

What does sheep grazing do to the mountains?

[Agriculture & Fisheries](#)[1]

[Agriculture & Fisheries](#)[1][Farming](#) [2][Norway](#) [3][Forskning.no](#) [4]

Livestock grazing affects the landscape. What effects does it have on the vegetation?

When animals graze, they affect the environment. They keep meadows open, their faeces fertilize the soil, and forests yield to cultivated landscapes. But what effect does grazing have on overall biomass? Does grazing affect carbon capture too? How many plants survive and what kind?

A group of researchers at NTNU decided to find out.

“This can tell us something about carbon sequestration in mountain plants, and how grazers affect it,” says Mia Vedel Sørensen in the Department of Biology. She recently earned her doctorate on the topic.

Weird cages

In 2013, the researchers set up 48 wire cages at various locations near Hjerkinn village in the Dovre mountains. These were grazing areas where sheep dominate and have the occasional company of moose, lemmings, field mice, ptarmigan and a few reindeer passing through. Researchers placed the cages in a meadow, a heath and a Salix shrub landscape with several different willow species.

The weird cages – or exclosures – were designed to keep out resident herbivores so that the researchers could eventually compare the vegetation inside and outside them.

The following year, in 2014, the researchers planted willow cuttings (Salix) to simulate shrub expansion.

For the past few decades, shrub vegetation has taken over parts of the mountain where heather and meadows were more common thirty years ago. However, grazing can slow down – and potentially even reverse – this expansion.

Research often takes time, and the researchers had to wait until summer 2015 to measure the different effects of their planting and cages. They recently presented their results in *BMC Ecology*.

So what did they find?

A surprising discovery

“We only found significant effects of the treatments in the heath community. The biomass there increased where the herbivores were kept out,” says Vedel Sørensen.

In other words, they found that on the heath, growth was better inside the protected cages than outside, where the sheep wandered around a lot. They did not see the same effects in the meadow or shrub landscapes.

“That surprised us to begin with,” she says.

Heath is the least attractive pastureland for the sheep. You would think the animals would have a greater impact on the grassy meadows or the area with the juicy shrubs, but no.

“But it actually did turn out to make sense,” says Sørensen.

Perhaps the grazing was better elsewhere, but the sheep still liked being on the heath. This was their favourite place to relax and chew their cud.

And where the sheep relax the most, they also defecate the most, which nourishes the plants and increases growth. In addition, the animals have an impact by trampling the vegetation. This gave some of the plants inside the cages a huge advantage and resulted in a greater difference between the protected and unprotected plant growth.

Shrub expansion may have effect

The researchers thus found that planting the shrubs showed no effects on the ecosystem, but that does not mean that the shrub expansion doesn't matter. Shrubs provide more shade, which in turn can affect other plants.

“We figure it's premature to judge these effects, and that this area will provide some interesting results later,” says Vedel Sørensen. She hopes that either she or others can follow up on these trials in a few years.

In an earlier study, Vedel Sørensen showed that meadows sequester the most carbon and heath the least of the three landscape types investigated. This project is part of a larger project called ECOSHRUB, which is led by Professor Bente Jessen Graae and Associate Professor Richard Strimbeck from NTNU.

Source: BMC Ecology. [Experimental herbivore exclusion, shrub introduction, and carbon sequestration in alpine plant communities.](#) [5] Sørensen, Mia Vedel; Graae, Bente Jessen; Hagen, Dagmar; Enquist, Brian J.; Nystuen, Kristin Odden; Strimbeck, Richard. (2018).

 [Animals affect nature when they graze. But where and how do they impact it the most? \(Photo: Mia Vedel Sørensen, NTNU\)](#) [6]

 [You can just hear the sheep thinking to themselves, ?What are these weird cages?? \(Photo: Mia Vedel Sørensen\)](#) [7]

 [Mia Vedel Sørensen in the field. \(Photo: Diana Eckert\)](#) [8]

 [Animals affect nature when they graze. But where and how do they impact it the most? \(Photo: Mia Vedel Sørensen, NTNU\)](#) [9]

[Gemini, NTNU Trondheim - Norwegian University of Science and Technology](#) [10]

[Cross-infection of foot rot between sheep and cattle](#) [11] [Factoring sheep into climate calculations?](#) [12]

[Surprisingly high levels of radioactivity in Norwegian reindeer and sheep](#) [13]

[Steinar Brandslet](#) [14]

January 9, 2019 - 06:00

This field is not in use. The footer is displayed in the mini panel called "Footer (mini panel)"

Source URL: <http://sciencenordic.com/what-does-sheep-grazing-do-mountains>

Links:

- [1] <http://sciencenordic.com/agriculture-fisheries>
- [2] <http://sciencenordic.com/farming>
- [3] <http://sciencenordic.com/category/countries/norway>
- [4] <http://sciencenordic.com/category/publisher/forskningno>
- [5] <https://bmcecol.biomedcentral.com/articles/10.1186/s12898-018-0185-9>
- [6] http://sciencenordic.com/sites/default/files/partner_sheep.jpg
- [7] http://sciencenordic.com/sites/default/files/sheep_norway_partner.jpg
- [8] http://sciencenordic.com/sites/default/files/mia-vedel-srensen-during-the-co2-measurement-in-the-heath-photo-diana-e-web_-768x576.jpg
- [9] http://sciencenordic.com/sites/default/files/partner_sheep_0.jpg
- [10] <http://sciencenordic.com/partner/gemini-ntnu-trondheim-norwegian-university-science-and-technology>
- [11] <http://sciencenordic.com/cross-infection-foot-rot-between-sheep-and-cattle>
- [12] <http://sciencenordic.com/factoring-sheep-climate-calculations>
- [13] <http://sciencenordic.com/surprisingly-high-levels-radioactivity-norwegian-reindeer-and-sheep>
- [14] <http://sciencenordic.com/content/steinar-brandslet>