestmannaeyjabær on the island of Heimaey, provides information about the Surtsey Nature Reserve. The Nature Reserve's administrative office is located in the Vestmannaeyjar Knowledge Centre. Please send enquiries to surtsey@ust.is

■ Surtsey websites

www.surtsey.is
www.ni.is/surtsey
www.ust.is/surtsey
www.heimaslod.is
whc.unesco.org

Surtsey's unique ecosystem and environment have been allowed to develop naturally, without human interference or influence



■ UNESCO World Heritage List

In autumn 2005, Surtsey was nominated for inclusion on the UNESCO World Heritage List. The Icelandic Institute of Natural History prepared the nomination.

The island was placed on the list in July 2008, when UNESCO recognised

it as a site of unique natural interest and a base for vital research into plant and animal colonisation and into the establishment and development of its ecology.

The far-sighted protection of Surtsey in 1965 and careful scientific monitoring and research into the ecosystem and geology of the island underpin Surtsey's presence on UNESCO's World Heritage List.



United Nations
Educational, Scientific and
Cultural Organization



Surtsey
• Inscribed on the World
• Heritage List in 2008



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OF ICELAND**

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