

# Conservatism saved Iceland from catastrophe

March 22 2012, By Tom Marshall

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The people of medieval Iceland survived disaster by sticking with traditional practices, an innovative new study suggests.

This didn't just help them recover from plague and volcanic eruptions; it may ultimately have kept [human settlement](#) on Iceland viable centuries later when [climate change](#) had made their environment even harsher.

The research examines how late-medieval Icelanders responded to potentially devastating population drops, by analysing layers of [soil](#) and volcanic ash.

"Icelandic society at the time was both very conservative and very resilient," says Dr. Richard Streeter, lead author of the paper, which appears in [Proceedings of the National Academy of Sciences](#). "We hear a lot about how societies need to be flexible, but in this case it seems to

have been reluctance to change that helped these people recover surprisingly quickly from plague and cope with climate change."

Iceland suffered two devastating [plagues](#) at the beginning and end of the 15th century. The first is thought to have killed around half the population. The country was also hit by regular volcanic eruptions, which left large areas of [farmland](#) unusable for years.

And since the mid-14th century, the European climate had started to get gradually colder, making the already-difficult Icelandic landscape even harder to farm. At the time Icelanders relied on [grazing animals](#) for much of their food, in particular on cows and sheep, and the plagues' [death toll](#) would have made it very hard for them to keep looking after their animals properly. It would have been easy for society to have sunk into despair and apathy. But that didn't happen.

The researchers looked at layers of soil and volcanic ash, or tephra. "Initially we were just interested in whether you could find signs of these disasters in the tephra record. We found you could, and wondered what this said about the society of the time and how it responded," Streeter explains.

In particular, changes in [soil erosion](#) after the plagues would suggest changes in grazing patterns, which could themselves reflect trends in wider society. If the community had floundered because of psychological trauma and manpower shortages, herds of feral sheep might be left to roam the hills, stripping vegetation bare and causing widespread erosion in upland areas.

Or, even if such a farming collapse was avoided, it would have been tempting for Icelandic people to abandon labour-intensive cow herding and rely only on sheep. The soil records show that neither of these happened. After both plagues, Icelanders carried on farming as they had

before - just on a smaller scale. They continued to keep both cows and sheep, and generally kept their flocks under control, so there was no discernible increase in soil erosion.

"Abandoning cows for sheep would certainly have been a possible response to the plague, but there's no evidence they did this," says Streeter. "If this had happened, we'd expect to see year-round sheep grazing creating very damaging erosion in upland areas." This is because it's hard to control where sheep graze without a lot of labor-intensive shepherding.

He adds that if Icelanders had permitted such destructive grazing, it might have meant their island couldn't support them centuries later. "Soil erosion eventually became a huge problem even as things were," he says. "And by the 18th century the climate got so bad that, combined with the after effects from the 1783 Laki eruption, there was talk of having to abandon Iceland. If there had been massive soil loss earlier on, this could have tipped them over the edge. Their ability to continue even through massive demographic change enhanced their resilience centuries later."

Iceland is the best place in the world for this kind of research. Its frequent [volcanic eruptions](#) mean there's a ready supply of volcanic ash to form new soil, meaning in many places ground levels rise by 0.5mm a year – very fast as soil goes.

This fast rate of deposition means changes in erosion caused by grazing are easy to spot. The eruptions also mean there's a thick layer of undisturbed ash every so often amid this soil; Iceland's accurate written histories mean we can date these layers with great precision. "We don't just know that there was a major eruption of Hekla in 1341," says Streeter. "We know it happened on the 19th of May, at 9am."

Iceland's resilience contrasts with the fate of the Greenland settlement.

Like Iceland, that society had been founded by Norse settlers, so they had very similar cultures. Greenland faced even greater problems – climate change hit it much harder, and changes in European trade patterns reduced demand for walrus ivory, the colony's main export. Unlike Iceland, the colony didn't survive the challenges it faced.

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